

**AIR QUALITY ASSESSMENT
FOR
LYNX CAT MOUNTAIN QUARRY
CUP and Revision to the
MINE AND RECLAMATION PLAN
(#90M-0003)
PROJ-2024-00173**

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CA Mine ID# 90-36-0049**

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**AIR QUALITY ASSESSMENT
FOR THE
LYNX CAT MOUNTAIN QUARRY
MINE AND RECLAMATION PLAN REVISION**

**MATCON CORPORATION
CA Mine ID# 90-36-0049**

INTRODUCTION

The Lynx Cat Mountain Quarry is an existing vested mine under the authority of Mining and Reclamation Plan #90M-010, as approved by San Bernardino County on June 28, 1990, and subsequently revised in 2015 and 2017. The mine consists of 48.2 acres and is designated by the State of California as CA Mine ID# 90-36-0049. The current land and mine owner is Matcon Corporation. The current status of the Conditional Use Permit (CUP) and Reclamation Plan #90M-010 is "active" and "operational" with a financial assurance bond of \$52,000. The March 2017 revision extended operations until March 28, 2027, with another five years of reclamation until March 28, 2032. The current approval/revision includes conditions of approval (COAs) some which are referenced in this document and will continue to be implemented as applicable (see Appendix G).

The purpose of the 2024 Conditional Use Permit (CUP PROJ-2024-00173) and Revision application is to revise the approved Mining CUP and Mine and Reclamation Plan 90M-010 to include the following:

- To extend the operation life of the mine for additional **50 years** until December 31, 2074 to provide a long-term aggregate solution for aggregate supply in the High Desert and Southern California;
- To expand the current quarry from 48.2 acres to 161.7 acres of actual quarry to the north 33.5 acres and to the west by approximately 80 acres (an increase of 113.5 acres);
- To expand the crushing, screening, processing and product stockpile areas onto the adjoining 80 acres of contiguous adjacent vacant property privately owned by Lynx Cat Mountain Development on the west side of the expanded quarry; and
- To increase the quarry depth from 250 to 500 feet below the ground surface (bgs) with an average pit floor depth of +/- 485 feet bgs.

The total area of this 2024 Reclamation Plan Revision will be approximately 241.7 acres, an increase of about 193.5 acres from the approved 48.2 acres. The revised Plan incorporates the existing 48.5 acres of permitted quarry with an additional 33.5 acres directly north and 160 acres to the west into the overall Mine and Reclamation Plan area and boundary. The proposed 2024 Revision will expand rock and aggregate reserves up to approximately 140 million tons (mt) and will include an additional 80 acres to crush, screen, process, and store the large volumes of

railroad ballast rock, rip rap, and construction aggregates needed the anticipated long-term demand for materials in the High Desert and Southern California over the next 50 years.

Reclamation of the site will commence immediately upon termination of mining and extend for a period of five years. The mined products produced at this quarry will include railroad ballast rock, sub ballast, riprap, paving stone, construction and concrete aggregates and decorative stone as well as general fill material. The mine is also currently permitted for the acceptance and processing for recycling of broken concrete and asphalt rubble, broken tile, brick, and other recyclable materials as well as the receipt and re-use use of non-hazardous drill cuttings and brine waters. Additionally, Lynx Cat Mountain Quarry is currently permitted for the set-up and operation of both Asphalt and Concrete Plants operation on the site.

The Lynx Cat Mountain Quarry is located approximately 4 to 5 miles north of State Route 58 (SR-58), four miles northwest of the community of Hinkley, California. It is the nearest quality aggregate source that meets the rigid Class I railroad ballast specifications that could be used by Class I railroads such as BNSF and UPRR and that qualifies for use on the high-speed rail for both ballast rock, sub-ballast and construction aggregates. Material delivery can be accomplished via the new proposed rail load-out facility and by truck to remain localized and reduce traffic congestion and emission impacts on the I-15, SR-58, and in the High Desert region in general.

Once the nearby rail loading facility is approved and constructed, trucks will transport the aggregate material from the quarry approximately two miles to this new rail loop loading facility which will be connected to the main line of the BNSF Railway for rail shipment to the various projects across the southwestern U.S. This facility is part of a separate Conditional use Permit (CUP) under review by the County.

1.0 AIR QUALITY ASSESSMENT

The site is in the Mojave Desert Air Basin (MDAB), an approximate 21,000 square mile area under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The MDAB encompasses the desert portion of San Bernardino County. The MDAQMD has jurisdiction over that portion of the MDAB within San Bernardino County that includes the project area.

Air quality is determined primarily by the types and amounts of contaminants emitted into the atmosphere, the size and topography of the local air basin and the pollutant-dispersing properties of local weather patterns. When airborne pollutants are produced in such volume that they are not dispersed by local meteorological conditions, air quality problems result. Dispersion of pollutants in the MDAB is influenced by periodic temperature inversions, persistent meteorological conditions and the local topography. As pollutants become more concentrated in the atmosphere, photochemical reactions occur, producing ozone and other oxidants.

Air emissions from the project are subject to federal, State and local rules and regulations implemented through provisions of the federal Clean Air Act, California Clean Air Act and the rules and regulations of the California Air Resources Board (CARB) and MDAQMD. Under the provisions of the federal and California Clean Air Acts, air quality management districts with air

basins not in attainment of the air quality standards are required to prepare an Air Quality Management Plan (AQMP). An AQMP establishes an area-specific program to control existing and proposed sources of air emissions so that the air quality standards may be attained by an applicable target date.

The United States Environmental Protection Agency (USEPA) and the CARB have designated portions of the District as nonattainment for a variety of pollutants, and some of those designations have an associated classification. The MDAQMD has adopted attainment plans for a variety of nonattainment pollutants.

The MDAQMD has local regulatory review and primary permitting and enforcement authority over potential stationary sources of air pollution within the Mojave Desert portions of San Bernardino County, including all cities and towns. The EPA and CARB serve as technical review and advisory agencies, providing technical advice and guidance when necessary. MDAQMD regulates emissions from stationary sources through the permitting process and requires permits to Construct/Operate for all stationary equipment with the potential to release air contaminants. The portable processing plant and power generator sets are required to obtain operating permits or maintain statewide portable equipment registration as applicable. Operations and permits are inspected and renewed annually. Haul trucks and diesel equipment must meet requirements of the CARB's Off-road Diesel Vehicles Regulations to reduce diesel pollutants. Operations will be required to comply with MDAQMD Rules 401 (limiting visible emissions from exhaust); 402 (avoid nuisance emissions); 403 prohibits visible dust from crossing property lines); and 403.2 (requirements for controlling fugitive dust).

To assist local agencies to determine if a project's emissions could pose a significant threat to air quality, the MDAQMD has prepared *the California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020*. The air and dust emissions changes from the existing operational and permitted use of the existing project were evaluated and compared to the emissions estimated for the proposed project. The net changes were then compared to and evaluated with the applicable MDAQMD standards and thresholds.

General Description of Mine and Processing Operations

The existing approved mining and processing operations provide rock and construction aggregate to markets in the upper Mojave Desert area. Three (3) million tons of material is permitted to be loaded by excavators and loaders either directly onto street legal 25-ton haul trucks for export to various construction projects (approximately 1.5 million tons per year (mtpy)) and/or transported to the on-site processing plants (approximately 1.5 mtpy).

The proposed project is being proposed to also provide ballast and rock for the rail projects planned in the High Desert. In conjunction with these projects, a rail loop load-out project is being proposed approximately two miles to the south of the Lynx Cat Mountain Quarry. As discussed above, once the nearby rail loading facility is approved and constructed, off-road 65-ton haul trucks will transport the rock and aggregate material from the quarry to this new rail loop loading facility which will be connected to the main line of the BNSF Railway for rail

shipment to the various projects across the southwestern U.S. This facility is part of a separate Conditional use Permit (CUP) under review by the County.

Operational Assumptions for Air Quality Assessment

Same operational hours assumed:

Mining and processing; up to 300 days/year and 16 hours/day; shipping up to 24 hours/day, 7 days/week. All mining and shipping estimates below are based on 300 days/year and up to 16 hours/day.

Existing Mining and Shipping: 3.0 million tons per year (mtpy)

- 3 mtpy mined; 250,000 tons/month; 10,000 tons/day.
- Approximately 1.5 mtpy processed through plant and 1.5 mtpy shipped directly off-site.
- 25-ton street-legal haul trucks: 120,000 trucks/year; 400 trucks/day; 25 trucks/hour.
- On-site: 400 trucks x 0.5 miles round trip (RT) = 200 miles/day.
- Off-site: 400 trucks x 60 miles RT = 24,000 mi/day.

Proposed Mining and Shipping: 4.0 mtpy

- 4 mtpy mined; 333,335 tons/month; 13,335 tons/day.
- Approximately 2 mtpy processed through plant and 2 mtpy shipped directly off-site.
- 2 mtpy trucked by 25-ton haul trucks and 2 mtpy to rail loop loadout by 65-ton off-road haul trucks.
- Assume 2 mtpy to be trucked by 25-ton haul trucks for a 60-mile one way trip estimate. 6,667 tons/day.
- 80,000 25-ton trucks/year; 267 trucks/day; 17 trucks/hour.
- On-site: 267 trucks x 0.5 miles RT = 134 mi/day
- Off-site: 267 trucks x 60 miles RT = 16,020 mi/day
- **Decrease of 133 trucks/day and 8,000 miles/day.**

- **NEW:** Assume 2 mtpy to be trucked by 65-ton haul trucks to rail loop loadout (4.5 miles RT).
- 2 mtpy; 6,667 tons/day.
- 30,770 trucks/year; 103 trucks/day; 10 trucks/hour.
- 103 trucks/day x 4.5 miles RT = 464 mi/day.

