

**PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0242-01-CT
Application for Renewal No. 0242-11
Application for Minor Modification No. 0242-12**

Company: Goodfellow Brothers, Inc.

Mailing Address: P.O. Box 220
Kihei, Hawaii 96753

Facility: 780 TPH Stone Processing Plant with 1 MW or 1.36 MW Diesel Engine Generator and 400 TPH Mobile Stone Processing Plant with Integral Diesel Engines

Location: Various Temporary Sites, State of Hawaii

SIC Code: 1429 (Crushed and Broken Stone, Not Elsewhere Classified)

Responsible Official: Ms. Amy Sands
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Equipment:

1. This permit encompasses the following equipment and associated appurtenances:
 - a. 780 TPH Jaw Crusher, Nordberg model C140B, serial no. 34395: equipment no. K-76;
 - b. 780 TPH Jaw Crusher, Nordberg model C140, serial no. 34997: equipment no. K-185 ;
 - c. 700 TPH Cone Crusher, Nordberg model no. HP400, serial no. 123622: equipment no. K-153;
 - d. 700 TPH Cone Crusher, Raptor model no. XL400, serial no. XL400-0019, with 440 TPH Screen, JCI model 6202-32LP, serial no. 5072014: equipment no. K-182;
 - e. 500 TPH Cone Crusher, Omnicone model 1560, serial no. 1560-253: equipment no. K-26;
 - f. 500 TPH Cone Crusher, Omnicone model 1560, serial no. 304-300034: equipment no. K-130;
 - g. 500 TPH Cone Crusher, Omnicone model 1560, serial no. 1560-175-SA, with 440 TPH Screen, JCI model 6202-32LP, serial no. 5072007: equipment no. K-187;
 - h. 400 TPH Screen Trailer, JCI model 6203-32LP, serial no. P060378: equipment no. K-165;
 - i. 264 TPH Screen, Cedarapids 4'x12'x2, serial no. 1426: equipment no. K-23;
 - j. 1 MW Diesel Engine Generator, Gen Set model 3512, serial no. 24Z08717, with a minimum stack height of 17 feet: equipment no. LP-130;

PROPOSED

- k. 1 MW Diesel Engine Generator, Gen Set model 3512, serial no. 24Z08458, with a minimum stack height of 17 feet: equipment no. LP-121;
- l. 1.36 MW Diesel Engine Generator, Caterpillar model XQ1500, serial no. BNR00315, with Caterpillar diesel engine, model no 3512, serial no. 1GZ-02594, manufactured on April 29, 2005, with a stack height of 15.9 feet: equipment no. LP-140;
- m. 400 TPH Mobile Jaw Crusher, Nordberg model no. LT105, serial no. 72742, with 300 hp Caterpillar diesel engine, model no. C-9 DITA, serial no. CLJ07165, with a minimum stack height of 11.9 feet: equipment no. K-148;
- n. 400 TPH Mobile Jaw Crusher, Nordberg model no. LT105, serial no. 72816, with 300 hp Caterpillar diesel engine, model no. C-9 DITA, serial no. CLJ07851, with a minimum stack height of 9.9 feet: equipment no. K-149;
- o. 400 TPH Mobile Jaw Crusher, Nordberg model no. LT105, serial no. 72839, with 300 hp Caterpillar diesel engine, model no. C-9 DITA, serial no. CLJ07329, with a minimum stack height of 10.9 feet: equipment no. K-150;
- p. 400 TPH Mobile Jaw Crusher, Nordberg model no. LT105, serial no. 73316, with 300 hp Caterpillar diesel engine, model no. C-9 DITA, serial no. MBD00692, with a minimum stack height of 10.9 feet: equipment no. K-164;
- q. 400 TPH Mobile Jaw Crusher, Nordberg model no. LT105, serial no. 73599, with 300 hp Caterpillar diesel engine, model no. C-9 DITA, serial no. MBD02002, with a minimum stack height of 16.8 feet: equipment no. K-183;
- r. 450 TPH Mobile Cone Crusher, Nordberg model no. LT300HP, serial no. 72814, with 525 hp Caterpillar diesel engine, model no. C-15 DITA, serial no. BEM04965, with a minimum stack height of 16.8 feet: equipment no. K-152;
- s. 450 TPH Mobile Cone Crusher, Nordberg model no. LT300HP, serial no. 73549, with 525 hp Caterpillar diesel engine, model no. C-15 DITA, serial no. JRE02480, with a minimum stack height of 16.8 feet: equipment no. K-184;
- t. 450 TPH Mobile Cone Crusher, Nordberg model no. LT300HP, serial no. 74093, with 525 hp Caterpillar diesel engine, model no. C-15 DITA, serial no. JRE05064, with a minimum stack height of 16.8 feet: equipment no. K-204;
- u. 661 TPH Mobile Screen, Powerscreen model no. Chieftain 2100, serial no. 12401468, with exempt 100 hp Deutz diesel engine model no. BF4M2012, serial no. 10167853: equipment no. K-167;
- v. 661 TPH Mobile Screen, Powerscreen model no. Chieftain 2100, serial no. 12402701, with exempt 100 hp Deutz diesel engine model no. BF4M2012, serial no. 10275425: equipment no. K-176;
- w. 661 TPH Mobile Screen, Powerscreen model no. Chieftain 2100, serial no. 12402611, with exempt 100 hp Deutz diesel engine model no. BF4M2012, serial no. 10268684: equipment no. K-178;
- x. 420 TPH Mobile Screen, Finlay Hydrascreen model no. 683 Super Trak, serial no. FTP551993, with exempt 96 hp Deutz diesel engine: equipment no. K-155;
- y. Radial Stacker, Powerscreen model no. M95, serial no. 7436022, with exempt 85 hp Cummings diesel engine, model no. B3.3, serial no. 68027604: equipment no. K-156;
- z. Radial Stacker, Powerscreen model no. M95, serial no. 7436039, with exempt 78 hp Deutz diesel engine, model no. BF 4L 2011, serial no. 01030480: equipment no. K-168;
- aa. Radial Stacker, Powerscreen model no. M95, serial no. 7436090, with exempt 78 hp Deutz diesel engine, model no. BF 4L 2011, serial no. 01030485: equipment no. K-169;
- bb. Radial Stacker, Powerscreen model no. M95, serial no. 7436079, with exempt 78 hp Deutz diesel engine, model no. BF 4L 2011, serial no. 01037492: equipment no. K-170;

