COVERED SOURCE PERMIT RENEWAL APPLICATION REVIEW

Application Nos. 0241-02, 0241-03, 0241-04

APPLICANT:	Ameron International Corporation, dba Ameron Hawaii Ameron Hawaii Kapaa Quarry Stone Processing Facility and Associated Concrete Batch Plant
RESPONSIBLE OFFICIAL:/POC	Mr. George N. West Vice President, Operations - Oahu P.O. Box 29968 Honolulu, HI 96820 808-832-9260
LOCATION	Kapaa Quarry 909 Kalanianaole Hwy. Kailua, HI 96734 UTM Coordinates: (Zone 4) 2,366,378 m North; 626,626 m East
PLANT SITE MANAGER/ OTHER CONTACT	Mr. Theodore F. Dela Cruz General Superintendent P.O. Box 29968 Honolulu, HI 96820 808-266-2673
OTHER CONTACT	Ms. Linda Goldstein Environmental Health & Safety Manager 808-832-9269
SIC	1411 – Dimension stone 3273 – Ready mixed concrete

Background and Proposed Process:

This review is for Ameron's Kapaa Quarry facility and covers multiple permit applications. The applications are:

- Application number 0241-02, a minor modification to the baghouses, was submitted on September 8, 2004. The application seeks to replace existing baghouse BH3 and to add new baghouse BH12. Approval for the baghouse replacement was granted on
- December 27, 2004 pursuant to Hawaii Adminstrative Rules, Chapter 11-60.1-82(k)(1).

- Application number 0241-03, submitted on February 7, 2007, is for the renewal of Covered Source Permit 0241-01-C, initially issued on December 17, 2002.

- Application number 0241-04, submitted April 9, 2009, is a significant permit modification which requests approval for the installation and operation of two new crushers and two new diesel engines at the facility. The crushers and diesel engines are to be located at phase II of the quarry.

The facility currently consists of a stone processing facility and a concrete batch plant. The primary functions of the facility are quarrying and aggregate processing, classified as Standard

Industrial Classification Code (SICC) 1411. The concrete batch plant is classified as SICC 3273.

New Process Description

One 925 ton per hour jaw crusher (Metso LT140) and one 550 ton per hour cone crusher (Metso GPS 500S), operating in series, will be added to the primary/secondary plant. The Metso LT140 will be powered by a 1,490 hp diesel engine and the Metso GPS 500S will be powered by a
540 hp diesel engine. Air pollution control consists of watersprays. The two new crushers will operate in parallel with the existing set of two crushers.

Existing Process Descriptions

QUARRY

Basaltic rock deposits are subjected to an explosive blast to loosen the rock. The loosened rock is loaded from the quarry into haul trucks for transport to the appropriate plant.

PRIMARY/SECONDARY PLANT

The haul trucks transport the rock to the Primary/Secondary Plant. The load is dampened by water spray then unloaded into the hopper of Primary/Secondary Plant. The material moves through the feeder to the primary jaw crusher, a scalping screen, and the secondary crusher. Approximately 20% is B-grade material, which is stockpiled or re-screened (via 2 conveyors and one radial stack), while 80% is conveyed (one conveyor and one radial stack) to the surge stockpile. An underground conveyor transfers the surge material to the Tertiary Crushing Plant, which produces various products and feed material for the Mansand Plant.

TERTIARY PLANT

The material in the Tertiary Plant is conveyed to a double-deck scalping screen which produces ½” and 2” aggregate. A conveyor transports the fines (< ½”) to a stockpile, while the larger aggregate is transported to the two short-head crushers (50% to each) then to two three-deck screens (S3 and S4). The S3 and S4 screens are 84.5” x 48” with 5 panels and 3-decks sized 1¼”, ¾”, and 5/16”. From the S3 and S4 screens, products are transported to one of four 75-ton holding tanks which hold materials to be conveyed to the Mansand Plant or emptied into trucks which transport the material to stockpiles.

The bulk of the material that does not pass through the double-deck scalping screen is fed to the Nordberg crushers (Crushers V and VI) and the other two three-deck screens (S5 and S6) to make ready-mix concrete products or to be conveyed to the Mansand Plant. The S5 and S6 screens are 74.25” x 48” with 4 panels and 3-decks sized 7/8”, 7/16”, and 5/16”.

Mechanical screening and air separation is applied to the 1/16” product to make ASTM C-33 concrete blend. The Tertiary Plant products are conveyed to stockpiles or to holding tanks for the Mansand Plant. Tanks 8 and 25 are surge for the Mansand Plant.

