PROPOSED

PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT No. 0569-01-CT
Renewal Application No. 0569-03

Company: Willocks Construction Corporation

Mailing Address: 16-209 Melekahiwa Place
Keaau, Hawaii 96749

Facility: Mobile Crushing Plant

Location: Various Temporary Sites, State of Hawaii

SIC Code: 1629 (Heavy Construction, Not elsewhere Classified)
1429 (Crushed and Broken Stones, Not Elsewhere Classified)

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Equipment:

Facility Equipment				
Equipment	Manufacturer	Model No.	Serial No.	Manuf. Date
340 TPH mobile jaw crusher, water spray system, various conveyors	Extec	C12	6908	2001
310 hp diesel engine	Caterpillar	3306BDITA	64Z31751	2001
380 TPH jaw crusher with stepped vibrating grizzly feeder (approximately 42” x 16”)	Kue Ken	4236	120M5017	
210 TPH cone crusher with El-Jay two-deck screen	Telsmith	48 S TEL	202M7274	1961
275 hp diesel engine	Caterpillar	3306T	7JB05489	
360 kW diesel engine generator	Detroit Diesel	8083-7400	8VF112536	
179 TPH screening plant (10’ x 14’), discharge belt conveyor, discharge hopper, and rubber shroud	Powerscreen	Mk II	7204123	1992
58 hp/43 kW diesel engine (Exempt)	Duetz	F3L-912	8205540	1992

BACKGROUND

Willocks Construction Corporation has submitted an application to renew its temporary covered source permit. The renewal application was received by the Department of Health (DOH) on December 23, 2008, along with a check for $500.00. There are no proposed changes for this renewal in the design or operation of the facility.

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

1. Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the 340 TPH jaw crushing plant, 380 TPH jaw crushing plant, and 179 TPH screening plant because each has a maximum capacity greater than 150 tons/hour and was manufactured after August 31, 1983. The 210 TPH cone crushing plant, manufactured in 1961, is not subject to Subpart OOO because it was manufactured before August 31, 1983.

2. Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the diesel engines and diesel engine generator because the engines were constructed before July 11, 2005.

National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61
This source is not subject to NESHAPS as no hazardous air pollutants are emitted at significant levels and there are no NESHAPS requirements in 40 CFR Part 61.

National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is not applicable because the diesel engines and diesel engine generator are existing sources (constructed before June 12, 2006).

Prevention of Significant Deterioration (PSD)
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 since 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)
This source is not subject to CERR 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.

DOH Annual Emissions Reporting
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.

Best Available Control Technology (BACT)
This source is not subject to BACT analysis because this is an existing source with no proposed modifications. BACT analysis is required for new sources or significant modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, Section 11-60.1-1.

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 nonmajor through federally enforceable permit conditions. This facility is a synthetic minor source based on potential emissions that exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Existing insignificant activities:

58 hp Diesel Engine
The 58 hp Duetz diesel engine, which powers the 179 TPH screening plant, is considered insignificant in accordance with HAR 11-60.1-82(f)(2) as the heat input rate is less than one

MMbtu/hr. Assuming a fuel oil no. 2 heating value of 0.14 MMBtu/gal and fuel consumption of 3.4 gal/hr, the heat input rate equates to 3.4 gal/hr x 0.14 MMBtu/gal = 0.48 MMbtu/hr.

ALTERNATIVE OPERATING SCENERIOS

Diesel Engines and Diesel Engine Generator

The permittee may replace the diesel engines and 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

Water Suppression

Water spray systems located on the crushers will be used as necessary to minimize fugitive emissions. In place of a water spray system for the 179 TPH screening plant, material will be dampened prior to screening. Fugitive emissions from storage piles, roads, and material transfer operations will be controlled by a water truck

PROJECT EMISSIONS

Calculations are attached to this review.

340 TPH Jaw Crushing Plant

Emission rates were based on the maximum capacity of the mobile jaw crushing plant to process 340 TPH of material. There are no hourly or production limitations for the 340 TPH crushing plant. The crushing plant is equipped with a water spray system to control fugitive emissions. Emissions factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions and are summarized below.

340 TPH Jaw Crushing Plant			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.503	2.204	2.204
PM-10	0.215	0.941	0.941
PM-2.5	0.043	0.188	0.188

310 hp Diesel Engine

The 310 hp diesel engine is attached to the 340 TPH crushing plant. The diesel engine is fired on fuel oil No. 2 with less than 0.5% sulfur by weight, with a maximum fuel consumption of 16.1 gallons/hour based on manufacturer's literature. There are no hourly operating limitations. Emissions were based on EPA Tier-1 maximum limit emission factors from manufacturer's literature. The mass balance method was used to determine the SO_2 emission rate.