Mine Equipment

Typical mobile equipment types and numbers were provided by Lynx Cat Mountain Quarry and are listed in Table 1. These are estimated equipment types, numbers, and usage. All equipment will meet the Tier 4 Final emission standards.

**Table 1
Lynx Cat Mountain Quarry Mobile Equipment List (Typical)**

Number	Equipment Description	Hrs/day (total)	Load Factor	HP	Net HP	Equipment Uses
3-4	3- CAT 980 (loads trucks/ occasionally feeder)	16 (exist) 24 (prop)	0.36	393	141.5	2-3 load trucks at 8 hrs/day each; one loads feeder at plant. Loading of excavated material into trucks for transport to plants and/or rail loadout and loading of product into trucks.
	1-CAT 988 (loads feeder)	8 (exist) 10 (prop)		538	194	
2-3	Excavators CAT 349	16 (exist) 24 (prop) 8 hr/day; daylight only	0.38	413	157	Mining and some direct loading into trucks.
3	CAT 773 Off-Road Trucks (65-ton capacity typ.)	8 (exist) 24 (prop)	0.39	727	283.5	Transportation of excavated material to the plants and/or the rail loadout staging area.
1	CAT D9T Dozer – as needed	6 (exist) 8 (prop)	0.43	452	194	Mining and stockpiling of material; construction and maintenance of roads and pit benches.
1	CAT 14H Motor grader	4 (exist) 6 (Prop)	0.41	238	98	Construction and maintenance of roads.
1	CAT 730 6000-gal. Water Pull or Truck-	6 (exist) 8 (prop)	0.38	370	141	Water spray haul roads, active mine areas, stockpiles, and general dust control.
1	Service Truck	---	---	---	---	Servicing and fueling onsite equipment.
Varies per contract	25-ton street legal trucks	---	---	---	---	Transportation of material off-site to project sites.
1	Processing plant (portable):		See attached file		---	Crushing/ screening/ washing plant for material as needed per contract specifications.
1-2	1000 kW Generator sets	8 (exist) 12 (prop)	0.74	535	396	Supplies power for plant facilities.
1	25kW gen set	24	0.74	15	11	Trailer and well
1-2	Atlas T-45 Drill rig	8 (exist) 12 (prop)	0.50	325	162.5	Drill holes for placement of explosives.

Source: Lynx Cat Mountain Operations; October 2024

2.0 AIR QUALITY EVALUATION

Thresholds of Significance

Air quality analyses for the proposed project have been conducted in accordance with the California Environmental Quality Act (CEQA) and Federal Conformity Guidelines (MDAQMD 2020) and the South Coast Air Quality Management District (SCAQMD) Air Quality Handbook with revisions through 2014. The MDAQMD has established the following significant annual emissions thresholds for determining whether the impacts from a project would be considered significant per CEQA:

Annual Emissions Thresholds of Significance (MDAQMD)

- Greenhouse Gases (CO₂e) - 100,000 tons
- Carbon monoxide (CO) – 100 tons
- Oxides of Nitrogen (NO_x) – 25 tons
- Volatile Organic Compounds (VOC) – 25 tons
- Oxides of Sulfur (SO_x) – 25 tons
- Particulate matter (PM₁₀) – 15 tons
- Particulate matter (PM_{2.5}) – 15 tons

Source: CEQA and Federal Conformity Guidelines (MDAQMD 2020)

County of San Bernardino “Greenhouse Gas Emissions Reduction Plan”

In September 2011, San Bernardino County adopted the Emissions Reduction Plan (GHGRP), which outlines a strategy to use energy more efficiently, harness renewable energy to power buildings, enhance access to sustainable transportation modes, and recycle waste. The 2015 update of the GHG Emissions Development Review Process updated the language the performance standard bringing it up to date with current code. In September 2021, the County adopted its GHGRP Update. Since the adoption of the County’s GHGRP in 2011 and its update in 2015, the State has enacted new climate change regulations, most notably the Senate Bill (SB) 32, which provides statewide targets to reduce GHG emissions to 40 percent below 1990 levels by 2030. To ensure conformity with the latest State climate change regulations, the County has updated its 2011 and 2015 GHGRP. This 2021 GHGRP Update serves as a comprehensive roadmap to outline strategies that the County will implement to continue achieving its GHG emissions reductions into the year 2030 and beyond, thereby ensuring sustainable and healthy growth.

The 2021 GHGRP Update summarizes the County’s historic and future GHG emissions and the reduction targets the County has established; the local reduction strategies that will be implemented and benefit at the community level to meet the reduction targets; and the implementation of the measures, potential funding sources, and how the GHGRP Update will be monitored and updated over time.

However, specific requirements for mining projects to reduce emissions of GHGs have not been adopted and so the Amended Plan would not conflict with the County’s Greenhouse Gas Reduction Plan.

The County may also consider the MDAQMD guidance and incorporate all applicable standards. The MDAQMD significance threshold for GHGs (100,000 tons/yr), while higher than the County's GHG Plan of 3,000 metric tons of carbon dioxide equivalent/year (MTCO_{2e}/yr) is more applicable to this type of project. Upon review of the Screening Tables, it was determined that the GHG reduction measures listed are related to typical long-term residential, commercial, and industrial structural development and the project activities do not apply. The MDAQMD states that, in general, emissions less than those listed in their CEQA and Federal Conformity Guidelines (February 2020) will result in less than significant impact on air quality. Thus, regional impacts from a project that adds emissions to the air basin in quantities which are less than those listed above would be less than cumulatively considerable.

2.1 OPERATIONS CRITERIA POLLUTANTS EVALUATION

For the existing project, onsite processing, mobile criteria, and dust emissions were screened using CALEEMOD App. G, Version 2022, 1.1.3, Table G-13, Off-Road Equipment Emissions Factors; the MDAQMD Emissions Inventory Guidance; SCAQMD "Air Quality Handbook"; Emission Factors for On-Road Heavy-Duty Diesel Trucks (EMFAC2021(v1.0.2) CARB website (October 2024); AP-42 Chapters 11.19 and 13.2.2; and SCAQMD Particulate Matter Emission Factors.

Operational emissions were analyzed with the following assumptions:

- All mobile equipment will meet Tier 4 Final diesel emission standards.
- Annual emissions were estimated based on 300 working days per calendar year.
- Mining equipment and the process plant would operate approximately as estimated in Table 1 subject to change on occasion due to construction demand.
- Off-road 65-ton capacity haul trucks will transport material to the rail loadout 16 hours/day - 103 trips per day.
- Existing on-road 25-ton haul truck trips average 400 trips per operating day for existing conditions; with material proposed to be trucked to the rail loadout, these truck trips decrease to approximately 267 trips/day with the proposed project.
- MDAQMD process plant dust control requirements and Rule 403.1 for fugitive dust control measures are included in the emissions' estimates.
- Air and dust control measures required by MDAQMD and County conditions of approval are incorporated.

The emissions calculations for the existing and proposed projects are provided in Appendices A and B. The estimated change in air pollutant emissions compared to existing and the proposed projects and their significance as compared to the thresholds above are summarized in Table 2. As shown, the net increase in air emissions from the proposed project are less than the annual thresholds of significance. With implementation of the MDAQMD rules, CARB's Off-Road Diesel Vehicle regulations, and existing Conditions of Approval listed below, air quality impacts are expected to be less than significant.

Table 2
Lynx Cat Mountain Quarry
Estimated Air Pollutant Emissions and Significance (Existing vs. Proposed)
Tons/Year

Equipment / Plant	ROG		NO _x		CO		PM ₁₀		PM _{2.5}	
	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Site Equipment & Off-Road Trucks Exhaust including trucks to rail loadout	0.33	0.54	1.46	2.35	14.59	23.50	0.12	0.17	0.11	0.16
Processing Plant	---	---	---	---	---	---	2.29	2.95	0.69	0.88
Trucks, Vendors & Employees' Vehicles on-site dust	---	---	---	---	---	---	0.01 ¹ 5.3 ²	0.01 ¹ 5.8 ²	0.01 ¹ 1.1 ²	0.01 ¹ 1.2 ²
Drilling & Blasting			10.2	13.6	40.2	53.6	2.67	3.56	0.55	0.73
Fugitive Dust (loading, unloading, & stockpiles)	---	---	---	---	---	---	0.24	0.22	0.050	0.045
On-Road trucks, Vendors, & Employees Exhaust (on and off-site)	0.22	0.22	13.24	9.07	1.58	1.70	0.29	0.21	0.26	0.19
Emissions Totals	0.55	0.76	24.9	25.0	56.4	78.8	10.92	12.92	2.77	3.22
Change in Emissions	+0.21		+0.1		+22.4		+2.0		+0.45	
MDAQMD CEQA Thresholds (Tons/year)	25		25		100		15		15	
Significant	No		No		No		No		No	

Scenario Year for Emissions: Existing Permitted (2024) & Proposed (2025 and thereafter) depending on demand.
Emission Sources: EMFAC2021(v1.0.2) CARB website (October 2024) for off-road equipment including off-road trucks; SCAQMD Emission Factors for on-road mobile vehicles; Particulate Matter Emission Factors SCAQMD, July 2010); and AP-42 Section 13.2.2 EPA, November 2006)

Notes/Assumptions:

Mining: Existing - 3 mtpy; Proposed - 4 mtpy.

Processing: Existing – 1.5 mtpy; Proposed – 2 mtpy.

