Best Management Practice and Standards Manual for Food Service Establishments

Prepared by JEA for the control of fats, oils, and grease (FOG) discharged to the sanitary collection system by Food Service Establishments (FSE).

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Introduction

Best management practices (BMP) are designed to help facilities comply with environmental regulations and prevent pollution. This BMP contains a set of operating procedures and guidelines designed to reduce the amount of fats, oils, and grease (FOG) discharged to the JEA Water Reclamation Facilities (WRF) The development of this BMP is intended to reduce the amount fats, oils, and grease (FOG) introduced to the JEA sanitary sewer system and protect the public health and environment from the hazards presented by sanitary sewer overflows.

As part of the Clean Water Act, the National Pretreatment Regulation (40 CFR 403) was established to protect WRFs and the waterways in which they discharge. The Environmental Protection Agency (EPA) delegates this responsibility to the State of Florida Department of Environmental Protection (DEP). In JEA service territories, the State has delegated local authority to JEA (an electric, water, and sewer utility). It is the responsibility of the JEA Industrial Pretreatment (IP) program to regulate non-residential discharges to the WRF.

BMP guidelines are enforceable through section 2.7 of the JEA IP Regulation. Through this regulation, food service establishments (FSEs) and commercial kitchens are required to follow the guidelines and operating procedures laid out in this document. If it is determined a FSE is not utilizing BMPs, JEA may apply the IP Regulation as necessary to protect the JEA sanitary sewer system, the environment, and public health.

Background

FSEs are commercial facilities that prepare and or serve food or beverages for sale or consumption. Through daily activities working with food, all FSEs generate varying amounts of FOG. While FOG are most associated with fried foods, they are generated in significant quantities in all types of commercial food preparation:

- Cooking meats
- Mayonnaise and salad dressings
- Butter, ice cream and other dairy products
- Cream, gravy, and sauces
- Fatty Fruits and Vegetables (Avocado)

Statement of Problem

FOG tends to coat any pots, pans, ware, utensils, and equipment in which it contacts. When these materials are washed, the FOG is rinsed to the sewer. Sanitary sewer systems are neither designed nor equipped to handle FOG. In the sewer, the FOG coats the interior surface of the pipes. Overtime, FOG accumulations restrict the flow of wastewater through the sewer. Eventually the FOG can clog the sewer pipes causing the sewage to back up and spill onto the ground, waterways, and homes or buildings. This is called a sanitary sewer overflow (SSO) and endangers both the public health and the environment.

Fats, oils, and grease can also cause interference at the WRF. The FOG can negatively impact operations resulting in improper treatment of pollutants. These pollutants that are otherwise removed by the treatment process could be discharged to the river.

Policy

Discharges of FOG present a potential problem to the proper conveyance and treatment of sanitary sewage. JEA, as the control authority, is required to regulate discharges from FSEs. It is the policy of the JEA IP program to require FSEs discharging to the sanitary sewer system to abide by this policy and implement the BMPs in this document to minimize the amount of FOG entering the WRF.

Statement of Discharge Policy

1. All discharges from FSEs must be in accordance with applicable state, local or federal rules and regulations.
2. All facilities that are likely to discharge FOG, whether be newly constructed, or existing facility which shall be expanded or renovated to include a food service facility where such facilities did not previously exist, shall be required to install a properly sized and JEA approved grease separation device (GSD).
2. All FSEs unless otherwise determined by JEA, must have a properly sized and operational Grease Separation Device.
3. Sizing and design of all GSD must meet the criteria set forth within this BMP as well as the current FBC-Plumbing, Chapter 10.
4. Sizing and design shall be approved by JEA permitting and the local Building & Plumbing Inspection Division.
5. All FOG bearing drains must be plumbed to the interceptor, including but not limited to pot sinks, pre-rinse stations, workstations, soup kettles, braising pans, mop sinks, and floor drains.
6. All grease interceptors and traps must be maintained on a basis determined by JEA.

