

# **City of Vancouver – Westside Water Reclamation Facility**

## **Title V Basis Statement**

**Issued: January 25, 2016**

Southwest Clean Air Agency  
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AIR OPERATING PERMIT #:	SW97-1-R2
ISSUED TO:	City of Vancouver PO Box 1995 Vancouver, WA 98668-1995
PLANT SITE:	Westside Water Reclamation Facility 2323 W Mill Plain Boulevard Vancouver, WA 98660
PERMIT ENGINEER:	John St.Clair, Air Quality Engineer
REVIEWED BY:	Paul T. Mairose, Chief Engineer

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**I. GENERAL INFORMATION and CERTIFICATION**

**Company Name** ..... City of Vancouver

**Plant/Facility Name**..... Westside Water Reclamation Facility

**Unified Business Identification** ..... 065-001-364

**Standard Industrial Classification** ..... 22132

**North American Industrial Classification System** ..... 221320

**Facility Address**..... 2323 W Mill Plain Boulevard  
Vancouver, WA 98660

**Mailing Address** ..... PO Box 1995  
Vancouver, WA 98668-1995

**Parent Company/Address** ..... City of Vancouver  
PO Box 1995  
Vancouver, WA 98668-1995

**Responsible Official** ..... Eric Holmes, City Manager  
City of Vancouver

**Inspection Contact** ..... Frank Dick, PE, Industrial Pretreatment  
Coordinator

**Basis for Title V Applicability**

The Westside Water Reclamation Facility (WSWRF) is a municipal wastewater treatment facility operated by the City of Vancouver; the City also operates the Marine Park Water Reclamation Facility and an industrial pretreatment lagoon. WSWRF includes a fluidized bed furnace (FBF), a sewage sludge incineration (SSI) unit, which burns sludge generated from the two treatment facilities. Section 129(e) of the Federal Clean Air Act, obligates a facility subject to a New Source Performance standard (NSPS) applicable to a solid waste incinerator to operate under Title V Air Operating Permit (AOP) within 36 months of the promulgation of the NSPS. On March 21, 2011, 40 CFR 60 Subpart M ( §§60.5000 et seq) "Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units" was promulgated by the EPA. This Subpart directs the State or EPA to promulgate a state or federal model rule that applies to SSIs. Because Washington State did not exercise its option for a state model rule, EPA will be issuing a federal model rule that will apply to SSIs in the future. Under § 129(e), a Title V application was due on March 21, 2014.

The following are the potential-to-emit (PTE) totals for the regulated pollutants at the WSWRF facility:

<b>Pollutant</b>	<b>PTE (tpy)</b>
NO <sub>x</sub>	47.00
CO	14.50
VOC	13.00
SO <sub>2</sub>	9.25
Lead	0.23
PM	5.00
PM <sub>10</sub>	5.00
PM <sub>2.5</sub>	4.538
NH <sub>3</sub>	Not Applicable
H <sub>2</sub> S	0.082
O <sub>3</sub>	Not Applicable
CO <sub>2e</sub>	39,020
HAP	3.22

### **Current Permitting Action**

This is an initial Title V permit.

### **Attainment Area**

WSWRF is located within the Portland-Vancouver ozone and CO maintenance area. The maintenance area was redesignated for CO in October 1996 and for ozone in April 1997. The area is in attainment for all other pollutants.

### **Facility Description**

The WSWRF provides treatment for municipal wastewater and has on-site sludge incineration capabilities. The facility has an annual average design capacity of 28.26 million gal/day (MGD), with a maximum daily flow of 41.1 MGD. The facility performs primary treatment in primary clarifiers, secondary treatment by activated sludge and secondary clarifiers, and disinfection by ultraviolet radiation. Residual primary solids are dewatered, thickened and stored. Waste activated sludge (WAS) is normally wasted to the WAS tank or to the gravity belt thickeners, with the option of conditioning in an aeration basin. The two solid trains are mixed and thickened with gravity belt thickeners, and dewatered with a centrifuge. The facility operates a sewage sludge incinerator as its primary means of solids disposal. Foul odors from various plant processes are collected and treated in a packed tower scrubber for hydrogen sulfide gas removal.

The facility was reclassified from a Title V facility to a natural minor in 2002 after removal of the Multiple Hearth Furnace when the PTE for CO dropped below 100 tpy. Air Discharge Permit (ADP) 05-2625 was the first minor permit issued for the facility as a natural minor. This ADP was later superseded but the status of the facility was unchanged until the promulgation of the sewage sludge incineration rules re-establishing the facility as being subject to the Title V program.

**II. EMISSION UNIT DESCRIPTIONS**

<b>EU No.</b>	<b>Equipment/Activity</b>	<b>No. of Units</b>	<b>Control Equipment</b>	<b>No. of Ctrls</b>
1	Fluidized Bed Furnace, US Filter/Zimpro	1	Venturi scrubber, Tray Scrubber, and Mist Eliminator	3
2	Sand Silo	1	Fabric filter	1
3	Air Treatment System	1	Packed tower wet scrubber and Mist Eliminator	1
4	Emergency Generator Engine #1, 1005 bhp Caterpillar Model 3508	1	Ultra-low sulfur diesel and hours limitation	1
5	Emergency Generator Engine #2, 1005 bhp Caterpillar Model 3508	1	Ultra-low sulfur diesel and hours limitation	1
6	Emergency Generator Engine #3, 1095 bhp Caterpillar Model 3508	1	Ultra-low sulfur diesel and hours limitation	1
7	Industrial Pre-treatment Lagoon	1	Aerators	N/A

**EU-01: Fluidized Bed Furnace**

The FBF is a custom designed unit engineered by U.S. Filter/Zimpro (Fig. 1). The unit is configured as a vertically oriented shell in which a bed of hot sand, approximately 60" thick, is mixed with sludge and simultaneously fluidized by injected air at pressures from 20–35 kPa. The combustor bed is 5 ft high with a 16-foot inside diameter. The preheat burner is rated at 8.0 MMBtu/hr and is fueled on natural gas or fuel oil. The unit is designed to combust up to 16,131 lb/hr (31.5 gpm) of wet sludge which contains 4,833 lb/hr of dry sludge (26.4% solids), 185 lb<sub>dry</sub>/hr of grit and 80.0 lb<sub>dry</sub>/hr of scum. The sludge is mixed with 7,324 scfm of combustion air which exits the combustor at 1,550°F and produces approximately 1,000 lb/hr of ash.

Uncontrolled byproducts of combustion are estimated at 40% excess air. Design value for exhaust from the bed is estimated at 12,860 acfm (at 185°F, 1.9% H<sub>2</sub>O, and 7.0% O<sub>2</sub>) and 7,470 acfm (at 85°F, 2.5% H<sub>2</sub>O, and 7.0% O<sub>2</sub>), with and without plume suppression, respectively. Exhaust gases from the combustor are used to preheat the fluidizing air to 1,000°F while cooling the exhaust air to 1,153°F using a shell and tube heat exchanger from American Schack. Exhaust from the preheat heat exchanger is routed to a second heat exchanger where plume suppression air is used to further cool the exhaust gases. The hot plume suppression air at 3,580 dscfm (16,150 lb/hr) is designed to be injected into the stack to heat the exhaust gases (post air pollution controls) to increase plume rise and eliminate the condensate plume (plume suppression). Exhaust from the second heat exchanger is routed to a pre-cooler with a water flow rate of 53 gpm. Exhaust from the pre-cooler is routed to an Emtrol (s/n 40172W20-1604-2) damper type variable throat Venturi scrubber. The scrubber is designed to operate at a minimum pressure drop of +40 iwc at 140 gpm of scrubber water. Exhaust from the scrubber is routed to an Emtrol tray scrubber equipped with four trays and a chevron type mist eliminator. The pressure drop across the entire scrubber system should be at a minimum of +45 iwc. A continuous emission monitoring system (CEMS) for carbon monoxide (CO) and oxygen (O<sub>2</sub>) has been installed upstream of the introduction of the plume suppression air. Exhaust from the FBF and control system is discharged vertically.