Trucking: Existing – 3 mtpy by 25-ton street legal trucks; Proposed – 2 mtpy by 25-ton street legal trucks and 2mtpy by 65-ton off-highway trucks to rail loadout.

Operations based on 300 days/year with trucking up to 7 days week based on demand.

¹ Exhaust emissions

² Road dust emissions.

Dust related PM_{2.5} = 0.208 of PM₁₀ (CEIDARS List).

3.0 CONDITIONS AND MEASURES TO CONTROL AIR EMISSIONS

The following existing County approved conditions of approval and mitigation measures are currently required to be implemented by Lynx Cat Mountain Quarry operations.

Additional or updated measures in bold have been incorporated into these conditions.

25. Air Quality. Although the Project does not exceed Mojave Desert Air Quality Management District thresholds, the Project proponent is required to comply with all applicable rules and regulations as the Mojave Desert Air Basin is in non-attainment status for ozone and suspended particulates [PM10 and PM2.5 (State)]. **The operator shall obtain permits to construct and annually renew permits to operate the process plant, ready mix and asphalt facilities, and generators from the MDAQMD and be in compliance with such permits.** To limit dust production, the Project proponent must comply with Rules 402 nuisance and 403 fugitive dust, which require the implementation of Best Available Control Measures for each fugitive dust source. Compliance with Rules 402 and 403 are mandatory requirements and thus not considered mitigation measures.

26. Wind. The Project proponent shall ensure that all disturbance activities are suspended when winds exceed 25 miles per hour; however, measures to mitigate fugitive dust shall be maintained at all times.

27. Diesel Regulations. The operator shall comply with all existing and future California Air Resources Board and Mojave Desert Air Quality Management District regulations related to diesel-fueled trucks **and equipment**, which among others may include: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment. Mojave Desert Air Quality Management District rules for diesel emissions from equipment and trucks are embedded in the compliance for all diesel fueled engines, trucks, and equipment with the statewide California Air Resources Board Diesel Reduction Plan. These measures will be implemented by the California Air Resources Board in phases with new rules imposed on existing and new diesel-fueled engines.

55. AQ-1 Exhaust Emissions. The mine operator shall maintain and operate construction equipment so as to minimize exhaust emissions. Production shall be scheduled to minimize daily equipment operations. During mining, trucks and vehicles in loading and unloading queues shall have their engines turned off when not in use, to reduce vehicle emissions. **Trucks in loading queues will have their engines turned off when not in use for more than 5 minutes to reduce idling and vehicle emissions in compliance with Title 13, California Code of Regulations, Section 2485 (Anti-Idling Policy).**

56. AQ-2: Vehicle Maintenance. The mine operator shall ensure that all equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.

57. AQ-3: Fuel Sources. The mine operator shall ensure use on-site mobile equipment powered by alternative fuel sources (i.e., methanol, **bio-diesel**, natural gas, propane, or butane) as feasible.

58. AQ-4 Dust Control Measures. The mine operator shall ensure that periodic watering for short-term stabilization of disturbed surface area to minimize visible fugitive dust emissions occurs. For purposes of this requirement, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance. **Additional measures shall include:**

- **Roads will be treated with EPA approved dust suppressants to prevent dust as needed.**
- **Speed limits on unpaved roads shall be 25 mph.**
- **All loaded trucks leaving from the site onto public roads shall be properly trimmed with a 6-inch freeboard height and/or covered and sprayed with water so as to minimize dust and prevent spillage onto a public roadway per California Vehicle Code 23114.**

59. AQ-5: Track out. The mine operator shall take actions sufficient to prevent project-related track out onto paved surfaces and cover loaded haul vehicles while operating on publicly maintained paved surfaces.

60. AQ-6: Graded Surfaces. The mine operator shall stabilize graded site surfaces upon completion of earth moving activity when subsequent earth moving activity is delayed or expected to be delayed more than 30 days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions.

61. AQ-7: Cleanup. The mine operator shall clean-up project-related track-out or spills on publicly maintained paved surfaces within 24 hours.

62. AQ-8: Earthmoving Activity. The mine operator shall reduce nonessential earth-moving activity under high wind conditions. For purposes of this requirement, a reduction in earth-moving activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.

Global Warming – Greenhouse Gases

Per CEQA guidelines, new project emissions are treated as standard emissions, and air quality impacts are evaluated for significance on an air basin. Greenhouse gas emissions are treated differently, in that the perspective is global, not local. Therefore, emissions for certain types of projects might not necessarily be considered as new emissions if the project is primarily population driven. Many gases make up the group of pollutants that are believed to contribute to global climate change. However three gases are currently evaluated carbon dioxide (CO₂) methane (CH₄) and nitrous oxide (N₂O). Nitrous oxide is not of concern due its very low emissions from this type of operation and methane is included but is also a very minor contributor.

The proposed project’s change in GHG emissions was compared to the existing project, the MDAQMD threshold of 100,000 tons/year and the screening threshold of 3,000 MTCO_{2e} per year adopted by the County as potentially significant to global warming. Utilizing the air quality models listed under Section 2.1, the change in the annual operational GHG emissions amount to a decrease of approximately 2,904 MTCO_{2e} per year based on 300 days of operations per year (see Table 3 and Appendix A tables). This is due to the reduction in the number of trips and milage traveled for the 25-ton street-legal haul trucks off-site due to the utilization of larger haul trucks shipping material to the nearby rail load-out facility. The change in GHG would not exceed the MDAQMD’s or the County’s thresholds and no significant GHG impacts are expected.

Project-related GHG emissions from on-site equipment, power generators, and trucks are shown in Table 3. The CEQA threshold of 100,000 MTCO_{2e} per year has been utilized by the MDAQMD as potentially significant to global warming. Utilizing this threshold, proposed operations of the mine project would likely decrease and therefore the change in GHG compared to existing conditions would be below the threshold. In addition, the GHG emissions generated from project activities are also less than the County’s GHG Plan Screening Guidance Standard of 3,000 MTCO_{2e}. The conditions of approval and measures listed as AQ-1a through AQ-1e will also reduce operational GHG emissions and correspond to several measures within the County GHG Plan.

Table 3
Lynx Cat Mountain Quarry
Greenhouse Gas Emissions
Operational Annual Emissions (MTCO_{2e})

Source/Phase	CO ₂		CH ₄	
	Existing	Proposed	Existing	Proposed
Truck Trips	12,357	8,511	0.29	0.31
Onsite Equipment & Trucks	1,497	2,439	1.28	2.03
Total per Year	13,854	10,950	1.57	2.34
	Existing Total		Proposed Total	
Total MTCO_{2e}	13,856		10,952	
Change in GHG	-2,904			
MDAQMD Threshold	100,000			
Significant	No			
County’s GHG Plan	3,000			
Significant	No			

Refer to Appendix A for detailed GHG emissions estimates.

In a broader sense, the proposed project is providing rock, ballast, and aggregate material to large-scale rail projects and ongoing and future construction projects in the High Desert from a local source. Local-sourced material in conjunction with the utilization of an adjacent rail load-out facility, will substantially reduce truck trips, miles driven, fuel consumption, air pollutant and GHG emissions, and degradation of public roads. To the extent that a project reduces vehicle

miles driven, GHG emissions, particularly CO₂, may be reduced. GHG impacts for the operation of the proposed mine site is deemed to cause a less than significant impact to climate change.

The existing County condition of approval below will reduce GG emissions:

63. Green House Gas Monitoring and Mitigation. *The developer shall implement the following as greenhouse gas (GHG) mitigation during the operation of the approved project:*

a) *Waste Stream Reduction.* The “developer” shall provide to all project employees County-approved informational materials about methods and need to reduce the solid waste stream and listing available recycling services.

b) *Vehicle Trip Reduction.* The “developer” shall provide to all project employees. County approved informational materials about the need to reduce vehicle trips and the program elements this project is implementing. Such elements may include: participation in established ride-sharing programs, creating a new ride-share employee vanpool, designating preferred parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading for ride sharing vehicles with benches in waiting areas, and/or providing a web site or message board for coordinating rides.

c) *Select construction equipment based on low-emissions factors and high-energy efficiency.* All diesel/gasoline-powered construction equipment shall be replaced, where possible, with equivalent electric or CNG equipment.

d) *All construction equipment engines shall be properly tuned and maintained in accordance with the manufacturers specifications prior to arriving on site and throughout construction duration.*

4.0 CONCLUSIONS

The air quality impacts of the proposed revision to the operations of the Lynx Cat Mountain Quarry have been assessed and compared to the existing operations and CEQA thresholds of significance. This air quality assessment estimated the existing and proposed on-site exhaust and dust emissions from the excavation, removal, processing, and trucking of the aggregate materials and found that the change in annual emissions would be less than the MDAQMD significance levels with the implementation of MDAQMD regulations, County conditions of approval, and mitigation measures. conditions and measures. These conditions and measures are included in this report and are implemented by the mine operator. With implementation of these conditions and measures, the potential air quality impacts would be expected to be less than significant.

In addition, the change in GHG emissions between the existing and proposed projects is deemed to cause a less than significant impact to climate change.

