



TECHNICAL SUPPORT DOCUMENT

FARWEST PORTABLE CRUSHING

SWCAA ID: 2397

Air Discharge Permit / Nonroad Engine Permit 20-3442

ADP / NEP Application S-137

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Abbreviations

ADP	Air Discharge Permit
AP-42	<u>Compilation of Emission Factors, AP-42, Fifth Edition, Volume 1, Stationary Point and Area Sources</u> – published by the US Environmental Protection Agency
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
Btu	British thermal units
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO ₂ e	Carbon dioxide equivalent as defined in 40 CFR 98
EPA	U.S. Environmental Protection Agency
HAP	Hazardous Air Pollutant listed pursuant to Section 112 of the Federal Clean Air Act
LAER	Lowest Achievable Emission Rate
lb/hp-hr	Pounds per horsepower per hour
lb/hr	Pounds per hour
lb/yr	Pounds per year
MMBtu	Millions of British thermal units
NO _x	Nitrogen oxides
PM	Particulate matter with an aerodynamic diameter less than 100 micrometers (includes both filterable particulate matter measured by EPA Method 5 and condensable particulate matter measured by EPA Method 202)
PM ₁₀	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (includes both filterable particulate matter measured by EPA Method 201 or 201A and condensable particulate matter measured by EPA Method 202)
PM _{2.5}	Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (includes both filterable particulate matter measured by EPA Method 201 or 201A and condensable particulate matter measured by EPA Method 202)
PSD	Prevention of Significant Deterioration
psig	Pounds per square inch, gage
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RCW	Revised Code of Washington
rpm	Rotations per minute
SQER	Small Quantity Emission Rate listed in WAC 173-460
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
SWCAA	Southwest Clean Air Agency
TAP	Toxic Air Pollutant pursuant to Chapter 173-460 WAC
T-BACT	Best Available Control Technology for toxic air pollutants
tpy	Tons per year
VOC	Volatile organic compound
WAC	Washington Administrative Code

1. FACILITY IDENTIFICATION

Applicant Name: Farwest Portable Crushing
Applicant Address: PO Box 1289, Gresham, OR 97030

Facility Name: Farwest Portable Crushing
Facility Address: Portable – initially to be located in North Bonneville Quarry
Contact Person: Ted Salka (owner)
SWCAA Identification: 2397

Primary Process: Crushed and Broken Stone / Other Crushed and Broken Stone Mining and Quarrying
SIC/NAICS Code: 1429 / 212319
Facility Designation: Natural minor

2. FACILITY DESCRIPTION

Farwest Portable Crushing operates a portable rock crushing/screening plant. The plant may be used to crush rock or construction debris. The plant consists of rock crushers and screens driven by diesel-fired generator sets.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit (ADP) / Nonroad Engine Permit (NEP) Application number S-137 (ADP / NEP Application S-137) received July 14, 2020. ADP / NEP S-137 request approval to add the following:

- (a) A trailer-mounted 1993 Clemro 34x42 Jaw Crusher (serial number 0570-1910).
- (b) A trailer-mounted 1995, 810 hp, diesel-fired, Caterpillar 3412 engine to drive an electrical generator (engine serial number 81Z17471). This engine is moved frequently and is therefore classified as a nonroad engine.
- (c) Replacement of the ElJay 5 x 14 Screen (serial number 1328).
- (d) Replacement of the ElJay 5163FD Screen (serial number F-3D16).

Small Unit Notification 240 (SUN-240) was originally submitted for approval of the 1995 Caterpillar Generator Engine but was withdrawn by letter on July 1, 2020 because the SUN could not be processed for a non-emergency engine. SUN-239 was originally submitted for the 1993 Clemro 34x42 Jaw Crusher but was withdrawn by letter dated July 1, 2020 to consolidate the approval with ADP / NEP Application S-137. Air Discharge Permit 12-3002 and the approvals for SUNs 102 and 179 will be superseded in their entirety by this permitting action and the requirements from those approvals will be carried forward into the new permit.

4. PROCESS DESCRIPTION

Rock, construction debris, recycled asphalt, or concrete will be fed to one or more crushing units via front end loader or backhoe. Material will be crushed, screened, and stacked by the crushing and screening units and associated conveyors. High pressure water spray will be used to control fugitive dust at the infeed of the crushers and screens. Wet suppression will be utilized as necessary to control fugitive dust at conveyor transfer points and other sources of fugitive dust.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

- 5.a Pioneer 3042 Jaw Crusher (existing). This is intended to be an initial crusher at the plant.
- | | |
|----------------|-------------------------|
| Make / Model: | Pioneer / 3042 |
| Serial Number: | U2382 |
| Size/Capacity: | 357 tons per hour (tph) |
| Manufactured: | 1974 |

Federal Regulations: 40 CFR 60 Subpart OOO is not applicable because this unit was constructed before August 31, 1983.

