

**To the Mayor and Members of the City Council****September 10, 2024**

Page 1 of 8

**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS****Grease Abatement Program Summary**

The management of fats, oils, and grease (FOG) is a critical issue for the water utility's wastewater collection and treatment systems due to the potential for these substances to cause blockages in the sewer system, leading to sanitary sewer overflows, environmental contamination, public health risks, and odor complaints along with significant operational and maintenance costs.

**Background on Grease Traps**

Grease traps, also known as grease interceptors, are devices designed to capture FOG from wastewater before it enters the sanitary sewer system. By allowing wastewater to cool and slow the rate of flow, grease traps facilitate the separation of grease, which solidifies and floats to the surface inside the traps, while heavier waste particles settle at the bottom. The middle layer of water, now with reduced grease content, is then discharged into the sewer system. The floating grease and settled solids, regulated as "Special Waste" by the Texas Commission on Environmental Quality (TCEQ), must be regularly removed and disposed of by licensed/permitted waste removal, transportation, and disposal companies.

Sanitary Sewer overflows (SSOs) – any and all of which are considered illegal discharges to the waters of the state - became a federal enforcement priority in the 1990s. The City itself had been under an administrative order (AO) by the Environmental Protection Agency (EPA) for overflows stemming back to the late 1980s and well into the 1990s that cost over \$280 million dollars to remedy. Our current grease trap ordinances, along with installation standards and guidance, were developed in an effort to close out the AO and to ensure that ongoing efforts for sewer system "capacity maintenance and operations management" (CMOM) plans were effective at eliminating SSOs going forward.

As a part of these efforts, root cause analysis of the SSO data identified grease as the leading cause of overflows in more than 75% of the occurrences. As we set out to establish the regulations that would better protect the City's infrastructure, we consulted with agencies across the state and the country to determine best management practices. Our current grease abatement program incorporated much of what was learned and contributed to what the state later established as a "model ordinance." The City's current participation in the "Sanitary Sewer Overflow Initiative" (SSOI) as part of a regulatory obligation with TCEQ to maintain proper operation of our collection system is predicated on the current system of oversight of "food service establishments" (FSEs) which includes our grease trap standards and our permitting/inspections program. The program has been tremendously effective at reducing SSOs, going from over 2500 overflows in the year 2000 to less than 100 overflows last year - with only 15 being attributable to grease.

**Regulatory Requirements**

Grease traps are regulated by both city plumbing code (2021 International Plumbing Code) and the City's state/federally authorized Industrial Pretreatment Program which is codified under City Code Chapter 12.5-600 through 12.5-732. Whenever there are conflicts, the more restrictive requirements apply.

The City's adopted plumbing code, the 2021 International Plumbing Code (IPC) mandates that all commercial kitchens must have a grease trap or interceptor and that all potential grease bearing waste streams must be routed through the trap. Sizing requirements along with requirements for ongoing

To the Mayor and Members of the City Council

September 10, 2024

Page 2 of 8

**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

maintenance of grease traps and interceptors are loosely defined within the IPC and generally refer to “manufacturer recommendations.” Many of the manufacturer recommendations are not consistently nor properly followed beyond initial installation. Issues such as installing and maintaining flow control devices and/or cleaning traps at prescribed frequencies (which can be “*weekly or more often as necessary*”) are not enforced by plumbing codes once “certificates of occupancy” are issued. It is worth noting that there is substantive guidance in the “commentary” to the IPC that provides clarity and validation of the City’s sizing and maintenance criteria.

**City Code Chapter 12.5-620 PRETREATMENT FACILITIES.**

(a) Users shall provide wastewater treatment as necessary to comply with this article and shall achieve compliance with all categorical pretreatment standards, local limits and the prohibitions set out in Division 2 of this article within the time limitations specified by EPA or TCEQ, the state or the director, whichever is more stringent.

(b) The user shall provide, operate and maintain any facilities necessary for compliance at the user’s expense.

**City Code Chapter 12.5-621 ADDITIONAL PRETREATMENT MEASURES.**

2) Grease and grit traps shall be of a type and a capacity approved by the city and shall be located so that they are easily accessible for cleaning, maintenance and inspection.

**Grease Trap Sizing**

The utility has produced a Grease Trap Sizing and Installation Guidance document that provides a basis for sizing and location of grease traps. While these recommended standards are intended to provide our customers with reasonable assurance that sizing and proper maintenance would allow them to meet general and specific discharge limits for oil and grease, ultimately ours is a “performance based” standard rather than being prescriptive:

In order to be approved for use, grease trap type and size should conform to one of several conventions that factor in volume of wastewater generated by the customer, the flow rate of the establishment’s fixtures, and the type of food preparation processes involved. Several methods can be used to estimate the appropriate size of a grease trap. These methods are defined in the International Plumbing Code (IPC) Commentary and in other building code standards such as the Uniform Plumbing Code.