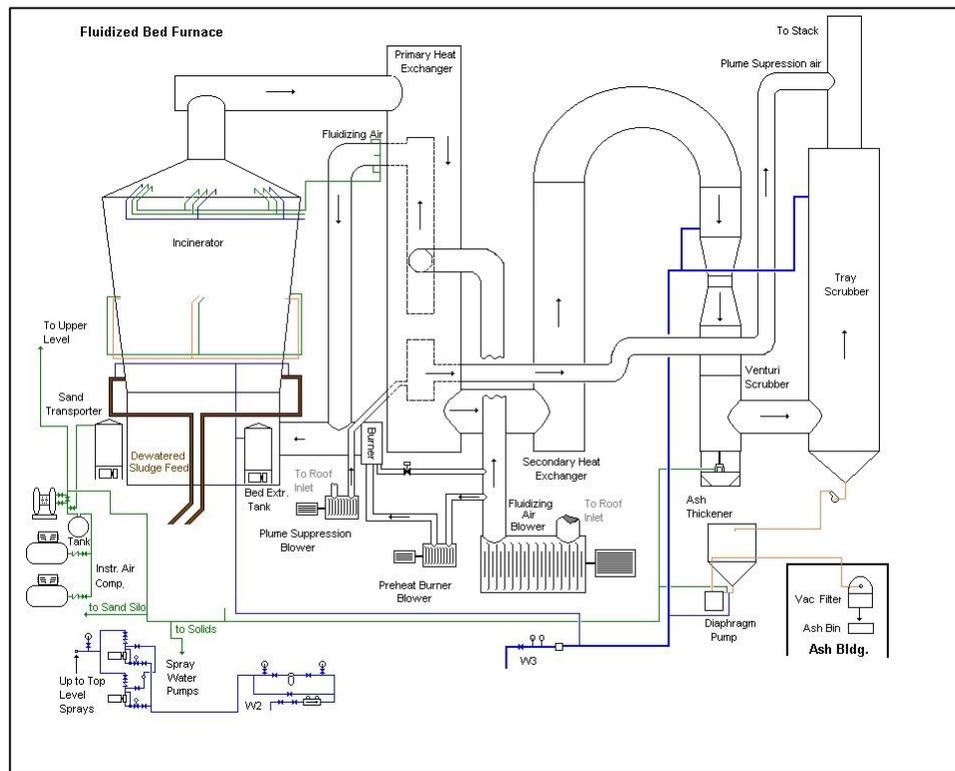


Fig. 1: Schematic showing the components of the FBF and its air pollution control equipment.

### Normal Operation

During normal operation, the FBF is operated in different modes. This process occurs over the course of a week, with the FBF in Bottle mode over the weekend, during which the FBF is not actively operated and sludge is stored for the workweek. The modes generally follow this pattern:

### Normal operation (generally on a weekly basis)

HEAT TO BURN → START-UP → BURN EVENT → HEAT TO BOTTLE → BOTTLE

Each of these modes is described below:

#### *Heat to Burn Mode*

At the beginning of the workweek, the FBF "bottle" is breached during which the FBF is readied for introduction of the stored sludge. During this operating mode, the furnace is heated using fuel oil to 1,400°F; a temperature greater than 1,330°F is generally needed for good combustion of the sludge. Below 1,400°F, CO levels will often be high and erratic. Depending upon how much temperature loss occurred over the weekend, this mode may last from 2–4 hours, up to 7 hours. During this process the FBF blower, Venturi scrubber and tray scrubber are all operational, but not at maximum operating levels. Sludge is not being introduced into the FBF.

*Start-up Mode*

Once the FBF is up to temperature, sludge is fed into the FBF; supplemental fuel oil may be added as necessary to keep the fuel mixture energy content consistent. The quantity of fuel oil may be tapered off at any time once the energy content of the sludge becomes sufficient, however, fuel oil addition may resume in the case of wet or low-energy content sludge. The start-up period is defined as the two-hour period which begins with the first operation of the sludge Schwing pump and ends when two clock hours of sludge feed have elapsed. This operating mode begins with the feed of the sewage sludge from the pumps to the FBF for continued operations within the operating constraints; a clock hour begins at 00:00:00 and ends at 00:59:59.

*Burn Event Mode*

Within 10–30 minutes of starting up, freeboard temperatures will typically exceed 1,400°F and the CO level will become low and stable. Stepping from a successful start-up in less than 2 hours the system has a steady supply of sewage sludge that is combusting within the sand bed at temperatures that range from 1,300–1,500°F. Air, sludge, and fuel are used to maintain bed temperatures. Operators work toward burning sludge without the use of auxiliary fuel and therefore minimizing emissions and providing for an economical operation. The FBF is operated most frequently in the Burn mode.

*Heat to Bottle Mode*

Generally, at the end of the week, sludge flow is stopped and the sludge is stored over the weekend. With no sludge being fed to the FBF, fuel oil is burned during the Heat to Bottle mode in order to increase the temperature of the FBF to a maximum of about 1,560°F. Once a temperature maximum is reached, no additional fuel is supplied to the FBF. Over the next few days, the internal FBF temperature will decrease, but will generally not cool to the extent that large quantities of fuel oil will be needed to initiate the heat to burn mode.

*Bottle Mode*

Bottling the furnace is necessary to prevent the loss of heat between burn events. Bottling usually occurs over weekends. No pollutants are emitted during bottling since there is no fuel being combusted.

Annual Maintenance

At least once annually, the FBF goes into a cold shutdown mode. In this mode, no fuel is added to the FBF and the temperature is decreased at a controlled rate until the interior temperature is at ambient. This process takes 3–4 days. Once the FBF is at ambient temperature maintained and repair activities can be performed on the internal components of the FBF. Once all maintenance and repair activities are completed, the FBF is operated in cold start-up mode, where it is fired on natural gas to increase the temperature, again at a controlled rate, up to approximately 1,400°F in order to prepare to operate the FBF in Heat to Burn mode. During annual maintenance, the FBF operates through the following modes:

Annual Maintenance Operation (generally once per year)

COLD SHUTDOWN → COLD START-UP → HEAT TO BURN

### Other Operations

The FBF can also be operated under the following four maintenance modes, which typically do not have significant emissions:

- Differential Pressure Test;
- Sand Addition;
- CEMS Calibration/Blow Back and
- Sand Extraction.

### **EU-02: Sand Silo**

The sand silo is used to store make-up sand for the FBF (Fig. 2). A passive bin vent filter is on the silo's exhaust. C.P. Environmental Filters, Inc. manufactured this shaker-type bag filter used to control particulate emissions from the transfer of sand from trucks to the silo. The filter is designed to control 500 acfm and has a filtration area of 295 ft<sup>2</sup>. Emissions from transfer are estimated at less than 50 lb/yr of PM. The sand contains less than 1% of 70 mesh or smaller material and the filter's efficiency is greater than 99%.