5.b Lippman Jaw Crusher (existing). This is intended to be an initial crusher at the plant.

Make / Model: Lippman / 24 x 36

Serial Number: 470411

Size/Capacity: 127 - 584 tph, generally < 250 tph in practice. 24" gape, 36" width

Manufactured: 1947

Federal Regulations: 40 CFR 60 Subpart OOO is not applicable because this unit was constructed before August 31, 1983.

5.c Clemro 34x42 Jaw Crusher (new). This is intended to be an initial crusher at the plant.

Make / Model: Clemro 34 x 42

Serial Number: 0570-1910

Size/Capacity: unknown – likely in the range of 350 tpy based on units of similar size.

Manufactured: December 1993

Federal Regulations: 40 CFR 60 Subpart OOO

5.d ElJay RC45STD Rollercone Crusher (existing). This unit is used for secondary crushing.

Make / Model: ElJay / RC45STD

Serial Number: 600

Size/Capacity: 45", ~175 tph

Manufactured: 1969

Federal Regulations: 40 CFR 60 Subpart OOO is not applicable because this unit was constructed before August 31, 1983.

5.e Cedarapids 4026 Roll Crusher (existing). This unit is used for tertiary crushing.

Make / Model: Cedarapids / 4026

Serial Number: 27003

Size/Capacity: 40" x 26", 667 tpy

Based on Cedarapids Pocket Reference Book, 16th Edition:

(feet per minute)	Setting (inches)	Capacity (tons per hour/inch)	Capacity (tons per hour)
700	4.5"	27.8	667
700	1.0"	9.0	216
400	4.5"	20	480
400	1.0"	6.4	154

Manufactured: 1973

Installed at Farwest: 2015

Federal Regulations: 40 CFR 60 Subpart OOO is not applicable because this unit was constructed before August 31, 1983.

5.f KPI JCI 5 x 16 x 2 Screen (new). This screen is attached to the ElJay RC45STD rollercone crusher.

Equipment: KPI JCI 5 x 16 2-deck screen

Serial Number: S1845585

Size/Capacity: 5 x 16 (two deck) / ~500 tph (large range depending on multiple factors)

Manufactured: ~2018

Federal Regulations: 40 CFR 60 Subpart OOO

- 5.g KPI JCI 5 x 16 x 3 Screen (new). This screen is attached to the Cedarapids 4026 Roll Crusher.
Equipment: KPI JCI 5 x 16, 3-deck screen
Serial Number: S173956
Size/Capacity: 5 x 16 (three deck) / ~500 tph (large range depending on multiple factors)
Manufactured: ~2018
Federal Regulations: 40 CFR 60 Subpart OOO
- 5.h Haul Roads and Conveyors. Dump trucks or other equipment may be used to transport material to, from, or within a work area.
- 5.i 1986 Caterpillar Generator Engine (existing). This engine drives a 545 kW Caterpillar SR4 generator that is used to power crushing, screening, and conveying equipment at the facility.
Engine Make / Model: Caterpillar / 3412DI
Engine Serial Number: 81Z05685
Fuel: Diesel
Horsepower Rating: 890 hp
Engine Built: July 10, 1986
Engine Certification: None
Stack Description: ~8" diameter, est. 10' above grade, 4,986 cfm @ 905°F
Federal Regulations: 40 CFR 63 Subpart ZZZZ
- 5.j 1995 Caterpillar Generator Engine (new). This engine drives a 545 kW Caterpillar SR4 generator that will be used to power crushing, screening, and conveying equipment at the facility. This engine will need to be moved frequently between locations (more than once every 12 months); therefore this engine is a nonroad engine.
Engine Make / Model: Caterpillar / 3412CDITA
Engine Serial Number: 81Z17471
Fuel: Diesel
Horsepower Rating: 810 hp
Engine Built: February 24, 1995
Engine Certification: None
Stack Description: ~8" diameter, est. 10' above grade, 4,487 cfm @ 891°F
Federal Regulations: 40 CFR 89 (this is an existing nonroad engine)

5.k Equipment/Activity Summary.

