



Fats, Oils & Grease (FOG) Program Review



Orange County WDR
Subcommittee Group

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Acknowledgements

This Fats, Oils and Grease (FOG) Program Review report was prepared by a subgroup of the Orange County Waste Discharge Requirement (WDR) Collection System Steering Committee on behalf of the Northern Orange County WDR Permittees.

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ACRONYMS

ASME American Society of Mechanical Engineers

BMP Best Management Practices

CCTV Closed Circuit Television

CIWQS California Integrated Water Quality System

CPC California Plumbing Code

FOG Fats, Oils and Grease

FSE Food Service Establishment

GCD Grease Control Device

GGI Gravity Grease Interceptor

GRD Grease Removal Device

HGI Hydromechanical Grease Interceptor

LFP Limited Food Prep

PDI Plumbing and Drainage Institute

SSMP Sewer System Management Plan

SSO Sanitary Sewer Overflow

UPC Uniform Plumbing Code

WDR Waste Discharge Requirements

I. Introduction

A subcommittee of the Orange County Waste Discharge Requirements (WDR) Collection Systems Steering Committee (Committee) was formed to look at the current Fats, Oils and Grease (FOG) program being implemented in central and northern (Northern) Orange County.

The current FOG program is over ten years old and has continued to be improved over that time through knowledge and information gained by cities and wastewater agencies (collectively referred to as Agencies) through implementation of the program, attendance at conferences, seminars, workshops and Permittee meetings.

An important goal of the committee was to look at how Agencies are implementing their FOG program, specifically, the requirements related to the use of grease control devices by food service establishments (FSEs). The Committee was interested in knowing whether there had been changes over time in the type of devices specified and quantifying the annual reduction in total and grease related sanitary sewer overflows (SSOs).

To answer these questions the Committee reviewed existing ordinances and literature, conducted Permittee surveys and gathered information from Committee member experience. The results of these efforts culminated in the preparation of this report.

The report begins with a history of the WDR program (Section II) and ends with an assessment of the number of SSOs occurring since the program's inception (Section VII). Other sections provide information on the various grease control devices (GCD) used and what factors to consider when selecting an appropriate device. The report ends with a conclusion and recommendation section that provides a summary of the information presented and factors that may be considered when selecting a GCD.

II. Background

Orange County has a number of scenic and popular beaches that attract tourists from around the world. However, these beaches are susceptible to closures due to elevated levels of bacteria from SSOs. In an attempt to mitigate the number of beach closures due to SSOs, a number of governmental bodies issued reports and regulations to control and reduce the number of SSOs starting with the 2001 Orange County Grand Jury Report and later by state regulators.

A. 2001 Orange County Grand Jury Report

The Orange County Grand Jury conducted a survey of 35 wastewater collection and treatment agencies in Orange County in 2000-2001 and determined that grease buildup in sewer lines was the main cause for SSOs that resulted in beach closures. On April 25, 2001 the Grand Jury

issued a report that made five recommendations. These recommendations are reformatted below and a complete copy of the report can be found in Appendix A.

Grand Jury Recommendations

1. Wastewater collection and treatment agencies should cooperate and develop a standardized ordinance for grease discharge.
2. The ordinance should have enforcement powers and contain requirements for inspection and maintenance.
3. Agencies should develop education and training programs for restaurant owners and staff.
4. Completion of training programs should be made a condition of wastewater discharge permits from local agencies and training should also be directed towards large housing complexes.
5. The Orange County Health Care Agency should inspect grease trap and grease interceptor maintenance logs.

B. WDR Orders

Following the 2001 Grand Jury Report, the Regional Board issued Waste Discharge Requirement Order No.R8-2002-0014 (Order) on April 26, 2002 to agencies and cities that own their own wastewater collection system. Provision C.12.viii. of the Order required preparation and implementation of a Fats, Oils and Grease Control Program as part of the Permittees' Sewer System Management Plan (SSMP). Permittees were given until December 30, 2004 to adopt a grease control program. In response to that provision, Permittees adopted FOG ordinances that included requirements for installation of GCDs such as grease traps and gravity interceptors with interceptors being the preferred device.

A few years later, the State Water Resources Control Board, building on the Order from the Regional Board, adopted statewide Waste Discharge Requirements Order No. 2006-0003 DWQ (State Order) on May 2, 2006 for agencies that own their own wastewater collection system. Similar to the Regional Board Order, Permittees were required to evaluate whether a FOG program was required for their jurisdiction. Where FOG was determined to be a problem, the State Order required implementation of grease control devices (D.13.vii.d) as part of the Permittees' SSMP.

The State Order requirements closely followed the requirements in the Regional Board Order so that Agencies within Northern Orange County already had a FOG program in place when the State Order was adopted.

C. FOG Control Study - Phase I Report

In an effort to comply with the Regional Board Order, Orange County Permittees retained the services of Environmental Engineering and Contracting, Inc. (now EEC Environmental) to perform a study to evaluate FOG control practices, technologies and programs in use in the United States to minimize FOG discharges to the sewer system.

The resultant study titled FOG Control Research Study Report Phase I (Phase I) completed in June 2003 included a survey that found that no Agency had a FOG program in place at that time but some Agencies had grease control ordinances and a few Agencies required maintenance of GCDs (Appendix B Table B-8). Acknowledging the need to control FOG to prevent SSOs and sewer pipe blockages, the resultant report recommended the development of a FOG Control Program consisting of 12 building program blocks that include FOG characterization, education and outreach, developing ordinances, implementing kitchen best management practices (BMPs), sewer line cleaning, implementation of FOG control technologies to remove grease and other programs. Of interest to the Committee were the recommendations in the report related to GCDs that included:

- All new and existing FSEs that undergo tenant improvement remodeling costs of \$50,000 or more, install and maintain gravity grease interceptors (GGIs) with inspections to be conducted by municipalities.
- Existing FSEs could have a 2-year grace period to install GCDs.
- GGI pumping would consist of a minimum frequency of 6 months.
- GGIs were the best conventional technology available for controlling grease and preventing blockages of sewer lines and SSOs.
- Grease traps (passive and automatic) could be considered as alternative options to GGIs with proper maintenance and inspections when GGIs were deemed not feasible.
- Testing of automatic grease traps was recommended as part of a Phase II study to determine their effectiveness.

D. FOG Control Study - Phase II Report

Following the recommendations of the Phase I report, a Phase II study was initiated in 2004/2005 to evaluate new progressive technologies. The Phase II study included evaluation of additives applied by FSEs to reduce FOG discharges; additives applied directly to sewer lines; monitoring devices used in GGIs, and most importantly, further evaluation of nonconventional automatic grease traps (passive grease traps with more features such as automatic FOG removal and bioremediation).

The automatic grease trap evaluation was of interest to the Committee since it provided the basis for the type of GCDs currently being implemented by Agencies in Northern Orange County. The study solicited vendor products to test and evaluate. Three manufacturers were selected from an initial list of eight and three sites were selected for each manufacturer. The selected sites were in Pennsylvania, Rhode Island, Maryland and California.

For the test evaluation, the study used automatic grease removal devices (GRDs) with skimmer wheels or devices with a grease level monitor and pump. Evaluation consisted of measuring FOG influent and effluent concentration while dishwashing was taking place. A 30 minute separating FOG test was done to assess if FOG was passing through the GRD and potentially accumulating downstream in the sewer line. For purposes of measuring the floating FOG, a 1000 ml volumetric flask with the neck graduated in 1 ml increments was used.

Some of the results from that study included the following:

- In 90% of inspections conducted, FOG skimming appeared to be occurring.
- FSEs appeared to be performing some maintenance in 55% of inspections.
- When floating FOG was removed, effluent concentrations were relatively low (<0.25 ml) (0.25 ml thickness used as a baseline).
- No direct correlation was found between depth of settled solids and floating effluent FOG volume.
- It is important to remove the FOG layer (if not maintained, it is discharged in the effluent).
- Skimmers work effectively when maintained.

The conclusions from the study noted that regulatory agencies did not specifically require maintenance or inspection of GRD devices and there were concerns that the GRDs might not be adequately maintained by existing or future FSEs. The testing and information gathered from well-maintained units noted that GRDs could be used on a risk basis or Variances issued with conditions that include: connecting to significant grease waste sinks and drains; maintenance of the unit; use of maintenance logs; FSEs pay for increased inspections and if closed circuit television (CCTV) showed grease accumulation in the sewer line, the Variance could be revoked. It was also noted that increased maintenance requirements of FSEs may result in more Agency resources needed to confirm compliance resulting in higher program costs than allowing only underground vault-type GGIs.

III. FOG Ordinances

To assess FOG control requirements, a number of Agency ordinances within Orange County, the state and outside California were reviewed.

A. Orange County

Most Orange County Agencies adopted their FOG ordinance in 2003 or 2004 consistent with the requirements specified in the Regional Board Order that required ordinances to be in place by December 30, 2004.

Agency ordinances were typically modeled after the Backbone Ordinance provided in EEC's Phase I report (Appendix C) modified to suit individual Agency needs. The ordinances typically include the following: legal authority to enforce, including right of entry to inspect; cost recovery for agency resources expended; enforcement including fines and suspension of permit or sewer services; FOG pretreatment requirements for new and existing FSE facilities; and the issuance of Waivers or Variances.

The FOG pretreatment requirements specified generally require installation of a GGI but the use of an alternate technology such as a grease trap is allowed if the installation of a gravity GGI is not feasible. Factors that might be considered in a feasibility review include physical constraints such as space, slope and other factors more thoroughly discussed in the following sections. Economic considerations are not specified in ordinances and are left to the discretion of the Agency.

Waivers and Variances from the use of GGIs are allowed if it can be shown that little or an insignificant amount of grease is produced and may include mitigation fees that provide funds for future pipe cleaning.

B. Outside Orange County

For comparison with Orange County, FOG ordinances from the cities of Los Angeles, San Diego, Ventura, San Francisco and the Seattle Public Utilities were reviewed.

The San Diego and Los Angeles ordinances are similar to those in Orange County and require the use of a GGI for new or remodeled FSEs. The city of Los Angeles ordinance, similar to Orange County ordinances, contains waivers that applicants may request if they believe the restaurant produces an insignificant amount of grease. The city of Ventura's ordinance divides facilities into classes based on the amount of FOG generated. This ordinance requires the use of GGIs for heavy FOG producers. Those that are not classified as heavy FOG producers may be allowed to install grease traps.

The San Francisco ordinance was adopted in November 2010 and requires all FSEs, new and existing, undergoing remodeling changes to install GCDs, which can be a grease trap or GGI. The Seattle FOG Manual based on the ordinance includes the term Maximum Extent Feasible

that provides flexibility in selecting proposed devices but the use of GGIs is generally preferred over grease traps.

IV. Grease Control Devices

Agency ordinances typically refer to two types of GCDs: GGIs and grease traps. In the adopted ordinances the meaning of the two types of devices is clear. However, the meaning of “grease interceptor” has been updated in the plumbing codes where grease interceptor is used to refer to the two types of devices noted above. Because of these changes, it is not uncommon to confuse or mistake a grease trap, now hydromechanical interceptor (HGI), for a GGI when discussing FOG ordinance pretreatment requirements.

For purposes of clarification and to provide consistency between terms in this report, the use of grease control devices will be as defined in various Agency ordinances to mean:

“any grease interceptor or grease trap which attaches to wastewater plumbing fixtures and lines, the purpose of which is to trap or collect or treat FOG prior to it being discharged into the sewer system.”

The three types of GCDs most commonly used are discussed in the following paragraphs.

A. Gravity Grease Interceptor

This type of device formally known as grease interceptor is shown in Figure 1. It is most commonly a large retention vault 500 gallons or greater, usually constructed of concrete but may include other material, with multiple compartments or baffles installed underground outside between the facility and sewer system. The chambers and baffles use gravity to allow solids to settle at the bottom and allow the lighter FOG to rise to the top. The clean water is then allowed to discharge into the sanitary sewer. Any remaining FOG and solids are pumped out through access ports.

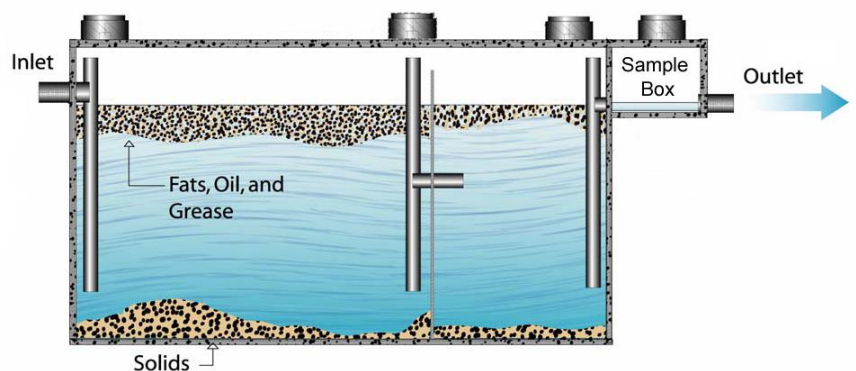


Figure 1 – Gravity Grease Interceptor

Maintenance and Inspection – Maintenance of GGIs varies with the size of the facility, kitchen practices implemented and cooking equipment used. There is no particular frequency that works for all interceptors. GGIs must be inspected frequently initially to assess the amount of FOG being generated and stored in the GGI. Most Agencies use the 25% Rule to determine maintenance of the GGI. The 25% Rule states that “when the combined solids and FOG layer combine to equal 25% of the maximum hydraulic depth of the GGI, it must be pumped and cleaned.” Access ports with manhole covers are provided at the top of the GGI for the inspection of retained FOG and solids and the pumping and inspection of the inside baffles and chambers. Some GGIs contain sample boxes where the effluent can be analyzed to assess GGI performance.

B. Hydromechanical Grease Interceptor

The hydromechanical grease interceptor (HGI), formally known as a grease trap, is shown in Figure 2. They are small retention tanks that can be installed above or below ground. HGIs are usually made of plastic, stainless steel or other material with interior baffles to slow down the wastewater stream and allow for FOG and solids separation.

Unlike GGIs, HGIs are sized by flow rate instead of volume, with the most common sizes ranging from 10 – 100 gallons per minute. Gravity is the HGIs primary method of FOG separation allowing the FOG to float up to the surface while the water passes through and the solids settle to the bottom. Additionally, the influent flow may be vented allowing air to mix with the moving FOG, which allows the air’s upward velocity to carry FOG to the top of the HGI faster than the regular passive separation.

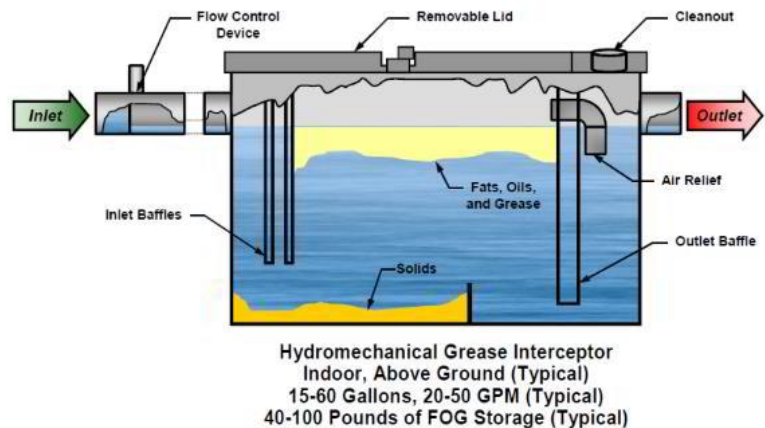


Figure 2 - Hydromechanical Grease Interceptor

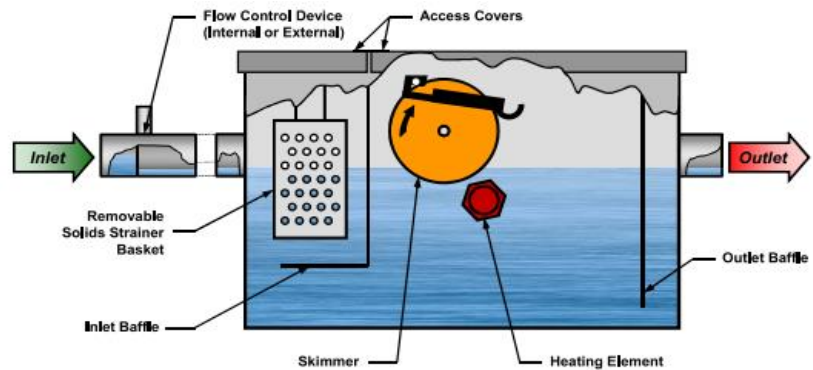
Maintenance and Inspection – HGIs require more frequent maintenance than GGIs due to their smaller size but there is no set frequency for cleaning or maintenance. That is determined based on the amount of FOG and solids produced and retained in the HGI. Once the FSE begins

operation, frequent inspections may be required to determine the frequency for cleaning and pumping. Even though HGI maintenance requirements are not typically stated in ordinances, Agencies typically require cleaning or pumping of the combined floating FOG and settled solids when accumulation exceeds 25% of the HGI's overall capacity. Inspection, pumping and cleaning of the unit is performed by removal of the HGI's top lid.