- cc. Radial Stacker, Powerscreen model no. M95, serial no. 7436130, with exempt 85 hp Cummings diesel engine, model no. B3.3, serial no. 68057534: equipment no. K-175;
- dd. 881 TPH Mobile Screen, Powerscreen model no. Warrior 2400, serial no. PID00126CDGB11897, with 225 bhp Caterpillar diesel engine, model no. C6.6, serial no. 66614805: equipment no. K-210;
- ee. Various conveyors; and
- ff. Various water sprays.

BACKGROUND

Goodfellow Brothers, Inc. (GBI) owns and operates a variety of crushers, screens, and conveyors for stone processing activities. The equipment is used to crush basalt and other materials for construction purposes. Materials are batch-dropped into a primary crusher, forwarded via conveyors to either a stockpile or to a secondary and possibly a tertiary crusher. The stockpiles either remain throughout the duration of the project or are moved by front-end loaders.

The equipment is deployed to various locations and may be erected in several different configurations depending on the project requirements. The current permit covers most of GBI's equipment inventory of crushers, screen trailers, and diesel engine generators. The permitted inventory of equipment also includes crushers with integrated diesel engines. To allow operational flexibility, the permit lists the maximum quantity and type of equipment allowed at a site, which allows GBI may use any or all of the equipment listed. The maximum number of temporary stone processing plant locations GBI is permitted to operate simultaneously with the State of Hawaii is 25.

Proposed Project

GBI has submitted an application for renewal to renew its temporary covered source permit. GBI also has submitted an application for minor modification to add an 881 TPH mobile screen with 225 bhp diesel engine to its permit.

The following equipment were sold and will be removed from the permit:

1. 780 TPH Jaw Crusher, Nordberg model C140B, serial no. C1403124 (K-129).
2. 440 TPH Screen Trailer, JCI model FSG5162-26, serial no. 97H07F32 (K-27).
3. 440 TPH Screen Trailer, JCI model 620332, serial no. 96H01F32 (K-143).
4. 1 MW Diesel Engine Generator, Gen Set model 3512, serial no. 24Z01234 (LP-84).
5. 700 TPH Mobile Jaw Crusher, Nordberg model no. LT110, serial no. 72940, with Caterpillar diesel engine model no. C-12 DITA, serial no. BDL04410 (K-151).
6. 386 TPH Mobile Cone Crusher, Terex-Pegson model no. 1300 Maxtrak, serial no. 130126CF, with Caterpillar diesel engine model no. C-12 DITA, serial no. BDL03217 (K-166).
7. 420 TPH Mobile Screen, Finlay Hydrascreens model no. 683 Super Trak, serial no. FTP510277 with 96 hp Deutz diesel engine (K-145).
8. 420 TPH Mobile Screen, Finlay Hydrascreens model no. 683 Super Trak, serial no. FTP541636 with 96 hp Deutz diesel engine (K-147).
9. Radial Stacker, Powerscreen model no. M95, serial no. 7436135 with 78 hp Deutz diesel engine model no. BF 4L 2011, serial no. 01031629 (K-179).
10. 350 TPH Mobile Jaw Crusher, BL-PEGSON model no. 4242SR, serial no. 420239EGSR, with Caterpillar diesel engine model no. C-9, serial no. MBD05048 (K-205).

PROPOSED

With the removal of equipment and the addition of the 881 TPH mobile screen (equipment no. K-210), the allowable equipment for each stone processing plant will be modified as follows:

- a. Non-Mobile/Mobile Stone Processing Plant
 - i. One (1) 780 TPH primary jaw crusher, equipment nos. K-76 and K-185;
 - ii. One (1) 500 TPH secondary cone crusher, equipment nos. K-26, K-130, and K-187;
 - iii. One (1) 700 TPH tertiary cone crusher, equipment nos. K-153 and K-182;
 - iv. One (1) 450 TPH or smaller mobile tertiary cone crusher, equipment nos. K-152, K-184, and K-204;
 - v. One (1) 881 TPH or smaller mobile screen, equipment nos. K-155, K-167, K-176, K-178, and K-210;
 - vi. Three (3) 440 TPH or smaller screens, equipment nos. K-23, K-165, K-182 (integral with crusher), and K-187 (integral with crusher);
 - vii. One (1) 1.36 MW or smaller diesel engine generator, equipment nos. LP-121, LP-130, and LP-140;
 - viii. Six (6) storage piles; and
 - ix. Various conveyors and stackers.

- b. Mobile Stone Processing Plant
 - i. Two (2) 400 TPH or smaller mobile jaw crushers, equipment nos. K-148, K-149, K-150, K-164, and K-183;
 - ii. Two (2) 450 TPH or smaller mobile secondary cone crushers, equipment nos. K-152, K-184, and K-204;
 - iii. Two (2) 881 TPH or smaller mobile screens, equipment nos. K-155, K-167, K-176, K-178, and K-210;
 - iv. Six (6) storage piles; and
 - v. Various conveyors and stackers.

The non-mobile plant will be limited to 1,600 hours at any one location in any rolling twelve-month (12-month) period. The mobile plant will be limited to 1,800 hours at any one (1) location in any rolling twelve-month (12-month) period. The operating hour limitations are needed for the stone processing plants to remain a non-major source.

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 9, Hazardous Air Pollutant Sources
Subchapter 10, Field Citations

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the stone processing plant because the maximum capacity of the facility is greater than 150 tons/hour, and the plants were manufactured after August 31, 1983.

The proposed 881 TPH Mobile Screen was manufactured in 2011. Equipment that commence construction, modification, or reconstruction on or after April 22, 2008, have more stringent fugitive emission opacity limits. The current permitted equipment were all manufactured prior to April 22, 2008.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the diesel engines and diesel engine generators because the engines are considered nonroad engines as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not nonroad engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is not applicable to the diesel engines and diesel engine generators because the engines are considered nonroad engines as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not nonroad engines.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21

This source is not subject to PSD 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.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM because the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Consolidated Emissions Reporting Rule (CERR), 40 CFR Part 51, Subpart A

CERR is not applicable because emissions from the facility do not exceed CERR triggering levels.

DOH In-house Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because potential emissions due to the modification (881 TPH mobile screen with 225 hp diesel engine) are below significant levels. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

BACT		
Pollutant	Potential Emissions (225 hp diesel engine) (TPY)	Significant Levels (TPY)
CO	1.2	100
NO _x	1.3	40
SO ₂	0.8	40
PM	0.1	25
PM-10	0.1	15
VOC	0.1	40

Synthetic Minor Source

A synthetic minor source is a facility that is potentially major, as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is a synthetic minor source because potential emissions for NO_x exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year.