MANSAND PLANT

The Mansand plant is used to manufacture sand. Material sent to the Mansand Plant is dried to 2% moisture content by using a dryer. The dryer typically uses waste heat exhausted from the Kapaa Generating Parrtners turbine located at the adjacent Kapaa landfill. When waste heat is not available, the dryer is fueled by either fuel oil no. 2 or specification used oil. Exhaust from the dryer is vented through a baghouse. The dried material at about 120 to 150°F is conveyed to Tank 9 and combined with material at ambient temperature to produce 95°F material in the feed tank. This material is conveyed to two Canica crushers and then to a tower with twelve (12) single-deck and twelve (12) double-deck screens to produce three products. The Mansand Plant produces about ¼” size, 1/8”size, and 1/16” size products. Some of these products are then sent to an air separator that removes the finest products. Product that is not usable, such

as 200 mesh with 1% moisture content, are moisturized, loaded in trucks, and stockpiled near the quarry to be used as cover material.

CONCRETE BATCH PLANT

Material is conveyed from the Mansand Plant to the overhead storage bin of the Concrete Batch Plant. Material is weighed, enters the hopper, and then the pre-mix drum which vents to a baghouse. Cement blend is added into the pre-mix drum from one of two silos then loaded into ready-mix trucks. The cement silos are filled pneumatically by contractor's trucks or by conveyors if the blend is made onsite, and each silo is vented to a baghouse. An electric chiller is used to prevent the concrete from setting and a 75 kW diesel generator is used for backup. The concrete is then transported offsite by the ready-mix trucks.

EQUIPMENT:

The equipment for each process is listed in tables 1-3.

TABLE 1: STONE PROCESSING FACILITY EQUIPMENT					
Equipment Description	**Fuel Used**	**Model Number**	**Serial Number**	**Manufacture Date**	**Maximum Design Capacity**
6" drill rig	Diesel	DM45	2872	1988	NV
4" drill rig	Diesel	ECM-350	194678	NV	NV
4" drill rig	Diesel	ECM-635	NV	2000	NV
Primary/Secondary Plant					
Metso Lokotrac LT 140 jaw crusher 10 with 540 hp diesel engine (new)	Diesel	C140		March 2008	925 tph
Metso GPS 500S cone crusher 11 with 1,490 hp diesel engine (new)	Diesel	GP300S		March 2008	550 tph
Missouri Rogers dynactuator surge vibratory feeder (54'x16')	Electric	54x20	VFG-119	1965	600 tph
Kueken primary jaw crusher 1 (60'x48')	Electric	200	20016468	1965	600 tph
5 ½' Symons standard cone crusher 2	Electric	5 ½' std.	5237	1965	600 tph
Hewitt-Robins secondary scalper (5'x12')	Electric	NV	V06032	1965	600 tph
Hewitt-Robins 3-deck screen (6'x16')	Electric	6x16	NV	1965	80 tph
Conveyors (5x)	Electric	NV	NV	1965	NV
Tertiary Plant					
Surge vibratory feeder 1	Electric	NV	44392	1964	NV
Surge vibratory feeder 2	Electric	NV	44393	1964	NV
Surge vibratory feeder 3	Electric	NV	NV	1964	NV
5 ½' Symons cone short-head crusher 3	Electric	5 ½' SH	5510	1964	NV
5 ½' Symons cone short-head crusher 4	Electric	5 ½' SH	5754	1964	NV
Nordberg HP 300 SX cone crusher 5 [A]	Electric	300SX	HP30310542	2002	215 tph
Nordberg HP300SX cone crusher 6 [A]	Electric	300SX	HP300SX286	1996	215 tph
Hewitt-Robins 2-deck scalper screen 2 (5'x14')	Electric	2DSCALPER	VD9446	1964	NV
Hewitt-Robins 3-deck screen 3 (7'x20')	Electric	TDV-16VIBREX	C70562501	1964	75 tph
Hewitt-Robins 3-deck screen 4 (7'x20')	Electric	TDV-16VIBREX	C70562502	1964	NV
Hewitt-Robins 3-deck scalper screen 5 (6'x16')	Electric	TDV14	C706101-07	1964	NV