Fig. 2: The sand silo is located along the FBF building western edge.

### **EU-03: Air Treatment System**

Odors from the primary processes, sludge handling processes, and sludge storage are captured by an air treatment system and routed to an odor control scrubber (Fig. 3). The scrubber system consists of a scrubber tower, media with support grating, mist eliminator, internal piping, liquid distributors, and all necessary accessories. The system was engineered by HDR, Inc.

The odor control scrubber treats odorous air evacuated from the raw sewage pump station headworks (3,550 acfm), the grit handling building (2,800 acfm), primary clarifier scum boxes, effluent launders, feed wells, and flow distribution box (12,650 acfm capacity), sludge storage tank and ash handling building (1,000 acfm), and gravity thickeners (12 air changes/hr). Air from these sources can combine to as much as 33,000 acfm of foul air. The scrubber achieves removal of odorous compounds by providing a large air/water interface for absorption into the liquid phase. The maximum water flowrate for this unit is 450 gpm and a maximum pressure drop of 4 iwc. The recirculation flow is continuously analyzed for oxidation reduction potential (ORP) and pH. ORP is a measure of the tendency of a chemical species to acquire electrons and thereby be reduced. Sodium hypochlorite and sodium hydroxide are used to maintain optimum levels of ORP and pH. The addition of these chemicals is automated but can be done manually as well. Within a pH range of 9–12, the water chemistry favors the bisulfide ion (HS<sup>-</sup>) in solution over hydrogen sulfide (H<sub>2</sub>S); above pH 12, the reaction begins to favor precipitation of elemental sulfur. The odor control scrubber is also equipped with a mist eliminator and the manufacturer states that the scrubber has 99.9% control efficiency.



Fig. 3: The odor control scrubber.

**EU-04, EU-05, and EU-06: Emergency Generator Engines #1, #2, and #3**

These generator engines were installed as backup power to the influent pump station, plant lighting, and drives for the primary and secondary clarifiers. The engines are subject to 40 CFR 63 Subpart ZZZZ.

**EU-07: Industrial Pretreatment Lagoon**

The Industrial Pretreatment Lagoon, a roughing lagoon, was built in 1979 to pretreat food-processing wastewater prior to sending it to the WSWRF for final treatment. The Lagoon is designed to treat 3.2–4.7 MGD long term peak flow (dry to wet weather flow, respectively) from various food processing and industrial facilities in the area. The wastewater has a design capacity of approximately 31,000 lb/day BOD<sub>5</sub> and 20,000 lb/day total suspended solids (monthly average). It consists of two three-acre aeration cells followed by one 14-acre settling cell. The lagoon occupies 20 acres of a 23-acre site, and has a total volume of approximately 88 million gallons. Other structures located on the premises include two 5,900-gal aqueous ammonia tanks, one 4,200-gal phosphoric acid tank, and a blower building.

Every one to two years, the solids that have settled to the bottom of the lagoon are collected through an automatic pump system. The solids are piped to agricultural land nearby and sprayed on land where water fowl forage is grown as part of a larger wetlands reclamation project. The solids are registered with the Washington Department of Agriculture as an organic fertilizer, "AgriCycle LQ."

### III. EXPLANATION OF INSIGNIFICANT EMISSION UNIT DETERMINATIONS

Each emission unit listed as insignificant in the permit application has been reviewed by SWCAA to confirm its status. Identification of an emission unit as insignificant does not exclude the unit or activities from requirements under the Permit. Emission units were determined to be insignificant by SWCAA as follows:

#### **IEU1. Categorically Exempt Insignificant Emission Units.**

The following activities have been determined to be present at the WSWRF, but are categorically exempt under WAC 173-401-532:

- Lubricating oil storage tanks [WAC 173-401-532(3)];
- Storage tanks, reservoirs and pumping and handling equipment of any size, limited to soaps, lubricants, hydraulic fluid, vegetable oil, grease, animal fat, aqueous salt solutions or other materials and processes using appropriate lids and covers where there is no generation of objectionable odor or airborne particulate matter [WAC 173-401-532(4)];
- Pressurized storage of oxygen, nitrogen, carbon dioxide, air, or inert gases [WAC 173-401-532(5)];
- Vents from continuous emissions monitors and other analyzers [WAC 173-401-532(8)];
- Internal combustion engines for propelling or powering a vehicle [WAC 173-401-532(10)];
- Plant upkeep including routine housekeeping, preparation for and painting of structures or equipment, re-tarring roofs, applying insulation to buildings in accordance with applicable environmental and health and safety requirements and paving or stripping parking lots [WAC 173-401-532(33)];
- Cleaning and sweeping of streets and paved surfaces [WAC 173-401-532(35)];
- Steam cleaning operations [WAC 173-401-532(39)];
- Portable drums and totes [WAC 173-401-532(42)];
- Lawn and landscaping activities [WAC 173-401-532(43)];
- Comfort air conditioning or air cooling systems, not used to remove air contaminants from specific equipment [WAC 173-401-532(46)];
- Natural and forced air vents and stacks for bathroom/toilet facilities [WAC 173-401-532(48)];
- Office activities [WAC 173-401-532(49)];
- Personal care activities [WAC 173-401-532(50)];
- Sampling connections used exclusively to withdraw materials for laboratory analyses and testing [WAC 173-401-532(51)];
- Firefighting and similar safety equipment and equipment used to train firefighters excluding fire drill pits [WAC 173-401-532(52)];
- Fuel and exhaust emissions from vehicles in parking lots [WAC 173-401-532(54)];
- Carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, shot blasting, shot peening, sintering or polishing: Ceramics, glass, leather, metals, plastics, rubber, concrete, paper stock or wood provided that: [WAC 173-401-532(55)];
- Sample gathering, preparation and management [WAC 173-401-532(73)];

- Repair and maintenance activities, not involving installation of an emission unit and not increasing potential emissions of a regulated air pollutant [WAC 173-401-532(74)];
- Handling equipment and associated activities for glass and aluminum which is destined
- Batteries and battery charging [WAC 173-401-532(77)];
- Solid waste (as defined in the Washington Administrative Code) containers [WAC 173-401-532(79)];
- Totally enclosed conveyors [WAC 173-401-532(86)];
- Air compressors, pneumatically operated equipment, systems and hand tools [WAC 173-401-532(88)];
- Vacuum systems exhausts [WAC 173-401-532(108)];
- Sludge dewatering and handling [WAC 173-401-532(114)];
- Polymer tanks and storage devices and associated pumping and handling equipment, used for solids dewatering and flocculation [WAC 173-401-532(117)];
- Non-PCB oil filled circuit breakers, oil filled transformers and other equipment that is analogous to, but not considered to be, a tank [WAC 173-401-532(118)];
- Electric or steam-heated drying ovens and autoclaves [WAC 173-401-532(119)]; and
- Sewer manholes, junction boxes, sumps and lift stations associated with wastewater treatment systems [WAC 173-401-532(120)].

