PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0766-01-CT
Application for Significant Modification No. 0766-02

Company: B.J. Rees's Enterprise

Mailing Address: P.O. Box 358
Coalville, Utah 84017

Facility: 925 TPH Crushing and Screening Plant

Location: Various Temporary Sites, State of Hawaii

Initial Location: Pohakuloa Training Area (PTA) Quarry, Pohakuloa, Hawaii

SIC Code: 1442 (Construction Sand and Gravel)

Responsible Official: Mr. Blaine J. Rees
Owner
(435) 336-5345

Contact: Mr. Charles M. Olson
Manager
(435) 336-5345

Equipment:

Existing 925 TPH Stone Processing Plant with:

1. Trio vibrating grizzly feeder, serial no. TF5220011Y, (equipment no. 1196);
2. 925 TPH Trio jaw crusher, serial no. TJ32X54, mfg date 2004, (equipment no. 1195);
3. 800 TPH JCI 3-deck screen (6' x 20'), serial no. 99H05A32, mfg date 1997, (equipment no. 997);
4. 500 TPH Canica impact crusher, model no. VSI 105, serial no. 105 148-96, mfg date 1996, (equipment no. 1371);
5. 500 TPH Nordberg cone crusher, model no. G-Cone, serial no. 20552793, mfg date 2004, (equipment no. 1211);
6. 800 TPH JCI 3-deck screen (6' x 20'), serial no. S041299, mfg date 2006, (equipment no. 1278);
7. 500 TPH Canica impact crusher, model no. VSI 105, serial no. 105176, mfg date 1999, (equipment no. 1065);
8. 800 TPH ElJay 3-deck screen (6' x 20'), serial no. 43A0491, mfg date 1990, (equipment no. 854);
9. 1,500 kW Caterpillar diesel engine generator, model nos. SR4B (generator set) and 3512 (engine), serial no. SBG00604, mfg date 2008;
10. Water spray systems; and
11. Various conveyors.

Equipment added in modification:

12. 925 TPH Trio vibrating grizzly feeder, serial no. TF582006, mfg date 2005, (equipment no. 1250);
13. 500 TPH Nordberg crusher, model no. NP1415, serial no. TJ32X54 2052004, mfg date 2005, (equipment no. 1240);
14. 925 TPH 3-deck screen (6' x 20'), serial no. TBD, mfg date 2009, (equipment no. TBD);
15. 500 TPH Canica crusher, model no. VSI 155, serial no. 155 134-02, mfg date 2002, (equipment no. 1371);
16. 800 TPH 3-deck screen (6' x 20'), serial no. TBD, mfg date 2009, (equipment no. TBD); and
17. 1,000 kW Caterpillar C32 diesel engine generator, serial no. SYC03981, mfg date 2008, (equipment no. 1349).

BACKGROUND

B.J. Rees's Enterprise has submitted an application for a significant modification. The stone processing plant consists of various crushers and screens, powered by diesel engine generators. The total operating hours of the proposed stone processing plant will be limited to 3,200 hours in any rolling twelve-month (12-month) period. Water spray systems and a water truck will be used to control fugitive emissions.

This review will consider equipment emissions from both existing equipment and equipment added in the modification for determining applicability. All equipment listed is currently not located in Hawaii. Permittee was waiting for a winning bid and is now currently making arrangements to start shipping.

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 crushers and screens because they were manufactured after August 31, 1983, and the maximum capacity of all crushers are greater than one-hundred and fifty (150) TPH. The 925 TPH 3-deck screen and 800 TPH 3-deck screen were manufactured after April 22, 2008, and subject to the post April 22, 2008 opacity requirements.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable to the 1,500 kW diesel engine generator (manufactured 1/19/2008) and 1,000 kW diesel engine generator (manufactured 10/01/2008) because the units commenced construction after July 11, 2005, and were manufactured after April 1, 2006. For purposes of Subpart IIII, the date that construction commences is the date the engine is ordered. Manufacturer's specifications indicate the diesel engine generators are EPA Tier 2 certified.

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 applicable to the 1,500 kW and 1,000 kW diesel engine generators because the engines are a new stationary RICE. A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary rice on or after June 12, 2006. A new stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply for such engines under this part.

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.

Air Emissions Reporting Requirements (AERR), 40 CFR Part 51, Subpart A

AERR is not applicable because potential emissions from the facility do not exceed AERR thresholds.

