

Temporary Covered Source Permit (CSP) No. 0678-01-CT Review
Application No. 0678-03

APPLICANT: Okada Trucking Company, Ltd.

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

PROPOSED PROJECT:

The subject application is for an initial covered source temporary permit. The application seeks to permit the following equipment:

1. Komatsu BRE380 JG-1 Mobile crusher; 265 ton per hour (tph) portable jaw crusher with 180 hp diesel engine, 10 gal/hr, fired on fuel oil no. 2
2. The Screen Machine Scalper 107T, 265 tph screen with 80 hp diesel engine, 4.2 gal/hr, fired on fuel oil no. 2

The applicant has proposed the following operational limits on the equipment:

- An operational limit of 2,500 hours per rolling 12-month period for both the mobile jaw crusher and mobile screen.
- Use of low sulfur diesel fuel with a sulfur content of less than 0.5% by weight to minimize SO₂ emissions.

The crusher and screen are both stand alone mobile units and can be used together or as stand-alone units. The screen also does not have to be located on the same physical property as the crusher, and vice versa..

Air Pollution Controls:

Air pollution control for the crusher unit consists of watersprays located at the main conveyor belt. A control efficiency of 70% will be credited to the emission points after the crusher. The screen unit also uses watersprays for air pollution control.

APPLICABLE REQUIREMENTS:

Hawaii Administrative Rules (HAR) Title 11 Chapter 59

Hawaii Administrative Rules (HAR) Title 11 Chapter 60.1

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 10 - Field Citations

New Source Performance Standards (NSPS)

40 CFR Part 60 Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing

Plants is an applicable requirement because the manufacture date of the equipment is after August 1983 and the crusher has a maximum capacity greater than 150 tph.

Best Available Control Technology (BACT) Analysis

A BACT analysis is required for new sources or modifications to existing sources that would result in a net significant emissions increase as defined in HAR, Section 11-60.1-1. The emissions from the equipment are greater than significant levels, but the usual BACT method for the control of fugitive dust is the application of watersprays, and watersprays are already incorporated as a control device. Therefore, a BACT analysis is not required for this permit.

NON-APPLICABLE REQUIREMENTS:

40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition

Internal Combustion Engines does not apply because the diesel engine is classified as a non-road engine. The diesel engine is also exempt from the requirements of 40 CFR part 89.

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) does not apply since there is no standard for diesel engines or stone processing equipment.

40 CFR Part 63 Subpart ZZZZ- National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is an applicable requirement since the diesel engine is an area source of HAPs. However, the only requirement for an engine of this size (≥ 500 bhp) is to comply with the requirements of 40 CFR 60 Subpart IIII.

Prevention of Significant Deterioration (PSD) does not apply since this is not a major stationary source.

Compliance Assurance Monitoring (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 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 pre-control emissions that are greater than the major source level [>100 tpy]; and (5) not otherwise be exempt from CAM. CAM is not applicable to the plant since item 1 does not apply.

Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the facility are less than reporting levels pursuant to 40 CFR 51, Subpart A (see **Table 1**).

Table 1 – CERR Reporting Requirements

Pollutant	Facility Emissions (tpy)	Continuous Emissions (tpy) ^a	CERR Triggering Levels (tpy)		Internal Reporting Threshold (tpy)
			1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	0.18	0.61	≥ 250	≥ 100	≥ 25
PM ₁₀	9.17	32.15	≥ 250	≥ 100	≥ 25
PM _{2.5}	9.11	31.93	≥ 250	≥ 100	≥ 25
NO _x	2.04	7.14	$\geq 2,500$	≥ 100	≥ 25
SO _x	0.88	3.08	$\geq 2,500$	≥ 100	≥ 25
CO	0.28	0.96	$\geq 2,500$	$\geq 1,000$	≥ 250
HAPs (total)	0.13	0.47	n/a	n/a	≥ 5

^a Emissions @ 8,760 hours per year.

Internal reporting is required for the facility because the facility is a covered source. The annual emissions reporting will also help in verifying compliance with the annual operational limits.

Synthetic Minor Applicability

The facility is a synthetic minor source because the facility would be classified a major source (>100 tpy of individual pollutant) if operated continuously (8,760 hr/yr) at maximum capacity. Refer to table 1 for continuous emission estimates.

Insignificant Activities/Exemptions:

The engine for the screening unit is exempt from permitting requirements pursuant to HAR Chapter 60.1 Insignificant activities listed in the application consists of one (1) diesel fuel tank with a 105.7 gallon capacity.

Alternative Operating Scenarios:

None

Project Emissions:

Emissions from crushing and screening were determined using AP-42, sections 11.19.2, Crushed Stone Processing (8/04), 13.2.4, Aggregate handling and Storage Piles, and 13.2.2, Unpaved Roads. Hazardous Air Pollutant emissions factors for the diesel engine were obtained from AP-42 section 3.3, Gasoline and Diesel Industrial Engines. Criteria pollutant emission factors and fuel consumption data were provided by the manufacturer. Other assumptions are:

1. Worst-case crushing and screening AP-42 emission factors used.

PROPOSED

2. All particulate matter (PM, PM₁₀, PM_{2.5}) not from the diesel engine from consists of filterable particulate matter only.
3. A control efficiency of 70% assumed due to watersprays.

A summary of the emissions from the permitted equipment is shown in the following table.

