



ESTES PARK SANITATION DISTRICT FOG INTERCEPTOR RULES AND REGULATIONS

OVERVIEW

All newly created or constructed food service establishments shall be required to install an approved external Fats, Oils and Grease (FOG) interceptor. Existing food service establishments undergoing a remodel or a tap transfer through a sale of the business shall be required to install an external FOG interceptor or be subject to a higher user fee rate.

Approved FOG interceptors shall be sized as per the formula detailed in this document. Minimum size of the interceptor shall be 1000 gallons.

Beginning 1/1/09 existing food service establishments without approved external interceptors will pay user fees at an increased rate of 100 percent. The maximum quarterly non-compliance charge shall be \$1000 subject to annual review. The minimum non-compliance charge shall be equal to the District's minimum commercial charge. Failure to properly maintain the interceptor will result in non-compliance charges during the quarter. The District may also schedule an interceptor pumping and then charge the business for the pumping plus an additional 33 percent administrative fee. This will be added to the quarterly user fee bill. An approved pumping vendor shall perform cleaning. Records of the cleaning shall be maintained on approved forms and made available for review by EPSD staff members.

The District will provide \$2500 to participate in the installation of a FOG interceptor for existing restaurants. Approval is needed prior to any participation by the District.

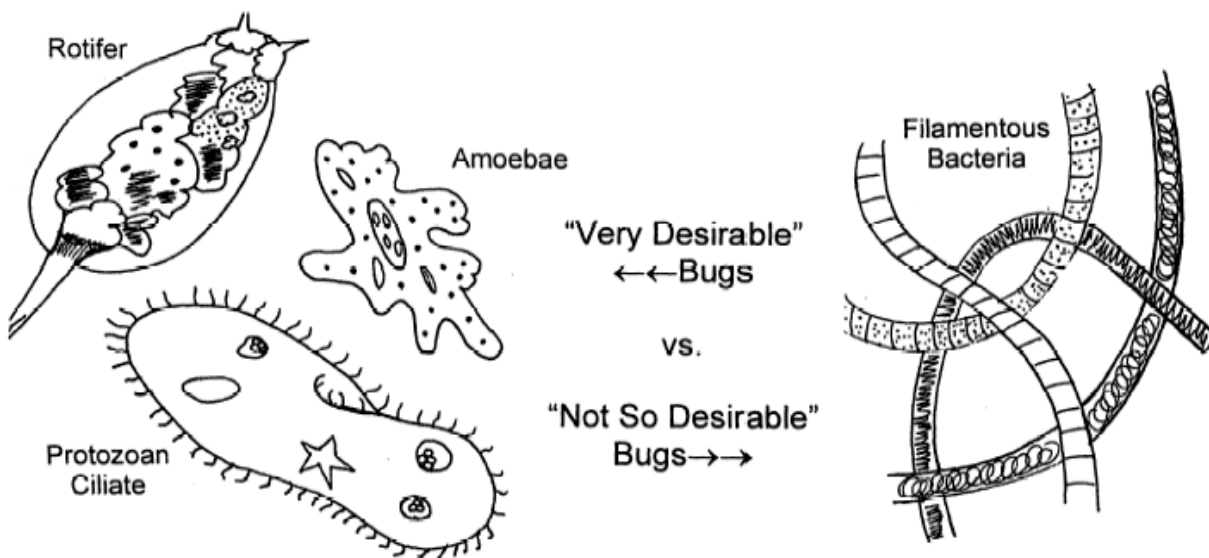
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I. INTRODUCTION

Fats, oils and grease (FOG) can have negative impacts on wastewater collection and treatment systems. Fats, oil and grease present different problems to wastewater treatment and collection operators. For the treatment plant operator, FOG is a major problem. Most sewer plants are not designed to remove FOG and their performance suffers as a result. Many wastewater collection blockages or plugs can be traced to FOG. Plugged sewer lines can be serious, resulting in sanitary sewer overflows (SSOs) or backups into homes or businesses.