### **IEU2. Units and Activities Defined as Insignificant on the Basis of Size or Production Rate.**

The following units and activities have been determined to be present at the WSWRF, but are categorically exempt under WAC 173-401-533:

- Operation, loading and unloading of VOC storage tanks (including gasoline storage tanks), 10,000 gal capacity or less and vapor pressure not greater than 80mm Hg at 21°C: One 10,000-gal diesel tank for FBF;
- Welding using not more than one ton per day of welding rod [WAC 173-401-533(2)(i)];
- Surface coating, using less than two gallons per day [WAC 173-401-533(2)(q)];
- Space heaters and hot water heaters using natural gas, propane or kerosene and generating less than five million Btu/hr [WAC 173-401-533(2)(r)];
- Tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts [WAC 173-401-533(2)(s)]:
  - One 6,000-gal sodium hydroxide solution storage tank;
  - Two 9,400-gal sodium hypochlorite solution storage tank;
  - Two 5,900-gal aqueous ammonia tanks (industrial pretreatment lagoon); and
  - One 4,200-gal phosphoric acid tank (industrial pretreatment lagoon); and
- Cleaning and stripping activities and equipment, using solutions having less than one percent VOCs by weight [WAC 173-401-533(2)(z)].

### **IEU3. Insignificant Emission Units based on Emission Thresholds**

An emission unit or activity shall be considered insignificant if actual emissions of all regulated air pollutants from a unit or activity are less than the emission thresholds established in WAC 173-401-530(4):

- One 12,000-gal diesel tank for emergency generators. Assuming a worst-case of all generators operating at 570 hr/yr each and diesel usage for the FBF, emissions were determined using EPA TANKS 4.09d emission modeling. Maximum emissions were

estimated at 6.7 lb/yr VOC. Actual emissions would be substantially less than the calculated maximum, which is below the 2 tpy threshold listed in WAC 173-401-530(4)(d).

- One 4,200-gal phosphoric acid tank with a concentration typically at 52%. Assuming the tank is kept half full with a throughput of about 25 gal/yr, emissions were determined using EPA TANKS 4.09d emission modeling. Maximum emissions were estimated at 13.2 lb/yr, which is well below the small quantity emission rate (SQER) listed in WAC 173-460 (8/1996).

#### **IV. EXPLANATION OF TERMS AND CONDITIONS**

The Title V Permit contains three sets of requirements: Permit Provisions, General Terms and Conditions, and Operating Terms and Conditions, listed in Sections IV, V, and VI, respectively. Permit Provisions apply to all sources as specified in the Federal, State, or Local regulations and are required to be established in any Title V Permit. General Terms and Conditions have a similar origin but may apply non-specifically to the facility or an activity or may be applicable when triggered. In most cases, these terms are also applied to all Title V sources and are included in all Title V permits. Operating Terms and Conditions typically are facility specific or apply generally to a facility type, classification, or activity.

##### **Req-01 to Req-06 and Req-08: General Standards for Maximum Emissions**

SWCAA 400-040 establishes maximum emission standards for various air contaminants, including fallout, fugitive emissions, fugitive dust, visible emissions, SO<sub>2</sub>, and unreasonable odors. These requirements apply to all emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Req-01 establishes a maximum visible emissions limit for all emission units at 20% opacity. Most emission units that emit visible emissions have limits established in minor permit actions that are much less than 20% opacity. Visible emissions are generally measured using SWCAA Method 9, which is similar to EPA Method 9, except the data reduction methods are different.

Under Req-02, Req-03, Req-05, and Req-08, the definitions of fallout, fugitive dust, fugitive emissions, and emissions detrimental to human health may overlap, but may also be considered to be completely separate emissions. Generally, fallout is particulate matter that is deposited in measurable quantities outside the boundaries of the facility. Fugitive dust may be considered fallout if there is a sufficient quantity, but is more often associated with dust blown by the wind. Fugitive emissions include fugitive dust, but would also include emissions that could not reasonably pass through a stack or vent, such as leaks in pipes or tanks. Emissions detrimental to human health could include any of the above, if the material was determined to have health impacts.

Req-04 addresses odor impacts on neighboring properties. While some odors are expected from this facility, historical complaints have been relatively low. The facility scavenges foul air from multiple sources and treats the air in the odor control scrubber, which uses a caustic scrubber liquor. In circumstances where maintenance or repair is being performed on the scrubber, WSWRF occasionally utilizes an industrial odor eliminator (such as Ecosorb<sup>®</sup> or equivalent), which is injected into the ductwork upstream of the scrubber. When in bypass mode, the treated air is discharged through the same stack, but bypasses the scrubber. This occurs about 1–2 days per year.

From a fuel-based standpoint, burning natural gas and fuel oil in any unit cannot exceed the 1,000 ppm SO<sub>2</sub> limit in Req-06 as demonstrated below:

*Natural Gas, FBF*

$$\left[ \frac{\frac{0.0506 \text{ lb}}{\text{ft}^3} \times \frac{\text{ft}^3}{0.001020 \text{ MMBtu}} \times \frac{26 \text{ part S}}{10^6 \text{ part NG}} \times \frac{64.07 \text{ lb/lbmol SO}_2}{32.07 \text{ lb/lbmol S}}}{\frac{8710 \text{ dscf}}{\text{MMBtu}} \times \left( \frac{20.9 \% \text{ O}_2}{20.9 \% \text{ O}_2 - 7 \% \text{ O}_2} \right) \times \frac{\text{lbmol}}{385.3 \text{ dscf}} \times \frac{28.9 \text{ lb air}}{\text{lbmol}}} \right] = 2.48 \text{ ppm SO}_2$$

*Fuel Oil (15 ppm sulfur), FBF and Emergency Engines*

$$\left[ \frac{\frac{7.206 \text{ lb}}{\text{gal}} \times \frac{\text{gal}}{0.140 \text{ MMBtu}} \times \frac{15 \text{ part S}}{10^6 \text{ part oil}} \times \frac{64.07 \text{ lb/lbmol SO}_2}{32.07 \text{ lb/lbmol S}}}{\frac{9190 \text{ dscf}}{\text{MMBtu}} \times \left( \frac{20.9 \% \text{ O}_2}{20.9 \% \text{ O}_2 - 7 \% \text{ O}_2} \right) \times \frac{\text{lbmol}}{385.3 \text{ dscf}} \times \frac{28.9 \text{ lb air}}{\text{lbmol}}} \right] = 1.48 \text{ ppm SO}_2 \text{ (1.91 ppm SO}_2 \text{ @ 3\% O}_2\text{)}$$

The sulfur content in sludge varies considerably. Measurements taken by WSWRF show an average 100–700 mg/kg sulfate and 200–500 mg/kg sulfide. At the maximum recorded total sulfur of about 7,500 mg/kg, on a mass balance basis, the SO<sub>2</sub> emission would not exceed 1,000 ppm, assuming a worst-case SO<sub>2</sub> scrubber control efficiency of 50%. The SO<sub>2</sub> source testing of the FBF, performed every sixty (60) months in accordance with M07, is sufficient to demonstrate compliance with the standard.

**Req-07: Concealment and Masking**

No specific monitoring was specified for these requirements because there are no specific monitoring requirements that can be used to encompass the whole range of potential concealment and masking scenarios. The facility is required to certify compliance with all terms and conditions of the permit, including these prohibited items, at least annually. WSWRF must make a reasonable inquiry to determine if concealment or masking has occurred during the reporting period in order to certify compliance.

Although the facility does employ plume suppression air (see discussion about Req-26), all compliance determinations with respect to emission rates are performed upstream of the suppression air. The elimination of the steam plume also causes compliance with the opacity limit to be more easily verified.

The addition of industrial odor control chemicals (such as Ecosorb) is not considered by SWCAA to be masking because it is a reactive product that neutralizes (rather than obscures) the odor and it is considered a reasonable precaution for odor.