Greenhouse Gas Tailoring Rule

Title V or PSD permitting for greenhouse gas (GHG) emissions is not applicable to this facility because the potential to emit of CO₂ equivalent (CO₂e) emissions is less than 100,000 tons per year. Under the Tailoring Rule, in no event are sources with the potential to emit less than 100,000 tons per year CO₂e subject to PSD or Title V permitting for GHG emissions before 2016. Total GHG emissions on a CO₂e basis using the global warming potential (GWP) of each GHG are determined in the table below.

Non-Mobile/Mobile Stone Processing Plant with 1.36 MW diesel engine generator:

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	2311	2311
Total Emissions			2311

Mobile Stone Processing Plant:

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	1924	1924
Total Emissions			1924

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

The diesel engines on the 661 TPH mobile screens, 420 TPH mobile screen, and radial stackers are considered insignificant activities in accordance with HAR §11-60.1-82(f)(2) because the heat input capacities are less than one (1) MMBtu/hr.

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine and Diesel Engine Generator

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

AIR POLLUTION CONTROLS

The crushing and screening plants are equipped with water spray systems to control fugitive dust. Water trucks/water sprays will be used as necessary to minimize fugitive dust from plant operations, material transfer points, stockpiles, and plant roads.

PROJECT EMISSIONS

Non-Mobile/Mobile Stone Processing Plant

Emissions were based on the “maximum case” plant configuration consisting of the following equipment:

1. One (1) 780 TPH primary jaw crusher (Nordberg C140)
2. One (1) 500 TPH secondary cone crusher (Omnicone 1560)
3. 700 TPH tertiary cone crusher (Nordberg HP400 or Raptor XL400)
4. 450 TPH mobile tertiary cone crusher (Nordberg LT300HP)
5. One (1) 881 TPH mobile screen (Warrior 2400) with 225 hp diesel engine (CAT C6.6)
6. Three (3) 440 TPH screens
7. One (1) 1.36 MW or 1 MW diesel engine generator

Water sprays will be use to control fugitive emissions. Emissions were based on emissions factors from AP-42 and manufacture’s data. Operating hours for the Non-Mobile/Mobile Stone Processing Plant will be limited to 1,600 hours in any rolling twelve-month (12-month) period.

PROPOSED

With 1 MW diesel engine generator:

Non-Mobile/Mobile Stone Processing Plant (1,600 hr/yr)							
Pollutant	1 MW CAT 3512	525 hp CAT C-15	225 hp CAT C-6.6	Process	Stockpiles	Unpaved Roads	Total
CO	7.77	0.57	1.03				9.4
NO _x	29.25	5.76	1.15				36.2
SO ₂	4.62	1.46	0.69				6.8
PM	0.64	0.64	0.06	5.00	2.51	2.91	11.8
PM-10	0.52	0.64	0.06	1.81	1.19	0.71	4.9
PM-2.5	0.51	0.64	0.06	0.25	0.18	0.07	1.7
TOC	0.82	0.07	0.04				0.9
HAPs	0.014	0.011	0.005				0.03

With 1.36 MW diesel engine generator:

Non-Mobile/Mobile Stone Processing Plant (1,600 hr/yr)							
Pollutant	1.36 MW CAT 3512	525 hp CAT C-15	225 hp CAT C-6.6	Process	Stockpiles	Unpaved Roads	Total
CO	2.18	0.57	1.03				3.8
NO _x	27.18	5.76	1.15				34.1
SO ₂	5.41	1.46	0.69				7.6
PM	0.26	0.64	0.06	5.00	2.51	2.91	11.4
PM-10	0.25	0.64	0.06	1.81	1.19	0.71	4.7
PM-2.5	0.24	0.64	0.06	0.25	0.18	0.07	1.4
TOC	1.26	0.07	0.04				1.4
HAPs	0.016	0.011	0.005				0.03

Total facility emissions of the Non-Mobile/Mobile Stone Processing Plant are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)							
Pollutant	Emissions		Emissions		BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
	Mobile Plant (1,600 / 8,760)	Non-Mobile Plant (1,600 / 8,760)	Mobile Plant (1,600 / 8,760)	Non-Mobile Plant (1,600 / 8,760)			
CO	9.4	51.3	3.8	20.7	100	2,500 / 1000	250
NO _x	36.2	198.0	34.1	186.7	40	2,500 / 100	25
SO ₂	6.8	37.0	7.6	41.4	40	2,500 / 100	25
PM	11.8	64.4	11.4	62.3	25	-	25
PM-10	4.9	27.0	4.7	25.5	15	250 / 100	25
PM-2.5	1.7	9.4	1.4	7.9	-	250 / 100	-
VOC	0.9	5.1	1.4	7.5	40	250 / 100	25
HAPs	0.03	0.16	0.03	0.18	-	-	5

