

PROPOSED

TEMPORARY COVERED SOURCE APPLICATION REVIEW

Permit Number: 0515-01-CT

Application for a Renewal No. 0515-03

Applicant: Isemoto Contracting Company
0515-03 Application for a Renewal

Facility Name: Crusher “C” (consists of a 465 tph Jaw Crusher and 490 tph Cone Crusher)

Located At: Various Locations, State of Hawaii
Initial Location: Kaupulehu Development for storage,
Kailua-Kona, Hawaii 96740

UTM-Coordinates: Zone 5 Q, 188886.28 m E; 2196408.13 m N (NAD 83)

Mailing Address: 74-5039 B Queen Kaahumanu Highway
Kailua-Kona, Hawaii 96740

SIC Code: 1429 Crushed and Broken Stone

Responsible Official: Mr. Jerry Egami
Senior Vice President
74-5039 B Queen Kaahumanu Highway
Kailua-Kona, Hawaii 96740
(808) 329-8051

Consultant: EMET Services Inc
Mr. Fred Peyer
95-109 Waikalani Drive
Mililani, Hawaii 96789
(808) 779-2948

PROPOSED PROJECT

Isemoto Contracting Company is submitting a renewal for their temporary covered source permit to continue operation of their “Crusher C” plant consisting of a 490 TPH Cedarapids and a 465 TPH Pioneer, portable stone crushers. Electricity powering these crushers comes from a 750 bhp Cummins Diesel Engine Generator with a smaller 425 bhp Cummins Diesel Engine Generator as a back up.

The raw material consists of basalt rock and concrete. The raw material is loaded into the primary Pioneer jaw crusher by a front end loader. Output from the primary jaw crusher is transferred by conveyor belt to the added secondary cone crusher. The variable-setting feeder screens the larger stones into the cone crusher and the smaller crushed stones fall through the feeder onto a conveyor onto a stockpile.

EQUIPMENT DESCRIPTION

The facility encompasses the following equipment and associated appurtenances:

1. One (1) 490 TPH Cedarapids Cone Crusher, model MVP 380, serial no. 052694, manufactured in 2004
2. One (1) 465 TPH Pioneer Jaw Crusher, model 3350, serial no. 401465, manufactured in 2004
3. One (1) 750 bhp Cummins Diesel engine generator, model no. QSX15-G9, identification no. L040726833 with a heat input of 34.7 gallons/hour
4. One (1) 425 bhp (317 kW) Cummins Diesel engine generator, model no. N14-P425, Identification no. 11935152 with a heat input of 20.86 gallons/hour
5. Various conveyors
6. Water spray system

Applicable Requirements

Hawaii Administrative Rules (HAR) Title 11

Chapter 11-59, Ambient Air Quality Standards

Chapter 11-60.1 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

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

AIR POLLUTION CONTROLS

The 490 TPH Cedarapids Cone Crusher, model MVP 280 has a closed side variable setting feeder. Water spray is used for pollution control.

The existing water spray system will apply to the added cone crusher and the existing water truck will minimize fugitive dust emissions on access roads and other areas around the plant.

All Diesel Engine Generators (DEG) will be fired exclusively on fuel oil no. 2 with less than or equal to 0.0015% sulfur content by weight to minimize sulfur dioxide emissions.

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AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing

Total Facility Emissions and Trigger Levels (TPY) for "Crusher C"							
Pollutant	Emissions with 2,800 hours/year	Emissions with 8,760 hours/year	BACT Significant Levels	AERR Thresholds	DOH Levels	Wind Erosion	Vehicle Travel on Dusty Road
PM-2.5	1.70	5.27	10	100	.	0.01	0.60
PM-10	4.55	14.07	15	100	25	0.05	6.40
PM	10.20	31.87	25	.	25	0.10	26.20
CO	5.80	18.10	100	1000	250		
NO _x	21.80	68.10	40	100	25		
SO ₂	3.40	10.70	40	100	25		
VOC	1.47	4.60	40	100	25		
HAPs	0.02	0.06	.	0.5 actual Lead	5		

BACT (Best Available Control Technology) - This source is not subject to BACT analysis because no modifications are proposed. BACT analysis is required for new sources or modification 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.

Department of Health (DOH) – In-house Annual Emissions Reporting

The Clean Air Branch of the DOH requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting levels and for all covered sources. Annual emissions reporting is because this is a covered source.

