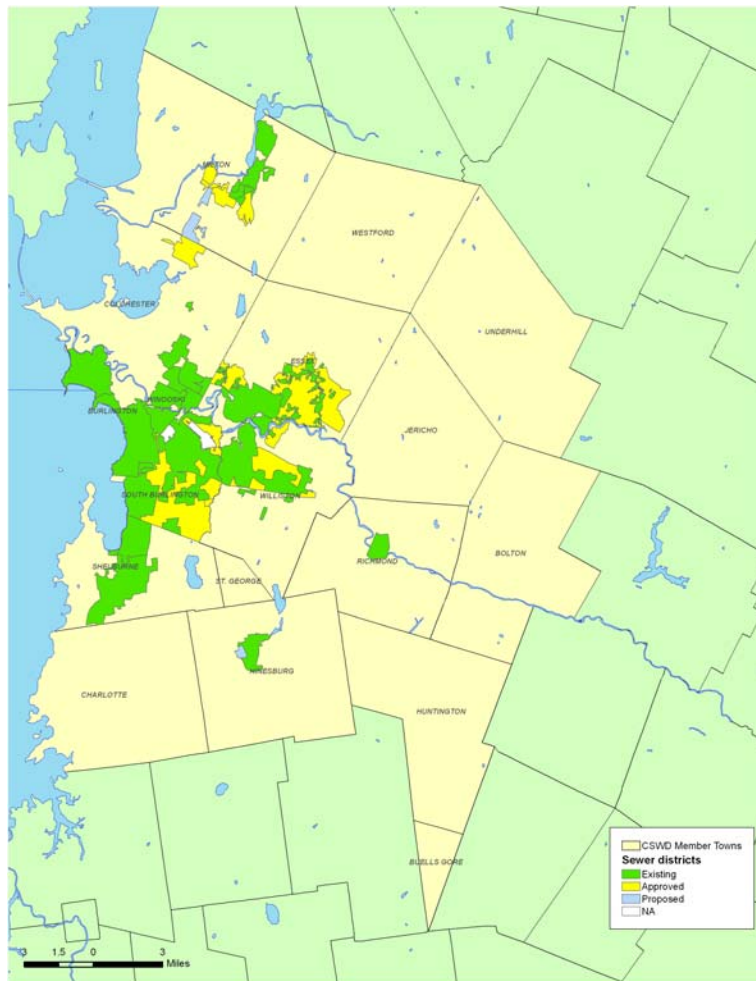

MANUAL FOR MANAGEMENT OF FATS, OIL, AND GREASE

CHITTENDEN SOLID WASTE DISTRICT / FEBRUARY 7, 2006



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1. INTRODUCTION

Large quantities of fats, oils, and grease (FOG) are generated at food processing establishments (FPEs), such as restaurants, schools, churches, and corporate cafeterias that should be properly separated and stored for removal to a recovery facility. Due to the cost of removal, the limited disposal options available, and lack of ordinance enforcement, FOG from many businesses is finding its way into municipal wastewater treatment systems. System operators are enduring the costs associated with the removal of clogs in pipes and pumping stations and the processing of FOG in wastewater.

This manual contains information on how municipalities, publicly owned wastewater treatment facilities, and solid waste management districts could go about regulating FOG; recommendations for grease/water separation methods; and describes the process of how to implement a FOG program. This manual and accompanying database provides sufficient information and a tool to assist in the development of a FOG management program.

A separate *FOG Manager* database application was developed as part of this project as a tool to assist the management authority with managing all the information needed to operate a program.

The Appendices include information on sample ordinances, other management authorities' experiences; education, outreach, and training resources; sample notice of violation letter; sample outreach pamphlet; and a sample maintenance record form.

2. FOG MANAGER

The FOG Manager database that accompanies this manual not only provides for tracking of FOG generators, their equipment, waste streams and disposal method, it also contains valuable resource information regarding markets, service providers, technical information, and regulatory entities contacted during the development of this manual.

As developed, FOG Manager (see Figure 1) provides any jurisdiction that wants to develop a management program of all FOG generators a tool and container of information for managing, notifying, and reporting on all generators. It has been pre-populated with Chittenden County FPEs permitted by the Vermont Department of Health (VDH) and with all schools in the county. The information in this database has also been used to geocode these generators using ArcGIS, but no effort was made to locate facilities which did not geocode. FOG Manager contains forms for entering or updating data, reports that summarize generator characteristics, and addresses to use for creating correspondence or mailings. All the VDH FPE information on facility location, mailing address, telephone number, and number of meals served per week was imported into FOG Manager.

The screenshot shows the Microsoft Access application window titled "FOG generators". The form is divided into several sections:

- Header:** ID: 551, Name: AFC SUSHI @SHAWS #413. Navigation buttons (back, forward, etc.) are present.
- Geocoding status:** A checkbox labeled "M" is checked, with a note: "U: unmatched, not on the map; M: matched, on the map".
- Contact Information:** Fields for Address (516 SHELBOURNE ROAD), Mailing Address (19205 SOUTH LAUREL PARK RD), Town (SOUTH BURLINGTON), Web Address, Mail Town (RANCHO DOMINGUEZ), Phone (802), Postal Code (CA90220), Fax, Contact Name, Contact Phone, and E-mail.
- VHD Type:** A dropdown menu set to "Market - supermarket with food pre". Other fields include Permit number, # meals (500 to 1000), Permit date, Organic (checkbox), Hours of Operation, Survey Date, Days of Operation, and Survey Method.
- Sewer District:** Fields for WWT (Bartlett's Bay), Status (Existing), Owner (City of South Burlington), Plant engineer, and Area Served (South Burlington2).
- FOG generated:** A table with columns: FOG type, Volume (gal/month), and Equipment. Below it is a table for Disposal methods with columns: Provider/Hauler, Disposal method, and Pickup frequency.
- Grease Traps:** Fields for Manufacturer, Size (Gallons) (0), Cleaning interval, Functioning, Grease disposal, Location, Service provider, and Grease additives.
- Buttons:** "New Generator", "Filter Records", and "Remove Filter".
- Footer:** "Prepared by Stone Environmental Inc. for the Chittenden Solid Waste District" and "January 2005, Version 1.0".

The bottom of the window shows a status bar with "Record: 1 of 38" and "Form View".

FOG Manager allows the FOG management authority to track generator's name, type, number of meals per week, physical location, mailing address, contact name, contact phone number, types and amounts of

FOG generated, types of grease collection devices being used, collection device cleaning and maintenance data, service providers, wastewater treatment service area, and ordinance enforcement information.

FOG Manager contains a report and form that enables the FOG management authority to survey generators to determine

- the type of grease generator
- grease trap/interceptor used by each generator and its placement/location (to establish whether the grease trap material is exposed to sewage)
- the current cleaning frequency of grease interceptor or separator and kitchen equipment

FOG Manager contains the contact information for sources of existing markets and outlets for FOG, resources in Vermont for management of waste streams, rendering services, pumping companies, and disposal facilities.

The *FOG Manager* Program and *User Manual* are available from the Chittenden Solid Waste District.

3. MANAGING FOG

Many types of FOG have value in agricultural or industrial processes, like rendering facilities, animal feed production, biodiesel production, or even incineration. In an ideal world, there would be a market for FOG; a market for waste FOG exists when a buyer can afford to pay for the waste FOG, the transport, all processing of the waste FOG, and sell a product at a profit. Whether the buyer can afford this is a function of the demand for what the buyer produces, the transport distance of the waste FOG, and the cost of alternative feedstocks (if any) to waste FOG.

The creation of a FOG management authority through enforcement of local sewer ordinances is a non-market solution to FOG management. Where there are no markets for waste FOG, a management authority is the principal method to ensure that best management practices (BMPs) are followed, and that waste FOG generally does not reach the sewers. At present, in Chittenden County, there does not appear to be a market for waste FOG. This was not always the case. Not long ago, restaurants were paid for part of their waste FOG, and even now, some users charge less than others to collect FOG. The economics and health concerns have changed, and they may change again to create markets in the future. Even now, the following management options could have some value for someone, and so they cost the FPE less than landfilling the FOG.

3.1. Management Options for Yellow Grease

Yellow grease, or used frying oil from restaurants, is a feedstock for rendering plants and biodiesel manufacturers, and it can be bought directly by cattle farms. Rendering plants use yellow grease to make components of chicken feed. Until recently, the rendering plants used it for cattle feed. Worries of spreading bovine spongiform encephalopathy (BSE), or mad-cow disease, have put an end to that market, since some yellow grease contains beef products. The lowered demand for rendered products has changed the market dynamics; whereas FPEs formerly were paid for yellow grease, typically rendering companies now charge to collect and haul away yellow grease.

Biodiesel manufacturing uses yellow grease as a feedstock. One local biodiesel firm charges about 40 cents per gallon to pick up the yellow grease. This is roughly half of what is charged by the local rendering firm with whom they compete for the yellow grease.

3.2. Management Options for Brown Grease

Brown grease, which is grease extracted from grease interceptors and grease traps, is less valuable as a commodity than yellow grease. Brown grease is mixed with water, so every gallon of brown grease transported contains less FOG than a gallon of yellow grease. Furthermore, brown grease can be a mixture of different FOG—anything that goes down the drain—while yellow grease is composed more uniformly of frying oils with similar congealing temperatures and other properties.

There are two potential markets for brown grease:

- Biodiesel or biowaxes
- Heating oil

At this time, neither of these potential markets seems to represent potential income for brown grease generators, though they may reduce the costs of having the brown grease hauled away. If petroleum prices raise sharply, producers of biodiesel, biowax, or heating oil may potentially pay to receive brown grease.

Brown grease can be used for making biodiesel or biowaxes. Because the brown grease congeals at a lower temperature, it is more suitable for making a product like wax that congeals at a lower temperature. Green Technologies would need to overcome a number of barriers to start producing biowax.

For one, pumper trucks collect brown grease, the same kind that empty septic tanks. If a collection service uses a pumper truck that also pumps septic tanks, septage containing fecal matter is mixed with the brown grease. The bacterial and viral contamination is a barrier for making biowaxes out of brown grease. Using a pumper truck dedicated to brown grease or disinfecting the truck before it is used to collect brown grease can overcome this barrier. Another barrier is simply the complexity of getting another production line off the ground. The truck may have to be heated to keep the grease from congealing—and collection of the grease is more difficult in winter, as brown grease “freezes” at a higher temperature than yellow grease.

Since Green Technologies charges to collect yellow grease for their existing biodiesel production, it is likely that they would also charge restaurants for brown grease collection—though perhaps not as much as firms collecting it for a use with less valuable product.

Incineration is being used in some places for brown grease, and electricity is generated.

Eco/Technologies, LLC (Agawam, Massachusetts) is testing a technology for burning brown grease together with municipal trash. They are charging \$0.10/gallon to pick up the brown grease, plus transportation. This rate is competitive with many septage and limited grease treatment rates in the area .

Other ways of managing brown grease can be expected always to cost money for the generator, since they add little or no value to some other process:

- Land application
- Landfill
- Treatment at dedicated facilities for septage and brown grease
- Bioremediation on site (in facilities like advanced wastewater treatment units)

- Composting
- Treatment at a wastewater treatment plant

3.3. Hidden or Individually Created Markets

Tom Anderson of the Central Vermont Solid Waste Management District (CVSWMD) describes “hidden markets,” which are generally individuals they have found that accept organic waste streams. In addition to a commercial biodiesel manufacturer, for example, collectors of restaurant yellow grease include individuals who use it to power their own vehicles. On the prevalence of hidden markets in general, he referred to a furniture manufacturer that had people lining up to buy its sawdust. CVSWMD believes that there are more markets out there than people in the solid waste industry know about. The Vermont Biofuels Association has indicated that many individuals are sourcing FOG for their own use. Note: This may be a more appropriate section to include the generic VT Pub and Brewery information in.

3.4. Identifying Potential Receivers of FOG

Since no market has been found that pays FPEs for FOG, the least-cost option for management of FOG for generators in Chittenden County appears to be that used by Vermont Pub & Brewery, which pays for transportation to a nearby cattle farm and has no tipping fee at the farm. Controls must be in place, however, to prevent beef-derived FOG from entering the food chain given the concerns regarding Bovine Spongiform Encephalopathy. There may also be individuals who use yellow grease for home-manufactured biodiesel who collect the yellow grease at no charge. All other management routes, including rendering and commercial production of biodiesel, involve a charge to the generator.

One of the tasks of a management authority is to identify least-cost ways to manage FOG while keeping them out of the sewers. The management authority can connect generators with people who will accept yellow or brown grease at little or no cost. When legal management costs are kept down, incentives to violate the rules are also kept down. The following lists give ways to find potential receivers of FOG; the management authority may wish to canvass them to find the least-cost option.

The management authority can compile a list of potential receivers of FOG by investigating both the demand and the supply side. On the supply side, the authority can phone 5-10 restaurants and other FPEs that seem likely to be in touch with hidden markets for their FOG and ask them how they handle their yellow grease and brown grease.

On the demand side, markets were investigated in Vermont, New Hampshire, Maine, Massachusetts, and western New York. The following receivers can offer the least-cost method for the FPE to manage FOG:

3.4.1. Renderers

The following is a list of renderers in the Northeast:

Baker Commodities, Inc.

Billerica Division

Griswold Park, Williston, Vermont 05495

Phone: (802) 658-0721

or

Baker Commodities Inc

Phone: (800) 427-0696

The National Renderers Association website¹ contains a directory of members, which contains the Baker Commodities offices and also the following listings:

Baker Commodities, Inc. – Rochester

2268 Browncroft Boulevard

Rochester, New York 14625

Contact: Bill Schmieder

Phone: 716-482-1880

Fax: 716-654-7070

E-mail: bschmieder@bakercommodities.com

Western Massachusetts Rendering Co., Inc.

94 Foster Road

Southwick, Massachusetts 01077

Contact: Richard Plakias

Phone: 413-569-6265

Fax: 413-569-6512

E-mail: info@wmrco.com

The Torrington (Connecticut) Area Health District recommends asking the following questions when choosing a renderer²:

- What types of waste grease are accepted?
- Who provides containers for the grease?
- How often will the grease be picked up?
- What size are the grease storage containers and is adequate and appropriate storage space for the containers available.
- What is the charge for accepting the grease?

¹ http://www.renderers.org/Member_Directory/index.htm

² <http://www.tahtd.org/fog.htm>

- Are there restrictions on cleaners that can be used or mixed with the grease?

3.4.2. Biodiesel

Vermont Biodiesel Association can give current information about commercial biodiesel producers. As of late August 2005, Green Technologies is the only active commercial biodiesel producer in Vermont; other potential commercial producers are members of the association, says association head Nataka White.

Vermont Biodiesel Association
P.O. Box 307
Middlebury, Vermont 05753
Phone: 802 388-1328
Fax: 802 388-4351
info@vermontbiofuels.org
www.vermontbiofuels.org

Individuals in Vermont who are interested in collecting FOG for biodiesel use may be found through electronic forums at <http://www.solarbus.org/forum/> such as “WVO TechTalk.”

3.4.3. Compost Facilities

Identify local composting facilities, for yard waste, manure, food waste, etc. Some composting facilities accept FOG for a fee.

Intervale Compost Products
282 Intervale Road
Burlington VT 05401
Phone: 802 660-4949
<http://www.intervale.org/compost/>

Champlain Valley Compost
Charlotte VT 05445
802-425-5556
<http://www.cvcompost.com/>

3.4.4. Septage Facilities

Contact local septage haulers and ask 1) whether they clean out grease traps/interceptors, 2) whether they know of any facilities for handling brown grease, and 3) what they do with the septage they pump. Whoever receives their septage may also accept brown grease. Processing at wastewater treatment plants is the most common way of managing brown grease.

3.4.5. Solid Waste District Drop-off Centers

The Chittenden Solid Waste District accepts limited quantities of FOG at their drop-off centers. Solid waste districts may offer a useful management option for small quantities of FOG, like those generated by households.

3.4.6. Wastewater Treatment Plant Digesters

In Essex Junction, the wastewater treatment plant's digesters are the subject of a pilot study to use fat from a food manufacturer to increase the heat and electricity generated. The electricity significantly reduces the cost of running the plant, and the heat can be used to pasteurize sludge, which removes some regulatory restrictions on handling it. The pilot study uses highly concentrated fat from a food processing facility. If proven successful, this process may be suitable for other treatment plants in the state where anaerobic digestion technology is applied.

3.4.7. Landfill Cover

Contact landfills to see whether they are willing to accept FOG as a component of landfill cover.

4. ELEMENTS OF A MANAGEMENT AUTHORITY'S PROGRAM

Absent a market for FOG, a management authority is needed to provide rules, incentives, information and outreach, and enforcement. Otherwise there is a risk that generators will take a least-cost approach (for them) to FOG management and use the sewers to remove the FOG. The high costs from sewer blockages demands that a FOG Management program include a regulatory approach to minimize plant costs and prevent problems.

In Vermont, the existing management authority for FOG is highly fragmented. The Chief Plumbing Inspector (in the Department of Public Safety's Fire Protection Division) is responsible for sizing the grease trap for the pot sink in new food preparation establishments. He does not conduct ongoing inspections. The Department of Health inspects restaurants and asks when the last time the grease trap was emptied, but they do not have guidelines on emptying frequency. Department of Health rules do not specify that a grease trap exist, but if it is there, it must be clean—though this is not defined. The Agency of Natural Resources (ANR) has jurisdiction over the grease interceptors outside the building and specifies sizing for them. The ANR formerly approved municipal sewer use ordinances, but no longer does so, nor does it have any regulations or guidelines on FOG discharges to sewers. The ANR Small Business Compliance program is working to put out a fact sheet on oil/water separators targeted at both vehicle service areas and restaurants. Finally, municipalities or sewer districts may have sewer use ordinances that regulate FOG.

In the absence of coordinated State efforts, FOG management will occur only through action by a local management authority. In Vermont, the City of South Burlington regulates FOG generators through a permit program administered by its Wastewater Superintendent and the Public Works Director. The ordinance for this program is contained in Appendix A.

Like any organization seeking to change behavior, a management authority for FOG has many tools available for its work. To ensure that FOG is managed appropriately, it has both an education and regulatory role. It can set guidelines, provide information, inspire, persuade, and cajole. As a government authority, it can also regulate facilities, issue permits, inspect facilities, issue fines or other penalties, tax discharges, and give incentives.

No one tool is sufficient to minimize FOG in sewers. The following elements, together, represent ways FOG management authorities have found to address issues that they have faced. Every location may not need every element. The elements are adapted from programs in Vermont, Connecticut, Delaware, New York, Texas, and Washington State. More information about some details of those programs is found in Appendix B.

4.1. General Permit

Vermont statutes contain no general permit regulating FOG discharges to sewers. A general permit in other states regulates “any wastewater discharge associated with a facility which discharges to a sanitary sewer line and then to a POTW [Publicly Owned Treatment Works] or a privately owned or State owned sewage treatment works.” The general permit regulates how the grease trap/interceptor is to be plumbed, dimensioned, designed, installed, maintained, and reported on. Effluent limits for pH and FOG is also contained in the general permit.

If the State is to coordinate FOG management, the general permit offers a framework. The rest of this section considers elements of a local FOG management authority that do not require any new state framework or actions.

4.2. Local Permitting and Approval Programs

Local and state authorities and other actors have many roles to play in FOG management. Table 1 shows some of these.

TABLE 1: FOG IMPLEMENTATION ROLES

Name	Current Role in Program Implementation	Scope
Local Public Works or POTW	Update sewer use ordinances to incorporate FOG management requirements, or enforce current FOG requirements. Conduct inspections and permit reviews, engage in outreach.	Local
Department of Public Safety Building Inspectors	Incorporate FOG management requirements into inspection procedures for newly-established and renovated FPEs.	Statewide
Department of Health	Provide the local FOG management authority with a list of many FPEs, e.g., restaurants, caterers, bakers, and lodging establishments. In the course of inspecting FPEs, they could inspect the grease trap/interceptor and notify the management authority of the results of the inspection.	Statewide
Agency of Agriculture	Provide the local FOG management authority with a list of many FPEs, e.g., meat and dairy processing facilities. In the course of inspecting FPEs, they could inspect the grease trap/interceptor and notify the management authority of the results of the inspection.	Statewide
Chief Plumbing Inspector (Department of Public Safety)	Inspect new FPEs to insure that grease traps inside of building meet code.	Statewide
Grease Trap/Interceptor Cleaning Companies	Service pretreatment equipment, collect non-renderable FOG, collect renderable grease, transport, use FOG or deliver to FOG receivers.	Statewide, some based out-of-state

Appendix A: Sample FOG Ordinances contains examples of ordinances that have been drafted or implemented.

4.3. Education and Training

It is important to educate the FPE owners on what best management practices (BMPs) are for FOG management, as well as what reporting requirements they are subject to and what inspection they will be subject to. BMPs include equipment selection, installation, inspection, and maintenance; plus grease minimization procedures. *Appendix C: Education, Outreach, and Training Resources* contains a list of resources to use in education and training.

If desired, and resources permit, outreach may be aimed at individual homeowners. This could be important in areas where the local food culture includes much frying at home.

4.4. Guidelines/Regulations for Installing and Operating Equipment

The Agency of Natural Resources regulates the design and installation of grease interceptors, outside of buildings. The Chief Plumbing Inspector in the Division of Public Safety regulates installation of grease traps inside buildings, according to the state plumbing code.

Proper installation of grease traps is crucial. There are reports of many businesses in Vermont that have installed the grease trap right after the 180° F dishwasher. The FOG are dissolved at that temperature, and the grease trap is not designed to retain dissolved FOG. Sources of guidelines for installation of grease traps are found in *Appendices B and C*.

Grease interceptors/traps stop working if they are not cleaned. The Vermont Department of Health requires that grease traps be cleaned, but it does not specify a frequency of cleaning or what “clean” means. The Department of Health is working with the Department of Public Safety to develop and make recommendations on cleaning frequency. Other jurisdictions have widely varying recommendations for cleaning frequency. For grease traps, recommendations range from twice a day to twice a week.³ For grease interceptors, recommendations range from monthly to at least once every 180 days.

The need for cleaning is a function of the load of FOG plus the capacity of the grease trap/interceptor. The load of FOG varies, depending on the type of FPE, the FOG management practices, and the ability of FOG management authority to accept and treat the waste product. Texas developed a useful “Model Standards for a Grease Ordinance”, since it takes this into account:

³ The Texas House Bill quoted in this section seems to allow up to 180 days between cleanings, but it is not clear from the Definitions section of the bill whether indoor grease traps are really included when it refers to “grease traps/interceptors.”

- 1) Grease traps and grease interceptors shall be cleaned as often as necessary to ensure that sediment and floating materials do not accumulate to impair the efficiency of the grease trap/interceptor; to ensure the discharge is in compliance with local discharge limits; and to ensure no visible grease is observed in discharge.
- 2) Grease traps and grease interceptors subject to these standards shall be completely evacuated a minimum of every ninety (90) days, or more frequently when:
 - (A) twenty-five (25) percent or more of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating materials, sediment, oils or greases; or
 - (B) the discharge exceeds BOD, COD, TSS, FOG, pH, or other pollutant levels established by the POTW; or
 - (C) if there is a history of non-compliance.
- 3) Any person who owns or operates a grease trap/interceptor may submit to the POTW a request in writing for an exception to the ninety-day (90) pumping frequency of their grease trap/interceptor. The POTW may grant an extension for required cleaning frequency on a case-by-case basis when:
 - (A) the grease trap/interceptor owner/operator has demonstrated the specific trap/interceptor will produce an effluent, based on defensible analytical results, in consistent compliance with established local discharge limits such as BOD, TSS, FOG, or other parameters as determined by the POTW, or
 - (B) less than twenty-five (25) percent of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating materials, sediment, oils or greases
- 4) In any event, a grease trap and grease interceptor shall be fully evacuated, cleaned, and inspected at least once every 180 days.

One way to implement such a rule is to require the FPE owner to obtain and maintain a maintenance contract with a qualified (and possibly approved) waste removal business for new installations, a monthly or bi-monthly cleaning may be required until the maintenance company can establish a predictable level of FOG accumulation for that particular facility. Thereafter, required cleanings may be extended until the optimum pumping frequency is found. Random inspections can be used to check whether the pumping frequency is adequate.

A similar practice of cleaning indoor grease traps frequently until the optimum cleaning frequency is found may be recommended to FPEs. A simpler method is to mandate daily cleaning of indoor grease traps for all FPEs. Daily cleaning is well within the range of twice daily to twice weekly used in other jurisdictions.

4.5. Monitoring and Record Keeping

Records of grease trap/interceptor maintenance are to be kept at least on site, and they may be forwarded to a regulatory agency. The *FOG Manager* application could be modified to store this information. Examples of record forms are in *Appendix G*.

4.6. Inventory and Analysis

An inventory of the FOG dischargers and the equipment used at each site is another essential part of a FOG management program. *FOG Manager* provides a tool to keep track of this inventory (see Section 2). FOG Manager currently contains all the FPEs available from the 2004 Department of Health Food and Lodging Permit Database. This information will need to be updated and kept current by the management authority. Additional potential FOG dischargers, such as church banquet halls can be found in the telephone book or town directories. The Food Safety and Consumer Assurance Division of the Agency of Agriculture regulate meat and dairy processing facilities. They can provide a list of meat processing facilities. The Dairy Section can provide a list of dairy processing facilities.

The next step is to send a survey form to all FPEs, asking them to self-report their equipment, volumes of FOG generated, etc. *FOG Manager* contains an example of such a form. The survey form is partially based on one developed for a permit application from Connecticut. The survey would be sent out and the returned information entered into the database. Alternatively, the data entry form in the database could be used for doing a telephone survey. When this form was used in Connecticut, 90% of the forms were filled out and returned. Some inaccuracies in the data were found in field surveys, so inspections will be necessary both to gather data on establishments that do not return the survey and to verify the information in the returned surveys.

4.7. Inspection Program

Periodic inspections of FPEs are an essential management program element. Inspections ensure that FOG equipment is properly installed and in working order, and that it has been cleaned and emptied regularly. One decision to make is whether the FOG management entity conducts its own inspections of the FPEs or whether the inspections are incorporated into existing programs. Another is whether to conduct spot checks or regular inspections of all facilities.

Currently, the Vermont Department of Health's Food and Lodging Program conducts inspections of restaurants, caterers, bakers, and lodging establishments. Their inspection includes checking the last time the grease traps/interceptors were emptied, but that is all they do related to FOG. Although, they have not contracted out to other agencies to do additional tasks while on their inspections such an arrangement may be able to be worked out through the Commissioner of the Department of Health.

Meat and dairy processing facilities are inspected through the Food Safety and Consumer Assurance Division of the Agency of Agriculture and they have had historically cooperated with the Department of Health in inspections, so there is a precedent for interagency cooperation.

An inspection checklist for use by the FOG Management Authority is contained in *Appendix D*.

Using inspectors from the Department of Health and/or Agency of Agriculture on their regularly scheduled visits seems to be the most efficient way of conducting inspections—if the State authorities agree to it. If such agreement is difficult to achieve, spot checks by the local management authority can give a basis for assessing compliance at a lower cost than regular inspections of all FPEs.