TABLE 1: STONE PROCESSING FACILITY EQUIPMENT					
Equipment Description	**Fuel Used**	**Model Number**	**Serial Number**	**Manufacture Date**	**Maximum Design Capacity**
Hewitt-Robins 3-deck scalper screen 6 (6'x16')	Electric	TDV14	C706101-08	1964	NV
Wet wash screen 31	Electric	FSG5142-24	B4A1590	1964	NV
Conveyors (28x)	Electric	NV	NV	1964	NV
NA = Not Applicable; NV = Not Available; [A] Not subject to 40 CFR 60 Subpart OOO					

TABLE 2: MANSAND PLANT EQUIPMENT					
Equipment Description	**Fuel Used**	**Model Number**	**Serial Number**	**Manufacture Date**	**Maximum Design Capacity**
Primary surge vibratory feeders FV9A, FV9B, FV9C, FV10A, FV10B, FV10C(6X)	Electric	NV	NV	1974	NV
Fines air separator	Electric	24'OW	74021	1974	NV
Bucket elevator	Electric	NV	NV	1974	NV
Canica crusher 7	Electric	100	EE100209	1974	NV
Canica crusher 8	Electric	100	EE100124	1974	NV
Tyler TY-Rock 2-deck 5'x14' screens S7-S18 (12x)	Electric	F600	20433 thru 20444	1974	NV
Tyler TY-Speed single deck 4'x10' screens S19-S30 (12x)	Electric	110R	55-316 thru 55-327	1974	NV
Tanks	Electric	NV	NV	1974	NV
Stansteel Pulse jet Baghouse 1	Electric	NV	3200RT	1974	65,000 cfm
Dustex Pulse jet Baghouse 2	Electric	NV	3418-9-26	1974	15,000 cfm
Dustex Pulse jet Baghouse 3	Electric	NV	3338-6-10	1974	5,000 cfm
Dustex Pulse jet Baghouse 4	Electric	NV	3338-6-6	1974	2,500 cfm
Dustex Pulse jet Baghouse 6	Electric	NV	3338-6-8	1974	6,000 cfm
BHA Pulse Jet Baghouse 8	Electric	36LS	NV	1974	1,800 cfm
Dustex Pulse jet Baghouse 9	Electric	NV	3338-6-8	1974	3,600 cfm
BHA Pulse jet Baghouse 10	Electric	NA	NV	1974	3,000 cfm
Rees Pulse Jet Baghouse 11	Electric	6-1500	NV	1974	30,400 cfm
BHA Pulse Jet Baghouse 12	Electric	NA	NV	2004	10,000 cfm
Griffin Mechanical shaker Baghouse for T-27	Electric	36-KS	NV	1974	1,500 cfm
Griffin Mechanical shaker Baghouse for T-28	Electric	36-KS	NV	1974	1,500 cfm
Impact Separator	Electric	NA	NV	1974	NV
Cyclones (2x)	Electric	NA	NV	1974	NV
Stansteel rotary dryer and cooler/Genco burner	Waste heat from utility turbine/diesel	810	MS0494	1974	204 gph
Conveyors (26x)	Electric	NV	NV	1974	NV
NA = Not Applicable; NV = Not Available					

TABLE 3: CONCRETE BATCH PLANT EQUIPMENT					
Equipment Description	**Fuel Used**	**Model Number**	**Serial Number**	**Manufacture Date**	**Maximum Design Capacity**
Rex concrete batcher	Electric	LO GO 12	LA28842	1986	300 cu yd./hr
Rex cement silo	Electric	NV	NV	1986	54 ton
Cement silo	Electric	NV	NV	1986	100 ton
Rex aggregate bin	Electric	NV	NV	1986	45 cu yd.
Dune sand tank	Electric	NV	NV	1986	
Griffin cement weigh batcher vents (2x)	Electric	18CDS	27420	1986	15 lb/hr
Griffin silo filter vents (2x)	Electric	36KS	NV	1986	15 lb/hr
C&W baghouse for premix drum	Electric	CW-RA-140-S-IU	9090-52-P3	1992	
Detroit Diesel back-up generator	Diesel	6V71T	NV	NV	75kW
NA = Not Applicable; NV = Not Available					

Air Pollution Control:
There are eleven baghouses serving conveyors, tanks, and screens in the Mansand Plant and five baghouses serving the Concrete Batch Plant to reduce emissions of particulate matter. Water sprays are used at the feeders, conveyors, radial stackers, stockpiles, and aggregate transfer points. Water trucks are employed at the quarry, as well at the plants to control fugitive dust emissions generated by vehicle traffic. Emission calculations are included for the unpaved roadways with a 70% control of fugitives due to the water trucks. Emission controls are applied at transfer points using the Mojave Desert Air Quality Management District Emission Guidelines (April 10, 2000). At the point of water spray application, 70% control is assigned. At each subsequent transfer point, a factor of (70-5n)% is assigned where n is the number of points downstream of the initial application.