Required Maintenance Practices

- To prevent introduction of FOG to the JEA sanitary sewer, GSD must be maintained on a regular basis.

750 gallons or over	A minimum of every 90 days or more often if grease and solids levels reach 25% of the tank volume.
50 gallons to 749 gallons	A frequency not to exceed 30 days.
0-49 gallons	A frequency not to exceed 15 days.

- Grease interceptor devices must be inspected to insure proper functionality during each pump out event.
- JEA offers a variance program. 3 on-time cleanings are required for application. FSE must gain approval from JEA Coordinator prior to implementing to new schedule. Request variance by emailing fog@jea.com.

Maximum variance time allotted for the following devices:

- Automatic Grease Removal Devices: Do not qualify for variance
- Steel & Metal Traps: 90 days (maximum)
- Polyurethane & Plastic Traps: 180 days (maximum)
- Gravity Concrete Interceptors: 365 days (maximum)

Kitchen Practices

Kitchen practices strictly control the discharge of grease and solids to the interceptor. By reducing the amount of these substances discharged, a food service establishment may be able to reduce the cost associated with a greater than quarterly pump out frequency. This will also lead to decreased plumbing maintenance cost.

JEA has implemented an online program to aid FSEs in all things FOG related. FOG BMP (www.fogbmp.com) allows the FSE user to create a customized best management practice (BMP) for their facility. Each facility within the JEA service territory is required to set up and implement these BMPs to better protect the sewer collection system.

For information regarding FOG BMP profile set up please contact the JEA FOG Coordinator at fog@jea.com

Preemptive Practices:

- "No Grease" signs shall be posted above sinks and near dishwashers. Never pour grease or used oil down the sink - Used cooking oil containers are in place for used oil
- Install drain screens at all drain locations. Food particles take up volume in the grease interceptor, resulting in increased pump out frequency.
- Do not use grinders or garbage disposal units. Ground food takes up volume in the grease interceptor, resulting in increased pump out frequency.
- Do not wash straws, disposable gloves, paper, towels, or any other inappropriate materials down the drain.

- Floor drains should be connected to GSD where applicable. Protect unconnected drains from spills by sealing floor drains. Establish a spill cleanup plan if necessary.

Cleaning Practices:

- Excessive food waste shall be scraped or wiped from dishes, pots, pans, and other wares into waste containers.
- Wipe out pots, pans, bowls, and other dishware with paper towels ("dry" cleaning) prior to "wet" cleaning.
- Wipe food preparation areas with disposable paper towels prior to "wet" cleaning.
- Wipe up any grease spills with disposable paper towels prior to "wet" cleaning or mopping.
- Dispose of spent cooking oil into an approved used cooking oil collection container for recycling
- Use food grade paper to soak up oil and grease under deep fryers and other cooking equipment.
- Use water temperatures less than 140°F in all sinks, especially the pre-rinse sink before the dishwasher.
- Use absorbent pads to clean up spilled oil and grease around outdoor equipment, containers or dumpsters. If using free-flowing absorbent material, such as kitty litter or sawdust, after the material has absorbed the spill, sweep up and discard in the trash immediately to prevent material from being introduced to the storm drain system.
- Maintain cleanup supplies such as mops, brooms, brushes, paper towels, and absorbent material, to always be ready for spills.

Grease Separation Devices (GSD) Maintenance Practices

- Routine GSD maintenance checks - Look for grease that could be leaking from device, strange noises, or if the trap is failing to collect grease.
- Interior GSD - Clean and maintain as required by JEA.
- Exterior GSD - Cleaned and maintained as required by JEA by a professional pumping company.

Other Maintenance Practices:

- All waste generated from cleaning kitchen exhaust hoods, ductwork and rooftop fans must be collected and transported by a permitted hauler and disposed of at an approved disposal facility. Routinely clean kitchen exhaust system and filters to prevent excess grease buildup (Fire Hazard).