Using the various assumptions and formula contained within these methods, (including IPC Section 1003.3.7) the utility arrived at a minimum recommended grease trap size of 750 gallons for full-service restaurants. The bases generally assume minimum fixtures required for a health department permit, including:

- a 3-compartment sink (10 – 20 gpm drain rate - depending on drain pipe size),
- mop sink (10 – 20 gpm drain rate),
- handwash sink (7 – 10 gpm drain rate).

To the Mayor and Members of the City Council

September 10, 2024

Page 3 of 8

**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

The minimum simultaneous drain rates of these fixtures combine to produce a 27 gallon per minute drain rate; at a 30 minute detention time (empirically determined time frame required for grease and water to separate) produces an 810 gallon capacity requirement for effective grease removal. We reduced that calculated volume to a nominal 750 minimum recommended size for most full-service kitchens. However, the utility does require construction plans to provide a basis for the design being proposed by customers that includes all calculations in order to be approved. Proposed grease traps that are smaller than determined by calculations or that are less than 500 gallons will not be approved for full-service kitchens unless accompanied by an engineered stamped/sealed design that includes the calculations and the basis for design along with a "variance" request that must be supported by a performance/effectiveness demonstration along with continuous compliance going forward.

"Low impact" food preparation such as those typical of "heat and serve" convenience stores, sandwich shops, or small daycares, may be eligible for smaller size traps with an approved "variance" contingent on an engineered stamped/sealed design and/or increased maintenance schedules coupled with a performance/effectiveness demonstration. Using this approach, grease trap sizes of 250 gallons for "passive/gravity removal" systems or "100 pound" (generally rated at 50 gallons per minute flow rate or 10 to 15 gallon retention capacity) hydro-mechanical grease traps can be approved. It is important to note, that even the "low impact" facilities are required to have the same minimum fixtures as full service kitchens, including 3-compartment sink, hand wash sink, and mop sink. At full load from all fixtures, smaller traps can be overloaded in such a way as to completely displace the volume of water along with the captured grease contained in the trap in less than five minutes of operation. To prevent this, hydro-mechanical traps must be equipped with a "flow control" device. These are often removed by kitchen staff as a means of getting sinks to drain faster which does minimize the trap's effectiveness and can lead to discharge violations. As such, the permits and associated "variances" for small grease traps include requirements for flow control and more frequent cleaning operation than larger gravity traps. Additionally, these types of traps are intended to be installed close to the source of wastewater and above floor. This creates challenges if floor drains are in use in food preparation areas, as the trap must then be installed below grade, and by City Health Department regulations, must be installed outside of areas where food is prepared due to risk of contamination.

**Minimum Recommended Grease Trap Size**

The objectives of standardized sizing conventions are aimed at ensuring customers are successful at meeting discharge limits and minimizing the potential for plumbing blockages within premises or downstream in the wastewater collection system under a variety of operating conditions.

The EPA Design Manual for Onsite Wastewater Treatment and Disposal Systems (EPA 625/1-80-012) provides two equations for "*design methods that have been developed thorough years of field experience*" that specify a minimum 750 gallon minimum size. The International Plumbing Code Section 1003.3.7 and Commentary, along with other codes such as the Uniform Plumbing Code (UPC) all utilize formulae that result in a calculation of 750 gallon minimum grease trap size requirements when standard plumbing fixtures and loading assumptions are used, and as such form the basis for the City's minimum recommended sizing.

**To the Mayor and Members of the City Council**

**September 10, 2024**

Page 4 of 8



**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

While smaller grease traps may have lower upfront costs, they often require more frequent cleaning and maintenance, leading to higher life cycle expenses for FSEs. A 750-gallon minimum size trap strikes a balance between initial investment and ongoing operational costs. Upfront construction cost of a 500 gallon trap and a 750 gallon grease trap can vary by \$1,000 to \$2,000. However the cost of upsizing an existing trap that fails to adequately treat wastewater can cost tens of thousands of dollars to retrofit when existing plumbing, slab foundations, parking lots and/or landscaping have to be altered to accommodate larger traps later on - often in response to enforcement actions resulting from failure to meet wastewater discharge limits or in response to sewer back-ups and sewer overflows.