C. Grease Removal Device

A grease removal device (GRD), formally known as an automatic grease trap, is a subset of the HGI. In addition to baffles, GRDs usually contain a strainer basket and skimming wheel and a FOG container outside the unit. A typical GRD is shown in Figure 3.

GRDs are sized similarly to HGIs and have similar capacities. The use of the solids separation basket allows the solids to be filtered from the waste stream at the inlet and gravity allows the lighter FOG to rise to the top. Additionally, a heating element may be used to warm the FOG for enhanced separation. Some GRDs use a skimmer to automatically remove the accumulated FOG into the container and other GRDs use hydrostatic pressure to force the FOG into the container.



Grease Removal Device
Skimmer Style Shown. Other Style Units are Available
Indoor, Above Ground (Typical)
15-60 Gallons (Typical), 20-50 GPM (Typical)

Figure 3 - Typical Grease Removal Device

Maintenance and Inspection – As noted in Section II.D, GRDs require more frequent but minor maintenance. As with other HGIs, maintenance is based on the amount of FOG produced. Initial monitoring of the GRD will determine when the strainer basket and FOG container need to be emptied. The outside container should be checked on a daily basis and the top of the unit removed periodically to assess the frequency at which the strainer basket and other accumulated solids inside the unit need to be removed. Wiper blades and other moving parts should be checked weekly and any incidental buildup should be removed. Pumping of the

device is conducted as needed but Agencies typically use the 25% Rule to determine the frequency at which the unit must be maintained.

D. Hydromechanical Grease Interceptor Testing and Approval

The Plumbing & Drainage Institute (PDI) is a widely recognized organization that tests and certifies manufacturer HGI devices. Testing of HGIs is performed under PDI Standard G 101 that uses the setup as shown in Figure 4. Lard is used as the test media and certification requires the unit to achieve 90% efficiency in grease removal and that the unit have a capacity of a minimum of 2 lbs. of grease for each gallon per minute (GPM) of flowrate. For example: if the unit is rated at 25 GPM, the unit must be capable of storing 50 pounds of grease and still achieve 90% effectiveness. The test also requires the use of an air vent and external flow control where the flowrate to the HGI can be regulated. A typical setup is shown below in Figure 4. A list of PDI certified hydromechanical devices is provided in Appendix D. The most current certification list can be found at <http://www.pdionline.org/certified-grease-interceptors/>

The American Society of Mechanical Engineers has also developed ASME Standard A112.14.3 that manufacturers can use to test their hydromechanical units. The setup is similar to the PDI standard and lard is also used as the test media. Testing does not require venting or external flow control. The rating and efficiency is certified at 90% and has a 2 lbs. per gallon holding capacity per designated flow rate (GPM).

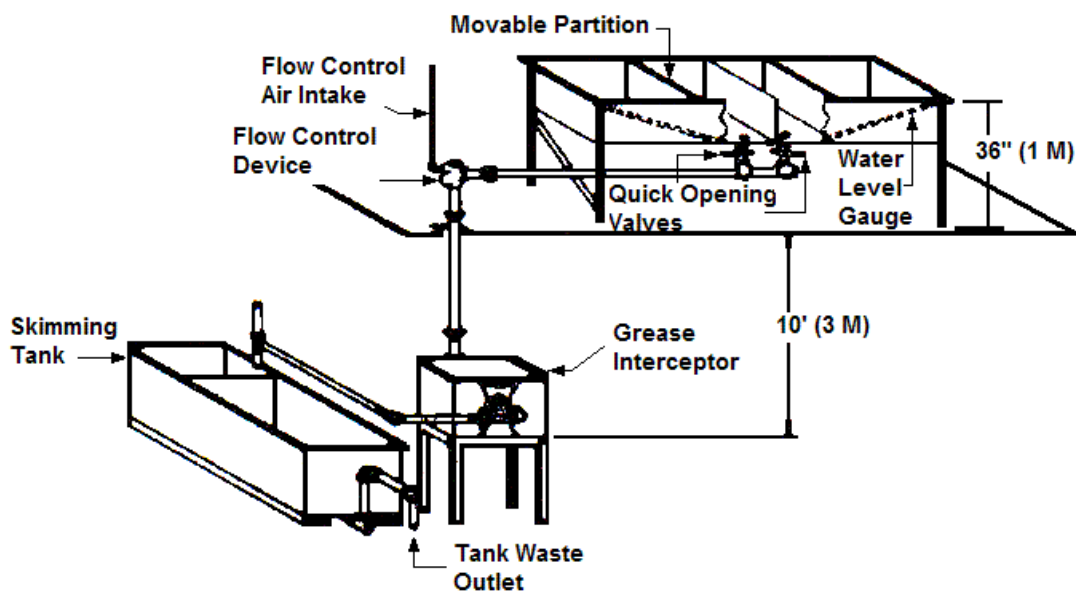


Figure 4 – PDI-G 101 Testing and Rating Procedure

E. Plumbing Code

The design of GCDs is regulated by the plumbing code adopted by the Agency. The California Plumbing Code (CPC) or Uniform Plumbing Code (UPC) are the most common codes used by Agencies to approve GCDs. The CPC contains information on interceptor installation requirements, what can be connected to the interceptors, venting requirements, material construction and other information.

Sizing requirements for HGIs are based on drainage drawdown periods of one or two minutes or pipe flowrates as shown in Table 1. If desired, flowrates can be converted to fixture capacity and Table 1014.2.1 of the CPC (not shown) can be used for sizing.

Table 1
Hydromechanical Grease Interceptor Sizing¹

TABLE 1014.2.1
HYDROMECHANICAL GREASE INTERCEPTOR SIZING USING GRAVITY FLOW RATES¹

DIAMETER OF GREASE WASTE PIPE (inches)	MAXIMUM FULL PIPE FLOW (gpm) ²	SIZE OF GREASE INTERCEPTOR	
		ONE-MINUTE DRAINAGE PERIOD (gpm)	TWO-MINUTE DRAINAGE PERIOD (gpm)
2	20	20	10
3	60	75	35
4	125	150	75
5	230	250	125
6	375	500	250

For SI units: 1 inch = 25 mm, 1 gallon per minute = 0.06 L/s

1. California Plumbing Code Table 1014.2.1 - 2013 Version
2. The table above assumes 1 minute drain time used for sizing HGIs.

Table 2 shows that gravity grease interceptors are sized based on the number of drainage fixture units (DFUs) attached.

Table 2
Gravity Grease Interceptor Sizing³

TABLE 1014.3.6
GRAVITY GREASE INTERCEPTOR SIZING

DRAINAGE FIXTURE UNITS ^{1, 3} (DFUs)	INTERCEPTOR VOLUME ² (gallons)
8	500
21	750
35	1000
90	1250
172	1500
216	2000
307	2500
342	3000
428	4000
576	5000
720	7500
2112	10 000
2640	15 000

For SI units: 1 gallon = 3.785 L

3. California Plumbing Code Table 1014.3.6 - 2013 Version
Sizing based on 30 minute retention time.

F. Costs

HGIs vary in size, configuration and material. Table 3 shows costs for interceptors categorized as standard, automatic, low profile, underground and gravity. Relative values are shown as costs vary by manufacturer, material and features. What can be deduced from Table 3 is that standard HGIs (Figure 2) are the lowest cost interceptors ranging from a few hundred to a few thousand dollars depending on capacity, material and manufacturer. GRDs (Figure 3) have slightly higher costs than standard HGIs and again vary based on material and features. Low profile HGIs are specially designed interceptors designed to fit in areas where a standard HGI is too deep and generally cost a little more due to the uniqueness of the design. Below ground HGIs tend to be larger than standard HGIs and cost more. Specially designed HGI devices intended to fit specific configurations tend to cost a little more but usually fall within the range of costs shown. GGIs are the highest cost interceptors ranging upwards of \$10,000 depending on size and manufacturer. All costs noted in the Table do not include excavating, backfilling and plumbing, which are additional.

**Table 3
Interceptor Costs**

Type	Capacity	Costs in \$
Hydromechanical		
Standard	20 ¹ -500 gal	Low 100's – low 1000's
Automatic	20 ¹ -500 gal	High 100's – low 1000's
Low Profile	20 ¹ -500 gal	High 100's – low 1000's
Underground	20 ¹ -500 gal	High 100's – high 1000's
Gravity	500 gal and up	10,000 and higher

V. Surveys

To gather information on the use of GCDs in Orange County, two surveys were conducted as discussed below.

A. Orange County Surveys

1. An initial survey of WDR Permittees was undertaken by EEC Environmental in November 2014 that asked a number of questions related to the use of GCDs including:

- What type of GCD do you require?
- What type of GCDs have been approved?
- What criteria is used to approve an HGI?
- Does your agency conduct testing for HGIs?
- How many FSEs currently have a GCD?

A summary of the responses is provided below and a copy of the complete survey and responses can be found in Appendix E.

Summary of Responses

- Number of respondents – 21.
- Number of FSEs – 6836.
- Number of GGIs – 2443.
- Number of HGIs – 632.
- Most agencies allow HGIs (when GGIs are not feasible).
- There is no performance testing of HGIs.
- The CPC or UPC are the main codes used.
- Most Agencies follow the 25% Rule.
- Indoor HGIs are inspected.

2. A supplemental survey was conducted in December 2015 to collect additional information not included in the November 2014 survey. This survey asked questions concerning ordinances, kitchen BMPs and requirements for GCDs based on ownership and operation changes. The responses from the survey are summarized below. The complete survey and responses received can be found in Appendix E.

Summary of Responses

- Number of respondents -19.
- Year ordinances adopted:
 - In 2004 – 12
 - After 2004 – 1
 - In 2003 – 2
 - Prior to 2003 – 3
- Most ordinances have not been revised or updated (13).
- HGIs allowed with conditions (physical limitations or constraints, accessibility, costs).
- GGIs preferred in existing FSEs.
- Issues related to the use of HGIs include lack of/or poor maintenance.
- Lack of data to determine if HGIs are effective although there is no evidence they do not work properly.
- Kitchen BMPs required.
- Most Agencies require GGIs after change of ownership or change in operations (remodeling, change in food procedures, more FOG, change in equipment).
- Most Agencies require interceptors (GGIs preferred) when excess FOG has been identified in sewer line.

B. Orange County Findings

Findings from the two Orange County surveys indicated that 36% of FSEs use GGIs and 9% use HGIs. The 4:1 ratio of GGIs to HGIs is not surprising since ordinances require consideration of GGIs first before considering HGIs. And, Agencies use the 25% Rule when assessing compliance for FOG and performance testing of HGIs is not conducted. Also important to note is that most Agencies allow the use of HGIs when a GGI is not feasible; they do not conduct monitoring and Agencies lack sufficient data to assess HGI effectiveness. However, most Agencies indicate that excluding maintenance issues, installed HGIs do not have significant issues.

C. Southern California Alliance of Publicly Owned Treatment Works (SCAP) Surveys

1. A four question survey was conducted in April 2015 of SCAP agencies who were asked specific questions regarding the use of HGIs and GGIs as well as their FOG ordinances. The four questions were:

- Does your Agency allow HGIs?
- If so, what is the brand of the device(s)?
- Does your FOG Ordinance state that these types of devices are allowed?
- Does your Agency charge a separate FOG permit fee?

The results from the responding agencies are summarized below. A copy of the complete survey can be found in Appendix E.

Summary of Responses

- Respondents – 9.
- Agencies generally allow the use of HGIs but not all.
- Ordinances do not specify any particular brand of HGI as long as they meet Agency requirements, which include compliance with the UPC, PDI or other approving agency.
- Most agency ordinances do not specifically mention the use of HGIs as allowed.
- Not all agencies have FOG permit fees.

2. A second survey was initiated in February 2016 to gather additional information. Like the first survey, the questions were focused on HGIs. The questions asked in this survey were:

- Does your agency allow the use of mechanical devices (other than concrete GGIs) such as stainless steel, under the sink, multi-compartment devices in your service area? If so what type?
- Do you allow in-the-floor HGIs?
- Does your agency allow the use of a Trapzilla or some other type of similar device? If so, what device?
- Does your agency have a dedicated FOG program and ordinance?
- Does cost have anything to do with your approval of a device? Are you grandfathering in any FSEs when they remodel? If not, do they have to install a new device when they remodel if they currently have no device?

The results are summarized below. The complete survey can be found in Appendix E.

Summary of Responses

- Respondents – 13.

- HGIs are generally allowed. (Responses varied on whether they were allowed under the sink or the location was not addressed).
- Most agencies allow in-floor HGIs but not all.
- Agencies have a dedicated FOG program and ordinance.
- Economics is not explicitly specified in ordinances but some agencies may consider.

D. SCAP Findings

Like the Orange County findings, the responding SCAP agencies, which also include Orange County agencies, allow the use of HGIs but only if there are constraints to installing a GGI. The allowance of HGIs is usually governed by some type of agency approval such as the Plumbing Code or other approving agency and economic consideration is at the discretion of the Agency.

VI. Grease Control Devices Used

As noted in the previous sections, the type of GCD used by an FSE varies between Agencies. However, the Orange County surveys showed that GGIs are the preferred type of GCD but that agencies also allow the installation of an HGI under specific conditions. Very few Agencies specify the type of HGI required, but typically require that the device is certified through PDI and is properly sized based on either the UPC or CPC sizing requirements (shown in Tables 1 & 2). When approving GRDs, some Agencies prefer the FSE install a Thermaco Big Dipper or Goslyn. The following summarizes information provided regarding GCD installations:

- 3 agencies state they never allow an HGI.
- 95% of agencies only allow HGIs when space and slope is not available.
- 4 agencies required an GRD.
- 25-50 gpm is the most common size of HGI.

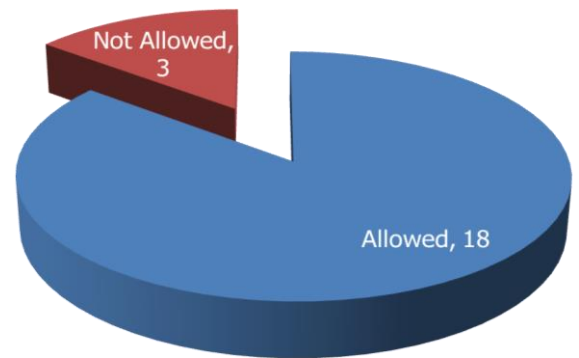


Figure 5 Agencies that Allow HGIs

Some Agencies are also starting to allow larger HGIs that are typically installed outside and underground, but require less excavation space due to their smaller footprint. Examples of these types of devices include the Schier Great Basin GB250, Proceptor by Green Turtle and the Thermaco Trapzilla. These devices are closer to a GGI because of their larger capacity but costs are less for installation and maintenance.