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.

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 NOx emissions do exceed major source thresholds (100 TPY) when the facility is operated at its maximum capacity continuously for 8,760 hours per year. The plant is not an SM-80 source because the PTE for NOx is 38.64 TPY with the annual operating limit.

Best Available Control Technology (BACT)

A best available control technology analysis is required because potential facility emissions from this permit application are above significant emission levels as defined in HAR, Section 11- 60.1. Due to equipment from initial permit not being operated, all equipment emissions were counted toward the BACT analysts.

PM BACT
Water sprays will be used throughout the facility to control PM emission which is considered BACT.

BACT Trigger Levels (TPY)			
Pollutant	Emissions [a] (with Limits)	BACT Significant Level	Significant
CO	12.35	100	No
NO_X	38.64	40	No
SO_2	0.04	40	No
PM	32.35	25	Yes
PM-10	11.79	15	No
PM-2.5	2.51	10	No
VOC	1.49	40	No

[a] Represents emissions from the operation of one of the two diesel engines generators. The DEG w/ higher emissions and emissions from crushing activities.

Greenhouse Gas Tailoring Rule

Total GHG emissions on a CO_2e basis using the global warming potential (GWP) of the GHG are shown in the table below.

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO_2e Based Emissions (TPY)
Carbon Dioxide (CO_2)	1	16,004.17	17,641.40
CH_4	25	38.69	42.65
N_2O	298	16.23	17.89
Total Emissions:			17,701.93

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

There are no insignificant activities identified by the applicant.

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine Generator

The permittee may replace the 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 generator from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation). The requirements are located in Special Condition No. C.7.

AIR POLLUTION CONTROLS

The stone processing plant is 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

Operating hours for the stone processing plant will be limited to 3,200 hours in any rolling twelve-month (12-month) period. Water will be used as necessary to control fugitive dust emissions

Stone Processing Equipment Added in Modification

The maximum capacities of each crusher and screens were used to calculate emissions, although only a percentage of material will be processed by the secondary crushers and screens. 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 8.19.1 (4th ed.) - Sand and Gravel Processing. Vehicle travel on unpaved roads emissions were based on emission factors from AP-42 Section 13.2.2 (11/06) – Unpaved Roads. A seventy (70) percent control efficiency was assumed for water suppression to control fugitive dust.

Existing Stone Processing Equipment					
Pollutant	Stone Processing Plant Emissions (TPY)		Wind Erosion Emissions (TPY)	Unpaved Roads Emissions (TPY)	
	3,200 hr/yr	8,760 hr/yr	8,760 hr/yr	3,200 hr/yr	8,760 hr/yr
PM	21.11	57.78	0.38	20.06	54.93
PM-10	7.63	20.88	0.18	4.91	13.43
PM-2.5	1.34	3.67	0.02	0.49	1.34

Modification 0766-02 Stone Processing Equipment					
Pollutant	Stone Processing Plant Emissions (TPY)		Wind Erosion Emissions (TPY)	Unpaved Roads Emissions (TPY)	
	3,200 hr/yr	8,760 hr/yr	8,760 hr/yr	3,200 hr/yr	8,760 hr/yr
PM	10.53	28.81	0.19	10.85	29.69
PM-10	3.48	9.52	0.09	2.65	7.26
PM-2.5	0.54	1.49	0.01	0.27	0.73

1,500 kW Caterpillar Diesel Engine Generator

The 1,500 kW diesel engine generator is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions for CO, NOx, PM, and VOC were based on manufacturer's data. SO_2 emissions were based on mass balance and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) – Large Stationary Diesel and All Stationary Dual-fuel Engines.

1,500 kW Caterpillar Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,200 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	2.19	3.50	9.59
NO_X	24.15	38.64	105.78
SO_2	0.02	0.04	0.10
PM	0.14	0.22	0.61
PM-10	0.13	0.22	0.59
PM-2.5	0.13	0.20	0.55
TOC	0.53	0.85	2.32
HAPs	0.02	0.04	0.10

1,000 kW Caterpillar Diesel Engine Generator

The 1,000 kW diesel engine generator is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions for CO, NOx, and PM were based on EPA Tier 2 levels. SO_2, TOC, and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) – Large Stationary Diesel and All Stationary Dual-fuel Engines.