310 hp Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	5.812	25.457	25.457
NO_X	4.690	20.544	20.544
SO_2	1.142	5.001	5.001
PM	0.275	1.206	1.206
PM-10	0.275	1.206	1.206
PM-2.5	0.275	1.206	1.206
VOC	0.663	2.903	2.903
HAPs	0.0085	0.0374	0.0374

380 TPH Jaw Crushing Plant and 210 TPH Cone Crushing Plant

Emission rates were based on the maximum capacity of the primary jaw crushing plant to process 380 TPH of material, and the maximum capacity of the secondary cone crushing plant to process 210 TPH of material. The operating hours will be limited to 2,500 hours per rolling 12-month period. The crushing plants are equipped with water spray systems to control fugitive emissions. Emissions factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions and are summarized below.

380 TPH Jaw Crushing Plant and 210 TPH Cone Crushing Plant			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	1.970	2.462	8.627
PM-10	0.740	0.925	3.240
PM-2.5	0.118	0.147	0.515

179 TPH Screening Plant

Per review 0473-01, manufacturer's literature specified a maximum screening capacity of 650 TPH. However, the following information was provided by Willocks Construction Corporation to obtain the maximum capacity of the screener:

1. The maximum heaped bucket capacity of the front-end loader is 5.25 cubic yds;
2. Only one front-end loader will be utilized at any given time to load material into the screening plant; and
3. The maximum scoops/hour of the front-end loader loading the screening plant = 20 scoops

Per AP-42, Appendix A (Reformatted1/95), the density of wet gravel is 126 lb/cf (1.7 tons/cy).
20 buckers/hour x 5.25 cy/bucket = 105 cy/hr.
105 cy/hr x 1.7 tons/cy = 179 tons/hr.

There are no direct water spray systems on the screening plant, but material will be dampened prior to and subsequent to the screening operations to reduce and control fugitive emissions. The operating hours will be limited to 3,120 hours per rolling 12-month period. Emissions are summarized in the table below.

179 TPH Screening Plant			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,120 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.444	0.693	1.944
PM-10	0.149	0.232	0.652
PM-2.5	0.014	0.021	0.060

360 kW Diesel Engine Generator

Emission rates were based on a limit of 2,500 hours/year. The diesel engine generator is fired on fuel oil No. 2 with less than 0.5% sulfur by weight, with a maximum fuel consumption of 24.2 gallons/hour based on manufactures literature. Emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines. The mass balance method was used to determine the SO_2 emission rate.

360 kW Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	3.219	4.023	14.097
NO_X	14.941	18.676	65.442
SO_2	1.716	2.145	7.516
PM	1.050	1.313	4.600
PM-10	1.050	1.313	4.600
PM-2.5	1.050	1.313	4.600
VOC	1.220	1.525	5.342
HAPs	0.0128	0.0161	0.0562

275 hp Diesel Engine

Emission rates were based on a limit of 2,500 hours/year. The diesel engine is fired on fuel oil No. 2 with less than 0.5% sulfur by weight, with a maximum fuel consumption of 15.1 gallons/hour based on manufactures literature. Emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines. The mass balance method was used to determine the SO_2 emission rate.

275 hp Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	2.008	2.510	8.796
NO_X	9.323	11.653	40.834
SO_2	1.071	1.338	4.690
PM	0.655	0.819	2.870
PM-10	0.655	0.819	2.870
PM-2.5	0.655	0.819	2.870
VOC	0.761	0.951	3.333
HAPs	0.0080	0.0100	0.0351

Storage Piles

Emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles were used to calculate emissions and are summarized in the table below. Emissions were based on the maximum capacities of the crushing and screening plants, and a 70% control efficiency was assumed for fugitive dust control.

Storage Piles			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [Limited hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	7.648	19.086	33.499
PM10	3.617	11.058	15.844
PM2.5	0.548	1.675	2.399

Truck Travelling on Unpaved Road

Emission factors from AP-42 Section 13.2.2 (11/06) - Unpaved Roads were used to calculate emissions from vehicles travelling on unpaved roads and are summarized in the table below. Emissions were based on the maximum capacities of the crushing and screening plants, and a 70% control efficiency was assumed for fugitive dust control.

Truck Travelling on Unpaved Road			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [Limited hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	3.559	8.882	15.590
PM10	1.051	2.622	4.602
PM2.5	0.105	0.262	0.460

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions [Limited hr/yr]	Emissions [8,760 hr/yr]	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	31.99	48.35	100	2,500 / 1000	250
NO_X	50.87	126.82	40	2,500 / 100	25
SO_2	8.48	17.21	40	2,500 / 100	25
PM	36.66	70.54	25	-	25
PM-10	19.12	33.96	15	250 / 100	25
PM-2.5	5.63	12.30	-	250 / 100	-
VOC/TOC	5.38	11.58	40	250 / 100	25
HAPs	0.06	0.13	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality assessment (AAQA) is generally required for new sources or modified sources with emission increases. An ambient air quality assessment is not required for this permit renewal because there are no changes or modifications proposed.

SIGNIFICANT PERMIT CONDITIONS

There are no new significant permit conditions.

CONCLUSION

Actual emissions should be lower than those estimated because the crushing and screening plants will not operate at their maximum capacities at their permitted hourly limits. Recommend issuance of the covered source permit subject to the 30-day public comment period and 45-day Environmental Protection Agency review period.

Mark Saewong
6/24/2009