40 Code of Federal Regulations (CFR) Part 51 - Annual Emissions Reporting Requirement (AERR). This source is not subject to AERR since, Subpart A – Air Emissions Reporting Requirements, determines AERR based on facility wide emissions of each air pollutant at the AERR triggering levels. Emissions do not exceed respective AERR threshold levels.

40 Code of Federal Regulations (CFR) §52.21 - 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.

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 and screening (manufactured in 2014) because the maximum capacity of the facility is greater than 150 tons/hour, and the crushing plant was manufactured after August 31, 1983.

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Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (ICE) is not applicable to these diesel engines, because they are considered nonroad engines as defined in 40 CFR §1068.30, and in HAR §11-60.1-82 (d) (4). Subpart IIII applies to stationary internal combustion engines that are not nonroad engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

Pursuant to section 112 of the Clean Air Act (CAA), 40 CFR Part 61, §61.01(a) lists the substances which have been designated as HAPs. Under this part, NESHAPS is not applicable to this stone crushing plant because there are no listed standards for crushers. This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) - (Maximum Achievable Control Technology (MACT)

Subpart ZZZZ – National emission standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is not applicable to these diesel engines because they are considered a nonroad engine as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not nonroad engines.

40 CFR Part 64 - Compliance Assurance Monitoring (CAM)

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.

Synthetic Minor Source - A synthetic minor refers to sources which have the potential to emit greater than 100 ton per year of a regulated air pollutant, or ten (10) tons per hazardous air pollutant (HAP), or twenty-five (25) tons per year for any combination of HAPs, but where limits are proposed to reduce emissions below these levels. Emissions from nonroad engines are not included in the potential to emit when determining a source's major source status. The potential to emit for the crushers at 8,760 hours of operation per years is less than major source levels, therefore, this source is not a synthetic minor.

ALTERNATIVE OPERATING SCENARIOS

Diesel Enginer Generator

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 generator from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

INSIGNIFICANT ACTIVITIES

None proposed by the applicant.

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PROJECT EMISSION

Potential emission calculations are based on the maximum capacity of the primary crusher. The secondary cone crusher's 490 tph is limited by the 465 tph primary jaw crusher. AP-42, 5th edition, Table 11.19.2-2 Emission Factors for Crushed Stone Processing Operations, August 2004, were used to calculate the fugitive dust emissions from the Cedarapids cone crusher. Because there were no primary and secondary crushing emission factors (EF), the tertiary crushing emission factor was used to predict the cone crusher's emissions.

AP-42 Table 3.4-1 Emission Factors For Uncontrolled Diesel Industrial Engines, and Table 3.4-3 and 3.4-4 Speciated Organic Compound Emission Factors For Large Uncontrolled Stationary Diesel Engines and PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines, respectively, October 1996, were used to estimate the criteria pollutants SO₂ and TOC, and hazardous air pollutant emissions from the added stand-by 750 bhp Cummins diesel engine. The maximum fuel consumption rate of this Cummins engine is 34.7 gallons per hour (gph).

Plant PM Pollutants Summary

Pollutant	465 PTH Jaw Crusher	465 PTH Jaw Crusher	490 TPH Cone Crusher	490 TPH Cone Crusher	DEG worst case	DEG worst case	Total	Total
	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr
PM _{2.5}	0.2	0.6	0.2	0.7	1.30	3.97	1.70	5.27
PM ₁₀	1.6	4.9	1.7	5.2	1.30	3.97	4.55	14.07
PM	4.3	13.6	4.6	14.3	1.30	3.97	10.20	31.87

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465 TPH Jaw crusher (Stone Quarrying and Processing Plant)

AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing

Emissions (lb/hr) = Processing Capacity (ton/hr) x Emission Factor
(lb/ton)

	Value	Unit	Notes
Hour Limit	2800	hour/year	
Processing Capacity	465	ton/hour	
Conveyor Transfer Points	6	-	

PM	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	465	3.14E-05	0.01	0.02	0.06
Primary Jaw Crusher	465	1.20E-03	0.56	0.78	2.44
Screen	465	2.20E-03	1.02	1.43	4.48
Screen	465	2.20E-03	1.02	1.43	4.48
Conveyor Transfer Points (6x)	465	1.40E-04	0.39	0.55	1.71
Truck Loading	465	1.96E-04	0.09	0.13	0.40
Total PM			3.10	4.3	13.6