4.8. Enforcement

Penalties on businesses violating FOG management rules are fines levied at sufficient levels to encourage compliance. The smallest set of fines found was in Texas, where a warning is issued for the first violation not found to cause a sewer blockage. Subsequent violations in a two-year period are subject to fines of \$1,000 for the second, \$1,500 for the third, and \$2,000 for the fourth, and four or more violations in a two-year period “may result in termination of [sewer] service.”

The most costly set of fines found was in New York City; businesses not complying with the rules may be fined up to \$10,000 per day, per violation. The management authority will have to establish their own system of penalties and warnings in the creation of their ordinance.

4.9. FOG Collection and Processing

FOG management programs require that FOG regularly be collected from grease traps/interceptors, so they continue to function. This is typically provided for by contracts between the FPE and another company. Not all companies that pump out septic tanks also clean grease traps/interceptors. Types of companies that may collect or process FOG are identified in Appendix B, along with ways to identify the least-cost option(s) for FOG producers. The Collector will be required to submit reports on who and how much was collected at each regulated FPE. This will ensure that FPE are following their agreed upon practices and program(s).

4.10. Financing

Special financing mechanisms may be needed for the FOG management program. One newly started program has a goal of using existing resources, without additional financing; it is too early to know whether they will succeed.

A number of financing methods in use are described in *Appendix B*. The simplest financing mechanism would seem to be increasing wastewater rates on all FPEs, regardless of their FOG loading. This would be easier to administer than rates dependent on test results of actual FOG loading to the sewer system from each facility.

APPENDIX A: SAMPLE FOG ORDINANCES

South Burlington, Vermont Ordinance

Connecticut Model FOG Ordinance

Durham, North Carolina Ordinance

Texas House Bill 1979 Model Standards for a Grease Ordinance

City of South Burlington

**Ordinance Regulating the Use of
Public and Private Sanitary Sewerage and
Stormwater Systems**

As Amended March 21, 2005

City of South Burlington
Ordinance Regulating the Use of
Public and Private Sanitary Sewerage and Stormwater Systems

The South Burlington City Council hereby ordains:

The South Burlington Ordinance Regulating the Use of
Public and Private Sanitary Sewerage Systems is amended as follows:

ARTICLE I - GENERAL

SECTION 1. Definitions

Unless the context specifically indicates otherwise, the meaning of terms and abbreviations used in this ordinance shall be as follows:

"Authorized Person" shall mean the City Manager, Stormwater Superintendent, Wastewater Superintendent and such other persons as they specifically appoint or authorize to perform duties for the Stormwater Services Department or Water Pollution Control Department.

"Best Management Practices (BMPs)" shall mean schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to the stormwater system or waters of the State of Vermont or the United States. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

"BOD" (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20°C expressed in milligrams per liter.

"Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer. The building drain extends five feet beyond the outer face of the building wall.

"Building Sewer" shall mean that part of the sewage system which receives the sewage from the building drain and conveys it to the nearest end of the house connection unless a house connection is not available, whereby the building sewer shall be extended to the nearest available "Y" branch on the main sanitary sewer.

"Change or Alter" shall mean an act done which will result in a direct or indirect

impact on the contribution of stormwater into the public stormwater system.

"City Manager" shall mean the City Manager of the City of South Burlington, or his authorized deputy, agent, or representative.

"Clean Water Act" shall mean the federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

"Clerk" shall mean the City Clerk of the City of South Burlington.

"Combined Sewer" shall mean a sewer receiving both stormwater runoff and sewage.

"Construction Activity" shall mean activities including, but not limited to clearing and grubbing, grading, excavating, and demolition.

"Connection Fee" shall mean a fee imposed on applicants for the municipality's cost of performing, supplying materials, supervising, inspecting and administering a connection to the sewage system including any necessary sewer service extension, upgrading sewers or for any portion of these activities.

"Credit" shall mean an ongoing reduction in the stormwater user fee for certain identified and approved qualifying and ongoing private actions or activities that either reduce the potential impact of increased stormwater discharges that result from development of a property.

"Department" shall mean the Vermont Department of Environmental Conservation.

"Developed Property" shall mean any property that is altered from a natural state by construction or installation of more than five hundred (500) square feet of impervious surface.

"Developer" shall mean individual, corporation, association, or other organization engaged in land development or building construction.

"Development" shall mean the construction of improvements on a tract of land for any purpose, including, but not limited to, residential, commercial, industrial, manufacturing, farming, educational, medical, charitable, civic, recreational, and religious uses.

"Director" shall mean the Director of Planning and Zoning for the City.

"Discharge Permit" shall mean a permit issued by the Department pursuant to

authority granted in 10 V.S.A., Chapter 47.

"Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage, and sale of produce.

"Hazardous Materials" shall mean any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

"Health Officer" shall mean the legally designated Health Officer or Deputy Health Officer of the City of South Burlington, Vermont.

"House Connection" shall mean that part of the sewage system that runs from the main sanitary sewer to the property line and includes all necessary fittings.

"Impervious Surface" shall mean those manmade surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, sidewalks, walkways, compacted gravel and soil surfaces, and awnings and other permanent fabric or plastic coverings, from which precipitation runs off rather than infiltrates.

"Illicit Discharge" shall mean any direct or indirect non-stormwater discharge to the stormwater system.

"Industrial Activity" shall mean activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

"Industrial Wastes" shall mean the liquid wastes from an industrial manufacturing process, trade, or business. Industrial wastes do not include sanitary sewage.

"Main Sanitary Sewer" shall mean the sewers laid longitudinally along the center line or other part of the streets or other rights-of-way and which all owners or abutting properties have equal rights and which is controlled by public authority.

"National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit" shall mean a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

"Natural Outlet" shall mean any outlet into a watercourse, pond, ditch, lake, or other body of surface or groundwater.

"Non Single Family Residence" (NSFR) shall mean all types of developed property in the City except single family residences.

"Non-Stormwater Discharge" shall mean any discharge to the stormwater system that is not composed entirely of stormwater or such other waters or materials as are specifically authorized herein. It shall also include placing or depositing any hazardous material or pollutant in the stormwater system.

"On-Site Sewage Treatment and Disposal System" means a septic tank and leaching field system utilizing natural soil to treat and disperse sewage in such a manner as to protect public health, and both groundwater and surface water from contamination.

"Owner" shall mean any person, who owns or possess any property connected to or served by the public sanitary or stormwater system or proposes to connect to the public sanitary or stormwater system.

"Person" shall means any individual, firm, company, association, society, corporation, institution, partnership, governmental entity, group or other entity.

"pH" shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

"Private Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating, and disposing of sewage that is not under the control of nor operated by the City of South Burlington.

"Properly Shredded Garbage" shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half ($\frac{1}{2}$) inch (1.27 centimeters) in any dimension.

"Public Sewage System or Facilities" shall mean all facilities for collecting, pumping, treating and disposing of sewage and is controlled and operated by the City of South Burlington.

"Public Stormwater System" shall mean all elements of the stormwater system located in the City of South Burlington that are controlled and operated by the City of South Burlington or that carry water that drains from any public property, including

street rights-of-way.

"Pollutant" shall mean any introduced substance which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

"Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and groundwater are not intentionally admitted.

"Secretary" shall mean the Secretary of the Agency of Natural Resources, State of Vermont or his/her representatives.

"Sewage" (or "Wastewater") shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and stormwater as may be present.

"Sewage and Stormwater Commissioners (or "Commissioners", or "BOARD") shall mean members of the City Council acting as a Board of Sewage and Stormwater Commissioners under 24 V.S.A., Section 3614.

"Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

"Sewer" shall mean a pipe, culvert, ditch, swale or other conduit for carrying sewage or stormwater.

"Shall" is mandatory; "may" is permissive.

"Single Family Residence" (SFR) shall mean detached single family homes, duplexes, and triplexes.

"Slug" shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

"Storm Drain" (sometimes termed "storm sewer") shall mean a sewer intended to carry only stormwater and surface waters.

“Stormwater” shall mean excess water from rainfall and snow melt that does not evaporate or penetrate into the ground, which flows overland and is collected and transported to waters of the State of Vermont or the United States by the stormwater system, together with any material that becomes dissolved or suspended in such water during its overland flow before entering the stormwater system.

“Stormwater Appeal Board” shall be made up of the City Manager, Public Works Director, and a third person appointed by the City Council.

“Stormwater Discharge” shall mean any stormwater that is transported, naturally or otherwise, from a developed property to the public stormwater system.

“Stormwater Pollution Prevention Plan” shall mean a document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater systems, and/or waters of the State of Vermont or the United States.

“Stormwater Services Division” shall mean that City department responsible for construction, operation and maintenance of the public stormwater system.

“Stormwater System” shall include natural and man-made drainage structures, conveyances, storm drains, catch basins, and any other appurtenant device or structure where stormwater is collected, transported, pumped, treated, or disposed of.

"Stormwater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Stormwater Services Division.

"Subdivision" shall mean a tract of land, owned or controlled by a person as defined herein, which has been partitioned or is intended to be divided for the purpose of sale or lease into two (2) or more lots. The dividing of a parcel of land by sale, gift, lease, mortgage foreclosure, court ordered partition or filing of a plot plan on the town records where the act of division creates one or more parcels of land of less than 10 acres in area, but excluding leases subject to the provisions of Chapter 153 of Title 10 relating to mobile homes. Subdivision shall be deemed to have occurred on the conveyance of the first lot or the filing of a plot plan on the town records, whichever shall first occur; or the commencement of building development with intent to subdivide, as defined in subsection (1) of this section, such that the building development will be located upon a parcel of land less than 10 acres in size.

"Subsurface Sewage Disposal System" shall mean any sewage treatment system whereby the tank or plant effluent is leached into the ground by subsurface disposal.

"Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering or use of BMPs.

"Undeveloped Property" shall mean any property that exists in a natural state with no more than five hundred (500) square feet of impervious surface.

"Wastewater Superintendent" shall mean that employee of the City of South Burlington who shall be designated from time to time by the City Manager to oversee the Water Pollution Control Department.

"Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

"Water Pollution Control Department" shall mean that City department responsible for construction, operation and maintenance of the sewage works.

SECTION 2. Abbreviations:

ANSI shall mean American National Standards Institute.

ASME shall mean American Society of Mechanical Engineers.

ASTM shall mean American Society for Testing and Materials.

AWWA shall mean American Water Works Association.

NPC shall mean National Plumbing Code.

CS shall mean Commercial Standards.

WPCF shall mean Water Pollution Control Federation.

WEF shall mean Water Environment Federation.

ppm shall mean parts per million.

mg/l shall mean milligrams per liter.

Degrees F shall mean degrees Fahrenheit.

Degrees C shall mean degrees Centigrade.

cm. shall mean centimeter.

m. shall mean meter.

sq.m. shall mean square meters.

l. shall mean liters.

kg. shall mean kilograms.

ARTICLE II - SANITARY SEWER SYSTEM

SECTION 1. Use of Public Sanitary Sewer System Required

(a) It shall be unlawful for any person to place, deposit, or permit to be deposited on public or private property within the City of South Burlington, or in any area under the jurisdiction of said City, any human or animal excrement, garbage, or other objectionable waste.

(b) It shall be unlawful to discharge to any natural outlet within the City of South Burlington, or in any area under the jurisdiction of said City, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with provisions of this Ordinance.

(c) Except as hereinafter provided, it shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, leach field or other facility intended or used for the disposal of sewage.

(d) The owners of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the City and abutting on any street, alley, or right-of-way in which there is located a public sanitary or combined sewer of the City, is hereby required at his expense to install suitable toilet facilities therein, and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within one hundred and eighty (180) days after date of official notice to do so, unless specifically exempted from this provision by the City Council.

SECTION 2. Private Sewage Disposal

(a) Where a public sanitary or combined sewer is not available under the provisions of Section 1, paragraph (d), the building sewer shall be connected to a private

sewage disposal system complying with the provisions of this Section 2.

(b) Before commencement of construction of a private sewage disposal system the owner shall first obtain a written permit signed by the City Manager. The application for such permit shall be made on a form furnished by the City, which the applicant shall supplement by any plans, specifications, and other information as are deemed necessary by the City Manager. A permit and inspection fee of \$25.00 shall be paid to the City at the time the application is filed.

(c) A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the City Manager. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the City Manager when the work is ready for final inspection and before any underground portions are covered. The inspection shall be made within 24 hours of the receipt of notice by the City Manager, excluding Saturday, Sunday, and holidays.

(d) The type, capacities, location, and layout of a private sewage disposal system shall comply with all recommendations of the Vermont Health Regulations, Chapter 5, Sanitary Engineering, Sub Chapter 10 Wastewater Treatment and Disposal, Individual on-site systems. No septic tank or cesspool shall be permitted to discharge to any natural outlet. Amended 5/5/92.

(e) At such time as a public sewer becomes available to a property served by a private sewage disposal system, as provided in Section 2, paragraph (d), a direct connection shall be made to the public sewer in compliance with this Ordinance, and any septic tanks, cesspools, and similar private sewage thoroughly and properly cleaned, disinfected, and filled in or removed according to good sanitation practice and under the inspection and direction of the City Manager or his representative.

(f) The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the City.

(g) No statement contained in this Section 2 shall be construed to interfere with any additional requirements that may be imposed by the Health Officer.

SECTION 3. Building Sewers and Connections

(a) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Wastewater Superintendent. Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the system, shall notify the

Wastewater Superintendent at least 45 days prior to the proposed change or connection. No such change or connection shall be made without written approval from the Wastewater Superintendent, issued in accordance with Article III of this Ordinance.

(b) There shall be three (3) classes of building sewer permits: (i) for residential, (ii) for commercial service, and (iii) for service to establishments producing industrial wastes. In each case, the owner or the owner's agent shall make application on a form furnished by the City. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Wastewater Superintendent. The City Council may establish fees for review and issuance of permits and approvals, inspections and connections.

(c) All costs and expense incident to the installation, connection, maintenance and repair of the building sewer shall be borne by the owner. The owner shall indemnify the City from any loss or damage that may directly or indirectly be occasioned by the installation, connection, maintenance, and repair of the building sewer.

(d) A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another or on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, in which case the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer. Use of private sewers which accept and convey flow from more than one building may not be used except when found, on examination and test by the City, to be in satisfactory condition and meeting all requirements of this Ordinance. The burden of proof and all expenses incurred by the City to determine the condition and adequacy of the private sewer shall be borne by the Owner of said private sewer.

(e) The City may require the Owner of a project or developer to install a water meter so recorded flow can be used to determine the yearly wastewater charge. Water saving fixtures or equalization tanks may be required by the City for projects/buildings and developments connecting to the sewer system.

(f) Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the Wastewater Superintendent, to meet all requirements of this Ordinance.

(g) The size, slope, location, alignment, materials of construction, of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and shall also conform to the rules and requirements of the City Water Pollution Control Department and the State of Vermont. In the absence of code provisions or in amplification thereof,

the materials and procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9 shall apply.

(h) Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. No building sewer shall be laid parallel to or within three (3) feet (91.4 cm) of any bearing wall which might thereby be weakened. The depth shall be sufficient to afford protection from frost. The building sewer shall be laid at uniform grade in the direction from the main sewer to the building and in a straight alignment insofar as possible. Change in direction shall be made only with properly curved pipe and fittings with suitable clean-outs or flush holes as described in subsection (r) of this Article. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage to be carried by such sewer shall be lifted by an approved artificial means and discharged to the building sewer. Such lifting devices shall be located outside the building foundation and have no access or ventilation through the building.

(i) No person shall make connection of roof downspouts, exterior and interior foundation drains, areaway drains, basement sumps or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer. All such connections which exist shall be disconnected by the Owner, at his expense within thirty (30) days upon receipt of notification by the City.

(j) The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City and the State of Vermont, and shall also conform to the rules and requirements of the Water Pollution Control Department, or the procedures set forth in appropriate specifications of the ASTM and the latest edition of the WPCF Manual of Practice No. 9. All such connections shall be made gas tight and water tight. Any deviation from the prescribed procedures and materials must be approved by the Wastewater Superintendent before installation.

(k) Prior to any connection to the house connection "Y" or to the main sewer, the City shall be given two working days notice in order that they may supervise such work. If the City has not been properly notified, they may require the completed work to be uncovered for examination, at the Owner's expense.

(l) The diameter of the building sewer shall not be less than four (4) inches (10.2 cm). The building sewer shall be laid on a uniform grade, wherever practicable, in a straight alignment, of at least one-fourth (1/4) of an inch per foot (2%). Where, in special cases, a minimum grade of one-fourth (1/4) inch per foot cannot be maintained, a grade of one-eighth (1/8) inch per foot (1%) may be permitted, but only after the City gives their written approval for the specific connection.

(m) When installing the building sewer, the trenches shall be dug in a careful manner and properly sheathed where required. The excavated materials shall be placed in a separate pile from road materials and shall be piled in a compact heap so placed as to cause the least possible inconvenience to the public. Proper barricades and lights must be maintained around the trench to guard against accidents.

(n) In backfilling, the material under, around and for two (2) feet (61 cm) immediately over the pipe shall be selected so it contains no stones capable of damaging the installation. This must be carefully tamped, the balance of the trench to be backfilled in a workmanlike manner, tamping and filling in eight (8) inch (20.3 cm) layers so as to avoid excessive settlement. When the trench has been filled to the proper height, the road material is to be replaced and heavily tamped or rolled.

(o) Where the trench is excavated in rock, the rock must be carefully excavated to a depth of six (6) inches (15.2 cm) below the bottom of the sewer and the trench brought to the proper elevation with gravel or other material satisfactory to the City. The remainder of the trench must be backfilled with suitable material as described in sub-section (n) of this Article.

(p) Where subsurface-soil conditions warrant, special precautions must be taken as may be directed by the City. In quicksand, all pipes must be laid out on pressure treated planking two (2) inches (5.1 cm) thick by at least six (6) inches (15.2 cm) wide.

(q) The connection of the building sewer to the main sewer shall be made at the house connection at the property line or, if no house connection exists, connection shall be made at the nearest available "Y" connection on the main sewer. The City will designate the position of the end of the house connection at the property line or the "Y" connection on the main sewer, whichever is appropriate. If it becomes necessary to cut into the main sewer, when no other source of connection is available, then such connection shall be made as directed by and under the supervision of the City. The dead-ends of all pipes not immediately connected with the house plumbing system must be securely closed by a water-tight cover of imperishable material and properly marked and located.

(r) The use of clean-outs on the building sewer shall be made by installing a "Y" and one-eighth (1/8) bends. The clean-outs shall ordinarily be installed at the point of connection between the building sewer and the outside part of the house plumbing system, at all curves on the building sewer and on the straight part of the house sewer to the main sewer. The clean-out shall be brought up from the building sewer to four (4) inches (10.2 cm) below ground level and properly capped. Locations of all clean-outs shall be recorded and turned over to the City. Where the distance from the building to

the point of connection at the main sewer is less than fifty (50) feet (15.2 m), at least one (1) clean-out twenty (20) feet (6.1 m) from the house shall be provided. Clean-outs shall be of the same diameter as the building sewer.

(s) Before any portion of an existing building sewer or the house plumbing system outside of the building is connected to the main sewer, the Owner shall prove, to the satisfaction of the City, that it is clean and conforms in every respect to this Ordinance and all joints are gas tight and water tight.

(t) Where pipe is installed for building sewers, such work shall be performed by a licensed plumber.

(u) The City shall apply appropriate tests to the pipes. The plumber and contractor, at their own expense, shall furnish all necessary tools, labor, materials and assistance for such tests and shall remove or repair any defective materials when so ordered by the City.

(v) Any person performing work on public property for the purpose of installing a building sewer shall file with the City evidence of adequate insurance coverage for liability and property damage. Minimum amounts of coverage will be established by the City and posted in the Clerk's Office.

(w) All work shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, curbs, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the City and other authorities having jurisdiction.

(x) The Contractor shall not block any driveway, street or road at any time without permission of the City and other controlling agencies. Every effort shall be made to permit the movement of vehicular traffic at all times. Whenever it becomes necessary to cross or interfere with roads, walks or drives, whether public or private, the Contractor shall maintain, at his own expense and subject to the approval of the City, safe bridges or other means of egress.

(y) Maintenance of all private sewage facilities including, but not limited to, (1) house plumbing systems, (2) building sewers to the main sewer, (3) house connections, (4) sewers and (5) appurtenances shall be the responsibility of the Owner, at his or her expense. The Owner shall be solely responsible for continually maintaining such facilities in satisfactory operating condition. Maintenance shall include, but not be limited to, (1) maintaining flow, (2) clearing obstructions, (3) maintaining all joints gas and water-tight, (4) repair or replace collapsed, deteriorated or defective materials, and (5) all other work which is necessary and essential to maintaining proper operation and preserving the structural integrity and water-tightness of the system.

(z) The Owner is obligated by sewer and any other permits to construct the project/building/development to meet all specifications for which the permits/approvals were issued. The building inspector or some authorized person will inspect existing buildings and construction sites from time to time during each construction phase to assure permit specifications are being met. A final inspection shall be made prior to the connection from the building to the main sewer line by the City.

SECTION 4. Prohibited Discharges into the Public Sanitary Sewer System

(a) No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

(b) No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sanitary sewers:

(1) Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas.

(2) Any waters or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the receiving waters of the sewage treatment plant.

(3) Any waters or wastes having a pH lower than 5.5, or higher than 9.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the public sewage facilities.

(4) Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the public sewage facilities such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, etc. either whole or ground by garbage grinders.

(d) No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely in the opinion of the Wastewater Superintendent that such wastes can harm either the sewers, sewage treatment process, or equipment, have an adverse effect on the receiving stream, or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming his

opinion as to the acceptability of these wastes, the Wastewater Superintendent will give consideration to such factors as the quantities of subject wastes in relation to flows and velocities in the sewers, materials of construction of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

- (1) Any liquid or vapor having a temperature higher than one hundred fifty (150)°F (65°C).
- (2) Any water or wastes containing fats, wax grease, or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150)°F and (0 and 65°C).
- (3) Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Wastewater Superintendent.
- (4) Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.
- (5) Any waters or wastes containing settleable solids, iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine demand, exerting an unusual chemical oxygen demand or containing any other material or constituent in concentrations which exceed the limits established by the Wastewater Superintendent for such materials.
- (6) Any waters or wastes containing phenols or other taste-or-odor-producing substances, in such concentrations exceeding limits which may be established by the Wastewater Superintendent as necessary, after treatment of the composite sewage, to meet the requirements of the State, Federal, and other public agencies of jurisdiction for such discharge to the receiving waters.
- (7) Any radioactive wastes or isotopes of such half-life, or concentration as may exceed limits established by the Wastewater Superintendent in compliance with applicable State or Federal regulations.
- (8) Any chemicals or chemical compounds of the following nature or characteristics or having similarly objectionable characteristics: alcohols, arsenic and arsenicals, phenols or cresols, formaldehydes, iodine, manganese, cyanide, heavy metals and other metal finishing or plant wastes, acid pickling waste, mercury and mercurials,

silver and silver compounds, sulfonamides, toxic dyes (organic or mineral), zinc, all strong oxidizing agents such as chromates, dichromates, permanganates, peroxide and the like, compounds producing hydrogen sulfide, or any other toxic, inflammable or explosive gases, either upon acidification, alkalization, oxidation or reduction, strong reducing agents such as nitrites, sulphides, sulphites, and the like, radioactive materials or isotopes, whether neutralized or not.

(9) Materials which exert or cause:

(aa) Unusual concentrations of inert suspended solids (such as, but not limited to, Fullers earth, lime slurries, and lime residues) or of the dissolved solids (such as, but not limited to, sodium chloride and sodium sulfate).

(bb) Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).

(cc) Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works which may cause the effluent limitations of the discharge permit to be exceeded.

(dd) Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

(10) Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of its discharge permits or of other agencies having jurisdiction over discharge to the receiving waters.

(11) Any waters or wastes containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the wastewater treatment plant.

(12) Any noxious or malodorous gas or substance capable of creating a public nuisance.

(13) Any waters or wastes if it appears likely, in the opinion of the Wastewater Superintendent, that such waste can harm either the sewers, treatment plant process or equipment, would have an adverse effect on waters of the State of Vermont or the United States, or could otherwise endanger human or animal life, limb, public property or constitute a nuisance.

(e) The admission into the public sanitary sewers of any waters or wastes having (a) a five (5) day BOD greater than 400 mg/l or (b) containing more than 400 mg/l of suspended solids or (c) containing any quantity of substances having the characteristics described in sub-section (c) and (d) above, having an average daily flow greater than two percent (2%) of the average daily sewage flow received at the sewage treatment plant shall be subject to the review and approval of the Wastewater Superintendent. The Wastewater Superintendent may:

- (1) Reject the wastes, or,
- (2) Require control over the quantities and rates of discharge, and/or
- (3) Require payment to the City to cover the added cost of handling, treating and disposing of the wastes not covered by sewer charges established under the provisions of Article IV of this Ordinance, or
- (4) Require pretreatment to an acceptable condition for discharge to the public sewers, or
- (5) Require any combination of the foregoing.

If the City Manager permits the pretreatment or equalization of waste flows, the design, plans, specifications and any other pertinent information relating to proposed equipment and facilities; shall be submitted for the approval of the City Manager and the Agency of Natural Resources and no construction of such facilities shall be commenced until said approvals are obtained in writing. Further, such pretreatment facilities must be consistent with the requirements of any state pretreatment permit issued to the industry.

(f) Grease, oil, and sand interceptors shall be provided when, in the opinion of the Wastewater Superintendent, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, and or other harmful ingredients. Such interceptors shall not be required for private living quarters. All interceptors shall be of a type and capacity approved by the Wastewater Superintendent, and shall be located as to be readily and easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned and repaired regularly, as needed, by the user at their expense.

(g) The user shall maintain records (which are subject to review by the Wastewater Superintendent) of the dates and means of disposal of accumulated interceptor wastes. Any removal and hauling of the collected materials not performed by the user's personnel must be performed by currently licensed waste disposal firms

(h) To facilitate compliance with this section, the user shall apply for a permit and furnish as part of the permit application a plan and description of the device. Where grease, oil or sand interceptors or similar appurtenances are involved, approval must be granted from both the Wastewater Superintendent and the Public Works Director.

(i) Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction and equipped with easily removable covers which, when bolted in place, shall be gas-tight and water-tight.

(j) Where installed, all grease, oil, hair, and sand interceptors shall be maintained by the owner, at his/her expense, in continuously efficient operation at all time. Materials collected shall not be introduced into the public sewage system.

(k) Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his/her expense.

(l) All industries discharging into a public sewer shall perform such monitoring of their discharges as the Wastewater Superintendent may reasonably require, including installation, use, and maintenance of monitoring equipment, keeping records and reporting the results of such monitoring to the Wastewater Superintendent. Where industrial pretreatment permits are issued by the State of Vermont, monitoring records must also be submitted to the appropriate agency in accord with such permit. Such records shall be made available upon request by the Wastewater Superintendent to the State agency or to other agencies having jurisdiction over discharges to the receiving waters. Records of any monitoring will be supplied by the Wastewater Superintendent to the Secretary on request.

(m) All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this Ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. The particular analyses involved will determine whether a twenty-four (24) hour flow composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are

obtained from 24-hr proportioned composites of all outfalls whereas pH's are determined from periodic grab samples.

(n) Any industry held in violation of the provisions of this Ordinance may have its disposal authorization terminated.