A. Selecting the Proper Grease Control Device

When selecting a grease interceptor for an FSE it is important to take all precautions necessary to protect the sewer collection system from excessive FOG discharge. Agencies cannot simply require a large outdoor GGI for all FSEs and expect it to be the most optimal grease controlling solution. A number of factors that may be considered when establishing requirements for GCD installations include:

1. **Available space:** Installing a GGI requires significant space near the outer perimeter of the FSE building. The excavation area for the interceptor is typically at least 1 ft. larger than the dimension of the GGI. This space is not always available to FSEs especially for FSEs in strip malls, wraparound drive-thrus, high-rise buildings or on properties that do not allow the disturbance of the pavements or sidewalks.
2. **Maintaining proper slope:** The CPC and UPC require a minimum of 2% slope for the grease waste sewer lines leading to the GCD and from the GCD to the main sewer line. Depending on the location of the GCD, maintaining the 2% slope may not be feasible especially when the Agency main sewer line is shallow. Installing a sump pump may be used to overcome the 2% slope limitation but this has the potential to generate odors and is subject to clogging from FOG pass-through. Additionally, if not well maintained, the failing sump pumps can cause SSOs.
3. **Costs of installation:** The expense of installing a GGI is considerably greater compared to an HGI as indicated in Table 3 of Section IV. Also, depending on the extent of the excavation to configure the plumbing, the total costs for installing a GGI for an existing FSE can be high. Costs for installation are typically lower in new construction since the plumbing is exposed and there is no concrete or pavement to remove and replace. Therefore, installing a GGI in new construction FSEs is more feasible. In existing facilities, the costs to retrofit and install a GGI can be as much as \$20,000 more than for new construction facilities due to new plumbing, excavation and backfilling.
4. **FSE flow rates:** FSE flow rates should be compared to the size of the GCD. Smaller FSEs that do not wash significant dishware and are connected to large GCDs will not generate enough wastewater to prevent septic conditions (no aeration) from occurring in the GCD. The septic conditions lead to the generation of hydrogen sulfide (H_2S) and low pH conditions. The H_2S and low pH lead to corrosive conditions that can corrode the concrete of GGIs, can damage the downstream sewer system, and can create offensive odors. As a precaution, Agencies should be careful to size GCDs in accordance with the UPC and CPC and not oversize GCDs.

5. **Sewer line characteristics:** The characteristics of the main sewer line should be considered when determining the appropriate GCD for an FSE. If the FSE is located in an area where the sewer line is prone to FOG accumulation or FOG related SSOs, the Agency may be less prone to allow exemptions from the GGI requirements. If space and slope is an issue, then an HGI or multiple HGIs may be required to connect as many grease waste sinks and drains as possible.
6. **FSE compliance history:** Existing FSEs that have a history of discharging excessive FOG to the sewer system or have caused or contributed to an SSO may not be a good candidate to allow a Waiver or Variance from the requirement to install a GGI, unless there are space or slope limitations.

B. Conditional Waiver/Variance Requirements

When Agencies decide to allow the installation of an HGI over a GGI, the process typically followed is the Conditional Waiver/ Variance process. The issuance of a Conditional Waiver/Variance establishes an understanding with the FSE that the Agency is making an exception to the typical GGI requirements and that if the HGI is not properly maintained the Agency can require the HGI to be replaced with a GGI. This agreement can be established through an official letter with the FSE or by a modification to the FSE's permit requirements. Each request is carefully evaluated and typical conditions that may be included in the Waiver/Variance include but are not limited to:

- An HGI is provided for all grease bearing sinks and drains.
- The HGI is installed pursuant to all manufacturer requirements including flow control devices and proper space for maintenance access.
- The HGI is maintained pursuant to all manufacturers recommendations including, but not limited to:
 - The full contents of the unit(s) are removed prior to settled solids and/or floating FOG reaching 25% of the hydraulic depth of the device, or at maximum, on a quarterly basis (when in use);
 - A log is maintained of all service and maintenance activities, including monthly pumping activities;
 - Kitchen and/or facilities maintenance staff are trained on the operation and maintenance of the HGI.
- Compliance with all other requirements of the FOG Control Program Rules and Regulations is maintained including:
 - Kitchen and/or facilities maintenance staff are trained on BMPs to prevent FOG

- from going down the drain;
- Signage is posted in clear view of kitchen staff stating/illustrating the required kitchen BMP requirements.
- Prior to any tenant or facility modification, addition or alteration of cooking or food preparation equipment, plans are submitted for review and the GGI re-evaluated.
- Prior to any change in menu, change in facility name or change in ownership, plans are submitted for review and re-evaluation of the GGI.
- Space is reserved for a GGI installation in the event that the HCI proves insufficient.

C. Risk-Based Requirements Approach

A review of multiple Agency ordinances found that those ordinances do not consider factors such as the type of equipment used and number of grease producing devices when determining the appropriate device for an FSE. This type of assessment called Risk Assessment is relatively new and found in some newer ordinances. It is more fully discussed in Section VII.

VII. Sanitary Sewer Overflows

For years Agencies have had to deal with SSOs resulting from clogged or blocked sewer lines due to grease. As noted at the beginning of this report, a goal of the State Order is to reduce collection system SSOs through the implementation of various programs, including the FOG program.

In Northern Orange County, the FOG program has been in effect for over 10 years and it is well known that the number of annual SSOs have been reduced significantly over time. To assess the reduction in the number of SSOs occurring in Northern Orange County, the Committee undertook an effort to quantify the number of annual SSOs, and if feasible, determine the effectiveness of the FOG program in reducing SSOs.

A. CIWQS Data Collection

To determine the number of annual SSOs, public SSO data from the California Integrated Water Quality System (CIWQS) was reviewed. The CIWQS system was operational for the entire year beginning in 2007 and that was the year chosen as the starting point. From that date forward annual SSO data reported by Northern Orange County Agencies up to 2015 was reviewed. The CIWQS system contains information on public and private SSOs but only public SSO data was used because it is reported to the state and could be used for comparison with the number of SSOs reported in the Phase I report. Private SSOs are reported voluntarily to the state and their use may result in incomplete information and may not be compatible with the Phase I SSO survey. The Phase I report survey appears to include some private SSO data, but because

Agencies were not required to report SSOs to the state prior to the 2002 Order, it is likely that most private SSOs were reported by cities to the Regional Board as part of the National Pollutant Discharge Elimination System (NPDES) program and may not be included in the Phase I report table.

After downloading the SSO data from CIWQS, the information was reviewed to identify SSOs reported as grease related and tabulated. The CIWQS data contains columns with key words such as roots, grease, vandalism and other parameters that could be searched but could not be drilled down further to identify FSEs as the possible cause of the SSO. To identify an FSE as the possible cause of an SSO, each individual report would have to be reviewed and there was no guarantee that the report would identify an FSE as the cause. Therefore, the CIWQS SSO database was searched simply for grease.

B. Results

The CIWQS SSO results are graphed for the years 2007 thru 2015 in Figure 6. The figure also includes the number of SSOs reported in the EEC Phase I report, which shows that of the 234 SSOs reported in 2001, 148 or 63% were reported as caused by grease. In 2015, there were 54 public SSOs and 11 SSOs (20%) reported to be caused by grease.

The graph shows that indeed there has been a significant reduction (77%) in the number of SSOs reported and an even greater (93%) reduction in the number of SSOs caused by grease. While it cannot be stated that the FOG program has been responsible for the reduction in grease-related SSOs: other factors such as sewer line maintenance, education, kitchen BMP practices and other mechanisms employed by Agencies in their programs have also had some effect on reducing SSOs. However, it can be stated anecdotally that the FOG program is working.

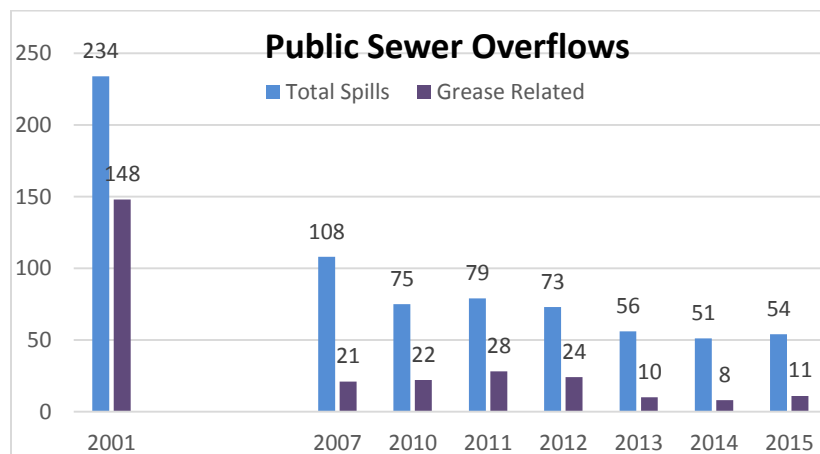


Figure 6 - Total and Grease Related SSOs

VIII. Conclusion and Recommendations

A. Conclusions

The Committee began with the goal of looking at how Agencies in Northern Orange County were implementing their FOG program and the type of GCDs specified and if changes had occurred over the years in the devices specified. Surveys, literature review and Committee member experience provided additional insight into this review. Based on the information gathered, a general conclusion is that the type of GCDs currently specified has not changed since the program's inception and that annual SSOs have been reduced significantly. Other conclusions that can be made regarding the use of GCDs and SSOs include:

1. With a few exceptions, Agency FOG ordinances have not been revised.
2. The preference for GGIs remains.
3. HGIs and GRDs are allowed by Agencies, but only when there are physical constraints such as space, slope or other factors prohibiting the installation of GGIs.
4. There is insufficient Permittee monitoring data to quantitatively assess the performance of HGIs although qualitative information seems to indicate that the HGIs function adequately as long as they are maintained.
5. Public SSOs in Northern Orange County have dropped significantly from a high of 234 in 2001 to 54 in 2015. The number of SSOs related to grease have dropped from 148 in 2001 to 11 in 2015.

B. Recommendations

Since most of the information gathered by the Committee relates to the use of GCDs and their implementation, the following recommendations attempt to provide Agencies with additional information that may be used when reviewing FSE plans and GCD requests.

As noted in this report, Agencies require GGIs for new and existing FSEs as the preferred GCD. However, much has been learned since the start of the program and experience has shown that each FSE must be evaluated individually for its potential to discharge FOG and the impact to the sewer collection system. Selecting the correct GCD requires careful consideration and that Agency staff conducting the FSE plan review are familiar with the different types of GCDs available. It is also important that no matter which type of GCD is chosen, the FSE fully understands the maintenance requirements of the device.

Potential factors that may be considered are noted below.

1. **Space Constraints** – Areas where a new FSE will be constructed provides the best opportunity for the use of a GGI where physical constraints are least likely to be

encountered. Existing FSEs that must be retrofit encounter significant challenges as noted in 4 below.

2. **Interceptor Size** – Typically the more FOG is produced, the larger the interceptor required, or if multiple FSEs are connected together, accurate sizing may show a very large interceptor as required. However, experience has shown that using a large GGI in cases where little wastewater is produced or the interceptor is not adequately maintained could be problematic and cause hazardous buildup of hydrogen sulfide and odors. Conversely, using too small of an interceptor may lead to the discharge of FOG into the collection system and cause SSOs. Agency experience with GCDs should be considered when selecting the appropriate GCD size.
3. **Installation Factors** – When considering the appropriate GCD to be used, consideration may be given to the following factors: type of restaurant (menu items, food processing, number of seats, etc.), pipe slope, space availability, accessibility and maintenance, frequency of use, hot spots, history of SSOs, location (strip mall with one large device or several small), potential odors, pipe size, potential for catching high heels (manhole openings) and other site specific factors.
4. **Retrofit Conditions and Costs** - Retrofitting existing FSEs (slab removal and repair, pipe rerouting, new sewer lines, street repair, etc.) can be costly and can run over \$40,000 depending on site conditions. If the building is leased, consideration could be given to requesting that the owner provide the GCD to make it easier for a tenant to move in. Also, in the case of a leased space, consideration should be given to what would happen if a restaurant with a waiver for a GGI moved out and a heavy FOG restaurant moved in.
5. **FOG Generation Rates** - FOG generation is a key factor in deciding what type of interceptor may be the most appropriate for an FSE. Not all FSEs produce the same amount of FOG. Facilities such as buffets, cafeterias, diners and FSEs that use significant amount of grease and oils in their cooking have the greatest potential to clog the sewer collection system and cause SSOs. Therefore, they should be treated accordingly.
6. **Maintenance** – Maintenance and accessibility to the GCD is an important consideration when selecting a GCD. When the GCD is not properly maintained, failure and pass-through in the GCD can happen rapidly especially in smaller volume devices. Ensure the GCD has adequate covers that can be opened for easy access. For a GGI this might include covers over each chamber to allow maintenance of the interceptor or baffles. For HGIs this might include covers that do not require special equipment or bolts that make it difficult for employees to open, which may deter maintenance.
7. **Risk Assessment** – A relatively new concept incorporated in some programs and touched on in Section VI is the concept of Risk Assessment. EEC Environmental has developed a scoring system to assist in assessing the potential risk an FSE has to discharge FOG to a sewer collection system. The intent of the scoring system is to

provide a non-biased justification to categorize FSEs. Objective criteria such as number of seats, cooking equipment and plumbing fixtures are used to determine an FSE's Risk score. The total score places the FSE into an assigned category. EEC has developed and implemented this system for multiple cities and sewer agencies. An example of the FOG discharge risk table is provided in Appendix F.

The following paragraphs describe how the Risk scoring system may be implemented. The system maximizes the limited resources of an Agency by identifying and focusing on the FSEs that have the highest potential to discharge excessive FOG to the sewer system. GCD installation requirements and rules and regulations can be established for the FSEs in each category. Examples of GCD installation requirements include:

- Category 1 & 2 FSEs are required to install a GGI immediately or upgrade an existing GCD.
- Category 3 FSEs are required to install a GCD if associated with a sewer system hot spot or a SSO.
- Category 4 FSEs are not required to install a GCD.

Based on this scoring criteria, the following FSEs may be categorized as follows:

- A) A typical sandwich shop that warms prepared food served on paper (no dishwasher) would be categorized as a limited food prep facility = **LFP**.

Limited Food Prep FSE: A FSE that engages only in reheating, hot holding, or assembly of ready to eat food products, and/or serves only beverages, ice cream or frozen yogurt, and therefore, in the process of preparing and making food available to the public is likely to generate negligible amounts of FOG that could be discharged into the Agency's sewer system. These types of FSEs are typically Category 4 dischargers and are not required to install a GGI or HGI.

- B) A typical small fast food burger grill serving food on paper, using a grill and deep fryer, and has less than 100 seats would be categorized as a low risk category = **Low FOG Discharger**.

Low FOG Discharger: A FSE that, in the process of preparing and making food available to the public, generates FOG that is discharged into the sewer system, and based on the Agency's rules and regulations regarding ranking FSEs on their FOG discharge risk, has been determined by the Agency to pose a relatively minor risk of discharging FOG in amounts that could significantly impact the sewer system. Typically these FSEs have few

sinks and drains (3-compartment sink only) and an HGI connected to the 3-compartment sink would be sufficient for FOG control.

- C) A typical large buffet or full service restaurant with a seating capacity greater than 100, serving food on reusable plates, cooking with a grill, soup kettles, a rotisserie, and a deep fryer would receive a score of 44 points. Based on this score, this type of FSE would be categorized as a risk category 1 (very high risk) = **Category 1 or Category 2 FOG Discharger**.

High FOG Dischargers are typically required to install a GGI. If a GCD is installed other than a GGI, then all grease waste sinks and drains are connected to the device. FSEs that are High FOG dischargers and are discharging to an HGI, are typically on very high maintenance frequencies (daily or weekly) to maintain the 25% rule program requirement.

C. Future Considerations

As noted in this report, most Agency ordinances have not been updated since they were initially adopted and changes have occurred in the FOG program that might need to be reflected in existing ordinances. For example: the terminology regarding grease control devices has changed and most ordinances do not provide significant guidance on the factors to be considered when selecting devices other than GGIs. Agencies may take information presented in this report or may decide to form a group to study future ordinance updates.

APPENDIX A

2001 Orange County Grand Jury Report

Sewage Spills, Beach Closures Trouble in Paradise?

SUMMARY

In the past several years, Orange County public beaches have experienced many closures due to ocean water contamination, significantly impacting Orange County's economy and quality of life. The Orange County Health Care Agency issued 252 orders that closed beaches for more than 2000 days from the beginning of 1987 through 2000 and the situation is getting worse. Almost all closures were the result of bacterial contamination from a sewage spill into drains or other waterways flowing into the ocean.