ID No.	Generating Equipment/Activity	# of Units	Control Equipment	# of Units
1	Pioneer 3042 Jaw Crusher	1	High pressure wet suppression at crusher entrance	N/A
2	Lippman Jaw Crusher	1	High pressure wet suppression at crusher entrance	N/A
3	Clemro 34x42 Jaw Crusher	1	High pressure wet suppression at crusher entrance	N/A
4	ElJay RC45STD Rollercone Crusher	1	High pressure wet suppression at crusher entrance	N/A
5	Cedarapids 4026 Roll Crusher	1	High pressure wet suppression at screen deck	N/A
6	KPI JCI 5 x 16 x 2 Screen	1	High pressure wet suppression at screen deck	N/A
7	KPI JCI 5 x 16 x 3 Screen	1	High pressure wet suppression at screen deck	N/A
8	Conveyors	N/A	Wet suppression	N/A
9	Haul Roads	N/A	Wet suppressions	N/A
10	1986 Caterpillar Generator Engine (890 hp)	1	Ultra-low sulfur diesel, limited operation	N/A
11	1995 Caterpillar Generator Engine (810 hp nonroad engine)	1	Ultra-low sulfur diesel	N/A

6. EMISSIONS DETERMINATION

6.a Crushing and Screening Operations. Potential emissions from crushing, screening, and material transfer are calculated from aggregate throughput and emission factors from EPA AP-42, Table 11.19.2-2 (8/04). Emission factors for all stages except primary crushing are "controlled" factors from the 8/04 version of the table. Emission factors for primary crushing are taken from the 1/95 version of the table which only provided an "uncontrolled" PM factor for primary crushing. An 'uncontrolled' factor for PM₁₀ was calculated using the 2.1:1 ratio of PM to PM₁₀ specified in the table footnotes. An "uncontrolled" factor for PM_{2.5} was calculated using a PM to PM_{2.5} ratio of 12:1 which is based on the tested PM to PM_{2.5} ratio for tertiary crushing in the 8/04 version of the table. A control efficiency of 80% was applied to the primary crushing factors to account for the use of wet suppression. The blasting emission factors come from AP-42, Table 11.9.1 assuming a blast area of 17,000 square feet, a blast depth of 20 feet, and a material density of 3,240 pounds per cubic yard.

Activity	Throughput (tpy)	Pollutant	Emission Factor - Controlled (lb/ton)	Transfer Points	Emissions (lbs)
Primary crushing (3" - 12")	200,000	PM	0.00014		28
		PM ₁₀	0.000067		13
		PM _{2.5}	0.000012		2
Secondary crushing (1" - 4")	200,000	PM	0.0012		240
		PM ₁₀	0.00054		108
		PM _{2.5}	0.0001		20
Tertiary crushing (3/16" - 1")	200,000	PM	0.0012		240
		PM ₁₀	0.00054		108
		PM _{2.5}	0.0001		20
Screening	200,000	PM	0.0022		440
		PM ₁₀	0.00074		148
		PM _{2.5}	0.00005		10
Loading/conveying	200,000	PM	0.00014	7	196
		PM ₁₀	0.000046		64
		PM _{2.5}	0.000013		18
Blasting	200,000	PM	0.0015		304
		PM ₁₀	0.00079		158
		PM _{2.5}	0.000046		9

6.b Haul Roads. Emissions from haul roads were calculated using default emission calculations from EPA AP-42, Section 13.2.2 (12/03), an average load weight of 20 tons, an average silt content of 4.8%, and an average round trip distance of 0.5 miles. This does not include in-pit activities by non-road equipment. The use of wet suppression is expected to provide an overall control efficiency of 80% for haul road emissions.

$$E = k \left(\frac{s}{12} \right)^a \left(\frac{w}{3} \right)^b$$

Where: w = average truck weight in tons;
s = road surface silt content (%); and
The constants k, a, and b are given in the table below:

Constant	PM _{2.5}	PM ₁₀	PM ₃₀ (assumed to represent PM)
k (lb/vehicle mile traveled)	0.23	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

Maximum haul road emissions are estimated in the table below.

Haul Road Emissions				
Average Truck Weight =	27 tons (assumes empty weight of 17 tons)			
Average Round Trip Distance =	0.50 miles			
Amount of Aggregate per Load =	20.0 tons			
Total # of Trips =	10,000 loads			
Total Miles Traveled =	5,000 miles			
Assumed Silt Content =	4.8%			
Assumed Control (wet suppression) =	80%			
	Uncontrolled Emission Factor	Controlled Emission Factor	Emissions tpy	Emission Factor Source
Pollutant	lb/mile	lb/mile		
PM	6.94	1.39	3.47	AP-42 13.2.2 (11/06)
PM ₁₀	1.77	0.35	0.88	AP-42 13.2.2 (11/06)
PM _{2.5}	0.27	0.054	0.14	AP-42 13.2.2 (11/06)

6.c 1986 Cat Generator Engine. Potential annual emissions from the combustion of ultra-low sulfur diesel (<0.0015% sulfur by weight) were calculated with the assumption that the equipment will operate at full load for 1,000 hours per year.