APPENDIX A
LYNX CAT MOUNTAIN
QUARRY AIR POLLUTANTS
AND GHG EMISSIONS
CALCULATIONS

**Table A1
Lynx Cat Mountain Quarry (Existing - 3 MTPY)
Onsite Mining and Loading Equipment Emissions (Typical)**

Operation	Emission Factor	Units	Equation Variables		Emissions						CO2 lbs/day	CH4 lbs/day
			1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day		
Equipment Exhaust Emissions												
PM-10 & Excavator CAT 349 (157 hp)	0.00314	lbs/hr	Equipment # 2	Operating Hrs 8	0.050	0.046						
Loaders CAT 980 (142 hp)	0.00283	lbs/hr	2	8	0.045	0.042						
PM-2.5 Loader CAT 988 (194hp)	0.03880	lbs/hr	1	8	0.310	0.286						
Dozer CAT D9T (194 hp)	0.03880	lbs/hr	1	6	0.233	0.214						
Off-Highway Truck CAT 773 (284 hp)	0.00570	lbs/hr	1	8	0.046	0.042						
Grader CAT14H (98 hp)	0.00196	lbs/hr	1	4	0.008	0.007						
Water Truck CAT 730 (142 hp)	0.00283	lbs/hr	1	6	0.017	0.016						
Drill Rig Atlas T-45 (163 hp)	0.00326	lbs/hr	1	8	0.026	0.024						
Gen Set 25 kW (33 hp)	0.00007	lbs/hr	2	24	0.003	0.003						
Gen Set 1000kW CAT (396 hp)	0.00792	lbs/hr	1	8	0.063	0.058						
ROG Excavators	0.02041	lbs/hr	2	8			0.33					
Loaders CAT 980	0.01840	lbs/hr	2	8			0.29					
Loader CAT 988	0.02522	lbs/hr	1	8			0.20					
Dozer	0.02522	lbs/hr	1	6			0.15					
Off-Highway Trucks	0.03690	lbs/hr	1	8			0.30					
Grader	0.01274	lbs/hr	1	4			0.05					
Water Truck	0.01840	lbs/hr	1	6			0.11					
Drill Rig Atlas T-45 (163 hp)	0.02120	lbs/hr	1	8			0.17					
Gen Set 25 kW	0.00429	lbs/hr	2	24			0.21					
Gen Sets	0.05148	lbs/hr	1	8			0.41					
CO Excavators	0.89500	lbs/hr	2	8				14.32				
Loader CAT 980	0.80660	lbs/hr	2	8				12.91				
Loader CAT 988	1.10600	lbs/hr	1	8				8.85				
Dozer	1.10600	lbs/hr	1	6				6.64				
Off-Highway Truck	1.61900	lbs/hr	1	8				12.95				
Grader	0.55860	lbs/hr	1	4				2.23				
Water Truck	0.80660	lbs/hr	1	6				4.84				
Drills	0.92910	lbs/hr	1	8				7.43				
Gen Set 25 kW	0.18810	lbs/hr	2	24				9.03				
Gen Sets	2.25720	lbs/hr	1	8				18.06				
NOX Excavators	0.08950	lbs/hr	2	8					1.43			
Loader CAT 980	0.08066	lbs/hr	2	8					1.29			
Loader CAT 988	0.11060	lbs/hr	1	8					0.88			
Dozer	0.11060	lbs/hr	1	6					0.66			
Off-Highway Truck	0.16190	lbs/hr	1	8					1.30			
Grader	0.05590	lbs/hr	1	4					0.22			
Water Truck	0.08066	lbs/hr	1	6					0.48			
Drills (Tiers 2 and 3)	0.09291	lbs/hr	1	8					0.74			
Gen Set 25 kW	0.01881	lbs/hr	2	24					0.90			
Gen Sets	0.22572	lbs/hr	1	8					1.81			
SOX Excavators	0.00130	lbs/hr	2	8						0.02		
Loader CAT 980	0.00090	lbs/hr	2	8						0.01		
Loader CAT 988	0.00140	lbs/hr	1	8						0.01		
Dozer	0.00160	lbs/hr	1	6						0.01		
Off-Highway Truck	0.00200	lbs/hr	1	8						0.02		
Grader	0.00080	lbs/hr	1	4						0.00		
Water Truck	0.00140	lbs/hr	1	6						0.01		
Drills	0.00140	lbs/hr	1	8						0.01		
Gen Set 25 kW	0.00020	lbs/hr	2	24						0.01		
Gen Set	0.00300	lbs/hr	1	8						0.02		
CO2 Excavator	100.0	lbs/hr	2	8							1,600.0	
Loader CAT 980	76.0	lbs/hr	2	8							1,216.0	
Loader CAT 988	118.0	lbs/hr	1	8							944.0	
Dozer	132.0	lbs/hr	1	6							792.0	
Off-Highway Truck	180.0	lbs/hr	1	8							1,440.0	
Grader	100.0	lbs/hr	1	4							400.0	
Water Truck	125.0	lbs/hr	1	6							750.0	
Drills	131.0	lbs/hr	1	8							1,048.0	
Gen Set 25 kW	10.2	lbs/hr	2	24							489.6	
Gen Set	287.0	lbs/hr	1	8							2,296.0	
CH4 Excavator	0.00450	lbs/hr	2	8								0.0720
Loader CAT 980	0.00410	lbs/hr	2	8								0.0656
Loader CAT 988	0.00520	lbs/hr	1	8								0.0416
Dozer	0.00760	lbs/hr	1	6								0.0456
Off-Highway Truck	0.00700	lbs/hr	1	8								0.0560
Grader	0.00440	lbs/hr	1	4								0.0176
Water Truck	0.00560	lbs/hr	1	6								0.0336
Drills	0.00280	lbs/hr	1	8								0.0224
Gen Set 25 kW	0.00100	lbs/hr	2	24								0.0480
Gen Set	0.00630	lbs/hr	1	8								0.0504
Total Daily					0.80	0.74	2.22	97.25	9.73	0.13	10,976	0.45
Total Annual Tons (existing)					0.12	0.11	0.33	14.59	1.46	0.02	1,497	1.28

Based on 3 MTPY mined (10,000 tons/day) and 1.5 MTPY processed (5,000 tons/day).

Existing permitted; actual based on demand. 300 working days with Sundays and holidays generally off.

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

Emission Sources: CALEEMOD App G; Version 2022, 1.1.3: Table G-13 - Offroad Equipment Emission Factors April 2022; all Tier 4 final. SCAQMD Emissions.

One loader works in plant at 8 hrs/day.

Two loaders load trucks at 16 hrs./day.

**Table A2
Lynx Cat Mountain Quarry
On-Road Truck & Vehicle Exhaust Emissions Off-Site (Existing)**

Operation		Emission Factor	Units	Equation Variables		Emissions							
				1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	CO2 lbs/day	CH4 lbs/day
Truck Emissions Onsite				# of trips per day	vmt						Negl		
PM-10	Aggregate Trucks	0.00007	lbs/mile	400	60	1.752	1.612						
PM-2.5	Vendor Trucks	0.00007	lbs/hr	10	60	0.044	0.040						
	Employee	0.00010	lbs/mile	20	60	0.120	0.110						
			lbs/mile			0.000	0.000						
ROG	Aggregate Trucks	0.00003	lbs/mile	400	60			0.6					
	Vendor Trucks	0.00003	lbs/mile	10	60			0.02					
	Employee	0.00070	lbs/mile	20	60			0.84					
			lbs/mile					0.00					
CO	Aggregate Trucks	0.00013	lbs/mile	400	60				3.12				
	Vendor Trucks	0.00013	lbs/mile	10	60				0.08				
	Employee	0.00610	lbs/mile	20	60				7.32				
			lbs/mile						0.00				
NOX	Aggregate Trucks	0.00356	lbs/mile	400	60					85.44			
	Vendor Trucks	0.00356	lbs/mile	10	60					2.14			
	Employee	0.00060	lbs/mile	20	60					0.72			
			lbs/mile							0.00			
CO2	Aggregate Trucks	3.63000	lbs/mile	400	60							87,120	
	Vendor Trucks	3.63000	lbs/mile	10	60							2,178	
	Employee	1.10000	lbs/mile	20	60							1,320	
			lbs/mile									0	
CH4	Aggregate Trucks	0.000001	lbs/mile	400	60								0.0288
	Vendor Trucks	0.000001	lbs/mile	10	60								
	Employee	0.00006	lbs/mile	20	60								0.0720
			lbs/mile										
					Total	1.92	1.76	1.46	10.52	88.30	Negl	90,618	0.1008
					Total Tons/Year (existing)	0.29	0.26	0.22	1.58	13.24	Negl	12,357	0.29

Emission Factors Source: SCAQMD On-Road Passenger Vehicles & Delivery Truck (scenario year 2025)

Aggregate/vendor Trucks - EMFAC2021(v1.0.2) CARB website

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

vmt = miles driven on-site for material delivery estimated at 30 miles one-way trip; 60 miles RT.

