PROPOSED

PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT No. 0710-01-CT
Initial Permit Application No. 0710-01

Company: Ka'iulani 4, LLC

Mailing Address: 456-A Kekuanaoa Street, Suite 100
Hilo, Hawaii 96720

Facility: 265 TPH Mobile Jaw Crusher with 180 hp Diesel Engine

Initial Location: Henry Street
Kailua-Kona, Hawaii 96745

Responsible Official: Leonard S. Tanaka
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SIC Code: 1429 (Crushed and Broken Stone, Not Elsewhere)

Equipment:

1. 265 TPH Komatsu mobile jaw crusher, model no. BR380JG-1, serial no. 1339;
2. 180 HP Komatsu Diesel Engine, model no. SAA6D101E-2, serial no. 26383368;
3. Vibrating grizzly feeder;
4. Various conveyors; and
5. Water spray system.

BACKGROUND

Ka'iulani 4, LLC has submitted an application for an initial temporary covered source permit to operate a mobile jaw crushing plant. The 265 TPH jaw crusher is powered by a 180 HP diesel engine fired on fuel oil No. 2 with less than 0.5% sulfur by weight. Raw material such as broken stone and concrete are dropped into the vibrating grizzly feeder and passed to the jaw crusher. The crushed material drops onto a conveyor belt where it is transferred to the stockpile. Fugitive emissions from the crusher will be controlled by water sprays, as necessary, at the grizzly feeder, crusher, and transfer points. The typical hours of operation are 8 hours/day, 40 hours/week, 52 weeks/year. There will be no hourly or production limitations for the crusher. This facility is a covered source because it is subject to federal standards (NSPS Subpart OOO).

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)
- Title 11 Chapter 59, Ambient Air Quality Standards
- Title 11 Chapter 60.1, Air Pollution Control
  - Subchapter 1, General Requirements
  - Subchapter 2, General Prohibitions
    - 11-60.1-31, Applicability
    - 11-60.1-32, Visible Emissions
    - 11-60.1-33, Fugitive Dust
    - 11-60.1-38, Sulfur Oxides from Fuel Combustion
  - Subchapter 5, Covered Sources
  - Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
    - 11-60.1-111, Definitions
    - 11-60.1-112, General Fee Provisions for Covered sources
    - 11-60.1-113, Application Fees for Covered sources
    - 11-60.1-114, Annual Fees for Covered sources
    - 11-60.1-115, Basis of Annual Fees for Covered Sources
  - Subchapter 8, Standards of Performance for Stationary Sources
    - 11-60.1-161, New Source Performance Standards
  - Subchapter 10, Field Citations

This source is subject to NSPS (New Source Performance Standards).
40 CFR Part 60 Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants applies since the mobile crusher has a maximum capacity greater than 150 tons/hour and was manufactured after August 31, 1983.

This source is not subject to NESHAPS (National Emission Standards for Hazardous Air Pollutants) as no hazardous air pollutants are emitted at significant levels (> 10 TPY single HAP or > 25 TPY for total HAPs) and there are no NESHAPS requirements under 40 CFR Part 61.

This source is not subject to MACT (Maximum Achievable Control Technology) since the source is not a major source of hazardous air pollutants (HAPS) emissions (>10 TPY single hap or > 25 TPY for total haps) and there are no MACT requirements under 40 CFR Part 63.

This source is not subject to PSD (Prevention of Significant Deterioration) requirements because it is not a major stationary source as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7; (criteria air pollutant > 100 or 250 TPY as applicable).

This source is not subject to CAM (compliance assurance monitoring) since the permitted equipment is not classified as a major source (criteria pollutant > 100 TPY).

This source is not subject to CERR (Consolidated Emissions Reporting Requirements) since 40 CFR Part 51, Subpart A – Emissions Inventory Reporting Requirements, determines CERR based on facility wide emissions of each air pollutant at the CERR triggering levels. The emissions do not exceed respective CERR threshold levels. As such, emissions data will not be required to be inputted into the National Emissions Inventory (NEI) database.

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting level(s) and for all covered sources. Internal annual emissions reporting will be required because this is a covered source.

This source is not subject to BACT (Best Available Control Technology) analysis because potential to emit emissions are below significant levels as defined in HAR, Section 11-60.1-1. BACT analysis is required for new sources and significant modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations.

A synthetic minor source is a facility that is potentially major (as defined in HAR 11-60.1-1), but is made nonmajor through federally enforceable permit conditions. This facility is not a synthetic minor source because potential emissions do not exceed the major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

106 Gallon Fuel Oil No. 2 Fuel Tank
Insignificant activity in accordance with HAR §11-60.1-82(f)(1).

ALTERNATIVE OPERATING SCENERIOS

Diesel Engine
The permittee may replace the diesel engine with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel engine from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

AIR POLLUTION CONTROLS

Fugitive Emissions
The crushing plant is equipped with a water spray system with sprinkler nozzles located at the jaw entry and the main conveyor discharge point.

PROJECT EMISSIONS

Emission calculations are attached to this review. The following are the emissions due to the crushing plant and diesel engine.

