Facility Name NPDES Permit #

Fats, Oils & Grease (FOG) (Food-to-Energy (F2E)) Receiving Facility Operations Document

[Date]

Purpose (Explain in general terms the overall receiving program – what is received, how is it received, what its purpose is, and what safeguards are put in place, etc.) Example:

This standard operating procedure (SOP) is intended to ensure that the delivery and processing of Fats, Oils, and Grease (FOG) and Food Waste (FW) brought to the [facility name] Treatment Plant are conducted in a safe, efficient manner that protects the physical facilities, maintains adequate treatment capacity, ensures proper overall operation, maximizes beneficial reuse, and maintains acceptable effluent quality. This procedure is designed to comply with the requirements in Special Provisions section [xxx] in [facility name] NPDES permit, relating to Fats, Oils, and Grease, or food processing waste, for injection into anaerobic digesters, and the SOP content requirement listed in the September 25, 2013 letter from the State Water Resources Control Board (SWRCB) for publically-owned treatment works (POTW) receiving hauled-in anaerobically digestible waste for co-digestion.

Description (Describe the receiving station, any organic waste screenings, rock traps, paddle finishers, digesters, power generating units, solids handling, etc.) Example:

The FOG/F2E) Receiving Station (the Receiving Station) is located on the [south-western side of the Agency’s Solids Handling Building]. The Receiving Station consists of a [insert appropriate description of receiving station and its components as in the following example] Slurry Tank, a FOG-receiving connection and Food Waste (FW) receiving hatch opening into the Slurry Tank, and various processing equipment. It is designed to receive and process FOG [and FW], mix it with digested sludge, and transport it to the Agency’s Anaerobic Digesters (the Digesters). During normal operation [include description of gas production and power generating equipment as in the following example] methane gas (biogas) is produced in the Digesters, and is used as a fuel source, along with natural gas, to operate a cogeneration engine and generator that produces electricity and waste heat. The electricity produced is used to power the Agency’s facilities, which offsets the purchase of natural gas for engine fuel and electricity from [energy provider]. Captured waste heat is used to produce hot water for heating the Digesters, and for other uses throughout the Treatment Plant and Agency facilities.

Unlike typical wastewater treatment plant process equipment, the Receiving Station does not receive raw wastewater from a collection system. The wastes are delivered to the station by
FOG tanker and/or specialized food waste hauling trucks coming primarily from Food Service Establishments (FSEs). The FOG/F2E Receiving Station’s Slurry Tank has a total volume of \{x\} gallons (see Attachment, Capacity to Accept FOG and Food Waste). This facility includes integrated instrumentation and control systems for manipulating and monitoring various aspects of the Receiving Station operation. The received FOG and FW are processed by screening, grit/rock removal, mixing with heated digested sludge, and holding for processing into the Digesters. Following the anaerobic digestion process, the biosolids are dewatered by centrifuges and beneficially reused as land-applied soil amendments or as alternative daily cover at the Novato Landfill.

Definitions (as appropriate)

Authorized Waste Haulers: Companies the Agency has authorized to transport and dispose of FOG and FW into the Receiving Station for processing.

Biosolids: Refers to treated municipal wastewater sludge that meets federal (EPA) pollutant and pathogen requirements for land application and surface disposal.

Commercial Food Waste (FW): Food wastes from commercial food service establishments.

Fats, Oils and Grease (FOG): Oily organic compounds, derived from animal and/or plant sources, that are generated during food preparation and cooking, and that are captured in grease traps and interceptors at Food Service Establishments.

Food Service Establishment (FSE): Those establishments primarily engaged in preparing, serving or otherwise making foodstuffs available for purchase and consumption.

FOG/F2E Receiving Station: The facility which receives, stores, and processes FOG/FW from waste haulers with the purpose of introduction of the FOG/FW into the Digesters and to increase biogas production.

FOG Delivery Sequence: The automated sequential steps required to receive and process FOG deliveries.

Food Waste Delivery Sequence: The automated sequential steps required to receive and process food waste.

Hauled Waste: A non-hazardous liquid waste, as defined by the U.S. EPA, which is prohibited from discharge into:

(a) a sanitary sewer; or
(b) a storm sewer or watercourse.
**Human Machine Interface (HMI/PLC):** The user interfaces in a Treatment Plant’s process control system. They provide a graphics-based interface for administering the process control and monitoring system.

**Interference:** Discharges which, alone or in conjunction with a discharge from other sources, would:

1. Inhibit or disrupt the Treatment Plant, its treatment processes or operations, or the processing, use, or disposal of its sludge processes; and

2. Therefore would a cause, or have the potential to cause, a violation of any permitted requirement.

**Liquid Waste Hauler:** Any person, firm, corporation, or other entity that collects, pumps, transports and/or disposes of liquid wastes.