The 2000–2001 Orange County Grand Jury conducted a survey among 35 wastewater-collection and/or treatment agencies in the County. The survey concluded that the leading cause of sewage spills is clogged sewage pipes from accumulation of grease/oil discharged from restaurants and high-density residential areas. While several wastewater collection and/or treatment agencies have grease discharge ordinances that require restaurants to have grease trap/interceptor devices, only a relative few of these agencies have a regular inspection and enforcement program in place. With over 6,800 restaurants and approximately 12,000 miles of sewer pipes in Orange County, more effective methods of minimizing grease discharge into sewer pipes must be developed and put into practice if grease-related sewage spills are to be prevented.

The Orange County Grand Jury's recommendations to reduce the grease buildup in our sewer system include:

- Cooperation of cities, county wastewater collection and/or treatment agencies in adopting a standardized countywide grease discharge ordinance with enforcement power,
- An aggressive public education program aimed at individual restaurant owners and staff as well as the general public, including owners/managers of large housing complexes, and
- Regular review of restaurant grease traps/interceptors maintenance logs by the Orange County Health Care Agency and routine inspection of these devices by wastewater collection and/or treatment agencies staff within their respective jurisdictions.

PURPOSE/INTRODUCTION

The beaches of Orange County are among the most beautiful and utilized recreational resources in the entire country. When closed to public use, not only do the people using the beaches lose a recreational resource, but there is a substantial economic impact associated with the absence of beachgoers as well. From San Clemente to Seal Beach, many coastal businesses depend upon beach visitors for a significant portion of their income.

When a sewage line or other sewage facility fails, raw sewage may drain to the ocean, carrying with it bacteria and other human pathogens. This will automatically trigger a state-mandated beach water closure, which will remain in effect until further testing deems the water to be safe for recreational use.

According to a survey conducted by the Grand Jury and directed to 35 wastewater collection and/or treatment agencies in Orange County, the reasons cited for most sewage spills are:

- Accumulation of cooking grease in sewer pipes
- Age-related deterioration of sewer pipes
- Tree root intrusion and blockage of sewer pipes
- Sewage system pump failure

The purpose of this study is to explore the effect improperly discarded cooking grease/oil has on sewage spills and highlight possible remedies that may be available in preventing them

HISTORY AND BACKGROUND

California State law requires that when designated "indicator bacteria" reach certain levels in tested ocean water, the adjacent beach will be posted with warning signs. If higher levels are detected, the ocean waters will be closed to recreational use. Waters are tested several times a week at many locations along Orange County's coastline. Data collected by the Orange County Health Care Agency shows that from 1987 through 2000, the agency issued 252 beach water closure orders, which effectively closed the adjacent beaches to visitors for a total of more than 2000 days.

When large volumes of restaurant or high-density housing-generated cooking grease/oil enter sewage collection pipes, the grease solidifies and accumulates resulting in narrowing of the pipe's internal opening. Eventually the inside of the pipe is closed forcing incoming sewage to escape through manhole covers or other exit points. Until this sewage is detected and contained it may enter a surface drainage system, natural or manmade, where it drains into the ocean. Sewage has a high human pathogen content and thus contaminates water

adjacent to where the drains empty into the ocean, creating an immediate public health hazard.

Restaurants generally dispose of cooking grease/oil in the following three ways:

1. **Grease traps:** These are small devices hooked directly to the outgoing drains of sinks and dishwashers and are located inside the restaurant. Because they hold small quantities of captured grease, these traps must be emptied and cleaned on a regular basis and the grease properly discarded to prevent grease overflow into the sewer system.
2. **Grease interceptors:** Interceptors are large underground devices usually located outside the restaurant and connected to the restaurant's outgoing sewer drainage system. These large tanks have heavy manhole-like covers that are difficult to access for inspection. When full they must be emptied and cleaned by private waste pickup and disposal companies.
3. **Large covered barrels:** Barrels, in which higher quality cooking grease is placed, are kept covered and then collected by commercial companies who sell it for industrial reuse. These barrels are placed outside the restaurant. They are easily accessible and are usually not a contributing factor to the problem unless they are accidentally spilled and the contents enter sewer or storm drains.

Several beach cities in other Southern California counties have recently tackled their grease buildup and disposal problem with very encouraging results. During the 1990's the City of San Diego reported a 48% reduction in the number of sewage spills as a result of aggressive inspection and enforcement of their grease discharge ordinance for restaurants. In particular, the City of Oxnard (Ventura County) has not only adopted a grease discharge ordinance but its sewage treatment plant also operates its own grease pump-out service. The grease is pumped from restaurant interceptor tanks and brought back to the plant for proper processing and disposal. This program has shown to be not only cost effective, but the number of grease-related sewer spills has been reduced from a five year average of 25 to an average of eight spills a year for 1999–2000.

Orange County's situation is complicated by the fact that we have 38 separate agencies that provide wastewater collection and/or treatment services. Thirty-five of these agencies are cities or special districts that provide the sewer pipes and pumping facilities for collecting and transporting the raw sewage to one of the treatment plants located along the coast responsible for final treatment, reclamation and/or disposal of wastewater. These treatment plants accomplish final disposal by one of the following methods:

- Treated effluent water is sent out several miles via underwater pipe into the ocean.

- Wastewater is treated to levels suitable for recharging the natural underground aquifer.
- Treated wastewater is used as reclaimed water for landscaping or other non-human consumption-related activity.

In general, these agencies are responsible for the construction, inspection and maintenance of wastewater collection and transportation and in some cases treatment facilities within their jurisdictions. They also have the authority to issue wastewater discharge permits and to adopt various ordinances. These ordinances dictate quality, volume and prohibited types of wastewater accepted from residential, commercial and industrial wastewater generators.

The Grand Jury conducted a survey among 35 wastewater collection and/or treatment agencies in Orange County. Pertinent questions and responses from each agency to the survey were as follows:

1. Please list the most important reasons for accidental sewage spills occurring in your jurisdiction. A total of 29 (83%) agencies included grease as a major cause of sewage spills.
2. Do you have a grease discharge ordinance in your City/Agency?
Yes: 23 (66%) No: 12 (34%)
3. Do you require grease traps/interceptors for restaurants?
Yes: 26 (74%) No: 9 (26%)
4. If you do require grease traps/interceptors, do you have an inspection/maintenance program for these? (Of the 26 "Yes" responses to question number 3.)
Yes: 7 (27%) No: 19 (73%)
5. Have you adopted the 1997 *Uniform Plumbing Code* for use in your City/Agency? (This question relates to standardized design of grease traps/interceptors.)
Yes: 31 (89%) No: 4 (11%)

The Grand Jury's analysis shows that approximately two-thirds of the wastewater collection and/or treatment agencies surveyed have adopted a grease discharge ordinance within their area of jurisdiction and most (74%) require some type of grease intercepting device in restaurants. However, only 27% conduct routine inspection and maintenance programs to assure that these devices are effective in reducing the discharge of cooking grease in sewer lines.

The Orange County Sanitation District, in cooperation with their member agencies and Orange County Health Care Agency have conducted public information efforts to educate not only restaurants but also occupants of high-density residential housing areas such as large apartment complexes. This is

accomplished by distribution of brochures and presentations to residents and restaurants. Large residential housing complexes are also a source of cooking grease, although not nearly in the same volume as that discharged by restaurants. However, these efforts may need to be resumed and expanded given the fact that grease-related sewer pipe blockages continue to increase in number.

METHOD OF STUDY

The Grand Jury visited wastewater collection and/or treatment sites and facilities as well as conducted interviews with administrative, technical and operational staff of several wastewater collection and/or treatment agencies, both within and outside of Orange County. Seminars and workshops on the subject of wastewater collection, treatment and water quality were attended. Grand Jurors interviewed restaurant owners and managers. In addition, the Grand Jury met with several staff members of the Environmental Health Division of the Orange County Health Care Agency and then accompanied them on their regular restaurant inspections. Literature and ordinances from other coastal counties relating to grease discharge in sewage systems were also reviewed.

FINDINGS

Under California Penal Code Sections 933 and 933.05, responses are required to all findings. The Orange County Grand Jury has arrived at five findings:

1. Seventy-four percent of Orange County wastewater collection and/or treatment agencies require restaurants in their jurisdictions to have grease traps/interceptors installed and 66% have discharge ordinances.
2. Few wastewater collection and/or treatment agencies (27%) are using these discharge ordinances as a basis for grease trap/interceptor inspections and maintenance activities and resultant enforcement actions when restaurants are not in compliance with the ordinance.

Responses to Findings 1 and 2 are required from:

The City Councils of:

**Anaheim
Brea
Buena Park
Cypress
Fountain Valley
Fullerton
Garden Grove
Huntington Beach**

**Laguna Beach
La Habra
La Palma
Los Alamitos
Newport Beach
Orange
Placentia
San Clemente**

**San Juan Capistrano
Santa Ana
Seal Beach
Stanton
Villa Park
Westminster
Yorba Linda**

**And
The Boards of Directors of:**

**Aliso Water Management Agency
Costa Mesa Sanitary District
El Toro Water District
Irvine Ranch Water District
Moulton Niguel Water District
Midway City Sanitary District
Orange County Sanitation District
Rossmoor/Los Alamitos Area
Sewer District**

**Santa Margarita Water District
South Coast Water District
South East Regional Reclamation
Authority
Sunset Beach Sanitary District
Trabuco Canyon Water District
Yorba Linda Water District**

3. The Orange County Sanitation District, through its member agencies and the Orange County Health Care Agency have carried out public education efforts aimed at reducing cooking grease discharge from restaurants and residential sources.

A Response to Finding 3 is from requested from **the Orange County Health Care Agency**

A Response to Finding 3 is required from **the Board of Directors, Orange County Sanitation District and Orange County Board of Supervisors.**

4. All Orange County restaurants are inspected on a regular basis by qualified Orange County Health Care Agency, Environmental Health Division Specialists.
5. Orange County Health Care Agency specialists do not routinely inspect restaurant grease traps/interceptors unless there is an obvious indication of malfunction, even though these inspections are thorough in all other aspects of sanitation and food safety.

Responses to Findings 4 and 5 are required from **Orange County Board of Supervisors and requested from the Orange County Health Care Agency**

RECOMMENDATIONS

Under California Penal Code Sections 933 and 933.05, each recommendation requires a response from the government entity to which it is addressed. These responses are submitted to the Presiding Judge of the Superior Court. Based upon the findings, the Orange County Grand Jury recommends that:

1. All Orange County wastewater collection and/or treatment agencies form a coalition for the purpose of formulating a standardized grease discharge ordinance for use by all affected wastewater collection and/or treatment agencies. (Finding 2)
2. This ordinance should carry enough enforcement power to effectively prevent cooking grease from being discharged by restaurants and should include a vigorous inspection schedule, maintenance criteria and clearly defined enforcement procedures and sanctions where violations are noted. (Finding 2)
3. All Orange County wastewater collection and/or treatment agencies should carry out aggressive grease discharge prevention education and training programs aimed at individual restaurant owners and staff in their respective jurisdictions. Due to the high turnover in both restaurant businesses and workers, this effort should be carried out continually, countywide, throughout the year. (Finding 3)
4. Completion of training programs should be made a condition for wastewater discharge permit issuance to all new applicants, where discharge permits are required. This educational program should also contain a component directed toward owners and/or managers of large housing complexes. (Finding 3)

Responses to Recommendations 1 - 4 are required from:

The City Councils of:

Anaheim	Laguna Beach	San Juan Capistrano
Brea	La Habra	Santa Ana
Buena Park	La Palma	Seal Beach
Cypress	Los Alamitos	Stanton
Fountain Valley	Newport Beach	Villa Park
Fullerton	Orange	Westminster
Garden Grove	Placentia	Yorba Linda
Huntington Beach	San Clemente	

And

The Boards of Directors of:

Aliso Water Management Agency	Orange County Sanitation District
Costa Mesa Sanitary District	Rossmoor/Los Alamitos Area
El Toro Water District	Sewer District
Irvine Ranch Water District	Santa Margarita Water District
Moulton Niguel Water District	South Coast Water District
Midway City Sanitary District	South East Regional Reclamation Authority

**Sunset Beach Sanitary District
Trabuco Canyon Water District**

Yorba Linda Water District

5. The Orange County Health Care Agency should require, and then routinely inspect and review grease trap/interceptor maintenance logs to be accurately kept by restaurant operators to assure proper emptying and cleaning frequency of these devices. This log review should be made part of the Health Care Agency's regularly scheduled restaurant food safety inspection visit procedures. (Findings 4 and 5)

A Response to Recommendation 5 is requested from the **Orange County Health Care Agency.**

A Response to Recommendation 5 is required from the **Orange County Board of Supervisors**

APPENDIX B

Table B-1 & B-8

(Phase I Report 2003)

**Table B-1
Summary of SSOs*
2001**

City	2001	2001 % Grease Caused
NORTH ORANGE COUNTY		
Anaheim	26	25
Brea	1	0
Buena Park	3	90
Costa Mesa Sanitary	16	53
Cypress	4	100
Fountain Valley	3	100
Fullerton	34	30
Garden Grove	45	90
Huntington Beach	13	52
Irvine	NA	NA
Irvine Ranch Water District	3	0
La Habra	9	90
La Palma	0	0
Midway City Sanitary	14	90
Newport Beach	21	90
Orange	20	55
Placentia	3	90
Rossmoor/Los Alamitos	0	0
Santa Ana	13	90
Seal Beach	2	NA
Stanton	0	0
Sunset Beach Sanitary	0	0
Tustin	4	0
Villa Park	0	0
Yorba Linda Water District	0	50
SOUTH ORANGE COUNTY		
Aliso Viejo	NA	NA
San Clemente	8	15

Explanation:

NA = RFI Question Not Answered

Data for North Orange County from OCSD City and Agency Collection Facilities O&M Survey FY '00-01 Data, June 2002

Data for South Orange County from RFI

*Based on interviews with many of the cities and agencies listed above, some cities or agencies reported private property SSOs as well as the SSOs in their sewer lines.

**Table B-8
Summary of FOG Program and Ordinances**

City	FOG Program	Grease Control Ordinance	Requires Grease Control Device Per Uniform Plumbing Code
NORTH ORANGE COUNTY			
Anaheim	No	Yes	Yes
Brea	-	No	Yes
Buena Park	No	No	Yes
Costa Mesa Sanitary	No	No	No
Cypress	No	No	Yes
Fountain Valley	-	No	Yes
Fullerton	No	No	Yes
Garden Grove	No	No	Yes
Huntington Beach	No	No	Yes
Irvine	No	No	Yes
Irvine Ranch Water District	No	No	No
La Habra	No	No	Yes
La Palma	No	No	Yes
Midway City Sanitary	-	Yes	Yes
Newport Beach	No	Yes	No
Orange	No	No	Yes
Placentia	-	Yes	Yes
Rossmoor/Los Alamitos	No	Yes	No
Santa Ana	No	No	Yes
Seal Beach	No	No	Yes
Stanton	No	Yes	Yes
Sunset Beach Sanitary	No	Yes	No
Tustin	No	No	Yes
Villa Park	No	No	Yes
Yorba Linda Water District	-	Yes	Yes
SOUTH ORANGE COUNTY			
Aliso Viejo	No	Yes	No
San Clemente	Yes	No	Yes

Explanation:

All Other Data from RFI

Data for Grease Control Ordinance and Grease Control Ordinance Per Uniform Plumbing Code Fields for North Orange County from City and Agency Collection Facilities O&M Survey FY '00-01 Data, June 2002

All Other Data from RFI

APPENDIX C

FOG Control Program

Backbone Ordinance

(Phase I Report 2003)

FOG CONTROL PROGRAM

BACKBONE ORDINANCE

I. Purpose and Applicability

The purpose of this ordinance is to prevent clogging and blocking of the City's¹ sanitary sewer lines through the establishment of regulations for the discharge of fats, oils, and grease, and other insoluble waste discharges from food service establishments into the sanitary sewerage system for the City. The purpose of the ordinance is further to implement procedures for recovering costs associated with FOG discharges and blockages, to establish administrative requirements for FSEs, and to establish enforcement procedures for the regulations.

