

**PERMIT APPLICATION REVIEW
 TEMPORARY COVERED SOURCE PERMIT No. 0696-01-CT
 Application for Significant Modification No. 0696-04**

Company: Delta Construction Corporation

Mailing Address: 91-255 Oihana Street
 Kapolei, Hawaii 96707

Facility: Crushing and Screening Plants

Location: Various Temporary Sites, State of Hawaii

Initial Location: Wainui Street, Waipahu, Oahu

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

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Equipment:

Facility Equipment				
Equipment	Manufacturer	Model No.	Serial No.	Manuf. Date
455 TPH Cone Crushing Plant with integrated 4'x10' screen 440 hp Diesel Engine	Extec Caterpillar	X44SBS C13	11606 LGK07082	Jan. 2008 May 2007
460 TPH Jaw Crushing Plant 228 kW Diesel Engine	Komatsu Komatsu	BR500JG-1 SA6D125E-2	1212	2000
400 TPH Screening Plant 111 hp Diesel Engine (exempt)	Extec Deutz	Turbo Trac BFM1012	7300	2000
353 TPH Jaw Crushing Plant 350 hp Diesel Engine	McCloskey Caterpillar	C50 C9	80139	Jan. 2011
359 TPH Screening Plant 125 hp Diesel Engine (exempt)	McCloskey Caterpillar	S190 C4.4	SA9000S1908- MO66345	9/16/2008
Water Spray Systems				
Various Conveyors				

BACKGROUND

Delta Construction Corporation has submitted an application for significant modification to operate a 353 TPH mobile jaw crushing plant and 359 TPH mobile screening plant. The total operating hours of each proposed crushing and screening plants will be limited to 3,500 hours in any rolling 12-month period. The crushing plant is powered by a 350 hp diesel engine fired on fuel oil no. 2 with a maximum sulfur content of 0.05% by weight. The screening plant is powered by an exempt 125 hp diesel engine. The screening plant is currently permitted under noncovered source permit no. 0740-01-NT. The proposed crushing and screening plants may operate independently or with the existing cone crusher with integrated screen.

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 proposed crushing plant (manufactured in January 2011) and screening plant (manufactured in September 2008) because the maximum capacity of the facility is greater than 150 tons/hour, and the plants were manufactured after August 31, 1983. Equipment that commence construction, modification, or reconstruction on or after April 22, 2008, have more stringent fugitive emission opacity limits. Subpart OOO also applies to the existing crushing and screening plants.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the diesel engines 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 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 (proposed crusher with 350 hp diesel engine and screen) 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 (TPY)	Significant Levels (TPY)
CO	3.1	100
NO _x	4.1	40
SO ₂	0.2	40
PM	10.6	25
PM-10	4.3	15
VOC	0.3	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 not a synthetic minor source because potential emissions do not exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Diesel Engine

The following diesel engines are considered insignificant activities in accordance with HAR §11-60.1-82(f)(2) because the heat input capacities are less than one MMBtu/hr. Based on the conversion factor from AP-42 (10/96) Table 3.3-1, note a:

111 hp Deutz diesel engine powering the 400 TPH Extec screen:
111 hp x 7,000 Btu/hp-hr = 0.78 MMBtu/hr

125 hp Caterpillar C4.4 diesel engine powering the 359 TPH McCloskey screen:
125 hp x 7,000 Btu/hp-hr = 0.88 MMBtu/hr

ALTERNATIVE OPERATING SCENARIOS

Diesel Engines

The permittee may replace each 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

The crushing and screening plants are equipped with water spay 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

The operating hours of the crushing and screening plants and diesel engines will be limited to 3,500 hours in any rolling 12-month period.

Proposed Equipment

Crushing and Screening Plants

The proposed 353 TPH jaw crusher and 359 TPH screen may operate independently or together with the existing 455 TPH cone crusher with integrated screen. Potential emissions were calculated assuming the material processed goes through the proposed jaw crusher, existing cone crusher, then the proposed screen. Water sprays will be used to control PM emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing.

PROPOSED

Storage pile emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles. Vehicle travel on unpaved roads emissions were based on emission factors from AP-42 Section 13.2.2 (11/06) - Unpaved Roads. A 70% control efficiency was assumed for water suppression to control fugitive dust for unpaved roads.

Crushing and Screening Plant						
Pollutant	Crushing/Screening Plant Emissions (TPY)		Storage Piles Emissions (TPY)		Unpaved Roads Emissions (TPY)	
	3,500 hr/yr	8,760 hr/yr	3,500 hr/yr	8,760 hr/yr	3,500 hr/yr	8,760 hr/yr
PM	4.72	11.82	4.40	11.02	1.30	3.25
PM-10	1.74	4.36	2.08	5.21	0.32	0.79
PM-2.5	0.24	0.61	0.32	0.79	0.03	0.08

350 hp Caterpillar Diesel Engine

The diesel engine is fired on fuel oil no. 2 with a maximum sulfur content of 0.05% by weight. CO, NO_x, PM, and TOC emissions were based on manufacturer's data. The mass balance method was used to determine SO₂ emissions. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines.

350 hp Caterpillar Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	1.79	3.13	7.84
NO _x	2.37	4.15	10.38
SO ₂	0.13	0.23	0.58
PM	0.09	0.16	0.39
PM-10	0.09	0.15	0.38
PM-2.5	0.08	0.14	0.35
TOC	0.18	0.32	0.79
HAPs	0.010	0.017	0.043

Existing Equipment

Facility emissions of the existing equipment are summarized below, referenced from review no. 0696-03.