Larger and properly maintained grease traps reduce the frequency of sewer blockages and associated maintenance, providing economic benefits to the municipality by decreasing plant operating expenses, the need for frequent sewer cleaning, and emergency response and repair. Additionally, the cost of managing waste from grease traps through proper sizing and maintenance remains with the generator in a proactive manner rather than passing treatment cost, reactive costs for clean-up, failed regulatory compliance, and public health risks to rate payers who would otherwise subsidize a lack of environmental stewardship by business owners.

**Other Municipality Grease Trap Sizing Requirements**

The City’s minimum standards and sizing criteria align with other cities in the region. See “**Attachment 1” Grease Trap Sizing Standards in the North Central Texas Region** comparison, excerpted from the North Central Texas Council of Governments “*Grease Interceptors – A Comprehensive Guide.*”

Other large cities in Texas have similar “performance based” standards, sizing conventions, and permitting systems as Fort Worth:

**Houston**

Houston utilizes the Uniform Plumbing Code to determine grease trap requirements without publishing a minimum size in any of their guidance. However, in practice, Houston has a minimum grease trap size of 500 gallons. Inasmuch as Houston is under a consent decree with EPA and TCEQ since 2021, and in response to that order, Houston Public Works recently modified their performance based criteria, requiring wastewater generators to meet a 200 mg/L discharge limit for oil and grease (down from 400 mg/L) whereas the Fort Worth limit is 250 mg/L for discharges into the Village Creek collection/treatment system, and even lower for our retail customers discharging into the TRA Central (200 mg/L) and TRA Denton Creek (100 mg/L) treatment plants. Like Fort Worth, Houston regulates all food service establishments through issuance of wastewater discharge permits. Houston Public Works (HPW) has actually taken additional steps and issues permits and has established requirements for interceptors/traps for all car washes, laundry facilities and other generators of “special waste” which have the potential to create obstructions in the sewer system.

**San Antonio**

San Antonio has adopted the International Plumbing Code, with local amendments associated with Grease Traps. The amendments specify that the “size, type and location of each interceptor shall be

**To the Mayor and Members of the City Council**

**September 10, 2024**

Page 5 of 8



**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

designed and installed in accordance with the manufacturer's instructions and the requirements of this section based on the "anticipated conditions of use" creating a performance based program. San Antonio has also adopted a requirement restricting "food waste disposers" from being discharged through grease traps and require "solids interceptors" for those wastes (in addition to a grease trap).

San Antonio, under a consent decree from EPA since 2013, has performance based criteria that are more stringent than Fort Worth and include 200 mg/L oil and grease limit; they also have stringent criteria wherein compliance is determined by visual inspection using a "sludge judge" sampling device and a requirement to pump grease traps when 25% of the storage volume is filled with grease and solids.

Additionally, all FSEs have annual permits that have a requirement for annual assessment of their traps by a 3rd party plumber or other licensed inspectors (using a prequalified list of inspectors). Extensive record keeping, best management practices, and maintenance requirements are incorporated into permits.

**Austin**

Austin Water's Office of Industrial Waste (IW) modified its grease interceptor policies in April 2021. As a part of their overall program, all grease traps and interceptors must be pre-approved by the Austin Industrial Waste/Pretreatment team.

Austin no longer allows "under sink" grease traps. Like Fort Worth, hydro-mechanical grease traps may be used in "low FOG-producing establishments" such as small sandwich shops, coffee shops, and bakeries that use disposable flatware and do not utilize an automatic dishwasher. The smallest size hydro-mechanical trap must be 75 gallons per minute (gpm) or higher. By contrast, Fort Worth will allow 50 gpm traps in similar applications with an approved variance and engineered designs. Austin has other conditions on these types of systems that are more stringent than Fort Worth – including requirements for "indirect connections without external flow control" (requiring internal/un-alterable internal flow control) and construction with non-corrodible materials.

For higher grease loading applications, Austin requires "designed gravity grease interceptors" with very specific features – and installation in accordance with the Uniform Plumbing Code. Sizing calculations yield results similar to Fort Worth and Houston (with a 750 gallon minimum size), although Austin will allow gravity grease interceptors as small as 100 gallons in capacity under "restricted use" applications such as those for which hydromechanical traps are authorized. Austin also has a more stringent Oil and Grease discharge limit than Fort Worth at 200 mg/L

**Fort Worth Program Statistics**

**Total Number of Permitted Grease Traps and sizes at "Food Service Establishments" (FSEs):**

Grease Trap Size (gallons)	Number of traps
<100	417
100-249	123
250-499	91

**To the Mayor and Members of the City Council**

**September 10, 2024**

Page 6 of 8



**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

500-749	276
750-999	169
1000-1499	1006
1500-1999	325
2000-2999	313
3000-4999	425
>5000	63
<b>TOTAL</b>	<b>3208</b>

Average trap size is 1385 gallons. Largest trap size is 20,000 gallons; smallest is 10 gallons.

