

**PERMIT APPLICATION REVIEW  
 TEMPORARY COVERED SOURCE PERMIT No. 0603-01-CT  
 Application for Significant Modification No. 0603-03**

**Company:** E. M. Rivera & Sons, Inc.

**Mailing Address:** P.O. Box 9031  
 Kailua-Kona, Hawaii 96745

**Facility:** 730 TPH and 505 TPH Portable Crushing Plants

**Location:** Various Temporary Sites, State of Hawaii

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

**Responsible Official:** Mr. Hiram Rivera  
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**Consultant:** CFM Environmental LLC  
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**Equipment:** The facility encompasses the following equipment and associated appurtenances.

<b>Facility Equipment</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Manuf. Date</b>
730 TPH Primary Jaw Crusher	Pioneer	4248	4248-96	1994
503 hp Diesel Engine	Caterpillar	3408	67U-16687	1994
505 TPH Primary Jaw Crusher	Terex/Cedarapids	Cobratrack 1100	53224	2005
300 hp Diesel Engine	Cummins	QSL-9	46426239	2005
1,005 TPH Secondary Cone Crusher	Telsmith	56021	63404	1966
475 hp Diesel Engine Generator	Caterpillar	3406CDITA	4JK00154	2003
Water Spray Systems				
Various Conveyors				

**BACKGROUND**

E. M. Rivera & Sons has submitted an application for a significant modification for their temporary covered source permit. The modification consists of the addition of the following equipment, which are also permitted under noncovered source permit no. 0554-01-NT:

- 1,005 TPH Telsmith Style S Cone Crusher, model no. 56021, serial no. 63404; and
- 475 hp Caterpillar diesel engine generator, model no. 3406CDITA, serial no. 4JK00154.

The 1,005 TPH secondary crushing plant, powered by a 475 hp diesel engine generator, will only be operated as a secondary crusher with either of the permitted primary crushing plants. The primary and secondary crushing plants will be connected by conveyors. The operating hours for the 1,005 TPH crushing plant and 475 hp diesel engine generator will be limited to 2,080 hours in any rolling 12-month period. Fugitive emissions will be controlled by water sprays. Stockpiles and plant area will be controlled by an existing water truck.

There are no proposed changes for existing equipment 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 730 TPH and 505 TPH portable crushing plants because the maximum capacity of each crusher is greater than 150 tons/hour and were manufactured after August 31, 1983.

Subpart OOO is not applicable to the 1,005 TPH crusher plant because it was manufactured in 1966.

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 manufactured before April 1, 2006.

### 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 (RICE) is not applicable to the diesel engines and diesel engine generator because the engines are classified as existing sources (constructed before June 12, 2006). An existing compression ignition (CI) stationary RICE does not have to meet the requirements of this subpart and of subpart A of this part.

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 the potential to emit emissions due to the modifications (1,005 TPH crusher with 730 TPH primary crusher and 475 hp DEG) are below the significant levels as shown in the table below. 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.

<b>BACT</b>		
Pollutant	Potential Emissions (TPY)	Significant Levels (TPY)
CO	4.8	100
NO <sub>x</sub>	9.8	40
SO <sub>2</sub>	1.8	40
PM	3.9	25
PM-10	2.4	15
VOC	1.1	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 a synthetic minor source because potential emissions NO<sub>x</sub> and PM exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

**INSIGNIFICANT ACTIVITIES / EXEMPTIONS**

Storage Tanks

The following storage tanks are less than 40,000 gallons and are considered insignificant in accordance with HAR 11-60.1-82(f)(1):

1. One 500 gallon fuel oil no. 2 storage tank.

**ALTERNATIVE OPERATING SCENERIOS**

Diesel Engines and Diesel Engine Generator

The permittee may replace each diesel engine or 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/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**

Fugitive Emissions

The crushing plants are equipped with water spray systems to control fugitive emissions from crushing operations. A water truck will be used to control fugitive emissions for the stockpiles, yard area, and unpaved roads.

**PROJECT EMISSIONS**

Emission calculations are attached to this review. The operating hours of the crushing plants, diesel engines, and diesel engine generators will be limited to 2,080 hours in any rolling 12-month period. The 1,005 TPH secondary cone crusher shall only be operated with either primary crushers. The maximum emission occur when operated with the 730 TPH crusher.

730 TPH Primary Jaw Crusher with 1,005 TPH Secondary Cone Crusher

Emissions were based on the maximum capacity of the 730 TPH primary jaw crusher. The secondary cone crusher will be limited in production by the primary jaw crusher. Water spray systems will be used to control PM emissions. The controlled emissions factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions.

<b>730 TPH Primary and 1,005 TPH Secondary Crushers</b>		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	2.48	10.46
PM-10	1.04	4.39
PM-2.5	0.21	0.90

505 TPH Primary Jaw Crusher

Emissions were based on the maximum capacity of the 505 TPH primary jaw crusher. Water spray systems will be used to control PM emissions. The controlled emissions factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions.