Table 4: Air Pollution Control Equipment

Process Emission Points	Pollutant Controlled	Control Equipment	Control Method Efficiency
Stockpiles; and aggregate transfer points	PM, PM_{10}	Water sprays	70% [AP-42 Section 11.19]
Aggregate transfer points;	PM, PM_{10}	Water sprays	70-(5*n)% where n is # of transfer points downstream of initial application [MDAQMD][a]
Unpaved roadways	PM, PM_{10}	Water trucks	70% [AP-42 Section 11.19]
Concrete Batch Plant	PM, PM_{10}	Baghouses & Filter vents	99%
Mansand plant crushers, screens, aggregate transfer points	PM, PM_{10}	Baghouses	99%

[a] Control efficiencies obtained from Mojave Desert Air Quality Management District Emissions Inventory Guidance for Mineral Handling and Processing Industries (April 10, 2000).

Operational Limits:
The existing permits for the facility limit the primary and secondary plants to 600 TPH and 4,992 hours of operation per rolling tweleve-month (12-month) period. The conveyor carrying material into the Tertiary Plant has a scale that sends instantaneous readings in tons per hour to the control room. Belt scales are also located on the holding tanks or stockpiles to weigh finished products. Equipment run time is also recorded from the amp meter. Modeling was performed for the maximum capacity of specific pieces of equipment based on operations of sixteen (16) hours per day and 4,992 hours per year. Therefore, the facility is limited to a maximum of sixteen (16) hours of operation per day.

With regards to the new equipment, an operational limit of 235,000 gallons per rolling tweleve-month (12-month) period is proposed for the 1,490 hp diesel engine (DE4), and an operational limit of 140,000 gallons per rolling tweleve-month (12-month) period is proposed for the 540 hp diesel engine (DE3). The limits will be monitored by taking daily fuel consumption readings for each diesel engine and summarized for each month.

Applicable Requirements:
Hawaii Administrative Rules (HAR):
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
  - 11-60.1-37 Process Industries

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 Standards of Performance for Non-metallic Mineral Processing Plants
Subchapter 10 Field Citations

New Source Performance Standards:
A portion of the equipment is subject to the following 40 Code of Federal Regulations (CFR) Part 60
-Subpart A General Provisions
-Subpart OOO Standards of Performance for Non-metallic Mineral Processing Plants

Existing Equipment:
40 CFR 60 Subpart OOO applies to fixed crushed stone plants with capacities greater than 25 TPH that commence construction, reconstruction, or modification after August 31, 1983. The dates of manufacture for the equipment are shown in Table 1. The Nordburg HP300SX cone crusher 6 (manufactured in 1996) was a like kind replacement for the Nordburg Gyradisc 54" crusher 6 (manufactured in 1964). The Nordburg HP300SX cone crusher 5 (manufactured in 1996) was a like kind replacement for the Nordburg Gyradisc 54" crusher 5 (manufactured in 1964). Although the Nordburg HP300SX cone crushers have capacities greater than 25 TPH, per 40 CFR 60.670(d)(1), Subpart OOO does not apply since the units were equal or smaller in size than the units replaced. (Correspondences dated January 24, 1997; February 26, 1997; April 11, 1997; July 24, 1997; July 31, 1997; September 4, 1997) Therefore, none of the existing equipment is subject to Subpart OOO.

New Equipment:
40 CFR, 60 Subpart OOO is an applicable requirement for both of the new crushers. The portion of the subpart that pertains to the new crushers is for equipment manufactured after August 31, 1983, but before April 22, 2008. Pertinent requirements lnculde a 15 percent visible emissions limit for the crushers and annual performance testing to demonstrate compliance with the visible emissions limit.

Prevention of Significant Deterioration (PSD):
PSD applies to new stationary sources in an attainment area which emit or have the potential to emit 250 TPY (or 100 TPY for 28 named source categories) of any regulated pollutant, to a major stationary source making a major modification involving a significant net emissions increase (e.g., 15 tons per year PM_{10} [HAR 11-60.1-1]), or to a non-major source undergoing a modification that is major by itself.