Criteria Pollutant Emissions (Diesel engine, crusher, screen)

Criteria Pollutant	Emissions			
	lb/hr	g/s	Limited ¹ (TPY)	Max (TPY)
SO ₂	0.704	0.089	0.88	3.08
NO ₂	1.63	0.205	2.04	7.14
CO	0.22	0.028	0.28	0.96
VOC	0.14	0.018	0.18	0.61
PM				
<i>Diesel Engine</i>	<i>0.049</i>	<i>0.006</i>	<i>0.06</i>	<i>0.21</i>
<i>Crusher/Screen</i>	<i>26.49</i>	<i>3.337</i>	<i>33.11</i>	<i>116.01</i>
TOTAL PM	26.54	3.34	33.17	116.22
PM₁₀				
<i>Diesel Engine</i>	<i>0.049</i>	<i>0.006</i>	<i>0.06</i>	<i>0.21</i>
<i>Crusher/Screen</i>	<i>7.29</i>	<i>0.919</i>	<i>9.11</i>	<i>31.93</i>
TOTAL PM₁₀	7.34	0.93	9.17	32.14
PM_{2.5}				
<i>Crusher/Screen</i>	<i>7.29</i>	<i>0.919</i>	<i>9.11</i>	<i>31.93</i>
TOTAL PM_{2.5}	7.29	0.92	9.11	31.93

Hazardous Air Pollutant Emissions (from Diesel Engine)

HAP	Emissions			
	lb/hr	g/s	Limited ¹ (TPY)	Max (TPY)
Aldehydes	9.84e-02	1.24e-02	1.23e-01	4.31e-01
Benzene	1.31e-03	1.65e-04	1.64e-03	5.75e-03
Toluene	5.75e-04	7.25e-05	7.19e-04	2.52e-03
Xylenes	4.01e-04	5.05e-05	5.01e-04	1.76e-03
Propylene	3.63e-03	4.57e-04	4.53e-03	1.59e-02
1,3 Butadiene	5.50e-05	6.93e-06	6.87e-05	2.41e-04
Formaldehyde	1.66e-03	2.09e-04	2.07e-03	7.27e-03
Acetaldehyde	1.08e-03	1.36e-04	1.35e-03	4.72e-03
Acrolein	1.30e-04	1.64e-05	1.63e-04	5.70e-04
Total PAH	2.36e-04	2.98e-05	2.96e-04	1.03e-03
Total			0.13	0.47

¹ Diesel engine and crusher limited to 2,500 hours of operation and screen limited to 3,950 hours of operation on an annual basis.

For detailed calculations, refer to the attached emissions spreadsheets.

AIR QUALITY ASSESSMENT:

An ambient air quality analysis was performed on the diesel engine exhaust stack to demonstrate compliance with State and Federal ambient air quality standards. An analysis is not required for the crusher or screen since their emissions are fugitive in nature.

Ambient air concentrations were determined using the EPA-approved SCREEN3 modeling program. The modeling program used an emission rate of one (1) gram per second in conjunction with the stack parameters listed in the following table:

SCREEN3 Air Modeling Input Parameters								
Emission Rate (g/s)					Stack Parameters			
SO ₂	NO _x	CO	PM ₁₀	Pb	Height (m)	Temp. (k)	Velocity (m/s)	Diameter (m)
0.089	0.205	0.028	0.006	N/A	3.35	793	111.85	0.076

In addition to the stack parameters, the following structure data was used to determine if the crusher will impact the ambient air analysis.

Distance (m)	Height (m)	Width (m)	Length (m)	Projected Width (m)	H _g ^a	Downwash
0	3.35	2.49	12.50	12.75	8.4	Yes

^a H_g= Height + 1.5 (lesser of height or projected width) → GEP stack height

The results indicate that the downwash from the crusher will impact the analysis, since the stack height (3.35 m) is less than the calculated good engineering practice (GEP) stack height of 8.4 meters. Therefore, the building parameters were incorporated into the model.

Other assumptions used in the analysis include:

- Screening Met data used;
- flat terrain assumed;
- Ambient rate method ratio of 0.75 for conversion of NO_x to NO₂; and
- Worst-case background concentrations from available monitoring stations (2006).

The modeling results exhibited in the following table demonstrate that operation of the equipment will not violate State or Federal ambient air quality standards.

SCREEN3 Modeling Results – Komatsu Diesel Engine								
Modeled Conc.	2399	µg/m ³ per g/s						
Pollutant	Avg. Time	Emission Rate (g/s)	Time Factor	Impact	Background	Total Impact	Std.	% of std.
SO ₂	3-hr	0.089	0.9	192	451	643	1,300	49.46
	24-hr	0.089	0.4	85	161	246	365	67.40
	Ann	0.089	0.2	12	11	23	80	28.75
NO ₂	Ann	0.205	0.2	21	9	30	70	42.86
PM ₁₀	24-hr	0.006	0.4	6	59	65	150	43.33
	Ann	0.006	0.2	1	16	17	50	34.00
CO	1-hr	0.028	1.0	67	2850	2,917	10,000	29.17
	8-hr	0.028	0.7	47	1967	2,014	5,000	40.28

Other Issues:

None

Significant New Permit Conditions:

1. Both the crushing and screening unit are limited to 2,500 hours of operation per rolling 12-month basis.
2. The screening unit can only operate for 1,450 hours more than the crushing unit. The crushing unit can operate 2,500 hours per rolling 12-month period. Therefore, the screening unit can operate a maximum of 3,950 hours per rolling 12-month period.

Conclusion and Recommendation:

The facility is in compliance with all State and Federal laws, rules, regulations, and standards with regards to air pollution. Recommend issuance of temporary covered source permit.

Kevin Kihara
June 18, 2008