**Odor Control System:** A system to contain and remove odors from the air in process environments. The FOG/F2E Receiving Station’s odor control system includes air ducts, fans, and an activated carbon media vessel. The carbon adsorbs volatile organic carbons (VOCs) and converts hydrogen sulfide (H\textsubscript{2}S) into water soluble sulfur compounds by oxidation.

**Treatment Plant:** For the purpose of this SOP, these are any of the facilities, structures, devices, equipment, or works owned by the Agency for the purpose of the transmission, storage, treatment, recycling, and reclamation of municipal wastes.

**Unacceptable Materials:** Materials of a type, quality, or quantity that would adversely impact the FOG/F2E receiving facility operations (e.g. clogging pipelines or damaging equipment).

**Conditions of Acceptance of FOG/FW (Example below)**

{Facility Name} has the right to inspect each load of hauled waste to confirm that no unacceptable materials are contained therein. Lack of inspection of any load does not relieve an authorized waste hauler from their obligation to not discharge any unacceptable materials into the FOG/F2E Receiving Station.

The FOG/F2E Receiving Station will receive FOG and/or FW from haulers {x} days per week. The hours of operation are {y}. Authorized waste haulers will {describe requirements for each hauler (ie, identifying key card, form to fill out, check in with operations, etc.) prior to or upon entering the Treatment Plant and proceeding to the FOG/F2E Receiving Station.

{Facility} reserves the right to refuse or require scheduled delivery of any hauled waste, if doing so would be in the best interest of the operation of the Treatment Plant to avoid process...
disruptions. Only pre-authorized wastes will be accepted. Wastes that contain heavy metals, toxic chemicals, and extreme pH, flammable or corrosive materials in concentrations harmful to the treatment operation will not be accepted.

Unloading

The Receiving Station’s equipment has been designed for accepting both FOG and FW waste streams. Material is screened by a Rock Trap Grinder (FOG) and a Paddle Finisher (FW). These machines are designed to prevent unacceptable material that could damage downstream equipment, and/or cannot be anaerobically digested, from moving beyond the Receiving Station. These screening materials are directed to special debris bins for off-site disposal.

FOG delivery is designed to be fully automated after the authorized waste hauler uses an Agency-issued access card to activate the card reader. Prior to accepting a FOG delivery, the station’s HMI will shut down all operating equipment and valves feeding the Slurry Tank that could disturb or change the liquid level in the tank. The Slurry Tank has a total volume of \(x\) gallons; however, the Agency’s energy recovery system limits the capacity to a maximum of \(Y\) gallons of FOG per day [if applicable]. [Food Waste deliveries will only be accepted by pre-authorized haulers with \{include any conditions here such as:] staff observing. The Slurry Tank can accept and process exclusively up to \(x\) tons of food waste daily [based on the limits of the Agency’s energy recovery system.] \{Describe any specific directions and instructions to truck drivers for delivery and discharge of loads, including clean up – for example the following:] Guide posts and a concrete tire stop are located to assist the MSS delivery drivers in proper truck positioning to enable depositing the contents into the Slurry Tank without spilling onto the plant road. Material spills can be cleaned up by rinsing into a nearby drain sump that is connected to the slurry tank, labeled “Drains to Slurry Tank.”

Processing \{Explain specific details of how the slurrying, screening, rock trap, mixing, etc. are sequenced and work\} As an example:

After the hauled waste has been received and the Slurry Tank filled to the pre-established level, an operator will initiate the slurry tank mixing sequence\(^{(4)}\) from the FOG/FW HMI or portable tablet device. The station PLC sets the amount of mixing time needed (based on source and amount) to create the slurry. After appropriate slurry mixing, the Receiving Station goes into an automatic mixing mode using the mix pumps, the paddle finisher, and/or the rock trap grinder.

Feeding \{Explain the specifics of sequencing, timing, recirculating, and feeding of waste to the digester(s)] As an example:
Feeding the slurry to the digesters is permitted only when all of the following conditions exist:

1. The FOG Delivery Sequence is not active.
2. Food Waste Slurry Sequence is not active.
3. Slurry Tank level is above the Operator-adjustable low-level setting. (Initially set at 3.0 feet.)
4. Station recirculating pumps are operating.
5. Digester Gas Level between the gas membrane is operating at a range of 71’ – 65’.
6. Digester Liquid Levels are between the operating ranges of 28.5’ - 28.1”.

Interference {Include all special steps and requirements instituted to maintain the integrity of the receiving facility, digesters, and all related units} As an example:

The Agency proactively attempts to prevent the introduction of materials that may cause interference by utilizing only authorized waste haulers for all FOG and FW deliveries. In the event unacceptable material is delivered into the FOG/F2E Receiving Station, the following steps are to be taken:

1. The FOG receiving port is equipped with an inline pH meter. In the event an extreme pH (≤3 or ≥9) reading is detected, FOG delivery valve (MOV21.4) will receive the command to close from the PLC. Material that has moved into the slurry tank will be pumped to an off-line storage basin through the Agency’s tank drain system to be removed, or the authorized waste hauler shall be required to remove the contaminated material directly from the slurry tank.