**Req-09: Requirements for Combustion Units**

SWCAA 400-050 establishes maximum emission standards for combustion and incineration units. The particulate matter limit cited in Req-09 is a general requirement that applies to all combustion units, therefore, these requirements apply to all combustion emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

WSWRF burns three fuels: natural gas, #2 fuel oil, and sludge. Natural gas is primarily used for affecting a cold start of the FBF with smaller quantities used for space heating and hot water. SWCAA generally assumes that all the natural gas monitored at WSWRF is burned in the FBF,

which is a conservative approach, considering that consumes the majority of the natural gas. For demonstration purposes, emission calculations assume no control by the scrubbers in the FBF.

The calculation assumes a heat content of 1,020 Btu/ft<sup>3</sup>, the PM (total) emission factor from AP-42 Section 1.4 (July 1998), a 7% O<sub>2</sub> content in the exhaust, and a fuel factor of 8710 dscf/MMBtu from EPA Method 19:

$$\frac{7.6 \text{ lb}}{10^6 \text{ scf}} \times \frac{7000 \text{ gr}}{\text{lb}} \times \frac{\text{scf}}{1020 \text{ Btu}} \times \frac{10^6 \text{ Btu}}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8710 \text{ dscf}} \times \frac{20.9\%}{20.9\% - 7.0\%} = 0.0090 \text{ gr/dscf PM}$$

Fuel oil is used in the FBF as a supplemental fuel source during Start-up Mode or during normal mode as necessary; fuel oil sulfur content is limited to 15 ppmw. Although fuel oil is typically combusted with sludge, conservatively, it could be assumed that the fuel oil is burned as a sole fuel. As with natural gas, for demonstration purposes, emission calculations from fuel oil combustion in the FBF assume no control by the scrubbers. The calculation assumes a heat content of 0.137 Btu/gal, an emission factor of 3.3 lb/gal from AP-42 Section 1.4 (July 1998), a 7% O<sub>2</sub> content in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19:

$$\frac{3.3 \text{ lb}}{1000 \text{ gal}} \times \frac{7000 \text{ gr}}{\text{lb}} \times \frac{\text{gal}}{0.137 \text{ MMBtu}} \times \frac{\text{MMBtu}}{9190 \text{ dscf}} \times \frac{20.9\%}{20.9\% - 7.0\%} = 0.028 \text{ gr/dscf PM}$$

Source tests are required at least once every sixty (60) month period when the FBF is burning sludge only. The following source tests have been performed:

Date	Result
December 17, 2014	0.003 gr/dscf
November 3, 2004	0.0095 gr/dscf

Fuel oil is also used in the emergency generator engines. Emergency engine usage is limited to maintenance and readiness checks; actual emergency use is limited to 570 hr/yr for each engine. Emergency engine #3 has a slightly higher manufacturer's emission rate of 0.26 lb/1000 gal and represents a worst-case scenario. The calculation assumes a heat content of 0.137 Btu/gal, the manufacturer's PM emission factor, a 7% O<sub>2</sub> content in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19:

$$\frac{0.26 \text{ lb}}{1000 \text{ gal}} \times \frac{7000 \text{ gr}}{\text{lb}} \times \frac{\text{gal}}{0.137 \text{ MMBtu}} \times \frac{\text{MMBtu}}{9190 \text{ dscf}} \times \frac{20.9\%}{20.9\% - 7.0\%} = 0.0022 \text{ gr/dscf PM}$$

In all of these scenarios, compliance with the combustion PM limit can be demonstrated.

### **Req-10: Requirement for Process Units**

SWCAA 400-060 establishes maximum emission standards for general process units. The particulate matter limit cited in Req-10 is a general requirement that applies to all process units, therefore, these requirements apply to all combustion emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring,

recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

All identified EUs have emission limits established that are more stringent than that specified in SWCAA 400-060.

### **Req-11: Facilitywide Emission Limits**

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These limits represent a maximum potential-to-emit for the facility including all identified EUs and processes. The limits typically are the summation of individual EU limits, but may vary depending upon alternate operating scenarios.

Emission calculations must be performed for the individual emission units as specified in the applicable sections below.

### **Req-12 through Req-24: FBF Emission Limits**

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The City of Vancouver submitted a BACT analysis for the FBF with the 1996 Application for ADP 97-2035. The RACT/BACT/LAER Clearinghouse and several of the other large wastewater treatment facilities in WA State were reviewed for comparable technologies.

The short term emission limits for PM, SO<sub>2</sub>, VOC and NO<sub>x</sub> under Req-12 through Req-14 for the FBF were originally established in ADP 97-1980, based upon source tests of the multiple hearth furnace (which was decommissioned in 1999), vendor emission guarantees for the FBF, and upon a search of the EPA RACT/BACT/LAER clearinghouse. These limits were carried forward into ADP 97-2035, which also included short term limits for CO (95 ppm) and PM, front and back half (0.015 gr/dscf) and annual limits; these limits were incorporated into ADP 13-3041.

Annual emissions from the FBF are calculated using the emission factors listed below, based on the TSD for ADP 13-3047:

- Natural gas
  - NO<sub>x</sub>: 0.098 lb/MMcf [AP-42 §1.4 (July 1998)]
  - CO: CEMS Data (may include CO from fuel oil and/or sludge)
  - VOC: 0.0054 lb/MMcf [AP-42 §1.4 (July 1998)]
  - SO<sub>2</sub>: 0.00059 lb/MMcf [AP-42 §1.4 (July 1998)]
  - PM/PM<sub>10</sub>/PM<sub>2.5</sub>: 0.0075 lb/MMcf [AP-42 §1.4 (July 1998)]
- Fuel Oil
  - NO<sub>x</sub>: 20. lb/1000 gal [AP-42 §1.3]
  - CO: CEMS Data (may include CO from fuel oil and/or sludge)
  - VOC: 0.34 lb/1000 gal [AP-42 §1.3]
  - SO<sub>2</sub>: 0.21 lb/1000 gal [mass balance at 15 ppm S]
  - PM and PM<sub>10</sub>: 3.3 lb/1000 gal [AP-42 §1.3]
  - PM<sub>2.5</sub>: 2.1 lb/1000 gal [AP-42 §1.3]
- Sludge
  - NO<sub>x</sub>, TGOC (as methane), SO<sub>2</sub>, PM<sub>10</sub> (total), and PM<sub>10</sub> (filterable): Most recent source test
  - CO: CEMS Data (may include CO from fuel oil and/or sludge)

- Arsenic, beryllium, cadmium, chromium, lead, mercury, and nickel: Most recent source test (control efficiencies) and average results of the periodic sludge metals analysis
- Benzene, chloroform, chloromethane, 1,4-dichlorobenzene, methylene chloride, and vinyl chloride: Most recent source test
- Hydrogen chloride: Most recent source test

Under Req-14, the originating PM limit from ADP 13-3047 Condition 4 did not include an averaging period. Due to the requirement to source test for PM, the averaging period is effectively 1-hr, based on three source test runs. Req-14 has been updated to reflect this. Req-16 is largely based on the limits under 40 CFR 60.152(a)(1).

Req-15 recognizes two operating modes for the FBF with different emission characteristics: Start-Up mode and Burn Event Mode. Under ADP 13-3047, two separate averaging periods were established to reflect the potential for different emission rates. The CO limit was later increased to 100 ppmvd under ADP 05-2625 and carried forward under ADP 13-3047. The monthly averaged 100 ppmv CO limit under 40 CFR 503.40(c)(2) is streamlined with the more stringent 1-hourly and 2-hourly averaged 100 ppmv CO limits listed under ADP 13-3047 Condition 5. The limit under 40 CFR 503.40(c)(2) is subject to permit shield.

