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## Attachments

## Introduction

Fats, oils and grease (FOG) are a major concern for Vallecitos Water Districts (VWDs) operation of the sanitary sewer system. When FOG is not disposed of properly it will solidify as it cools and accumulate along the interior walls of the pipe, trapping food particles and other debris. Overtime, this solid mass continues to grow until it obstructs the flow and causes sewage to back up and eventually resulting in a sanitary sewer overflow (SSO). SSOs create a health risk to the public, damage property, pollute the environment, and depending on the severity of the incident, are costly to clean up.

Food service establishments can be a significant source of FOG because of the amount of grease and oil produced when cooking and other food preparation work. Without proper cleanup practices and maintenance of a grease removal device, food particles and FOG will flow to the sanitary sewer system. FOG can be significantly reduced by the properly maintaining a grease removal device and implementing Best Management Practices (BMPs).

State Water Resources Control Board Order 2006-0003 requires that VWD develop and implement a FOG control program as part of its Sanitary Sewer Management Plan (SSMP). The purpose of the program is to reduce the potential for FOG related sanitary sewer overflows. Also, Order 2006-0003, recommends a FOG inspection program for food service establishments be implemented as part of a FOG control program. Based on the requirements of Order 2006-003, VWD has identified the need for implementing a FOG inspection program for food service establishments.

This manual is written to educate and provide food service establishments with information about FOG discharge prevention techniques. These techniques have been proven effective in reducing maintenance costs for owners/managers and preventing FOG from entering the sanitary sewer system. By following practices in this manual, food service establishments will help protect residents, businesses and the environment by reducing sewer backups and overflows resulting from the accumulation of FOG in the sanitary sewer system.

The FOG Control Program and manual will be periodically evaluated by VWD and modified as necessary to maximize the effectiveness of the program.

## What is FOG?

FOG refers to animal and vegetable fats, oils and greases that are commonly used and generated from food service establishments involved in food preparation. FOG is a by-product found in butter or margarine, baking goods, cooking oil, dairy products, food scraps, lard, and meat fats.

## Why is FOG a Problem?

When poured down the drain, FOG can build up over time in pipes, valves, and equipment, causing significant problems to VWD's sanitary sewer system and wastewater treatment plant. Problems include sewer line blockages that can lead to backups or overflows. This is both an environmental issue and public health concern, in which sewage can contaminate our local creeks, lakes and beaches. Property damage can also result from a sewer backup or overflow leading to expensive clean up and repairs that may have to be paid by the business owner.

## How to Achieve Compliance with the FOG Control Program

As an owner or manager of a food service establishment, achieving compliance with VWD's FOG Control Program will require the implementation of the following BMPs that are designed to minimize the introduction of FOG into the sanitary sewer system.

- Employee Training and Awareness
- Post Kitchen BMPs and No Grease Signage
- Installation of Drain Screens
- Dry Wipe/Scrape Dishware
- Water Temperatures Less Than 140° F
- Recycle Waste Cooking Oil
- Spill Prevention and Clean Up Methods
- Clean Grease Removal Devices Routinely
- Do Not Use Emulsifiers and Enzymes
- Maintenance of Kitchen Exhaust Filter

## Are Food Service Establishments going to be inspected?

VWD will perform inspections of all food service establishments at least once every year. In addition, establishments may be inspected at any time in response to complaints or reports of sewer backups or sewer overflows. During the inspection, a VWD inspector will meet with an owner or manager of the food service establishment to determine compliance with the FOG Control Program.

Inspections will be conducted to evaluate the following:

- BMPs
- Grease removal device cleaning and maintenance
- Recordkeeping and documentation

## Best Management Practices (BMPs) for Food Service Establishments

Residual fats, oils and grease are by-products that food service establishments must constantly manage. Typically, FOG enters a facility's plumbing system from washing cookware, cleaning floors and sanitizing equipment. Sanitary sewer systems are not designed or equipped to handle FOG that accumulates on the interior of the pipes. The most effective way to manage FOG and minimize the discharge into the District's sewer system is by implementing the BMPs listed below.

### 1. Employee Training and Awareness

All employees are required to be trained and made aware of all BMPs for preventing FOG from entering the sewer system. New employees will need to be initially trained within two weeks of employment. Each employee must receive refresher training every 6 months. Training will need to be documented and employees' signatures obtained indicating understanding of the BMPs reviewed. Use the Best Management Practices Employee Training Log (Attachment I) provided in this manual.