II. Definitions

A. Fats, Oils, and Grease (FOG)

FOG shall mean any substance such as a vegetable or animal product that is used in, or is a byproduct of, a cooking or food preparation process, and that may solidify with a change in temperature or other circumstance, adhere to the walls of a sewer, and create or contribute to a blockage in a sewer lateral or sanitary sewerage system component.

B. Food Service Establishment (FSE)

A food service establishment (FSE) shall mean any entity operating within ****THE CITY**** in a permanently constructed structure, such as a room, building, place, or portion thereof, maintained and used or operated for the purpose of storing, preparing, serving, or manufacturing, packaging, or otherwise handling food for sale to other entities or for consumption by the public, its members, or employees and which has any process or equipment that uses or produces FOG.

C. Food Grinder

Food grinder or garbage grinder shall mean any device installed in the plumbing or sanitary sewerage system for the purpose of grinding food waste or food preparation byproducts for the purpose of disposing into the sanitary sewerage system.

¹ The City should be defined in this paragraph.

D. Grease Interceptor

A grease interceptor is a two or three compartment chamber that is generally required to be located, according to the Uniform Plumbing Code, underground, between an FSE and the sanitary sewerage system. These devices may be large and are intended to gravity separate FOG from wastewater as the wastewater moves through the chamber. To perform according to design specifications, the chamber requires periodic cleaning and maintenance, including removal of accumulated FOG and solids, which must be disposed in a proper manner at regular intervals.

E. Grease Trap

A grease trap is a device, generally much smaller than a grease interceptor, which is attached to no more than four individual plumbing fixtures, also intended to separate FOG from wastewater prior to discharge of the wastewater to the sanitary sewerage system. Grease traps must be cleaned regularly and the FOG and solids disposed in a proper manner.

F. Automatic Grease Trap

An automatic grease trap is a grease trap which is designed with a self-cleaning mechanism to remove grease from the chamber intermittently or continuously.

G. Sewer Lateral

A sewer lateral is a building sewer as defined in the Uniform Plumbing Code. It is the wastewater connection between the building's wastewater facilities and a public sewerage system.

H. Sewer Lateral Line Cleaning

Sewer lateral line cleaning is the flushing or rodding of the lateral connection between the FSE and the public sewerage system to remove FOG, roots, and other debris, whether it is conducted on a regular maintenance schedule or to remove a blockage on an emergency basis.

I. Uniform Plumbing Code

The Uniform Plumbing Code (UPC) refers to the California Code of Regulations, Title 24, Part 5.

J. FOG Control Program Manager

The FOG Control Program Manager is the individual or public agency designated by the City to administer the FOG Control Program. The FOG Control Program Manager is

responsible for all determinations of compliance with the program, including approval of discretionary variances and waivers.

K. General Permit for Food Service Establishments

The General Permit for Food Service Establishments (FSEs) is a legally-binding permit setting forth the terms, conditions, and criteria of the FOG Control Program. It is prepared and maintained by the FOG Control Program Manager under authority from the City, and its provisions may be modified from time to time by the FOG Control Program Manager.

L. Grease Hauler

Grease Hauler means any person or entity who collects the contents of a grease interceptor or grease trap for the purpose of transporting it to a recycling or disposal facility. A grease hauler may also provide grease interceptor or grease trap maintenance services.

III. FOG Control Program

A. FOG Discharge Restrictions

FOG may not be discharged into the City's sanitary sewerage system if it will accumulate and/or cause or contribute to blockages in the City's sanitary sewerage system or in the sewer lateral which connects the FSE to the City's sanitary sewerage system.

B. General Permit for Food Service Establishments and Additional Permit Conditions

The FOG Control Program Manager is authorized to prepare and maintain a General Permit for Food Service Establishments ("General Permit"). This General Permit will contain the specific requirements for the FOG Control Program. Its terms may be modified periodically by the FOG Control Program Manager, following a public hearing to provide an opportunity for interested parties to provide comments. Each FSE which discharges or proposes to discharge into the City's sanitary sewerage system must submit a Notice of Intent to Discharge to the FOG Control Program Manager and must agree to comply with the terms of the General Permit. Failure to comply with the General Permit conditions will constitute a violation of this ordinance.

Notwithstanding the existence of the General Permit, the FOG Control Program Manager may also issue individual permit conditions to any FSE. In the event the FOG Control Program Manager issues individual permit conditions to an FSE, the basis for those permit conditions shall be disclosed to the FSE in writing along with the permit

conditions. Failure to comply with the individual permit conditions will constitute a violation of this ordinance.

C. FOG Pretreatment Required

1. New FSEs

On or after the effective date of this ordinance, all newly constructed FSEs, FSEs which change ownership, and FSEs which undergo remodeling in excess of a dollar value of more than \$² or resulting in an increase in flow or waste generation of XX%³ or more shall be required to install a grease interceptor, according to requirements set forth in the General Permit for Food Service Establishments, unless a waiver is granted under Section III.C.3 below, and shall be required to follow all requirements of the grease control program of this ordinance.

2. Existing FSEs

All existing FSEs may be required to install and to properly operate and maintain a grease interceptor according to the requirements set forth in the General Permit, unless the FSE has obtained a waiver as described in Section III.C.3 below, and shall be required to follow all requirements of the grease control program of this ordinance. The requirement to install and to properly operate and maintain a grease interceptor may be conditionally stayed, that is delayed in its implementation, by the FOG Control Program Manager for a period of up to two years from the date of adoption of this ordinance. Terms and conditions for application of a stay to an FSE shall be set forth in the General Permit.

a) Alternative FOG Pretreatment Program

Any existing FSE may submit an application to the FOG Control Program Manager for approval of an Alternative FOG Control Program in lieu of installation of an interceptor. If the Alternative FOG Control Program is approved by the FOG Control Program Manager, the FSE will be required to implement this program and will be granted a variance from the requirement to install, operate and maintain a grease interceptor, for as long as the FSE demonstrates to the satisfaction of the FOG Control Program Manager that the FSE meets the FOG discharge requirements of Section III.A of this ordinance and as detailed in the General Permit. The terms and conditions for approval of an Alternative FOG Pretreatment Program and a variance from the requirement to install a Grease Interceptor shall be specified in the General Permit.

The FSE must comply with other requirements of this ordinance and the General Permit, to the extent that they are applicable.

² Cities have used dollar values from \$25,000 to \$100,000 to trigger the loss of the grandfather exception.

³ This waste flow option may be utilized in the program.

3. Application for Waiver of Requirement for Grease Interceptor

Any FSE may obtain a waiver of the requirement to install, operate and maintain a grease interceptor from the FOG Control Program Manager, if the FOG Control Program Manager determines that its operation will not generate sufficient FOG to have the potential for causing or contributing to a blockage of the sanitary sewerage system or the sewer lateral. The factors on which the FOG Control Program Manager will evaluate the FSE operation to determine whether a waiver will be granted will be based on analysis utilizing Uniform Plumbing Code calculations which estimate potential for generating FOG and when discharges are de minimis. The specific factors and procedures for applying for a waiver shall be set forth in the General Permit. Any waiver granted under this section is valid only as long as the FSE continues to operate according to the information contained its Notice of Intent to Discharge.

The FSE shall comply with other requirements of this ordinance, including annual reporting and inspection requirements, to the extent they are applicable.

4. Operations and Maintenance Requirements

All grease interceptors and grease traps shall be maintained in efficient operation at all times by the FSE at the FSE's expense. Details of required maintenance shall be specified in the General Permit.

Maintenance of the sewer lateral, whether through hydrojetting or rodding, shall not cause or contribute to blockages in the City's sanitary sewerage system. Terms and conditions for this maintenance work, including, but not limited to, notification requirements, shall be specified in the General Permit.

5. Best Management Practices

Each FSE shall implement a program of Best Management Practices in its operation to minimize the discharge of FOG into the sanitary sewerage system. The General Permit shall include Best Management Practices for kitchen practices, food preparation and cleanup areas and for the design, operation and maintenance of grease interceptors, grease traps and other facilities.

Every food service employee of the FSE must be trained in the BMP Program as specified in the General Permit.

6. Food Grinders

The use of a food grinder which discharges food wastes from an FSE into the sanitary sewerage system is prohibited.

D. Program Administration

1. Notice of Intent to Discharge

Each existing FSE shall submit a “**Notice of Intent to Discharge**” (NOI) to the FOG Control Program Manager within 180 days of the effective date of this ordinance. The information to be provided on the NOI shall be specified in the General Permit. The NOI shall contain a certification by the FSE that it intends to comply with all requirements of this ordinance and the General Permit.

Any existing FSE which substantially changes its menu or operation shall submit a revised NOI at least 30 days prior to commencing service under the new operation. The applicability of an existing waiver, stay or variance from the requirement to install, operate and maintain a Grease Interceptor will be assessed by the FOG Control Program Manager based on the information contained in the new NOI.

All newly constructed FSEs, FSEs which change ownership, and FSEs which undergo remodeling in excess of a dollar value of more than \$⁴ or which results in an increase in flow or waste generation of XX%⁵ or more shall submit an NOI at least 60 days prior to startup. The NOI shall include a certification that the FSE will operate in compliance with all provisions of this ordinance. Any FSE which fails to submit the required NOI in a timely manner may be prohibited from discharging to the sanitary sewerage system.

2. Recordkeeping Requirements

Each FSE shall maintain records for its FOG Pretreatment Program as specified in the General Permit.

3. Annual Program Certification

At least once annually, each FSE shall submit a certification to an inspector, at the inspector’s request, that its operation has not changed from the conditions documented in its NOI, that all logs and documents maintained on site are true and correct, and that the FSE is in compliance with all requirements of this ordinance. A copy of the form of this certification shall be included in the General Permit.

4. Reporting Requirements

Each FSE shall report to the FOG Control Program Manager any spills of FOG and any unauthorized discharges into the sanitary sewerage system within the time period following the occurrence of the event as specified in and according to the requirements set forth in the General Permit.

⁴ See, footnote 2.

⁵ See, footnote 3.

5. Right to Enter and Inspections

Upon showing proper credentials, a person authorized by the FOG Control Program Manager shall have the right to enter and inspect the FSE's premises for announced or unannounced inspections. Such person shall have access to any facilities and records necessary for determining compliance with this ordinance. An inspection may include review of all logs and documentation of the FSE's FOG Management Program, inspection of all kitchen facilities, and inspection of any and all grease pretreatment facilities and devices.

Orange County Health Care Agency inspectors are authorized to act for the FOG Control Program Manager as inspectors during regular OCHCA FSE inspections. Orange Country Heath Care Agency inspectors will review FOG Control Program Records for each FSE at least once annually.

IV. Fees

Each FSE shall pay a one time Application Fee for each NOI submitted pursuant to Section III.D.1 of this ordinance, including the initial NOI, and an NOI submitted following change of ownership, for a substantially changed operation, or due to remodeling which results in excess of a dollar value of more than \$\$⁶ or an increase in flow or waste generation of XX%⁷ or more. The Application Fee must be paid when the NOI is filed with the City. The amount of the Application Fee shall be specified in the General Permit.

Each FSE shall pay an annual fee established by the FOG Control Program Manager for the FOG Control Program. The amount of the fee shall be based on the FSE's potable water use and on the classification of the FSE in one of three categories:

- FSE with approved grease interceptor;
- FSE without an approved grease interceptor; and
- FSE with waiver of requirement to install approved grease interceptor.

The factors for calculating the fee for each category of FSE shall be included in the General Permit.

V. Enforcement

Failure to comply with the City's FOG Control Program, the terms of this ordinance and the General Permit, and any individual permit conditions will result in enforcement action against the FSE. The FOG Control Program Manager shall be responsible for enforcement actions.

⁶ See, footnote 2.

⁷ See, footnote 3.

Violations of this ordinance, the General Permit and individual permit conditions may result in fines and/or penalties. Fines and/or penalties shall be set forth in the General Permit.

1. Appeal of FOG Pretreatment Requirement

Any FSE may appeal the decision of the FOG Control Program Manager with respect to the FOG Pretreatment Requirements, including, the requirement to install a grease interceptor, the sizing requirements for a grease interceptor, the denial of a proposed Alternative FOG Pretreatment Program, and the addition of individual permit conditions.

- (1) Appeals shall be submitted to the FOG Control Program Manager within thirty days after the FSE has been notified of the decision by the FOG Control Program Manager. The decision of the FOG Control Program Manager on the appeal shall be in writing.
- (2) The decision of the FOG Control Program Manager can be appealed within fifteen days of the issuance of the FOG Control Program Manager's decision.⁸

2. Violations

Failure to comply with the provisions of this ordinance, the terms of the General Permit, and any individual permit conditions may result in one or more of the following:

- (1) Notices of noncompliance may be issued with a specified period for correction;
- (2) Administrative citations may be issued for violations in the amounts and manner established by the FOG Control Program Manager;⁹
- (3) The FSE may be assessed for all expense, loss, and damage associated with a blockage in the sanitary sewerage system resulting from the FSE's failure to comply with this ordinance, the General Permit, and individual permit conditions;
- (4) The FSE may be charged a compliance fee, following determination that an FSE was in violation, as established by the FOG Control Program Manager; and
- (5) The FSE may be prohibited from discharging to the sanitary sewerage system.

3. Appeals of Violations

Determination of violations resulting in fines, penalties, or requirements to install grease interceptors may be appealed in the following manner:

- (1) Appeals of fines, penalties, or other corrective actions shall be submitted to the FOG Control Program Manager within thirty days after the FSE has been notified of the penalty and/or corrective actions. The decision of the FOG Control Program Manager shall be in writing.

⁸ The appeals process must be consistent with the City's procedures.

⁹ This must be consistent with the City's procedures.

(2) The decision of the FOG Control Program Manager may be appealed within fifteen days of the issuance of the FOG Control Program Manager's decision.¹⁰

¹⁰ See, footnote 8.

APPENDIX D

Plumbing & Drainage Institute

Certified Hydromechanical Interceptors

Plumbing & Drainage Institute

An Association of Manufacturers of Plumbing and Drainage Products



Certified Grease Interceptors

Additional Pages

- [Login](#)
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- [List of licensees](#)
- [PDI Standards](#)
- [Publications](#)
- [Seminars](#)
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AB Restaurant Equipment LLC

P.O. Box 388
 Morganville, NJ 07751
 Phone: 800-488-0513
 Fax: 732-970-5898
 URL: www.abreg.com

Grease Interceptors

Model Number	Size
ABGT-8LB	04 GPM
ABGT-14LB	07 GPM
ABGT-20LB	10 GPM
ABGT-30LB	15 GPM

Ashland PolyTrap

P.O. Box 218
 Williston, Ohio 43468
 URL: www.Ashlandpolytraps.com

Grease Interceptors

Model Number	Size
4804	04 GPM
4807	07 GPM
4810	10 GPM
4815	15 GPM
4820	20 GPM
4825	25 GPM
4835	35 GPM
4850	50 GPM

Bio-Microbics Inc.

8450 Cole Parkway
 Shawnee, KS 66227
 Phone: 800-753-3278
 Fax: 913-422-0808
 URL: www.biomicrobics.com

Grease Interceptors

Model Number	Size
FH-20	20 GPM
FH-35 has been dropped	35-GPM
FH-50	50 GPM

BK Resources, Inc.

120 Frontage Road
 Altamont, IL 62411
 Phone: 888-310-4393

Grease Interceptors

Model Number	Size
BK-GT-8	04 GPM

Fax: 888-310-4394

BK-GT-14	07 GPM
BK-GT-20	10 GPM
BK-GT-30	15 GPM
BK-GT-40	20 GPM
BK-GT-50	25 GPM
BK-GT-70	35 GPM
BK-GT-100	50 GPM

BK-GI-302-P	15 GPM
BK-GI-402-P	20 GPM
BK-GI-503-P	25 GPM
BK-GI-703-P	35 GPM
BK-GI-1004-P	50 GPM

Canplas Industries, LTD.