PROPOSED

Mobile Stone Processing Plant

Emissions were based on the “maximum case” plant configuration consisting of the following equipment:

1. Two (2) 400 TPH mobile jaw crushers (Nordberg LT105) with 300 hp diesel engines (CAT C-9)
2. Two (2) 450 TPH mobile secondary cone crushers (Nordberg LT300HP) with 525 hp diesel engines (CAT C-15)
3. One (1) 881 TPH mobile screen (Warrior 2400) with 225 hp diesel engine (CAT C6.6)
4. One (1) 661 TPH mobile screen (Chieftain 2100)

Water sprays will be use to control fugitive emissions. Emissions were based on emissions factors from AP-42 and manufacture’s data. Operating hours for the Mobile Stone Processing Plant will be limited to 1,800 hours in any rolling 12-month period.

Mobile Stone Processing Plant (1,800 hr/yr)							
Pollutant	300 hp CAT C-9*	525 hp CAT C-15*	225 hp CAT C6.6	Process	Stockpiles	Unpaved Roads	Total
CO	1.13	1.28	1.16				3.6
NO _x	7.11	12.96	1.29				21.4
SO ₂	1.91	3.28	0.78				6.0
PM	0.11	1.44	0.07	3.61	2.57	2.97	10.8
PM-10	0.11	1.44	0.07	1.39	1.21	0.73	4.9
PM-2.5	0.11	1.44	0.07	0.23	0.18	0.07	2.1
TOC	0.27	0.16	0.0446				0.5
HAPs	0.014	0.025	0.006				0.04

Total facility emissions of the Mobile Stone Processing Plant are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (Limited)	Emissions (No Limits 8,760 hr/yr)	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	3.6	17.4	100	2,500 / 1000	250
NO _x	21.4	104.0	40	2,500 / 100	25
SO ₂	6.0	29.1	40	2,500 / 100	25
PM	10.8	52.4	25	-	25
PM-10	4.9	24.1	15	250 / 100	25
PM-2.5	2.1	10.2	-	250 / 100	-
VOC	0.5	2.3	40	250 / 100	25
HAPs	0.04	0.22	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) was conducted for the proposed 225 hp Caterpillar C-6.6 diesel engine to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, Version 7.1.0, was used for the modeling analysis.

Terrain

USGS National Elevation Dataset from the USGS Seamless Data Warehouse. Resolution is 1/3 arc-second (about 10 meters).

Meteorological data

Meteorological data from Kahului Airport (2005 – 2009) was used for the analysis. Five (5) years of meteorological data was used for 1-hr NO₂ and 1-hr SO₂ standards, and year 2009 data was used for the other standards.

Receptor Grid

Receptor grid spacing was set at 30 meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

EPA's Building Profile Input Program (BPIP-PRIME) was used to evaluate downwash effects of nearby structures.

Ozone Limiting Method

The ozone limiting method was used for the NO_x to NO₂ conversion. The in-stack NO₂/NO_x ratio of 20% for diesel engines was used for the model. The hourly ozone background concentrations obtained from the Sand Island, Oahu, air monitoring station for the years 2005 through 2009.

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
225 hp engine	0.1625	0.1813	0.0094	0.0094	0.1088	4.27	0.089	0.550	763

Results

The annual concentrations assume no annual hourly limit. The table below shows the predicted ambient air quality impacts from the 225 hp diesel engine should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	213.2	4236.5	4449.7	10000	40000	44.5%
	8-hr	170.8	1374	1544.8	5000	10000	30.9%
NO ₂	1-hr	135.5	48.9	184.4	-	188	98.1%
	Annual	44.2	7.5	51.7	70	100	73.8%
PM-10	24-hr	9.0	37	46.0	150	150	30.7%
	Annual	4.5	16	20.5	50	-	41.0%
PM-2.5	24-hr	9.0	14	23.0	-	35	65.8%
	Annual	4.5	5.5	10.0	-	15	66.8%
SO ₂	1-hr	139.7	31	44.8	-	196	87.1%
	3-hr	126.1	26.1	26.5	1300	1300	11.7%
	24-hr	104.6	7.8	8.1	365	365	30.8%
	Annual	52.3	2.6	2.8	80	80	68.6%

notes:

1. Background concentrations (2009 Hawaii Air Quality Data) from Kapolei, Oahu. 1-hr NO₂ is the 3-yr average of the 98th percentile. 24-hr PM-2.5 is the 3-yr average of the 98th percentile.