### 2. Post Kitchen BMPs and No Grease Signage

Post Kitchen BMPs and No Grease signs in the food preparation and dishwashing areas. This will serve as a constant reminder to employees of the BMPs for food service establishments and to properly dispose of waste oil. VWD will provide the signs.

### 3. Installation of Drain Screens

Install drain screens on all sink and floor drains in food preparation and kitchen areas. Ensure screens are removable for the ease of cleaning and dispose of the solid waste in the trash. Screen openings should be between 1/8" and 3/16". This prevents introduction of solid waste to the grease removal device and the sanitary sewer system.

### 4. Food Grinders

Disconnect garbage disposals and/or food grinders. Their use is prohibited due to the amount of solid waste and grease introduced to a grease removal device and the sanitary sewer system. Food waste should be directly disposed of in a trash receptacle or recycled if possible.

## 5. Dry Wipe/Scrape Dishware

Use rubber scrapers, squeegees or paper towels to remove food waste, fats, oils and grease from cookware, serving ware, utensils, etc., prior to dishwashing. Dispose of food waste and FOG in a trash receptacle or recycling container. Do not use cloth towels for wiping or scraping of kitchen ware.

## 6. Use Water Temperatures Less Than 140° F

Do not discharge wastewater with a temperature above 140° F to any grease removal device. Temperatures exceeding 140° F will dissolve grease, which then re-solidifies in the sanitary sewer system as water cools.

## 7. Recycle Waste Cooking Oil

Collect all waste cooking oil from pots, pans and fryers and properly stored it in a designated recycling receptacle. Use a licensed waste hauler or recycling company for the disposal of waste oil. Documentation of proper disposal/recycling of waste oil is required. Use the Waste Cooking Oil and FOG Disposal/Recycling Log (Attachment II) that is provided in this manual.

## 8. Spill Prevention and Clean Up Methods

Properly cover containers when transporting cooking oil and grease. Empty containers before they are full to avoid spills. Use absorbents material such as paper towels or kitty litter to pick up oil and grease before mopping. Dispose of used absorbent material in the trash.

## 9. Clean Grease Removal Devices Routinely

Cleaning and maintenance is based on the combined grease and solids accumulation reaching 25% of the designed hydraulic depth of the grease removal device. Documentation is required when cleaning and maintenance is performed. Use the Grease Removal Device Cleaning Log (Attachment III) provided in this manual. Refer to page 5 on proper maintenance requirements for grease removal devices.

## 10. Usage of Emulsifiers and Enzymes

**Do not use** additives, including but not limited to biological or chemical agents, enzymes or surfactants acting as grease emulsifiers, into any grease removal device, for FOG remediation. Emulsifiers and enzymes dissolve solidified grease which re-congeals further downstream in the sanitary sewer system.

## 11. Maintenance of Kitchen Exhaust Filter

Clean filters as frequently as necessary to maintain good operating condition. Properly dispose of the wastewater generated from cleaning the exhaust filter.

## Grease Removal Device Maintenance Requirements

For a grease removal device to be effective, the unit must be properly sized and maintained to allow adequate retention time for settling and accumulation of solids and grease. Inspecting and cleaning a grease removal device is critical to ensure it functions properly. The grease removal device should be checked on a frequent basis.

The required maintenance frequency for a grease removal device depends greatly on the amount of FOG the facility generates as well as the BMPs implemented that reduce FOG discharged into the sanitary sewer system. In many cases, an establishment that fully implements BMPs will realize financial benefit through a reduction in maintenance frequency.

**Maintenance requirements for grease removal devices:**

- Regular cleaning and maintenance of a grease removal device is essential to its proper operation. The cleaning of these devices is based on the combined grease and solids accumulation reaching 25% of the designed hydraulic depth of the interceptor. During routine cleaning if it's determined the 25% combined grease and solids accumulation is being exceeded, it is the responsibility of the food service establishment to clean the device more frequently.

- Hydromechanical grease interceptors, formally known as grease traps will need to be cleaned and inspected at least once a month. Cleaning may be performed by staff or by a licensed waste hauler. Using a licensed waste hauler is the most reliable and preferred option. Follow the procedures on page 7 under Hydromechanical Grease Interceptor Maintenance (Grease Trap). In addition, this device should be cleaned by a licensed waste hauler every three (3) months to ensure proper operation and maintenance.