(o) When required by the Wastewater Superintendent, the Owner of any property served by a building sewer carrying industrial wastes shall install a suitably controlled manhole in the building sewer to facilitate observation, sampling and measurement of the wastes. Such manhole, when required, shall be accessible and safely located and shall be constructed in accordance with plans approved by the Wastewater Superintendent. The manhole shall be installed by the Owner, at his/her expense, and shall be maintained by the owner so as to be safe and accessible at all times.

(p) Scavenger waste consists of septage, sludge or other forms of waste brought to the wastewater facility for treatment and disposal. The waste must meet all article II requirements.

(1) The discharge of scavenger wastes at designated septage receiving areas at the City's wastewater treatment facilities may be permitted. The discharge of scavenger wastes from sources outside of the City may be permitted with approval of the Wastewater Superintendent of Water Pollution Control.

(2) There will be a fee charged each time a load of scavenger waste is discharged at the City's wastewater treatment facilities. Such fee will be determined by the City Council and will be based upon the quantity and quality of the discharged waste.

(q) No statement in this Ordinance shall be construed as preventing any special agreement or arrangement between the City and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the City for treatment, subject to payment therefore, by the industrial concern, provided that such agreements do not contravene any requirements of existing Federal laws and are compatible with any user charge and industrial cost recovery system in effect.

SECTION 5. Protection from Damage

No person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance, or equipment which is a part of the public sanitary sewage system. Any person violating this provision shall be subject to immediate arrest under the charge of unlawful mischief as set forth in Title 13, Section 3701 of the Vermont Statutes Annotated.

AN ORDINANCE ENACTING AMENDMENTS TO CHAPTER 23, THE SEWER
USE ORDINANCE REGARDING THE REMOVAL OF FAT, OIL, AND GREASE

WHEREAS it is well-documented that releases of fat, oil, and grease into the sewer system cause blockages of the sewer lines, increase the need for and cost associated with line maintenance, and impede sewage treatment at the wastewater plant;

WHEREAS because of recent changes in State law, the City of Durham faces greater penalties for blocked sewer lines and inadequate maintenance of such lines than it previously faced;

NOW, THEREFORE, the City Council of the City of Durham hereby enacts the following:

SECTION I:

Chapter 23, Article IV, Sec. 23-98 of the Durham City Code is amended by deleting the section as it now reads and replacing it with the following amended language:

"Sec. 23-98. Fat, Oil, Grease and Sand Removal Systems.

(a). When Removal Systems are Required

On or before March 1, 2001, certain establishments that prepare, process, or serve food shall install a removal system meeting approved standards that removes and collects fat, oil, and grease from wastewater and shall establish acceptable standard operating procedures for grease disposal. Such establishments include but are not limited to grocery stores, restaurants, bakeries, and companies, schools, and institutions with on-site cafeterias. Establishments that must meet this requirement include all new establishments, all existing establishments with a monthly average water consumption greater than 1500 cubic feet, and establishments which monitoring has shown discharge more than 250 mg/liter of fat, oil, or grease. The Director shall promulgate guidelines that implement this Section 23-98. These guidelines may, among other things, further define and categorize those establishments covered by this requirement, and distinguish amongst them; specify the types of removal systems the various categories of establishments must install and the specifications of such systems; establish cleaning schedules for various types of removal systems and frequency of removal of the fat, oil, and grease from the establishment. Other users that generate sand, oil and grease such as car washes, and automotive and machine shops shall install sand, oil, and grease removal systems when the Director notifies the user of the need for such system or when it is required by the Plumbing Code.

(b). Prohibited Discharges into the Fat, Oil and Grease Removal System.

The following shall not be discharged into the fat, oil, and grease removal system:

- 1) Waste that does not contain fat, oil, grease, and that otherwise does not require treatment;
- 2) Wastewater from dish washing machines or wastewater with temperature exceeding 150° F;
- 3) Ground residue from food waste grinders and garbage disposals;
- 4) Sanitary waste;
- 5) Emulsifiers, chemicals, and enzymes.

(c). Maintenance and Cleaning of System; Maintenance of Records

All users with removal systems shall clean such systems in accordance with the Director's guidelines. Such users shall maintain cleaning records on site showing the date and time of cleaning and person doing the cleaning for a period of three years.

(d). Collection of Fat, Oil, and Grease; Maintenance of Records

All users with removal systems shall contract for the removal of the fat, oil, and grease collected from the removal system. The contract shall be available on site for inspection by the City. The user shall require the contractor to complete a form provided by the City indicating the ultimate disposition of the fat, oil, and grease collected -- e.g., the disposal destination, such as a named landfill, of the removed substances and whether the fat, oil, and grease are being reprocessed or rendered. The user shall also require the contractor to indicate on a form, which, if it is not the City's form, shall be acceptable to the City, each collection made from the user. Required forms shall be maintained on site for a period of three years.

(e). Monitoring of Discharge

The Director or designee may require that any user monitor and test their discharge for fat, oil, grease, and/or sand in such a manner and with such methods as are specified by the Director. All monitoring results shall be shared with the City. In addition, as a condition of discharging to the system, all users may be monitored by the city without prior notice.

(f) Exceptions

The Director is authorized to vary application and enforcement of this section in cases where establishments existing prior to March 1, 2001 cannot site outside removal systems without extreme hardship because of lack of available adjacent land or other similar circumstances.

SECTION 2:

Any sections of the City Code that are in conflict with this amendment are hereby superceded.

SECTION 3

This amendment shall be effective upon passage.

DOCUMENT 3

MODEL FOG ORDINANCE

The following Model FOG Ordinance provides language that can be easily amended or added to local sewer use ordinances. This Model Ordinance is intended for use by municipalities, in whole or in part, on an as needed basis. Table 1 lists the sections of this ordinance which are considered necessary to provide a complete and enforceable FOG Pretreatment Program.

The terms {*Municipality*}, {*Agency*} and {*Agent*} have been used to assist local program developers in determining the entity responsible for various program functions. As many entities have the potential to participate in varying aspects of program maintenance and enforcement, each local FOG program will have different delegation of responsibilities. Local program developers are encouraged to consider the resources available to their community and make changes to the following Model FOG Ordinance as needed to meet their municipality's needs. Other terms have been included in brackets {} for easy identification of items that might require modification for adoption by a municipality.

The term {*Municipality*} in most cases will refer to the Town or City for which the program is set up. Under some circumstances or locations within this document this term could be a Department of Public Works, Water Pollution Control Authority, a Dedicated Municipal FOG Agency, or Company contracted to oversee the FOG Program.

The entity referred to by the term {*Agency*} could be the Municipality or any of the entities listed under {*Municipality*} above.

The term {*Agent*} refers to the entity performing the inspection and enforcement duties. This entity will in many cases be the same as the {*Agency*} but could be another agency or company designated by the {*Municipality*} or {*Agency*}.

In the Model Program set up for the City of Torrington, the {*Municipality*} is the City of Torrington which adopts ordinances, the {*Agency*} is the Department of Public Works which has the technical knowledge to review pretreatment system equipment and plans, and the {*Agent*} is the Torrington Area Health District which employs inspectors and maintains Program records.

The following ordinance includes Automatic Grease Recovery Units (AGRUs) only as an alternate pretreatment system that requires case-by-case approval of the {*Agency*}. However, the *General Permit for the Discharge of Wastewater Associated with Food Preparation Establishments* allows the use of AGRUs as a pre-approved system. This model provides an example of how municipalities may chose to make municipal programs more stringent than the DEP's requirements. The model ordinance can easily be modified to allow AGRU's as a pre-approved system by relocating item Section 6 D to Section 5 with minor changes to the remainder of Section 6.

Table 1
Fats, Oils and Grease Pretreatment Ordinance Sections

Section 1. Purpose.
Section 2. Definitions.
Section 3. Application to Install a FOG Pretreatment System.
Section 4. Discharge Limits.
Section 5. Pretreatment System Requirements.
Section 6. Alternate FOG Pretreatment System.
Section 7. Pretreatment Equipment Maintenance.
Section 8. FOG Minimization.

Fats, Oils and Grease Pretreatment Ordinance [Adopted]

Section 1. Purpose.

The purpose of this Article is to outline the wastewater pretreatment requirements for Food Preparation Establishments and other commercial facilities that discharge fats, oils and grease in their wastewater flow. All new and existing facilities that generate and discharge fats, oils and grease in their wastewater flow shall install, operate and maintain a FOG pretreatment system. The requirements of this Article shall supplement and be in addition to the requirements of the {Municipality's} Sewer Use Ordinance.

Section 2. Definitions.

{AGENT} – Authorized representative of the {Municipality}.

CONTACT PERSON - The Contact Person shall mean the individual responsible for overseeing daily operation of the Food Preparation Establishment and who is responsible for overseeing the Food Preparation Establishment's compliance with the FOG Pretreatment Program.

FOG - FATS, OIL AND GREASE - Any fats, oils and grease generated from the food preparation process as identified by the most current EPA method as listed in 40-CFR 136.3.

FOG INTERCEPTOR - A passive tank installed outside a building and designed to remove fats, oil and grease from flowing wastewater while allowing wastewater to flow through it, and as further defined herein.

FOG RECOVERY UNIT - All active indoor mechanical systems designed to remove fats, oil and grease by physical separation from flowing wastewater, as further defined herein.

FOG PRETREATMENT SYSTEM - Refers to properly installed and operated FOG Interceptors, FOG Recovery Units, and other alternate system as approved by the {Agency}.

FOOD PREPARATION ESTABLISHMENTS - means Class III and IV food service establishments and any other facility discharging fats, oil and grease above the effluent limits in Section 5(c)(2) of the Department of Environmental Protection's *General Permit for the Discharge of Wastewater Associated with Food Preparation Establishments* such as but not limited to restaurants, hotel kitchens, hospital kitchens, school kitchens, bars, factory cafeterias and clubs.

NON-RENDERABLE FATS, OILS AND GREASE - is fats, oils, and grease generated from food preparation processes that have been contaminated during the food preparation process thereby prohibiting this material from being rendered.

NOTIFICATION OF APPROVED ALTERNATE FOG PRETREATMENT SYSTEM - Written notification from the {Agency} for authorization to install and/or operate an alternate FOG Pretreatment System.

RENDERABLE FOG - is uncontaminated fats, oils and grease from the food preparation process that can be used as a source of material that is free of impurities and can be recycled into products such as animal feed and cosmetics.

RENDERABLE FOG CONTAINER - Means a closed, leak-proof container for the collection and storage of food grade fats, oil and grease.

REGIONAL FOG DISPOSAL FACILITY - is a publicly owned treatment works or privately owned treatment works that is permitted by the Connecticut Department of Environmental Protection for the separation and disposal by incineration or other methods of FOG from the wastewater of a facility.

Section 3. Application to Install a FOG Pretreatment System.

- A. FOG Pretreatment Systems shall be provided for all new and existing Food Preparation Establishments, including restaurants, cafeterias, diners, and similar non-industrial facilities using food preparation processes. FOG Pretreatment Systems shall not be required for private living quarters or dwelling units.
- B. All new Food Preparation Establishments as determined by the {Agency}, shall include the design and specifications for the FOG Pretreatment System as part of the sewer connection application as described in the {Municipality's} Sewer Use Ordinance.
- C. All existing Food Preparation Establishments which require a new FOG Pretreatment System, as determined by the {Agency}, shall submit an application for the installation of a new FOG Pretreatment System within twelve (12) months of adoption of this Ordinance. The application shall be in accordance with {Municipality's} Sewer Use Ordinance. The approved FOG Pretreatment System shall be installed within three (3) years of adoption of this ordinance.
- D. All existing Food Preparation Establishments which have an existing FOG Pretreatment System may, as determined by the {Agency}, keep the existing FOG Pretreatment System in operation. Such facilities shall submit an application for an "Alternate FOG Pretreatment System" as described in {Section 6 C}. Such application shall be submitted within twelve (12) months of adoption of this Ordinance.
- E. All costs and related expenses associated with the installation and connection of the FOG Interceptor(s) or Alternate FOG Pretreatment System(s) shall be borne by the Food Preparation Establishment. The Food Preparation Establishment shall indemnify the {Municipality} and its Agents for any loss or damage that may directly or indirectly occur due to the installation of the FOG Pretreatment System.

Section 4. Discharge Limits

- A. No facility shall discharge or cause to be discharged any wastewater with a FOG concentration in excess of one hundred (100) milligrams per liter, as determined by the currently approved test for total recoverable fats and grease listed in 40 CFR 136.3, or in concentrations or in quantities which will harm either the sewers, or Water Pollution Control Facility, as determined by the {Agency}.

Section 5. Pretreatment System Requirements.

- A. An application for the design and installation of a FOG Pretreatment System shall be subject to review and approval by the {Agency} per the {Municipality's} Sewer Use Ordinance, and subject to the requirements of all other applicable codes, ordinances and laws.
- B. Except as provided by {Section 6}, the wastewater generated from Food Preparation Establishments shall be treated to remove FOG using a FOG Interceptor.
- C. Every structure at the subject facility shall be constructed, operated and maintained, in a manner to ensure that the discharge of food preparation wastewater is directed solely to the FOG Interceptor, or Alternate FOG Pretreatment System. No valve or piping bypass equipment that could prevent the discharge of food preparation wastewater from entering appropriate treatment equipment shall be present.
- D. The Contact Person at each Food Preparation Establishment shall notify the {Agency} when the FOG Pretreatment System is ready for inspection and connection to the public sewer. The connection and testing shall be made under the supervision of the plumbing inspector, and/or {Agent}.
- E. All applicable local plumbing/building codes shall be followed during the installation of the FOG Pretreatment System.
- F. FOG Interceptor Requirements.
 - (1) The FOG Interceptor shall be installed on a separate building sewer line servicing kitchen flows and shall be connected only to those fixtures or drains which would allow fats, oils, and grease to be discharged. This shall include:
 - (a) Pot sinks;
 - (b) Pre-rinse sinks;
 - (c) Any sink into which fats, oils and grease are likely to be introduced;
 - (d) Soup kettles or similar devices;

- (e) Wok stations;
 - (f) Floor drains or sinks into which kettles may be drained;
 - (g) Automatic hood wash units;
 - (h) Dishwashers without pre-rinse sinks; and
 - (i) Any other fixtures or drains that are likely to allow fats, oils and grease to be discharged.
- (2) No food grinder shall discharge to the FOG Interceptor.
 - (3) No fixture or drain other than those listed in Paragraph (1) above shall be directly connected to the FOG Interceptor unless approved by the {Agent}.
 - (4) An outdoor, FOG interceptor shall have a minimum depth of four (4) feet and a minimum detention time of:
 - (a) At least twenty-four (24) hours of the maximum daily flow from the fixtures described in subparagraph (1) of this section based on water meter records or other methods of calculation as approved by the {Agent}, or
 - (b) 1000 gallons, whichever is greater.
 - (5) FOG Interceptors shall have a minimum of two compartments. The two compartments shall be separated by a baffle that extends from the bottom of the FOG interceptor to a minimum of five (5) inches above the static water level. An opening in the baffle shall be located at mid-water level. The size of the opening shall be at least eight (8) inches in diameter but not have an area exceeding one hundred eighty (180) square inches.
 - (6) FOG Interceptor shall be watertight and constructed of precast concrete, or other durable material. It shall be located so as to be accessible for convenient inspection and maintenance. No permanent or temporary structures or containers shall be placed directly over the FOG Interceptor. FOG Interceptors installed in areas subject to traffic shall be designed to accommodate traffic loading.
 - (7) FOG Interceptors constructed of precast concrete, shall meet the following requirements:
 - (a) All concrete FOG Interceptors shall be fabricated using minimum 4,000-psi concrete per ASTM standards with four (4) to seven (7) percent air entrainment.

- (b) The FOG Interceptor shall have a minimum liquid depth of thirty-six (36) inches, measured from the bottom of the tank to the outlet invert.
 - (c) The air space provided between the liquid height and the underside of the tank top shall be a minimum of eight (8) inches.
 - (d) All structural seams and/or lifting holes shall be grouted with non-shrinking cement or similar material and coated with a waterproof sealant. In areas where seasonal high ground water is at an elevation greater than the bottom of the FOG Interceptor, but below the top of the FOG Interceptor, the exterior top, sides and bottom shall be coated with a waterproof sealant creating a water tight condition for the tank. In areas where seasonal high ground water is at an elevation greater than the top of the FOG Interceptor, the exterior of the manhole extensions to grade shall be coated with a waterproof sealant creating a water tight condition for the extension.
 - (e) The manhole cover shall be placarded with the warning "Entrance into the tank could be fatal".
 - (f) Voids between the FOG Interceptors walls and inlet and outlet piping shall be grouted with non-shrinking cement and coated with a waterproof sealant.
 - (g) The liquid capacity of the tank shall be marked on the top of the tank between the outlet access hole and the outlet wall or on the vertical wall between the top of the tank and the top of the outlet opening.
 - (h) The invert elevation of the inlet shall be between three (3) inches and six (6) inches above the invert elevation of the outlet.
- (8) All non-concrete septic tanks must be approved for use by the {Agency}.
- (9) Separate cleanout covers shall be provided over the inlet and outlet of the FOG Interceptor so as to provide easy access for inspection and cleaning. Cleanout ports shall be fitted with manhole extensions to grade. In areas subject to traffic, the extensions shall ductile iron frames and round manhole covers. Where concrete covers are used, the lid must either weigh a minimum weight of fifty-nine (59) pounds or contain a locking mechanism to prevent unauthorized entrance. The manholes, extensions, and inlet and outlet access holes to the FOG Interceptor shall have a minimum inside diameter of seventeen (17) inches.
- (10) The inlet and outlet piping shall be PVC meeting ASTM D 1785 Schedule 40 with rubber compression gaskets or solvent weld couplings. The joints must meet ASTM D 3212 specifications. The {Agent} may approve other piping materials for use. The minimum diameter of the inlet and outlet piping shall be four (4) inches. The inlet and outlet shall utilize a tee-pipe fitting on the interior of the FOG Interceptor. No caps or plugs shall be installed on the tee-pipes. The tee-pipe

on the inlet and outlet shall extend to within twelve (12) inches of the bottom of the tank and at least five (5) inches above the static liquid level of the tank.

- (11) The FOG Interceptor shall be set level of a consolidated, stable base that has been mechanically compacted, with a minimum of six (6) inches of crushed stone so that no settling or tipping of the FOG Interceptor can occur. Select backfill shall be placed and compacted around the FOG Interceptor in a manner to prevent damage to the tank and to prevent movement caused by frost action.
- (12) The outlet discharge line from the FOG Interceptor shall be directly connected to the municipal sanitary sewer.
- (13) The FOG Interceptor shall be located so as to maintain the separating distances from well water supplies set forth in Section 19-13-B51d of the Public Health Code.
- (14) The following minimum-separating distances shall be maintained between the FOG Interceptor and the items listed below.

(a) Property line	10 ft
(b) Building served (no footing drains)	15 ft
(c) Ground water intercepting drains, footing drains and storm drainage systems	25 ft
(d) Open watercourse	50 ft
- (15) When necessary due to installation concerns, testing for leakage will be performed using either a vacuum test or water-pressure test.
 - (1) Vacuum Test - Seal the empty tank and apply a vacuum to two (2) inches of mercury. The tank is approved if 90 percent of the vacuum is held for two (2) minutes.
 - (2) Water-Pressure Test - Seal the tank, fill with water, and let stand for twenty-four (24) hours. Refill the tank. The tank is approved if the water level is held for one (1) hour.

Section 6. Alternate FOG Pretreatment System.

- A. When it is not practical for the Food Preparation Establishment to install an outdoor in-ground FOG Interceptor per {Section 5}, an Alternate FOG Pretreatment System may be utilized upon approval by the {Agency} and upon receiving a "Notification of Approved Alternative FOG Pretreatment System." Approval of the system shall be based on demonstrated (proven) removal efficiencies and reliability of operation. The {Agency} will approve these systems on a case-by-case basis. The Contact Person may be required to furnish analytical data demonstrating that FOG discharge concentrations do not exceed the limits established in this ordinance.

- B. Alternate FOG Pretreatment Systems shall consist of a FOG Recovery Unit meeting the requirements of *{Paragraph D below}*, unless there are special circumstances that preclude such installation, as approved by the *{Agency}*, and in accordance with *{Paragraph E}*.
- C. Alternate FOG Pretreatment Systems shall meet the requirements of *{Section 5, A through E}*, and shall be installed immediately downstream of each of the fixtures and drains listed in *{Section 5 F. (1)}*, and shall meet the requirement of *{Section 5 F. (2) and (3)}*.
- D. Alternate FOG Pretreatment System Requirements.
- (1) FOG Recovery Units shall be sized to properly pretreat the measured or calculated flows using methods approved by the *{Agency}*.
 - (2) FOG Recovery Units shall be constructed of corrosion-resistant material such as stainless steel or plastic.
 - (3) Solids shall be intercepted and separated from the effluent flow using a strainer mechanism that is integral to the unit.
 - (4) The FOG Recovery Unit shall operate using a skimming device, automatic draw-off, or other mechanical/hard wired electrical means to automatically remove separated FOG. This automatic skimming device shall be controlled using a timer or level control. The operation of the automatic skimming device shall be field adjustable. The FOG Recovery Unit timer shall be set to operate the unit no less than once per day.
 - (5) FOG Recovery Units shall be fitted with an internal or external flow control device to prevent the exceedence of the manufacturer's recommended design flow.
 - (6) FOG Recovery Units shall be located to permit frequent access for maintenance, and inspection.
- E. Other Alternate FOG Pretreatment System
- (1) Other Alternate FOG Pretreatment Systems that do not meet the requirements of *{Section 5 F or Section 6 D}*, may be considered for approval by the *{Agency}* on a case-by-case basis. The application shall include:
 - (a) Documented evidence that the proposed Alternate FOG Pretreatment System will not discharge FOG concentrations that exceed the discharge limits per *{Section 4}*.

- (b) Plans and specifications for the proposed system including plans and profile of system installation, manufacturer's literature, documentation of performance and any other information detailing the proposed alternate system.
 - (c) A written Operation and Maintenance Plan, which shall include the schedule for cleaning and maintenance, copies of maintenance log forms, a list of spare parts to be maintained at the subject facility, and a list of contacts for the manufacturer and supplier. Following receipt of written Notification of Approved Alternate FOG Pretreatment System from the {Agency}, the Operation and Maintenance Plan shall be maintained on the premises. The plan shall be made available for inspection on demand by the {Agent}.
 - (d) A written FOG Minimization Plan, which shall include procedures for all Food Preparation Establishment employees to minimize FOG entering the wastewater collection system.
 - (e) A description of a FOG Pretreatment Training Program for Food Preparation Establishment employees in FOG minimization procedures.
- (2) A Notification of Approved Alternate FOG Pretreatment System may be granted for a duration not to exceed three (3) years, with extensions, when demonstrated to the satisfaction of the {Agency} that the proposed Alternate FOG Pretreatment System, Operation and Maintenance Plan, FOG Minimization Plan and FOG Pretreatment Training Program are adequate to maintain FOG concentration in the wastewater discharge below the limits set in {Section 4}.

Section 7. Pretreatment Equipment Maintenance

- A. The FOG Pretreatment System shall be maintained continuously in satisfactory and effective operation, at the Food Preparation Establishment's expense.
- B. The Contact Person shall be responsible for the proper removal and disposal, by appropriate means, of the collected material removed from the FOG Pretreatment System.
- C. The Contact Person shall ensure that the FOG Interceptor is inspected when pumped to ensure that all fittings and fixtures inside the interceptor are in good condition and functioning properly. The depth of grease inside the tank shall be measured and recorded in the maintenance log during every inspection along with any deficiencies, and the identity of the inspector.
- D. The Contact Person shall determine the frequency at which its FOG Interceptor(s) shall be pumped according to the following criteria:
 - (1) The FOG Interceptor shall be cleaned by a subsurface sewage disposal cleaner whenever twenty-five (25) percent of the operating depth of the FOG Interceptor is occupied by fats, oils, grease, and settled solids, or a minimum of once every three

- (3) months, whichever is more frequent. Cleaning of FOG Interceptors shall include the complete removal of all contents, including floating materials, wastewater and settled sludge. Decanting back into the FOG Interceptor shall not be permitted. FOG interceptor cleaning shall include scraping excessive solids from the wall, floors, baffles and all piping.
- (2) If the Contact Person can provide data demonstrating that less frequent cleaning of the FOG Interceptor will not result in a grease level in excess of twenty-five (25) percent of the operating depth of the FOG Interceptor, the {Agency} may allow less frequent cleaning. The Contact Person shall provide data including pumping receipts for four (4) consecutive cleanings of the FOG Interceptor, complete with a report from the Grease Trap/Interceptor Cleaner indicating the grease level at each cleaning, and the FOG Interceptor maintenance log.
- (3) A maintenance log shall be maintained on the premises, and shall include the following information: dates of all activities, volume pumped, grease depth, grease trap/interceptor cleaner's name, location of the waste disposal, means of disposal for all material removed from the FOG Interceptor, and the name of the individual recording the information. The maintenance log and Grease Trap/Interceptor Cleaner's receipts shall be made available to the {Agent} for inspection on demand. Interceptor cleaning and inspection records shall be maintained on file a minimum of five (5) years.
- E. All material removed and hauled from FOG Pretreatment Systems must be performed by a subsurface sewage disposal cleaner or entity approved by the {Agency}. Pumped material shall be disposed of at a Regional FOG Disposal Facility.
- F. The Contact Person shall be responsible for the cost and scheduling of all actions need to comply with this {Article}. The Contact Person shall be notified in writing of violations of this Article by the {Agent}. Actions to comply with this {Article} shall be completed within the time limits as given below:

<u>Violation</u>	<u>Days from Inspection to Correct Violation</u>
Equipment not registered	30 days
Equipment not properly installed	90 days
Major violations (outdoor and indoor)	30 days
Minor Violations	90 days

Section 8. FOG Minimization.

- A. The Contact Person shall make every practical effort to reduce the amount of FOG contributed to the sewer system.
- B. Renderable fats, oil and grease shall not be disposed of, in any sewer, septic tank or FOG Interceptor. All renderable fats, oil and grease shall be stored in a separate, covered, leak-

proof, Renderable FOG Container, stored out of reach of vermin, and collected by a renderer.

- C. Small quantities of FOG scraped or removed from pots, pans, dishes and utensils shall be directed to the municipal solid waste stream for disposal.

House Bill 1979 Model Standards For a Grease Ordinance

Section I. Applicability and Prohibitions

- (a) This ordinance shall apply to all non-domestic users of the Publicly Owned Treatment Works (POTW), as defined in Section II of this Ordinance.
- (b) Grease traps or grease interceptors shall not be required for residential users.
- (c) Facilities generating fats, oils, or greases as a result of food manufacturing, processing, preparation, or food service shall install, use, and maintain appropriate grease traps or interceptors as required in Section II of this Chapter. These facilities include but are not limited to restaurants, food manufacturers, food processors, hospitals, hotels and motels, prisons, nursing homes, and any other facility preparing, serving, or otherwise making any foodstuff available for consumption.
- (d) No user may intentionally or unintentionally allow the direct or indirect discharge of any petroleum oil, nonbiodegradable cutting oil, mineral oil, or any fats, oils, or greases of animal or vegetable origin into the POTW system in such amounts as to cause interference with the collection and treatment system, or as to cause pollutants to pass through the treatment works into the environment.