<b>505 TPH Jaw Crusher</b>		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.94	3.96
PM-10	0.39	1.65
PM-2.5	0.08	0.35

475 hp Caterpillar Diesel Engine Generator

The diesel engine generator is fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight, and a maximum fuel consumption of 24.2 gallons/hour. Emissions were based on manufacturer's data. HAP 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 SO<sub>2</sub> emissions.

<b>475 hp Diesel Engine Generator</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	4.62	4.80	20.24
NO <sub>x</sub>	9.42	9.80	41.26
SO <sub>2</sub>	1.72	1.78	7.52
PM	1.34	1.39	5.87
PM-10	1.34	1.39	5.87
PM-2.5	1.34	1.39	5.87
TOC	0.15	0.16	0.66
HAPs	0.013	0.013	0.055

503 hp Caterpillar Diesel Engine

The diesel engine is fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight, and a maximum fuel consumption of 26.2 gallons/hour. 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 SO<sub>2</sub> emissions.

## PROPOSED

<b>503 hp Diesel Engine</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	3.48	3.62	15.26
NO <sub>x</sub>	16.18	16.82	70.85
SO <sub>2</sub>	1.86	1.93	8.14
PM	1.14	1.18	4.98
PM-10	1.14	1.18	4.98
PM-2.5	1.14	1.18	4.98
TOC	1.32	1.37	5.78
HAPs	0.014	0.014	0.061

### 300 hp Cummins Diesel Engine

The diesel engine is fired on fuel oil No. 2 with less than 0.5% sulfur by weight, with a maximum fuel consumption of 14.75 gallons/hour. Emissions were based on emission factors from manufacturer's data. HAP 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 SO<sub>2</sub> emissions.

<b>300 hp Diesel Engine</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.94	0.97	4.11
NO <sub>x</sub>	2.81	2.92	12.32
SO <sub>2</sub>	1.05	1.09	4.58
PM	0.08	0.08	0.35
PM-10	0.08	0.08	0.35
PM-2.5	0.08	0.08	0.35
TOC	2.81	2.92	12.32
HAPs	0.008	0.008	0.034

### Storage Piles

Emissions were based on the maximum capacities of the 730 TPH and 505 TPH crushing plants to process a total of 1,235 TPH of material. A 70% control efficiency was assumed for water suppression to control fugitive dust. Emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles.

<b>Storage Piles</b>		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	10.93	46.02
PM-10	5.17	21.77
PM-2.5	0.78	3.30

### Truck Travelling on Unpaved Road

Emissions were based on the maximum capacities of the 730 TPH and 505 TPH crushing plants to process a total of 1,235 TPH of material. A 70% control efficiency was assumed for

water suppression to control fugitive dust. Emissions were based on emission factors from AP-42 Section 13.2.2 (11/06) - Unpaved Roads.

<b>Truck Travelling on Unpaved Road</b>		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	27.28	114.88
PM-10	6.67	28.09
PM-2.5	0.67	2.81

Total Emissions

Total facility emissions are summarized in the table below.

<b>Total Facility Emissions and Trigger Levels (TPY)</b>					
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	9.4	39.6	100	2,500 / 1000	250
NO <sub>x</sub>	29.5	124.4	40	2,500 / 100	25
SO <sub>2</sub>	4.8	20.2	40	2,500 / 100	25
PM	44.7	188.4	25	-	25
PM-10	16.9	71.3	15	250 / 100	25
PM-2.5	5.7	24.1	-	250 / 100	-
VOC	4.5	18.8	40	250 / 100	25
HAPs	0.04	0.15	-	-	5

**AIR QUALITY ASSESSMENT**

An ambient air quality impact assessment (AAQIA) is generally required for new sources or modified sources with emission increases. An AAQIA was performed for the 475 hp diesel engine generator under NSP no. 0554-01-NT, and therefore is part of the existing background concentrations. The AAQIA under NSP no. 0554-01-NT showed compliance with State and National ambient air quality standards with an operating hour limit of 2,500 hours/year. It will be limited to 2,080 hours/year under this permit.

**SIGNIFICANT PERMIT CONDITIONS**

New significant permit conditions:

1. The total operating hours 1,005 TPH crushing plant and 475 hp diesel engine generator shall not exceed 2,080 hours in any rolling 12-month period.
2. The 475 hp diesel engine generator shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

## **PROPOSED**

3. The 1,005 TPH secondary crushing plant shall only be operated as a secondary crushing plant with either the 730 TPH or 505 TPH primary crushing plants.
4. The crushing plants shall be configured and operated with all incoming materials being processed through the 730 TPH and 505 TPH primary crushing plants.
5. Update permit conditions for 40 CFR Part 60, Subpart OOO (updated April 28, 2009).

### **CONCLUSION**

Actual emissions should be lower than estimated because the crushing plants will not be operating at its maximum capacity for 2,080 hours per year. Recommend issuance of the temporary 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  
October 1, 2009