1986 Cat Generator Engine						
Hours of Operation =	1,000 hours					
Power Output =	890 horsepower					
Diesel Density =	7.206 pounds per gallon					
Fuel Sulfur Content =	0.0015 % by weight					
Fuel Consumption Rate =	44.00 gallons per hour (from Caterpillar)					
Fuel Heat Content =	0.138 MMBtu/gal (for use with GHG factors from 40 CFR 98)					
Annual Fuel Consumption =	44,000 gallons					
Pollutant	Emission Factor lb/hp-hr	Emission Factor lb/hr	Emissions tpy	Emission Factor Source		
NO _x		14.72	7.36	Caterpillar - Potential Site Variation		
CO	0.00038	0.34	0.17	23 ppmvd @ 15% O ₂ (Subpart ZZZZ)		
VOC		0.13	0.065	Caterpillar		
SO _x as SO ₂	0.000011	0.0095	0.0048	Mass Balance		
PM/PM ₁₀ /PM _{2.5}		1.07	0.54	Caterpillar		
Greenhouse Gases	kg/MMBtu	GWP	CO ₂ e lb/MMBtu	CO ₂ e lb/gallon	tpy, CO ₂ e	Emission Factor Source
CO ₂	73.96	1	163.05	23	495	40 CFR 98
CH ₄	0.003	25	0.165	0.023	0.50	40 CFR 98
N ₂ O	0.0006	298	0.394	0.054	1.20	40 CFR 98
Total GHG - CO ₂ e			163.613	23	497	

Emissions must be calculated using the emission factors identified above unless new emission factors are provided by the manufacturer or developed through source testing.

6.d 1995 Cat Generator Nonroad Engine. Potential annual emissions from the combustion of ultra-low sulfur diesel (<0.0015% sulfur by weight) were calculated with the assumption that the equipment will operate at full load for 2,000 hours per year.

1995 Cat Generator Engine						
Hours of Operation =	2,000 hours					
Power Output =	810 horsepower					
Diesel Density =	7.206 pounds per gallon					
Fuel Sulfur Content =	0.0015 % by weight					
Fuel Consumption Rate =	41.09 gallons per hour (based on 7,000 Btu/hp-hr)					
Fuel Heat Content =	0.138 MMBtu/gal (for use with GHG factors from 40 CFR 98)					
Annual Fuel Consumption =	82,174 gallons					
Pollutant	Emission Factor lb/hp-hr	Emission Factor lb/hr	Emissions tpy	Emission Factor Source		
NO _x		13.61	13.61	Caterpillar - Potential Site Variation		
CO		0.48	0.48	Caterpillar - Potential Site Variation		
VOC		0.13	0.13	Caterpillar - Potential Site Variation		
SO _x as SO ₂	1.10E-05	0.0089	0.0089	Mass Balance		
PM/PM ₁₀ /PM _{2.5}		0.83	0.83	Caterpillar - Potential Site Variation		
Greenhouse Gases	kg/MMBtu	GWP	CO ₂ e lb/MMBtu	CO ₂ e lb/gallon	tpy, CO ₂ e	Emission Factor Source
CO ₂	73.96	1	163.05	23	925	40 CFR 98
CH ₄	0.003	25	0.165	0.023	0.94	40 CFR 98
N ₂ O	0.0006	298	0.394	0.054	2.24	40 CFR 98
Total GHG - CO₂e			163.613	23	928	

Emissions must be calculated using the emission factors identified above unless new emission factors are provided by the manufacturer or developed through source testing.

6.e Facilitywide Potential Emissions (PTE) Summary.

Pollutant	Total PTE (tpy)	Project Increase (tpy)
Nitrogen oxides	20.97	13.61
Carbon monoxide	0.65	0.48
Volatile organic compounds	0.20	0.13
Sulfur oxides as sulfur dioxide	0.014	0.0089
Particulate matter	5.38	2.94
PM ₁₀	2.56	1.43
PM _{2.5}	1.54	0.92
Toxic Air Pollutants	0	0
Hazardous Air Pollutants	0	0
CO ₂ e	1,424	928

7. REGULATIONS AND EMISSION STANDARDS

Regulations that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the regulations, codes, or requirements listed below.

