

PROPOSED

REVIEW OF APPLICATION FOR A MINOR MODIFICATION Covered Source Permit (CSP) No. 0522-01-C

Permit No.: 0522-01-C

Application File No.: 0522-04

Applicant: Grace Pacific Corporation

Facility: 300 TPH Asphalt Plant

SIC Code: 2951 (asphalt paving mixtures & blocks)

Location: Kapaa Quarry, Kailua, Oahu

UTM Coordinates: 626,200 m East and 2,366,050 m North
(updated per Grace Pacific 4/11/06 application submittal)

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I. Background

Grace Pacific Corporation (Grace Pacific) operates three hot mix asphalt plants on Oahu, located in Makakilo, Kailua, and Halawa. Of the three, the Makakilo plant (334 TPH capacity) has the greatest capacity and handles most of the large federal and state road construction projects. The Kailua plant (300 TPH capacity) handles most of the projects located on the windward side of Oahu, while the Halawa plant (186 TPH capacity) provides for most of the smaller projects such as private driveways and pothole repair.

Proposed Modification

Grace Pacific has submitted an application for a minor modification for all three of its plants on Oahu to allow combustion of biodiesel and grease trap oil in the facility's asphalt drum mixer

PROPOSED

and combustion of biodiesel in the facility's diesel engine generator (DEG) for the Makakilo and Halawa plants which each have a permitted DEG. This Kailua plant has a DEG that is not permitted because it is only used as an emergency DEG. The 7/11/06 application and 12/1/06 addendum for the Kailua plant propose a modification which is considered minor because there is no increase in emissions.

II. Equipment Description

No changes proposed. Table 1 lists the existing facility equipment.

Table 1: Equipment					
Description	Capacity	Manuf.	Model No.	Serial No.	Date
Drum mixer	300 TPH	Astec	RDB 8438	02-092-2201	2002
Burner	75 MMBTUH	Astec	WJ75UO/G1	02-092-2206	2002
Emergency DEG	750 kW, 58.8 fuel gph	Caterpillar	3412	2WJ00863	--
Baghouse	51,110 CFM	Astec	SBH-59:BP	94-109-217	1992
Fiberbed Mist Collector	12,000 CFM	Astec	BSC-16-FBF	06-042	2006

III. Air Pollution Controls

No changes proposed. Table 2 lists the existing pollution controls used at the facility.

Table 2: Air Pollution Controls			
Emission Source	Control Measure	Control Efficiency	Control Efficiency Reference
Drum mixer	Baghouse	99% for PM	AP-42, App. B, Table B.2-3, 1/95.
Silos & Truck load-out	Fiberbed mist collector	95% for PM	CECO filter manufacturer
Unpaved roads	Water spray	70% for PM	AP-42 §11.19.1.2, par. 3, 11/95.
Aggregate stockpiles	Water spray	70% for PM	AP-42 §11.19.1.2, par. 3, 11/95.
Storage bins	Water spray	70% for PM	AP-42 §11.19.1.2, par. 3, 11/95.

IV. Applicable Requirements

- Hawaii Administrative Rules (HAR), Title 11
 - Chapter 59, Ambient Air Quality Standards
 - 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

PROPOSED

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

2. PSD Requirements

PSD requirements do not apply because this facility is not considered a major stationary source and is not proposing any modifications to trigger a major modification as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

3. NSPS Requirements

The following subparts of 40 CFR 60 - Standards of Performance for New Stationary Sources (NSPS) apply to this facility:

Subpart A - General Provisions

Subpart I - Standards of Performance for Hot Mix Asphalt Facilities

The 750 kW emergency DEG is not subject to Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured before April 1, 2006 and was not modified or reconstructed after July 11, 2005.

4. NESHAP Requirements

These requirements do not apply because no standard covering this facility's operation or equipment has been promulgated under 40 CFR 61.

5. MACT Requirements

These requirements do not apply because this facility is not a major source of hazardous air pollutants and does not belong to a source category or subcategory for which a standard has been promulgated under 40 CFR 63.

6. BACT Requirements

A BACT review is required for new or modified sources which generate a net emissions increase that is "significant," as defined in HAR §11-60.1-1. Since combustion of biodiesel and grease trap oil in the drum mixer will not increase emissions, a BACT review is not required.

7. CAM Requirements (40 CFR 64)

The purpose of Compliance Assurance Monitoring (CAM) is to provide 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

PROPOSED

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. Since this facility is not a major source and does not meet all five criteria, CAM does not apply.

8. CER/DOH Requirements

Consolidated Emissions Reporting (CER) requirements apply if emissions from the facility equal or exceed levels specified in 40 CFR 51, Subpart A, Appendix A shown in the table. CER requirements do not apply because the facility's emissions are below the CER thresholds.

The Department of Health (DOH) requires emissions reporting if total facility emissions of a particular pollutant exceed DOH levels. These reports are used internally within DOH and are not inputted into the CER database. Emissions reporting is required because facility-wide emissions of NOx, PM, and VOC exceed DOH levels.

Pollutant	Facility Emissions	Significant Level	CERR Level	DOH Level
CO	81.2	100	1000	250
NOx	39.4	40	100	25
PM	35.2	25	-	25
PM-10	18.6	15	100	25
PM-2.5	6.5	-	100	-
SO2	6.7	40	100	25
VOC	36.2	40	100	25
Pb	0	0.6	5	5
HAPs	5.5	-	-	5

Note: There is no emissions increase.