PM-10	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	465	1.60E-05	0.01	0.01	0.03
Primary Jaw Crusher	465	5.40E-04	0.25	0.35	1.10
Screen	465	7.40E-04	0.34	0.48	1.51
Screen	465	7.40E-04	0.34	0.48	1.51
Conveyor Transfer Points (6x)	465	4.60E-05	0.13	0.18	0.56
Truck Loading	465	1.00E-04	0.05	0.07	0.20
Total PM-10			1.12	1.6	4.9

PM-2.5	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	465	4.71E-06	0.00	0.00	0.01
Primary Jaw Crusher	465	1.00E-04	0.05	0.07	0.20
Screen	465	5.00E-05	0.02	0.03	0.10
Screen	465	5.00E-05	0.02	0.03	0.10
Conveyor Transfer Points (6x)	465	1.30E-05	0.04	0.05	0.16
Truck Loading	465	2.94E-05	0.01	0.02	0.06
Total PM-2.5			0.15	0.2	0.6

notes:

1. EFs (controlled) from AP-42 Table 11.19.2-2
2. Assume PM-10 = 51% of PM and PM-2.5 = 15% of PM when no data available (AP-42 Appendix B.2 (1/95))

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490 TPH Cone crusher (Stone Quarrying and Processing Plant)					
AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing					
Emissions (lb/hr) = Processing Capacity (ton/hr) x Emission Factor (lb/ton)					
	Value	Unit	Notes		
Hour Limit	2800	hour/year			
Processing Capacity	490	ton/hour			
Conveyor Transfer Points	6	-			
PM	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	490	3.14E-05	0.02	0.02	0.07
Cone Crusher	490	1.20E-03	0.59	0.82	2.58
Screen	490	2.20E-03	1.08	1.51	4.72
Screen	490	2.20E-03	1.08	1.51	4.72
Conveyor Transfer Points (6x)	490	1.40E-04	0.41	0.58	1.80
Truck Loading	490	1.96E-04	0.10	0.13	0.42
Total PM			3.27	4.6	14.3
PM-10	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	490	1.60E-05	0.01	0.01	0.03
Cone Crusher	490	5.40E-04	0.26	0.37	1.16
Screen	490	7.40E-04	0.36	0.51	1.59
Screen	490	7.40E-04	0.36	0.51	1.59
Conveyor Transfer Points (6x)	490	4.60E-05	0.14	0.19	0.59
Truck Loading	490	1.00E-04	0.05	0.07	0.21
Total PM-10			1.18	1.7	5.2
PM-2.5	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				2,800 hr/yr	8,760 hr/yr
Truck Unloading	490	4.71E-06	0.00	0.00	0.01
Cone Crusher	490	1.00E-04	0.05	0.07	0.21
Screen	490	5.00E-05	0.02	0.03	0.11
Screen	490	5.00E-05	0.02	0.03	0.11
Conveyor Transfer Points (6x)	490	1.30E-05	0.04	0.05	0.17
Truck Loading	490	2.94E-05	0.01	0.02	0.06
Total PM-2.5			0.15	0.2	0.7
notes:					
1. EFs (controlled) from AP-42 Table 11.19.2-2					
2. Assume PM-10 = 51% of PM and PM-2.5 = 15% of PM when no data available (AP-42 Appendix B.2 (1/95))					

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DEG Pollutant summary

Pollutant	750 bhp DEG (TPY)		425 bhp DEG (TPY)		Worst Case	Both DEGs
	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr
PM-2.5	0.60	1.90	1.27	3.97	1.27	5.87
PM-10	0.70	2.00	1.27	3.97	1.27	5.97
PM	0.70	2.13	1.27	3.97	1.27	6.10
CO	5.80	18.10	3.90	12.20	5.80	30.30
NO _x	21.80	68.10	18.00	56.40	21.80	124.50
SO ₂	3.40	10.70	2.10	6.50	3.40	17.20
TOC	0.6	1.9	1.47	4.6	1.47	6.50
CO ₂	1122.20	3510.88	670.52	2097.78	1122.20	5608.66
N ₂ O	0.01	0.03	0.01	0.02	0.01	0.05
CH ₄	0.04	0.14	0.03	0.08	0.04	0.22