- 7.a Title 40 Code of Federal Regulations (40 CFR) Part 60.670 et seq. (Subpart OOO) "Standards of Performance for Nonmetallic Mineral Processing Plants" establishes opacity and particulate matter emission limits for stationary (fixed) plants with capacities greater than 25 tons per hour and portable plants greater than 150 tons per hour that were constructed, reconstructed or modified after August 31, 1983. This regulation is applicable only to the Clemro jaw crusher. All other units were built prior to the applicability date. This regulation is applicable to accessory equipment (e.g. screens) whenever it is operated in conjunction with an affected crushing unit.
- 7.b 40 CFR 60 Subpart IIII (60.4200 et seq.) "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" applies to each compression ignition (CI) internal combustion engine (ICE) that commences construction after July 11, 2005 and is manufactured after April 1, 2006, or that is modified or reconstructed after July 11, 2005. No equipment at this facility is subject to this regulation. The 1986 Caterpillar Generator Engine is not subject to this regulation because the unit was manufactured prior to 2005. The 1995 Caterpillar Generator Engine is not subject because it is a nonroad engine rather than a stationary source.
- 7.c 40 CFR 63 Subpart ZZZZ (63.6580 et seq.) "National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines" establishes national emission limitations and operating limitations for HAP emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The 1986 Caterpillar Generator Engine is subject to this regulation. The 1995 Caterpillar Generator Engine is not subject to this regulation because it is a nonroad engine. For area sources, an engine is "existing" if construction was commenced before June 12, 2006. The 1985 Caterpillar Generator Engine was built prior to 2006 and therefore is considered an existing engine at an area source.

Enforcement of this regulation has not been delegated from EPA to SWCAA and the requirements from this regulation have not been included in the Permit.

Effective May 3, 2013 for existing non-emergency engines with a horsepower rating of > 500 horsepower at an area source, the owner or operator is required to:

- (1) Reduce CO emissions by 70% or to 23 ppmvd @ 15% O₂. [40 CFR 63.6603(a) and Table 2d(3(a & b))]
- (2) If using a catalyst to comply with the CO limit above, maintain the catalyst pressure drop within 2" w.c. from that measured during the initial performance test, and maintain the catalyst inlet temperature greater than or equal to 450°F and less than or equal to 1,350°F. If not using an oxidation catalyst to comply with the CO limit above, comply with the operating limitations approved by the Administrator. [40 CFR 63 Subpart ZZZZ Table 2b]
- (3) Utilize diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel. [40 CFR 63.6604] 40 CFR 80.510(b) requires that the fuel sulfur not exceed 15 ppm and that the fuel have a minimum cetane index of 40 or a maximum aromatic content of 35%.
- (4) Perform an initial performance test no later than 180 days after May 3, 2013 in accordance with 40 CFR 63 Subpart ZZZZ Tables 4 and 5 and the requirements listed in 40 CFR 63.6620. [40 CFR 63.6612(a), 63.6620]
- (5) Perform periodic performance tests every 8,760 hours of operation or 3 years, whichever comes first. [40 CFR 63.6615 & Table 3(4)]
- (6) Operate each continuous parameter monitoring system (e.g. temperature sensor) in accordance with 40 CFR 63.6625(b). [40 CFR 63.6625(b)]
- (7) If the engine does not have a closed crankcase ventilation system, one must be installed, or an open crankcase filtration emission control system must be installed that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals. [40 CFR 63.6625(g)]

- (8) If you have an operating limitation that requires the use of a temperature measurement device, you must meet the requirements in paragraphs (k)(1) through (4) of 40 CFR 63.6625(k). [40 CFR 63.6625(k)]
- (9) Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 CFR 63.6625(h)]
- (10) Submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.6645.
- (11) Maintain records and submit reports and notifications as required.
- (12) Report each instance in which the owner did not meet each operating limitation. [40 CFR 63.6640(b)]
- (13) Record the occurrence and duration of each malfunction of operation (i.e., process equipment). [40 CFR 63.6655(a)(2)]

Additional requirements and details can be found in the text of Subpart ZZZZ.

- 7.d 40 CFR 89 includes requirements for all nonroad engines other than specific categories of nonroad engines such as engines subject to 40 CFR 1039 (Tier 4 engines). In accordance with Appendix A of Subpart 89, states are precluded from requiring retrofitting of nonroad engines except that states are permitted to adopt and enforce any such retrofitting requirements identical to California requirements which have been authorized by EPA under section 209 of the Clean Air Act. States may enforce regulations such as hours of usage, daily mass emission limits, and sulfur limits on fuel.