9. Major Source Determination

A major source, as defined in HAR 11-60.1-1, emits or has the potential to emit any hazardous air pollutant in the aggregate of 10 tpy, 25 tpy or more of any combination of HAPs, or 100 tpy of any pollutant. This facility is not a major source since potential emissions, considering operating limits and pollution controls, are below these levels.

10. Synthetic Minor Determination

A synthetic minor 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 of CO because without operational limits, emissions would equal or exceed 100 tpy. (Reference: Review of Application 0522-01, 4/2/03).

V. Insignificant Activities / Exemptions

Table 4: Insignificant Activities		
No. of Items	Item Description	HAR Reference
1	750 kW emergency diesel engine generator	11-60.1-82(f)(5) Standby generators used exclusively to provide electricity...
1	10,000 gallon diesel fuel tank	11-60.1-82(f)(1) Any storage tank, reservoir, or other container of capacity equal to or less than 40,000 storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 and 112 of the Act.
1	6,000 gallon diesel fuel tank	
2	30,000 gallon asphalt storage tank	
1	25,000 gallon working asphalt tank	
1	31,040 gallon liquid asphalt tank	

VI. Alternate Operating Scenarios

None proposed.

VII. Project Emissions

Grace Pacific proposes to fire biodiesel and/or grease trap oil in its asphalt drum mixer.

Biodiesel

Biodiesel is a renewable fuel made by a chemical reaction of alcohol, vegetable oils, animal oils, fats, and/or greases. A transesterification process removes the undesirable glycerin by-product so that biodiesel can operate like petroleum diesel oil in conventional compression-ignition engines. When compared to diesel oil combustion, biodiesel has lower CO, PM, SO₂, and VOC emissions. NO_x is the only pollutant that increases when biodiesel is used instead of diesel oil in *internal combustion engines*.

Drum Mixer: A study comparing NO_x emissions from *external combustion* of diesel oil and biodiesel found that NO_x emissions are lower when firing biodiesel.¹ Based on this study conducted on boilers, it is assumed that external combustion of biodiesel in the asphalt drum mixer will not increase emissions.

Grease Trap or Cooking Oil

Grease trap oil is unprocessed waste oil collected from restaurants. Emissions from grease trap oil are assumed to be similar to those of cooking oil which is already a permitted fuel. Table 5 shows some properties of grease trap oil, as provided by Pacific Biodiesel, Inc. Per W. Mohlman of Pacific Biodiesel, Inc., no visible emissions are expected from the external combustion of grease trap oil.

PROPOSED

Table 5: Grease Trap Oil Properties	
Supplier	Pacific Biodiesel
Density at 250° C	0.894 g/cm ³
Heat of Combustion (gross)	122,390 BTU/gal
Heat of Combustion (net)	130,640 BTU/gal
Viscosity at 40°C	27.1 cst
Ref:	
1. Addendum to Application No. 0036-06, 12/1/06 cover letter.	
2. Appendix A of 12/1/06 Addendum.	

Table 6 shows total facility emissions. Since facility emissions account for the worst-case scenario, previously calculated emissions, based on diesel oil combustion, remain unchanged.

Table 6: Facility Emissions - 4,000 hr/yr operation (tpy)							
Pollutant	Drum Mixer	750 kW Emergency DEG - at 500 hr/yr	Unpaved Roads	Aggregate Handling	Load-Out	Silo-Filling	Total
CO	78.00	1.71			0.81	0.71	81.2
NOx	33.00	6.44					39.4
PM	19.80	0.20	10.05	5.11	0.02	0.02	35.2
PM-10	13.80	0.19	2.11	2.41	0.02	0.02	18.6
PM-2.5	1.74	0.19	2.11	2.41	0.02	0.02	6.5
SO ₂	6.60	0.10					6.7
VOC/TOC	26.40	0.18			2.35	7.31	36.2
Total HAPs	5.34	0.01			0.05	0.11	5.5

Reference:

1. *Biodiesel Blends in Space Heating Equipment*, C.R. Krishna, prepared for the National Renewable Energy Laboratory, U.S. Department of Energy, December 2001.

VIII. Air Quality Assessment

An Ambient Air Quality Impact Assessment (assessment), is generally performed for new or modified sources. Since the proposed modification will not increase emissions, an assessment was not performed for this application review.

IX. Significant Permit Conditions

1. The drum mixer shall only be fired on fuel oil no. 2, spec used oil, aviation fuels, Unitek diesel, biodiesel, cooking oil, grease trap oil, or any combination thereof.

Purpose: Emission calculations based on use of the above fuels, as proposed by the applicant.

PROPOSED

2. The biodiesel and grease trap oil (assumed similar to cooking oil) shall only be obtained from Pacific Biodiesel, Inc. unless the permittee requests and obtains approval from the Department of Health to use a different vendor.

Purpose: Biodiesel specification sheets were submitted for fuel provided by Pacific Biodiesel, Inc.

X. Conclusion

Grace Pacific has proposed combustion of biodiesel and grease trap oil in the asphalt drum mixer. Since these fuels contain no sulfur and are relatively clean, actual facility emissions should be less than indicated in this review because facility emissions were based on the worst-case emissions from the various fuels. Issuance of an amended covered source permit to allow combustion of biodiesel and grease trap oil is recommended based on review of information provided by the applicant and subject to significant permit conditions and EPA review.

April Matsumura
January 12, 2007