How does FOG adversely affect the treatment process?

A brief understanding of how a wastewater treatment facility works can help provide answers. A treatment plant is similar in operation to an aquarium in your home. Proper conditions and aquatic balance can make your fish tank operate smoothly. However when a wrong mix of sunlight exists or when there are too many top feeders vs. bottom feeders the tank becomes a source of problems. A wastewater treatment plant is similar to a large fish tank. A plant operator attempts to create a proper mix of microscopic organisms or “bugs” in the system using all the tools of their trade. These bugs “digest” solids present in the system. At the end of their life cycle they may be in turn digested by other bugs and so on until they become part of the finished product called digested sludge or “biosolids”. These organisms cannot digest fats, oils or grease. Instead other organisms grow in the presence of FOG. These bugs can create foaming that upsets the balance in the system and create a poorer quality effluent. This poorer quality can exist in the form of greater amounts of suspended solids and/or higher levels of BOD. Biological Oxygen Demand (BOD) is the amount of oxygen necessary for a degradation of a waste by bacteria. In layman’s terms this means bacteria are using much of the oxygen in the water in order to continue digesting the waste. This leaves less oxygen in the system for the fish and other aquatic life.



In addition to these worries, the operator must also face issues relating to the buildup of grease on tank walls and odors created from this buildup. Controlling odors at wastewater treatment plants has become a very important issue when dealing with the business community and the general public.

How does FOG adversely affect the collection process?

Fats, oil and grease (FOG) from restaurants and other food processing facilities create a problem for collection operators. As FOG coagulates in pipes, manholes and lift stations the efficiency of the system is compromised. Grease floats on top of the water in the waste stream. As it comes into contact with surfaces free of water it begins to cling and collect on the top and the sides of the pipe. Over time the diameter of the pipe becomes smaller as the grease accumulation begins to build. Eventually a blockage in the sewer main will occur and cause a sanitary sewer overflow (SSO). An SSO can create public and environmental health issues. Raw sewage overflows that reach water supplies can create additional environmental concerns for users of the water. Staff and equipment time is needed to purge the lines of this grease accumulation. However, much of the grease is pushed further down the system where it can cause more harm before finding its way to the treatment facility and creating the problems discussed earlier. The solution is to keep as much FOG out of the system as possible.

II. RULES AND REGULATIONS CONCERNING FOG

The United States Environmental Protection Agency (EPA) requires that municipal sanitary sewer authorities implement pretreatment programs to control the discharge of fats, oils and grease. The process of controlling FOG for the District began in the 1990's when new restaurants were required to install grease traps. Some new restaurants installed external grease interceptors. The majority installed In-Kitchen Passive Interceptors. The primary differences between the units were: size, location and cost. External grease interceptors were by design significantly larger (750 – 1000 gallon) vs. the small size of the internal units (40 – 50 gallon). The internal unit would require weekly or daily cleaning, while the external interceptors might require quarterly or semi-annual cleaning. The District experience with the smaller units was not positive. Rarely was cleaning done timely, if at all. Also large hot water discharges from three compartment sinks could flush the unit out entirely. FOG removal was essentially non-existent from these units. The external units were quite effective however. Inspections noted significant levels of FOG “trapped” in the interceptor. Timely and proper cleaning still remained a problem, but at least the FOG was not being washed out of the system as easily. In order to facilitate the removal of FOG from food service operations, the directors passed a series of motions to move the District in the proper direction.

The first motion was passed in May 2001 and involved new restaurants:

All new construction of, including existing businesses remodeling to become; commercial establishments where food is prepared or processed limited to; restaurants, cafes, lunch counters, cafeterias, bars, bakeries, sandwich, including but not shops,

meat cutting businesses and other similar establishments shall have an approved external FOG interceptor installed.

Seconded – Motion carried.

The second motion involved conditions of tap transfer from one owner to another.

As a condition of tap transfer for ownership or licensee changes of all businesses who prepare or process food, a special review will be necessary by the board of directors for purposes relating to FOG interceptor requirements for the business.