SIGNIFICANT PERMIT CONDITIONS

1. Allowable Temporary Stone Processing Plants

The permittee shall not operate more than twenty-five (25) temporary stone processing plants simultaneously within the State of Hawaii at anytime. Each temporary stone processing plant shall not operate at or adjacent to another temporary stone processing plant owned or operated by the permittee unless an ambient air quality impact assessment for the proposed location is submitted to and approved by the Department of Health.

2. Allowable Equipment/Storage Piles

For each temporary stone processing plant location, the maximum amount of equipment/storage piles shall be as follows:

a. Non-Mobile/Mobile Stone Processing Plant

- i. One (1) 780 TPH primary jaw crusher, equipment nos. K-76 and K-185;
- ii. One (1) 500 TPH secondary cone crusher, equipment nos. K-26, K-130, and K-187;
- iii. One (1) 700 TPH tertiary cone crusher, equipment nos. K-153 and K-182;
- iv. One (1) 450 TPH or smaller mobile tertiary cone crusher, equipment nos. K-152, K-184, and K-204;

- v. One (1) 881 TPH or smaller mobile screen, equipment nos. K-155, K-167, K-176, K-178, and K-210;
- vi. Three (3) 440 TPH or smaller screens, equipment nos. K-23, K-165, K-182 (integral with crusher), and K-187 (integral with crusher);
- vii. One (1) 1.36 MW or smaller diesel engine generator, equipment nos. LP-121, LP-130, and LP-140;
- viii. Six (6) storage piles; and
- ix. Various conveyors and stackers.

b. Mobile Stone Processing Plant

- i. Two (2) 400 TPH or smaller mobile primary/secondary jaw crushers, equipment nos. K-148, K-149, K-150, K-164, and K-183;
- ii. Two (2) 450 TPH or smaller mobile secondary cone crushers, equipment nos. K-152, K-184, and K-204;
- iii. Two (2) 881 TPH or smaller mobile screens, equipment nos. K-155, K-167, K-176, K-178, and K-210;
- iv. Six (6) storage piles; and
- v. Various conveyors and stackers.

3. Operating Hours

The total operating hours of each temporary stone processing plant shall not exceed the following limits:

a. Non-Mobile/Mobile Stone Processing Plant

The total operating hours for each temporary "Non-Mobile/Mobile Stone Processing Plant" shall not exceed 1,600 hours at any one (1) location in any rolling twelve (12) month period.

b. Mobile Stone Processing Plant

The total operating hours for each temporary "Mobile Stone Processing Plant" shall not exceed 1,800 hours at any one (1) location in any rolling twelve (12) month period.

The temporary stone processing plant shall be considered in operation when any crusher, screen, conveyor, and/or diesel engine covered under this permit is operating.

4. Emission Limit, Each Location

For each location, the total emissions from the equipment and activities covered by this permit shall not exceed the threshold limits for a "major source" as defined in HAR §11-60.1-1.

5. Fugitive Emission Limits

- a. The permittee shall not cause to be discharged into the atmosphere from any crusher, fugitive emissions which exhibit greater than fifteen (15) percent opacity.

- b. Except for the 881 TPH mobile screen (equipment no. K-210), the permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors, screening operation, or from any other affected facility, fugitive emissions which exhibit greater than ten (10) percent opacity.
- c. The permittee shall not cause to be discharged into the atmosphere from the 881 TPH mobile screen (equipment no. K-210), fugitive emissions which exhibit greater than seven (7) percent opacity.

6. Fuel Limits

The diesel engines shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

CONCLUSION

Potential emissions were based on the worst case scenarios of the Non-Mobile/Mobile Stone Processing Plants and Mobile Stone Processing Plants. Water sprays will be used to control fugitive emissions. The ambient air quality impact assessment of the proposed 881 TPH screen with diesel engine 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
September 27, 2011