- Mats, mops, and equipment wash-down must be conducted in areas that allow the wash water to enter drains connected to the grease separation device. If the wash down area is not supported by a drain that leads to the grease separation device, all waste generated from cleaning must be collected and transported by a permitted hauler and disposed of at an approved disposal facility.
- When jetting, rodding or other drain cleaning activities are performed, FOG shall not be allowed to pass through any drainage system. All FOG must be collected and transported by a permitted hauler and disposed of at an approved disposal facility.
- Create a BMP that is specific to your restaurant and staff to include actual equipment present and map of facility.

Additional Benefits of Maintaining GSD and using Best Management Practices:

- Reduce overflow and backups in plumbing that could disrupt daily operations
- Improved drainage from facility
- Reduce infestations such as fly, larvae, roaches by limiting odors that attract pests.
- Promote health and safety by reducing bacterial growth, creating a safer environment for employees
- Regular cleaning reduces odors that are unpleasant for staff and guests
- Prevent costly repairs of plumbing due to grease related issues
- Extends the GSD lifespan

Documentation

- For every GSD pump out event, whether performed by the FSE or a hauler, a JEA pump out report must be submitted to JEA within five (5) days of the event.
- JEA requires self-cleaning reports conducted by the FSE to include before and after pictures to ensure the device was cleaned satisfactorily.
- JEA IP regulation requires all records of pump outs or interceptor maintenance to be maintained on site and available for JEA inspection for a minimum of three (3) years.

Training

- Train all kitchen staff in these best management practices and the environmental impacts of grease in the sewer system. All training shall be completed and documented through the FOG BMP program
- Post FOG BMP Best Management Practices signs in kitchens and near sinks.
- Place yellow grease re-use bins in easy access areas for staff. Follow up to ensure sure staff properly disposes of used cooking oil.
- Provide constant re-enforcement on proper disposal of fats, oils, and grease with staff.

Interceptor Additives

Many vendors service grease interceptors with chemicals or microorganisms to remove FOG material. Known interceptor additives are:

- Emulsifiers, detergents, or caustic substances – these chemicals act to break up the grease and allow it to pass through the interceptor and into the sewer system where it

can reform and cause blockages. These substances reduce the efficiency of the interceptor or trap and are **prohibited** for use as an additive.

- Enzymes – have the same affect as emulsifiers and are therefore **prohibited** as additives.

- Microorganisms – typically cultured bacteria are added to the interceptor. Ideally these bacteria digest the FOG converting it to innocuous substances. Microorganisms are **not** prohibited as an additive. However, since bacteria need an environment with specific requirements to proliferate, the effectiveness of these organisms in the environment of the interceptor is not known. The use of microorganisms does not relieve an FSE of pump out frequency requirements.

Guidance for Working with Grease Hauling Companies

- Work closely with your hauling company to make sure your interceptor is serviced at the proper frequency and all required paperwork is completed properly and submitted to JEA in a timely manner. JEA Certified Haulers are required to perform these duties for their customers.

- Be sure your hauler leaves a copy of each pump out report and any other interceptor maintenance documentation such as pre-service & post-service photos. Reports shall be kept on site for 3 years.

- Review your pump out reports from haulers for accumulations of grease and solids. If amounts are nearing or exceeding 25% review kitchen practices to find areas in which improvements can be made to reduce the introduction of FOG and solids. If the pump out report indicates that the interceptor needs repair, contact hauler or plumber to have it serviced immediately.

- Ask your hauler where/how grease interceptor contents are disposed.

Conclusion

Food service establishments can have a significant impact on the environment. Through the use of a properly sized and functioning interceptor, suitable kitchen practices, and regular maintenance of the interceptor FSEs can reduce the amount of fats, oils, and grease discharged to the sanitary sewer system.
By following the practices in this document, food service establishments will be helping to reduce sanitary sewer overflows and protect our community's health and environment as well as reducing plumbing maintenance cost associated with the discharge of fats, oils, and grease.