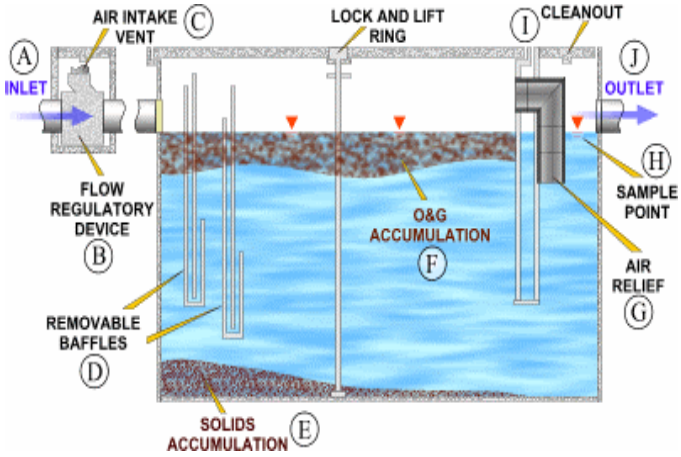
- Due to the size of gravity grease interceptor a licensed waste hauler must perform the cleaning and maintenance of the device. The cleaning and maintenance of the interceptor must occur at least every three (3) months. Refer to the list of service providers, Grease Removal Device Cleaning and Cooking Oil Recycling/Rendering Companies (attachment V) provided in this manual. As the food service establishment owner/operator is responsible for the condition of the grease interceptor, it is recommended that an appropriate representative witness all cleaning and maintenance activities to verify that proper procedures are being followed. Refer to page 9 under Gravity Grease Interceptor Maintenance.

- Food service establishments are required to maintain records documenting the cleaning of grease removal devices. These records should include the name of the employee or company that performed the cleaning, date, amount of grease removed and disposal location. Use the Grease Removal Device Cleaning Log (Attachment III) provided in this manual.

## What is a Hydromechanical Grease Interceptor (Grease Trap)?

Hydromechanical grease interceptors are typically located inside a food service establishment but can also be installed outside. These devices are designed to collect, contain or remove food waste and grease from the waste stream while allowing the balance of the liquid waste to discharge to the sanitary sewer system by gravity.

## How Does a Hydromechanical Grease Interceptor Work?




A. Flow from four or fewer kitchen fixtures enters the interceptor.

B. An approved flow control or restricting device is installed to restrict the flow to the rated capacity of the interceptor.

C. An air intake valve allows air into the open space of the interceptor to prevent siphonage and back-pressure.

D. The baffles help retain grease towards the upstream end of the interceptor since grease floats and will generally not go under the baffle. This helps to prevent grease form leaving the interceptor and moving further downstream where it can cause a blockage.

E. Solids in the wastewater that do not float will be deposited on the bottom of the interceptor and will need to be removed during routine cleaning.

F. Oil and grease floats on the water surface and accumulates behind the baffles. The oil and grease will need to be removed during routine cleaning.

G. The air relief is provided to maintain proper air circulation within the interceptor.

H. Some interceptors have a sample point at the outlet end to sample the quality of the wastewater leaving the device.

I. A cleanout is provided at the outlet or just downstream of the outlet to provide access into the pipe to remove any blockages.

J. The wastewater exits the interceptor through the outlet pipe and continues to a gravity grease interceptor or the sanitary sewer system.

## Hyromechanical Grease Interceptor Maintenance (Grease Trap)

Proper maintenance procedures outlined below:

| Step | Actions |
|---|---|
| 1. | Remove bolts and lid to access interceptor. |
| 2. | If equipped with baffles, remove them. |
| 3. | Make sure the flow restrictor on the inflow pipe is present. |
| 4. | Scoop the accumulated grease layer out and deposit in a watertight container for proper disposal. |
| 5. | Bail out any water to facilitate solids from the bottom of the interceptor. The water should be discharged to the sanitary sewer system. Note: Grease haulers can remove the entire content of the interceptor using a vacuum system. |
| 6. | Remove all the solids from the bottom of the interceptor. Make sure the water is drained from the solids and properly disposed in the trash. |
| 7. | Scrape the side, the lid and the baffles with a putty knife to remove the grease and deposit the grease into the same container used for the grease layer. |
| 8. | If damages or missing parts are seen repair or replace them to ensure proper working operation. |
| 9. | Replace baffles, lid and bolts. |
| 10. | Document maintenance actives on the Grease Removal Device Cleaning Log that is provided in this manual. |
| 11. | Contact a hauler or recycler for grease pick-up. |