Section II. Definitions

- (a) **Act** means Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et. seq.
- (b) **BOD** means the value of the 5-day test for Biochemical Oxygen Demand, as described in the latest edition of "Standard Methods for the Examination of Water & Wastewater."
- (c) **COD** means the value of the test for Chemical Oxygen Demand, as described in the latest edition of "Standard Methods for the Examination of Water & Wastewater."
- (d) **EPA** means the United States Environmental Protection Agency.
- (e) **Fats, oils, and greases (FOG)** means organic polar compounds derived from animal and/or plant sources that contain multiple carbon chain triglyceride molecules. These substances are detectable and measurable using analytical test procedures established in 40 CFR 136, as may be amended from time to time. All are sometimes referred to herein as "grease" or "greases."
- (f) **Generator** means any person who owns or operates a grease trap/grease interceptor, or whose act or process produces a grease trap waste.
- (g) **Grease trap or interceptor** means a device designed to use differences in specific gravities to separate and retain light density liquids, waterborne fats, oils, and greases prior to the wastewater entering the sanitary sewer collection system. These devices also serve to collect settleable solids, generated by and from food preparation activities, prior to the water exiting the trap and entering the sanitary sewer collection system. Grease traps and interceptors are also referred to herein as "grease traps/interceptors."

- (h) **Grease Trap Waste** means material collected in and from an grease trap/interceptor in the sanitary sewer service line of a commercial, institutional, or industrial food service or processing establishment, including the solids resulting from de-watering processes.
- (i) **Indirect Discharge** or **Discharge** means the introduction of pollutants into a POTW from any non-domestic source.
- (j) **Interference** means a discharge which alone or in conjunction with a discharge or discharges from other sources inhibits or disrupts the POTW, its treatment processes or operations or its sludge processes, use or disposal, or is a cause of a violation of the city's TPDES permit.
- (k) **pH** means the measure of the relative acidity or alkalinity of water and is defined as the negative logarithm (base 10) of the hydrogen ion concentration.
- (l) **POTW or Publicly Owned Treatment Works** means a treatment works which is owned by a state or municipality as defined by section 502(4) of the Clean Water Act. This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes all sewers, pipes and other conveyances that convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works. For purposes of this ordinance, the terms "sanitary sewer system" and "POTW" may be used interchangeably.
- (m) **TCEQ** means the Texas Commission on Environmental Quality, and its predecessor and successor agencies.
- (n) **Transporter** means a person who is registered with and authorized by the TCEQ to transport sewage sludge, water treatment sludge, domestic septage, chemical toilet waste, grit trap waste, or grease trap waste in accordance with 30 TEXAS ADMINISTRATIVE CODE §312.142.
- (o) **TSS** means the value of the test for Total Suspended Solids, as described in the latest edition of "Standard Methods for the Examination of Water & Wastewater."
- (p) **User** means any person, including those located outside the jurisdictional limits of the city, who contributes, causes or permits the contribution or discharge of wastewater into the POTW, including persons who contribute such wastewater from mobile sources.

Section III. Installation and Maintenance Requirements

- (a) Installations
 - 1) **New Facilities.** Food processing or food service facilities which are newly proposed or constructed, or existing facilities which will be expanded or renovated to include a food service facility, where such facility did not previously exist, shall be required to design, install, operate and maintain a grease trap/interceptor in accordance with locally adopted plumbing codes or other applicable ordinances. Grease traps/interceptors shall be installed and inspected prior to issuance of a certificate of occupancy.

- 2) Existing Facilities. Existing grease traps/interceptors must be operated and maintained in accordance with the manufacturer's recommendations and in accordance with these Model Standards, unless specified in writing and approved by the POTW.
 - 3) All grease trap/interceptor waste shall be properly disposed of at a facility in accordance with federal, state, or local regulation.
- (b) Cleaning and Maintenance
- 1) Grease traps and grease interceptors shall be maintained in an efficient operating condition at all times.
 - 2) Each grease trap pumped shall be fully evacuated unless the trap volume is greater than the tank capacity on the vacuum truck in which case the transporter shall arrange for additional transportation capacity so that the trap is fully evacuated within a 24-hour period, in accordance with 30 TEXAS ADMINISTRATIVE CODE §312.143.
- (c) Self-Cleaning
- 1) Grease trap self-cleaning operators must receive approval from the POTW annually prior to removing grease from their own grease trap(s) located inside a building, provided:
 - (A) the grease trap is no more than fifty (50) gallons in liquid/operating capacity;
 - (B) proper on-site material disposal methods are implemented (e.g. absorb liquids into solid form and dispose into trash);
 - (C) the local solid waste authority allows such practices;
 - (D) grease trap waste is placed in a leak proof, sealable container(s) located on the premises and in an area for the transporter to pump-out; and
 - (E) detailed records on these activities are maintained.
 - 2) Grease trap self-cleaning operators must submit a completed self-cleaning request to the POTW for approval. The written request shall include the following information:
 - (A) Business name and street address;
 - (B) Grease trap/interceptor operator name, title, and phone number;
 - (C) Description of maintenance frequency, method of disposal, method of cleaning and size (in gallons) of the grease trap/interceptor; and
 - (D) Signed statement that the operator will maintain records of waste disposal and produce them for compliance inspections.

- 3) Self-cleaners must adhere to all the requirements; procedures and detailed record keeping outlined in their approved application, to ensure compliance with this ordinance. A maintenance log shall be kept by self-cleaning operators that indicates, at a minimum, the following information:
 - (A) Date the grease trap/interceptor was serviced;
 - (B) Name of the person or company servicing the grease trap/interceptor;
 - (C) Waste disposal method used;
 - (D) Gallons of grease removed and disposed of;
 - (E) Waste oil added to grease trap/interceptor waste; and
 - (F) Signature of the operator after each cleaning that certifies that all grease was removed, disposed of properly, grease trap/interceptor was thoroughly cleaned, and that all parts were replaced and in operable condition.
- 4) Violations incurred by grease trap self-cleaners will be subject to enforcement action including fines and/or removal from the self-cleaner program.

(d) Cleaning Schedules

- 1) Grease traps and grease interceptors shall be cleaned as often as necessary to ensure that sediment and floating materials do not accumulate to impair the efficiency of the grease trap/interceptor; to ensure the discharge is in compliance with local discharge limits; and to ensure no visible grease is observed in discharge.
- 2) Grease traps and grease interceptors subject to these standards shall be completely evacuated a minimum of every ninety (90) days, or more frequently when:
 - (A) twenty-five (25) percent or more of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating materials, sediment, oils or greases; or
 - (B) the discharge exceeds BOD, COD, TSS, FOG, pH, or other pollutant levels established by the POTW; or
 - (C) if there is a history of non-compliance.
- 3) Any person who owns or operates a grease trap/interceptor may submit to the POTW a request in writing for an exception to the ninety (90) day pumping frequency of their grease trap/interceptor. The POTW may grant an extension for required cleaning frequency on a case-by-case basis when:
 - (A) the grease trap/interceptor owner/operator has demonstrated the specific trap/interceptor will produce an effluent, based on defensible analytical results, in consistent compliance with established local discharge limits such as BOD, TSS, FOG, or other parameters as determined by the POTW, or

- (B) less than twenty-five (25) percent of the wetted height of the grease trap or grease interceptor, as measured from the bottom of the device to the invert of the outlet pipe, contains floating materials, sediment, oils or greases
 - 4) In any event, a grease trap and grease interceptor shall be fully evacuated, cleaned, and inspected at least once every 180 days.
- (e) Manifest Requirements
- 1) Each pump-out of a grease trap or interceptor must be accompanied by a manifest to be used for record keeping purposes.
 - 2) Persons who generate, collect and transport grease waste shall maintain a record of each individual collection and deposit. Such records shall be in the form of a manifest. The manifest shall include:
 - (A) name, address, telephone, and commission registration number of transporter;
 - (B) name, signature, address, and phone number of the person who generated the waste and the date collected;
 - (C) type and amount(s) of waste collected or transported;
 - (D) name and signature(s) of responsible person(s) collecting, transporting, and depositing the waste;
 - (E) date and place where the waste was deposited;
 - (F) identification (permit or site registration number, location, and operator) of the facility where the waste was deposited;
 - (G) name and signature of facility on-site representative acknowledging receipt of the waste and the amount of waste received;
 - (H) the volume of the grease waste received; and
 - (I) a consecutive numerical tracking number to assist transporters, waste generators, and regulating authorities in tracking the volume of grease transported.
 - 3) Manifests shall be divided into five parts and records shall be maintained as follows.
 - (A) One part of the manifest shall have the generator and transporter information completed and be given to the generator at the time of waste pickup.

- (B) The remaining four parts of the manifest shall have all required information completely filled out and signed by the appropriate party before distribution of the manifest.
 - (C) One part of the manifest shall go to the receiving facility.
 - (D) One part shall go to the transporter, who shall retain a copy of all manifests showing the collection and disposition of waste.
 - (E) One copy of the manifest shall be returned by the transporter to the person who generated the wastes within 15 days after the waste is received at the disposal or processing facility.
 - (F) One part of the manifest shall go to the local authority.
- 4) Copies of manifests returned to the waste generator shall be retained for five years and be readily available for review by the POTW.

(f) Alternative Treatment

- 1) A person commits an offense if the person introduces, or causes, permits, or suffers the introduction of any surfactant, solvent or emulsifier into a grease trap. Surfactants, solvents, and emulsifiers are materials which allow the grease to pass from the trap into the collection system, and include but are not limited to enzymes, soap, diesel, kerosene, terpene, and other solvents.
- 2) It is an affirmative defense to an enforcement of Section III. (f) (1) that the use of surfactants or soaps is incidental to normal kitchen hygiene operations.
- 3) Bioremediation media may be used with the POTW's approval if the person has proved to the satisfaction of the POTW that laboratory testing which is appropriate for the type of grease trap to be used has verified that:
 - (A) The media is a pure live bacterial product which is not inactivated by the use of domestic or commercial disinfectants and detergents, strong alkalis, acids, and/or water temperatures of 160°F (71°C).
 - (B) The use of the media does not reduce the buoyancy of the grease layer in the grease trap and does not increase the potential for oil and grease to be discharged to the sanitary sewer.
 - (C) The use of the bioremediation media does not cause foaming in the sanitary sewer.
 - (D) The BOD, COD, and TSS discharged to the sanitary sewer after use of the media does not exceed the BOD, COD, and TSS which would be discharged if the product were not being used and the grease trap was being properly maintained. pH levels must be between 5 and 11.

- 4) All testing designed to satisfy the criteria set forth in Section III (f) (3) shall be scientifically sound and statistically valid. All tests to determine oil and grease, TSS, BOD, COD, pH, and other pollutant levels shall use appropriate tests which have been approved by the Environmental Protection Agency and the Texas Commission on Environmental Quality and which are defined in Title 40, Code of Federal Regulations, Part 136 or Title 30, TEXAS ADMINISTRATIVE CODE §319.11. Testing shall be open to inspection by the POTW, and shall meet the POTW's approval.

Section IV. Schedule of Penalties

- (a) If the POTW determines that a generator is responsible for a blockage of a collection system line the generator shall owe a civil penalty of \$1,000 for the first violation, \$1,500 for a second violation, and \$2,000 for the third violation within a two-year period. Continuous violations shall result in an increase in penalty by \$500 and may also result in termination of services.
- (b) Any person violating any of the provisions of this Ordinance shall be subject to a written warning for the first violation, a \$1,000 civil penalty for the second violation, a \$1,500 civil penalty for the third violation, and a \$2,000 civil penalty for the fourth violation within a two- year period. Consistent violations will result in a \$500 increase in civil penalty and may result in termination of service.

APPENDIX B: DETAILS OF OTHER JURISDICTIONS' EXPERIENCES

Section 4 of this document gives an overview of how some jurisdictions have implemented various elements of a FOG management authority. This Appendix gives some more details on their experiences.

General permit (See Section 4.1)

An example of a general permit was drafted by the Connecticut Department of Environmental Protection (DEP), regulating “any wastewater discharge associated with a facility which discharges to a sanitary sewer line and then to a POTW [Publicly Owned Treatment Works] or a privately owned or State owned sewage treatment works.” The authority is grounded in Section 22a-430b of the Connecticut General Statutes , which authorize the Commissioner of Environmental Protection to issue a general permit that “may regulate, within a geographical area, (1) A category of discharges which: Involve the same or substantially similar types of operations, involve the same type of wastes, require the same effluent limitations, operating conditions or standards, and require the same or similar monitoring and which in the opinion of the commissioner are more appropriately controlled under a general permit...”

The draft general permit regulates “[a]ny wastewater discharge associated with a facility which discharges to a sanitary sewer line and then to a POTW or a privately owned or State owned sewage treatment works.” The wastewater discharge is allowed, as long as a grease trap/interceptor “or other unit is installed in accordance with local ordinances.” It thus leaves to local ordinances the requirements for which facilities have a grease trap/interceptor. The general permit, however, regulates how the grease trap/interceptor is to be plumbed, dimensioned, designed, installed, maintained, and reported on. Effluent limits for pH and FOG are also contained in the general permit.

Installing and Operating Equipment Practices (See Section 4.4)

To gather a basis for recommending a cleaning frequency, we have phoned many jurisdictions around the country as well as the International Code Council, which administers the International Plumbing Code. Cleaning frequency is a function of the load of FOG plus the capacity of the grease trap/interceptor.

The sizing recommendations for grease interceptors vary widely. The National Precast Concrete Association compares six sizing recommendations, from national organizations like the Universal Plumbing Code and the US Environmental Protection Agency (EPA) and local and state authorities. For a given restaurant, the recommended size of the grease interceptor varies by a factor of four or more. (The design details of the grease interceptors permitted in the different jurisdictions vary, and some designs may be more effective than others.)

For a grease interceptor of a given size, the rate at which it fills varies, depending on the type of FPE and the FOG management practices—including whether a grease trap is located inside the building. For this reason, the International Plumbing Code and many jurisdictions do not recommend specific cleaning frequency. Rather, they recommend monitoring to see how fast the interceptor fills up, and suggest scheduling regular cleanings based on that established frequency. (A grease interceptor is generally considered to be full if FOG and sedimented solids, combined, take up 25% of its volume.) For example, the National Precast Concrete Association says, “it may be best to require the owner or establishment to obtain and maintain a maintenance contract with a qualified (and possibly approved) waste removal business For new installations, a monthly or bi-monthly cleaning may be required until the maintenance company can establish a predictable level of [FOG] accumulation for that particular facility. Thereafter, required cleanings may be extended until . . . the optimum pumping frequency is found.”

Enforcement (See Section 4.8)

In Connecticut, enforcement is specified by the laws governing enforcement of general permits. In Torrington, Connecticut, a distinction is made between major and minor violations. Major violations concern installation problems or cleaning violations, whereas minor violations relate to the BMPs on the inspection checklist. The Connecticut program contains a simple letter which can be used as a Notice of Violation (Appendix E). The member communities are each responsible for enforcement of the FOG pretreatment program.

In New York City, the city’s Department of Environmental Protection (DEP) enforces the sewer use regulations and has the authority to fine businesses that are not in compliance. DEP inspects businesses to make sure grease traps/interceptors are correctly sized, properly installed, maintained, and operating effectively. Businesses not complying with the rules may be fined up to \$10,000 per day, per violation.

The Town of Cary, North Carolina has a grace period of a year, from the date the ordinance takes effect, for enforcement of limits on FOG discharges from grease traps/interceptor: “Except as provided herein, for a period of one year following adoption of this Ordinance, although installation of Grease Interceptors will be required to be installed, no enforcement actions will be taken under this Ordinance for failure to achieve limits on Grease discharges from Grease Interceptors.”

In the state of Texas, House Bill 1979 “Model Standards For a Grease Ordinance” provides for penalties both for “generators” of FOG who are determined to cause a blockage of a collection system (without reference to whether the ordinance is violated in any way) and for violating any part of the ordinance. Those responsible for a blockage are subject to civil penalties of \$1,000 for the first violation, with the fine for each subsequent violation in a two-year period increasing by \$500 (e.g., \$1,500 for the second violation, etc.). For violations of any part of the ordinance, a warning is issued for the first violation, and then the same schedule of increasing fines takes effect. For both blockages and ordinance violations, four or more violations in a two-year period “may result in termination of service.”

Financing (See Section 4.10)

Special financing mechanisms are needed if the FOG management program is to be self financing. In Connecticut, the programs in Hamden and New Haven charge fees to FPEs using formulas that apply when the FOG loading is greater than 100 mg/L. A goal of the newly started program in Torrington, Connecticut is that it be implemented without need for additional financing.

Another financing mechanism would be to increase wastewater rates on all FPEs, regardless of their FOG loading, to cover the FOG management program. This would be easier to administer than rates dependent on test results of actual FOG loading to the sewer system from each facility. The targeted fees used in Hamden and New Haven also serve as an incentive to improve FOG management. Raising wastewater rates across the board on FPEs would be a financing mechanism for the program and nothing more.

APPENDIX C: EDUCATION, OUTREACH, AND TRAINING RESOURCES

Connecticut FOG Pretreatment Equipment Sizing Criteria

Connecticut Outdoor Sizing Example Application

Connecticut FOG Minimization Plan Guidance

Kent County, Delaware Fats, Oil, and Grease (FOG) Best Management Practices Manual

A Guide to Restaurant Grease Management, A Regulator's Desk Reference, IRAC, King County, Washington

Best Management Practices (BMPs) for Non-Residential Direct and Indirect Discharges to the Public Sewer System, Department of Environmental Protection, New York, NY

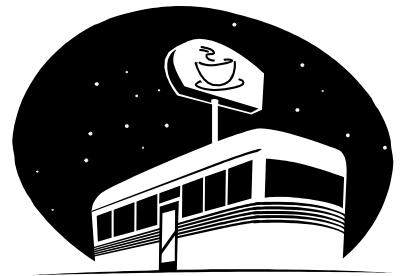
A Guide to Restaurant Grease Management

A Regulator's Desk Reference

**Interagency Resource for
Achieving Cooperation
(IRAC)**

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About Interagency Resource for Achieving Cooperation (IRAC):

The Interagency Resource for Achieving Cooperation (*IRAC*) is part of the Local Hazardous Waste Management Program in King County. *IRAC* is a forum for regulators from different agencies to work together sharing their diverse perspectives in addressing regulatory conflicts or gaps.

Disclaimer:

This publication provides research information and practical guidance regarding the handling, storage and disposal of restaurant grease within King County. It is not intended to be a complete reference to all laws and regulations; local jurisdictions may have regulations that differ from the recommendations in this report.

Additional copies of this report:

A printable version of this report is available electronically at:
<http://www.govlink.org/hazwaste/publications/>

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Introduction.

The IRAC Restaurant Grease Management Workgroup was formed to address the problem of grease entering the storm drainage system and sewers from improper grease handling and storage practices.

The goals of the workgroup:

- Provide information and guidance to regulators and food service establishment operators about how best to collect, store, and dispose of fats, oils, and grease generated from the preparation of food.
- Provide regulators with information and guidance for conducting inspections of food service establishments.
- Provide outreach materials for assisting food service establishments.
- Provide regulators with an information matrix list for sewer districts in the King County region.
- Provide food service establishments with a list of contractors and service providers.

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Section 1: Universal Standards

NOTE: These standards were compiled by the IRAC Restaurant Grease Management workgroup to provide over-all guidance for the acceptable handling, storage, and disposal of grease at food service establishments. These standards should be considered best management practices and design standards for kitchens as well as inside and outside grease storage areas.

- Use, store and dispose of grease properly.
- Don't dispose of grease to the storm or sanitary sewers.
- Collect fryer and cooking grease in watertight containers.
- Don't leave the lids to grease bins open to the weather.
- Keep collection bins or barrels in areas protected from traffic and the weather and away from drains.
- Keep collection bins in an area where spills will be contained or directed to the sanitary sewer.
- Clean up grease spills by scraping up as much as possible before mopping.
- Absorb oil spills with sphagnum moss or other dry oil absorbent. Place the used absorbent inside two plastic bags or other sealed container and dispose of it in the trash.
- Clean hood filters in sinks that flow to grease retention devices attached to the sanitary sewer. Do this on a frequent basis.
- Dispose of kitchen floor mop water to sinks that flow to grease retention devices attached to the sanitary sewer.
- Use low emulsion-type soaps for floor and hood cleaning.
- Connect trash compactors to the sanitary sewer or place them on pads that have a drain connected to the sanitary sewer.

Section 2: Inspector Guidelines

Inspection Procedures for Grease Interceptors and Grease Traps

Grease interceptors and traps reduce the likelihood of sanitary sewer overflows caused by grease from food services. Inspections are performed to ensure compliance with local discharge limits for fats, oils, and grease. This procedure describes how to inspect grease interceptors and traps, how to determine which interceptors or traps require inspection, and how to determine the quantity of grease accumulated in each device. It also includes information on the equipment used when doing inspections, a description of grease interceptors and traps, and how to inspect each device.

NOTE: *All grease retention devices should be inspected for discharge compliance at least quarterly.*

Inspection Equipment Lists

Equipment needed for inspecting grease interceptors and traps is provided below.

For Grease Interceptor Vaults

Manhole puller	Thread Tap for manhole bolt holes
Small sledge hammer	WD-40 or other lubricant
Mirror	Extra manhole bolts
Flashlight	Probe to check depth and condition of baffle tees
Ditch spade (shovel with narrow blade)	Disposable gloves
8' clear plastic tube (fluorescent light safety cover)	Paper towels
Portable pH meter	Sample cup on a rope or sample pump
Sample bottle provided by laboratory	
Sample inspection log sheet	

For Grease Traps

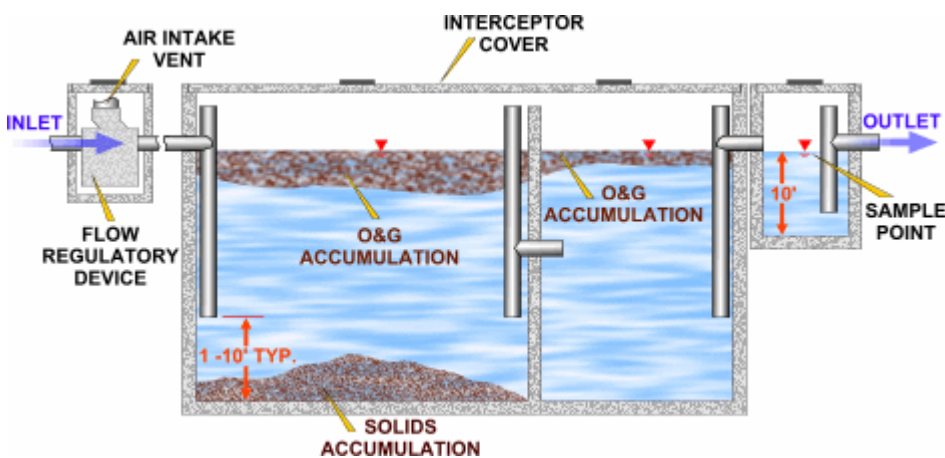
Large flat head screw driver
Large adjustable wrench
Other hand tools, including hex head or star head driver (may be required to open trap lid)
Clean-out plug wrench
2' to 4' clear plastic tube (fluorescent light safety cover cut to size)
Portable pH meter
Sample bottle provided by laboratory
Sample inspection log sheet
Small shovel or garden trowel
Disposable gloves
Paper towels
Flashlight
Turkey baster for sampling discharge water

Grease Interceptors

Description

A standard grease interceptor is a large-capacity underground vault with at least two chambers installed on the gray water discharge from a kitchen facility (see figure below). The large capacity of the vault slows down the wastewater, allowing oil and grease to float to the surface and solid material to settle out. These vaults are installed outside the building as near as possible to the source of oil/grease.

The vault has a concrete lid with manhole openings in the top. These allow access into the vault for cleaning and for inspection of vault components, and they allow for visual inspection of all interior baffle tees. These baffle tees are usually made of 6" PVC. Vault capacity is determined using a calculation provided in the Uniform Plumbing Code (see the most current version of UPC for calculation). The vault also must meet the standard specifications of the local jurisdiction.



Inspection Procedures

- 1) Open lid(s) covering all chambers of the interceptor vault.
- 2) Visually inspect inlet baffle tee and note any problems.
- 3) Determine inlet pH (if desired) using a portable pH meter.
- 4) Determine depth of grease blanket, including both liquid and solid grease, and note this on the inspection log. The depth of the grease blanket can be determined using either of two methods:
 - a) Push the blade of a ditch spade (narrow blade shovel) into the grease blanket until no more resistance is felt. Pull the shovel out, making a hole in the grease blanket, and estimate the depth of the blanket.
 - b) Using a clear plastic tube, obtain a core sample of the interceptor. Prepare the tube by routing a length of braided fishing leader through the tube (tying a small weight to the leader will aid in this task) and attach the leader to a rubber stopper with an eye-bolt inserted through it. Holding the tube vertically, push it through the grease blanket to the bottom of the interceptor and pull the plug into place with the fishing leader. Placing a cap or stopper on the upper end of the tube will help in keeping the leader taught and the plug in place. Pull the tube up and measure the amount of grease and solids in the interceptor. Empty the contents of the tube back into the vault and dispose of the tube in the on-site garbage, if available. Keep the stopper with eyelet for future use.

- 5) Inspect the inlet and baffle tees, if visible, and note any problems on the inspection log . If the baffle tee isn't visible and there are three lids over the vault, it may be visible under the center lid. To determine the depth of the tees, use a probe at least 10 feet long with something on the end that can hook onto the edge of a pipe. Two 5-foot sections of ¾ inch PVC pipe that screw together in the middle and have caps on the ends works well. This can also be used to determine if the baffle tee is in place in the event that it is not visible from above.
- 6) Inspect discharge tee and note any problems on the inspection log. Look for accumulation of grease on the walls of the tee or in the discharge. Look for rainbow sheen on the discharge flow.
- 7) Determine pH of discharge flow (if desired) using a portable pH meter.
- 8) Determine depth of grease blanket using procedure noted in #4 above.
- 9) Take sample of discharge flow (if desired).
- 10) Be sure to replace all access lids.
- 11) Leave the interceptor vault in the same condition in which it was found. If the lids were bolted down, re-bolt them, etc.
- 12) If any baffle tees are missing, or if there is significant grease (> 25 % of the static liquid volume), inform the facility manager or person in charge. Note the name of the person you talked to and the content of the discussion.

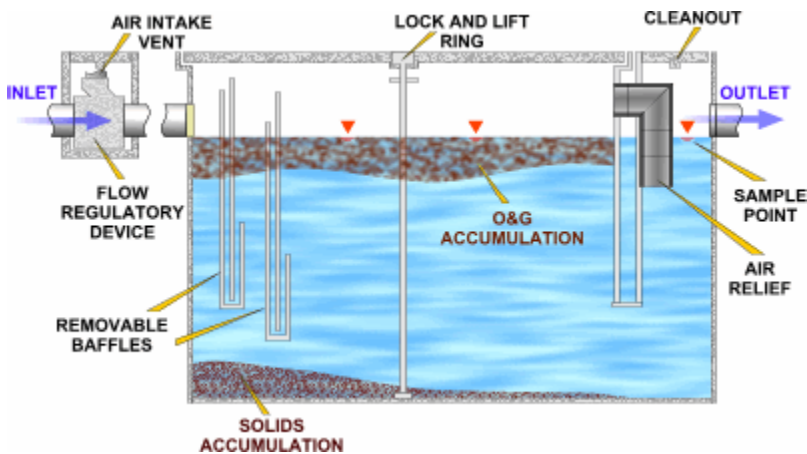
Grease Traps

Description

Grease traps are made of rust resistant metal and can be installed above or below the floor level, usually in the kitchen near the fixtures that discharge to them. A grease trap has a much smaller capacity than a grease interceptor vault (see figure below). .