The definition of nonroad engines in 40 CFR 89.2 includes any internal combustion engine in (1)(iii) "That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another..." "An internal combustion engine is not a nonroad engine if:...

(iii) the engine otherwise included in Paragraph 1(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source...A location is any single site at a building, structure, facility or installation." The 1986 Caterpillar Generator Engine is portable and though it may not remain stationary for more than 12 consecutive months, it is possible that it might not move for 12 months or more. For this reason, this unit was permitted as a stationary source. The 1995 Caterpillar Generator Engine is portable and will not remain in a single location for 12 months or more so it meets the definition of a nonroad engine and is subject to this regulation.

- 7.e Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act [RCW 70A.15] and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.
- 7.f RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an Order of Approval (Air Discharge Permit) for installation and establishment of an air contaminant source.
- 7.g Washington Administrative Code (WAC) 173-460 "Controls for New Sources of Toxic Air Pollutants" (as in effect August 21, 1998) requires Best Available Control Technology for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety.
- 7.h WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM₁₀, PM_{2.5}, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.
- 7.i SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology

(RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust.

- 7.j SWCAA 400-040(1) "Visible Emissions" requires that no emission of an air contaminant from any emissions unit shall exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point.
- 7.k SWCAA 400-040(2) "Fallout" requires that no emission of particulate matter from any source shall be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.
- 7.l SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere.
- 7.m SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum.
- 7.n SWCAA 400-046 "Application Review Process for Nonroad Engines" requires that a nonroad engine permit be issued by the agency prior to the installation, replacement or alteration of any nonroad engine subject to the requirements of SWCAA 400-045. Each application must demonstrate that the installation will not cause an exceedance of any national or state ambient air quality standard.
- 7.o SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate matter from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.
- 7.p SWCAA 400-109 "Air Discharge Permit Applications" requires that an air discharge permit application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an Air Discharge Permit application to request such changes. An air discharge permit must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits.
- 7.q SWCAA 400-110 "New Source Review" requires that an Air Discharge Permit be issued by SWCAA prior to establishment of the new source, emission unit, or modification.
- 7.r SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source be granted unless it is evidenced that:
- (1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
 - (2) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
 - (3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
 - (4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems have been evaluated to determine if they meet the requirements of Best Available Control Technology (BACT) and Best Available Control Technology for toxics (T-BACT) for the types and amounts of air contaminants emitted by the processes and equipment as described below:

- 8.a BACT Determination – Crushing and Screening. The proposed use of high pressure wet suppression systems, including spray or fog nozzles operating at a minimum pressure of 80 psig, has been determined to meet the requirements of BACT for the proposed crushing and screening equipment. Because there are other wet suppression systems (e.g. sonic fogging systems) that utilize a lower water pressure but provide equivalent or superior levels of emission control, the permit will allow for wet suppression systems reviewed and approved by SWCAA that provide equivalent or superior control of particulate matter emissions.
- 8.b BACT Determination – Fugitive Dust Emissions. The use of low-pressure wet suppression systems has been determined to meet the requirements of BACT for fugitive dust emissions from storage piles, material transfer points, and haul roads at this facility.
- 8.c BACT Determination - 1995 Caterpillar Generator Engine (ADP 20-3442). This engine is classified as a nonroad engine and is therefore not subject to BACT requirements.
- 8.d BACT Determination - 1986 Caterpillar Generator Engine (ADP 12-3002). Available control measures for diesel engines include the use of ultra-low sulfur fuel and add-on control equipment such as selective catalytic reduction (SCR) units and oxidation catalysts. SWCAA believes that SCR is not feasible in this case based on a combination of cost (cost estimates of ~\$60,000 for a similar sized engine, plus urea and maintenance costs) and practicality (this is a portable source). An oxidation catalyst for a Caterpillar 3412 was recently priced at \$3,500 per bank of cylinders. Assuming a total installed cost of \$10,000, a control efficiency of 40% for CO, 70% for VOCs, and 25% for PM (the guarantees), an 8% cost of capital and 5 year equipment life, the unit would have a multi-pollutant cost-effectiveness of approximately \$8,600 per ton if the unit was operated at the equivalent of full load for 1,000 hours per year. Based on this analysis, SWCAA believes that the use of an oxidation catalyst is not a cost-effective control device if the engine is operated for the equivalent of no more than 1,000 hours per year at full load.