Worst DEG HAPs Determination

HAPs	750 bhp DEG (TPY)		425 bhp DEG (TPY)		DEG worst case	Both DEGs
	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr	2,800 hrs/yr	8,760 hrs/yr
Benzene	5.28E-03	1.65E-02	3.81E-03	1.19E-02	5.28E-03	2.84E-02
Toluene	1.91E-03	5.98E-03	1.67E-03	5.23E-03	1.91E-03	1.12E-02
Xylenes	1.31E-03	4.11E-03	1.17E-03	3.65E-03	1.31E-03	7.75E-03
Formaldehyde	5.37E-04	1.68E-03	4.82E-03	1.51E-02	4.82E-03	1.68E-02
Acetaldehyde	1.71E-04	5.36E-04	3.14E-03	9.81E-03	3.14E-03	1.03E-02
Acrolein	5.36E-05	1.68E-04	3.78E-04	1.18E-03	3.78E-04	1.35E-03
1,3 - butadiene			1.60E-04	5.00E-04	1.60E-04	5.00E-04
Total PAH	1.44E-03	4.51E-03	6.87E-04	2.15E-03	1.44E-03	6.66E-03
Total HAPs	0.01	0.03	0.02	0.050	0.02	0.08

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GHG Calculations^b

Source	Fuel input gal/hr	Pollutant	Conversion factor ^b (MMBtu/gal)	EF (gram/MMBtu ^b)	GHG Total (TPY)	GHG Total (TPY) ^a	GWP CO2e ^b	CO ₂ e (TPY)	CO ₂ e Total (TPY)
750 bhp DEG	34.70	CO ₂	0.138	73,960.00	991.66	3,102.48	1.00	991.66	991.66
	34.70	CH ₄	0.138	3.00	40.22	125.84	25.00	1,005.61	1,005.61
	34.70	N ₂ O	0.138	0.60	8.04	25.17	298.00	2,397.36	2,397.36
425 bhp (317kW) DEG	20.86	CO ₂	0.138	73,960.00	596.14	1,865.07	1.00	596.14	596.14
	20.86	CH ₄	0.138	3.00	24.18	75.65	25.00	604.52	604.52
	20.86	N ₂ O	0.138	0.60	4.84	15.13	298.00	1,441.18	1,441.18
Total GHG Emissions									7,036.48

^aAll calculations using 2800 hr/yr limit for the two DEGs except here using 8760 hr/yr for comparison only.

^bPer IPCC, 4 April 2014 list.

Wind Erosion from Storage Piles

AP-42 Section 8.19.1 (4th ed.) - Sand and Gravel Processing

Emissions (ton/yr) = Area of Storage Piles (acre) x # Days Storage Piles Exist (day/year)
x Emission Factor (lb/acre/day) x ton/2000 lb

	Value	Unit	Notes
Area of Storage Piles	0.5	acre	
# Days Storage Piles Exist	365	day/year	

Pollutant	EF (lb/ton)	Control Efficiency	Emissions (TPY)	
			8,760 hr/yr	8,760 hr/yr
PM	3.5	70%	0.10	0.10
PM-10	1.7	70%	0.05	0.05
PM-2.5	0.2625	70%	0.01	0.01

notes:

- EFs from AP-42 Table 8.19.1-1; PM-2.5 = 7.5% of PM (AP-42 Sec. 13.2.5 (11/06))
- 70% control efficiency was assumed for water suppression (AP-42 Sec. 11.19.1.2 (11/95))

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment is generally required for new or modified sources to demonstrate compliance with the state and national ambient air quality standard.

No modification is being done in the plant, hence Air Quality Assessment using modeling is not required for this permit.

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SIGNIFICANT PERMIT CONDITIONS

1. Subject to Title 40 Code of Federal Regulations (CFR) Part 60-Standards of Performance for New Stationary Sources, Subpart OOO.
2. The water spray system shall be utilized as necessary while the plant is in operation.
3. For periods of diesel engine breakdown or overhaul, prior to the removal, the permittee shall submit to the Department of Health, written documentation on the removal and estimated return dates and on the make, size, model, and serial number for both the temporary replacement unit and the existing unit.

CONCLUSION AND RECOMMENDATION

Based on the information submitted by the applicant, it is the determination of the Hawaii Department of Health that the stone crushing plant will operate in compliance with 40 CFR Part 60, Subpart A, Subpart OOO, and the Hawaii Administrative Rules (HAR), Chapter 11-60.1, and will not cause or contribute to a violation of any State or National ambient air quality standards.

The actual crushing throughput will be much lower (basalt) than the assumed maximum design capacity used in the AP-42 emission calculations (limestone). Therefore, the Hawaii DOH recommends issuance of this CSP No. 0515-01-CT, subject to permit conditions, public comments, and EPA review.

Jensen I. Kennedy
23 November 2015