Existing miles per day = 400 * 60 miles RT = 24,000 miles

**Table A3
Lynx Cat Mountain Quarry
Stationary Source Emissions from Aggregate Processing (Existing - 1.5 mtpy) (Typical plant flow)**

Operation	Emission Factor	Units	Equation Variables			Emissions						
			1	2	3	PM-10 lbs/day	Particulate Control Efficiency	PM-10 lbs/day with control	PM-2.5 lbs/day with control	CO lbs/day	NOX lbs/day	SOX lbs/day
Aggregate Plant (typical)					Sub-total	0.0	----	0.0	0.0	----	----	----
PM10 Feeder1	0.00005	lbs/ton	625	8	----	0.3		0.3	0.0	NA	NA	NA
Feeder2	0.00005	lbs/ton	625	8	----	0.3		0.25	0.1			
Grizzly	0.00005	lbs/ton	625	8	----	0.3		0.25	0.1			
Jaw Crusher	0.00054	lbs/ton	625	8	----	2.7		2.7	0.1			
Crusher1	0.00054	lbs/ton	220	8	----	1.0		1.0	0.8			
Crusher2	0.00054	lbs/ton	220	8	----	1.0		1.0	0.3			
Screen 1	0.00074	lbs/ton	440	8	----	2.6		2.6	0.3			
Screen2	0.00074	lbs/ton	440	8	----	2.6		2.6	0.8			
Screen (wet)3	0.00074	lbs/ton	65	4	----	0.2	0.90	0.0	0.8			
Screen (wet)4	0.00074	lbs/ton	65	4	----	0.2	0.90	0.0	0.0			
Conveyor1	0.00074	lbs/ton	65	8	----	0.4		0.4	0.0			
Conveyor2	0.00074	lbs/ton	65	8	----	0.4		0.4	0.1			
Conveyor3	0.00074	lbs/ton	65	8	----	0.4		0.4	0.1			
Conveyor4	0.00074	lbs/ton	440	8	----	2.6		2.6	0.1			
Conveyor5	0.00005	lbs/ton	220	8	----	0.1		0.1	0.8			
Conveyor6	0.00005	lbs/ton	220	8	----	0.1		0.1	0.0			
Conveyor7	0.00005	lbs/ton	220	8	----	0.1		0.1	0.0			
Conveyor8	0.00005	lbs/ton	220	8	----	0.1		0.1	0.0			
Conveyor9	0.00005	lbs/ton	440	8	----	0.2		0.2	0.0			
Conveyor10	0.00005	lbs/ton	65	8	----	0.0		0.03	0.1			
Conveyor11	0.00005	lbs/ton	65	8	----	0.0		0.0	0.0			
Conveyor12	0.00005	lbs/ton	65	8	----	0.0		0.0	0.0			
Conveyor13	0.00005	lbs/ton	155	8	----	0.1		0.1	0.0			
Conveyor14	0.00005	lbs/ton	155	4	----	0.0		0.0	0.0			
Conveyor15	0.00005	lbs/ton	65	4	----	0.0		0.0	0.0			
Conveyor16	0.00005	lbs/ton	65	4	----	0.0		0.0	0.0			
Conveyor17	0.00005	lbs/ton	30	4	----	0.0		0.0	0.0			
Stacker 1	0.00005	lbs/ton	500	8	----	0.2		0.2	0.0			
Stacker (wet) 2	0.00005	lbs/ton	65	4	----	0.0	0.90	0.0	0.1			
Stacker (wet) 3	0.00005	lbs/ton	65	4	----	0.0	0.90	0.00	0.0			
					----	0.0		0.0	0.0			
					----	0.0		0.0	0.0			
Total (lbs/day)						15.7	----	15.3	4.6	0.0	0.0	0.0
Total Tons/Year (exisitng)								2.29	0.69			

Sources: AP-42, SCAQMD

AP-42, Section 11.19 - Crushed Stone Processing and Sand and Gravel Processing: EPA August 2004

PM-2.5 = 0.3 of PM10 (CEIDARS Table A - Oct 2006)

Particulate Control Efficiencies are included in Emission Factors.

PM2.5 = 0.30 of PM10 (Source: Final - Methodology to Calculate PM 2.5 and PM2.5 Significance Thresholds, SCAQMD, October 2006; Appendix A - Table A

Final - Methodology to Calculate PM 2.5 and PM2.5 Significance Thresholds, SCAQMD, October 2006

Crushers, screens, hoppers, and conveyors include water sprays per MDAQMD permitting.

Notes: Aggregate plant based 1.5 mtpy; on up to 5,000 tpd for up to 300 days per life of project or 625 tph for 8 hrs/day.

Assume 20% of feed washed.

Plan configuration is typical layout and will vary with rock make-up and product demand.

**Table A4
Lynx Cat Mountain Quarry
On-Road Truck Dust Emissions On-Site (Existing)**

Operation	Emission Factor	Units	Equation Variables		Emissions		
			1	2	PM-10 lbs/day Unmitigated	PM-10 lbs/day Mitigated	PM-2.5 lbs/day Mitigated
Delivery Vehicle Travel Onsite			# of trips/day	vmt			
25-ton Aggregate Trucks	1.78	lbs/vmt	400	0.50	356.0	35.6	7.4
		lbs/vmt			0.0	0.0	0.0
		lbs/vmt			0.0	0.0	0.0
				Total	356.0	35.6	7.4
				Total Tons/Year (exist)	53.4	5.3	1.1

Note: PM10 mitigation assumed to reduce emissions 90 percent on roads per AP-42 and SCAQMD.
Includes watering, gravel surface, dust suppressants as needed, and speed limits.

vmt = vehicle miles driven

Source of Emission Factors: SCAQMD Particulate Matter Emission Factors and AP-42, Chapter 13.2.2

$$E = k * (s/12)^{0.9} * (W/3)^{0.45}$$

E = PM10 emissions/vmt

k = constant (for PM10 = 1.5)

S - silt content (for sand & gravel plant road = 4.8%)

W = mean vehicle weight (street legal haul truck is 15 tons empty and 40 tons loaded) (Mean wt. = 27.5 tons)

Dust related PM2.5 = 0.208 of PM10 (CEIDARS List).

Based on 3 mtpy; 10,000 tpd; 1/2 loaded directly onto 25-ton trucks and transported off-site and 1/2 trucked to/from plant.
Round trip in each case = 0.50 miles.

**Table A5
Lynx Cat Mountain Quarry (Proposed 4 MTPY)
Onsite Mining and Loading Equipment Emissions (Typical)**

Operation	Emission Factor	Units	Equation Variables		Emissions						CO2 lbs/day	CH4 lbs/day
			1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day		
Equipment Exhaust Emissions												
PM-10 & Excavator CAT 349 (157 hp)	0.00314	lbs/hr	Equipment #	Operating Hrs	0.075	0.069						
Loaders CAT 980 (142 hp)	0.00283	lbs/hr	3	8	0.068	0.062						
PM-2.5 Loader CAT 988 (194hp)	0.03880	lbs/hr	1	10	0.388	0.357						
Dozer CAT D9T (194 hp)	0.03880	lbs/hr	1	8	0.310	0.286						
Off-Highway Truck CAT 773 (284 hp)	0.00570	lbs/hr	3	8	0.137	0.126						
Grader CAT14H (98 hp)	0.00196	lbs/hr	1	6	0.012	0.011						
Water Truck CAT 730 (142 hp)	0.00283	lbs/hr	1	8	0.023	0.021						
Drill Rig Atlas T-45 (163 hp)	0.00326	lbs/hr	2	6	0.039	0.036						
Gen Set 25 kW (11 hp)	0.00007	lbs/hr	2	24	0.003	0.003						
Gen Set 1000kW CAT (396 hp)	0.00792	lbs/hr	1	12	0.095	0.087						
ROG Excavators	0.02041	lbs/hr	3	8			0.49					
Loaders CAT 980	0.01840	lbs/hr	3	8			0.44					
Loader CAT 988	0.02522	lbs/hr	1	10			0.25					
Dozer	0.02522	lbs/hr	1	8			0.20					
Off-Highway Trucks	0.03690	lbs/hr	3	8			0.89					
Grader	0.01274	lbs/hr	1	6			0.08					
Water Truck	0.01840	lbs/hr	1	8			0.15					
Drill Rig Atlas T-45 (163 hp)	0.02120	lbs/hr	2	6			0.25					
Gen Set 25 kW	0.00429	lbs/hr	2	24			0.21					
Gen Sets	0.05148	lbs/hr	1	12			0.62					
CO Excavators	0.89500	lbs/hr	3	8				21.48				
Loader CAT 980	0.80660	lbs/hr	3	8				19.36				
Loader CAT 988	1.10600	lbs/hr	1	10				11.06				
Dozer	1.10600	lbs/hr	1	8				8.85				
Off-Highway Truck	1.61900	lbs/hr	3	8				38.86				
Grader	0.55860	lbs/hr	1	6				3.35				
Water Truck	0.80660	lbs/hr	1	8				6.45				
Drills	0.92910	lbs/hr	2	6				11.15				
Gen Set 25 kW	0.18810	lbs/hr	2	24				9.03				
Gen Sets	2.25720	lbs/hr	1	12				27.09				
NOX Excavators	0.08950	lbs/hr	3	8					2.15			
Loader CAT 980	0.08066	lbs/hr	3	8					1.94			
Loader CAT 988	0.11060	lbs/hr	1	10					1.11			
Dozer	0.11060	lbs/hr	1	8					0.88			
Off-Highway Truck	0.16190	lbs/hr	3	8					3.89			
Grader	0.05590	lbs/hr	1	6					0.34			
Water Truck	0.08066	lbs/hr	1	8					0.65			
Drills (Tiers 2 and 3)	0.09291	lbs/hr	2	6					1.11			
Gen Set 25 kW	0.01881	lbs/hr	2	24					0.90			
Gen Sets	0.22572	lbs/hr	1	12					2.71			
SOX Excavators	0.00130	lbs/hr	3	8						0.03		
Loader CAT 980	0.00090	lbs/hr	3	8						0.02		
Loader CAT 988	0.00140	lbs/hr	1	10						0.01		
Dozer	0.00160	lbs/hr	1	8						0.01		
Off-Highway Truck	0.00200	lbs/hr	3	8						0.05		
Grader	0.00080	lbs/hr	1	6						0.00		
Water Truck	0.00140	lbs/hr	1	8						0.01		
Drills	0.00140	lbs/hr	2	6						0.02		
Gen Set 25 kW	0.00020	lbs/hr	2	24						0.01		
Gen Set	0.00300	lbs/hr	1	12						0.04		
CO2 Excavator	100.0	lbs/hr	3	8							2,400.0	
Loader CAT 980	76.0	lbs/hr	3	8							1,824.0	
Loader CAT 988	118.0	lbs/hr	1	10							1,180.0	
Dozer	132.0	lbs/hr	1	8							1,056.0	
Off-Highway Truck	180.0	lbs/hr	3	8							4,320.0	
Grader	100.0	lbs/hr	1	6							600.0	
Water Truck	125.0	lbs/hr	1	8							1,000.0	
Drills	131.0	lbs/hr	2	6							1,572.0	
Gen Set 25 kW	10.2	lbs/hr	2	24							489.6	
Gen Set	287.0	lbs/hr	1	12							3,444.0	
CH4 Excavator	0.00450	lbs/hr	3	8								0.1080
Loader CAT 980	0.00410	lbs/hr	3	8								0.0984
Loader CAT 988	0.00520	lbs/hr	1	10								0.0520
Dozer	0.00760	lbs/hr	1	8								0.0608
Off-Highway Truck	0.00700	lbs/hr	3	8								0.1680
Grader	0.00440	lbs/hr	1	6								0.0264
Water Truck	0.00560	lbs/hr	1	8								0.0448
Drills	0.00280	lbs/hr	2	6								0.0336
Gen Set 25 kW	0.00100	lbs/hr	2	24								0.0480
Gen Set	0.00630	lbs/hr	1	12								0.0756
Total Daily					1.15	1.06	3.57	156.67	15.67	0.21	17,886	0.72
Total Annual Tons (Proposed)					0.17	0.16	0.54	23.50	2.35	0.03	2,439	2.03
Total Annual Tons (Existing)					0.12	0.11	0.33	14.59	1.46	0.02	1,497	1.28
Net Increase Annual Tons (Prop. -Existing)					0.05	0.05	0.21	8.91	0.89	0.01	942	0.75