For the 1986 Caterpillar Generator Engine, the use of ultra-low sulfur diesel fuel ($\leq 0.0015\%$ sulfur by weight), limitation of visible emissions to 10% opacity or less, and limitation of engine fuel consumption to $\leq 44,000$ gallons per year (the equivalent of operating at full load for 1,000 hours per year) was determined to meet the requirements of BACT for the types and quantities of air contaminants emitted.

With the addition of the 1995 Caterpillar Generator Engine, it is no longer practical to track fuel consumption, and the operational limit will be established at 1,000 hours per year. Without the installation of a fuel totalizer, the fuel consumption limit cannot be verified in the field; therefore a fuel limitation would not be enforceable as a practical matter.

- 8.e Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential emissions increase equal to or greater than the applicable PSD thresholds. Therefore, requirements of the PSD program are not applicable to this action.
- 8.f Compliance Assurance Monitoring (CAM). CAM is not applicable to any emission unit at this facility because this facility is not a major source required to obtain a Part 70 or 71 permit.

9. AMBIENT IMPACT ANALYSIS

Emissions of criteria air pollutants (NO_x, CO, SO₂, PM₁₀, PM_{2.5}) from engines were modeled with EPA's AERSCREEN version 16216 assuming that all emissions come from a single hypothetical stack. The results of the model indicated that no ambient air quality standard would be exceeded even with both engines operating at the same time at full rated capacity.

Conclusions

- 9.a Operation of the crushing and screening equipment as proposed in ADP Application S-137 will not cause the ambient air quality standards established by Title 40 Code of Federal Regulations Part 50 (40 CFR 50), "National Primary and Secondary Ambient Air Quality Standards" to be violated.
- 9.b The crushing and screening equipment proposed in ADP Application S-137, if properly installed and maintained, can be operated without causing a violation of the applicable emission standards, which include the limits established under SWCAA 400-040 "General Standards for Maximum Emissions."
- 9.c Operation of the crushing and screening equipment as proposed in ADP Application S-137 will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants," (in effect August 21, 1998) or WAC 173-476 "Ambient Air Quality Standards" to be violated.

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP / NEP 20-3442 in response to ADP Application S-137. ADP / NEP 20-3442 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a General Basis. Approval conditions for equipment affected by this permitting action incorporate the operating schemes proposed by the permittee in the ADP / NEP application.
- 10.b Emission Limits. Annual emission limitations for the equipment addressed in this permitting action were established equal to the potential to emit identified in Section 6. As discussed in Section 8, these emission limits meet the requirements of BACT. For the 1986 Caterpillar Generator engine, these emissions are based on operating up to 1,000 hours per year. Based on information provided with the ADP / NEP application, it is SWCAA's understanding that the emission limits established in the permit will not constrain future operation. The basis for the particulate matter emission limits was increased from 100,000 tons per year to 200,000 tons per year to account for the fact that with an increased amount of processing equipment, increased production is possible.

Visible emissions from the generator engines were limited to 10% opacity. Visible emissions should not exceed this level if the engines are operating properly. Visible emissions from newer generator engines would typically be limited to 5% opacity, however these uncertified engines are not expected to be as clean. In the case of the 1985 Caterpillar Generator Engine, annual operation was limited in lieu of adding after-market emission control equipment.

The visual emissions limit for haul roads was reduced from 20% (the state standard) to 10% consistent with RACT and determinations for similar facilities. In addition, this permitting action increases facilitywide throughput and potential emissions from haul roads, therefore a more stringent standard is appropriate.

- 10.c Operating Limits and Requirements. A visible emission limit (not to exceed 0% opacity for more than three minutes in any one hour) for the crushing and conveying equipment has been established consistent with proper operation of the proposed wet suppression systems and the requirements of 40 CFR 60, Subpart OOO. High pressure spray systems referenced in the Permit are those systems that rely on the high pressure to reduce the size of

water droplets. High pressure spray systems (≥ 80 psig) or equivalent have been determined to be a minimum BACT requirement for individual pieces of rock crushing and aggregate screening equipment.

Operation of the 1986 Caterpillar Generator Engine was limited to 1,000 hours per year consistent with the BACT determination described in Section 8.d.

- 10.d Monitoring and Recordkeeping. Sufficient monitoring and recordkeeping was established to document compliance with the annual emission limits and provide for general requirements (e.g. excess emission reporting, annual emission inventory submission). In addition, upset conditions must be recorded for each occurrence. For the purposes of this requirement, an upset condition is a failure, breakdown, or malfunction of any piece of process equipment or pollution control equipment that causes, or has the potential to cause, excess emissions. This log can be useful to plant operators and SWCAA staff when evaluating whether equipment is being properly operated and maintained.

