PROPOSED

PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0755-01-CT
Application for Initial Review No. 0757-01

Company: Powerscreen of California

Mailing Address: 10 Case Court
American Canyon, CA 94503

Facility: Crushing and Screening Plants

Location: Various Temporary Sites, State of Hawaii

Initial Location: 95-109 Waikalani Drive, Mililani, HI.
(UTM Zone 4: East 601,609 North 2,373,982)

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

Responsible Official: Mr. Jay Wessell
CFO
(707) 253-1874

Contact: Mr. Fred Peyer
Environmental Management Consultant
95-109 Waikalani Drive
Mililani, Hawaii 96789
(808) 779-2948

Equipment:

1. 352 TPH mobile impact crushing plant, model no. Powerscreen Pegson XH320SR, serial no. PID320SRKOMB3246 (manufactured 2011), with:

    a. 11' x 5' feed hopper;
    b. Various conveyors;
    c. Built-in water spray system; and
    d. 350 HP Scania diesel engine, model no. DC-09 70 A, serial no. 6653462 (manufactured 2011) with Tier 4i SCR (selective catalytic reduction) NOx control unit.

BACKGROUND

Powerscreen of California has submitted an initial application to operate a portable self-powered crushing plant. The 352 TPH crushing plant consist of an impact crusher and various conveyors. The crushing plant is track mounted and powered by a 350 HP diesel engine generator (Tier 4i). The portable crushing plant and diesel engine generator will be limited to 2500 hours in any rolling twelve-month (12-month) period. Water sprays and a water truck will be used to control fugitive emissions.

Process
Raw material is dropped into the feed hopper by a loader and passed to the impact crusher. The crushed material drops onto a moving conveyor belt and is transported to the stockpile. The product material is conveyed to one stockpile.

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 crushing plant (manufactured in 2011) because the maximum capacity of the facility is greater than 150 tons/hour, and the crushing plant were manufactured after August 31, 1983.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the 350 HP diesel engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not mobile/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 350 HP diesel engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not mobile/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 with operational limitations because potential emissions do not exceed BACT trigger levels (DE is Tier 4i with ULSD and Crushing Plant utilizes built-in wet spray systems would be BACT) . 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.

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 exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year (PM max 53 tn/yr).

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Fuel Tank
Diesel fuel tank

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine
The permittee may replace the tier 4i 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). (12 month Limit).

AIR POLLUTION CONTROLS

The crushing plant is equipped with a built-in water misting spay system 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

Operating hours for the crushing plant will be limited to 2,500 hours in any rolling twelve-month (12-month) period.

352 TPH Impact Crushing Plant
The maximum capacity of the crusher was used to calculate emissions. 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.

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.

253 TPH Crushing Plant						
Pollutant	Crushing Plant Emissions (TPY)		Storage Piles Emissions (TPY)		Unpaved Roads Emissions (TPY)	
	2,500 hr/yr	8,760 hr/yr	2,500 hr/yr	8,760 hr/yr	2,500 hr/yr	8,760 hr/yr
PM	0.81	2.85	0.94	3.30	9.34	32.74
PM-10	0.35	1.22	0.44	1.56	2.28	8.01
PM-2.5	0.08	0.27	0.07	0.24	0.23	0.80

350 BHP Scania DC09 70 A Diesel Engine Tier 4i
The 350 HP diesel engine is fired on fuel oil no. 2 ULSD with a maximum sulfur content not to exceed 15 ppm. CO, NO_X, PM, and TOC emissions were based on manufacturer's "not to exceed" data for Tier 4i. The mass balance method was used to determine SO_2 emissions. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines.

350 bhp Caterpillar Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.69	0.86	3.02
NO_X	1.79	2.24	7.84
SO_2	0.0048	0.01	0.02
PM	0.0104	0.01	0.05
PM-10	0.0104	0.01	0.05
PM-2.5	0.0104	0.01	0.05
TOC	0.01	0.01	0.05
HAPs	0.014	0.14	0.48

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	0.9	3.0	100	2,500 / 1000	250
NO_X	2.2	7.8	40	2,500 / 100	25
SO_2	0	0	40	2,500 / 100	25
PM	11.1	38	25	-	25
PM-10	3.1	10.8	15	250 / 100	25
PM-2.5	0.4	1.3	-	250 / 100	-
VOC	0.1	0.5	40	250 / 100	25
HAPs	0.01	0.04	-	-	5

Limited 2,500 hrs

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 CO_2 equivalent (CO_2e) 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 CO_2e subject to PSD or Title V permitting for GHG emissions before 2016. Total GHG emissions on a CO_2e basis using the global warming potential (GWP) of each GHG are determined in the table below.