## What is a Gravity Grease Interceptor?

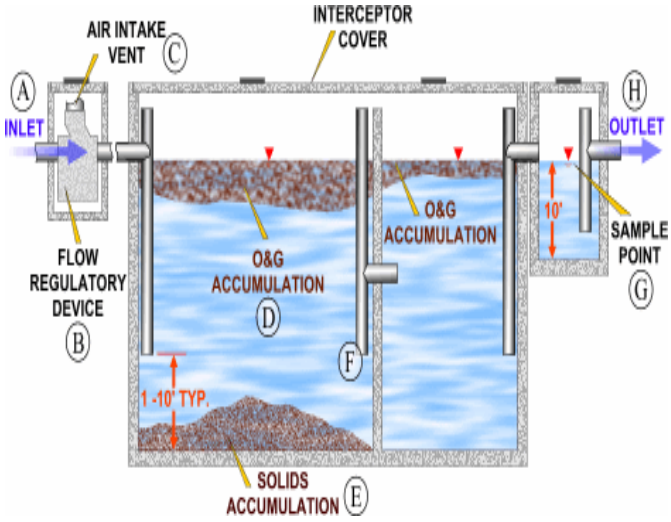
A gravity grease interceptor is a multi-compartment device that is located underground outside of a food service establishment. These devices are designed to collect, contain or remove food wastes and grease from the waste stream while allowing the balance of the liquid waste ("gray water") to discharge to the sanitary sewer system by gravity.

## How Does a Gravity Grease Interceptor Work?

A. Flow from under the sink grease traps or directly from plumbing fixtures enters the interceptor. The California Plumbing Code requires all flow entering the interceptor must enter through the inlet pipe.

B. An approved flow control or restricting device is installed to restrict the flow to the interceptor to the rated capacity of the interceptor.

C. An air intake valve allows air into the open space of the interceptor to prevent siphonage and back-pressure.




D. Oil and grease floats on the water surface and accumulates behind the retaining fittings and walls separating compartments. The oil and grease will need to be removed during routine cleaning.

E. Solids in the wastewater that do not float will be deposited on the bottom of the interceptor and will need to be removed during routine cleaning.

F. Grease retaining fitting extend down into the water within 12 inches of the bottom of the interceptor. Because grease floats, it generally does not enter the fitting and is not carried into the next compartment. The fittings also extend above the water surface to provide air relief.

G. Some interceptors have a sample box so the inspectors or employees of the establishment can periodically take effluent samples. Having a sample box is recommended by the California Plumbing Code but not a requirement.

H. The water exists the interceptor through the outlet pipe and flows to the sanitary sewer system.

## Gravity Grease Interceptor Maintenance

Proper maintenance procedures outlined below:

| Step | Actions |
|---|---|
| 1. | Contact a grease hauler or recycling company for cleaning of the interceptor. Refer to the list of companies in the manual. |
| 2. | Remove manhole covers. Remove bolts as required. |
| 3. | Remove the entire grease cap and debris from the top of the interceptor. |
| 4. | Vacuum water out of the interceptor. |
| 5. | Clean the side of the interceptor. |
| 6. | Remove the remaining solids and grease from the bottom of the interceptor. |
| 7. | Make sure the baffle is secure and in place. |
| 8. | Inspect the interceptor for any cracks or defects. |
| 9. | Check that the piping on the inlet and outlet sides of the interceptor is not clogged, loose or damaged. |
| 10. | If the interceptor is equipped with a sample box, open and clean the box. |
| 11. | Check that manhole covers are securely and properly seated after cleaning is completed. Re-install bolts to secure covers. |
| 12 | Document maintenance actives on the Grease Removal Device Cleaning Log provided in this manual. |

## Recordkeeping

Recordkeeping and documentation is an important element to the success of implementing a FOG program. Food service establishments are required to retain onsite the following records and documents:

- BMPs Employee Training Log (Attachment I)
- Waste Cooking oil and FOG Disposal/Recycling Log (Attachment II)
- Grease Removal Device Cleaning Log (Attachment III)
- VWD Food Service Establishment Inspection Report (Attachment IV)
- Grease removal device cleaning and FOG disposal/recycling manifests, invoices and receipts.

All records listed above must be filled out accordingly and retained for a minimum of three (3) years. These records will be requested and reviewed by the District's inspector during the inspection process.

## Conclusion

Food service establishments can be a significant impact on the environment. Through proper implementation of kitchen BMPs and regular inspection and maintenance of grease removal devices, food service establishments can reduce the amount of FOG discharge to the sanitary sewer system.

By following the practices in this manual, food service establishments will be helping reduce sanitary sewer overflows and protect the community's health and environment as well reducing maintenance cost associated with the discharge of FOG.

## If you have any questions regarding this manual please contact:

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