500 Veterans Drive Box 1800

Barrie, Ontario, Canada

L4M4V3

Phone: 800-461-1771

Fax: 705-726-8991

URL: www.endurainterceptor.com

Grease Interceptors

Model Number	Size
3907A	07 GPM
3910A	10 GPM
3915A	15 GPM
3920A	20 GPM
3925A Discontinued Model	25 GPM
3935A	35 GPM
3950A	50 GPM
3925ALT	25 GPM
3925A02LO	25 GPM
Endura XL 75gpm 4075A04(T)	75 GPM
Endura XL100gpm 40100A04(T)	100 GPM

Grease Interceptors with Sensing and Alarm Devices

Model Number	Size
394633 Discontinued Model	35 GPM

EPAS Ltd..

5 Shepherd's Drive

Cambane Ind. Est.

Newry Co. Down

N. Ireland BT 35 6JQ

Phone: +44(0)28 3083 3081

Grease Interceptors

Model Number	Size
GS1000	02 GPM
GS1000 AST	02 GPM
GS1000-LL	02 GPM

Fax: +44(0)28 3025 7556

URL: www.epas-ltd.com

GS1850	07 GPM
GS1850 AST	07 GPM
GS1850 AST-WOK	07 GPM
GS1850-ECO	07 GPM
GS1850-ECO-S	07 GPM
GS1850 AST-ECO	07 GPM
GS1850-LL	07 GPM
GS1850 AST-CRM-4	07 GPM
GS1850 AST-CRM-4-F	07 GPM
GS1850 AST-CRM-8	07 GPM
GS1850 AST-CRM-8-F	07 GPM
GSUSA-125	10 GPM
GSUSA-140	15 GPM
GSUSA-115	25 GPM
GSUSA-160	35 GPM
GSUSA-229	50 GPM
GSUSA-330	50 GPM
GSUSA-440	75 GPM

FM Environmental Ltd.

Greenbank Ind. Est.

Newry

County Down

Northern Ireland, UK BT34 2QX

Phone: ++4428 302 66616

Fax: ++4428 302 63233

URL: www.greaseguardian.com

Grease Interceptors

Model Number	Size
GGX-15	15 GPM
Grease Guardian GGX-25 GRD	25 GPM
Grease Guardian GGX-35 GRD	35 GPM

Goslyn LP

1904 University Business Dr.

Suite 310

McKinney, TX 75071

Phone: 888-648-5040

Fax: 214-618-3765

URL: www.goslyn.com

Grease Interceptors

Model Number	Size
GOS20	04 GPM
GOS40	10 GPM
GOS60	15 GPM
GOS80	25 GPM
GOS80LP	25 GPM

Highland Tank/Lowe Engineering

Grease Interceptors

1510 Stoystown Road

Friedens, PA 15541

Phone: 814-443-6800

Fax: 814-444-8662

URL: www.highlandtank.com

Model Number	Size
AGI-20	20 GPM
AGI 25	25 GPM
AGI 35	35 GPM
AGI-50	50 GPM

Jay R Smith Mfg. Co.

Grease Interceptors

2781 Gunter Drive East

Montgomery, AL 36109-0237

Phone: 334-277-8520

Fax: 334-272-7396

URL: www.jrsmith.com

Model Number	Size
P500-07	07 GPM
P500-10	10 GPM
P500-15	15 GPM
P500-20	20 GPM
P500-25	25 GPM
P500-35	35 GPM
P500-50	50 GPM
P500GT-07	07 GPM
P500GT-10	10 GPM
P500GT-15	15 GPM
P500GT-20	20 GPM
P500GT-25	25 GPM
P500GT-35	35 GPM
P500GT-50	50 GPM
8007	07 GPM
8010	10 GPM
8015	15 GPM
8015 low inlet Discontinued	15 GPM
8020	20 GPM
8025	25 GPM
8035	35 GPM
8050	50 GPM
8120	20 GPM
8170-25 Discontinued Model	25 GPM
8970-20 Discontinued Model	20 GPM
8970-35	35 GPM
8970-50 Discontinued Model	50 GPM
800-07	07 GPM
800-10	10 GPM
800-15	15 GPM

800-20	20 GPM
800-25	25 GPM
800-35	35 GPM
800-50	50 GPM

802-07	07 GPM
802-10	10 GPM
802-15	15 GPM
802-20	20 GPM
802-25	25 GPM
802-35	35 GPM
802-50	50 GPM

815-04	04 GPM
815-07	07 GPM
815-10	10 GPM
815-15	15 GPM
815-20	20 GPM
815-25	25 GPM
815-35	35 GPM
815-50	50 GPM

8450	75 GPM
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811-15 Discontinued Model	15 GPM
811-20 Discontinued Model	20 GPM
811-25 Discontinued Model	25 GPM
811-35 Discontinued Model	35 GPM

John Boos & Co.

315 South First St.
 Effingham, IL 62401
 Phone: 217-347-7701
 Fax: 217-347-7705
 URL: www.johnboos.com

Grease Interceptors

Model Number	Size
GI-302-P	15 GPM
GI-402-P	20 GPM
GI-503-P	25 GPM
GI-703-P	35 GPM
GI-1004-P	50 GPM

Josam Company

525W US Highway 20
 Michigan City, IN 46360-0360
 Phone: 219-872-5531
 Fax: 219-874-9539

Grease Interceptors

Model Number	Size
60102H	07 GPM
60103H	10 GPM
60104H	15 GPM

URL: www.iosam.com/catalog/JOS/line/GI

60105H	20 GPM
60106H	25 GPM
60107H	35 GPM
60108H	50 GPM
60109H	75 GPM
60110H	100 GPM
60104H-GRD	15 GPM
60105H-GRD	20 GPM
60106H-GRD	25 GPM
60107H-GRD	35 GPM
60108H-GRD	50 GPM
60102 Discontinued Model	07 GPM
60103 Discontinued Model	10 GPM
60104 Discontinued Model	15 GPM
60105 Discontinued Model	20 GPM
60106 Discontinued Model	25 GPM
60107 Discontinued Model	35 GPM
60108 Discontinued Model	50 GPM
60308A	50 GPM
60400-50	50 GPM

Grease Interceptors with Sensing and Alarm Devices

Model Number	Size
60104-SAP	15 GPM

Klinger's Trading Inc.

3009-B Bankers Industrial Drive

Atlanta, GA 30360

Phone: 770-246-6006

Fax: 770-246-6004

URL: www.klingerstrading.com

Grease Interceptors

Model Number	Size
GT-40	20 GPM
GT-100	50 GPM

L&J Restaurant Manufacturing Import Inc.

94 Bowery

New York, NY 10013

Phone: 866-842-4264

Fax: 212-431-9693

Grease Interceptors

Model Number	Size
LJ-8	04 GPM
LJ-14	07 GPM
LJ-20	10 GPM

LJ-30	15 GPM
LJ-40	20 GPM
LJ-50	25 GPM
LJ-70	35 GPM
LJ-100	50 GPM

Mifab Inc.

1321 West 119th Street

Chicago, IL 60643

Phone: 800-465-2736

Fax: 773-341-3047

URL: www.mifab.com/grease-oil-solids-interceptors.html

MIFAB PARTS

Grease Interceptors

Model Number	Size
MI-G-0	04 GPM
MI-G-1	07 GPM
MI-G-2	10 GPM
MI-G-3	15 GPM
MI-G-4	20 GPM
MI-G-5	25 GPM
MI-G-6	35 GPM
MI-G-7	50 GPM
MI-G-1-PL	07 GPM
MI-G-2-PL	10 GPM
MI-G-3-PL	15 GPM
MI-G-4-PL	20 GPM
MI-G-5-PL	25 GPM
MI-G-6-PL	35 GPM
MI-G-L-20	20 GPM
MI-G-L 35	35 GPM
MI-G-L-25-PL	25 GPM
MCL-G-0	04 GPM
MCL-G-1	07 GPM
MCL-G-2	10 GPM
MCL-G-3.	15 GPM
MCL-G-4	20 GPM
MCL-G-5	25 GPM
MCL-G-6	35 GPM
MCL-G-7	50 GPM
MCL-G-L20	20 GPM
MCL-G-L35	35 GPM
XL-MI-G-PL-750	75 GPM
XL-MI-G-PL-1150	100 GPM

	75 GPM
FE750	100 GPM
FE1150	

Prima Supply/Atlantic Metalworks

4603 Poplar Level Road
 Louisville, KY 40213
 Phone: 502-966-4578
 Fax: 502-966-502

Grease Interceptors

Model Number	Size
GI-8	04 GPM
GI-14	07 GPM
GI-20	10 GPM
GI-30	15 GPM
GI-40	20 GPM
GI-50	25 GPM
GI-70	35 GPM
GI-100	50 GPM

Rockford Separators

5159 28th Avenue
 Rockford, IL 61109
 Phone: 815-229-5077
 Fax: 815-229-5108
 URL: www.rkfdseparators.com

Grease Interceptors

Model Number	Size
RP-4	04 GPM
RP-7	07 GPM
RP-10	10 GPM
RP-15	15 GPM
RP-20	20 GPM
RP-25	25 GPM
RP-35	35 GPM
RP-50	50 GPM

Thermaco, Inc.

646 Greensboro Street
 Asheboro, NC 27203-2548
 Phone: 336-629-4651
 Fax: 336-626-5739
 URL: www.big-dipper.com

Grease Interceptors

Model Number	Size
Big Dipper ® W-200-IS	20 GPM
Big Dipper ® W-250-IS	25 GPM
Big Dipper ® W-350-IS	35 GPM
Trapzilla TZ-1826	100 GPM

Town & Country Plastics, Inc.

P.O. Box 269
 Morganville, NJ 07751

Grease Interceptors

Model Number	Size
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Phone: 732-780-5300	TCAGI-20/HDPE	20 GPM
Fax: 732-294-0001	TCAGI-25/HDPE	25 GPM
	GI-20/HDPE	20 GPM
	GI-25/HDPE	25 GPM

Triton Metals Inc.	Grease Interceptors	
43979 Airport View Drive		
Hollywood, MD 20636	Model Number	Size
Phone: 301-373-6110	SFA	20 GPM
Fax: 301-373-5033		

Wade Specification Drainage Products	Grease Interceptors	
11910 Country Rd. 492		
Tyler, TX 75706	Model Number	Size
Phone: 903-882-5511	5107	07 GPM
Fax: 903-882-2504	5110	10 GPM
URL: www.wadedrains.com	5115	15 GPM
	5120	20 GPM
	5125	25 GPM
	5135	35 GPM
	5150	50 GPM

Watts Water Technologies	Grease Interceptors	
815 Chestnut Street		
North Andover, MA 01845	Model Number	Size
Phone: 978-688-1811	WD-4	04 GPM
Fax: 978-794-1848	WD-7	07 GPM
URL: www.watts.com	WD-10	10 GPM
	WD-15	15 GPM
	WD-20	20 GPM
	WD-25	25 GPM
	WD-35	35 GPM
	WD-50	50 GPM
	WD- 7-A	07 GPM
	WD-10-A	10 GPM
	WD-15-A	15 GPM
	WD-20-A	20 GPM
	WD-25-A	25 GPM
	WD-35-A	35 GPM

WD-50 -A	50 GPM
WD-20-L	20 GPM
WD-35-L	35 GPM
GP-4	04 GPM
GP-7	07 GPM
GP-10	10 GPM
GP-15	15 GPM
GP-20	20 GPM
GP-25	25 GPM
GP-35	35 GPM
GP-50	50 GPM
GL-20	20 GPM
GL-35	35 GPM

Wentworth Company

918 W. 21ST Street
 Chicago, IL 60608
 Phone: 312-243-9303
 Fax: 312-564-5109
 URL: www.wentworthco.com

Grease Interceptors

Model Number	Size
WP-GT-15	15 GPM
WP-GT-20	20 GPM
WP-GT-25	25 GPM
WP-GT-50	50 GPM

Zurn Green Turtle

2709 Water Ridge Parkway
 Suite 410
 Charlotte, NC 28217
 Phone: 877-428-8187
 Fax: 704-295-1734
 URL: www.greenturtletech.com

Grease Interceptors

Model Number	Size
Proceptor GMC 100	100 GPM
Proceptor GMC 150	100 GPM
Proceptor GMC 200	100 GPM
Proceptor GMC 250	100 GPM
Proceptor GMC 300	100 GPM
Retroceptor™ RC-35	35 GPM
Retorceptor™ RC-50	50 GPM
Retroceptor™ RC-35LP	35 GPM
GMC-500	100 GPM
Z-250H	100 GPM

Zurn Industries, Inc.

1801 Pittsburgh Avenue

Erie, PA 16502

Phone: 814-455-0921

Fax: 814-875-1402

URL: www.zurn.com

Grease Interceptors

Model number	Size
Z1160 size 100 Discontinued	04 GPM
Z1160 size 200 Discontinued	07 GPM
Z1160 size 300 Discontinued	10 GPM
Z1160 size 400 Discontinued	15 GPM
Z1160 size 500 Discontinued	20 GPM
Z1160 size 600 Discontinued	25 GPM
Z1160 size 700 Discontinued	35 GPM
Z1160 size 800 Discontinued	50 GPM
Z1165 size 200	07 GPM
Z1165 size 300	10 GPM
Z1165 size 400	15 GPM
Z1165 size 500	20 GPM
Z1165 size 600	25 GPM
Z1165 size 700	35 GPM
Z1165 size 800	50 GPM
ZS1165 size 200	07 GPM
ZS1165 size 300	10 GPM
ZS1165 size 400	15 GPM
ZS1165 size 500	20 GPM
ZS1165 size 600	25 GPM
ZS1165 size 700	35 GPM
ZS1165 size 800	50 GPM
Z1170 size 100	04 GPM
Z1170 size 200	07 GPM
Z1170 size 300	10 GPM
Z1170 size 400	15 GPM
Z1170 size 500	20 GPM
Z1170 size 600	25 GPM
Z1170 size 700	35 GPM
Z1170 size 800	50 GPM
Z1170-UN Size 100	04 GPM
Z1170-UN size 200	07 GPM
Z1170-UN Size 300	10 GPM
Z1170-UN Size 400	15 GPM
Z1170-UN Size 500	20 GPM
Z1170-UN Size 600	25 GPM
Z1170-UN Size 700	35 GPM

Z1170-UN Size 800	50 GPM
ZS1170 size 100	04 GPM
ZS1170 size 200	07 GPM
ZS1170 size 300	10 GPM
ZS1170 size 400	15 GPM
ZS1170 size 500	20 GPM
ZS1170 size 600	25 GPM
ZS1170 size 700	35 GPM
ZS1170 size 800	50 GPM
Z1171 size 500	20 GPM
Z1171 size 700	35 GPM
Z1171 size 800	50 GPM
ZS1171 size 500	20 GPM
ZS1171 size 700	35 GPM
ZS1171 size 800	50 GPM
Z1171-RD size 500	20 GPM
Z1171-RD size 700	35 GPM
Z1171-RD size 800	50 GPM
Z1171-TD size 500	20GPM
Z1171-TD size 700	35 GPM
Z1171-TD size 800	50 GPM
Z1172-900	75 GPM
Z1173 size 200	07 GPM
Z1173 size 300	10 GPM
Z1173 size 400	15 GPM
Z1173 size 500	20 GPM
Z1173 size 600	25 GPM
Z1173 size 700	35 GPM
Z1173 size 800	50 GPM
ZS1173 size 200	07 GPM
ZS1173 size 300	10 GPM
ZS1173 size 400	15 GPM
ZS1173 size 500	20 GPM
ZS1173 size 600	25 GPM
ZS1173 size 700	35 GPM
ZS1173 size 800	50 GPM
Z1173-RD size 200	07 GPM