1,000 kW Caterpillar Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,200 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	7.72	12.35	33.80
NO_X	14.11	22.58	61.80
SO_2	0.003	0.01	0.01
PM	0.44	0.71	1.93
PM-10	0.42	0.68	1.85
PM-2.5	0.40	0.63	1.74
TOC	0.93	1.49	4.08
HAPs	0.02	0.03	0.07

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)									
Pollutant	Previous crushing equipment emissions* 3,200 hr/yr	Modification crushing emissions* 3,200 hr/yr	Worst case emissions from one DEG 3,200 hr/yr	Total emissions* 3,200 hr/yr	AERR	DOH Levels	Emissions* 8,760 hr/yr	Wind erosion and vehicle travel emissions	
								Limited	8,760 hr/yr
CO	-	-	12.35	12.35	1000	250	33.80	0	0
NO_X	-	-	38.64	38.64	100	25	105.78	0	0
SO_2	-	-	0.04	0.04	100	25	0.10	0	0
PM	21.11	10.53	0.71	32.35	-	25	88.53	31.48	85.19
PM-10	7.63	3.48	0.68	11.79	100	25	32.25	7.83	20.96
PM-2.5	1.34	0.54	0.63	2.51	100	-	6.90	0.79	2.1
VOC	-	-	1.49	1.49	100	25	4.08	0	0
HAPs	-	-	0.04	0.04	0.5 Actual Lead	5	0.10	0	0

*Does not include wind erosion and vehicle travel.

AIR QUALITY ASSESSMENT

An ambient air quality analysis (AAQA) was conducted for the 1,500 kW and 1,000 kW diesel engine generators to demonstrate compliance with state and national ambient air quality standards. The permit only allows the operation of one unit per site. The Lakes Environmental AERMOD View, Version 9.1.0, was used for the modeling analysis.

The predicted concentrations assumes operation at proposed 8,760 hr/yr, and ultra low sulfur diesel with sulfur content of 0.0015% by weight. Based on these assumptions, the facility should comply with State and Federal AAQS for CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ as shown below (Pb and H_2S assumed to be negligible).

Terrain

SRTM version three (3) topographical data with a thirty (30) meter resolution was used for executing the model runs.

Meteorological data

Meteorological data from Kona Airport (2008 – 2012) was used for the analysis.

Receptor Grid

Receptor grid covering an area of approximately 7.1 km^2 consisting of 8100 receptors was used. The facility is fenced and restricted.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Ozone Limiting Method (OLM)

The in stack ratio of NO2 to NOX of 0.20 and a default NO2/NOX equilibrium ratio of 0.9 was used for the ozone limiting method based on data from the San Joaquin APCD for internal combustion engines fired on diesel fuel.

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 (lb/hr)					Stack Parameters			
	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	Height (FT)	Exhaust Diameter (FT)	Flow Rate (CFM)	Temp (°F)
1,500 kW DEG	2.19	24.15	0.13	0.13	0.02	13.6	0.67	11061	763.5

Air Pollutant	Averaging Time	Impact (µg/m³)	Background * (µg/m³)	Total Impact (µg/m³)	SAAQS (µg/m³)	NAAQS (µg/m³)	Total Impact Compared to SAAQS and NAAQS
CO	1-hr	72.68	3092	**3164.68**	10000	40000	31.6%
	8-hr	48.78	1450	**1498.78**	5000	10000	30.0%
NO_2	1-hr	128.31	47	**175.31**	-	188	93.3%
	Annual	7.24	7	**14.24**	70	100	20.3%
SO_2	1-hr	0.49	54	**54.49**	-	196	27.8%
	3-hr	0.54	50	**50.54**	1300	1300	3.9%
	24-hr	0.20	20	**20.20**	365	365	5.5%
	Annual	0.01	4	**4.01**	80	80	5.0%
PM_{10}	24-hr	1.28	31	**32.28**	150	150	21.5%
	Annual	0.04	15	**15.04**	50	-	30.1%
$PM_{2.5}$	24-hr	0.78	10.7	**11.48**	-	35	32.8%
	Annual	0.04	4.6	**4.64**	-	15	30.9%

* Background concentrations (2014 Hawaii Air Quality Data) from Kapolei. NO_2 (1-hr) is the 98th percentile averaged over 3 years and PM-2.5 (24-hr) is the 99th percentile averaged over 3 years.