265 TPH Crushed Stone Processing
Emission rates were based on the maximum capacity of the crushed stone processing plant to process 265 TPH of material. There will be no hourly or production limitations for the crushing plant. The plant consists of a mobile jaw crusher with a vibrating grizzly feeder and a main conveyor belt. The crusher is equipped with water spray bars located over the jaw entry and conveyor head to control PM emissions. The controlled emissions factors from AP-42

Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions. Emissions are summarized below.

265 TPH Crushed Stone Processing		
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
PM	0.438	1.917
PM10	0.184	0.806
PM2.5	0.038	0.167

180 hp Diesel Engine

The diesel engine is fired on fuel oil No. 2 with less than 0.5% sulfur by weight, with a maximum fuel consumption of 10.0 gallons/hour based on manufacture's data. Emissions were based on emission factors from AP-42 Section 3.4 (10/96) - Gasoline and Diesel Industrial Engines. The mass balance method was used to determine SO_2 emissions.

180 hp Diesel Engine		
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
NO_X	1.566	6.858
CO	0.216	0.945
SO_2	0.704	3.084
PM	0.047	0.206
PM-10	0.047	0.206
PM-2.5	0.047	0.206
TOC	0.130	0.569
HAPs	0.005	0.023

Storage Piles

Emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles.

Storage Piles		
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
PM	1.889	8.272
PM10	0.893	3.913
PM2.5	0.135	0.592

Total Emissions
Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)				
Pollutant	Emissions [8,760 hr/yr]	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
NO_X	6.86	40	2,500 / 100	25
CO	0.94	100	2,500 / 1000	250
SO_2	3.08	40	2,500 / 100	25
PM	10.39	25	-	25
PM-10	4.92	15	250 / 100	25
PM-2.5	0.97	-	250 / 100	-
VOC/TOC	0.57	40	250 / 100	25
HAP	0.02	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality assessment (AAQA) was performed for the 180 hp diesel engine to demonstrate compliance with State and National Ambient Air Quality Standards. The SCREEN3 screening model was used.

Assumptions for the SCREEN3 model include:

a. Unit emission rate of 1 g/s;
b. Ambient temperature of 293 °K;
a. Flat terrain impact;
b. Rural dispersion parameters;
c. Wake effects from crusher (HxLxW = 11 feet x 41 feet x 9.67 feet);
d. Default meteorology.

The table below presents the emission rates and stack parameters used for the AAQA.

	Emission Rates (g/s)					Stack Parameters			
	NO_2	SO_2	PM-10	PM-2.5	CO	Height (m)	Temp (°K)	Flow Rate (m/s)	Diameter (m)
Diesel Engine	0.1973	0.0887	0.0200	0.0200	0.0920	3.63	793	0.51	0.076

The result of the SCREEN3 model for the maximum 1-hour concentration was 1538 $\mu g/m^3$, occurring at a distance of 15 meters from the source.

The predicted concentrations assume no annual limitations and assume they are operating at their maximum capacity. The emissions impact from the diesel engine demonstrates compliance with State and National Ambient Air Quality Standards as shown in the following table.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	SAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Compared to SAAQS
NO_2	Annual	45.5	9	54.5	70	100	77.9%
SO_2	3-hr	122.8	549	671.8	1300	1300	51.7%
	24-hr	54.6	167	221.6	365	365	60.7%
	Annual	27.3	10	37.3	80	80	46.6%
PM-10	24-hr	12.3	57	69.3	150	150	46.2%
	Annual	6.2	17	23.2	50	50	46.3%
PM-2.5	24-hr	12.3	10	22.3	-	35	63.8%
	Annual	6.2	5	11.2	-	15	74.4%
CO	1-hr	141.5	4332	4473.5	10000	40000	44.7%
	8-hr	99.0	1235	1334.0	5000	10000	26.7%

notes:

1. Applied EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations are used, respectively. State of Hawaii scaling factor of 0.2 is used for annual concentrations.
2. NO_X to NO_2 conversion based on EPA Tier 2 approach. NO_2 / NO_X = 0.75.
3. Background concentrations were taken from Hawaii Air Quality Data 2007. SO_2 background concentrations for the island of Hawaii were used. The maximum background concentrations from the island of Oahu were used for the other pollutants as there are no data for the island of Hawaii:
   NO_2 from Kapolei, Oahu
   SO_2 from Hilo, Hawaii
   PM_{10} from Kapolei, Oahu
   $PM_{2.5}$ (98^{th} %) from Sand Island, Oahu
   CO (1-hr) from Kapolei, Oahu, CO (8-hr) from Honolulu, Oahu

SIGNIFICANT PERMIT CONDITIONS

1. The mobile crusher and conveyors are subject to the provisions of 40 CFR Part 60, subpart A and subpart OOO.

2. The minimum stack height of diesel engine shall be 11 feet-11 inches (3.63 meters) above base elevation

CONCLUSION

Actual emissions should be lower than estimated because the mobile crusher will not be operating at its maximum capacity for 8,760 hours/year. The ambient air quality assessment demonstrates compliance with State and National Ambient Air Quality Standards. Recommend issuance of the temporary covered source permit subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Mark Saewong
March 3, 2009