Seconded – Motion carried.

A third motion was passed in February 2002 that required existing food service operations undergoing a remodel to install an external FOG interceptor.

... all remodels of commercial establishments where food is prepared or processed, including but not limited to; restaurants, cafes, lunch counters, cafeterias, bars, bakeries, sandwich shops, meat cutting businesses and other similar establishments to install an approved external FOG interceptor. Affected commercial establishments may ask for Special Review by the Board of Directors.

Seconded – Motion carried.

A December 2002 motion enabled the District to participate in the financial costs associated with interceptor installation for pre-existing food service establishments.

... to pay an amount equal to the price of a District pre-approved FOG interceptor to existing food service establishments that install or are required to install external FOG interceptors.

Seconded – Motion carried

This document detailing Rules and Regulations concerning FOG Interceptors was approved and adopted in July 2004. **ALL** food service establishments were required to have an external FOG interceptor by 12/31/07 or be subject to a non-compliant user fee schedule. The compliance time line was modified and extended by one year at the request of several businesses after director review to 12/31/08.

Existing food service establishments that are non-compliant will be subject to an increased rate of user fees. However a restaurant that creates FOG will eventually encounter a maintenance problem with a plugged line. The blockage can create a sewer backup situation and ultimately a health problem in your business. Pushing the problem further down the collection line is not an acceptable solution. The responsible party will pay all costs associated with the blockage including related problems that occur in sewer mains.

In April 2015 the directors reviewed businesses described as brew pubs, coffee shops and other beverage businesses. The directors clarified the requirements for FOG interceptors as follows:

... food service businesses introduce (FOG) into the collection system through three primary sources:

1. *Food preparation – processing and cooking products such as meats or fried foods (fats and grease); preparing sauces and salad dressings (oils and fats) and manufacturing products like ice cream and frozen yogurt (fats).*
2. *Serving prepared foods – examples include dip wells used to hold serving spoons for ice cream and frozen yogurt.*
3. *Cleanup – washing pots, pans, utensils, plates and bowls introduces fats, oils and grease in the waste stream.*

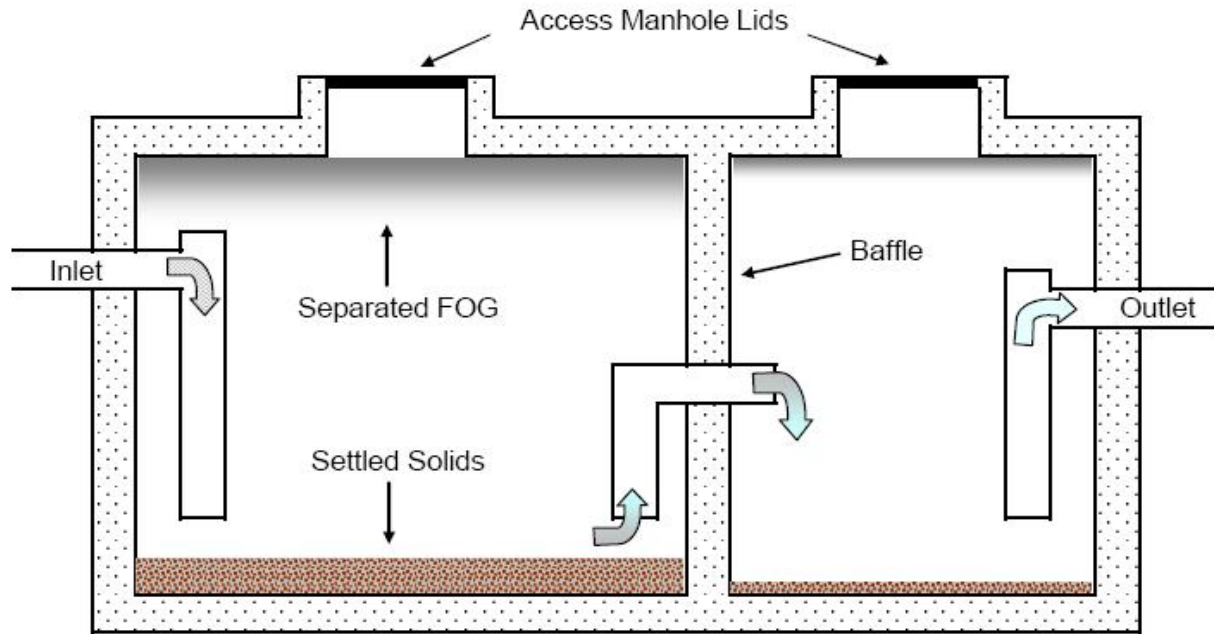
A properly sized external interceptor is required for any business that introduces FOG as described in examples 1-3. The District will allow beverage establishments such as breweries, bars, coffee and juice shops to sell and serve prepackaged pastries, cakes, cookies and breads or snack items such as crackers, pretzels (hard or soft) and popcorn. Specialty coffee drinks or juice drinks that do not include ice cream, yogurt, or frozen yogurt (fats) are acceptable without an interceptor. The introduction of any menu product generally considered meal items such as sandwiches, burgers, burritos, salads etc. will also trigger the interceptor requirement.