Req-16 is based on the requirement in ADP 13-3041, but also would assure compliance with 40 CFR 60.152(a)(1) which contains a standard for PM at 1.3 lb/ton<sub>dry</sub> of sludge. The limit under 40 CFR 60.152(a)(1) is subject to permit shield.

Maximum metals emission limits in Req-17 and Req-18 were established in ADP 13-3047 to link the sludge sampling maximum concentrations to actual emissions. The mercury limit under 40 CFR 61.52(b), also referenced by 40 CFR 503.43(b), is 7.1 lb/day, which corresponds to 0.296 lb/hr and is streamlined with the more stringent mercury limit of 0.0349 lb/hr in ADP 13-3047 condition 7. The limits under 40 CFR 61.52(b) and 40 CFR 503.43(b) are subject to permit shield.

Req-19 through Req-24 incorporate the compliance equations for metals listed under 40 CFR 503. Most of the variable specified are effectively constants, such as risk specific concentrations, NAAQS, and dispersion factor (established in the initial permitting action for the FBF). Metals control efficiency will be established every 120 months as part of the metal source test requirement. The sludge feed rate will vary daily.

The visible emissions limit in Req-24 is more stringent under consideration of BACT (0%) than the limit, 20%, under 40 CFR 60.152(a)(2). There is a difference in how data is reduced under EPA Method 9 and SWCAA Method 9. Under the latter, if there are thirteen (13) readings in any 1-hour period that are over the limit, then the limit has been exceeded. In contrast, under EPA Method 9, if the average of all readings taken in the 1-hour period is above the limit, then the limit would be exceeded. Therefore, the limit as written under ADP 13-3041 Condition 8 is streamlined with 40 CFR 60.152(a)(2) as 0% opacity using SWCAA Method 9. The limit under 40 CFR 60.152(a)(2) is subject to permit shield.

40 CFR 503 regulations are federally enforceable under the Federal Clean Water Act, but are not federally enforceable under the authority of the FCAA or this Permit. Because 40 CFR 503

regulations have been incorporated by reference under SWCAA 400-070(9) and are integrated into ADP 13-3047, they are applicable requirements under the definition in WAC 173-401-200(4)(c) and are enforceable under this Permit by SWCAA only.

### **Req-25 and Req-26: Sand Silo Emission Limits**

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Emission limits were established based on estimated maximum grain loading for baghouses and maximum operation of the silo. The visible emissions limit was established at 0% due to the reasonable expectation of no visible emission from this EU during normal operations.

Annual emissions are calculated using the emission factors listed below, based on the TSD for ADP 13-3047:

- Sand Silo
  - PM, PM<sub>10</sub>, and PM<sub>2.5</sub>: 0.021 lb/hr [SWCAA Factor]

### **Req-27: Air Treatment System Emission Limits**

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Initial limits for the ATS were established in DP 93-1513. During the initial permitting action, there was no SQER or acceptable source impact level given for bis-(2-ethylhexyl) phthalate in WAC 173-460, therefore no limit was established, however, there has been a requirement to periodically test for bis(2-ethylhexyl) phthalate. This compound is both a TAP and HAP with considerable health effects and a limit is justified. Under ADP 13-3041, SWCAA established a limit at 90% of the SQER and a corresponding concentration-based short term limit for bis(2-ethylhexyl) phthalate. At these levels, no adverse ambient air quality impact is anticipated.

Also under ADP 13-3041, the H<sub>2</sub>S emission limit for the ATS was increased; modeling has shown that at this level, no adverse ambient impact is expected.

Annual emissions are calculated using the emission factors listed below, based on the TSD for ADP 13-3047:

- Air Treatment System
  - VOC: Most recent source test. Although the TSD references the sum of VOC species, ADP 13-3047 Appendix B requires the use of EPA Method 25A. The latter is a more robust accounting of VOC emissions.
  - Acetone, bis(2-ethylhexyl) phthalate, chloroform, chlorine, hydrogen sulfide, and 1,1,1-trichloroethylene: Most recent source test

### **Req-28 and Req-29: Emergency Engine Emission Limits**

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Emission limits were established based on the manufacturer's guaranteed emission rates and maximum estimated operation. The visible emissions limit was established at 0% due to the reasonable expectation of no visible emission from these EUs during operation under normal conditions.

Annual emissions are calculated using the emission factors listed below, based on the TSD for ADP 13-3047:

- Generator #1 and #2
  - NO<sub>x</sub>: 33.00 lb/1000 gal [Manufacturer]

- CO: 1.22 lb/1000 gal [Manufacturer]
- THC: 0.77 lb/1000 gal [Manufacturer]
- SO<sub>2</sub>: 0.010 lb/1000 gal [Mass balance at 15 ppm S]
- PM and PM<sub>10</sub>: 0.25 lb/1000 gal [Manufacturer]
- Generator #3
  - NO<sub>x</sub>: 34.68 lb/1000 gal [Manufacturer]
  - CO: 1.13 lb/1000 gal [Manufacturer]
  - THC: 0.73 lb/1000 gal [Manufacturer]
  - SO<sub>2</sub>: 0.011 lb/1000 gal [Mass balance at 15 ppm S]
  - PM and PM<sub>10</sub>: 0.26 lb/1000 gal [Manufacturer]

### **Req-30, Req-31, and Req-32: Continuous Conformity and Pollution Control Devices**

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These requirements establish that the facility must 1) operate the identified emission units and any air pollution control equipment in accordance with the requirements established under the permit, 2) operate sources and air pollution control equipment in a manner to minimize emissions, and 3) operate air pollution controls whenever process equipment is operating.

### **Req-33: FBF Plume Suppression Requirement**

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Under normal operation, 3,580 dscfm (16,150 lb/hr) of hot air from the preheat heat exchanger on the FBF is injected into the stack to heat the exhaust gases (post air pollution controls) to increase plume rise and eliminate the condensate plume (plume suppression); this function is by design. In 2010, WSWRF conducted a study to determine if the plume suppression air could be eliminated, however the elimination of the plume suppression air caused the FBF to function poorly. Therefore, SWCAA required that plume suppression air be used at all times during which the FBF is burning sludge.

### **Req-34: FBF Fuel Types**

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The FBF is limited to natural gas, #2 fuel oil, and sludge under ADP 13-3047.

### **Req-35 through Req-38: FBF Operation Parameters**

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Specific operating parameters for the FBF were established in the various ADPs issued for the unit and are considered to be good operating practices. Some requirements originated from 40 CFR 60 Subpart O and 40 CFR 503 and were incorporated into an ADP.

### **Req-39 through Req-46: NSPS Subpart O and 40 CFR 503 Requirements**

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Both 40 CFR 60 Subpart O and 40 CFR 503 require the installation, maintenance, calibration, and operation of various parametric monitors. Many of these requirements have been incorporated into ADP 13-3047.

### **Req-47 and Req-48: Sand Silo Operating Parameters**

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Specific operating parameters for the Sand Silo were established in the various ADPs issued for the unit.