A solid metal lid is usually affixed to the grease trap body with a screw on each corner, although some lids have one large screw or bolt in the middle of the lid. Some grease traps have a separate discharge section with a clean-out plug at the top of the section.

Up to four fixtures can be connected to a grease trap, and the trap is sized according to the number of fixtures that can connect to it. Sizing criteria can be found in the Uniform Plumbing Code.



Inspection Procedures

- 1) Open the lid covering the grease trap and visually inspect all visible internal components and note any problems
- 2) Determine depth of grease blanket, including both liquid and solid grease, and determine the quantity of solids at the bottom. The following two methods can be used to determine the depth of the grease blanket.
 1. Push the blade of a small garden shovel or trowel into the grease blanket until no more resistance is felt. Pull the shovel out, making a hole in the grease blanket and estimate the depth of the blanket.
 2. Using a clear plastic tube and rubber stopper, pull out the contents of the grease trap. (This process works similar to holding your finger over the end of a straw and pulling the liquid up when you lift the straw.) Follow these steps:
 - i) Hold the tube vertically and push it to the bottom of the grease trap.
 - ii) Plug the top opening of the tube with a rubber stopper, making sure the plug is tight enough to create a vacuum.
 - iii) Pull the tube up, stopping just before the bottom of the tube comes up out of the grease blanket.
 - iv) Note the layers of grease blanket, liquid and solids in the trap.
 - v) Empty contents of tube into the trap and dispose of the tube in the garbage on-site, if available.

- 3) Collect a sample of the discharge flow (if desired).
- 4) Close the grease trap lid.
- 5) Leave the trap in the same condition in which it was found. If the lid was bolted down, re-bolt it.
- 6) If any of the grease retention components are missing, or if there is significant grease leaving the trap in the discharge (that is, enough to pose a threat of blockage), inform the facility manager or person in charge prior to leaving the site. Note the name of the person and the content of the discussion.

Section 3: Regulators' Outreach Materials

NOTE: The following documents and templates may be provided to restaurants to guide them through a grease management program.

▪ **Restaurant owner guidelines for implementing a grease reduction program**

There are many ways to cut down on your grease output and avoid costly maintenance and fines. By using common sense and good housekeeping practices and by reducing the accumulation of grease, you can minimize your impact on the sewer system and avoid costly cleanup of grease spills.

Pretreatment Methods. All pretreatment methods require a commitment to maintenance and, in most cases, a change in kitchen management policies. If you install a pretreatment device, remember that extremely hot water and solvents defeat the purpose of pretreatment devices by keeping the grease suspended in the gray water. Vendors can provide assistance on installation, maintenance, and information. They are listed in the Yellow Pages (see also Appendices A and B).

- **Recycle grease and oils when possible.** When using deep fat fryers, or processes that produce large amounts of plant or animal byproducts, separate the oils and fats from the food products. Recycle the fat and food products through one of the area grease rendering companies or food recyclers. If food recycling isn't an option, dispose of food products in sealed containers with your solid waste. In the future there may be better options for composting food waste.
- **Avoid using the food disposal.** Disposals and food grinders are bad for your system because they allow grease and food to leave your system ground up and suspended in liquid. These byproducts drop out and adhere to the walls of the pipe, fill up your pretreatment devices, and create a potential future backup.
- **Install grease traps.** These go inside the building near the sink and act as a holding facility for kitchen water before it is discharged into the side sewer. Grease traps usually require constant cleaning (every day for many businesses), but when sized and properly maintained, they effectively remove grease from kitchen wastewater.
- **Install a grease interceptor.** A grease interceptor is a large tank or vault (usually 750 gallons or larger) is installed outside the building and provides the most efficient way to remove grease and oils. However, it requires routine maintenance. The amount of maintenance depends on your use. Both grease interceptors and grease traps should be sized according to the Uniform Plumbing Code or other local standard.
- **Use bacteria (bugs).** Get permission from your local sewer agency before using these products.
- **Grease removal devices.** Several types of skimmers or dippers can mechanically remove grease from kitchen wastewater. They should be emptied and cleaned regularly.

Notice: If your establishment discharges more than the maximum amount of grease allowable, you may be liable for damage claims and cleaning costs resulting from grease discharges.

Education and Housekeeping: Periodic cleaning of the pretreatment device is imperative to insure that it is working properly. If no device exists, it is critical that kitchen staff understand how to clean dishes—that is, they must pre-scrape food waste into the solid waste, keep sink strainer baskets clean and replaced when necessary, etc.. Grease prevention procedures must be part of the standard training of new employees.

Good housekeeping is the first step in a good grease reduction program.
Here are some tips to help you eliminate grease before it becomes a problem:

- **Deep Fat Fryer:** Put waste grease in a container then pour it into the rendering barrel for recycling. Wipe the fryer down with paper towels and dispose of them with solid waste. Wash out the remaining the grease (there shouldn't be much).
- **Grill and Roaster/Broiler:** Empty drip pans into the rendering container and wipe everything off with paper towels. Dispose these with the solid waste. Any remaining grease can be washed.
- **Gravy and Sauce:** Wipe greasy pans and dishes prior to washing, putting leftover material into the rendering container. Residues should go out with the solid waste.
- **Frosting Containers:** Pre-scrape containers and wipe them with paper towels. Attempt to recycle or reuse large quantities and dispose of small quantities in the solid waste.
- **Butter and Butter by-products:** Pre-scrape utensils and containers prior to washing and dispose of non-recyclable materials in the solid waste.
- **Meat Scraps and Trimmings:** Wipe meat processing equipment clean with a paper towel prior to cleaning and put meat trimmings into the rendering container. Recycle floor sweepings or put them in the solid waste.
- **Avoid using the Garbage Disposal:** Garbage disposals send unwanted food byproducts into the sanitary sewer where they will drop out of solution, build up on the walls of your side sewer, and cause a backup.
- **Keep your Sink Strainers in place:** The best way to stop backups is to eliminate the source. Small food particles should be cleaned often from sink strainers and disposed as solid waste.
- **Recycle unprepared Food Waste:** Recycling is the preferred method of disposing of significant volumes of food waste. Most recycling companies provide rendering barrels or food waste barrels. Small quantities of food can be disposed in the solid waste if it's in a plastic bag or container.(See Appendix B for Contractor List)
- **Maintain Traps and Interceptors:** Small kitchen-sized traps should be cleaned at least weekly, sometimes more often. This can be done in-house, usually after hours, by kitchen staff. Larger vault-sized interceptors should be cleaned on a regular cycle, depending on the amount of grease accumulated.

▪ **Spill Prevention and Cleanup**

NOTE: These are recommendations for businesses to follow for spill prevention and cleanup:

- Store and transport liquids in containers with tight-fitting lids.
- Regularly inspect containers for leaks.
- Develop and implement an emergency spill prevention plan (see attached template). The plan should be posted at appropriate locations in the building (near areas that have a high potential for spills).
- Put an emergency spill containment and cleanup kit near the spill prevention plan.
- Train all employees about the plan and kit.
- Clean up all spills properly and immediately.

▪ Spill Prevention and Cleanup Plan (Template)

NOTE: This form might be used to provide a guideline for developing a written spill prevention plan. A spill kit should be part of the plan. It is recommended to post and educate employees about the plan when completed.

Company Name: _____

Address: _____

Phone Number: _____

Describe primary facility activities:

List types of chemicals used at the facility:

Provide Contact Names and Phone numbers for the following in the table below:

	Contact Names	Contact Phone Numbers
Owner		
Onsite Spill Cleanup Coordinator(s)		
Agencies to contact in the event of a spill. (i.e., Local City, County, and State agencies)		

Provide a small facility map that includes the following information:

- Location of Spill Kits
- Waste Storage areas
- Chemical Storage Areas
- Locations of Catch Basins on the Facility Property

Provide a short description of emergency cleanup and disposal procedures:

- a) _____
- b) _____
- c) _____
- d) _____

▪ **Spill Contact Directory: (Example)**

The following are examples of important agencies to list in a spill prevention plan:

- | | |
|---|----------------|
| ▪ Washington State Department of Ecology (NW region) | (425) 649-7000 |
| ▪ Fire Department | 911 |
| ▪ King County Industrial Waste (Monday thru Friday, business hours) | (206) 263-3000 |
| ▪ King County Public Health | (206) 296-4600 |
| ▪ Seattle Public Utilities | (206) 386-1218 |
| ▪ Seattle Surface Water Quality Hotline | (206) 684-7587 |
| ▪ After Hours Seattle Drainage Emergency Response | (206) 386-1849 |

▪ **Useful resources for regulators and restaurants:**

NOTE: Always respect copyrights when reprinting original material.

- Stormwater Journal; <http://www.forester.net/sw.html>
- EPA-NPDES regulations; <http://www.epa.gov/OWM/mtb/spillprv.pdf>
- Green Plan for The Food Service Industry; www.p2pays.org/food/main/oil.htm
- Washington Restaurant Association;
www.wrahome.com<http://www.des.nh.gov/SWTAS/greaseDisposal.htm>
- Pollution Prevention Regional Information Center; <http://www.p2ric.org/>
- King County FOG page; <http://dnr.metrokc.gov/wlr/indwaste/fog.htm>
- North Carolina FOG poster; <http://www.p2pays.org/ref/13/12327.pdf>
- North Carolina FOG poster (Spanish version); <http://www.p2pays.org/ref/13/12311.pdf>
- King County map page; <http://dnr.metrokc.gov/wlr/indwaste/map.htm>

■ Grease Trap Operation and Maintenance (TEMPLATE)

Note: This form may be used to track maintenance of grease traps inside of the building. Proper maintenance can help reduce stoppages in the plumbing and reduce blockages forming in main lines of the sewer collection system. Completion of this form will show the business's record of the maintenance for the equipment in service.

Company Information

Company Name: _____ Site Address: _____

[illegible]

1. Please mark one of the following: Cleaned (Grease/oil Removal), Inspected, or Pumped by professional cleaner.
2. List the quantity of grease and/or oil removed in approximate gallons.
3. Note the name of the employee and/or the company performing maintenance
4. The signature can be your employee or the employee of the company performing maintenance.

■ Choosing a Sewer Contractor:

NOTE: *If you have re-occurring problems, chances are you already have a contractor. Find someone with a proactive treatment program that will work to solve your problem and reduce your maintenance cost, not just jet your sewer lines. The following are some of the things a good contractor should offer:*

Education: The contractor should work with the kitchen staff to identify sources of grease and look for ways of eliminating them. They should also instruct the kitchen staff on alternatives to current practices that could be adding to the problem.

Maintenance: In addition to rodding and jetting, the full service contractor should set up a maintenance schedule and log book for any existing pre-treatment device, and assign the duties of cleaning the device to kitchen personnel. In the case of large separators, the contractor may inquire as to the maintenance schedule, and make recommendations for adjusting the cycle of cleaning if grease buildup persists.

Follow up: The contractor should check back periodically to insure the grease program they have implemented is still working. This includes checking the interceptor, log books, and talking with the kitchen staff. A good contractor should provide you with a program that will reduce the amount of jetting required for keeping your line clear, thus reducing your annual maintenance cost.

Pre-treatment Devices: Small devices require frequent maintenance and are less efficient. Larger devices allow for a greater storage time and more grease retention. Mechanical separators are fairly small units and work well as long as they are cleaned and maintained on a daily basis.

Section 4: Best Management Practices Manual for Fats, Oil, and Grease

Information, Pollution Prevention, and Compliance Information for Publicly-Owned Treatment Plants

NOTE: This manual was developed from a document produced by Brown and Caldwell for the Oregon Association of Clean Water Agencies (OACWA). This King County manual includes several modifications of the original document.

The original Brown and Caldwell/OACWA document was funded in part by the Oregon Department of Environmental Quality, through its Pollution Prevention Incentives for States grant awarded by the federal Environmental Protection Agency (Source: <http://www.oracwa.org>).

Fats, oil and grease, also called FOG in the wastewater business, can have negative impacts on wastewater collection and treatment systems. Most wastewater collection system blockages can be traced to FOG. Blockages in the wastewater collection system are serious, causing sewage spills, manhole overflows, or sewage backups in homes and businesses.

Two types of FOG pollutants are common to wastewater systems. Petroleum-based oil and grease (non-polar concentrations) occur at businesses using oil and grease, and can usually be identified and regulated by municipalities through local limits and associated pretreatment permit conditions. Animal and vegetable-based oil and grease (polar concentrations) are more difficult to regulate due to the large number of restaurants and fast-food outlets in every community.

This manual is written to provide municipal pretreatment staff, plus restaurant and fast food business managers and owners, with information about animal and vegetable-based oil and grease pollution prevention techniques for food service establishments. Use of the information provided in this manual can be effective in both reducing maintenance costs for business owners, and preventing oil and grease discharges to the sewer system.

Many of the nation's fast-food restaurant chains participate in FOG recycling programs. Ensuring that grease trap and grease interceptors are properly installed, and most importantly, properly maintained is more difficult. This manual focuses on proper maintenance of grease traps and interceptors, and includes inspection checklists for municipal pretreatment inspectors.

Knowledgeable municipal pretreatment staff, working with business owners, can effectively prevent oil and grease buildup, and associated problems, for both the sewerage agency and the restaurant owner.

Manual Contents

- **Frequently Asked Questions (FAQs)**
- **Best Management Practices (BMPs)**
- **Prohibitions**
- **Maintenance**
- **How It Works**
- **Compliance Inspection and Installation Checklists**

Frequently Asked Questions About Grease:

Is grease a problem?
What is a grease trap and how does it work?
What is a grease interceptor and how does it work?
Do I need a grease trap or interceptor?
Do I have a grease trap or interceptor?
Is the grease trap I have adequate?
How do I clean my grease trap?
Can you recommend a maintenance schedule?
What if I don't install a grease trap?
Who determines if I need a grease trap or interceptor?
How can I get in compliance?
What are the criteria for inspecting grease traps?

Is grease a problem?

In the sewage collection and treatment business, the answer is an emphatic YES! Grease is singled out for special attention because of its poor solubility in water and its tendency to separate from the liquid solution.

Large amounts of oil and grease in the wastewater cause trouble in the collection system pipes. It decreases pipe capacity and, therefore, requires that piping systems be cleaned more often and/or some piping to be replaced sooner than otherwise expected.

Oil and grease also hamper effective treatment at the wastewater treatment plant. Grease in a warm liquid may not appear harmful. But, as the liquid cools, the grease or fat congeals and causes nauseous mats on the surface of settling tanks, digesters, and the interior of pipes and other surfaces which may cause a shutdown of wastewater treatment units.

Problems caused by wastes from restaurants and other grease-producing establishments have served as the basis for ordinances and regulations governing the discharge of grease materials to the sanitary sewer system. This type of waste has forced the requirement of the installation of preliminary treatment facilities, commonly known as grease traps or interceptors.

What is a grease trap and how does it work?

A trap is a small reservoir built into the wastewater piping a short distance from the grease producing area. Baffles in the reservoir retain the wastewater long enough for the grease to congeal and rise to the surface. The grease can then be removed and disposed properly. See the "How It Works" section for a description of how the various components of a grease trap function.

What is a grease interceptor and how does it work?

An interceptor is a vault with a minimum capacity of between 500 and 750 gallons that is located on the exterior of the building. The vault includes a minimum of two compartments, and flow between each compartment is through a 90 degree fitting designed for grease retention. The capacity of the interceptor provides adequate residence time so that the wastewater has time to cool, allowing any remaining grease not collected by the traps time to congeal and rise to the surface where it accumulates until the interceptor is cleaned. See the "How It Works" section for a description of how the various components of a grease interceptor function.

Do I need a grease trap or interceptor?

Any establishment that introduces grease or oil into the sewage system in quantities large enough to cause line blockages or hinder sewage treatment is required to install a grease trap or interceptor. Grease interceptors are usually required for high volume restaurants (full menu establishments serving more than 40 meals per peak hour) and large commercial establishments such as hotels, hospitals, factories, or school kitchens.

Grease traps are required for small volume (fast food or take-out restaurants with limited menus, minimum dishwashing, and/or minimal seating capacity) and medium volume (full menu establishments operating 8-16 hrs/day and/or serving less than 40 meals per peak hour) establishments. Medium volume establishments may be required to install an interceptor depending upon the size of the establishment.

Do I have a grease trap or interceptor?

If the establishment is uncertain whether it has a grease trap or interceptor, the owner should contact the local sewer agency for the community served.

Is the grease trap I have adequate?

The Uniform Plumbing Code requires that no grease trap have a capacity less than 20 gallons per minute (gpm) or more than 55 gpm. The size of the trap depends upon the number of fixtures connected to it. The following table provides criteria for sizing grease traps:

Total number of fixtures connected	Required rate of flow, gpm	Grease retention capacity, lbs
1	20	40
2	25	50
3	35	70
4	50	100

How do I clean my grease trap or interceptor?

Refer to the [“Grease Trap and Interceptor Maintenance”](#) section.

Can you recommend a maintenance schedule?

Some establishments will find it necessary to clean their traps more often than once each week. If the establishment has to clean it too often, the owner should evaluate the effectiveness of food and grease handling practices. The owner also should consider installing a larger trap or interceptor. All grease interceptors should be cleaned at least twice each year.

If a grease trap is not maintained regularly it will not provide the necessary grease removal. The establishment should work out a specific cleaning schedule that is right for the establishment. All grease traps need to have the grease cleaned out periodically and no one likes to do the job. It is a dirty job. Running extremely hot water down the drain only moves the problem down stream. It does not go away. Catch the grease at the source! This is the most economical means to reduce all costs.

What if I don't install a grease trap?

If the establishment uses grease and oil in food preparation, it will eventually encounter a maintenance problem with a plugged building sewer line. The blockage can create a sewer backup situation and ultimately a potential health problem in the establishment. Someone will have to pay for removing the blockage. If the problem is in the building sewer line, then the establishment has direct responsibility for paying for the maintenance. If the blockage or restriction is in the public sewer main and it can be proven that the establishment is the cause of the blockage, then the establishment may have to pay for the public sewer to be maintained. Blocking a sanitary sewer line is also a violation of the federal Clean Water Act.

Who determines if I need a grease trap or interceptor?

When waste pretreatment is required by the local jurisdiction, an approved grease trap or interceptor must be installed according to the Uniform Plumbing Code or other standard of the local jurisdiction.

How can I get in compliance?

The establishment should contact its local jurisdiction.

What are the criteria for inspecting grease traps?

All food service establishments suspected of causing problems to the collection system or treatment facilities will be inspected. Some agencies use the following criteria to inspect grease traps:

Percent of Trap Filled	Trap Condition
25	Good
25 – 50	Fair
>50	Poor

If the trap is in “FAIR” condition, the establishment should be advised to keep an eye on the maintenance schedule. The cleaning frequency may need to be increased. If the trap is in “POOR” condition, the establishment may be issued a compliance order to have it cleaned immediately. The establishment may then be required to contact the local jurisdiction within 30 days to verify that the grease trap has been properly cleaned.

Best Management Practices (BMPs)

- **Prevent Blockages in the Sanitary Sewer System.**
- **Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System**
- **Prevent Fats, Oil, and Grease From Entering Creeks and Streams Through the Storm Drain System**

Prevent Blockages in the Sanitary Sewer System (Part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Train kitchen staff and other employees about how they can help ensure BMPs are implemented.	People are more willing to support an effort if they understand the basis for it.	All of the subsequent benefits of BMPs will have a better chance of being implemented.	Talk to the establishment manager about the training program that he/she has implemented.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	These reminders will help minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.	Check appropriate locations of "No Grease" signs.
Use water temperatures less than 140° F in all sinks, especially the pre-rinse sink before the mechanical dishwasher. The mechanical dishwasher requires a minimum temperature of 160° F, but the Uniform Plumbing Code (UPC) prohibits discharging the dishwasher to grease traps.	Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal or solidify in the sanitary sewer collection system as the water cools.	The food service establishment will reduce its costs for the energy – gas or electric – for heating the water.	Check boiler or hot water tank discharge temperature. Measure the temperature of the hot water being discharged from the closest sink.

Prevent Blockages in the Sanitary Sewer System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
<p>Use a three-sink dishwashing system, which includes sinks for washing, rinsing, and sanitizing in a 50-100 ppm bleach solution.</p> <p>Water Temperatures are less than 140° F. (See previous BMP)</p>	<p>The three-sink system uses water temperatures less than 140° F where a mechanical dishwasher requires a minimum temperature of 160° F. (See above)</p> <p>Note: The Uniform Plumbing Code (UPC) prohibits the discharge of dishwasher water to grease traps.</p>	<p>The food service establishment will reduce its costs for the energy - gas or electric - for heating the water for the mechanical dishwasher and for operating the dishwasher.</p>	<p>Measure temperature of the hot water at the three-sink system.</p>
<p>Recycle waste cooking oil.</p>	<p>There are many waste oil recyclers throughout Washington.</p>	<p>The food service establishment may be paid for the waste material and will reduce the amount of garbage it must pay to have hauled away.</p>	<p>Obtain name of recycler used.</p> <p>Review recycling records.</p> <p>Confirm records with recycler.</p>
<p>"Dry wipe" pots, pans, and dishware prior to dishwashing.</p>	<p>The grease and food that remains in pots, pans, and dishware will likely go to the landfill. By "dry wiping" and disposing in garbage receptacles, the material will not be sent to the grease traps and interceptors.</p>	<p>This will reduce the amount of material going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs.</p>	<p>Observe dishwashing practices.</p>
<p>Dispose of food waste by recycling and/or solid waste removal.</p>	<p>Some recyclers will take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed as solid waste in landfills by solid waste haulers.</p>	<p>Recycling of food wastes will reduce the cost of solid waste disposal.</p> <p>Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.</p>	<p>Inspect grease traps and interceptors for food waste accumulation.</p> <p>Confirm the recycler or solid waste removal company with the establishment manager.</p>

Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System (part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Witness all grease trap or interceptor cleaning and maintenance activities to ensure the device is properly operating.	Grease trap/interceptor pumpers may take shortcuts. If the establishment manager inspects the cleaning operation and ensures it is consistent with the procedures in the section on <u><i>Grease Trap and Interceptor Maintenance</i></u> they are more assured of getting full value for their money.	The establishment will ensure it is getting value for the cost of cleaning the grease trap or interceptor.	Inspect maintenance log or service invoices to determine cleaning frequency.
Clean undersink grease traps weekly.	<p>Undersink grease traps have less volume than grease interceptors.</p> <p>Weekly cleaning of undersink grease traps by the establishment's own maintenance staff will reduce the cost of cleaning the grease interceptor.</p> <p>If the establishment does not have a grease interceptor, the undersink grease trap is the only means of preventing grease from entering the sanitary sewer system. If the grease trap is not providing adequate protection, the local sewer agency may require installation of a grease interceptor.</p>	This will extend the length of the cleaning cycle for grease interceptors that the establishment maintains.	<p>Visually inspect the contents of the undersink grease trap.</p> <p>Inspect cleaning records.</p> <p>If grease traps are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased.</p>

Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Clean grease interceptors routinely.	<p>Grease interceptors must be cleaned routinely to ensure that grease accumulation does not cause the interceptor to operate poorly.</p> <p>The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged by the establishment.</p>	Routine cleaning will prevent plugging of the sewer line between the food service establishment and the sanitary sewer system. If the line plugs, the sewer line may back up into the establishment, and the business will need to hire someone to unplug it.	No more than 25% of the depth should be a combination of grease (top) and sediment (bottom).
Keep a <u>maintenance log</u> .	The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the pretreatment program to ensure that grease trap/interceptor maintenance is performed on a regular basis.	The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce cost.	<p>Inspect maintenance log.</p> <p>Provide the establishment with a sample maintenance log if it does not have one.</p> <p>Confirm the maintenance log with the grease hauler identified.</p>

Prevent Fats, Oil, and Grease from Entering Creeks and Streams through the Storm Drain System (part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Cover outdoor grease and oil storage containers. Some local jurisdictions will have BMPs in place for stormwater also.	Uncovered grease and oil storage containers can collect rainwater. Since grease and oil float, the rainwater can cause an overflow onto the ground. Such an overflow will eventually reach the stormwater system and nearby streams.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect containers for covers. Remove covers to ensure containers have not overflowed and do not have excess water.
Locate grease dumpsters and storage containers away from storm drain catch basins.	The farther away from the catch basin, the more time someone has to clean up spills or drainage prior to entering the storm drain system. Be aware of oil and grease dripped on the ground while carrying waste to the dumpster, as well as oil and grease that may "ooze" from the dumpster.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect the closest catch basin for signs of accumulated grease and oil.
Use absorbent pads or other material in the storm drain catch basins if grease dumpsters and containers must be located nearby. Do not use free flowing absorbent materials such as "kitty litter" or sawdust.	Absorbent pads and other materials can serve as an effective barrier to grease and oil entering the storm drain system.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Check the nearest catch basin and drainage paths for signs of grease and oil. Require absorbent pads if the basin is within 20 feet of grease dumpsters or containers, or if there are signs of grease in the catch basin at any distance. Discourage the use of free flowing absorbent material such as "kitty litter."