Paper plate service with solid waste disposal is a requirement of all non-interceptor applications. Washing coffee containers or blender containers in three compartment sinks or dishwashers is an acceptable clean up practice.

Concerning craft breweries, staff will develop best management practices for these businesses. Their discharges will be monitored to better determine the requirements.

III. INTERCEPTOR OVERVIEW AND SIZING REQUIREMENTS

Large pre-cast concrete interceptors work on three principles to achieve separation – Time, Temperature and controlled Turbulence. Animal fat is the easiest material to capture and retain. Vegetable oils used in cooking as well as emulsified grease from high temperature water and detergents are harder to control and require greater retention **TIME**. The volume of external interceptors, normally 750 – 1000 gallons, allows the **TEMPERATURE** of the water to cool and separate the FOG causing it to rise to the surface. Controlled **TURBULENCE** is achieved by the installation of a baffle in the interceptor that slows and controls the path of the water entering the interceptor. A properly sized and maintained interceptor can capture 90 percent of the FOG discharged from a food service establishment.



Cut-Away View of a Grease Interceptor
(required interceptor venting is not shown on diagram)

There are numerous methods used in sizing interceptors. Some methods are based on

- 1) Seating capacity
- 2) Meals served at peak hour
- 3) Plumbing fixtures and flow rates

The District use a method that is based on the number of fixtures connected to the interceptor and a value to each unit based on the System Investment Schedule used by the District to determine one-time demand charges. A GPM value of 7.5 is assigned each fixture. GPM per fixture can vary, but the District uses one value to keep the process simple. Also a desired detention time is used as a multiplier in the formula. Since adequate detention time is critical to the proper functioning of the interceptor, the District uses a 12-minute detention multiplier in the equation. An example of the formula is shown below:

1 – Dishwasher	=	3 fixture units
1 – Three compartment sink	=	3 fixture units
1 – Prep sink	=	2 fixture units
1 – Mop sink	=	<u>2 fixture units</u>
		10 fixture units (FVU)

10 FVU x 7.5 GPM x 12 minute retention = 900 gallon interceptor. However, minimum size interceptor is 1000 gallon.

The District may also look at current water consumption of existing restaurants to determine if sizing is adequate. The District has a minimum allowable interceptor of 1000 gallons. Should a business be exploring a kitchen expansion or enlarged seating capacity, then a larger interceptor should be considered. Upsizing at the time of the original installation could be wise choice.

The following fixtures are required to be connected to the interceptor: three-compartment sink, dishwasher and mop sink. Other less frequently occurring fixtures such as scullery sinks, pot and pan sinks and soup kettles are also required to connect. The garbage disposal or food grinder on the dishwasher shall also be connected to the grease interceptor. However, proper scraping of dishes and pans into solid waste disposal stations prior to the rinse associated with the grinder will keep excess food particles out of the interceptor. Food catch basins should be installed on the dishwashers and disposals. Loading an interceptor with food particles will only require it to be cleaned more often.