Questions can be directed to:
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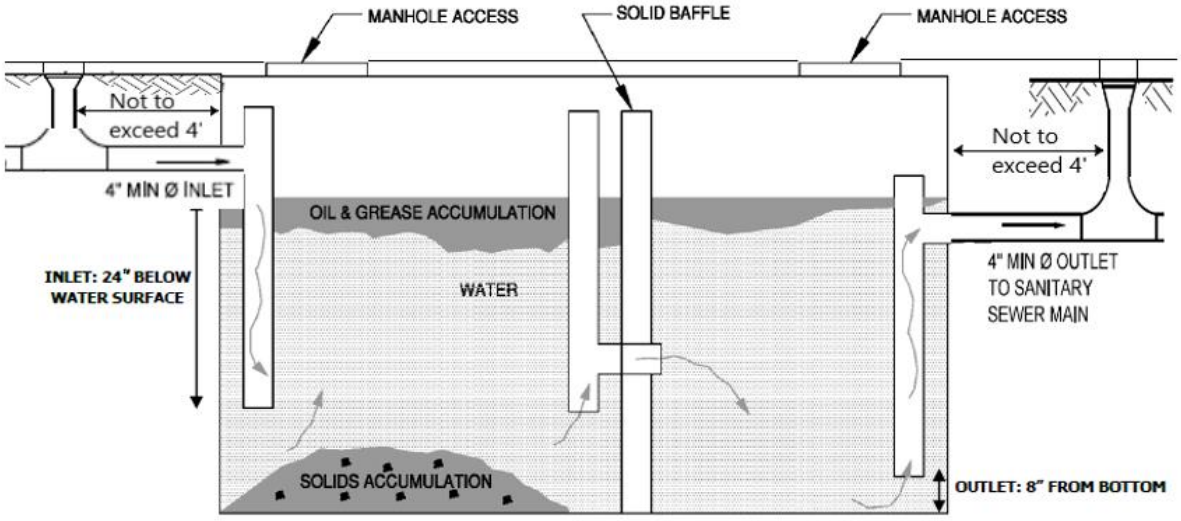
Jacksonville, FL 32202

(904) 665-7404
fog@jea.com

Or at our website: **JEA.com/grease**

JEA GRAVITY GREASE SEPARATION DEVICE STANDARDS

Gravity grease interceptors require JEA approval for all new food service establishments. Proposed gravity grease interceptors must undergo JEA Grease Separation Device plan review and receive approval prior to installation. JEA approval of the installation of a gravity grease interceptor at a new food service establishment shall meet the following



- Inlet & outlet piping shall have a two-way cleanout installed no more than 4 feet from the edge of device
- Inlet piping shall enter at 2 ½ inches above the liquid level
- Inlet piping shall connect to a vented tee which shall extend to 24 inches below the water level
- The outlet pipe shall start at 8 inches above the bottom of the device and extend vertically to a vented tee
- The tee and pipe shall be no less than 4 inches in diameter
- The tee shall be installed with the run in the vertical direction
- Access point covers shall be constructed of steel, poly, or composite materials. Concrete lids are prohibited
- All fixtures in the food preparation & washing areas shall be routed through the device
- No sanitary wastewater shall be plumbed to the device
- Access points will be located over the inlet and outlet piping to allow for adequate cleaning, sampling, and inspection
- Devices shall be properly sized by multiplying the peak drain flow into the interceptor in gallons per minute by a retention time of 30 minutes
- Devices will have a minimum size of 750 gallons and a maximum size of 1500 gallons
- If multiple devices are necessary, they will be installed in series and in accordance with these standards

- Baffles are required, alternative designs acceptable if designs must meet current version of Florida Building and Plumbing Code
- In trafficked areas device must have traffic bearing frame, cover, cleanouts, and manhole covers to meet FDOT standards
- The device must be water and gas tight