2. Food waste is processed and directly fed into the Agency’s Digesters. Twice weekly, staff performs digester sampling (pH, Temperatures, TS%, VS%, VSR%, TA, VA, VA/TA). Quarterly, Digester samples are taken for full metal analysis, and semi-annually Digester samples are taken for full organics analysis. In the event staff identifies one or more standard parameters outside of normal operations, the food source feed streams (FOG, FW, Primary Sludge, and TWAS) will be isolated and additional testing shall be performed to determine the cause of the problem.

Spill Prevention and Containment {Please describe and specify the spill prevention, containment and clean up protections you have instituted} As an example:

The FOG and FW delivery areas are designed to drain rainwater directly into the Slurry Tank via 4-inch drain piping. There are no valves in this piping, so drainage will occur without Operator action. To prevent possible odor emissions from the Slurry Tank, each 4-inch tank connection
contains a P-trap. In the event that one of the 4-inch drains becomes plugged, a 6-inch interconnected drain pipe with a buried plug valve is provided to drain any FOG or FW spillage directly into the Slurry Tank from either receiving pad. The buried plug valve should be closed at all other times to avoid the potential for odor emission through the 6-inch drain piping.

If the Slurry Tank needs to be drained rapidly, two feed pumps and a recirculation pump can be utilized. The pump discharges can be manually valved to the existing plant process waste return sump in the Solids Handling Building and recycled to the plant Headworks. Pipe cleanouts are located in the suction and discharge piping of the Receiving Station mixing pumps and feed pumps.

The Agency’s Emergency Response Plan provides a detailed response procedure in the event of spilled waste advancing into the Treatment Plant’s storm drain system that cannot be contained and pumped back to the system.

Vector and Odor Control {Explain all steps taken to ensure vector and odor control provisions are implemented and understood} As an example:

The Slurry Tank delivery hatch and Paddle Finisher sump hatch are two potentially significant access points for vectors (rats, mice, insects, birds) into the receiving tank. These access points shall be closed at all times except during deliveries and maintenance activities. Fine mesh screens have been attached to the tank’s air intake and exhaust vents to prevent vectors from entering through those locations.

The Odor Control System (OCS) has a gas detection meter that monitors for oxygen, hydrogen sulfide, and flammable gases and vapors. The OCS draws air from the Slurry Tank and removes the contaminants in the air stream before the air is released into the atmosphere. The fan for the OCS can be started manually as needed to prevent odor emissions from the Slurry Tank. The media in the OCS vessel is high-quality activated carbon. If an odor or hydrogen sulfide breakthrough occurs, the media can be regenerated in place.

Separate from the OCS, exhaust fans are provided to minimize the potential for harmful gases from accumulating in the FOG/F2E Receiving Stations equipment area. These fans are designed to provide adequate ventilation to avoid the need for the equipment area to be designated as a hazardous area per the National Electrical Code. Fans will be in operation at all times.

A chlorine solution can be sprayed into the Slurry Tank if needed to reduce odors that may be present after FOG and/or FW is dumped into the Slurry Tank. This chlorine solution spray can be controlled manually or by initiating the Chlorine Solution Spray Timer on the FOG/F2E
Screen at the HMI. Spray nozzles within the Slurry Tank direct the spray to the area below the food waste delivery hatch where the FW is introduced.

**Operations and Maintenance {Provide site specific details on daily and long-term operation and maintenance requirements} As an example:**

It is anticipated that daily removal of rocks from the rock trap/grinder and a general cleanup of the Receiving Facility will be required. The bins holding rejected material from the rock trap/grinder and/or the paddle finisher will require periodic pick-up and removal for disposal. Annual requirements will be grit removal from the Slurry Tank, inspection and needed replacement of hose pump hoses, and preventive maintenance on the rock trap grinder, mixing pumps, and paddle finisher.

O&M staff members will maintain appropriate technical certification levels and possess the experience required for operating the FOG/FW processing facility, separating equipment, and anaerobic digesters. Detailed facility operating procedures\(^{(7)}\) have been developed by Operations staff. Equipment-specific procedures\(^{(8)}\) are contained in the Digester Improvements and FOG/Food-to-Energy Facility Operations Document dated January 2013.

**References**

(1) Site-map with location reference.


(3) Administrative Policy/Procedure #11 – Acceptance of Hauled Waste (2012).


(5) Emergency Operating Procedure E21.01, found at H:\Operations\Standard Operating Procedures\eop21.01.

(6) Health and Safety Policy and Program “Emergency Response Plan” section 6, page 6-2, Overflows from the Treatment Plant.

(7) H:\Operations\Standard Operating Procedures\SOP 21.01.docx.
Attachment

Capacity to Accept FOG and Food Waste