Hand sinks, prep sinks and indirect receptors are not to be connected to the interceptor as they only increase the flow of water to the trap and decrease detention times. The District has allowed hand sinks to be connected to the interceptor when physical problems in existing restaurants would make the separation very difficult. However, an increase in the size of the trap is usually required. The following fixtures shall never be connected to an interceptor: toilets, urinals, wash basins and other fixtures that may contain possible fecal material.

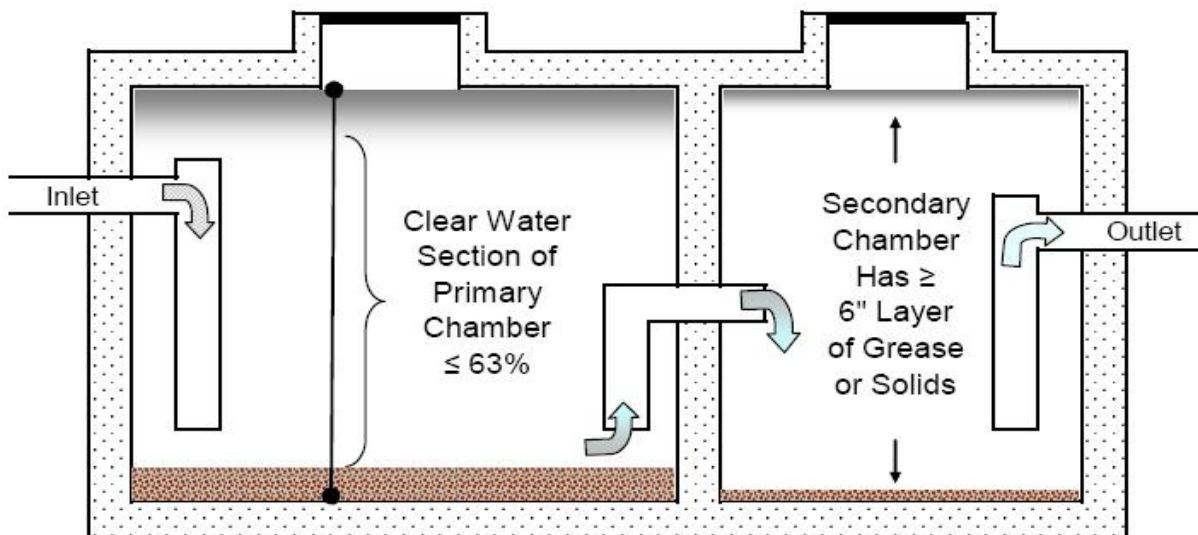
Most of the FOG released to waste stream is generated by equipment associated with dishwashing. While floor drains in kitchen operations are not a large producer of FOG, new establishments will be required to connect them to the interceptor. The District recommends dry cleanup of kitchen floors coupled with a wet mop and use of the sink installed for that purpose (mop sink).

Finally every retrofit of a food service establishment poses individual problems. Business owners may request the Board of Directors to review their situation on a case by case basis.

IV. MAINTENANCE, CLEANING AND RECORDS KEEPING

Proper interceptor maintenance is as important as the installation itself. All interceptors must be cleaned at least once per year. Without proper maintenance fats, oils, grease and food particles will eventually escape the interceptor. Poor or improper maintenance can also result in deterioration of the interceptor walls or baffles. Staff or an approved cleaning contractor will use a simple coring instrument to provide a snapshot of the interceptor contents in the primary and secondary chambers. If the primary chamber cross section reveals that it has less than 63 percent clear water, the trap shall be cleaned. In addition, the secondary chamber cross section shall prove to have less than or equal to six inches of FOG at the top or food particles on the bottom. If more is present for either the top or bottom, the interceptor shall be cleaned. If more than six

inches of food particles exist in the secondary chamber, it is likely a drain management issue exists in your establishment. A cleaning procedures review may result in significant savings associated with interceptor maintenance.