Since the quarry does not beling to any of the 27 source catgories for which fugitive emissions are included in major stationary source determinations, the Kapaa quarry is not a major stationary source. The majority of air emissions from the Kapaa quarry facility are fugitive in nature. Therefore, PSD regulations do not apply since the facility is not a major stationary source, and the modification by itself does not exceed the 250 tpy major source threshold for non-metallic mineral processing plants. Emission calculations are attached to the technical review for reference.

Best Available Control Technology (BACT):

A BACT analysis is required for new sources or modifications to existing sources that would result in a net significant increase as defined in HAR, Section 11.60.1-1. Although particulate matter emissions exceed the significant increase threshold of 15 tons per year, The typical BACT for a stone processing facility is the use of watersprays, which is already included in the modification. Therefore, a BACT analysis was not performed for the modification.

National Emission Standards for Hazardous Air Pollutants (NESHAP):
The facility is not subject to any NESHAP requirement as there are no applicable standards in 40 CFR, Part 61.

Maximum Available Control Technology (MACT) Standards:
The facility is not subject to any MACT standards since the facility is not a major source of hazardous air pollutants and does not belong to a source category for which a standard has been promulgated under 40 CFR, Part 63.

Compliance Assurance Monitoring (CAM):
Applicability of the CAM Rule (40 CFR, Part 64) is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

- Be located at a major stationary source per Title V of the Clean Air Act Amendments of 1990;
- Be subject to federally enforceable applicable requirements;
- Have pre-control device potential emissions that exceed applicable major source thresholds;
- Be fitted with an “active” air pollution control device; and
- Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

The facility is a major covered source and the stone processing equipment has pre-control device potential emissions that exceed applicable major source thresholds. The stone processing equipment has “active” air pollution control devices (water sprays and baghouses). Thus, the stone processing equipment is subject to CAM.

<u>CAM Plan Review</u>
To determine the equipment at the facility subject to CAM, the maximum potential uncontrolled emissions were calculated for devices fitted with an active air pollution control device. Equipment with federally enforcable requirements are as follows:

Baghouse	Emission Limit (lb/hr)
BH1	4.1271
BH2	0.1897
BH11	1.6429
BH_Drum	0.0570

The maximum emissions from the subject baghouses are:

Baghouse	Max Controlled Emissions[1] (TPY)	Max Uncontrolled Emissions (TPY)
BH1	10.3	1030
BH2	0.47	47
BH11	4.1	410
BH_Drum	0.14	14.23

Notes: Assumed a baghouse efficiency of 99%

[1] Limited to 4,992 hours of operation annually

For CAM purposes, baghouses BH1 and BH11 have pre-control emissions greater than major source levels but do not have post-control emissions greater than major source levels. Although Baghouses BH2 and BH_Drum also have federally enforceable emission limits, neither is subject to CAM because pre-control emissions levels do not exceed the one hundred (100) ton per year major source trheshold. The remaining baghouses and emission units at the facility do not have federally enforceable emission limits. Due to the fact that the post-control emissions for baghouses BH1 and BH11 are each less than one hundred (100) tons per year, the minimum required frequency for monitoring is reduced to once per twenty-four (24) hour period.

The proposed monitoring method for BH1 and BH11 is to increase the frequency of visible emissions monitoring from monthly to daily whenever the mansand plant is in operation. If the visible emissions test results for BH1 and BH11 exceed the visible emission limits, correctinve action will be taken and all actions performed will be reported.

Consolidated Emissions Reporting Rule Applicability
Consolidated Emissions Reporting Rule (CERR) is an applicable requirement because annual emissions from the facility exceed the minimum than reporting levels for a Type B source pursuant to 40, CFR 51, Subpart A (see following table)

CERR Reporting Requirements

Pollutant	Facility Emissions (tpy)	CERR Triggering Levels (tpy)		Internal Reporting Threshold (tpy)
		1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	0.79	≥ 250	≥ 100	≥ 25
PM_{10}	259.63	≥ 250	≥ 100	≥ 25
$PM_{2.5}$	259.63	≥ 250	≥ 100	≥ 25
NO_x	18.43	≥ 2,500	≥ 100	≥ 25
SO_x	0.15	≥ 2,500	≥ 100	≥ 25
CO	15.64	≥ 2,500	≥ 1,000	≥ 250
HAPs (total)	0.30	n/a	n/a	≥ 5

Insignificant Activities/Exemptions:
The following table summarizes the facility's insignificant activities and basis for exemption.