**Req-49 through Req-55: Emergency Generator Engine Operating Parameters, including NESHAP Subpart ZZZZ**

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The emergency generator engines are subject to 40 CFR 63 Subpart ZZZZ as engines located at a non-major source (area source) used for emergency purposes. As SWCAA has not yet been delegated this Subpart, these are Federal Only requirements, except in the case where SWCAA has incorporated a similar requirement in ADP 13-3047.

**Req-56: Industrial Pretreatment Lagoon Ammonia Storage**

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Under 40 CFR 68, the "threshold quantity" for ammonia solutions (greater than 20% concentration) is 20,000 lb. Based on guidance contained in "General Risk Management Program Guidance" from the Environmental Protection Agency, the threshold quantity for an ammonia solution is based on the total amount of ammonia in the solution, rather than the total mass of the solution. Quantities and concentration are managed by the facility to maintain the total ammonia stored on-site to below 15,000 lb as specified in ADP 13-3047.

## **V. EXPLANATION OF MONITORING TERMS AND CONDITIONS**

### **M01. Visible Emissions and Grain Loading Monitoring**

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The visible emission limits utilizing this monitoring section to assure compliance do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. No opacity or excess grain loading is expected from sources burning natural gas and although burning fuel oil is likely to exhibit some opacity, it is expected to be within applicable limits.

For the emission units that are subject to a grain loading limit, the opacity limit provides an indication of compliance.

This term requires a periodic review of sources of opacity by the facility to verify good working order of emission units and to take corrective action if any excess opacity is observed.

### **M02. Fugitive Emission and Fallout General Inspection**

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The requirements utilizing this monitoring section to assure compliance do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. Fugitive emissions and fallout are not generally expected to occur from any source subject to the requirement.

This term requires a periodic review of the facility to verify good working order of emission units and to take corrective action if any fugitive emissions or fallout is observed, or in response to a complaint.

### **M03. Complaint Log**

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This monitoring requirement is used to provide a reasonable assurance of compliance with the general requirements drawn from SWCAA 400-040. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. These requirements are designed to provide prompt response to all relevant air quality complaints, and record any necessary corrective action. The plant is located in an industrial area that has not received substantial public air quality complaints in the past.

This is a state only and/or local only requirement because it is used to assure compliance only with state and or local only requirements.

### **M04. Compliance Certification**

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The applicable requirements cited in this monitoring section do not directly establish any specific regime of monitoring or recordkeeping, but SWCAA has established this term under WAC 173-401-615(2) in order to provide compliance documentation.

The equipment restrictions are aimed at fundamental operating modes (no masking, fuel type, use of control technology, etc.) that do not change significantly once established. Periodic certification that no changes have been made to equipment function or design is an appropriate means of assuring compliance for these requirements.

The general work practice requirements (such as calibration, maintenance, and operation) are primarily a function of worker training, and workplace management. Compliance with these requirements is best ensured through active facility oversight. The due diligence associated with periodic compliance certification serves to confirm compliance.

#### **M05. Calibration Requirements**

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Under 40 CFR 60 Subpart O, 40 CFR 503 Subpart E, and ADP 13-3041, instrumentation required to provide parametric monitoring for the FBF are required to be calibrated on at a specific frequency. This monitoring term establishes the instruments that need to be calibrated and the documentation required to demonstrate that the calibration was performed.

#### **M06. Fluidized Bed Furnace Parameters**

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A variety of operating FBF parameters are monitored and recorded to indicate good operating practice of the FBF and an indication of compliance. Many of the requirements originated from 40 CFR 60 Subpart O and were incorporated wholly or in part into ADP 13-3047.

During the November 10, 1999 performance test, the FBF demonstrated an emission rate of 0.129 lb/ton<sub>dry</sub>. Based on the 0.015 gr/dscf emission limit under ADP 13-3047 (Req-14) to 0.015 gr/dscf, the typical airflows through the FBF, and the maximum sludge rate, the FBF cannot exceed the 0.75 lb/ton<sub>dry</sub> limit expressed under 40 CFR 60.153(d)(3). Because of this, the requirement for continuous monitoring under 40 CFR §§ 60.153(a)(1), (a)(3), (a)(4) is not applicable, however, ADP 13-3047 includes the requirement for continuous monitoring.

In some cases, the requirement to operate the monitor was included from the Subpart, but the requirement to continuously monitor originated from the ADP.

#### **M07. Fluidized Bed Furnace Source Testing**

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Source testing is required every sixty-month period for criteria pollutants, organics and hydrogen chloride and every one hundred twenty (120) months for metals.

#### **M08. Sludge Metals Concentration Monitoring**

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The facility monitors the concentration of metals in the sludge prior to introducing the sludge to the FBF. Using results from the previous source tests, control efficiencies for each metal species can be established. Sludge testing is required every two calendar months. While 40 CFR 503 requires testing every sixty (60) days, there is a potential for dates to creep; therefore, SWCAA established every two (2) month testing to normalize the testing schedule.

**M09. Continuous Emission Monitoring Quality Assurance and Quality Control**

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Because the facility operates CEMS, quality assurance and control are expected to verify that the instrument is operating appropriately.

**M10. Sand Silo Testing**

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Periodic visual observation of the sand silo using Method 22 by the facility is used to verify good working order of emission units and to trigger corrective action if any excess emissions are observed.

**M11. Sand Silo Operation**

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Operating parameters are recorded for the sand silo.

**M12. Air Treatment System Parameters**

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A variety of operating parameters are monitored and recorded by the facility to verify good working order of ATS and to trigger corrective action as necessary.

**M13. Air Treatment System Source Testing**

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Source testing is required every sixty (60) month period for organics.

**M14. Emergency Generator Engine Operating Parameters**

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A variety of operating parameters are monitored and recorded by the facility to verify compliance with operating limits and other requirements under 40 CFR 63 Subpart ZZZZ.

**M15. Industrial Pre-treatment Lagoon Ammonia Monitoring**

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Ammonia quantities are tracked at the Industrial Lagoon to verify non-applicability of 40 CFR 68.

**VI. EXPLANATION OF RECORDKEEPING TERMS AND CONDITIONS****K01. General Recordkeeping**

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This recordkeeping section consolidates similar requirements from ADPs, NSPSs, and NESHAPs, as well as clarifying or specifying requirements under other regulations. Gap filling under WAC 173-401-615(2) was used as necessary where there was no underlying requirement to keep records.

**K02. Continuous Emission Data Recordkeeping**

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Specific recordkeeping requirements are associated with the CEMS system, including specific data requirements, SSM recordkeeping, and calibration and testing reports.

## **VII. EXPLANATION OF REPORTING TERMS AND CONDITIONS**

### **R01. Deviations from Permit Conditions**

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A deviation or excursion from permit condition means an instance when any regulation, rule, or approval condition is not met, including, but not limited to, conditions that establish emission limitations, emission standards, control equipment requirements, work practices, parameter ranges, and those designed to assure compliance with such requirements, such as monitoring, recordkeeping, and reporting. Reporting requirements exist under 40 CFR 60 Subpart O, 40 CFR 63 Subpart ZZZZ, 40 CFR 503, WAC 173-401-615(3)(b), and ADP 13-3047. For the purposes of WAC 173-401-615(3)(b), unless otherwise defined in a specific permit term, "prompt" is defined by SWCAA to be thirty (30) days after the end of the month in which the deviation occurred or sooner. For deviations which represent a potential threat to human health or safety, "prompt" means as soon as possible, but in no case later than twelve (12) hours after the deviation is discovered.