Cleaning Triggers For External Interceptor

Interceptor cleaning shall be done by an EPSD approved vendor. A list of approved vendors shall be provided to interceptor owners. Approved vendors are required to ensure the proper cleaning of interceptors. Improperly cleaned interceptors will require more frequent cleaning and hence more expense for the food service entity. To be approved, a cleaning vendor shall agree to clean interceptors as described below and demonstrate their ability to do so.

The cleaning vendor shall thoroughly clean all four sides and the bottom of the interceptor. The following procedures shall be used to achieve this result.

- Step One: Notify EPSD staff when the interceptor is to be cleaned for inspection purposes. The cleaning vendor shall take all necessary safety precautions.
- Step Two: Skim the entire grease cap and debris from the top of the interceptor.
- Step Three: Place the vacuum tube into the bottom of the interceptor to pump out the remaining solids.
- Step Four: Pump the remaining water out of the interceptor.
- Step Five: Clean the sides and bottom of the interceptor. This shall be done by pressure washing the sides and bottom. The interceptor shall be

cleaned completely. All remaining water shall be pumped out of the interceptor.

Step Six: Inspect the sanitary T's located on the inlet, crossover line and outlet to make sure they are functioning properly and have not come loose.

Step Seven: Inspect the interceptor and baffle for cracks or other wear.

Step Eight: Properly replace the manhole access lids after pumping and cleaning.

Step Nine: Properly complete the District required records associated with the interceptor cleaning.

Step Ten: Contents of the cleaning or pump truck shall be properly disposed of as per rules associated with the Colorado Dept. of Public Health and Environment.

Cleaning records shall be kept by the business unless otherwise instructed by District staff. Forms can be picked up at the District office or printed from this document. The records shall include the date and time of the cleaning, the cleaning vendor, a signature line for the vendor employee.

NO ADDITIVES such enzymes or bacteria shall be added to any interceptor as part of any maintenance program. Enzymes and bacteria emulsify FOG and prevent them from hardening. This process of liquefying FOG moves the material down the line and ultimately the wastewater treatment plant where the problems discussed earlier occur. Adverse depreciation of the interceptor may also occur with the use of additives.

Any business that fails to properly maintain their interceptor (cleaning, repairs, use of enzymes etc.) shall be considered to be non-compliant. Non-compliant user fees will be instituted until the interceptor is brought into compliance. The District may also schedule an interceptor pumping and then charge the business for the pumping plus an additional 20 percent administrative fee.

V. EPSD INTERCEPTOR PURCHASE PROGRAM

The object of District participation is to assist existing restaurants and other businesses engaged in food preparation in becoming compliant with the Estes Park Sanitation District (EPSD) grease interceptor policies. We understand that small businesses are important to the vitality of the Estes Park economy. To help offset some of the costs associated with compliance, EPSD has instituted a program that will purchase an approved external interceptor for qualifying businesses through 12/31/08. Ownership of the interceptor will transfer to the business once the unit has been properly installed. All other costs associated with the installation including excavation and installation, plumbing and ongoing maintenance will be the responsibility of the business.

Qualifying food service establishments in existence prior to December 10th, 2002 are eligible. All interceptors require pre-approval by the District office. An inspection of the kitchen facilities shall be necessary to determine the proper size and review the proposed location of the interceptor. Location is very important and staff can help in the determination. The Town of Estes requires a miscellaneous building permit for the installation of all grease interceptors. There is a \$75 charge for the permit and the District will assist in the process if requested. Should the interceptor be installed in a public sidewalk, then a utility permit is also required from the Town of Estes Park Public Works Department. The business or their contractor will process utility permits.