Prevent Fats, Oil, and Grease from Entering Creeks and Streams through the Storm Drain System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
<p>Use absorbent pads or other material to clean up spilled material around outdoor equipment, containers or dumpsters.</p> <p>Free flowing absorbent materials such as "kitty litter" or sawdust may be used for minor "spot spills" as long as all material is swept up.</p>	<p>Absorbent pads or materials can help clean up grease and oil that is spilled on the ground and prevent it from flowing to the storm drain system.</p>	<p>The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams.</p> <p>In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.</p>	<p>If grease and oil are observed on the ground in the storage area, recommend the use of absorbents to minimize movement of the grease and oil.</p> <p>Encourage the use of absorbent pads. Remind the personnel at the establishment that free flowing absorbent material, such as "kitty litter," should only be used for "spot spills." No residual free flowing material should remain that might flow into storm drains.</p>
<p>Routinely clean kitchen exhaust system filters.</p>	<p>If grease and oil escape through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains.</p>	<p>The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams.</p> <p>In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.</p>	<p>Inspect roof (if safely accessible) for signs of oil and grease.</p> <p>Require a maintenance schedule and records for cleaning exhaust filters. Cleaning is usually by washing, which will discharge the grease to the interceptor where it can be controlled.</p>

Prohibitions Relating to Discharge of Fats, Oil, and Grease (part 1 of 1)

DO NOT...	Basis
Do not discharge fats, oil, and grease in concentrations that will cause an obstruction to the flow in a sewer, or pass through or interference at a wastewater treatment facility.	Grease can solidify and trap other solid particles to completely plug the wastewater collection system. Some jurisdictions have specific concentration limits.
Do not discharge grease, improperly shredded garbage, animal guts or tissues, paunch manure, bones, hide, hair, fleshings, or entrails.	These materials in combination or alone can cause blockages and other operations and maintenance problems in the wastewater collection and treatment system.
Do not discharge wastewater with temperatures in excess of 140° F to any grease traps. Mechanical dishwashers are not allowed to discharge to grease traps.	<p>Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal and cause blockages further downstream in the sanitary sewer collection system as the water cools.</p> <p>Note: High temperature water, such as from a dishwasher, should be discharged to the remotely-located grease interceptor, if there is one. The remote location and the high volume of the interceptor allows the water time to cool so that there is not a problem with dissolving grease and moving it further downstream. The high volume also provides dilution of the detergents in the dishwasher waste.</p>
Do not discharge waste from a food waste disposal unit to any grease traps. Discharging food waste disposal units to a grease interceptor may require the installation of a larger interceptor.	The food waste will greatly reduce the capacity of the grease trap for retaining grease and can cause worse problems with blockages.
Do not discharge caustics, acids, solvents, or other emulsifying agents.	<p>Though emulsifying agents can dissolve solidified grease, the grease can re-congeal further downstream in the sanitary sewer collection system.</p> <p>Caustics, acids, and solvents can have other harmful effects on the wastewater treatment system and can be a hazard to employees working in the wastewater collection system.</p>
Do not discharge fats, wax, grease or oils containing substances that will become viscous between 32° F (0° C) and 150° F (65° C).	The temperatures shown are temperatures that can occur in the wastewater collection and treatment system. If these substances congeal, solidify, or become too viscous, they can cause blockages and other operations and maintenance problems.
Do not utilize biological agents for grease remediation without permission from the sanitary agency receiving the waste.	The biological agents may disrupt the biological treatment process at the wastewater treatment plant.
Do not clean equipment outdoors in an area where water can flow to the gutter, storm drain, or street.	Grease and dirt will be washed off the equipment and enter the storm drain system and flow to nearby streams.

Grease Trap and Interceptor Maintenance

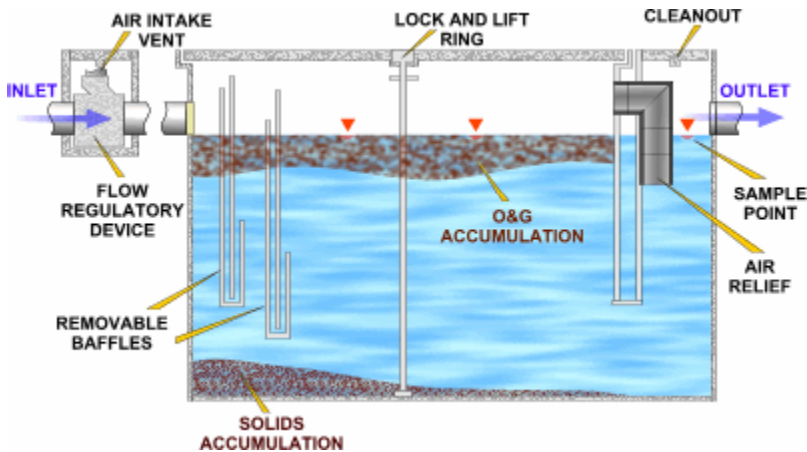
Grease trap maintenance is generally performed by maintenance staff, or other employees of the establishment. Grease interceptor (GI) maintenance, which is usually performed by permitted haulers or recyclers, consists of removing the entire volume (liquids and solids) from the GI and properly disposing of the material in accordance with all Federal, State, and/or local laws. When performed properly and at the appropriate frequency, grease interceptor and trap maintenance can greatly reduce the discharge of fats, oil, and grease (FOG) into the wastewater collection system.

The required maintenance frequency for grease interceptors and traps depends greatly on the amount of FOG a facility generates as well as any best management practices (BMPs) that the establishment implements to reduce the FOG discharged into its sanitary sewer system. In many cases, establishments that implement BMPs will realize financial benefit through a reduction in the frequency of required grease interceptor and trap maintenance. Refer to the “Best Management Practices” section for examples of BMPs that FOG generating establishments should implement.

WARNING! Do not use hot water, acids, caustics, solvents, or emulsifying agents when cleaning grease traps and interceptors.

Grease Trap Maintenance

A proper maintenance procedure for a grease trap is outlined below:



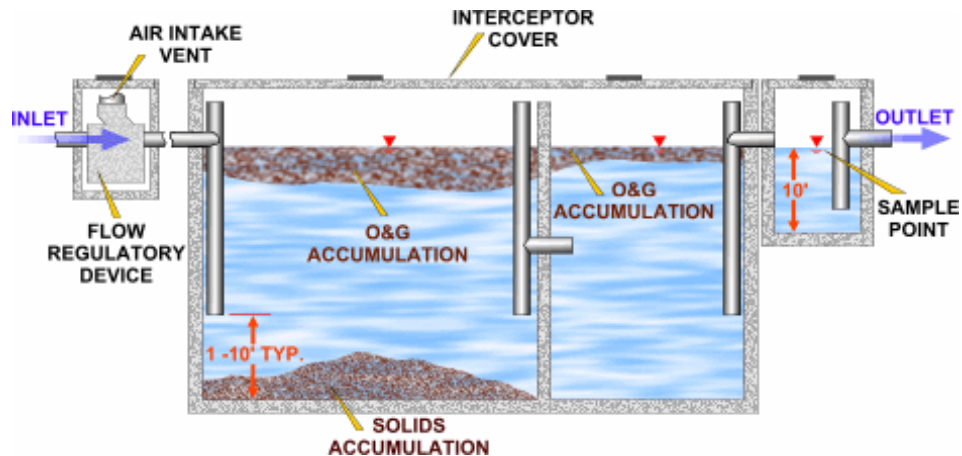
Step	Action
1.	Dip the accumulated grease out of the interceptor and deposit in a watertight container.
2.	Remove baffles if possible.
3.	Scrape the sides, the lid, and the baffles with a putty knife to remove as much of the grease as possible, and deposit the grease into a watertight container.
4.	Remove solids from the bottom with a strainer or similar device.
5.	Replace the baffle and the lid.
6.	Record the volume of grease removed on the <u>maintenance log</u> .
7.	Contact a hauler or recycler for grease pick-up.

Grease Interceptor Maintenance

Grease interceptors, due to their size, need to be cleaned by grease haulers or recyclers.

A proper maintenance procedure for a grease interceptor is outlined below:

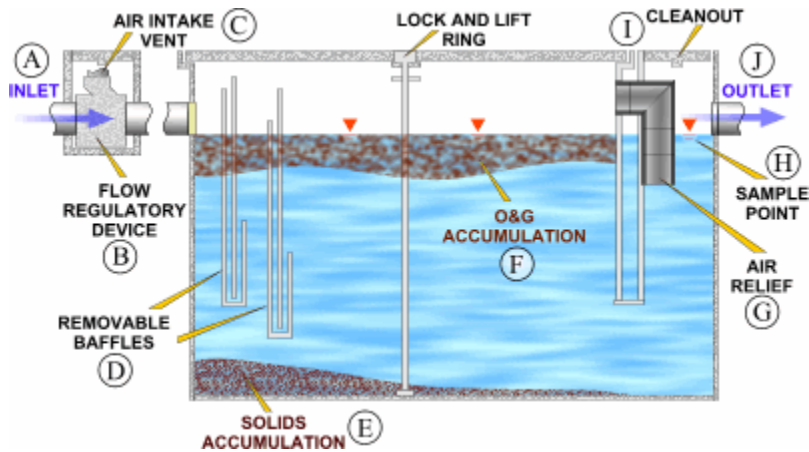
NOTE: *Since the establishment is liable for the condition of their pretreatment devices, the establishment owners/representatives should witness all cleaning/maintenance activities to verify that the interceptor is being fully cleaned and properly maintained. (Note: UPC does not require a flow-regulating device. Check with the local jurisdiction to see if they will require a flow regulating device.)*



Step	Action
1.	Contact a grease hauler or recycler for cleaning.
2.	Pump out the entire contents of the interceptor..
3.	Clean the sides, the lid, and the baffles to remove as much of the grease as possible.
4.	Replace the baffle and the lid.
5.	Record the volume of grease removed on the maintenance log.

How it Works

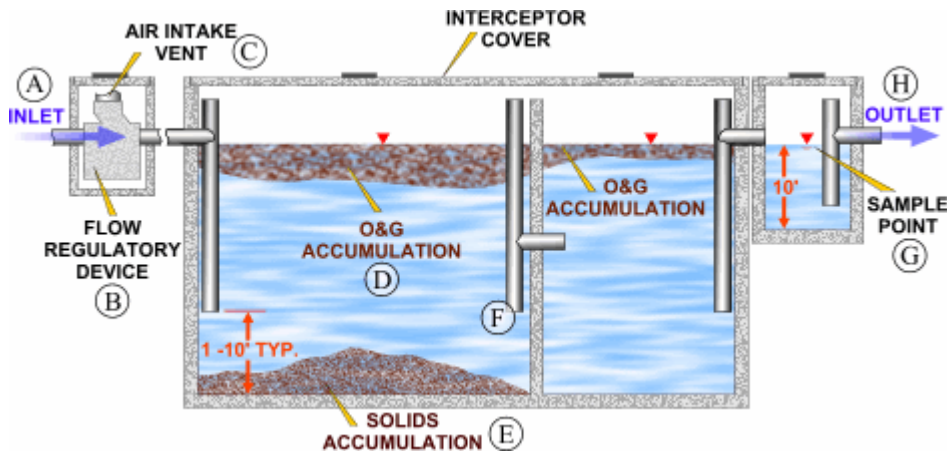
Grease Traps



A	Flow from four or fewer kitchen fixtures enters the grease trap.
B	An approved flow control or restricting device must be installed to restrict the flow to the grease trap to the rated capacity of the trap.
C	An air intake valve allows air into the open space of the grease trap to prevent siphonage and back-pressure.
D	The baffles help to retain grease toward the upstream end of the grease trap since grease floats and will generally not go under the baffle. This helps to prevent grease from leaving the grease trap and moving further downstream where it can cause blockage problems.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease trap and will need to be removed during routine grease trap cleaning.
F	Oil and grease floats on the water surface and accumulates behind the baffles. The oil and grease will be removed during routine grease trap cleaning.
G	Air relief is provided to maintain proper air circulation within the grease trap.
H	Some grease traps have a sample point at the outlet end of the trap to sample the quality of the grease trap effluent.
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 water exits the grease trap through the outlet pipe and continues on to the grease interceptor or to the sanitary sewer system.

How it Works

Grease Interceptors



A	Flow from undersink grease traps or directly from plumbing fixtures enters the grease interceptor. The UPC requires that all flow entering the interceptor must enter through the inlet pipe
B	Not required by UPC (Check with the local jurisdiction to see if a flow regulating device will be required).
C	An air intake valve allows air into the open space of the grease interceptor to prevent siphonage and back-pressure.
D	Oil and grease floats on the water surface and accumulates behind the grease retaining fittings and the wall separating the compartments. The oil and grease will be removed during routine grease interceptor cleaning.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease interceptor and will need to be removed during routine grease interceptor cleaning.
F	Grease retaining fittings extend down into the water to 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 that inspectors or employees of the establishment can periodically take effluent samples. Having a sample box is recommended by the UPC but not required.
H	Flow exits the interceptor through the outlet pipe and continues on to the sanitary sewer system.

Compliance Checklists

Installation Checklist (part 1 of 3)

Number	Item Description	Compliance Status¹
1.	Each grease trap serves not more than four single compartment sinks of the same depth. Grease trap is sized based upon the number of fixtures discharging to it. See FAQs .	
2.	Grease traps have a water seal of not less than two inches in depth or the diameter of its outlet, whichever is greater. (Note: Not specifically cited by UPC)	
3.	No food waste disposal unit or dishwasher is connected to or discharges into any grease trap.	
4.	Waste from toilets and urinals do not discharge to the grease interceptor.	
5.	Waste in excess of 140 degrees F is not discharged to any grease trap.	
6.	The vertical distance between the fixture outlets and grease trap weirs is as short as practical.	
7.	Grease interceptor is as close as practical to the fixtures served.	
8.	Each fixture connected to a grease trap is provided with an approved type flow control or restricting device installed in a readily accessible and visible location. Devices shall be designed so that the flow through the device or devices at no time exceeds the rated capacity of the grease trap or interceptor.	
9.	Each fixture discharging into a grease trap or interceptor is individually trapped and vented in an approved manner. The plumbing inspector should address this.	
10.	Each grease trap and interceptor is properly vented to allow air circulation throughout the entire drain system. The plumbing inspector should address this.	
11.	No water-jacketed grease trap or interceptor is installed.	
12.	Grease interceptor is easily accessible for inspection and cleaning and access does not require the use of ladders or the removal of bulky equipment.	
13.	There is a minimum of one access point into each compartment of the interceptor and no access points are greater than 10 feet apart. Each access opening is leak-resistant and cannot slide, rotate, or flip.	
14.	Location of grease interceptor is shown on approved building plans. Drawings of interceptor are complete and show all dimensions, capacities, reinforcing and structural design calculations.	

Installation Checklist (part 2 of 3)

Number	Item Description	Compliance Status ¹
15.	Grease interceptor is not installed in any part of a building where food is handled. Location shall meet the approval of the local jurisdiction.	
16.	Grease interceptor serves a single business establishment.	
17.	Grease interceptor has a minimum of two compartments and fittings designed for grease retention. The compartments shall be separated by partitions or baffles that extend at least 6 inches above the water level. The inlet compartment shall be 2/3 of the total interceptor capacity and shall have a minimum liquid volume of 333 gallons. The length of the inlet compartment shall be longer than the inside width of the interceptor.	
18.	The inlet and outlet fittings shall be a baffle tee (or similar flow device) that extends at least 4 inches above the water level to within 12 inches of the bottom of the interceptor. Flow between the separate compartments is through a baffle tee or bend that extends down to within 12 inches of the bottom of the interceptor.	
19.	The liquid depth shall be greater than or equal to 2'-6" and less than 6'-0".	
20.	There shall be a minimum of 9 inches of open vent space above the water level to the top of the interceptor. The airspace has a minimum capacity equal to 12-1/2% of the grease interceptor liquid volume.	
21.	The grease interceptor has at least one square foot of surface area for every 45 gallons of liquid capacity.	
22.	All waste enters the interceptor through the inlet pipe.	
23.	Grease interceptor cover is gas tight and has a minimum opening of 20 inches in diameter.	
24.	Grease interceptors located in areas of pedestrian or vehicle travel are adequately designed to support the imposed loads. Review of structural calculations may be required to verify adequacy.	
25.	Redwood baffles are not installed in grease interceptor.	
26.	A sample box is provided on the outlet side of the grease interceptor. This is recommended and may be required by the UPC so that the local jurisdiction can periodically sample the effluent quality.	
27.	Check to see if the grease interceptor is permanently and legibly marked with the manufacturer's name or trademark, model number, UPC certification mark and registration (if product is listed by the International Association of Plumbing and Mechanical Officials), and any other markings required by law.	

Installation Checklist (part 3 of 3)

Instructions for form:

1. Completely fill out general information.
2. For items that require some measurement of field data, the inspector should obtain the necessary data or information and record it under the column titled, "Field Data."
3. For all items marked in violation, note the fact that the establishment contact was notified of the violation and the contact's response.

¹An entry should be made for each item using the following codes:

- "C" – Compliance with the item
- "V" – Violation of the item (provide explanation in the notes)
- "NA" – Not applicable (provide explanation in the notes)
- "NC" – Not checked (provide explanation in the notes)

Establishment: _____

Address: _____

Installed by: _____

Signatures: _____

Date: _____

Notes: _____

Inspection Checklist (part 1 of 2)

Number	Item Description	Field Data	Compliance Status ¹
1.	The establishment has implemented a training program to ensure that the <u>BMPs</u> are followed.		
2.	"No Grease" signs are posted in appropriate locations.		
3.	The establishment recycles waste cooking oil and can provide records of this.		
4.	Water temperatures at all sinks are less than 140°F. (Make special note of the pre-rinse sink before the mechanical dishwasher or the sinks in the three-sink system.) Measure and record temperature.		
5.	The establishment "dry wipes" pots, pans, and dishware prior to rinsing and washing.		
6.	Food waste is disposed of by recycling or solid waste removal and is not discharged to the grease traps or interceptors.		
7.	Grease trap(s) is cleaned regularly. Note and record the frequency of cleaning.		
8.	Grease trap cleaning frequency is documented on a <u>maintenance log</u> (obtain a copy of the document).		
9.	Grease interceptor does not contain greater than 25% the depth in grease or solids accumulation. Estimate and record amount of grease in interceptor.		
10.	Grease interceptor is cleaned and maintained regularly. Note and record frequency of cleaning.		
11.	Grease interceptor cleaning and maintenance frequency is documented on a <u>maintenance log</u> (obtain a copy of the document).		
12.	Outdoor grease and oil storage containers are covered and do not show signs of overflowing.		
13.	Grease and oil storage containers are protected from discharge to storm drains.		
14.	Absorbent pads (preferred) or other materials (e.g., "kitty litter", etc.) are used to clean up any spills or leakages that could reach the storm drain. No residual free-flowing absorbent materials (e.g., "kitty litter", etc.) should remain that might flow into storm drains.		
15.	Storm drain catch basins show no signs of grease or oil.		
16.	The roof shows no signs of grease and oil from the exhaust system.		
17.	Exhaust system filters are cleaned regularly, which is documented by cleaning records. Note and record frequency of cleaning.		

Inspection Checklist (part 2 of 2)

Instructions for completing the form:

1. Completely fill out general information.
2. For items that require some measurement of field data, the inspector should obtain the necessary data or information and record it under the column titled, "Field Data."
3. For all items marked in violation, note the fact that the establishment contact was notified of the violation and the contact's response.

¹An entry should be made for each item using the following codes:

- "C" – Compliance with the item
- "V" – Violation of the item (provide explanation in the notes)
- "NA" – Not applicable (provide explanation in the notes)
- "NC" – Not checked (provide explanation in the notes)

Establishment: _____

Address: _____

Contact name: _____

Date: _____

Inspector: _____

Contact info: _____

Time Inspection Started: _____

Time Inspection Completed: _____

Signatures: _____

Notes: _____

Appendix A: Grease Pretreatment Devices Contractor List.

The businesses listed below provide maintenance or installation of grease pretreatment devices. This list is not intended to be inclusive of all contractors available and is being provided as an example of contractors who, as of this printing, are available to provide these services. However any licensed and bonded contractor can also provide these services (check your local yellow page under Engineers-Mechanical, Food Facilities-Consultants, Plumbing, Restaurant Equipment and Tanks-Cleaning). This list represents businesses that have made themselves known to the City of Seattle Public Utilities. The City of Seattle Public Utilities and the Interagency Regulatory Analysis Committee (IRAC) make no recommendations regarding specific businesses that perform grease maintenance and removal.

The following companies provide grease pretreatment and removal devices.

NAME AND ADDRESS	INTERCEPTOR INSTALLATION	MAINTENANCE
Area Recyclers (Baker Commodities, Seattle Rendering) P.O. Box 58368 Seattle, WA 98138 206-243-4781 Contact: Mike Bulleri	no	yes
Auburn Mechanical P.O. Box 249 Auburn, WA 98071 253-838-9780 Contact: Kim Johnson	yes (grease traps only)	no
Best Plumbing 4129 Stone Way N. Seattle, WA 98103 206-633-1700 Contact: Patti Taylor	yes	no
Darling International 2041 Marc Av. P.O. Box 1716 Tacoma, WA 98401 1-253-377-1775 Contact: Mike Olson	no	yes
Drainage System Consultants P.O. Box 46876 Seattle, WA 98146 206-242-7280 Contact: Dennis Presteen	no	yes
D.J. Hopkins Co. Inc. 5617 236th Av. N.E. Redmond, WA 98053-2506 425-868-8600 Contact: N/A	yes	no
Evergreen Sanitation P.O. Box 259 Lake Stevens, WA 98258 1-800-433-1678 Contact: N/A	no	yes

NAME AND ADDRESS	INTERCEPTOR INSTALLATION	MAINTENANCE
Northwest Cascade/Flow Hawks P.O. Box 73399 Puyallup, WA 98373 1-800-562-4256 or 425-471-1555 Contact: John Parker	yes	yes (sell and install Nibbler system for on-site sewer systems).
Mechanical Agents 8230 5 th Av S Seattle, WA 98108 206-464-1925 Contact: Gary Babb	yes	no
McKinstry Mechanical P.O. Box 24567 Seattle, WA 98124 206-818-1378 Contact: Tom Bagget	yes	yes
Mr. Rooter Plumbing 1120 S.W. 16 th St. Ste. 1A Renton, WA 98055 206-763-9010 Contact: Vinnie Sposari	yes (traps only)	yes (plumbing only)
Northwest Cascade (multiple locations) 800-444-2371	yes	yes
O'Neill Plumbing 6056 California Av. S.W. Seattle, WA 98136 206-932-5283 Contact: N/A	yes	yes
Roto-Rooter Plumbing 20508 56 th Av. W. Suite C Lynnwood, WA 98036 206-633-5506 Contact: Robin French	yes	yes
Rescue Rooter P.O. Box 719 Kent, WA 98035 1-800-869-6980	yes	yes (jetting and plumbing only - no pumping)
University Mechanical 11611 49 th Pl W. Mukilteo, WA 98275 206-364-9900 Contact: N/A	yes	yes

Note: It is prudent to obtain at least three bids. This is a competitive field and it is often possible to realize substantial savings by soliciting competitive bids. Once you have chosen a contractor be sure and obtain the necessary permits to do the work you desire. If you or your contractor have any problems, be sure and contact your city's grease management program for more information.

Appendix B: Grease Management Service Provider Contractor List.

The businesses listed below provide grease pick up, delivery to and in some cases rendering of restaurant grease for disposal. This list is not intended to be inclusive of all contractors available and is being provided as an example of contractors who, as of this printing, are available to provide these services. However any licensed and bonded contractor can also provide these services (check your local yellow pages). This list represents businesses that have made themselves known to the City of Seattle Public Utilities. The City of Seattle Public Utilities and the Interagency Regulatory Analysis Committee (IRAC) make no recommendations regarding specific businesses that perform grease management services.

The following companies offer different types of food and grease recycling services.
NOTE: They may require relatively large volumes to justify pickup.

NAME AND ADDRESS

Area Recyclers Inc.
(Baker Commodities, Seattle Rendering)
P.O. Box 58368
Seattle, WA 98138
206-243-4781 Contact: Mike Bulleri or Fred Roberts

Darling Restaurant Services
2041 Marc Av.
P.O. Box 1716
Tacoma, WA 98401
253-572-3922 Contact: Mike Olson

Pacific Rendering Co. Inc.
4023 West Marginal Way S.
Seattle, WA 98106
206-938-2061 Contact: Jim Johnstone

Rainier Ranch, Inc.
P.O. Box 301
Seahurst, WA 98062
206-243-2044 Contact: Roxann Wydick

Note: It is prudent to obtain at least three bids. This is a competitive field and it is often possible to realize substantial savings by soliciting competitive bids. Once you have chosen a contractor be sure and obtain the necessary permits to do the work you desire. If you or your contractor have any problems be sure and contact your cities grease management program for more information.

Appendix C: References.

- Brown and Caldwell – Fats, Oils, and Grease BMP Manual (<http://www.oracwa.org>)
- King County Public Rules and Regulations PUT 8-13 (PR)
- Washington Department of Labor and Industries, Washington Industrial Safety and Health, Washington Administrative Code (WAC 296-62 & 296-64)
- King County Code (KCC 28.84.060.)
- Revised Code of Washington (RCW Title 35.58.)
- Clean Water Act (33 U.S.C. 1251 et seq.).
- General Pretreatment Regulations (40 CFR 403).
- Uniform Plumbing Code



www.nyc.gov/dep

Michael R. Bloomberg, Mayor
Emily Lloyd, Commissioner

Best Management Practices
(BMPs)
for Non-Residential Direct and
Indirect Dischargers of Grease
to the Public Sewer System

From Title 15 of the Rules of the City of New York

§19-11 Best Management Practices (BMPs) for Non-Residential Direct and Indirect Dischargers of Grease to the Public Sewer System.

(a) Grease Interceptors shall be installed in waste lines which may receive grease from non-residential direct and indirect dischargers, including, but not limited to, those leading from pot wash sinks, woks, soup or stock kettles, food scrap sinks, scullery sinks, meat and/or poultry plumbing fixtures in all restaurants, kitchens, cafeterias, clubs, butcher shops, slaughterhouses, establishments where grease may be introduced into the drainage system. Sizing of grease interceptors shall comply with the criteria specified in this section, including applicable Tables I and/or II.

(b) All prefabricated grease interceptors shall be approved by the New York City Board of Standards & Appeals prior to July 10, 19991 or thereafter by the New York City Department of Building Material & Equipment Acceptance Division.

(c) The method for determining the minimum size/capacity of a grease interceptor is provided in Tables I and II following:

Table I		Table II	
Aggregate volume in cubic inches of all fixtures listed in this table.	Minimum grease interceptor retaining capacity for: pot sinks, food prep. Sinks, scullery sinks and floor drains which are used for washdown purposes only.	Aggregate volume in cubic inches of all fixtures, vessels and receptacles listed in this table.	Minimum grease interceptor retaining capacity for: scraper sinks, woks, automatic dishwashers and any fixture receiving discharge from soup and stock kettles.*
up to 2,462	8 (lb)	up to 1,231	8 (lb)
2,463 to 4,312	14 (lb)	1,232 to 1,656	14 (lb)
4,313 to 6,160	20 (lb)	1,657 to 3,080	20 (lb)
6,161 to 9,240	30 (lb)	3,081 to 4,620	30 (lb)
9,241 to 12,320	40 (lb)	4,621 to 6,160	40 (lb)
12,321 to 15,400	50 (lb)	6,161 to 7,700	50 (lb)
15,401 to 21,560	70 (lb)	7,701 to 10,780	70 (lb)
21,561 to 30,800	100 (lb)	10,781 to 15,400	100 (lb)
30,801 to 46,200	150 (lb)	15,401 to 23,100	150 (lb)
46,201 to 61,600	200 (lb)	23,101 to 30,800	200 (lb)
61,601 to 92,400	300 (lb)	30,801 to 46,200	300 (lb)
92,401 to 123,000	400 (lb)	46,201 to 61,600	400 (lb)

Note: Aggregate volume is the maximum volume (e.g. length times width times height to the overflow if rectangular) in cubic inches of all fixtures, vessels and receptacles that may flow simultaneously through the interceptor.

* Subject to the sizing requirements specified in sections 19_11(i) through (p).

If a premises contains fixtures listed in Table I and fixtures, vessels and/or receptacles listed in Table II, all of which are tributary to the same grease interceptor, then the method for determining the minimum grease interceptor retaining capacity in pounds shall be to separately calculate the retaining capacities for the fixtures in Table I and the fixtures, vessels and/or receptacles in Table II. These retaining capacities shall then be added together to obtain the total minimum grease interceptor retaining capacity required for such premises.

If the aggregate volumes listed in Tables I and II are exceeded, then a New York State Licensed Professional Engineer or a New York State Registered Architect shall extrapolate the appropriate grease interceptor sizing requirements.