Existing Equipment		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	4.7	11.7
NO _x	11.9	29.8
SO ₂	4.8	12.1
PM	23.4	58.5
PM-10	8.6	21.5
PM-2.5	1.5	3.7
TOC	0.4	1.1
HAPs	0.04	0.09

Total Emissions

Total facility emissions 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	7.8	19.5	100	2,500 / 1000	250
NO _x	16.0	40.2	40	2,500 / 100	25
SO ₂	5.0	12.7	40	2,500 / 100	25
PM	34.0	85.0	25	-	25
PM-10	12.9	32.2	15	250 / 100	25
PM-2.5	2.2	5.5	-	250 / 100	-
VOC	0.7	1.9	40	250 / 100	25
HAPs	0.1	0.1	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) was conducted for the proposed 350 hp Caterpillar diesel engine operating with the existing 440 hp Caterpillar diesel engine to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, version 6.8.6, was used for the modeling analysis.

Terrain

USGS 7.5 min digital elevation model (DEM) with 10 meter spacing from the Waipahu and Schofield Barracks, Oahu, quadrangles were used to model the elevated terrain heights.

Meteorological data

Meteorological data from the Honolulu International Airport for years 2005 through 2009 provided by the applicant was used. The five years of meteorological data was used with the ozone limited method to model the 1-hour NO_x to NO₂ conversion.

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 non-default option ozone limiting method was used for the 1-hour NO_x to NO₂ conversion. The in-stack NO₂/NO_x ratio of 10% was used for the model. The hourly ozone background concentrations in ppb was provided by the applicant and obtained from the Sand Island, Oahu air monitoring station for years 2005 through 2009. The 5-year average of the 98th percentile of

PROPOSED

the annual distribution of daily maximum 1-hour concentrations was computed and added to the background concentration.

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)
350 hp Engine	0.2255	0.2986	0.0109	0.0102	0.0166	5.79	0.152	1.05	751
440 hp Engine	0.3112	0.3830	0.0175	0.0164	0.0203	5.79	0.152	1.30	769

Results

The annual concentrations assume an annual hourly limit of 3,500 hours/year for the diesel engines. The table below shows the predicted ambient air quality impacts from the diesel engines 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	132.7	4237	4369.7	10000	40000	43.7%
	8-hr	108.3	1374	1482.3	5000	10000	29.6%
NO ₂	1-hr	100.5	58.3	158.8	-	188	84.5%
	Annual	8.5	7.5	16.0	70	100	22.8%
PM-10	24-hr	4.7	37	41.7	150	150	27.8%
	Annual	0.4	16	16.4	50	-	32.8%
PM-2.5	24-hr	4.2	25	29.2	-	35	83.4%
	Annual	0.4	5.5	5.9	-	15	39.1%
SO ₂	1-hr	8.6	44.4	53.0	-	196	27.0%
	3-hr	7.7	26.1	33.8	1300	1300	2.6%
	24-hr	5.7	7.8	13.5	365	365	3.7%
	Annual	0.5	2.6	3.1	80	80	3.8%

notes:

- Background concentrations from 2009 Hawaii Air Quality Data. Maximum 1st high background concentrations from Kapolei, Oahu. 1-hr SO₂ from 2008.
- The ozone limiting method was used for the 1-hr NO_x to NO₂ conversion.

SIGNIFICANT PERMIT CONDITIONS

- Operating Hour Limits
 - The total operating hours of the 455 TPH cone crushing plant, as represented by the total operating hours of the 440 hp diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.

PROPOSED

- b. The total operating hours of the 460 TPH jaw crushing plant, as represented by the total operating hours of the 228 kW diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
 - c. The total operating hours of the 400 TPH screening plant, as represented by the total operating hours of the 111 hp diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
 - d. The total operating hours of the 353 TPH jaw crushing plant, as represented by the total operating hours of the 350 hp diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
 - e. The total operating hours of the 359 TPH screening plant, as represented by the total operating hours of the 125 hp diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
2. The diesel engines shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.05% by weight.
 3. The permittee shall not cause to be discharged into the atmosphere from the following plants, fugitive emissions which exhibit greater than fifteen (15) percent opacity from any crusher and ten (10) percent opacity from any transfer point on the belt conveyors, screening operation, or from any other affected facility:
 - a. 455 TPH Extec cone crushing plant;
 - b. 460 TPH Komatsu jaw crushing plant; and
 - c. 400 TPH Extec screening plant.
 4. The permittee shall not cause to be discharged into the atmosphere from the following plants, fugitive emissions which exhibit greater than twelve (12) percent opacity from any crusher and seven (7) percent opacity from any transfer point on the belt conveyors, screening operation, or from any other affected facility:
 - a. 353 TPH McCloskey jaw crushing plant; and
 - b. 359 TPH McCloskey screening plant.

CONCLUSION

Delta Construction Corporation submitted an application for significant modification to add a 353 TPH mobile jaw crusher and 359 TPH mobile screen to its covered source permit. Water sprays will be used to control fugitive emissions. The ambient air quality impact assessment of the proposed diesel engine demonstrates compliance with State and National Ambient Air Quality Standards. Recommend issuance of the 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
May 6, 2011