Once approved, EPSD will order the interceptor and coordinate delivery with the excavation company. Installations shall follow EPSD Rules and Regulations Concerning Collection Lines. Staff will review the excavation and installation prior to back filling the excavation area. Plumbing requirements for the interceptor are provided in the exhibits section of this document. District personnel will be available to answer questions associated with plumbing requirements. For new businesses that are required to install an approved external interceptor all of the above requirements exist, however the District will not participate in the cost of the interceptor.

VI. COMPLIANCE SCHEDULE AND NON-COMPLIANCE USER FEES

Beginning 1/1/08 food service establishments that have not installed an external grease interceptor will begin paying user fees at a rate 50 percent greater than the standard base rate. The increased user fee rate will be applied to the meter that tabulates the water usage for the business. Independent metering of food service establishments that share a water meter with other businesses will be considered on a case by case basis. However, metering water usage that doesn't include bathrooms will not be considered, since other food service establishments that don't share a meter will not be provided the same benefit. The increased fee schedule recognizes businesses that comply have additional costs associated with interceptor maintenance. It also recognizes the District will have additional costs associated with line maintenance and plant operation and these fees will be used to help offset the financial cost.

By 12/31/08 all food service establishments that have not installed an approved external grease interceptor will be classified as non-compliant and be required to pay user fees at a rate 100 percent higher than the base user fee rate with a maximum additional fee of \$750 per quarter subject to annual review. The District will review participation in the interceptor purchase program for existing businesses on an annual basis.

Finally, the District may require a food service establishment to install an interceptor with no consideration of the higher user fee option. This might occur due to a public or environmental health issue that was created by the business or if the business began operating without properly following the rules of the District. It could also occur if it began operations as a pre-packaged food establishment and changed to one that prepares food. A physical disconnect could be required. All costs associated with

disconnection and reconnection will be the responsibility of the tap holder and/or business owner. Charges must be paid prior to reconnection.

VII. FUTURE DIRECTION

These rules and regulations are subject to change. They will not however become less stringent. New situations not addressed with these rules will be reviewed and changes will be made to include them. A new EPA program called CMOM may accelerate the FOG control program. CMOM is an acronym for a program called Capacity, Management, Operation and Maintenance. The program requires public utilities with surface water discharges to have adequate staff, legal authority, monitoring programs, proper maintenance programs, emergency response plans and capacity evaluation to reduce and eliminate sanitary sewer overflows (SSO). Reducing FOG is an important component of that program.

VIII. PLUMBING REQUIREMENTS AND STAFF CONTACTS

Included in the Exhibit Section are drawings and measurements for a 750, 1000 and 1250 gallon interceptor. These diagrams are provided by Colorado Precast Concrete in Loveland, CO. Should engineered drawings be necessary, please contact them at 970.669.0535 to make sure these are the most current drawings and specifications available. In addition to the specifications shown in the drawings the Estes Park Sanitation District has the following requirements regarding installations.

PLUMBING REQUIREMENTS

- Influent and effluent T's must be a glue fitting pipe.
- Crossover line in the baffle must be 90°.
- T's and crossover line must extend to within twelve inches of the bottom of the interceptor.
- The top of the influent and effluent T's must rise five - six inches.
- Interceptor must have a two (2) inch vent installed as per plumbing code.
- There shall be a cleanout installed before and after interceptor. The cleanouts shall be installed within a reasonable distance of the interceptor. Location of the cleanouts should be approved with EPSD staff prior to installation.
- SDR 35 PVC (gasket fittings) shall be used for pipe and cleanouts that are external to the interceptor.
- The Town of Estes Park Building Dept must inspect internal and external plumbing.
- Interceptor excavation/ installation must be inspected EPSD prior to back filling.
- The collection staff of the Estes Park Sanitation District must inspect exterior piping (including clean outs) prior to back filling.

Special attention should be given to the installation of influent and effluent T's. Poorly installed T's may come loose over time and require the services of a licensed plumber to repair. Doing things right the first time will save money in the long run.

The Collection Department of the District (970) 481-1458 or (970) 586-3516 will answer questions concerning any installations.