INSIGNIFICANT ACTIVITIES			
Equipment	**Size**	**Exemption Basis**	**Comment**
Load-out tanks 4,5,6,7,23,24,25	NA	HAR 11-60.1-82(f)(7)	None
Intermediate storage tanks 2,3,8,9,10,19	NA	HAR 11-60.1-82(f)(7)	None
Blending tanks 12,13,14	NA	HAR 11-60.1-82(f)(7)	None
Particle loadout tanks 15,16,17,18,21,22	NA	HAR 11-60.1-82(f)(7)	None
Dust tanks 27,28	NA	HAR 11-60.1-82(f)(7)	None
Underground fuel storage tanks	NV	HAR 11-60.1-82(f)(1)	Storage tank < 40,000 gallons
Portable diesel powered welder	NA	HAR 11-60.1-82(f)(2)	Heat input less than < 1MMBtu/hr
Hand held machining equipment	NA	HAR 11-60.1-82(g)(2)	Hand held equipment

The load-out tanks, intermediate storage tanks, blending tanks, particle load-out tanks, and dust tanks, as specified in Table 4 are exempt from permitting per HAR 11-60.1-82(f)(7) which exempts: "Other activities which emit less than two (2) tons per year of each regulated air pollutant other than carbon monoxide and which the director determines to be insignificant on a

case-by-case basis."

The underground fuel storage tanks are exempt from permitting based on HAR 11-60.1-82(f)(1) which exempts: "Any storage tank, reservoir, or other container of capacity equal to or less than forty thousand gallons storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 or 112 of the Act." The tanks listed above have capacities less than forty thousand gallons, and thus are exempt from regulations promulgated pursuant to Sections 111 or 112 of the Act.

The portable welder is exempt from permitting based on HAR 11-60.1-82(f)(2) which exempts: "Other than smoke house generators or gasoline fired industrial equipment, fuel burning equipment with a heat input capacity less than one million BTU per hour, except where the total heat input capacity of all individually exempted equipment exceeds five million BTU per hour when operated within the facility and controlled by a single owner or operator."

The hand held machining equipment is exempt from permitting based on HAR 11-60.1-82(g)(3) which exempts: "Hand held equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning or ceramic art work, precision parts, leather, metals, plastics, fiber board, masonry, carbon, glass, or wood, provided reasonable precautions are taken to prevent particulate matter from becoming airborne. Reasonable precautions include the use of dust collection systems, dust barriers, or containment systems."

Alternate Operating Scenarios:
No additional alternate operating scenarios have been proposed by the applicant. The existing permit allows for the replacement of a cruhser or screen with equipment of the same make, model, and size.

Project Emissions:
Emissions from the existing equpiment are summarized in the following table:

Existing Emission Estimates by Process [TPY]						
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**VOC**	**CO**
Stone Processing	192.2	130.9	--	--	--	--
Concrete Batching	1.7	1.1	--	--	--	--
Unpaved Roads	96.3	19.0	--	--	--	--
Stockpiles	45.2	21.4	--	--	--	--
Combustion	0.1	0.1	0.1	0.9	0.1	0.2
Total	**335.6**	**172.5**	**0.1**	**0.9**	**0.1**	**0.2**
Note: See tables in appendix for emission factor references.						

Emissions for the new equipment was determined using the following emission factors:

- Diesel engine emission factors for NO_2 CO and PM obtained from manufacturer's information;
- Diesel engine emission factors for SO_2 and VOC obtained from AP-42, Table 3.4-1(10/96);
- Diesel engine HAP emission factors obtained from AP-42, table 3.4-3 (10/96)
- Crusher emission factors from AP-42, table 11.19.2-2 (8/04)

The resultant emissions increase from the additon of the crushers and diesel engines is:

Pollutant	DEG 3 Emissions (TPY)	DEG 4 Emissions (TPY)	Total DEG Emissions (TPY)	Total DEG Emissions(g/s)	Crusher Emissions (TPY)	Total Emissions (TPY)
SOx	0.02	0.03	0.05	1.37E-03		0.05
NOx	15.57	1.96	17.53	0.50		17.53
CO	13.62	1.72	15.34	0.44		15.34
VOC	0.61	0.08	0.69	0.02		0.69
PM_{10}	0.78	0.10	0.88	0.03	86.25	87.13
HAP EMISSIONS						
BENZENE	1.66E-02	2.75E-02	4.41E-02	1.27E-03		0.04
TOLUENE	7.28E-03	1.21E-02	1.93E-02	5.56E-04		0.02
XYLENES	5.07E-03	8.41E-03	1.35E-02	3.88E-04		0.01
NAPHTHALENE	4.59E-02	7.61E-02	1.22E-01	3.51E-03		0.12
PROPYLENE	6.96E-04	1.15E-03	1.85E-03	5.32E-05		0.00
FORMALDEHYDE	2.10E-02	3.48E-02	5.58E-02	1.61E-03		0.06
ACETALDEHYDE	1.37E-02	2.26E-02	3.63E-02	1.04E-03		0.04
ACROLEIN	1.65E-03	2.73E-03	4.37E-03	1.26E-04		0.00
Toal HAPS	0.112	0.185	0.30	0.01		0.30

The total emissions from the facility is:

Pollutant	Emissions (tpy)				
	Existing	Diesel Engine 3	Diesel Engine 4	Crushers	Total
SO_2	0.1	0.01	0.02		0.13
NO_x	0.9	8.87	47.64		57.41
CO	0.2	7.76	11.31		19.27
VOC	0.1	0.35	0.35		0.80
PM_{10}	172.5	0.44	1.56	86.25	260.75
Total HAPs	0	0.78	1.29		2.07

Synthetic Minor Applicability:
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. If the facility were to operate at the maximum capacity for 8,760 hours per year, or even at the existing limit of 4,992 hours per year, emissions would exceed major source levels. Thus, the facility is not a synthetic minor source.

Air Quality Assessment:
To demonstrate that the installation and operation of the two new crushers and diesel engine generators will not couse or contribute to a violation of any State of Federal ambient air quality standard (aaqs), an air dispersion model was run for the two diesel engines to be added.

The existing equipment was previously modeled for the initial Title V permit, and thus was not included in the model for the new equipment. The new crushers are not included in the analysis since crusher emissions are not point sources and thus not required to be modelled. The model used was the Industrial Source Complex-Prime (ISC-Prime) model (Earth Tech, Inc. 1997) to predict concentration impacts from the operation of the two new diesel engines. ISC-Prime was selected because the model:

1. Contains the most current science with respect to building wake effects or downwash,
2. Predicts concentration impacts from multiple emission units simultaneously,
3. Predicts concentration impacts in complex terrain, and
4. Can be run with screening meteorology to obtain conservative concentration impacts.

Assumptions used in the model consist of the following:

1. Screening Met data used in conjunction with ISC-Prime.
2. UTM coordinates for each stack, building and receptor obtained from an AMERON Geographical Information Systems (GIS) database.
3. North American Datum of 1983 (NAD83) used for UTM coordinates
4. Background air quality data obtained from West Beach (SO_2 NO_x), University (CO) and Waimanalo (PM_{10}).

5. Annual operational limits of 235,000 gallons for diesel engine 4 and 140,000 gallons for diesel engine 3 to be considered when performing annual ambient air calculations.

Downwash:
The ISCST3 model uses the building input data to predict potential downwash effects. The downwash effects are considered for all of the point sources. The latest version of BEE-Line Software's BPIP was used for input into the ISCST3 model, and the electronic output file for the analysis has been included. The following table provides the parameters for buildings and structures at the facility.

Building/Structure Parameters				
I.D.	**Height(1) (ft)**	**Width (ft)**	**Length (ft)**	**Base Elevation(2) (ft)**
ST#1	25	82	43	207
ST#2(3)	15(5) 25(6)	128 85	62 41	198
ST#3	25	144	75	201
ST#4	15	46	30	195
ST#5	75	43	26	188
ST#6	75	23	10	184
ST#7	12	16	13	193
ST#8	12	33	13	187
ST#9	12	40	36	189
ST#10	70	85	46	200
ST#11	20	16	16	225
ST#12	45	62	25	228
ST#13	68	30	30	241
ST#14	77	62	26	220
ST#15	58	43	23	215
ST#16	90	164	69	217
ST#17	90	112	46	200
ST#18(4)	33(5) 66(7) 100(6)	246 203 161	164 407 325	282
ST#19	110	13	26	321
ST#20	20	10	39	196

Notes:
(1) Building height with respect to base elevation
(2) Base elevation above Mean Sea Level (MSL)
(3) This building consists of two tiers
(4) The aggregate piles consists of three tiers
(5) First tier
(6) Top tier
(7) Middle tier

Receptor locations:

Receptors were located in areas considered ambient air. The crest of the terrain features surrounding the Ameron facility formed the property line. A small portion of the property is being used by Grace Pacific for the operation of a hot mix asphalt plant within the Ameron facility. In addition, U.S. Highway H-3 bisects the property. Consistent with the definition of "ambient air," receptors were located at Hawaiian Bitumuls and at the segment of U.S. Highway H-3 crossing Ameron property for dispersion air modeling. Receptors were located at the entrance into Ameron property and along the H-3 highway in 50 meter increments. A total of 148 receptor locations were utilized.