(d) Vented flow control fittings shall be installed to insure that the flow capacity of the grease interceptor as specified by the manufacturer is not exceeded. Flow-control valves and/or fittings that are manually adjustable may not be used to limit flow to an interceptor.

(e) Grease interceptors must have a retention capacity in pounds of at least twice the numerical flow-through rate in gallons-per-minute.

(f) Grease interceptors shall remove an average of 90 percent or more of the grease or other extractable matter in the wastewater.

(g) The temperature of water entering a grease interceptor shall not exceed 180°F.

(h) All grease interceptors must be readily accessible for inspection by duly authorized employees of the Department.

(i) Grease interceptors for scraper sinks shall be sized in accordance with Table II, except that the minimum retaining capacity shall be at least 30 pounds. When determining the aggregate volume of all fixtures, vessels and receptacles specified in Table II that may flow simultaneously through an interceptor, a minimum of 3,465 cubic inches per scraper sink shall be used.

(j) Dischargers from automatic dishwashers must be tributary to a grease interceptor. Whether connected separately or in conjunction with other fixtures, the total volume in gallons of each automatic dishwasher shall be converted to cubic inches and added to the aggregate volume of Table II.

(k) Discharges from high-temperature sanitizer cycles of automatic dishwashers or from dedicated sanitization compartments of sinks need not be tributary to a grease interceptor.

(l) Floor drains which may receive grease must be tributary to a grease interceptor. The size of such grease interceptor shall be determined as follows:

(1) For floor drains where grease may be discharged during washdowns, Table I shall be used, and an additional 1,540 cubic inches per floor drain shall be added to the aggregate volume.

(2) Grease interceptors for floor drains which receive discharges directly from fixtures, receptacles and/or vessels shall be sized in accordance with the grease interceptor sizing requirements for the fixtures, vessels and/or receptacles tributary to it.

(3) For floor drains having a diameter larger than 3 inches or for trench and/or trough drains, a New York State Licensed Professional Engineer or a New York State Registered Architect shall extrapolate the appropriate sizing requirements of the tributary grease interceptor based on (1) and/or (2) above.

(m) For soup and/or stock kettles, the calculation of aggregate volume to be used in Table II shall be made based upon the total volume of all soup and stock kettles tributary to the grease interceptor even if the discharges from these vessels are made to a floor drain or similar fixture.

(n) Where woks, either alone or in conjunction with other types of fixtures, are tributary to a grease interceptor, each wok shall be deemed to contribute 1,617 cubic inches to the aggregate volume of Table II.

(o) Discharges from the cleaning of kitchen hoods which may extract grease from cooking operations must be made to receptacles or floor drains that are tributary to a grease interceptor. The sizing of the tributary grease interceptor must account for such discharges using standard engineering practice. For kitchen hoods with automatic rinse cycles, the tributary grease interceptor must be sized to account for the peak flow from the automatic rinse cycle as specified by the manufacturer.

(p) Interceptors smaller than those described in Tables I and II may be used, but only if connected in parallel to another interceptor(s), and the aggregate capacity of such interceptors must either equal or exceed the interceptor capacity required by Tables I and/or II. For parallel connections, vented flow control fixtures must be installed on each interceptor.

(q) Grease interceptors shall be properly installed, maintained and operated to insure that the requirements of this section and other applicable sections of the regulations are met. This shall include routine cleaning and grease removal from the interceptor as needed to insure the proper operation of the interceptors.

(r) New York State Licensed Professional Engineers and New York State Registered Architects may petition the Commissioner in writing for acceptance of an alternative pretreatment device, technology, equipment or procedures varying from, but equivalent to, those listed in this section. Such a petition must contain detailed documentation and calculations substantiating their equivalency. In no event shall any alternative pretreatment device, technology, equipment or procedures be less stringent than the requirements of this section.

(s) Notwithstanding any other provision of this section, (1) existing grease interceptors shall conform to the specific requirements of this section no later than one year after the effective date of this section, and (2) grease interceptors installed after the effective date of this section pursuant to an application filed before such effective date shall conform to the specific requirements of this section no later than 90 days after such effective date.

(t) Notwithstanding anything contained in section 19-11 the Commissioner in his discretion may require any grease interceptor to be installed at any time and to have a retention capacity equal to those listed in Tables I and/or II.



DESIGN CONSIDERATIONS AND DISCUSSION OF LARGE OUTDOOR GREASE INTERCEPTORS

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INTRODUCTION

In many jurisdictions, there is a lack of clear regulatory guidance concerning the effective pretreatment of grease-laden wastewater from institutional and commercial food handling establishments. This manual strives to provide clarification on the field-proven performances of the available technologies.

The National Precast Concrete Association (NPCA) has produced this document due to a lack of definitive literature on the design, construction and operation of large, outdoor ‘Grease Interceptors.’ There is a pressing need to demystify the basic principles of grease interceptor operation and performance.

The vision for this document is for it to be an informational tool that helps specifiers and municipalities understand the best way to remove grease and solids from commercial and industrial wastes. This paper will discuss methods of achieving measurable, effective, efficient and safe grease/solids removal from wastewater flows that meet the country’s tightening effluent discharge requirements.

Grease Removal

The purpose of a grease interceptor is to reduce to acceptable levels the amount of Animal and Vegetable Fats Oils and Greases (AVFOG) in wastewater in conformance with established standards. Grease interceptors should provide easy access for maintenance, be large enough to hold large quantities of grease (to reduce pumping/cleanout costs) and be outdoors to facilitate easy inspection and reduce the possibility of food contamination during cleanout.

Nonexistent, poor or ineffective grease removal from wastewater flows before they are discharged to public sewer systems results in the release of large quantities of grease into these systems. The grease eventually solidifies, causes stoppages within the piping networks and creates problems at treatment plants that are extremely costly and time-consuming.

Solidified grease can also cause sewer back ups that pose unnecessary health hazards as raw sewage backs up into residences or commercial establishments. The city of Stockton, California concluded that “properly plumbed [and maintained] ... grease [interceptors] ... do protect the sewer system and are justified for those sewer systems that are vulnerable to grease clogging.” (Stockton Grease Trap Study)

Across the country, a Howard County Maryland family filed suit against the County Executive and Public Works Director claiming their children became seriously ill from a sewage spill caused by a grease blockage the county knew about but did not address. Clearly, prevention is preferable to the potential problems caused when a sanitary sewer line backs up.

User Pay

The general doctrine of most public or governmental bodies these days is one of “user pay,” especially when it comes to garbage or waste. Therefore it makes sense that the persons or establishments that create waste grease should be responsible for its collection and disposal – and they shouldn’t cause unnecessary tax payer expenditures to handle sewer blockages and grease overloads at sewer treatment plants.

DISCUSSION

Several studies were reviewed which used observation and sampling of field conditions (See Appendix A). In these studies, several similarities stand out. The sample data indicates that undersized interceptors or traps performed very poorly when compared to effluent quality guidelines. Only properly sized, outdoor grease interceptors provided acceptable effluent quality. For example, the city of Austin, Texas study concluded that **retention time was the single most important factor in grease removal, and that large volume outdoor grease interceptors are required for acceptable retention times.**

Care must be taken when comparing studies and testing methods evaluating the efficiency of FOG removal. Actual wastewater usually contains various emulsifying chemicals, and the mixture is agitated before discharge to the trap or interceptor. While it would be impractical to evaluate all the variables that make up wastewater, it is important to remember that increasing the retention time (by increasing size) allows time for the FOG’s to separate.

Effluent Discharge Criteria

Regulatory bodies set different effluent discharge limits all around the country. Presently, there is no one recognized maximum allowable level of AVFOG discharge, although the different values are relatively similar. These similarities can provide the basis for one standard that satisfies all regulatory bodies. (If your local authority is not listed here and it publishes a maximum discharge standard, please forward it to NPCA for consideration in future updates to this paper.)

Some examples of jurisdictions which have stated measurable maximum allowable grease discharge requirements are as follows:

U.S. E.P.A.	150mg/l
Dallas, Texas	200mg/l
Toronto, Ontario	150mg/l
Austin, Texas	200mg/l
Fort Wayne, Indiana	200mg/l
Kansas City, Mo.	200mg/l
Stockton, Ca.	200mg/l

Jurisdictions that have maximum allowable grease discharge limits in the range of 150 to 200mg/l, and that measure and enforce these limits, can greatly reduce the costs associated with grease in a public sanitary sewer system.

Grease Traps

It is evident, as revealed by these and other studies and through discussions with various authorities having jurisdiction (AHJ), that indoor “grease traps” do not adequately remove greases and solids from commercial/industrial waste flows to meet newer effluent discharge requirements. Towards this end, the city of Cary, North Carolina’s Grease Code requires a minimum of twelve (12) minutes retention time, since large volumes of grease, which had been previously separated from the wastewater, were flushed out of the under-the-sink traps. Moreover, the city of Saint Petersburg, Florida has prohibited new installations of indoor “grease traps” and requires the large, outdoor grease interceptor for all new establishments. (Sec 27-227, 2(c)) The Johnson County, Kansas Environmental Department has also prohibited new installations of indoor grease traps, effective January 1, 2003. The City of Stockton, CA concluded in their study that small interceptors sized by PDI formulas have too short a retention time and further states, “a grease interceptor may not be installed in any part of a building where food is handled.”

Factors Affecting Interceptor Sizing

Obviously, the properties of grease-laden water must be considered when determining the size of an effective grease interceptor. For instance, greases and oils have a lower specific gravity than water – when left undisturbed a grease-laden mixture will separate, the grease and oil floating to the top. Another factor to consider is the AVFOG’s congealing temperature. Other factors affecting interceptor size include:

1. **Retention Time:** Retention time is the amount of time it takes one particle of influent to travel through the system and discharge out of the interceptor. It is a critical factor in removing an adequate amount of AVFOG. The wastewater entering an interceptor requires a certain amount of time for gravity separation of the AVFOG to occur.
Therefore, designing an interceptor to maximize retention time is the most important factor in its effectiveness. The various studies and specifications referred to in this paper approach retention time differently and calculate differing retention times – however, all agree that the AVFOG must spend sufficient time in an interceptor to allow for gravity separation.
2. **Flow rates:** Wastewater flow rates and retention times are inversely proportional. The greater the flow rate, the lower the retention time. There is no singularly accepted method for calculating the anticipated flow rate but most studies and AHJ’s agree that it must be taken into account when sizing an interceptor.
3. **Concentration:** The strength of influent waste is another important factor. An effective interceptor should be large enough to accumulate a significant amount of grease without

affecting the retention effectiveness, but this should not be the predominant sizing factor, as cleaning frequencies should be factored in.

4. Pumping Frequency: The size shall be sufficient to optimize cleaning and pump outs (to reduce an owner's operating costs.)
5. Chemistry: Wastewater temperatures and emulsifying chemicals affect the rate at which greases and oils will separate from the wastewater. Therefore interceptors should be large enough to act as a heat sink, giving new influent the time to cool and emulsifiers time to release their hold on greases and oils.

Physical Sizing of an Interceptor

While there are many different schools of thought as to sizing of grease interceptors, there are some consistent themes when comparing a number of proven formulas. Most of the proven sizing formulas take into account the maximum flow rate into the tank (influent). However, the method of establishing a specific influent flow rate differs from one AHJ to another. The Uniform Plumbing Code (UPC) calculates the influent flow rate as 6 gallons per meal if establishment has a dishwasher or 5 gallons per meal without a dishwasher. The EPA calculates the influent flow rate as 5 gallons per meal. Other AHJ's calculate this by taking the sum of the maximum flow rate per fixture over all fixtures such as sinks, dishwashers, floor drains etc. A table of typical fixture flow rates follows:

Typical Plumbing Fixture Flow Rates (from U.S. EPA)

Type of Fixture	GPM
Small residence or apartment sink	5
Large residence or dishwasher	10
Restaurant kitchen sink	15
Single compartment scullery sink	20
Double compartment scullery sink	25
2 single compartment sinks	25
2 double compartment sinks	35
Restaurant dishwasher (up to 30 gal. Cap.)	15
Restaurant dishwasher (30 to 50 gal. Cap.)	25
Restaurant dishwasher (50 to 100 gal. Cap.)	40
Floor drain	5

AHJ's throughout the country rely upon factors such as flow rates, fixture units, number of meals served and hours of operation to determine the retention time. An objective view at influent flow rate calculations results in a single fact: AHJ's agree that retention time is the single most important factor in determining interceptor size.

Formulas for Calculating Interceptor Size

Our research has found these calculations to be most commonly used, or those for which the AHJ has performed documented research. This is not intended to be an exhaustive list:

- **Johnson County, Kansas Sanitation Division**
 - The total size of the grease interceptor must be 30 times the maximum influent flow rate. This is the total size, not the grease capacity.
- **Uniform Plumbing Code (Appendix H):**

$$\left(\#Meals / peak.hour \right) * (flow.rate) * (retention.time) * (storage.factor)$$

where:

#meals/peak hr.= total number of seats

Flow rate (with dishwasher) = 6 gallons

Retention time (with dishwasher) = 2.5

Storage factor (16 hours of operation) = 2

- **United States Environmental Protection Agency (USEPA)**

$$(\#seats) * \left(\frac{gal}{meal} \right) * (storage.factor) * \left(\frac{hours.open}{2} \right) * (loading.factor)$$

where:

#gal/meal = 5

Storage Factor = 1.7

Hours Open = 8

Loading factor = 1

- **Washington Suburban Sanitary Commission**

$$(Max.flow.rate) * (Diversity.factor) * (Retention.time)$$

In this sizing formula, the maximum flow rate is defined as the sum total flow rate calculated by individual fixture discharge sizes. The diversity factor and retention time are as follows:

Diversity Factor = 0.2 for light grease

0.3 for moderate grease
0.4 for heavy grease
Retention time = 24 minutes standard (to be no shorter than 8min)

- **Austin, Texas**

$$\frac{(Total.fixture.units.value) * 7.5 * (12 \text{ min})}{2.5}$$

Here, the total fixture units refers to the UPC calculation based on the number of sinks, dishwashers, etc. 12 minutes refers to retention time.

- **Stockton, California**

$$(Total.maximum.flow) * (10 \text{ min})$$

The total maximum flow in this formula refers to the total gallons per minute of grease-laden water discharged to the tank.

Interceptor Size Comparisons - Example

It may not be immediately obvious, but a grease interceptor sized according to one standard may need to be sized differently when another standard is applied, even if all the variables are the same. For example, a small restaurant (A), a medium sized restaurant (B), and a large restaurant (C) have the following characteristics:

Restaurant	No. of Seats	Number of meals per peak hour	No. of Sinks	(D)ouble Sinks or (S)ingle?	No. of Dishwashers	Dishwasher Capacity (EPA) (gal)	No. of Floor Drains	Influent Discharge Rate (EPA)	Influent Discharge Rate (UPC)	Total Fixture Units (UPC)
A	20	20	2	S	1	30	1	45	50	11
B	100	100	3	D	2	40	3	140	123	30
C	200	200	6	D	5	75	5	400	275	67

Table 2 – Influent Discharge Calculations for Restaurants A, B & C

As **Table 2** shows, the hypothetical influent discharge calculated using this data varies depending on whether the UPC or EPA formulas are used. This will undoubtedly have an effect of the interceptor sized for each restaurant. Moreover, the interceptor size required by each of the municipalities discussed earlier will also differ for each restaurant. **Table 3** calculates the size (in gallons) of the grease interceptor each municipality would require:

Restaurant	Johnson County, Kansas Sanitation Division	UPC	EPA	Washington Suburban Sanitary Commission	Austin, Texas	Stockton, California
A	1350	600	680	432	396	450
B	4200	3000	3400	1344	1080	1400
C	12000	6000	6800	3840	2412	4000

Table 3 – Grease Interceptor Size (Gal)

To understand the varying sizes presented here, it is important to note that each jurisdiction requires distinct interior designs and baffling systems that may affect the minimum required sizes. When designing to a particular formula, it is important to contact the appropriate jurisdiction for the most recent grease interceptor design criteria.

Pumpout

The above results give a range of acceptable interceptor sizes proven effective by various AHJ's. The effectiveness of each unit is directly related to the amount of grease it receives, the maximum flow rate through it, and the cleaning frequency.

The cost per pumpout can be relatively high compared to the original cost of the structure. This is especially true of smaller expensive interceptors less than 1000 gallons. It is effective to keep ongoing pumpout costs at a minimum by installing a grease interceptor with sufficient volume to contain impurities longer. A larger interceptor that requires fewer pumpings per year can be cost effective for the owner.

With this in mind, many AHJ's have specified minimum sizes for their grease interceptors. Any of the above formulas would provide adequate grease removal, but all would require different pumpout frequencies. One exception is noted: Restaurant (A) should have a minimum 750 gal interceptor. This minimum size is consistent with the minimum sizes specified by UPC, EPA, and various cities throughout the country.

Simple Structural Design Considerations

The following two facts help determine placement of an interceptor:

1. Grease interceptors are large, heavy and contain a wide variety of contaminants. Consequently, interceptors should be located outdoors of an establishment, especially food preparation establishments.
2. Grease-laden water should flow to the interceptor driven by gravity. Consequently, the interceptor should be placed at a lower elevation than the establishment.

For these reasons, it is most effective to bury an interceptor outdoors. This means that an interceptor must be designed to sustain not only the pressures of the liquids within it, but also the earth pressures around and over it. However, the interceptor should be buried close to the establishment, and frequently this means that it will be in an area of vehicular traffic. If this is true, the interceptor will need to have a structural “traffic rating.”

When considering the structural needs for burial, it should also be noted that access to the interceptor for cleaning will be required. These accesses should be readily available to the maintenance personnel and may also need to be “traffic rated.” Frequently the best solution for these access points is a steel or cast iron frame and cover.

Interior Design of an Interceptor

It is generally accepted that a grease interceptor should have sufficient retention time to allow for settling and the liquid depth should be between 30" and 72". These figures ensure a retention time that gives grease time to separate.

Another important factor in the design of an interceptor is partitioning and baffling. Various regulations and studies discuss the need for one or two partitions and their effect on grease removal. What is clear is that there should be at least one partition wall in an interceptor to keep floating grease away from the outlet. There should also be an inlet baffle designed to divert incoming flows from a straight-line path to the outlet. An outlet baffle keeps grease that gets past the partition from escaping out of the interceptor. Studies have shown that performance can be further enhanced with the use of effluent filters on the outlet. This is of particular significance where additional protection is desirable for on-site disposal situations.

All components should be made of durable materials.

Venting and Odor Control

Odor issues with outdoor interceptors can be eliminated with a properly designed grease interceptor and the associated building's plumbing/venting system. Most building codes require the interceptor be vented back through the inlet plumbing and to a roof vent. In almost all cases odor problems are caused by improper venting of the building's plumbing system. This causes

the gases to build up in the interceptor and allows them to escape leading to odor problems. Proper building ventilation and interceptor design along with gastight manhole covers will prevent odors from escaping the interceptor and allow them to escape through the roof vents.

Clean out accesses must also be considered when designing an interceptor. They must allow enough room for a pumper to effectively break up the grease mat. They should also be located so that the inlet and outlet baffles can be accessed and there should not be more than 10 feet between any two accesses for grease removal reasons.

Operation

The manner in which the establishment handles grease is critical to the effective performance of an interceptor. A plan for handling greases and oils that are waste but not part of the wastewater flows must be developed and followed. Kitchen pretreatment is by far the most effective means of grease and oil removal. It would be difficult and expensive to design and maintain interceptors for receiving grease volumes from anything other than necessary wash-up and cleaning. Employees should be made aware that excessive use of water or emulsifying detergents could detrimentally affect the performance of an otherwise effective interceptor.

Maintenance and Testing

All interceptors require a certain amount of maintenance to maintain an acceptable level of effluent AVFOG. This requires a certain frequency of pumping and inspection which is hard for any AHJ to predict for a new installation and it can be difficult for an AHJ to ensure compliance. For these reasons, it may be best to require the owner or establishment to obtain and maintain a maintenance contract with a qualified (and possibly approved) waste removal business. In fact, many jurisdictions require such contracts for the maintenance of grease interceptors because of the lack of accountability associated with the maintenance of indoor grease traps. For new installations, a monthly or bi-monthly cleaning may be required until the maintenance company can establish a predictable level of AVFOG accumulation for that particular facility. Thereafter, required cleanings may be extended until such a point where the optimum pumping frequency is found. The AHJ may also require either the owner or the maintenance company to notify the AHJ when a scheduled cleaning is performed (or missed) or when a contract is not renewed.

Automated monitoring systems are now available that monitor the levels of FOG's and solids in the tank. They allow the establishments to keep good maintenance records, and optimize pumping costs. These systems provide documentation for the AHJ and can even be monitored offsite by an AHJ or a management company.

CONCLUSION

There are many important factors in effective grease/oil removal from wastewater flows. Not all studies or AHJ's agree on all these factors or on their order of importance, but there are enough similarities to draw a number of conclusions.

Large outdoor grease interceptors are the best method for AHJ's to pre-treat kitchen waste. Every independent study that we've encountered regarding interceptor performance concludes that only large outdoor interceptors can provide a level of acceptable AVFOG removal. These studies were all conducted by agencies with maximum allowable discharge requirements.

Only large outdoor interceptors can provide maintenance accountability because of their reliance on third party maintenance contractors. When maintenance is provided by a third party the invoicing process creates a paper trail that can be relied upon by the AHJ to prove that maintenance is occurring. This assurance does not exist for self-maintained grease traps.

Finally, outdoor interceptors provide a level of health safety that indoor traps cannot provide. By physically removing the collection, maintenance and disposal of grease outside the kitchen area, outdoor interceptors eliminate the health concerns created by providing these functions in the same workspace as food preparation.

Glossary

Baffle: A device either installed after construction or built into the interceptor used to modify the wastewater flow pattern.

Clear space: Volume of liquid within an interceptor that is free of FOG and solids.

FOG: animal and vegetable fats, oils and grease used for the preparation of and resulting from the cooking of food. Its composition is principally complex manufactured vegetable oils with smaller proportions of fish oils and animal fats. Also present are food particles, detergents, suspended solids, and emulsified grease particles. The FOG produced by cooking, such as chicken fat and animal fats from frying hamburgers solidify in the piping network at lower temperatures and may be solely responsible for the sewer stoppages.

Fixtures: pot sinks, preparation sinks, and dishwashers.

Flow rate: amount of wastewater flow

GPM: Gallons per minute; flow rate unit

Grease interceptor: a containment structure installed outside a building and specifically designed to trap food related suspended grease and solids before discharging into the sanitary sewer system. They are usually constructed of precast concrete.

Grease trap: a small containment structure designed to withhold portions of suspended grease and solids produced by food facilities before they enter the building plumbing. These are located inside facilities near the grease source.

Influent: FOG-laden wastewater discharged into the interceptor from food preparation areas.

Invert: the bottom, inside of a pipe.

Loading level: the average concentration of FOG in one gallon of wastewater discharging into the interceptor.

Loading rate: the frequency in which FOG laden wastewater enters the interceptor

Pumpout: To completely empty a grease interceptor, to include the scraping of the sidewalls

Retention time: the amount of time wastewater spends in the interceptor from the instant it leaves the inlet pipe to the time it enters the outlet pipe.

UPC: Uniform Plumbing Code

Wetted capacity: The total volume of liquid measured from the top of the sludge accumulation on bottom to the top of the liquid line.

Bibliography

City of St. Petersburg Grease Management Program. St. Petersburg City Code. 20 June 2002. 5 February 2003.
< <http://www.stpete.org/grease.htm>>

City of Stockton – SMC. Stockton Municipal Code, Chapter 7 - Health and Sanitation Code, Part III - Wastewater Discharge and Treatment Works, Division 2 – Regulations. 10 June 1993. 6 December 2002.
<http://www.stocktongov.com/clerk/smc/ch07_partIII_div02.htm>

Goldberg, Lisa. “Robey and Irvin named in lawsuit.” The Howard County Sun. 4 September 2002: 1B, 5B

International Association of Plumbing and Mechanical Officials. Uniform Plumbing Code – 2000 Edition. Walnut, California: International Association of Plumbing and Mechanical Officials, 1999.

Johnson County, Kansas Environmental Department. The Johnson County Code of Regulations for Sanitary Sewer Use, 2003 Edition. 18 December 2002. 5 February 2003.
< http://jced.jocoks.com/food_protection/interceptors/grease_summary.htm>

Town of Cary, North Carolina. Fats, Oils, and Greases Control Ordinance. 10 December 1998. 5 February 2003.
< <http://www.townofcary.org/grease/fogordinance.pdf>>

United States Environmental Protection Agency. Design Manual – Onsite Wastewater Treatment and Disposal Systems. Washington, DC: Office of Water Program Operators, October 1980.

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APPENDIX D: INSPECTION CHECKLIST AS PREPARED FOR TORRINGTON CONNECTICUT

DOCUMENT 11

INSPECTION CHECKLIST

This document provides the basic instructions for inspection of Food Preparation Establishments in the TAHD. **Guidance is provided on each of the inspection points listed on the inspection checklist provided at the end of this Document.** This discussion is not meant to be a thorough presentation of activities occurring during an inspection.

Food Preparation Establishment Inspection Guidance

One of the primary challenges to overcome in any grease pretreatment program is continuance of FOG management techniques at facilities with high employee turnover. This high turnover will require continuing training. Typically some degree of training occurs concurrently with the inspection. To aid the inspector in providing this training to Food Preparation Establishment staff, as well as provide training for the inspector, the following guidance is provided on facility inspections.

General Information (Items 1-4)

1. Registered Pretreatment Equipment – Every Class III and Class IV facilities must have a permit for FOG pretreatment equipment. Facilities that do not cook or wash dishes at their site must file an application for alternate equipment or maintenance.

2. Properly Installed FOG Pretreatment Equipment – Grease pretreatment equipment includes an outdoor FOG interceptor, an AGRU, or a passive indoor trap. Passive indoor traps are permitted only as alternative FOG pretreatment equipment. Kitchen sewer lines are to be separate from sanitary sewer lines. If a facility is thought to have connections between the kitchen and sanitary sewer, dye tablets may be used to confirm a cross connection. Inspectors should confirm that FOG interceptors are installed in the proper orientation. It is not uncommon for outdoor and indoor FOG interceptors to be installed backwards (kitchen drain connected to the trap outlet and the trap inlet connected to the municipal sewer). Improper installation allows FOG to be released to the sewer system and reduces capacity of the unit.

The following kitchen fixtures must be connected to one of these FOG management devices:

- Pot sink;
- Prerinse sink;
- Any other sinks into which FOG may be introduced;
- Tilt kettles or tilt braising pans;
- Floor drains or sinks into which kettles may be drained;
- Wok station drains;
- Automatic hood wash units;
- Dishwashers without prerinse sinks; and
- Any other fixtures or drains that can allow fats, oils and grease to be discharged into the sewer.

3. Was FOG Interceptor Inspected? – It may not be practical to open outdoor FOG interceptors on every visit to a facility. This item is included on the inspection checklist to allow tracking of the date of the last inspection of the inside of the FOG interceptor.