Hydromechanical Grease Separation Device Standards

Hydromechanical grease interceptors (HGI) require JEA approval for all new food service establishments. Proposed HGI must undergo JEA Grease Separation Device plan review and receive approval prior to installation. JEA approval of the installation of a HGI at a new food service establishment shall met the following criteria:

- HGI shall be sized & designed in accordance with ASME A112.14.3, ASME A112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101
- HGI shall be installed in strict accordance with manufacturer's instructions or in accordance with ASME A112.14.3, ASME A112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101
- All fixtures in the food preparation & washing areas shall be routed through the device
- No sanitary wastewater shall be plumbed to the device
- If multiple devices are necessary they will be installed in series and in accordance with these standards
- Access points will be located over the inlet and outlet piping to allow for adequate cleaning, sampling, and inspection
- Access point covers shall be constructed of steel, poly, or composite materials and be situated in an area that makes them easily accessible for cleaning, sampling, and inspection
- HGI shall be air and water tight
- In trafficked areas device must have traffic bearing frame and cover to meet FDOT standards
- HGI shall be equipped with a device to control the rate of flow through the unit. The rate of flow shall not exceed the manufacturer's rated capacity recommendation in gallons per minute for the unit
- The flow control device and HGI shall be vented in accordance with the Florida Building and Plumbing Code most current edition. The vent shall terminate not less than six inches above the flood-rim level or in accordance with manufacturers description

Industrial Pretreatment

PROHIBITED DISCHARGES AND LOCAL LIMITS

1. Prohibited Discharges

In accordance with §2.1 of JEA's *Industrial Pretreatment Regulation*, no user shall introduce or cause to be introduced into JEA's Wastewater Treatment Facilities (JEAWWF) any pollutant or wastewater which causes pass-through or interference or shall introduce or cause to be introduced pollutants, substances, or wastewater that have not been processed or stored in such a manner that they could be discharged to JEAWWF. No significant industrial user shall discharge to JEAWWF without authorization from JEA. These general prohibitions apply to all users of JEAWWF whether or not they are subject to categorical pretreatment standards or any other Federal, State, or local pretreatment standards or requirements.

Additionally, no user shall introduce or cause to be introduced into JEAWWF the following pollutants, substances, or wastewater:

(1) Pollutants which create a fire or explosive hazard in JEAWWF, including, but not limited to, waste streams with a closed-cup flash point of less than 140°F (60°C) using the test methods specified in 40 CFR 261.21.

(2) Wastewater having a pH lower than 5.5 or higher than 12.0, or otherwise causing corrosive structural damage to JEAWWF or equipment.

(3) Any solids or viscous substances that may cause obstruction to flow or be detrimental to sewerage system operations. These objectionable substances include, but are not limited to, asphalt, dead animals, offal, ashes, sand, mud, straw, industrial process shavings, metals, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, bones, hair and fleshings, entrails, paper dishes, paper cups, milk containers, or other similar paper products, either whole or ground.

(4) Any animal or vegetable-based oils, fats, or greases whether or not emulsified, which would tend to coat or clog, cause interference, pass through, or adverse effects on JEAWWF. Grease removed from grease traps or interceptors shall not be discharged to JEAWWF.

(5) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with JEAWWF.

(6) No user shall discharge into a sewer line or other appurtenance of the JEAWWF any wastewater having a temperature greater than 140^{o}F (60^{o}C) or which will inhibit biological activity in the treatment plant resulting in interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104 ^{o}F (40^{o}C). If a lower temperature limit is required than 140^{o}F at the point of connection to JEAWWF, then the limit shall be depicted in the user's wastewater discharge permit.

(7) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin at a total concentration exceeding 150 mg/l.

(8) Wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with a wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of JEAWWF, causing the treatment plant to fail a toxicity test or exceed the limitation set forth in a categorical pretreatment standard.

(9) Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, condensate, deionized water, non-contact cooling water, and unpolluted wastewater, unless specifically authorized by JEA.