Z1173-RD size 300	10 GPM
Z1173-RD size 400	15 GPM
Z1173-RD size 500	20 GPM
Z1173-RD size 600	25 GPM
Z1173-RD size 700	35 GPM
Z1173-RD size 800	50 GPM
Z1173-TD size 200	07 GPM
Z1173-TD size 300	10 GPM
Z1173-TD size 400	15 GPM
Z1173-TD size 500	20 GPM
Z1173-TD size 600	25 GPM
Z1173-TD size 700	35 GPM
Z1173-TD size 800	50 GPM
Z1192 size 800	50 GPM
GT2700-04	04 GPM
GT2700-07	07 GPM
GT2700-10	10 GPM
GT2700-15	15 GPM
GT2700-20	20 GPM
GT2700-25	25 GPM
GT2700-35	35 GPM
GT2700-50	50 GPM
GT2701-20	20 GPM
GT2701-35	35 GPM
GT2701-50	50 GPM
GT2702-04	04 GPM
GT2702-07	07 GPM
GT2702-10	10 GPM
GT2702-15	15 GPM
GT2702-20	20 GPM
GT2702-25	25 GPM
GT2702-35	35 GPM
GT2702-50	50 GPM

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APPENDIX E

Orange County
and
SCAP Surveys

ORANGE COUNTY SURVEY
NOVEMBER 2014

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Agency Name:	What is your agency's service area population?	How many miles of sewer is your system?	How many food service establishments (FSE) are in your service area?	How many gravity grease interceptors are in your service area?	How many enhanced maintenance locations (sewer system, FOG-related hotspots) are in your service area?
Respondent 1	100,000 - 200,000	50 - 100 miles	12	12	12
Respondent 2	50,000 - 100,000	< 50 miles	185	65	16
Respondent 3	< 50,000	< 50 miles	10	0	0
Respondent 4	50,000 - 100,000	100 - 300 miles	343	129	16
Respondent 5	< 50,000	50 - 100 miles	78	33	
Respondent 6	< 50,000	50 - 100 miles	114	64	39
Respondent 7	50,000 - 100,000	100 - 300 miles	181	65	
Respondent 8	< 50,000	< 50 miles	SEVEN (7)	TWO (2)	SEVEN (7)

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Agency Name:	What is your agency's service area population?	How many miles of sewer is your system?	How many food service establishments (FSE) are in your service area?	How many gravity grease interceptors are in your service area?	How many enhanced maintenance locations (sewer system, FOG-related hotspots) are in your service area?
Respondent 9	100,000 - 200,000	300 - 400 miles	559	112	
Respondent 10	100,000 - 200,000	100 - 300 miles	512	146	31
Respondent 11	100,000 - 200,000	300 - 400 miles	820	520	109
Respondent 12	< 50,000	50 - 100 miles	111	57	60
Respondent 13	100,000 - 200,000	300 - 400 miles	330	165	50
Respondent 14	200,000 - 500,000	> 400 miles	1000	100 est.	100
Respondent 15	50,000 - 100,000	100 - 300 miles	317	130	16

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Agency Name:	What is your agency's service area population?	How many miles of sewer is your system?	How many food service establishments (FSE) are in your service area?	How many gravity grease interceptors are in your service area?	How many enhanced maintenance locations (sewer system, FOG-related hotspots) are in your service area?
Respondent 16	< 50,000	100 - 300 miles	127	65	18
Respondent 17	200,000 - 500,000	300 - 400 miles	800	215	20
Respondent 18	200,000 - 500,000	> 400 miles	840	425	100
Respondent 19	100,000 - 200,000	> 400 miles	325	120	15
Respondent 20	< 50,000	< 50 miles	12	0	10
Respondent 21	50,000 - 100,000	100 - 300 miles	160	120	150

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Does your city/municipality allow the installation of HGIs?	Does your city/municipality only allow a certain type of HGI (e.g., passive HGIs, automatic GRDs, etc.)?
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above)., Yes, Any type of grease interceptor is allowed as long as all grease waste sinks and drains are connected., Yes, Prefer the installation of HGIs over gravity grease interceptors.	passive and those other ones
No, indoor grease interceptors are not allowed., No, the ordinance only allows the installation of gravity grease interceptors.	
No, indoor grease interceptors are not allowed.	What ever works best for the establishment.
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	We prefer Big Dippers or Trapzillas.
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	UPC sized-they must have Flow Control Device-cleanout downstream of HGI and be vented. District allows Passive and auto GRD's such as Trapzillas-Goslyns-JR Smith Line-Josam-Big Dippers etc..
No, the ordinance only allows the installation of gravity grease interceptors.	N/A
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above)., Yes, Only for retrofitting existing FSE.	GOSLYN or BIG DIPPER
Yes, Any type of grease interceptor is allowed as long as all grease waste sinks and drains are connected.	N/A

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Does your city/municipality allow the installation of HGIs?	Does your city/municipality only allow a certain type of HGI (e.g., passive HGIs, automatic GRDs, etc.)?
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	Automatic GRDs only
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above)., Yes, Any type of grease interceptor is allowed as long as all grease waste sinks and drains are connected.	No.
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No
trial basis	we are trying a Trapzilla at one of our locations.
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	We have only permitted a few of these and usually only the Big Dipper or Transzilla.

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

Does your city/municipality allow the installation of HGIs?	Does your city/municipality only allow a certain type of HGI (e.g., passive HGIs, automatic GRDs, etc.)?
No, the ordinance only allows the installation of gravity grease interceptors.	
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	No restrictions as to the type of HGI installed.
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above)., Yes, Only for retrofitting existing FSE., Yes, Any type of grease interceptor is allowed as long as all grease waste sinks and drains are connected.	NO
Yes, Only where slope and/or space limitations prevent the installation of a gravity grease interceptor (Definition and figure in link above).	

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you allow HGIs, what are the criteria for device approval?	Does your city/municipality conduct performance testing on HGIs?	If your city/municipality only allows the use of automatic GRDs, are multiple devices required to accommodate multiple grease waste sinks/fixtures?
sizing	No	Yes
		No
Flow control is key. Health department approvals, of course.	No. HCA FOG inspections.	No
There must be physical or financial constraints preventing use of a GGI, and we will monitor the line for FOG buildup and charge them for cleanings until the device is found effective.	operating within spec, e.g. if automatic that timers are set and it is plugged in, wipers are in good condition.	No
Properly sized per UPC-Properly vented Flow control device installed with downstream clean out. Located where easy to inspect and maintain. District allows outdoor located or indoor located with OCHCA approval.	No	
N/A	No	
NSF, UL, CSA, ICC-ES, IAPMO, ASME, and PDI	No	No
	N/A	

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you allow HGIs, what are the criteria for device approval?	Does your city/municipality conduct performance testing on HGIs?	If your city/municipality only allows the use of automatic GRDs, are multiple devices required to accommodate multiple grease waste sinks/fixtures?
California Plumbing Code	Open trap and insert clear plastic tube to measure solids and FOG. Apply 25% rule for compliance.	No
	No	
District. City Building Department performs calculations to	Hot check is part of the required annual inspection.	
Building Official Review	No	No
Low grease environment and space limitation.	Each owner has a maintenance log for the HGI. I inspect each location once a year.	No
Meet plumbing code	no	No
They must be approved by Orange County Health Care and they must be serviced monthly. Most recently, our approvals have been temporary in nature, i.e. two years - to be followed by installation of a gravity grease interceptor. And during the two year period a trust account is established to pay city crew to inspect and clean adjacent lateral or main monthly at FSE expense.	No.	No

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you allow HGIs, what are the criteria for device approval?	Does your city/municipality conduct performance testing on HGIs?	If your city/municipality only allows the use of automatic GRDs, are multiple devices required to accommodate multiple grease waste sinks/fixtures?
	No.	
Case by case depending on FOG generation and flow	No	No
As many sinks and drains connected as possible	No, some times conduct downstream CCTV.	
Must be effective in treating the FOG in the waste stream.		No
We have none. We only have 3 and 2 of those were required and permitted by the Co. of Orange	No	
		No

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

How many and what percentage of the FSEs in your service area currently have HGIs installed?	What sizing criteria are used for HGIs (e.g., California Plumbing Code, Table 1014.2.1)?	What is the most common size of HGIs in your service area (e.g., 25-50 gallons per minute [gpm])?	Does your city/municipality require compliance with the 25% rule (floating FOG + settleable solids / total fluid depth) for HGIs?
12	fixtures	12	No
0			
3 FSE	CPC	100gpm	Yes
14% or 49	CPC	Not sure	Yes
10 FSE's have an HGI	UPC/CPC	50-75 gpm	Yes
10	Any HGI's that exist were installed prior to the adoption of the FOG ordinance in December 2004.	50 gpm	No
20, 10%	CPC	10-25 GPM	Yes
NONE		NONE	

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

How many and what percentage of the FSEs in your service area currently have HGIs installed?	What sizing criteria are used for HGIs (e.g., California Plumbing Code, Table 1014.2.1)?	What is the most common size of HGIs in your service area (e.g., 25-50 gallons per minute [gpm])?	Does your city/municipality require compliance with the 25% rule (floating FOG + settleable solids / total fluid depth) for HGIs?
8-1.4%	California Plumbing Code	25-50 gallons	Yes
66, 13%	CPC	25-50 GPM	Yes
30% approx	Adopted CPC.	25-50 gpm	Yes
Not known	Yes	Minimum 750 gsallons	Yes
2	California Plumbing Code	25 gallon	Yes
1-2% est.	CPC	unk.	No
Less than two dozen, 5%	California Plumbing Code	25-50	Yes

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

How many and what percentage of the FSEs in your service area currently have HGIs installed?	What sizing criteria are used for HGIs (e.g., California Plumbing Code, Table 1014.2.1)?	What is the most common size of HGIs in your service area (e.g., 25-50 gallons per minute [gpm])?	Does your city/municipality require compliance with the 25% rule (floating FOG + settleable solids / total fluid depth) for HGIs?
4	adoption of FOG ordinance in 2004 were installed per plumbing code.	50 gpm	No
26 - 15%	UPC	25-50 GPM	Yes
64 - 15%	UPC	25-50 GPM	Yes
79	California Plumbing Code - Table 1013.2.1	50 gpm	Yes
3-25%	We only sized 1, and used the plumbing code.	25	No
5			

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you answered no to the previous question, what compliance criteria does your agency use?	Any additional comments?	Does your City/Municipality conduct inspection of indoor HGIs?
visual	NO	Yes
		Yes
		Yes
	preferred if the DFU's show the need for one. If DFU's dont rise to 500 gallon GGI then District allows the installation of an appropriately sized HGI that meets our criteria. If DFU's show need for GGI but there is no room then a waiver is granted and	Yes
Devices are inspected three times a year by a FOG insure compliance and effective operation.	existing grease trap is permitted to retain the device unless there is a history of SSO's at the facility or if there are major plumbing improvements, expansion of seating area, or if there are modifications to the	Yes
		Yes
N/A	NONE	

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you answered no to the previous question, what compliance criteria does your agency use?	Any additional comments?	Does your City/Municipality conduct inspection of indoor HGIs?
	Only 21% of all FSEs have grease traps or interceptors. However, of the 560 total many are gasoline stations with food marts or 7-11 type of facilities. There has been a two fold increase in the number of grease interceptors installed within the last nine years.	Yes
		Yes
		Yes
		Yes
		Yes
No specific criteria		Yes
	We strictly enforce our FOG ordinance which requires a gravity grease interceptor. We do approve HGIs in rare circumstances, and typically for a limited time in order for the FSE to build a fund to install the GRD.	Yes

WDR PERMITTEE SURVEY OF GREASE CONTROL DEVICES

If you answered no to the previous question, what compliance criteria does your agency use?	Any additional comments?	Does your City/Municipality conduct inspection of indoor HGIs?
Devices are inspected three times a year to verify that they are being maintained.	All new FSEs are required to install a minimum size 750 gallon gravity grease interceptor.	Yes
		Yes
		Yes
		Yes
None. We have little experience with this.	I'm sorry we didn't fill this out sooner; I thought we had done it.	Yes
		No

ORANGE COUNTY SURVEY
DECEMBER 2015

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	A	B	C	D	E	F
1	Agency/City	When was ordinance first adopted	Has ordinance been updated	In existing FSE is HGI allowed	In existing FSE which type of interceptor does ordinance give preference to: gravity or hydromechanical	Identify any special conditions for column E
2	Respondent 1	11/16/2004	No	No	Gravity	Physical constraints
3	Respondent 2	4/20/2010	No	Yes	No preference	Approved device
4	Respondent 3	10/12/2004	No	Not addressed	Gravity	Request by owner for alternate GRD
5	Respondent 4	Feb-03	Yes, 2010	Yes	Gravity	Space, slope limitations, physical constraints
6	Respondent 5	Dec-04	No	No	Gravity	NA
7	Respondent 6	1998	Yes , 2004	Yes	Both	required under 3 compartment sink
8	Respondent 7	4/20/2004	No	Yes	Gravity	Installed prior to 4-20-2004
9	Respondent 8	2005	No	Yes	Gravity	Installation of gravity interceptor determined to be impossible or impractical
10	Respondent 9	10/26/2004	No	Yes	No preference	NA
11	Respondent 10	5/1/2004	Yes, 2013	Yes	Gravity	Accessibility, costs

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	A	B	C	D	E	F
1	Agency/City	When was ordinance first adopted	Has ordinance been updated	In existing FSE is HGI allowed	In existing FSE which type of interceptor does ordinance give preference to: gravity or hydromechanical	Identify any special conditions for column E
12	Respondent 11	2004	Yes , 2014	No	Gravity	Site constraints, infeasibility, may allow HGI or similar FOG reducing device
13	Respondent 12	3/11/1991	Yes, 2004	Yes	Neither	Building official determines
14	Respondent 13	11/9/2004	No	Yes	Gravity	Physical constraints, feasibility
15	Respondent 14	11/17/2004	No	Yes	Gravity	When gravity interceptor is not possible or practical, which may be limited to small/limited menu FSEs
16	Respondent 15	10/11/2004	No	Yes	Gravity	Remodel, new ownership
17	Respondent 16	Nov-04	No	Yes	Gravity	Physical constraints, slope, space limitations
18	Respondent 17	2003	Yes, 2009	Yes	No	Properly maintained
19	Respondent 18	7/22/2004	No	Yes	Gravity	Inadequate space/slope for installation of gravity interceptor

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	G	H	I	J	K
1	In FSEs with HGIs have any performance issues been identified such as excessive grease, spills, lack of maintenance , other	Are kitchen BMPs required to be implemented	Is interceptor (hydromechanical, gravity) required after change of FSE ownership	Is interceptor (HGI, gravity) required during a change in operations FSE	Is change in operations defined?
2	Data limited	Yes	No	Yes	Yes
3	NA	Yes	Yes	Comply with WDR	
4	Some blockages due to lack of maintenance	Yes	Yes	Yes	
5	Lack of maintenance	Yes	Yes	Yes	Yes
6	NA	No	Yes	Yes	Yes
7	None	Yes	Yes	Yes	Yes
8	Buildup in sewer line	Yes	No	Yes	Yes
9	Lack of maintenance	Yes	Yes	Yes	Yes
10	None	Yes	Yes	Yes	Yes
11	Lack of maintenance, buildup in sewer lines	Yes	Yes	Yes	

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	G	H	I	J	K
1	In FSEs with HGIs have any performance issues been identified such as excessive grease, spills, lack of maintenance , other	Are kitchen BMPs required to be implemented	Is interceptor (hydromechanical, gravity) required after change of FSE ownership	Is interceptor (HGI, gravity) required during a change in operations FSE	Is change in operations defined?
12	Poor maintenance	Yes	Yes	Yes	Yes
13	None	Yes	Yes	Yes	No
14	None	Yes	No	Yes	Yes
15	Limited data	Yes	No	Yes	Yes
16	When not maintained	Yes	Yes	Yes	No
17	Lack of maintenance	Yes	Yes	Yes	Yes
18	No	Yes	No	Yes	No
19	None	Yes	Yes	Yes	Yes

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	L	M
1	Define Change in Operations	When excessive FOG is identified in sewer line from an existing FSE and a grease control device is required, what type is specified (HGI or gravity)
2	Remodeling	Gravity
3	See column K	Not specified
4	All existing FSEs that produce FOG, Remodeling	Gravity
5	Change in cooking equipment, plumbing	Gravity
6	Food preparation process changed	Gravity
7	More FOG generated, kitchen space determines size	Either, depending on type of food
8	Any change in ownership, food types, or operation procedures that have the potential to increase by 25% the amount of FOG used or generated by food preparation	Gravity
9	Change in ownership, food types, or operation procedures that have the potential to cause the increase in FOG	Gravity
10	Increased seating/production	
11		Gravity

WDR SUPPLEMENTAL SURVEY DECEMBER 2015

	L	M
1	Define Change in Operations	When excessive FOG is identified in sewer line from an existing FSE and a grease control device is required, what type is specified (HGI or gravity)
12	Any change in ownership, food types, or operation procedures that have the potential to increase the amount of FOG generated and/or discharged by FSEs in an amount that alone or collectively causes or creates a potential for SSOs to occur	Gravity
13	Building official determines	Building official determines
14	Any change in ownership, food types, or operation procedures that have the potential to increase the amount of FOG discharged by FSEs in an amount that creates a potential for SSOs to occur	Gravity
15	Remodel, any change in ownership, food types, or operation procedures that have the potential to increase the amount of FOG generated and/or discharged by FSEs in an amount that alone or collectively causes or creates a potential for SSOs to occur	Gravity
16		Gravity
17	Change in cooking equipment, plumbing	Gravity
18		Gravity
19	Any change that has the potential to increase the amount of FOG generation/discharge and potentially cause SSOs to occur	Gravity

SCAP SURVEY

APRIL 2015

April 27, 2015

Summary of Responses from SCAP Question on Use of Hydro-mechanical Devices

Question 1: Does your Agency allow (HGI) Hydro-mechanical Grease Interceptor's, besides Gravity Grease Interceptors, in your district or city for FOG Control

Question 2: If so, what is the brand name of the device(s)?