4. FOG Interceptor Accessible for Maintenance? – All FOG management equipment must be accessible for maintenance. Outdoor traps must not have dumpsters, tables or other fixtures or equipment located above them. Indoor FOG management equipment must not have items stacked or have shelves or other kitchen fixtures placed in locations that would prevent access for maintenance. Indoor traps should be installed at an elevation that allows access. Common inconvenient locations include behind piping, suspended just below the ceiling in basements, and under sinks that provide insufficient clearance to remove the lid. These inconvenient locations must be avoided to allow routine maintenance.

Major Violations Outdoor FOG Interceptors (Items 5-9)

FPEs are required by the Municipal Sewer Use Ordinance to admit properly identified FOG inspectors into their facilities. FPEs are further required to provide the labor to open FOG pretreatment equipment. All special equipment or tools to open outdoor FOG interceptors should be provided by the inspector. FPEs will not typically open outdoor FOG interceptors themselves but rely on the Grease Trap/Interceptor Cleaner to open, clean and inspect these units for them. It is suggested that inspectors provide basic tools for opening outdoor grease traps. A list of recommend tools and equipment is located at the end of this document. Inspections should be conducted during normal work hours and preferably not during peak business hours. Observation during peak hours can provide insight into normal operations; however, interference with FPE operations should be kept to a minimum.

5. Manhole Covers Brought to Grade, and Labeled – The manhole covers should be brought to grade for easy maintenance access. In some locations locking manhole lids may be required for security and safety reasons. Appropriate tools may be required to remove these lids including socket wrenches or screwdrivers.

Labels or signs should be securely attached and readable. These signs are intended to remind Grease Trap/Interceptor Cleaners and FPE staff of the dangers of working around an outdoor FOG interceptor. FPE staff members in most cases will not be familiar with confined space terminology or procedures.

6. Does Pumping Frequency Meet Permit? – The maintenance log should be reviewed to ensure that maintenance is occurring once every quarter. If grease accumulation is greater than nine (9) inches at the time of inspection, pumping should be scheduled as soon as possible.

An alternative maintenance schedule may have been granted if the FOG accumulation in outdoor FOG interceptors has been documented and approved by the TAHD to be significantly less than 9 inches of FOG accumulation in three months. FOG minimization practices in the kitchen must be maintained at all times for continued approval of the reduced pumping frequency.

7. Baffles in Good Condition – The baffle should extend a minimum of three inches above the water level. If the baffle is submerged this may indicate that the passage through the baffle is plugged. The inspector must observe confined space procedures and NOT place their head in the FOG interceptor to check the baffle or any other interior part of the FOG interceptor. A mirror on a pole should be used to check these interior parts of the FOG interceptor.

8. Inlet and Outlet Tees in Place – Inlet and outlet tees must be in place and located below the manholes to allow observation. No liquid should be flowing over the top of either the inlet or outlet tee. Caps are not to be placed on the tees. No visible fats, oil or grease should be observed leaving the FOG interceptor at the outlet tee.

9. Grease Less than ¼ Depth of Unit - The requirement for pumping grease interceptors is a maximum depth of ¼ of the liquid depth of FOG and settled solids. However, it may not always be possible to determine the liquid depth of the FOG interceptor. In these cases, the volume of the interceptor should be reviewed to determine the allowed depth of solid material in the grease interceptor. Allowable FOG accumulation in the inlet chamber of most 1,000 gallon grease interceptors should be 9 inches. During inspection, the thickness of the grease layer seen should be consistent with the time since the last cleaning of the tank. (i.e., If the tank was pumped a few days prior to the inspection, the grease layer should be visible only as a thin layer or film at the top of the water layer.) A thick grease layer accompanied by receipts for recent FOG pumping might indicate improper cleaning procedures by the Grease Trap/Interceptor Cleaners or excessive FOG being dumped into the collection system. The walls of the tank should be in good condition.

Major Violations Indoor FOG Interceptor (Items 10-15)

Both passive and active indoor traps must be properly vented to work properly. This is most easily noticed by an unusually low water level within the unit. When these units are not vented properly, a siphon can form that will lower the operating level below the desired level. Usually the vent is located within a few feet of the unit.

10. Unit Maintained Daily – Indoor passive and automatic traps must be cleaned every day that the facility is operating. Poor accessibility or lack of equipment to clean the trap will decrease the likelihood of proper maintenance. Inspectors should review the maintenance log and inquire with the individual cleaning the FOG interceptor where the material removed is discarded. FPEs may ask about methods for cleaning indoor passive traps.

11. Unit Energized – All AGRUs are to be energized at all times. AGRUs are typically plugged into dedicated outlets however the Connecticut General Permit requires units to be hardwired to the electricity to prevent unplugging or removal of the units.

12. Screening Basket and Baffles in Place – The screening basket for catching food particles and flow diversion baffles should be installed in their correct position. If these items are not installed they should be located and reinstalled. If these items are missing or broken replacement parts must be ordered.

13. Skimmer in Working Order – The skimmer of an AGRU consists of the motor that turns the skimmer wheel, the skimmer wheel, and the wiper blades. All of these items must be in working order. The outlet where grease is discharged into the collection container should be checked to ensure it is not clogged.

14. Heater Element in Working Order – The heater element requires 5 to 10 minutes to heat. It may be most efficient in facilities where AGRUs are installed to turn the heating element on at the beginning of the inspection then return to the AGRU after the Food Service part of the inspection. This will allow the heating element to warm up. Note that some units have two timers, one for the heating element and a second for the skimmer wheel. The heating element should energize at least 30 minutes prior to the skimmer energizing so that the FOG accumulated in the unit will have sufficient time to liquefy.

15. Grease Collection Container in Place – The grease collection container should be in the correct position to receive FOG from the AGRU and easily accessible for cleaning. Disposal to a floor drain is not allowed. The inspector should inquire where the collected grease is discarded. Disposal locations should be at facilities designated for AGRU grease collection or with a Grease Trap/Interceptor Cleaner. Renderers typically do not pick up this material as it has been in contact with detergents and wastewater. However, conditions for acceptance vary with different renderers.

Minor Violations (Items 16-24)

While water temperature above 150°F is not a violation of the Sewer Use Ordinance, the Health Department has regulations limiting the upper temperature of water used at FPEs. Water temperatures in excess of 150°F will solubilize FOG and decrease the efficiency of FOG management equipment.

16. FOG Interceptor Maintenance Log Available – All FPEs are required to maintain a log of maintenance activities for each FOG interceptor and AGRU. Each maintenance log should indicate the trap it is used for, the name of the person cleaning the unit, the date, condition of the components, and volume of material removed.

17. Signs Posted at All Sinks - Signs are to be posted on sinks indicating the activities that are allowed in each sink. Signs are a good method of instructing new employees on proper procedures particularly when employee turnover is high.

18. Pots, Pans, Dishes and Utensils Scraped - All food particles, grease, and other material are to be scraped into a trash container. Garbage grinders should not be installed and prerinse sinks should have screens to catch food particles.

19. Adequate Renderable FOG Storage – The renderable grease container and non-renderable grease container, if applicable, should be covered to ensure they are protected from spills or overflow during rain events. Grease collection containers should be placed to avoid grease entering floor drains or storm drains. The preferred location for rendering containers is in a walk-in freezer if possible to reduce the exposure to rodents, flies and other nuisance conditions. However, many facilities have no choice but to place rendering containers outside.

20. Exhaust Hood Properly Cleaned – Inspectors should inquire where and how often exhaust hood filters are cleaned. Some facilities have contractors that clean these filters off site. A common, but not permitted method, is to cleaning these filters outside where grease can flow to storm drains and enter nearby streams. Exhaust hood filters are to be cleaned in a sink that is connected to FOG Pretreatment Equipment.

21. Renderable Grease Recycled – Inspectors should note facilities that use large volumes of grease. The TAHD program requires those facilities that have fryolators to use a rendering company. Rendering companies charge a fee to accept renderable grease. This material should not be discarded in the trash as large volumes of grease can attract rodents, flies and cause odors as well as other nuisance conditions.

22. No Additives Used – The use of enzymes, bacteria, chemicals and other sewer or septic systems additives is not permitted. These materials can temporarily loosen or liquefy the FOG layer in FOG interceptors. The FOG can then travel downstream to block sewer laterals or sewer lines. The Municipal Sewer Use Ordinance includes provisions to recover the cost of emergency cleaning and fines, from facilities discharging unauthorized materials to the collection system.

23. FOG Equipment Capacity – The capacity of the FOG equipment should be consistent with accepted sizing criteria. The capacity of the equipment should be routinely recorded for verification against information recorded in the TAHD FOG Database.

24. Non-Renderable FOG Disposal Location – This question is included to ensure proper FOG disposal and also to estimate needed capacity at Regional FOG disposal facilities.

25. Grease Trap/Interceptor Cleaner's Information - The name of the non-recyclable FOG hauler and the rendering companies should be recorded to allow tracking of the FOG from its source to disposal.

Other Notes

Inspection of areas unrelated to the kitchen, such as the restroom, storm drains and the dumpster, can reveal unauthorized FOG disposal methods. This is usually visible by grease stains around the area of disposal.

Letters notifying Food Preparation Establishments of major violations will be mailed from the TAHD office on the first major violation. Letters notifying the municipality in which the facility is located, along with letters to Food Preparation Establishments, are mailed if the violation has not been corrected within the required time. Continued failure to correct the violation may result in referral to the Connecticut Department of Environmental Protection for enforcement.

An individual representing the Food Preparation Establishment should sign a copy of the inspection checklist and receive a copy when only minor violations at a facility are noted. Letters will not be sent from the TAHD office on the first report of minor violations. The TAHD will issue a letter for failure to correct the minor violation following subsequent inspections.

Recommended Items for Inspection

Photo identification card
Manhole hook
Screwdriver
Socket wrench
Mirror on a pole
Flashlight
Plastic measuring tape
Rubber or latex gloves
Thermometer
Inspection forms
Grease program informational brochures
Facility records

Inspection Checklist

Date: _____

Inspector: _____

Establishment: _____

Address: _____

Contact Name: _____ Signature: _____

Phone: _____

TRAP NUMBER

General Information

	#1		#2		#3	
1. Registered pretreatment equipment	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
2. Properly installed equipment	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
3. Was grease trap inspected	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
4. Grease trap accessible for maintenance	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N

Major Violations Outdoor Grease Traps

5. Manhole cover brought to grade, and labeled	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
6. Does pumping frequency meet permit	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
7. Baffles in good condition	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
8. Inlet and outlet Tees in place	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
9. Grease less than 1/4 depth of unit	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N

Major Violations Indoor Grease Trap

10. Unit maintained daily	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
11. Unit energized	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
12. Screening basket in place	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
13. Skimmer in working order	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
14. Heater in working order	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
15. Grease collection container in place	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N

Minor Violations

16. Grease trap maintenance log available	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
17. Signs posted at all sinks	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
18. Pots, pans, dishes and utensils scraped	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
19. Adequate renderable FOG container storage	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
20. Exhaust hood properly cleaned	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
21. Renderable FOG recycled	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
22. No additives used	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N

23. FOG equipment capacity _____

24. Non-renderable FOG disposal location ☐ Trash ☐ Contractor ☐ Other

25. Grease Trap/Interceptor Cleaner _____ Renderer

Name _____ Name _____

Address _____ Address _____

Phone _____ Phone _____

Comments _____

APPENDIX E: NOTICE OF VIOLATION LETTER EXAMPLE FOR TORRINGTON, CONNECTICUT



TORRINGTON AREA HEALTH DISTRICT

350 Main Street ♦ Suite A ♦ Torrington, Connecticut 06790
Phone (860) 489-0436 ♦ Fax (860) 496-8243 ♦ E-mail info@tahd.org ♦ Web Address www.tahd.org

"Promoting Health & Preventing Disease Since 1967"

Borough of Bantam

Bethlehem

Cornwall

Goshen

Harwinton

Kent

Borough of Litchfield

Litchfield

Morris

Norfolk

Plymouth

Salisbury

Thomaston

Torrington

Warren

Watertown

Winsted

{DATE}

{NAME}
{ADDRESS}

Notice of Violation
TAHD FOG Pretreatment Program

Dear {CONTACT}:

On {DATE} {INSPECTOR} of the Torrington Area Health District conducted an inspection of the grease handling and disposal methods at your facility located at {LOCATION} for compliance with the {REGULATORY AUTHORITY}. At that time the violations were noted as shown on the attached Inspection Summary.

Failure to properly maintain fats, oils and grease pretreatment equipment in accordance with the permitting requirements of the {REGULATORY AUTHORITY} can result in fines or loss of your food service license. The deficiencies noted in the Inspection Summary must be corrected within the following timetable.

Violation	Days from Inspection to Correct Violation
Equipment not Registered	30 days
Equipment not Properly Installed	90 days
Major Violations (Outdoor and Indoor)	30 days
Minor Violations	90 days

If additional information is needed on the TAHD Fats, Oils and Grease Pretreatment Program requirements, an information package titled FOG Pretreatment Regulations is available at the TAHD offices.

Sincerely,

Gilbert A. Roberts
Director of Environmental Health

CC: {Municipality}

APPENDIX F: OUTREACH PAMPHLET EXAMPLES

**Preventing Grease Discharges Into Sewers, Department Of Environmental Protection,
New York, NY**

Grease Disposal Tips, Department of Environmental Protection, New York, NY

Examples of Public Information & Education Brochures, State of Connecticut

DOCUMENT 5

EXAMPLES OF PUBLIC INFORMATION AND EDUCATION BROCHURES

There is a varied array of publicly available resources related to FOG pretreatment. The purpose of public information is varied and includes:

- Educating the public about the reasons for the development of FOG pretreatment programs;
- Defining the elements of a FOG pretreatment program;
- Providing a basic understanding of what FOG is;
- Increasing public understanding of the reasons FOG is a problem constituent of wastewater;
- Identifying the methods available to treat FOG;
- Increasing public awareness of the dangers of non-compliance; and
- Encouraging public acceptance of this important program.

It is important to understand that no single explanation will be understood by everyone. Different approaches are necessary to inform different groups of people. Because different techniques provide varying levels of effectiveness, a variety of techniques need to be used simultaneously to accomplish the highest level of compliance. For this reason this section includes a variety of approaches.

These approaches vary from the entertaining use of cartoons like the "Grease Avenger" comic used in Los Angeles California, to the rather dry but technically thorough online sewer ordinance from the Town of Ocean City, Maryland. Each is targeted at different groups to address different aspects of a public information program.

A balanced approach requires targeting a variety of levels of expertise and user information needs. This section includes a compiled list of resources that address each group and, when viewed as a whole, can be used to develop a meaningful and effective public information campaign. Table 5-1 provides a list of the information sources available from other jurisdictions and organizations in the United States.

Table 5-1

Characteristics of Public Information Materials

Information Source	Target Group	Treatment	BMPs	Health Issues	Compliance	Disposal	Rules	Contacts
Boston, Massachusetts	Food Preparation	X			X	X	X	X
Miami-Dade County Dept. Env. Res.	Food Preparation	X	X	X	X	X	X	
New York City DEP	Food Preparation				X		X	X
State of Oregon	Pretreatment Staff	X	X		X	X	X	X
City of Palo Alto, California	Food Preparation	X	X		X	X	X	X
City of San Diego, California	Food Preparation	X			X	X	X	X
City of Los Angeles, California	All	X	X	X	X	X	X	X
Ocean City, Maryland	Pretreatment Staff						X	
Boulder, Colorado	Food Preparation	X	X	X	X	X	X	X
St. Petersburg, Florida	Pretreatment Staff						X	
Lexington Lafayette Urban Kentucky	General Public	X	X	X	X	X	X	X
Water Environment Federation	General Public	X	X	X				

Boston Water and Sewer Commission

Boston Water and Sewer Grease Control Program

<http://www.bwsc.org/mainpage.html>

This website does not have a specific area for the Grease Control Program but includes grease information as a part of the larger sewer use regulations. The Grease Control information can be located on the website under Engineering/Regulations. Information includes regulations, grease control equipment sizing and maintenance requirements.

New York City DEP

Preventing Grease Discharges into Sewers, Guidelines for New York City Businesses

<http://nyc.gov/html/dep/html/grease.html>

This site is geared towards business owners. This document provides compelling reasoning for grease removal systems and a detailed explanation of the costs for non-compliance, and contact information. It does not give an explanation of the various options available but suggests contacts through the yellow pages.

Oregon

Fat, Oil and Grease Best Management Practices Manual

<http://www.oracwa.org> Click up FOG BMP Manual

This is a series of articles covering all aspects of FOG management. It is well written and includes figures that are clear and well explained. A thorough checklist is included.

City of Palo Alto and San Diego, California

Food Service Facilities, Selecting and Installing a Grease Removal Device

<http://www.ci.san-diego.ca.us/mwwd/community/sewspill.shtml>

This single page document is easy to read for the general public and provides a good explanation of all aspects of the oil and grease program.

City of Los Angeles Sewer Overflows

City San Early Notification (ENS) page

<http://www.lacity.org/SAN/wwater.htm>

This site includes a link to the above web site. The site provides details of City's Program.

Eliminating Fats Oil and Grease from Our Sewer System

<http://www.lacity.org/SAN/sewerfog.pdf>

This site offers a brochure for mailing that is visually appealing and concise. It defines the problem, health issues and how to get more information.

Grease Avenger, Keep Fats Oil and Grease Out of Sewers

<http://www.lacity.org/SAN/fog-grease-avenger-english.htm>

This site offers a comic that presents compelling reasons for individuals to take an interest in the FOG program. Available in English and Spanish.

Ocean City, Maryland

Wastewater Sewer Ordinance

<http://www.town.ocean-city.md.us/sewrordn.html>

This site offers online copies of the City ordinance related to sewers.

Boulder, Colorado

Food Service Facilities - Grease Removal Devices

http://www.ci.boulder.co.us/publicworks/depts/utilities/water_quality/industrial/pretreatment/ipt_grease/index.html

This set of web pages addresses all areas of Boulder's FOG program in a well-organized and attractive set of documents.

St. Petersburg, Florida

Grease management program

<http://www.stpete.org/grease.htm>

This document is a working draft of St. Petersburg's FOG program regulations.

Lexington Lafayette Urban County Government, Kentucky

Grease Interceptor Program

<http://www.lfucg.com/Sewers/Grease.asp>

This site presents a thorough and well-organized explanation of the existing FOG program.

Water Environment Federation (WEF)

Fat Free Sewers

<http://www.wef.org/publicinfo/factsheets/fatfree.jhtml>

The Water Environment Federation offers a bill stuffer informing the general population about problems associated with grease and proper disposal techniques.

A thriving business community is vital to New York City and its neighborhoods. A healthy economy benefits every New Yorker. But when businesses disregard sewer use regulations and improperly dispose of fats, oil, and grease (FOG), sewer lines can become clogged, causing sewage to back up into basements of homes and commercial establishments. When that happens, the entire community suffers.

The New York City Department of Environmental Protection (DEP) is responsible for maintaining the City's sewage system - 6,000 miles of sewers and 14 wastewater treatment plants that process about 1.3 billion gallons of sewage per day. Sewer back-ups are a major sewer system problem that damages property and affects public health. In some areas, back-ups are frequently caused by FOG clogging the local sewers. To address this problem, DEP is helping businesses comply with the City's sewer use regulations. DEP is educating not only restaurant owners but also operators of nursing homes, fruit and vegetable stands, laundries, and dry cleaners, among others, to keep FOG and other materials and chemicals out of the sewer system.

To work effectively, sewer systems need to be properly maintained, from the drain to the treatment plant. If wastes are disposed of correctly, the City's sewer system can handle them without any problem. FOG is an example of a waste that the sewer system cannot handle, and therefore should not be put down the drain. The City needs businesses and individuals to do their part to maintain the system because repeated repairs are disruptive to residences and businesses alike. Furthermore, proper disposal by commercial establishments is required by law.

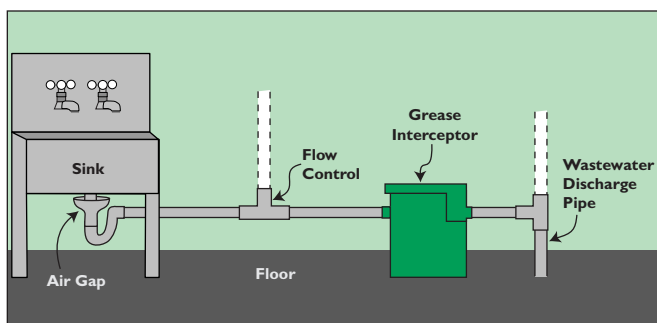
SEWER REGULATIONS CONCERNING GREASE

To ensure the proper disposal of FOG, and to prevent sewage back-ups, the City requires grease-generating establishments to correctly install, operate and maintain properly sized and designed grease interceptors. These grease interceptors must be routinely cleaned to ensure proper operation. (For more information see NYCDEP Sewer Use Regulations, 15 RCNY Chapter 19.)

On November 9, 1998, the City amended the Sewer Use Regulations. These amendments clarify existing requirements and provide for self-certification of grease interceptors by a NYS licensed Professional Engineer or Registered Architect. Self-certification relieves regulated establishments from a lengthy departmental review process.

HOW GREASE INTERCEPTORS WORK

Every business that disposes of FOG (e.g. restaurants, food handling operations, hospitals, day care and senior centers), should have a grease interceptor to prevent these materials from entering and clogging sewer lines.



This equipment works by separating the grease and oils from wastewater. Greasy wastewater entering the interceptor passes through a vented flow control fitting that regulates the flow of the wastewater. The wastewater then passes over a series of separator baffles, or regulating devices within the interceptor, that separates FOG. The FOG then floats to the top of the interceptor and accumulates until manually removed. The wastewater continues to flow through the interceptor, into a discharge pipe, and then to the City's sewer system.

INSTALLING AND MAINTAINING YOUR GREASE INTERCEPTOR

If a grease interceptor is not properly installed or maintained it will not do its job! For your own assurance, DEP requires that only licensed plumbers install grease interceptors. These interceptors must be the proper size to work correctly. A licensed plumber can determine the correct size. Plumbers and business owners may also write to DEP's Bureau of Wastewater Treatment, Pollution Prevention Section, at the address listed on the back of this brochure for technical assistance.

Every interceptor should be cleaned as frequently as necessary to avoid exceeding its rated capacity. To clean, remove the cover of the interceptor and scoop out any grease and/or oil that has collected on top. Grease and oil can be recycled, and should be collected by a fat renderer or other grease recycling company. Check the phone book under "Grease Traps" for such companies.

ENFORCING REGULATIONS

DEP enforces the City's sewer use regulations and may fine businesses that are not in compliance. DEP routinely sends inspectors to businesses to check interceptors and make sure they are correctly sized, properly installed, maintained, and operating effectively. If a business has an interceptor that is too small, inspectors will order the owner or operator to install the proper unit, based on New York City's Building Code and Sewer Use Regulations. The maximum penalty for not complying with the rules is currently \$10,000 per day, per violation. To avoid the expense of such fines, install the correctly sized unit and maintain it properly.

For information about the City's Sewer Use Regulations write to the address on the back of this brochure, or contact us on-line at www.nyc.gov/dep.

To report sewer back-ups or to get assistance with sewer, water, air or noise problems, call 311:

DIAL 311 Government Information and Services for NYC

or contact us on-line at:

www.nyc.gov/dep



www.nyc.gov/dep

New York City
Department of Environmental Protection
Bureau of Wastewater Treatment
59-17 Junction Boulevard
Flushing, New York 11373-5108

What You Should Know About

PREVENTING GREASE DISCHARGES INTO SEWERS

Guidelines for New York City Businesses



www.nyc.gov/dep

Michael R. Bloomberg, Mayor
David B. Tweedy, Acting Commissioner

Michael R. Bloomberg
Mayor



Emily Lloyd
Commissioner

GREASE DISPOSAL TIPS

TO HELP THE CITY'S ENVIRONMENT

New York City needs the help of all of its residents to keep our sewer system running properly. By following the guidelines below, you can help avoid repeated repairs and unnecessary disruptions to residences and businesses.

PROPERLY DISPOSE OF COOKING OIL & GREASE

Cooking oil and grease are wastes that the City's sewer system cannot handle and should not be discarded down the drain. Dumping grease, fats, and oil can clog sewer lines, causing sewage back-ups and flooding. Sewage back-ups can damage personal and public property. Here's how you can help.



DO NOT dump cooking oil, poultry fat and grease into the kitchen sink or the toilet bowl.



DO place cooled cooking oil, poultry and meat fats in sealed non-recyclable containers and discard with your regular garbage.

Michael R. Bloomberg
Mayor



Emily Lloyd
Commissioner

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DO place cooled cooking oil, poultry and meat fats in sealed non-recyclable containers and discard with your regular garbage.

RECYCLE USED MOTOR OIL

When poured down house or storm drains, used motor oil may travel to your local stream, bay, or harbor, where it can harm underwater vegetation and aquatic life.

Service stations are required by State law to accept up to 5 gallons of used motor oil per person, per day, at no charge. Remember not to mix your motor oil with any other substance.



DO NOT dump used motor oil into street or house drains.



DO put used motor oil in a sturdy container, such as a plastic milk jug, and take it to your local service station for recycling.

CONTACT US

For more information on disposal of motor oil and residential or commercial grease, or to report illegal dumping into street storm drains, call:

**DIAL
311
Government Information
and Services for NYC**

or write:

New York City Department of Environmental Protection
59-17 Junction Boulevard, Flushing, NY 11373

Visit DEP's Web Site at:

www.nyc.gov/dep

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Visit DEP's Web Site at:

www.nyc.gov/dep

APPENDIX G: MAINTENANCE RECORD FORMS FOR THE TORRINGTON, CONNECTICUT

Daily Operation and Maintenance Plan/Log for Grease Recovery Unit _____

Permit Number _____

Facility Name and Address _____

Month/Year _____ Contact Name and Phone _____

This grease trap is to be cleaned once each day. Grease removed from the unit is to be stored in the non-renderable grease container in the back parking lot. When the non-renderable container is approximately 2/3 full, the Manager should be notified to call _____ at phone number _____.

DATE/TIME	INITIALS	EMPTY BASKET	CLEAN TROUGH	WIPER BLADES	GREASE VOLUME	DISPOSAL
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Spare Parts for this unit include _____.

Spare parts are kept _____.

Operation and Maintenance Plan/Log for Grease Trap

Permit Number _____

Facility Name and Address _____

Contact Name _____ **Phone Number** _____

DATE	GREASE TRAP/INTERCEPTOR CLEANER	GREASE THICKNESS	VOLUME REMOVED
March 2005			
June 2005			
September 2005			
December 2005			
March 2006			
June 2006			
September 2006			
December 2006			
March 2007			
June 2007			
September 2007			
December 2007			
March 2008			
June 2008			
September 2008			
December 2008			
March 2009			
June 2009			
September 2009			
December 2009			

This grease trap is to be cleaned quarterly. The Manager is to call _____ at phone number _____ between the 1st and 15th of months shown above for service. The service provider is to remove the entire contents of the grease trap for disposal. Provide one copy of the receipt to Accounting for payment and place a second copy in the attached envelope. Return this form and envelope to shelf by timecards.

APPENDIX H: ACRONYMS AND ABBREVIATIONS

AGRU	Automatic grease recovery unit
ANR	(Vermont) Agency of Natural Resources
BMP	Best management practice
DEP	Department of Environmental Protection
FOG	Fats, oils, and grease
FPE	Food preparation establishment