### **R02. Excess Emissions**

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Excess emissions may result from a deviation or excursion from permit conditions, startups, shutdowns, malfunctions, and upsets. If the excess emissions are considered unavoidable and the Permittee reports the excess emissions within forty-eight (48) hours of discovery along with the appropriate documentation, SWCAA may waive penalties associated with the excess emissions in accordance with SWCAA 400-107(2).

### **R03. Complaint Reports**

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Reports to SWCAA regarding complaints received by the facility are required to be reported within three (3) days of receiving the complaint.

### **R04. Quarterly Reports**

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Specific data elements from ADP 13-3041 are required to be reported to SWCAA on a quarterly basis.

### **R05. Semiannual Monitoring Reports**

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The Permittee is required to provide a report of all monitoring records and provide a certification of all reports on a semiannual basis. Semiannual reporting and certification of monitoring records is required by WAC 173-401-615(3).

### **R06. Semiannual Report**

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Other semiannual reporting requirements based on underlying requirements were grouped together. This report may be combined with the semiannual report required under R05.

### **R07. Annual Compliance Certification**

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The Permittee is required to report and certify compliance with all permit terms and conditions on an annual basis. Annual compliance certification is required by WAC 173-401-630(5). In addition,

each applicable annual reporting requirements required by an ADP or federal regulation is listed in this section.

**R08. Emission Inventory Report**

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Annual reporting of emissions inventory is required under SWCAA 400-105 to be submitted to SWCAA by March 15th for the previous calendar year unless an extension is approved by SWCAA.

**R09. Emission Test Reports**

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SWCAA 400-106 and ADP 13-3047 require submission of source test reports no later than forty-five (45) days after completing the required test.

**VIII. EXPLANATION OF OBSOLETE AND FUTURE REQUIREMENTS****1. SWCAA Air Discharge Permits - OBSOLETE**

<b>Permit</b>	<b>Application</b>	<b>Date Issued</b>	<b>Description</b>
05-2625	CL-1552	9/15/2005	Changed in CO emission limit for FBF, changed sludge rate limit, approved installation of Venturi scrubber, and various permit clarifications. Facility established as natural minor based on application received on 1/17/2002 and removal of the Multiple Hearth Incinerator.
99-2204	CL-1385	10/19/1998	Modification of requirements for the Multiple Hearth Incinerator
97-1980R1	CL-1352	9/8/1998	Modification of approval conditions. Modified sludge rate limit for Multiple-hearth incinerator also made small changes to ATS requirements.
97-2035	CL-1268	10/10/1997	Expansion of wastewater treatment plant, including installation of FBF, FBF sand silo, and additional emergency generator. Also increased the facility's treatment capacity from 15 MGD to 22.4 MGD. Included opt-out provisions for limiting Multiple Hearth Incinerator operations.
97-1980	CL-1212	3/10/1997	Modification of emission limit for the Multiple Hearth Incinerator
93-1513	CL-975	11/22/1993	Installation of new equipment. Addition of a packed tower scrubber as part of the air treatment system.
87-868	—	1/14/1987	Administrative Order
86-846	CL-567	11/24/1986	Installation of new equipment. Application received for the installation of two stand-by generators
79-436	CL-353	2/6/1979	Sludge transfer tank
78-413	CL-78R	11/27/1978	Venturi for the Multiple Hearth Incinerator
76-193	—	7/20/1976	Sludge aeration system
76-162	CL-242	3/23/1976	Sludge aeration system
76-154	CL-217R2	2/27/1976	Fume scrubber for odor control
76-140	—	2/27/1976	Order on Consent
75-117	CL-217R	9/12/1975	Fume scrubber for odor control
75-103	CL-218	7/24/1975	Installation of extractor hood vent control for odor control system

**2. Future Requirements**

The facility operates an SSI that will be subject to requirements under a Federal Plan required by 40 CFR 60 Subpart Mmmm once the Federal Plan is promulgated under 40 CFR 62. Although the Permittee included information in the Title V application regarding these future requirements, there are currently no federal requirements under 40 CFR 60 Subpart Mmmm or under 40 CFR 62 that apply to the facility.

**IX. COMPLIANCE HISTORY**

The following compliance actions have been issued by SWCAA:

<b>Notice</b>	<b>Date</b>	<b>Action</b>	<b>Notes</b>
5306	10/23/2014	Notice to Correct	Exceeded PM emission limit in violation of Air Discharge Permit (ADP) 13-3047.
4266	8/1/2011	Notice to Correct	Failure to conduct metals testing every 60 days in violation of ADP 05-2627.
4262	9/23/2010	Notice to Correct	Exceeded H <sub>2</sub> S emission limit in violation of ADP 05-2627.
3519	2/1/2005	Notice to Correct	Failure to report FBF O <sub>2</sub> concentrations in violation of 40 CFR 60.155(a)(2) and ADP 97-2035.
2605	2/21/2001	Notice of Violation with No Assessed Penalty	Exceeded CO emission limit for the fluidized bed furnace during a startup operation.
1489	9/11/1998	Notice to Correct	Exceeded NO <sub>x</sub> emission limit in violation of ADP 97-1980.
1480	12/12/1997	Notice of Violation with \$250 Penalty	Exceeded the dry tons per day sludge processing limit in violation of Title V Permit SW97-1-R0.
1458	2/12/1996	Notice of Violation with \$1,000 Penalty	Failure to record oxygen and pressure for waste water incineration in violation of 40 CFR §§ 60.153(b)(1), 60.153(b)(2), and 60.155.
9137	12/4/1991	Notice of Violation with \$250 Penalty	Exceedance of opacity limit.
5370	4/9/1985	Warning	Exceedance of opacity limit.
5423	3/13/1985	Warning	Exceedance of opacity limit.
6991	4/18/1983	Notice of Violation with \$250 Penalty	Exceedance of opacity limit.
6731	8/25/1981	Warning	Exceedance of opacity limit.
7156	3/17/1981	Warning	Exceedance of opacity limit.
4679	11/12/1980	Warning	Exceedance of opacity limit.
4783	10/28/1980	Warning	Exceedance of opacity limit.
4673	10/13/1980	Notice of Violation with \$250 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
4671	10/7/1980	Notice of Violation with \$250 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.

<b>Notice</b>	<b>Date</b>	<b>Action</b>	<b>Notes</b>
4670	10/6/1980	Notice of Violation with \$150 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
0096	10/5/1980	Notice of Violation with \$150 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
4447	4/2/1980	Warning	Exceedance of opacity limit.

**X. TITLE V PERMIT ACTIONS**Current Actions – AOP SW97-1-R2

1. Permit Application Submitted:	February 26, 2014
2. Permit Application Deemed Complete:	March 11, 2014
3. Final Permit Issued:	January 25, 2016
4. Renewal Permit Application Due:	January 25, 2020
5. Complete Permit Application Due:	July 25, 2020
6. Permit Expiration:	January 25, 2021

Previous Actions – AOP SW97-1-R1

1. Revision Permit Application Submitted:	May 11, 1998
2. Permit Application Deemed Complete:	June 17, 1998
3. Final Permit Issued:	November 10, 1998
4. Renewal Permit Application Due:	March 4, 2002
5. Permit Expiration:	September 4, 2002

Previous Actions – AOP SW97-1-R0

1. Permit Application Submitted:	June 2, 1995
2. Permit Application Deemed Complete:	October 18, 1995
3. Final Permit Issued:	September 4, 1997
4. Renewal Permit Application Due:	March 4, 2002
5. Permit Expiration:	September 4, 2002