To assure that the 1995 Caterpillar Generator Engine is operated as a nonroad engine, each move of the engine, including within the same operating site, must be logged. The reason for each move must also be logged to document whether the action qualifies as a change in location under the definition of a nonroad engine.

- 10.e Emission Monitoring and Testing Requirements. See Section 12.
- 10.f Reporting. The permit requires reporting of the annual air emissions inventory, and reporting of the data necessary to develop the inventory. Excess emissions must be reported immediately in order to qualify for relief from monetary penalty in accordance with SWCAA 400-107. In addition, prompt reporting was required because it allows for accurate investigation into the cause of the event and prevention of similar future incidents.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

- 11.a Startup and Shutdown Provisions. Pursuant to SWCAA 400-081 "Startup and Shutdown," technology based emission standards and control technology determinations shall take into consideration the physical and operational ability of a source to comply with the applicable standards during startup or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during startup or shutdown, SWCAA shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during startup or shutdown.

The diesel-fired generator engines may exhibit excess opacity upon startup even if the affected unit is in proper working order. Accordingly, the visual emissions limits listed in the permit for these units do not apply during the startup period defined in the permit. The general opacity standard from SWCAA 400-040 of 20% continues to apply to the 1986 Caterpillar Generator Engine during startup and shutdown.

- 11.b Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The applicant did not propose or identify any applicable alternate operating scenarios. Therefore, none were accommodated by the approval conditions.
- 11.c Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures other than the control measures identified in the permit were identified by either the permittee or SWCAA. Therefore, no additional measures were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

Initial opacity observations are required by 40 CFR 60 Subpart OOO for affected crushing and any associated screening equipment and belt conveyors. The Clemro Jaw Crusher 3042 Jaw Crusher, KPI JCI 5 x 16 x 2 Screen, and KPI JCI 5 x 16 x 3 Screen are "new" affected units at this facility. Appendix A details the initial opacity observation requirements.

40 CFR 63 Subpart ZZZZ will require that the permittee conduct an initial performance test to demonstrate compliance with the CO emission limit for the 1986 Caterpillar Generator Engine within 180 days of the compliance date (May 3, 2013). Subsequent tests must be conducted every 3 years or 8,760 hours of operation, whichever occurs first. As mentioned in Section 7, SWCAA has not be delegated enforcement of this regulation and therefore these requirements were not included in the Permit.

13. FACILITY HISTORY

13.a General. Farwest Portable Crushing previously had a rock crushing facility permitted with SWCAA (SWCAA ID 2079); however registration was allowed to lapse on that equipment. Only one piece of equipment in the plant permitted under ADP 12-3002 (the ElJay model 45STD rollercone crusher) was registered with SWCAA before the registration lapsed.

13.b Previous Approvals. The following Orders/Permits have been issued for this facility:

Permit Approval Number	Application #	Date Issued	Description
12-3002	S-133	1/19/2012	"New" source consisting of 2 crushers and 2 screens, all powered by a diesel-fired generator set.
SUN-102	SUN-102	8/25/2015	Installation of Cedarapids 40x42 roll crusher (serial number 27003).
SUN-179	SUN-179	5/2/2019	Installation of Lippman 24x36 jaw crusher (serial number 470411).

Bold font indicates that the Order, Permit, or Small Unit Notification approval was superseded or will no longer be in effect when ADP / NEP 20-3442 becomes fully effective.

14. PUBLIC INVOLVEMENT

14.a Public Notice for ADP / NEP Application S-137. Public notice for ADP / NEP Application S-137 was published on the SWCAA internet website for a minimum of 15 days beginning on July 17, 2020.

14.b Public/Applicant Comment for ADP / NEP Application S-137. SWCAA did not receive formal comments, a comment period request, or any other inquiry from the public or the applicant regarding this ADP / NEP application. Therefore, no public comment period was provided for this permitting action.

14.c State Environmental Policy Act (SEPA). A Determination of Nonsignificance (DNS) was issued December 29, 1980 by the Department of Natural Resources for mining activities in the North Bonneville Quarry (the initial location proposed for the applicant's equipment). Operating this facility with a new generator and new crusher is consistent with the original DNS issued by the Department of Natural Resources; therefore this project is exempt from SEPA requirements pursuant to WAC 197-11-800(3). WAC 197-11-800(3) exempts projects that only involve repair, remodeling, maintenance, or minor alteration of existing structures, equipment or facilities, and do not involve material expansions or changes in use. SWCAA issued a determination that the project is exempt from SEPA review on November 19, 2020 (Determination of SEPA Exempt - SWCAA 20-040).