Input parameters:
There were a total of 2 point sources used in the model. Table 7 provides the emission source parameters.

Table 7: Emission Source Parameters

Source ID	Location			Stack Parameters			
	Elevation (m)	East (m)	North (m)	Height (1) (m)	Temperature (K)	Diameter(2) (m)	Exit Velocity (2) (m/sec)
DEG#3	146.15	626,938	2,365,436	6.5	762	0.19	60.39
DEG#4	146.15	626,952	2,365,436	3.2	685	0.25	56.73

Emissions:
Four criteria pollutants were modeled for the ambient air quality assessment: CO, NO_2, PM_{10} and SO_2. The peak hourly emission rates for each modeled source were provided by the manufacturer, and are summarized in Table 8.

Table 8: Modeled Emission Rates (g/s)

Source	CO	NO_2	PM_{10}	SO_2
DEG #3	0.392	0.448	0.0224	0.000515
DEG #4	0.571	2.4	0.0786	0.000855

Using the emission rates listed, the model calculated the following maximum one (1) hour concentrations for each pollutant. Note the maximums for The one hour concentrations are listed in table 9.

Table 9: Modeled One Hour Concentrations

Pollutant	Concentration ($\mu g/m^3$)
CO	41.095
NO_x	757.04639
SO_2	48.648
PM_{10}	215.871

To determine the concentrations for other averaging periods other than one-hour (1-hour), the conversion factors listed in table 10 were used:

Table 10: Averaging Period Conversion Factors

Averaging Period	Conversion Factor
3-hour	0.9
8-hour	0.7
24-hour	0.4
Annual	0.2

In addition to the conversion factors listed, the annual NO_x concentrations were adjusted using the ambient rate method, and the annual fuel limits for the two diesel engines.

Diesel Engine	Fuel Rate (gal/hr)	Annual Max. (gal/yr)	Annual Limit (gal/yr)	% of Annual Limit	Modeled Impact (μg/m^3)	Adjusted Impact (μg/m^3)
3	28.9	253,164	140,000	55.3	121.69	67.29
4	47.9	419,604	235,000	56.0	636.13	356.27
			Total Impact from both engines			423.56
			Ambient rate method adjustment			0.75
			Adjusted NO_x cocentration (μg/m^3)			317.67

The modeling result demonstrates compliance with State and Federal ambient air quality standards, and are summarized in the following table.

Modeling Results – Ameron Kapaa Quarry Modification								
Pollutant	**Avg. Time**	**Modeled Concentration ($\mu g/m^3$)**	**Time Factor**	**Impact**	**Background**	**Total Impact**	**Std.**	**% of std.**
SO_2	3-hr	0.36562	0.9	0.33	24	24.33	1,300	1.87
	24-hr	0.36562	0.4	0.15	7	7.15	365	1.96
	Ann	0.36562	0.2	0.07	2	2.07	80	2.59
NO_2[A]	Ann	317.67	0.2	63.53	6	69.53	70	99.33
PM_{10}	24-hr	123.52	0.4	49.41	36	85.41	150	56.94
	Ann	123.52	0.2	24.70	16	40.70	50	81.40
CO	1-hr	257.14	1.0	257.14	2736	2993.14	10,000	29.93
	8-hr	257.14	0.7	180.00	1967	2147.00	5,000	42.94

[A] Multiplied by ambient rate method (0.75)
[B] Applied annual fuel limits of 140,000 gal/yr and 235,000 gal/yr for DE3 and DE4, respectively

Significant Permit Conditions:
The significant permit conditions added to the permit consists of the following:

Rolling tweleve-month (12-month) operational limits of 235,000 gallons for diesel engine 4 and 140,000 gallons for diesel engine 3.

Conclusion:
The facility complies with all state and federal standards with regard to air pollution. Recommend issuance of covered source permit subject to public hearing and 45-day EPA review.

Kevin Kihara
February 11, 2010