Based on 4 MTPY mined (13,333 tons/day) and 2 MTPY processed (6,667 tons/day).

Year 2025 proposed and thereafter based on demand; 300 working days with Sundays and holidays off.

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

Emission Source: CALEEMOD App G; Version 2022, 1.1.3: Table G-13 - Offroad Equipment Emission Factors April 2022; all Tier 4 final.

One loader works in plant at 10 hrs./day.

Three loaders load trucks at 24 hrs./day (total).

HP above is net HP times load factors. Load factors CALEEMOD App G; Version 2022, 1.1.3: Table G-12 - Horse power and Load Factors for Construction Equipment; April 2022.

**Table A6
Lynx Cat Mountain Quarry
On-Road Trucks & Vehicle Exhaust Emissions Off-Site (Proposed)**

Operation		Emission Factor	Units	Equation Variables		Emissions							
				1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	CO2 lbs/day	CH4 lbs/day
Truck Emissions Onsite				# of trips per day	vmt						Negl		
PM-10	Aggregate Trucks	0.00007	lbs/mile	267	60	1.169	1.076						
PM-2.5	Vendor Trucks	0.00007	lbs/hr	12	60	0.053	0.048						
	Employee	0.00010	lbs/mile	25	60	0.150	0.138						
			lbs/mile			0.000	0.000						
ROG	Aggregate Trucks	0.00003	lbs/mile	267	60			0.4					
	Vendor Trucks	0.00003	lbs/mile	12	60			0.02					
	Employee	0.00070	lbs/mile	25	60			1.05					
			lbs/mile					0.00					
CO	Aggregate Trucks	0.00013	lbs/mile	267	60				2.08				
	Vendor Trucks	0.00013	lbs/mile	12	60				0.09				
	Employee	0.00610	lbs/mile	25	60				9.15				
			lbs/mile						0.00				
NOX	Aggregate Trucks	0.00356	lbs/mile	267	60					57.03			
	Vendor Trucks	0.00356	lbs/mile	12	60					2.56			
	Employee	0.00060	lbs/mile	25	60					0.90			
			lbs/mile							0.00			
CO2	Aggregate Trucks	3.63000	lbs/mile	267	60							58,153	
	Vendor Trucks	3.63000	lbs/mile	12	60							2,614	
	Employee	1.10000	lbs/mile	25	60							1,650	
			lbs/mile									0	
CH4	Aggregate Trucks	0.000001	lbs/mile	267	60								0.0192
	Vendor Trucks	0.000001	lbs/mile	12	60								
	Employee	0.00006	lbs/mile	25	60								0.0900
			lbs/mile										
					Total	1.37	1.26	1.47	11.33	60.49	Negl	62,416	0.1092
Total Tons/Year (proposed)						0.21	0.19	0.22	1.70	9.07	Negl	8,511	0.31

Emission Factors Source: SCAQMD On-Road Passenger Vehicles & Delivery Truck (scenario year 2025)

Aggregate Trucks - EMFAC2021(v1.0.2) CARB website

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

vmt = miles driven on-site for material delivery estimated at 30 miles one-way trip

267 aggregate trucks/day = 6,675 tpd transported off-site

Proposed Miles per day - 267 * 60 miles RT = 16,020 miles

**Table A7
Lynx Cat Mountain Quarry
Stationary Source Emissions from Aggregate Processing (Proposed - 2 mtpy) (Typical plant flow)**

Operation	Emission Factor	Units	Equation Variables			Emissions							
			1	2	3	PM-10 lbs/day	Particulate Control Efficiency	PM-10 lbs/day with control	PM-2.5 lbs/day with control	CO lbs/day	NOX lbs/day	SOX lbs/day	
Aggregate Plant (typical)					Sub-total	0.0	----	0.0	0.0	----	----	----	
PM10 Feeder1	0.00005	lbs/ton	Tons/hr	Operating Hours									
Feeder2	0.00005	lbs/ton	670	10	----	0.3		0.3	0.0	NA	NA	NA	
Grizzley	0.00005	lbs/ton	670	10	----	0.3		0.34	0.1				
Jaw Crusher	0.00054	lbs/ton	670	10	----	3.6		3.6	0.1				
Crusher1	0.00054	lbs/ton	160	10	----	0.9		0.9	1.1				
Crusher2	0.00054	lbs/ton	160	10	----	0.9		0.9	0.3				
Screen 1	0.00074	lbs/ton	470	10	----	3.5		3.5	0.3				
Screen2	0.00074	lbs/ton	470	10	----	3.5		3.5	1.0				
Screen (wet) 3	0.00074	lbs/ton	70	5	----	0.3	0.90	0.0	1.0				
Screen (wet) 4	0.00074	lbs/ton	70	5	----	0.3	0.90	0.0	0.0				
Conveyor1	0.00074	lbs/ton	70	10	----	0.5		0.5	0.0				
Conveyor2	0.00074	lbs/ton	70	10	----	0.5		0.5	0.2				
Conveyor3	0.00074	lbs/ton	70	10	----	0.5		0.5	0.2				
Conveyor4	0.00074	lbs/ton	470	10	----	3.5		3.5	0.2				
Conveyor5	0.00005	lbs/ton	235	10	----	0.1		0.1	1.0				
Conveyor6	0.00005	lbs/ton	235	10	----	0.1		0.1	0.0				
Conveyor7	0.00005	lbs/ton	235	10	----	0.1		0.1	0.0				
Conveyor8	0.00005	lbs/ton	235	10	----	0.1		0.1	0.0				
Conveyor9	0.00005	lbs/ton	470	10	----	0.2		0.2	0.0				
Conveyor10	0.00005	lbs/ton	70	10	----	0.0		0.04	0.1				
Conveyor11	0.00005	lbs/ton	70	10	----	0.0		0.0	0.0				
Conveyor12	0.00005	lbs/ton	70	10	----	0.0		0.0	0.0				
Conveyor13	0.00005	lbs/ton	165	10	----	0.1		0.1	0.0				
Conveyor14	0.00005	lbs/ton	165	5	----	0.0		0.0	0.0				
Conveyor15	0.00005	lbs/ton	70	5	----	0.0		0.0	0.0				
Conveyor16	0.00005	lbs/ton	70	5	----	0.0		0.0	0.0				
Conveyor17	0.00005	lbs/ton	40	5	----	0.0		0.0	0.0				
Stacker 1	0.00005	lbs/ton	535	10	----	0.3		0.3	0.0				
Stacker (wet) 2	0.00005	lbs/ton	70	5	----	0.0	0.90	0.0	0.1				
Stacker (wet) 3	0.00005	lbs/ton	70	5	----	0.0	0.90	0.00	0.0				

						Total (lbs/day)	20.1	----	19.6	5.9	0.0	0.0	0.0
						Total Tons/Year (proposed)			2.95	0.88			

Sources: AP-42, SCAQMD

AP-42, Section 11.19 - Crushed Stone Processing and Sand and Gravel Processing: EPA August 2004
PM-2.5 = 0.3 of PM10 (CEIDARS Table A - Oct 2006)

Particulate Control Efficiencies are included in Emission Factors.

PM2.5 = 0.30 of PM10 (Source: Final - Methodology to Calculate PM 2.5 and PM2.5 Significance Thresholds, SCAQMD, October 2006; Appendix A - Table A
Final - Methodology to Calculate PM 2.5 and PM2.5 Significance Thresholds, SCAQMD, October 2006

Crushers, screens, hoppers, and conveyors include water sprays per MDAQMD permitting.

Notes: Aggregate plant based on 2 mtpy; up to 6,670 tpd for up to 300 days per life of project or 670 tph for 10 hrs/day.
Assume 20% of feed washed.

Plan configuration is typical layout and will vary with rock make-up and product demand.