Source	Emission Rates (lb/hr)					Stack Parameters			
	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	Height (FT)	Exhaust Diameter (FT)	Flow Rate (CFM)	Temp (°F)
1,000 kW DEG	7.72	12.05	0.42	0.40	0.02	13.6	0.67	8387	964.9

Air Pollutant	Averaging Time	Impact (µg/m³)	Background * (µg/m³)	Total Impact (µg/m³)	SAAQS (µg/m³)	NAAQS (µg/m³)	Total Impact Compared to SAAQS and NAAQS
CO	1-hr	270.13	3092	**3362.13**	10000	40000	33.6%
	8-hr	187.13	1450	**1637.13**	5000	10000	32.7%
NO_2	1-hr	91.33	47	**138.33**	-	188	73.6%
	Annual	5.29	7	**12.29**	70	100	17.6%
SO_2	1-hr	0.53	54	**54.53**	-	196	27.8%
	3-hr	0.57	50	**50.57**	1300	1300	3.9%
	24-hr	0.19	20	**20.19**	365	365	5.5%
	Annual	0.01	4	**4.01**	80	80	5.0%
PM_{10}	24-hr	4.98	31	**35.98**	150	150	24.0%
	Annual	0.19	15	**15.19**	50	-	30.4%
$PM_{2.5}$	24-hr	2.75	10.7	**13.45**	-	35	38.4%
	Annual	0.18	4.6	**4.78**	-	15	31.9%

* Background concentrations (2014 Hawaii Air Quality Data) from Kapolei. NO_2 (1-hr) is the 98th percentile averaged over 3 years and PM-2.5 (24-hr) is the 99th percentile averaged over 3 years.

SIGNIFICANT PERMIT CONDITIONS

1. The total operating hours of the crushing plants shall not exceed 3,200 hours in any rolling twelve-month (12-month) period at any single location. The total operating hours of the crushing plants at a single location shall be represented by the total combined operating hours of the diesel engine generators at that location.

   Maintain following records to insure hours of operation:

   a. Date of meter readings;
   b. Location of the diesel engine generator;
   c. Beginning and ending meter readings for each month for each location;
   d. Total individual and combined hours of operation for the two diesel engine generators for each month for each location; and
   e. Total combined hours of operation for the two diesel engine generators on a rolling twelve-month (12-month) basis for each location.

   Reason: Customer requested limit in permit to maintain NOx emissions below major source level.

2. Fugitive Emission Limits

   a. For equipment that commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008:

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

   b. For equipment that commenced construction, modification, or reconstruction on or after April 22, 2008:

      i. The permittee shall not cause to be discharged into the atmosphere from any crusher, fugitive emissions which exhibit greater than twelve (12) percent opacity.
      ii. 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.
      iii. The permittee shall not cause to be discharged into the atmosphere from the baghouse, stack emissions which exhibit greater than seven (7) percent opacity.

   Reason: The stone processing plant is subject to Subpart OOO.

3. Diesel Engine Generators

   a. The 1,500 kW and 1,000 kW diesel engine generators shall not operate simultaneously at any single location;
   b. The total combined hours of operation of the diesel engine generators at any single location shall not exceed 3,200 hours in any rolling twelve-month (12-month) period.

c. The diesel engine generators shall be fired only on ultralow sulfur diesel fuel with the following specifications:

   i. Maximum sulfur content of 0.0015% by weight; and
   ii. Minimum cetane index of forty (40) or maximum aromatic content of thirty-five (35) percent by volume.

Reason: Operation of both units fails the 1-hour NOx AAQA standard and 40 CFR 60 Subpart IIII fuel requirements for the diesel engine generator.

4. Incorporate provisions of 40 CFR 60 Subpart OOO.

Reason: The stone processing plant is subject to Subpart OOO.

CONCLUSION

B.J. Rees's Enterprise submitted an application for a significant modification to operate additional equipment at the stone processing plant. Actual emissions should be less than those estimated. Potential emissions were based on the maximum capacities of the crushers, screens, and diesel engine generators. The secondary crushers and screens will process only a percentage of material processed by the primary crusher. Water sprays will be used to control fugitive emissions.

Recommend issuance of the temporary covered source permit subject to the incorporation of the significant permit conditions, thirty (30) day public comment period, and forty-five (45) day Environmental Protection Agency review period.

Joseph Baumgartner
June 17, 2016