PROPOSED

TEMPORARY COVERED SOURCE PERMIT (CSP) APPLICATION REVIEW
Temporary CSP No. 0549-01-CT
Significant Modification Application No. 0549-03

Applicant: Keauhou Kona Construction Corporation (KKCC)
Facility: 325 and 950 TPH Portable Crushing and Processing Plants w/ 505 hp Cummins, 587 hp Caterpillar, 1110 hp Detroit, Diesel Engine Generators

New Location: The Shores of Kohanaiki, Kailua-Kona, Hawaii

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Standard Industrial Classification Code (SICC)
1429 Crushed and Broken Stone Basalt and Volcanic Rock

Abstract: This review applies to the significant modification application received January 24, 2006 which proposed the addition of one (1) 1110 hp Detroit Diesel diesel engine generator (DEG), model no. 16V-FO7336, identification no. 8163-7405, manufactured in 1987, to the above mentioned facility and CSP No. 0549-01-CT.

This review also responds to a letter from the applicant Keauhou Kona received on February 22, 2006 requesting the removal of the following equipment from the above mentioned facility and CSP No. 0549-01-CT.

1. 340-380 TPH Kue Ken primary jaw crusher, model no. 4236 (42" x 36"), serial no. 120M 5017, with stepped vibrating grizzly feeder, approximately 42" x 16";

2. 210 TPH Telsmith cone crusher, model no. 48S TEL, serial no. 202M 7274 with an El-Jay two deck screen, model no. 34D 0689, identification no. FSG 514 324;

3. 275 hp Caterpillar diesel engine, model no. 3306T, serial no. 7JB0 5489, servicing the 340-380 TPH Kue Ken primary jaw crusher; and

4. 360 kW Detroit Diesel diesel engine generator, model no. 8083-7400, serial no. 8VF11 2536.

Equipment: 325 TPH and 950 TPH portable crushing and processing plants encompassing the following equipment and associated appurtenances:

a. 200-325 TPH Minyu jaw crusher (30" x 42"), model no. MS-4230, serial no. 207 with El-Jay vibratory feeder (46" x 16');
b. 620-950 TPH Telsmith jaw crusher (38" x 58"), model no. 3858, serial no. 222M8214 with vibrating grizzly feeder (20' x 54");
c. 270-380 TPH Cedarapids cone crusher, model no. 1313, serial no. 23JO791; with Cedarapids three-deck screen, model no. FSG616332 (6' x 16'), identification no. 34G0689;
d. 505 hp Cummins diesel engine generator, model no. KT-1150-G, serial no. 31118276;
e. 587 hp Caterpillar diesel engine generator, model no. 3406C, serial no. 4ZR06944;
f. 1110 hp Detroit Diesel diesel engine generator, model no. 16V-FO7336, identification no.8163-7405, manufactured in 1987;
l. Various conveyors; and
m. Water spray system(s).

The Standard Industrial Classification Code for this facility is 1429 (Crushed and Broken Stone, Not Elsewhere Classified).

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Background

KKCC has submitted an application for a significant modification to add a 1110 hp diesel engine generator to their temporary covered source permit. Power for the plant will be provided by the newly added 1110 hp DEG or any of the two existing DEGs because there is no dedicated diesel engine built into the plant for its operation. Typical operating hours for the facility is 8 hours per day, 5 days per week.

From the previous permit modification, KKCC requested that:

a. The 950 TPH jaw crushing plant can run with the secondary jaw crusher;

b. The 950 TPH jaw crushing plant can run with any of the existing permitted diesel engine generators;

c. Each primary crusher can operate simultaneously at different locations with one secondary crusher and one diesel engine generator;

d. The 950 TPH jaw crushing plant is allowed to operate as much as 2,500 hr/yr; and

e. Each diesel engine generator is allowed to operate as much as 22 hours per day.

Applicable Requirements

Hawaii Administrative Rules (HAR)

Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1, Subchapter 1, General Requirements
Chapter 11-60.1, 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
Chapter 11-60.1, Subchapter 5, Covered Sources
Chapter 11-60.1, 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
Chapter 11-60.1, Subchapter 8, Standards of Performance for Stationary Sources
11-60.1-161, New Source Performance Standards
Chapter 11-60.1, Subchapter 10, Field Citations

Synthetic Minor

The facility is a synthetic minor source because limits have been imposed to restrict the facility from exceeding major source levels for NO_X and PM and PM-10 if operated at 8,760 hr/yr. Note that all fugitive particulate emissions are considered for the major source determination because the facility is in a listed category of sources specified in the definition of "major source."

Non-Applicable Requirements

40 Code of Federal Regulations (CFR) Part 60-New Source Performance Standards (NSPS), Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the crushing and screening equipment because the equipment was manufactured after 1983 and the primary crushers have a capacity greater than 150 TPH. There are no

requirements in Subpart OOO for DEGs.

The facility is not a major stationary source for hazardous air pollutants (HAPs) and is not subject to National Emissions Standards for Hazardous Air Pollutants (NESHAPS) or Maximum Achievable Control Technology (MACT) requirements under 40 CFR, Parts 61 and 63.