**Table A8
Lynx Cat Mountain Quarry
On-Road Truck Dust Emissions On-Site (Proposed)**

Operation	Emission Factor	Units	Equation Variables		Emissions		
			1	2	PM-10 lbs/day Unmitigated	PM-10 lbs/day Mitigated	PM-2.5 lbs/day Mitigated
Delivery Vehicle Travel Onsite			# of trips/day	vmt			
25-ton Aggregate Trucks	1.780	lbs/vmt	267	0.50	237.6	23.8	4.9
65-ton Off-road haul truck	2.887	lbs/vmt	103	0.50	148.7	14.9	3.1
		lbs/vmt			0.0	0.0	0.0
Total					386.3	38.6	8.0
Total Tons/Year (Proposed)					57.9	5.8	1.2

Note: PM10 mitigation assumed to reduce emissions 90 percent on roads per AP-42 and SCAQMD.
Includes watering, gravel surface, dust suppressants as needed, and speed limits.

vmt = vehicle miles driven

Source of Emission Factors: SCAQMD Particulate Matter Emission Factors and AP-42, Chapter 13.2.2

$$E = k * (s/12)^{0.9} * (W/3)^{0.45}$$

E = PM10 emissions/vmt

k = constant (for PM10 = 1.5)

S = silt content (for sand & gravel plant road = 4.8%)

W = mean vehicle weight (street legal haul truck is 15 tons empty and 40 tons loaded) (Mean wt. = 27.5 tons)

W = mean vehicle weight (65-ton off-road haul truck is 48.25 tons empty and 113.25 tons loaded) (Mean wt. = 80.75 tons)

Dust related PM2.5 = 0.208 of PM10 (CEIDARS List).

Based on 4 mtpy; 13,335 tpd; 1/2 loaded directly onto 65-ton off-road trucks and transported off-site and 1/2 trucked to/from plant after processing in 25-ton street legal trucks.

Round trip for trucks leaving plant = 0.5 miles.

Round trip for direct loading = 0.5 miles.

APPENDIX B
LYNX CAT MOUNTAIN
QUARRY FUGITIVE DUST
EMISSIONS CALCULATIONS

**APPENDIX B
LYNX CAT MOUNTAIN QUARRY
2024 Revision**

**AIR POLLUTANT EMISSIONS
ASSUMPTIONS AND CALCULATIONS
November 2024**

**Table B1
Production and Blast Information**

	Existing Operations	Proposed Operations
MINING		
Rock and Aggregate	3 million tons/year (mtpy)	4 mtpy
Days/year	300	300
Tons/day	10,000	13,333
Hours/day	8	10
Tons/hour	1,250	1,333
PROCESSING		
Material Processed	1.5 mtpy	2 mtpy
Days/year	300	300
Tons/day	5,000	6,675
Hours/day	8	10
Tons/hour	625	835
TRUCKING		
25-ton street legal haul trucks	3 mtpy	2 mtpy
Days/year	300	300
# of trucks/day	400	267
Miles/day (60 miles round trip)	24,000	16,000
65-ton off-road trucks (mine to rail loadout)	---	2 mtpy
# of trucks/day	---	103
Miles/day (4.5 miles round trip)	---	464
BLASTING		
# of Blasts/year	60	80
# of Drill Holes/blast	125	125
# of Drill Holes/year	7,500	10,000
ANFO (tons/blast) (varies with rock)	20	20
ANFO (tons/year)	1,200	1,600

Source: Lynx Cat Mountain 2024

**Table B2
Lynx Cat Mountain Quarry Mobile Equipment List (Typical)**

Number	Equipment Description	Hrs/day (total)	Load Factor	HP	Net HP	Equipment Uses
3-4	3- CAT 980 (loads trucks/ occasionally feeder)	16 (exist) 24 (prop)	0.36	393	141.5	2-3 load trucks at 8 hrs/day each; one loads feeder at plant. Loading of excavated material into trucks for transport to plants and/or rail loadout and loading of product into trucks.
	1-CAT 988 (loads feeder)	8 (exist) 10 (prop)		538	194	
2-3	Excavators CAT 349	16 (exist) 24 (prop) 8 hr/day; daylight only	0.38	413	157	Mining and some direct loading into trucks.
3	CAT 773 Off-Road Trucks (65-ton capacity typ.)	8 (exist) 24 (prop)	0.39	727	283.5	Transportation of excavated material to the plants and/or the rail loadout staging area.
1	CAT D9T Dozer – as needed	6 (exist) 8 (prop)	0.43	452	194	Mining and stockpiling of material; construction and maintenance of roads and pit benches.
1	CAT 14H Motor grader	4 (exist) 6 (Prop)	0.41	238	98	Construction and maintenance of roads.
1	CAT 730 6000-gal. Water Pull or Truck-	6 (exist) 8 (prop)	0.38	370	141	Water spray haul roads, active mine areas, stockpiles, and general dust control.
1	Service Truck	---	---	---	---	Servicing and fueling onsite equipment.
Varies per contract	25-ton street legal trucks	---	---	---	---	Transportation of material off-site to project sites.
1	Processing plant (portable):		See attached file		---	Crushing/ screening/ washing plant for material as needed per contract specifications.
1-2	1000 kW Generator sets	8 (exist) 12 (prop)	0.74	535	396	Supplies power for plant facilities.
1	25kW gen set	24	0.74	15	11	Trailer and well
1-2	Atlas T-45 Drill rig	8 (exist) 12 (prop)	0.50	325	162.5	Drill holes for placement of explosives.

**Table B3
Lynx Cat Mountain Mine
Annual Mine Operations
Fugitive Dust Emissions (PM₁₀ & PM_{2.5})
Tons/Year (Controlled)**

Source	Controlled Emission Factors: (PM ₁₀) (PM _{2.5})	Mining Operations (annual tons/year)		Change (tons/year)
		Existing	Proposed	
Drilling	0.64 lb/hole (PM ₁₀)	2.4	3.2	+0.8
	0.13 lb/hole (PM _{2.5})	0.49	0.65	+0.16
Blasting	9.11 lb/blast (PM ₁₀)	0.273	0.364	+0.091
	1.895 lb/blast (PM _{2.5})	0.057	0.076	+0.019
	Lbs./Hour	3,000 hrs/year	4,200 hrs.year	+1,200 hrs.
Dozing & Grading	0.60 (PM ₁₀)	0.90	1.26	+0.36
	0.07 (PM _{2.5})	0.158	0.22	+0.062
	Lbs./Ton	20,000 tpd; 6 mtpy	26,667 tpd; 8 mtpy	+2 mtpy
Loading¹	0.0012 lbs/ton (PM ₁₀)	3.6 tpy	4.8 tpy	+1.4
	0.00025 lbs./ton (PM _{2.5})	0.75 tpy	1.0 tpy	+0.25
	Lbs./day/acre	Acres - 8	Acres - 12	
Active Mine & Plant Areas & Stockpiles²	0.22 lb/day/ac (PM ₁₀)	0.264 tpy	0.396 tpy	+0.132
	0.046 lb/day/ac (PM _{2.5})	0.055 tpy	0.082 tpy	+0.027
Unpaved Roads³ (onsite)	Lbs./mile	60,000 mi (25-ton) 0 mi – (65-ton)	40,050 mi (25-ton) 15,450 mi (65-ton)	
On-Road 25-ton haul trucks	0.178 lbs/mile (PM ₁₀)	5.3 tpy	3.57 tpy	-1.73
	0.037 lbs/mile (PM _{2.5})	1.1 tpy	0.735 tpy	-0.365
Off-Road 65-ton haul trucks (onsite)	0.42 lbs./mi (PM ₁₀)	none	2.235 tons/yr.	+2.235
	0.08lbs./mi (PM _{2.5})		0.465 tons/yr.	+0.465
Totals	---	12.737 (PM ₁₀) 2.61 (PM _{2.5})	15.825 (PM ₁₀) 3.23 ton/yr. (PM _{2.5})	+3.088 +0.62

Source: Lynx Cat & Lilburn Corporation 2024. See Appendix A for Excel tables.

Notes:

1. Loading includes four (4) operations, two loading on and off-road haul trucks at mine and two loading operations at plant site (one load/drop at the processing plant feeder and one loading on-road trucks for transportation off-site). Assume 95% control based on water spraying material, washed material, dust suppressants, speed limits for trucking.
2. Active mine and plant areas/stockpiles at any one time: mine and plant 4 acres each (existing; and 6 acres each (proposed) acres (3 acres). Assume 80% control with water spraying; active 300 days/year.
3. Unpaved roads onsite include on and off-road haul truck movement to plant or directly off-site. Estimated controls 90% with watering, dust palliatives, gravel surface, and speed limits.

Silt content (s) = 1.5% (MDAQMD for crushed limestone rock)
Moisture Content of ore/overburden = 0.5% (worst case per MDAQMD)

PM10 = 0.489 of Total Particulate Matter

PM2.5 = 0.208 of PM 10

Source: CEIDARS List SCAQMD 2006

FUGITIVE DUST EMISSIONS ESTIMATES

Drilling and Blasting

Existing: 3 mtpy; 60 blasts

Proposed: 4 mtpy; 80 blasts/year

Production/Extraction

Drilling Emission Factors: 1.3 lb/hole (TPM); 0.64 lb/hole (PM₁₀); 0.13 lb/hole (PM_{2.5})

Sources: AP-42 (1998); Table 11.9-4 & SCAQMD Particulate Matter EF (Dec. 2014).