Question 3: Does your FOG Ordinance state that these types of devices are allowed?

Question 4: Does your Agency charge separate FOG permit fee's?

Question 1:

Respondent 1 : *The Building Division does allow HGIs, however, only in instances where physical (not economic) impediments exist to installation of interceptors (see attached Variance Application form). ? [Variance Template](#) (look for FSE Variance Template in SCAP Reference Library)*

Respondent 2: *Yes.*

Respondent 3: *We do, as long as sizing and installation is per the manufacturer's recommendations and it complies with the latest edition of the California Plumbing Code*

Respondent 4: *Yes, the City allows (HGI) Hydro-mechanical Grease Interceptor's.*

Respondent 5: *Yes but most go with a Gravity type.*

Respondent 6: *The City does not allow Hydro-mechanical grease interceptors.*

Respondent 7: *Yes we do.*

Respondent 8: *Well, only ones that were already installed prior to 2009, before we started the FOG program. There are a few FSE's that have requested HGI due to space problems and*

April 27, 2015

have been approved but are watched closely. If there is change of owners or remodeling, a GGI must be installed.

Respondent 9: *Yes.*

Question 2:

Respondent 1: *We do not approve or disapprove of any particular brands.*

Respondent 2: *It is up to the architect to submit make/model/size specs.*

Respondent 3: *Any that are listed and approved.*

Respondent 4: *We do not specify, however device must meet UPC or PDI requirements.*

Respondent 5: *We don't specify a certain brand, although the Big Dipper has been used a few times by some FSE's.*

Respondent 6:

Respondent 7: *Unknown what brand.*

Respondent 8: *Brand name unknown.*

Respondent 9: *We don't specify brands-as long as it's PADI listed and a known brand (Plumbing & Drain Institute).*

Question 3:

Respondent 1: *The Ordinance does not explicitly allow or disallow Traps. However, UPC requires interceptors and allows for “alternate means and methods” if approved by the agency. Therefore traps are these alternate means and methods. The following definitions are in our AMC 10.08:*

“Grease control device” means any grease interceptor, grease trap or other mechanism, device or structure which attaches to, or is applied to, sewage plumbing fixtures and lines, the purpose of which is to trap, collect, treat and/or remove FOG from sewage prior to its being discharged into the sanitary sewer system.

“Grease interceptor” means a multi-compartment device that is constructed in different sizes and is generally required to be located, according to the California Plumbing Code and any and all amendments thereto, underground between an FSE and its connection to the sanitary sewer system.

“Grease trap” means a grease control device that is used to serve individual fixtures and have a limited effect.

Respondent 2: *Yes.*

Respondent 3: *The ordinance states that a grease pretreatment device is required. Installation requirements are discussed when applying for a plumbing permit with our Building Dept.*

Respondent 4: *Yes, only if a Gravity Grease interceptor will not be able to be installed due to size limitations or physical constraints.*

Respondent 5: *No, it is stated in general terms: grease trap or interceptor.*

Respondent 6: *No, the City does not charge a separate Fog permit fee. However a review of the sewer ordinance is on-going.*

Respondent 7: *Our FOG program requires discharges to install and maintain HGIs.*

April 27, 2015

Respondent 8: *They are not allowed, except for very special conditions and watched carefully.*

Respondent 9: *I have not looked at our FOG Ordinance lately, but I believe yes, our ordinance specifically states that HGI's are allowed under certain conditions.*

Question 4:

Respondent 1: *No.*

Respondent 2: *No, we were supposed to go back to Council but with the downturn in the economy, we've never made it.*

Respondent 3: *Yes, We charge all FSE's for a 5-year permit.*

Respondent 4: *The City does not charge separate fees for one device over another.*

Respondentt 5: *No.*

Respondent 6:

Respondent 7: *No permit fees are required.*

Respondent 8: *Yes, our FSE's are charged by separate FOG invoice annually. \$160 normal FSE with proper GGI and \$400 for FSE's without the proper equipment installed or no equipment at all (about 8% of FSE).*

April 27, 2015

Respondent 9: *I think we do for our FOG Permit for each FSE and I believe we charge them for a FOG Plan Review when needed.*

SCAP SURVEY

MARCH 2016

SCAP Collections System Questionnaire on FOG Program March 3, 2016

Respondents: 1 through 14

Question 1: Does your agency allow the use of mechanical devices (other than concrete grease interceptors) such as stainless steel, under the sink, multi-compartment devices in your service area? If so, what type?

Respondent 1: We have a few Big Dippers.

Respondent 2: Yes. Options are open provided they meet plumbing code.

Respondent 3: Not at this time.

Respondent 4: Yes. The device has to be approved by the inspector.

Respondent 5: Yes all appropriately sized PDI or IAPMO listed devices.

Respondent 6: Yes. Stainless steel or other material and under the sink.

Respondent 7: We have 1 under the sink grease trap; I don't know the type.

Respondent 8: We allow Hydromechanical Grease Interceptors (HGI) as allowed by the plumbing for building retrofits only. HGI must be in-floor and not "under sink" type.

Respondent 9: Generally, no. We review on a case by case basis.

Respondent 10: Yes. Steel, fiberglass reinforced polyester, polyethylene. Under the counter, or a vault in the kitchen or outside.

Respondent 11: Our standard is a three manhole concrete gravity grease interceptor (one manhole over each baffle) and a sample box. The device needs to have a cleanout and vent to the building. A Food Service Establishment may apply for a waiver from this requirement under the following conditions:

- a. There is no adequate space for installation of a grease interceptor
- b. There is no adequate slope for gravity flow between kitchen plumbing fixtures and the grease interceptor

c. The Food Service Establishment can justify that the alternate pre-treatment technology is equivalent to or better than a grease interceptor in controlling FOG discharge.

They must submit a letter stating why they should not be required to install a Grease Interceptor to the District Standard due to one of the conditions listed above. If this is approved, we would allow an alternative grease control device to be installed. We require that the device consist of a flow control device. We prefer that the alternative device be made of polymer material or plastic, and to be an “in-the-floor” grease traps with a minimum clearance of 6” around the device within the vault.

We would allow Hydro-Mechanical Devices as part of the variance, we would not allow mechanical devices with rotating pieces or power requirements.

Respondent 12: Yes, we also use HGIs when GGIs are not compatible.

Respondent 13: In the ground interceptors are required. An exemption will only be made if there are no physical means to install a grease interceptor due to confined spaces.

Respondent 14: The City allows any grease control device as long as it is sized properly for what is going through it and that it is maintained properly.

Question 2: *Do you allow “in-the-floor” grease traps?*

Respondent 1: Yes.

Respondent 2: I am not sure exactly what this is. The Traps I am familiar with sit on the floor and am not aware of any that have been installed below a slab. However, provided they meet plumbing code and can be accessed for maintenance and HCA approves, then we would OK them as well.

Respondent 3: No.

Respondent 4: Yes.

Respondent 5: Yes.

Respondent 6: Yes, if that is the only location available otherwise prefer device to be raised above the floor.

- Respondent 7:** We have 1.
- Respondent 8:** We only allow HGIs. “Traps” are not allowed.
- Respondent 9:** Generally, no. We review on a case by case basis.
- Respondent 10:** Yes.
- Respondent 11:** Yes, when a variance is given, we prefer the device to be installed “in-the-floor with a 6” clearance around the device.
- Respondent 12:** Yes, HGIs.
- Respondent 13:** We currently have one that has been in place for several years.
- Respondent 14:** Yes, as long as they are also in compliance with the Health Dept.

Question 3: Does your agency allow the use of a Trapzilla or some other type of similar device, and if so, what device?

- Respondent 1:** We have a few Trapzilla’s.
- Respondent 2:** Provided it meets plumbing code sizing criteria then we would accept this or similar device.
- Respondent 3:** Not at this time.
- Respondent 4:** Yes. We currently have one Trapzilla in town.
- Respondent 5:** Yes and the only other similar device we have seen is a Schier.
- Respondent 6:** Yes.
- Respondent 7:** I don’t know what that is; but we don’t have any. We only have 2, noted above.
- Respondent 8:** This appears to be a “trap” and we would not allow it.
- Respondent 9:** Generally, no. We review on a case by case basis.
- Respondent 10:** As long as it conforms to uniform plumbing code requirements.
- Respondent 11:** This device is a Hydro-Mechanical Grease Interceptor, which we would allow as part of the variance along with similar hydro-mechanical

devices. The District does not have a preference in make/maker for variance devices.

Respondent 12: Yes, to that also Schier device.

Respondent 13: No. Only under certain circumstances as noted above.

Respondent 14: Yes. As long as the device will handle the flow and maintenance can be performed then our building dept. will review and approve any device.

Question 4: Does your agency have a dedicated FOG Program and Ordinance?

Respondent 1: Yes.

Respondent 2: Yes. AMC 10.08.100. [Link to Code Section](#)

Respondent 3: Yes.

Respondent 4: Yes.

Respondent 5: Yes.

Respondent 6: Trapzilla is allowed or any other device approved by PDI or ASME A112.14.3-2000 or latest version.

Respondent 7: Yes.

Respondent 8: Yes.

Respondent 9: Yes, the FOG program in conjunction with the Pretreatment Program and Ordinance.

Respondent 10: Yes.

Respondent 11: Yes, we have a dedicated FOG Control Program as part of our Sewer System Management Plan. Any new Food Service Establishment receives a binder with the program and how it applies to their establishment along with training. The Food Service Establishment is inspected annually and is required to demonstrate compliance and training of staff.

Respondent 12: Yes, to that. Program came about in 2006..

Respondent 13: Yes.

Respondent 14: Yes.

Question 5: *Does cost have anything to do with your approval of a device? And are you grandfathering in any Food Establishments when they remodel? If not, do they have to install a new device when they remodel if they currently have no device?*

Respondent 1: No. No. If they remodel the kitchen they have to install a grease control device that is in compliance with our FOG ordinance and specifications.

Respondent 2: No.

Respondent 3: New construction, expansion and certain types of remodeling triggers installation of a grease interceptor.

Respondent 4: No. Whenever there is a change of operation or owner ship we are looking to see if there is a device in use. If there is no device The City will ask for one to be put in as long as there is room in the kitchen.

Respondent 5: Cost of the device isn't a consideration but the practicality of installing a GRD device is a consideration. We require a grease interceptor or trap if there is a change of ownership, I or a remodel meeting certain criteria i.e., > \$50,000, 30% increase in kitchen area, under slab plumbing in food processing area, or any change in the size or type of food preparation equipment.

Respondent 6: The ordinance does not consider economics but if costs outweigh benefits they may be. There is no grandfathering when remodeling. However, remodel is subject to a minimum threshold cost of \$50,000 and there must be an increase in FOG, equipment or meals before interceptor is required.

Respondent 7: Cost always matters; however, I've been there 13 years and no-one has come or gone.

Respondent 8: Cost has nothing to do with approval of a device. We look at the location of the FSE, ability to retrofit with a gravity grease interceptor, and type of operation.

A grandfathered FSE must install a grease control device if they remodel their plumbing.

- Respondent 9:** The FOG program reviews facilities strictly by their food production. Turnkey restaurants are generally allowed to have their grease trap devices grandfathered in; remodels will generally lose any grandfathered devices. Each facility is reviewed on a case by case basis.
- Respondent 10:** No. Devices have been installed in problem areas.
- Respondent 11:** Approval of device is only based on whether or not it meets our standards. Any Food Service Establishment going through the “will-serve” process is required to comply with all current District Standard; for Food Service Establishments this would include installation of a Grease Interceptor as part of their remodel. There is no grandfathering of businesses during standards enforcement.
- Respondent 12:** No cost does not affect installation we partner with the City in a re-bate program to help FSEs. No grandfathering for remodels they must comply to ordinance and install a grease protection device. They will be eligible for rebate.
- Respondent 13:** All grease interceptors must be a minimum of 750 gallons. A grease interceptor is required when kitchen plumbing upgrades equaling \$50,000 are performed.
- Respondent 14:** Will work with a business to come up with the best solution for compliance with our program. The City reviews all plans for remodels and tenant improvements and ensures that there is an interceptor and that it is functioning and sized properly for the business. If there isn’t an interceptor we will require that one be installed prior to the business opening.

APPENDIX F

Risk Table

Kitchen Equipment Inventory

Equipment Type	Quantity	Score
Warm Only Equipment		
<input type="checkbox"/> Microwave	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 1 = _____
<input type="checkbox"/> Toaster	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 1 = _____
<input type="checkbox"/> Toaster Oven	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 1 = _____
Low Risk Cooking Equipment		
<input type="checkbox"/> Bread Oven	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 2 = _____
<input type="checkbox"/> Combi-Oven (Convection/Steam)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 2 = _____
<input type="checkbox"/> Pizza Oven	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 2 = _____
<input type="checkbox"/> Steamer	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 2 = _____
Moderate Risk Cooking Equipment		
<input type="checkbox"/> Char Broiler w/Grease Burner	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 4 = _____
<input type="checkbox"/> Griddle	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 4 = _____
<input type="checkbox"/> Grill	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 4 = _____
<input type="checkbox"/> Stove (Range)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 4 = _____
<input type="checkbox"/> Oven/Range	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 4 = _____
High Risk Cooking Equipment		
<input type="checkbox"/> Char-broiler (w/o grease burner)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Deep Fryer	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Kettle	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Rotisserie	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Smoker	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Tilt Skillet	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Wok	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
<input type="checkbox"/> Other _____	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4_____	QTY X 8 = _____
Other Factors		
<input type="checkbox"/> Single Service Kitchen ¹		= 0
<input type="checkbox"/> Full Service Kitchen		QTY X 8 = _____
<input type="checkbox"/> Seating > 100	# of seats _____	1 X 8 = _____
	Total Score	

¹ Single service kitchen: meals served as take-out or on disposable plates/utensils only

FSE Categorization

Total Score < 6 = Cat 4 (LFP)
Total Score = 6-15 = Cat 3 (LGD)
Total Score > 15 = Cat 1/Cat2

A facility is likely to be a Category 4 (LFP) if:

- They are a single use kitchen and their cooking equipment is limited to Warm Only and/or a couple pieces of Low Risk equipment.

A facility is likely to be Category 3 (LGD) if:

- They are a single use kitchen and their cooking equipment is limited to a couple pieces of Moderate equipment and/or a single piece of High Risk equipment; or
- They are a full service kitchen and their cooking equipment is limited to a couple pieces of Low and/or Moderate Risk equipment.

A facility is likely to be a Category 1/Category 2 if:

- They are a large facility (>100) with High Risk equipment; or
- They are full service kitchen with High Risk equipment; or
- They are a single service kitchen with several pieces of Moderate and/or High Risk cooking equipment.