The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR, 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 precontrol emissions that are greater than the major source level; and (5) not otherwise be exempt from CAM. CAM is not applicable to because this facility does not meet all of the above requirements.

Prevention of Significant Deterioration (PSD) review applies to new major stationary sources and major modifications to these types of sources. This facility is not a major source for any single air pollutant. As such, PSD review is not required.

A Best Available Control Technology (BACT) analysis is not required for the modification to add a 1110 hp diesel engine generator because emissions do not exceed significant levels as defined in HAR, Section 11-60.1-1.

Annual emissions reporting is required because this facility is a covered source.

The Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the added diesel engine generator are less than reporting levels pursuant to 40 CFR 51, Subpart A (see table below).

Pollutant	Stone Plant Emissions (TPY)	CERR Triggering Levels (TPY)	
		3 Year Cycle (Type A Sources)	1 Year Cycle (Type B Sources)
PM-10	28.2	≥ 100	≥ 250
SO_2	8.8	≥ 100	≥ 2,500
NO_x	68	≥ 100	≥ 2,500
VOC	4.3	≥ 100	≥ 250
CO	15.9	≥ 1,000	≥ 2,500

Insignificant Activities and Exemptions
There were no reported insignificant activities or exemptions.

Alternate Operating Scenarios
The applicant proposed an alternate temporary replacement for the 1110 hp diesel engine

generator if any situation reasonably warrants removal of the diesel engine generator, for example, engine failure, or a need for engine overhaul. The replacement engine shall have equal or less emissions than the original engine. The

replacement diesel engine generator shall comply with the same terms and conditions as the initial DEG. The permittee shall submit the necessary information to the Department, with the Department's approval, prior to installing the replacement.

Air Pollution Controls

The 1110 hp diesel engine generator will be fired on fuel oil no. 2 with less than or equal to 0.5 percent sulfur content by weight to minimize sulfur dioxide emissions.

Project Emissions

Emissions factors for the 1110 hp Detroit Diesel diesel engine generator are taken from AP - 42, Oct. '96, as follows:

1. For the criteria pollutants, Table 3.4-1"Emission Factors Large Stationary Diesel Engines";
2. For particulate matter less than 10 micrometers, and particulate matter less than 2.5 micrometers, AP-42, Appendix B.2 (9/90), Table B.2-2, Description of Particle Size Categories, Category: 1; Process: Stationary Internal Combustion Engines; Material: Gasoline and Diesel Fuel, 96% PM = PM_{10}, and 90% PM = $PM_{2.5}$, and
3. For hazardous air pollutants (HAPs), AP-42, Table 3.4-3 Speciated Organic Compound Emission Factors.

A maximum fuel consumption of 59.9 gal/hr was used for the calculations. Emission rates were calculated on the permitted 2,080 hour per year operation, a 19,300 Btu/lb fuel heating value, and a fuel density of 7.1 lb/gal for diesel fuel oil no. 2 with less than 0.5 % sulfur by weight. Emissions are summarized below.

1110 hp Detroit Diesel Diesel Engine Generator Emissions				
Criteria Pollutant	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr) / (g/s)	Annual Emissions (TPY)	
			2,500 hr/yr	8,760 hr/yr
NO_X	3.2	26.3 / 3.31	27	115
CO	0.85	6.98 / 0.88	7	31
SO_2	0.505	4.25 / 0.54	4	18
PM	0.1	0.82 / 0.10	1	4
PM-10	0.1	0.82 / 0.10	1	4
PM-2.5	0.1	0.82 / 0.10	1	4
TOC	0.09	0.74 / 0.09	1	3

[a] Assumes that all sulfur in the fuel is converted to SO_2 . 1.01 S. S = per cent sulfur in fuel, 0.5 = 0.5. 1.01 x 0.5 = 0.505

[b] Based on AP-42, Appendix B.2 (9/90), Table B.2-2, Description of Particle Size Categories, Category: 1; Process: Stationary Internal Combustion Engines; Material: Gasoline and Diesel Fuel,

96% PM = PM_{10} and 90% PM = $PM_{2.5}$.

1110 hp Diesel Engine Generator Hazardous Air Pollutants Emissions				
Pollutant	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)/(g/s)	Annual Emission (TPY)	
			2500 hr/yr	8760 hr/yr
benzene	0.00078	/	0.007	0.03
toluene	0.00028	/	0.002	0.01
xylenes	0.00019	/	0.002	0.007
propylene	0.0028	/	0.02	0.10
formaldehyde	0.000079	/	0.0007	0.003
acetaldehyde	0.000025	/	0.0002	0.001
acrolein	0.000008	/	0.000070	0.0003
naphthalene	0.00013	/	0.008	0.005
Totals			0.04	0.16

Facility-wide emissions for operation of the 325 TPH and 950 TPH crushing and processing plants are listed as follows:

Total Plant - Wide Emissions		
Pollutant	Potential Emission (TPY) [Proposed controls at 2,500 hr/yr] Previous / New Modification	Potential Emission (TPY) [Proposed controls at 8,760 hr/yr] Previous / New Modification
CO	15.3 / 15.9	16.8 / 25.5
NO_x	70.7 / 68	247.6 / 258.5
SO_2	8.2 / 8.8	28.9 / 34.8
PM	78.5 / 67	275.3 / 242.4
PM-10	29.3 / 28.2	102.6 / 99.2
PM-2.5	9.9 / 8.9	34.9 / 31.9
VOC	5.7 / 4.3	20.3 / 14.7
HAPs	0.097 / 0.096	0.339 / 0.355

Air Quality Assessment

An air modeling assessment was conducted for the 1110 hp diesel engine generator using Screen3. The Screen3 maximum 24-hour concentration 146.7 micrograms per cubic meter was divided by the complex terrain valley conversion factor 0.25 resulting in a one-hour normalized concentration of 586.8 micrograms per cubic meter per gram per second.

NO_2 concentration was determined using the ozone limiting method. The O_3 background value of 34 micrograms per cubic meter was obtained from Sand Island, Table 4-8 Annual Summary of One-Hour Ozone, 2004 Annual Summary Hawaii Air Quality Data.

The background concentrations were obtained from HELCO Huehue post-construction ambient air monitoring data, August 1, 2004 to July 31, 2005.

The table below presents the potential emission rates and stack parameters used in the air modeling assessment.

SOURCE EMISSION RATES AND STACK PARAMETERS FOR AIR MODELING

SOURCE		EMISSION RATES				STACK PARAMETERS			
Equipment	Stack No.	SO_2 (g/s)	NO_X (g/s)	CO (g/s)	PM_{10} (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
1110 hp Diesel Engine Generator	3	0.536	3.31	0.879	0.103	8.0	722	204.55	0.1016

The predicted concentration in the following table assumed 2,080 hour per year operation and the maximum g/s emission rates. Based on these assumptions, the emissions impact from the diesel engine generator will comply with state and federal ambient air quality standards.

PREDICTED AMBIENT AIR QUALITY IMPACT OF THE ADED 1110 HP DEG

AIR POLLUTANT	AVERAGING TIME	IMPACT (ug/m^3)	BACKGROUND (ug/m^3)	TOTAL IMPACT (ug/m^3)	AIR STANDARD (ug/m^3)	PERCENT STANDARD
Sulfur Dioxide	3-Hour	283	63	346	1,300	27
	24-Hour	126	24	150	365	41
	[a]Annual	14.9	4.5	19	80	24
Nitrogen Dioxide[b]	[a]Annual	41.8	2	44	70	63
Carbon Monoxide	1-Hour	516	1151	1,667	10,000	17
	8-Hour	361	911	1,272	5,000	25
PM-10	24-Hour	24.3	24.3	49	150	32
	[a]Annual	2.9	14.6	18	50	35

a Concentration reduced by a factor of 2,050/8,760 to account for a 2,050 hour per year operating limit for the 1110 hp diesel engine generator.

b $NO_2 = NO_X$

Significant Permit Conditions

1 The total operating hours of the added 1110 hp diesel engine generator shall not exceed 2,080 hours of operation in any rolling twelve (12) month period.

2. The permittee shall install, operate, and maintain a non-resetting hour meter on the 1110 hp diesel engine generator for the continuous and permanent recording of the number of hours operated.

Reasons for 1 and 2:

The hour limit was incorporated into the permit to limit the 1110 diesel engine generator's hours of operation to 2,080 hours per year as proposed by the applicant.

The 325 TPH and 950 TPH primary plants can be powered with electricity from any of the three diesel engine generators. The 325 TPH and 950 TPH plants do not have a dedicated engine. Therefore, these plants require an hour meter. The hours of operation for the secondary crushing and screening depend on those for the primary plants because the secondary plants will only operate when the primary plants are running. Both the 22 hr/day and 2,500 hr/yr operating limits are required for the each diesel engine generator to comply with the ambient air quality standards for operation at the same location worst-case.

3 The minimum stack height for the 1110 hp diesel engine generator shall be thirty 8 meters (about 26 feet - 3 inches).

Reason for 3

The minimum stack height requirements were incorporated for the newly added 1110 hp diesel engine generator to show compliance with air standards for operation of all the equipment at one location worst-case.

Conclusion

Based on the information submitted by the applicant, it is the determination of the Hawaii Department of Health that the proposed addition of the 1110 hp DEG will be in compliance with the Hawaii Administrative Rules, Chapter 11-60.1, and will not cause or contribute to a violation of any state or national ambient air quality standards.

Actual emissions from the 1110 tph diesel engine generator should be lower than estimated because potential emissions were based on operation of the DEG at maximum capacity. DEG operation is not expected to reach maximum capacity for every moment in time. Hour limits on the diesel engines ensures compliance with state and federal ambient air quality standards. The Hawaii DOH intends to issue this CSP no. 0549-01-CT, subject to permit conditions, the 30-day public comment period, and 45-day EPA review period. When issued, this permit will supersede CSP No. 0549-01-CT, issued on April 12, 2005, in its entirety.

Glenn Nagamine
June 27, 2006