(10) Pollutants which result in the presence of toxic gases, vapors, or fumes within JEAWWF in a quantity that may cause acute worker health and safety problems. Acute worker health and safety problems may be defined using the most recent information on TWA-TLV, TWA-STEL, and IDLH from the American Conference of Governmental Industrial Hygienists (ACGIH), National Institute for Occupational Safety and Health (NIOSH), EPA, and the Occupational Health and Safety Administration (OSHA).

(11) Trucked or hauled pollutants, except at discharge points designated by JEA in accordance with §6.3 of JEA's *Industrial Pretreatment Regulation*.

(12) Noxious or malodorous liquids (City of Jacksonville, City Odor Ordinance, Chapter 376, Ordinance Code), gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance, inspection or repair.

(13) Wastewater which imparts color that cannot be removed by the treatment process, and causes a violation of JEAWWF's NPDES permit such as, but not limited to, dye wastes and vegetable tanning solutions.

(14) Wastewater containing any radioactive wastes or isotopes except in compliance with applicable Federal and State regulations or permits issued by Federal and State Agencies and specifically authorized by JEA.

(15) Sludge, screenings, or other residues from the pretreatment of industrial wastes.

(16) Medical or infectious wastes, except as specifically authorized by JEA in a wastewater discharge permit

(17) Detergents, surface-active agents, or other substances which may cause excessive foaming and cause interference and pass-through JEA Wastewater Treatment Plants.

(18) Waters or wastes containing phenol or other taste- or odor-producing substances in such concentrations exceeding limits established by JEA, as necessary after treatment of the composite sewage to meet requirements of Federal, State or other public agencies having jurisdiction for the discharge to the receiving waters.

(19) Garbage that has not been properly shredded to such a degree that all particles will be carried freely in suspension under flow conditions normally prevailing in JEAWWF. At no time shall the concentration of properly ground garbage exceed a level that would prevent JEAWWF from maintaining the required efficiency or cause operational difficulties.

(20) Swimming pool drainage unless specifically authorized by JEA. No person who fills a swimming pool with non-metered water may discharge swimming pool drainage to a sanitary sewer without a JEA wastewater discharge authorization.

(21) It shall be unlawful for silver-rich solution from a photographic processing facility to be discharged or otherwise introduced into JEAWWF, unless such silver-rich solution is managed by the photographic processing facility in accordance with the most recent version of the Silver CMP prior to its introduction into JEAWWF.

2. Local Limits

The following pollutant limits are established to protect against pass-through and interference. No user shall discharge wastewater with pollutants in excess of the following:

POLLUTANTS	BUCKMAN ST WWF	DISTRICT II WWF	SOUTHWEST WWF	ARLINGTON EAST WWF	MANDARIN WWF
Cadmium (mg/l)	1.20	1.20	1.20	1.20	1.20
Chromium (mg/l)	10.00	10.00	10.00	10.00	10.00
Copper (mg/l)	3.38	0.82(1)	none	3.38	3.38
Cyanide (mg/l)	3.38	3.38	3.38	3.38	3.38
Lead (mg/l)	1.40	0.70	1.90	1.17	1.90
Mercury (mg/l)	0.006(1)	0.006(1)	0.006(1)	0.006(1)	0.006
Molybdenum (mg/l)	2.66(1)	0.741 lb/day(1) (2)	none	none	none
Nickel (mg/l)	3.98(1)	3.98	3.98	3.98	3.98
Silver (mg/l)	0.43	0.43	0.43	0.43	0.43
Zinc (mg/l)	2.61	2.61	2.61	2.61	2.61

(1) Limits for contributory flow users only. Industrial user will be notified by JEA regarding its status as a contributory user.
(2) Limitations applied in IU permits as determined by JEA.

Maximum Allowable Discharge Limits

The above limits apply at the point where the wastewater is discharged to JEAWWF. All concentrations for metallic substances are for "total" metal unless indicated otherwise. JEA may impose mass limitations in addition to, or in place of, the concentration-based limitations above.