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO_2e Based Emissions (TPY)
Carbon Dioxide (CO_2)	1	0.9	0.9
Methane (CH_4)	0	0	0
Nitrous Oxide (N_2O)	310	2.2	682
Total Emissions:			683

AIR QUALITY ASSESSMENT
The applicant used Aerscreen for the air quality assessment in Section H of the application. Aerscreen is a first tier review that uses worst case meteorological assumptions and site-specific land use parameters to provide a more conservative result. DOH checked the Aermod inputs.

An ambient air quality impact assessment (AAQIA), screening level, was performed for the 350 HP diesel engine powering the 352 TPH mobile crusher to demonstrate compliance with State and National ambient air quality standards. The AERSCREEN model was used for the analysis to determine maximum pollutant impacts. US EPA AERSCREEN , Version 11126, was used for the screening level modeling analysis. The ozone limiting method (OLM) for NO_2 was used within AERSCREEN with the NOx ratio set at 0.20. Downwash was also used within AERSCREEN. ULSD fuel oil no. 2 is used to control SOx.

MAKEMET subprogram addresses meteorology and surface characteristics
Surface terrain was flat with no terrain elevations
Surface characteristics Albedo=0.18 , Bowen ratio=0.8 and Roughness length=0.50 meter
Minimum temperature=294.3K, Maximum temperature=305.4K
Minimum wind speed=0.5m/s, default
Anemometer height= 10.00meter, default

Receptor Grid
Receptor grid spacing was set at 25 meters out to 5,000 meter distance.
Workspace area around crushing plant set at 25 meters

Dispersion Coefficient
Rural dispersion coefficient was selected.

Building Downwash
The EPA's Building Profile Input Program (BPIP) was used to evaluate downwash effects based on the plants track area dimensions.
Height 3.4m
Length 7.6m
Width 3.1m

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)
Diesel Engine Generator	0.085	0.135	0.0014	0.0014	0.0051	3.8	0.108	0.95	793

Results
The annual concentrations assume annual fuel limits equivalent to 2,500 hours/year. The table below shows the predicted ambient air quality impacts from the mobile crusher with diesel engine generator should comply with State and National ambient air quality standards

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
CO	1-hr	251	2404.5	2656	10000	40000	26.6%
	8-hr	176	1145	1321	5000	10000	26.4%
NO_2	1-hr[4]	127	41	168		188	89.6%
NO_2	Annual	17	7.5	24	70	100	35.1%
PM-10	24-hr	1.7	33	34.7	150	150	23.1%
	Annual	0.2	14	14.2	50	-	28.5%
PM-2.5	24-hr	1.7	14	15.7	-	35	44.8%
	Annual	0.2	5.7	5.9	-	15	39.6%

SO2	1-hr[4]	15.3	44	59		195	30.2%
SO_2	3-hr	13.7	31.3	45	1300	1300	3.5%
	24-hr	6.2	11.4	17.6	365	365	4.8%
	Annual	0.9	2.9	3.7	80	80	4.7%

notes:

1. 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. Background concentrations from 2010 Hawaii Air Quality Data. Maximum background concentrations for CO, NO_2, SO_2 and PM taken from Kapolei, Oahu (2010).
   PM-2.5 98th percentile used.
3. NO_X ratio of 0.20 used for 1-hr OLM analysis.
4. 1-hr NO_2 and SO_2 values also in ug/m^3.

SIGNIFICANT PERMIT CONDITIONS

1. The total operating hours of the 352 TPH mobile crushing plant and 350 HP diesel engine is limited to 2,500 hours per year, therefore an hour meter shall be required.
2. The 350 HP Tier 4i diesel engine shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed fifteen (15) ppm as required by the manufactures specifications.
3. The permittee shall not cause to be discharged into the atmosphere from the crusher, fugitive emissions which exhibit greater than twelve (12) percent opacity (construction after April 22, 2008).
4. 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 seven (7) percent opacity (construction after April 22, 2008).

CONCLUSION

Powerscreen of California application is for an initial permit to operate a 352 TPH mobile track mounted crushing plant in with built-in screen powered by a 350 HP Tier 4i diesel engine. Built-in water sprays will be used to control fugitive emissions. Potential emissions were based on the maximum rated capacities of the equipment.

The air quality assessment of the Tier 4i diesel engine demonstrated 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, thirty-day (30-day) public comment period, and forty-five-day (45-day) Environmental Protection Agency review period.

Gary Siu
February 2013