This table demonstrates program flexibility in grease trap sizing, ensuring appropriate levels of treatment without a “one size fits all” approach.

**Annual average quantity of grease removed from FSEs (and kept out of collection system):**

Year	FOG (gallons)	FOG (lbs)
2024 (thru 31May)	7,347,883	58,783,064
2023	17,668,606	141,348,848
2022	15,409,860	123,278,880
2021	15,618,462	124,947,696
2020	14,227,098	113,816,784
2019	14,764,585	118,116,680
Average	14,172,749	113,381,992

The Village Creek Water Reclamation Facility lacks the capacity to effectively treat the significant organic waste load generated by this volume of grease. Processing this waste would lead to substantial increases in operating expenses, potential discharge violations, and would pose serious risks to public health and the environment downstream. Additionally, the “response cost” for Field Operations to address a typical grease-related SSO, without complicated remediation, mitigation, or environmental/public health impacts is over \$1,000 per incident. This does not include fines or penalties the city would incur following permit violations or fish kills. Therefore, it is imperative to employ effective and proven pretreatment and source reduction using appropriately sized and maintained grease traps.

FSEs as generators of grease waste must do their part in effectively keeping that waste out of the collection and treatment systems. Properly sized and maintained grease traps is the principal mechanism for doing so.

**To the Mayor and Members of the City Council**

**September 10, 2024**

Page 7 of 8



**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

**Permit Compliance Summary**

Year	Violations
2024 (to date)	100
2023	129
2022	279
2021	583
2020	471
2019	481

Most violations are for failures to clean grease traps at prescribed frequency, obtain a discharge permit, or maintain traps in good working order (missing flow control, clean-out covers, manhole lids).

As evidence of the program’s effectiveness, fewer than 25 customers in the past 10 years have had to endure the expense and operational impact of replacing grease traps in order to meet discharge limits.

**Closing Summary**

The utility’s nationally recognized pretreatment program and its highly effective grease trap sizing and maintenance requirements are essential for safeguarding our city’s wastewater infrastructure, protecting the environment, and ensuring the continued health and safety of our residents. Inadequately sized or poorly maintained grease traps contribute significantly to blockages in our sewer systems, leading to sanitary sewer overflows, costly repairs, environmental hazards, and potential public health risks. Furthermore, these requirements promote responsible business practices among food service establishments, ensuring that they contribute positively to the community and operate in a manner that aligns with our city’s sustainability goals.

The utility’s adopted measures are components of its “Approved TCEQ Pretreatment Program” and not only a proactive approach to managing fats, oils, and grease (FOG) but also a necessary step toward preserving our city’s infrastructure and resources along with ensuring wastewater rate affordability for future generations. We urge the City Council to continue its support of this legacy program as a critical investment in the long-term health and efficiency of our municipal systems.

Should you have any questions about the grease trap regulations or sizing conventions, please contact Jerry Pressley, Assistant Water Director at (817) 392-8257, or Chris Harder, Water Director, at (817) 392-5020.

**David Cooke  
City Manager**

To the Mayor and Members of the City Council

**September 10, 2024**

Page 8 of 8



**SUBJECT: GREASE TRAP REQUIREMENTS FOR COMMERCIAL KITCHENS**

**Attachment 1: Grease Trap Sizing Standards in the North Central Texas Region**

Excerpted from the North Central Texas Council of Governments

*“Grease Interceptors – A Comprehensive Guide.”*

<b>City</b>	<b>Minimum Size (gallons)</b>	<b>Variations or special notes</b>
Addison	250 /1000	<50 person seating = 250 gal requirement >50 person seating = 1000 gal
Arlington	500	No variations
Carrollton	500 /1000	Light prep (heat and serve) = 500 gal Heavy prep = 1000 gal
Cleburne	1000	Considerations for small lot or space with enhanced maintenance schedule
Coppell	1000	Considerations for small lot or space with enhanced maintenance schedule
Dallas	None	Requires engineered design/sealed plans for all
Denton	250/750	<50 person seating = 250 gal requirement >50 person seating = 750 gal
Eules	750	No Variations
Frisco	500	Variations depending on application and approval
Grand Prairie	500	Variations with approval, requires enhanced maintenance schedule
Irving	250/750	No Variations
Mansfield	No Min	Requires engineered design/sealed plans for all
North Richland Hills	500	No Variations
Plano	No Min	Requires engineered design/sealed plans for all