Blasting Emission Factor: EF (lbs/blast) = (0.000014*Area^{1.5} * k (particulate matter-varies)

Area = 12,100 sq. feet (11 holes by 11 holes at 10-foot interval

K (PM₁₀) = 0.489

PM_{2.5} = 0.208 of PM10

Sources: AP-42 (1998); Table 11.9-4 & SCAQMD Particulate Matter EF (Dec. 2021)

EF(PM₁₀) = 0.000014 * 12,100^{1.5} * 0.489 = 9.11 lbs./blast

EF(PM_{2.5}) = 9.11 lbs./blast (PM10) * 0.208 = 1.895 lbs./blast (PM2.5)

Approx. 20 tons of ANFO per blast.

Data is estimated based on past blasting and on geologic conditions and area within the pit development (Lynx Cat)

Existing: 1,200 tons of ANFO used per year:

CO emission factors: 67 lbs/ton * 1,200 tons = 40.2 tons/year

NOX emission factor: 17 lbs/ton * 1,200 tons = 10.2 tons/year

Proposed: 1,600 tons of ANFO per year.

CO emission factors: 67 lbs/ton * 1,600 tons = 53.6 tons/year

NOX emission factor: 17 lbs/ton * 1,600 tons = 13.6 tons/year

Source: MDAQMD Mineral Guidance 2013 Section C; §13.3 of USEPA's AP-42

Dozing/Grading

Dozing/Grading Emission Factor (PM₁₀) = 0.6 lbs./hour (controlled)

Dozing/Grading Emission Factor (PM_{2.5}) = 0.07 lbs./hour

Source of dozing equation below: AP-42, Section 11.9, Table 11.9.1 Bulldozing Overburden Equation

$$\begin{aligned} \text{EF (PM}_{10}\text{)} &= k * (s)^{1.5} / M^{1.4} \text{ lb/hr} \\ &= 0.75 * 1.5^{1.5} / 0.5^{1.4} \text{ lb/hr} \\ &= 0.75 * 2.12 / 0.379 \\ &= 4.2 \text{ lbs./hr.} \end{aligned}$$

$$\begin{aligned} \text{EF (PM}_{2.5}\text{)} &= k * (s)^{1.5} / M^{1.4} \text{ lb/hr} \\ &= 0.105 * 1.5^{1.5} / 0.5^{1.4} \text{ lb/hr} \\ &= 0.105 * 2.12 / 0.379 \\ &= 0.6 \text{ lbs./hr.} \end{aligned}$$

k = 0.75 (PM₁₀); = 0.105 for PM_{2.5}

Silt content (s) = 1.5% (MDAQMD for crushed limestone)

Moisture content (M) = 0.5% (MDAQMD default)

Control factor = 85.6% (water spraying); Table 3, page 10 of MDAQMD (increase M from 0.5% to 2%)

EF (PM₁₀) = 4.2 lbs./hr. x (100-85.6%) = 0.6 lbs./hr. (controlled) (Dozing/grading)

EF (PM_{2.5}) = 0.6 lbs./hr x (100-85.6%) = 0.07 lbs/hr (controlled) (Dozing/grading)

Loading Trucks and Plant Feeder at Mine and Plant

Emissions from the loading/dropping activities at mine and plant sites include loading trucks and plant feeder.

EF (PM₁₀) = 0.024 lbs/ton (uncontrolled)

EF (PM₁₀) = 0.00125 lbs/ton (controlled with water spraying, dust suppressants, and speed limits on roads – 95% est.)

EF (PM_{2.5}) = 0.208 x 0.00125 = 0.00026 lbs/ton

Source: AP-42 Section 13.2.4 (EPA, November 2006)

$$EF (PM10) = k * (0.0032) * (U/5)^{1.3} / (M/2)^{1.4} \text{ lbs/ton}$$

U (mean wind speed) = 12 mph (SCAQMD default factor)
Moisture content (M) = 0.5% (Dry; worst case per MDAQMD)
k (PM10) = 0.35

$$\begin{aligned} EF (PM10) &= 0.35 * (0.0032) * (12/5)^{1.3} / (0.5/2)^{1.4} \\ &= 0.00112 * 3.12/0.1436 \\ &= 0.024 \text{ lbs/ton (uncontrolled)} \end{aligned}$$

EF (PM10) with control = 95% (SCAQMD fugitive dust mitigation measures including limiting vehicle and equipment speeds to 15 mph, applying dust suppressants, water spraying active areas and roadways)

$$\begin{aligned} EF (PM10) \text{ with control} &= 0.024 * 0.05 = 0.0012 \text{ lbs/ton} \\ EF (PM2.5) \text{ with control} &= 0.0012 * 0.208 = 0.00025 \text{ lbs/ton} \end{aligned}$$

Existing PM10 & PM2.5 Emissions:

Material loaded per day: 20,000 tons/day

- loaded onto trucks to plant (5,000 tpd)
- loaded into process plant feeder (5,000 tpd)
- processed material loaded into trucks for shipping (5,000 tpd): and
- loaded directly into trucks at mine (5,000 tpd)

$$EF(PM10) = 20,000 \text{ tpd} * 0.0012 \text{ lbs/ton} = 48 \text{ lbs/day} * 300 \text{ days/year} = 3.6 \text{ tons/year}$$

(PM10 controlled)

$$EF(PM2.5) = 3.6 \text{ tpy} * 0.208 = 0.75 \text{ tpy (PM2.5 controlled)}$$

Proposed PM10 & PM2.5 Emissions:

Material loaded per day: 26,670 tpd

$$\text{Same operations as above but daily operation increased to } 6,667 \text{ tpd} * 4 \text{ operations} = 26,670 \text{ tpd} * 0.0012 \text{ lbs/ton} = 32.0 \text{ lbs/day} * 300 \text{ days} = 4.8 \text{ tpy (PM10 controlled)}$$

$$4.8 \text{ tpy} * 0.208 = 1.0 \text{ tpy (PM2.5 controlled)}$$

Active Mining, Plant, and Stockpile Areas:

Existing Active Areas: 8 acres/day

Mining – 2 acres
Stockpiles – 2 acres
Plant Area – 2 acres
Stockpiles 2 acres

Proposed Active Areas: 12 acres/day (increase each area above by 1 acre)

Source: MDAQMD Mineral Guidance 2013 Section G

$$EF = J * 1.7 * sl / 1.5 * (365 - P) / 235 * I / 15 \text{ lb./day/ac}$$

J = 0.5 for PM₁₀

J = 0.2 for PM_{2.5}

Silt loading (sl) = 1.5% for rock material

P = ave. days of precipitation (default = 20 days) MDAQMD

I = windy hours greater than 12 mph = 13.3% (MDAQMD default)

For Active Mine Areas, Stockpiles, and Crusher Area

$$EF(\text{PM}_{10}) = 0.5 * 1.7 * 1.5 / 1.5 * 1.47 * 0.89 = 1.11 \text{ lbs./day/ac (uncontrolled)}$$

$$EF(\text{PM}_{10}) \text{ at 80\% control with water spraying} = 0.22 \text{ lbs./day/ac (controlled)}$$

$$EF(\text{PM}_{2.5}) = 0.046 \text{ lbs./day/ac (controlled)}$$

Onsite Haul Road Dust

Refer to Tables A4 and A8 for total emissions.

**Table B4
Lynx Cat Mountain Quarry
On-Site Haul Road Dust
On-Road and Off-Road Haul Trucks**

Parameters	Existing	Proposed
25-ton on-road haul trucks CAT 773 (typ); off-road 65-ton haul truck		
Truck Weights (tons): <u>25-ton</u> Empty: 15 tons Full: 40 tons Average: 27.5 tons <u>CAT 773 65-ton</u> Empty: 48.25 tons Full: 113.25 tons Average: 80.75 tons		
Aggregate Production	3 mtpy	4 mtpy
Aggregate Trips/Day	400 – 25-ton on-road trucks	267 – 25-ton on-road trucks 103 – 65-ton off-road trucks
Days/Year	300	300

Vehicle miles traveled (VMT) (round trip)	0.5 – 25-ton on-road trucks ----	0.5 – 25-ton trucks 0.5 – 65-ton trucks
Miles/Year	60,000 ----	40,050; 25-ton 15,450; 65-ton
Control Factor	90%	90%

$$\text{Emission Factor (PM}_{10}\text{)} = K * (s/12)^a * (W/3)^b$$

Source: AP-42, Section 13.2.2, Unpaved Roads (11-2006 & SCAQMD)

K = 1.5 for PM₁₀ (lbs/VMT)

s (silt content) = 4.8% (from sand & gravel road; AP-42 and MDAQMD)

W (ave. truck wt.) = 27.5 tons for 25-ton trucks

a = 0.9

b = 0.45

$$\begin{aligned} \text{EF (PM}_{10}\text{)} &= 1.5 * (4.85/12)^{0.9} * (27.5/3)^{0.45} \text{ lbs/VMT} \\ &= 1.5 * 0.438 * 2.71 = \mathbf{1.78 \text{ lbs./VMT (uncontrolled for 25-ton trucks)}} \end{aligned}$$

$$\begin{aligned} \text{EF (PM}_{10}\text{)} &= 1.5 * (4.8/12)^{0.9} * (80.75/3)^{0.45} \text{ lbs/VMT} \\ &= 1.5 * 0.438 * 4.39 = \mathbf{2.887 \text{ lbs./VMT (uncontrolled for 65-ton trucks)}} \end{aligned}$$

Dust Control Estimates

Water spray – 61% (SCAQMD)

15 mph speed limit – 57% (SCAQMD)

Use of approved dust suppressant on unpaved roads and work areas – 84% (SCAQMD)

Gravel bed on dirt roads.

Used 90% for unpaved roads and areas.