Staff Report

FATS, OILS, AND GREASES CONTROL PROGRAM PROPOSAL

April 15, 2014

BACKGROUND:

The City maintains over 200 miles of sanitary sewer lines that convey wastewater to the Water Pollution Control Facility (WPC) south of Ames. When fats, oils, and greases (FOG) are introduced into sewer lines, they can solidify and create blockages. This situation can be likened to a cholesterol blockage in a person's artery causing a heart attack. The result of a FOG blockage is typically a backup of untreated sewage into sewer customers' homes or establishments. These backups create cleanup costs for businesses and residents, and the blockage may affect multiple customers depending on its location.

Fats, oils and greases cause challenges for City operations as well. The City spent $22,200 this past year on routine and emergency cleaning of sanitary sewer mains. In 2011, City staff reported to the City Council that grease clogs caused 12 sanitary sewer backups in the year prior. Grease collected in mains can also detach and form "grease logs." These travel to the WPC plant and clog the bar screens that are designed to prevent debris from entering the plant, or plug the skimmer boxes and piping that remove floatable materials from the primary clarifiers. Two or three times per year the staff at the WPC facility will spend between four to eight hours to clear a grease blockage. On some occasions it has required more than 24 hours of effort to clear a grease blockage at the treatment plant.

Finally, FOG is an environmental and health concern. The sewer blockages it causes can allow untreated sewage to enter the storm water system and ultimately the local watershed. Additionally, if sewage backs up into a Food Service Establishment (FSE), the State health code requires the establishment to close until it has been thoroughly cleaned. The environmental concerns have led the EPA to impose its own control over the sewer programs in some communities without a FOG control program.

FOG AND FOOD SERVICE ESTABLISHMENTS (FSEs):

Food Service Establishments (FSEs) are the primary source of FOG. This is why the Uniform Plumbing Code requires installation of grease interceptors (grease traps) to reduce the possibility of FOG entering the sanitary sewer. FOG can come from food particles, oils, sugars, dairy products, and other solids.

Grease interceptors can be one of two primary types. **Gravity-flow grease interceptors** are larger, outdoor devices. They are typically installed underground and vary in size from 500 to 5,000 gallons, depending on the number of kitchen drains in the FSE. In this device, wastewater is slowed by compartments. Solids settle to the bottom and grease moves to the top, with a layer of clear water in between. The outlet pipe is situated to avoid allowing the solids or floating grease to escape.

Hydromechanical grease interceptors are typically indoor devices. These are much smaller than gravity-flow interceptors, and operate by introducing air to agitate the waste water. The water flows through baffles to separate the solids and greases from the water. Sometimes these units contain devices that scrape the grease into a separate container for disposal.

Grease interceptors of either type are not effective without routine maintenance and cleaning. The "fullness" of an interceptor is measured by taking the height of the trapped grease and solids and comparing that to the total depth of the unit. **If the level of grease and solids exceeds 25% of the total unit depth, the grease interceptor is full. Beyond that level, grease can begin to escape into the sanitary sewer.** While hydromechanical interceptors can be cleaned out by a FSE's staff, gravity-flow interceptors are typically pumped out by contractors. **Cleaning and maintenance of interceptors is the key challenge, since the Plumbing Code specifies installation requirements, but not how to maintain them.**

The amount of FOG created by a FSE varies based on the quantity of food produced, food type, whether washable or disposable tableware is used, and kitchen management practices (e.g., scraping plates before washing them, use of sink screens, use of garbage disposals, use of hot versus cold water).

Several FSEs in the community add emulsifiers to their wastewater. This prevents grease from building up in the interceptors, but further study is needed to determine whether the grease re-hardens in sewer mains (pushing the problem downstream), or if certain additives are acceptable.

FOG collected from interceptors must be taken to the WPC Plant or to another facility for proper disposal. Although FOG is a problem at the front of the WPC facility, it can be disposed of in the plant's digesters, where it generates methane to run the plant's generators as it decomposes. Many grease contractors in Ames deliver the grease to the wastewater facility in Des Moines, since the disposal cost is lower. In Ames, improvements to the WPC grease handling station totaling $300,000 are planned for FY 2016/17. These improvements could help make it more convenient and/or less costly for grease haulers to dispose of grease in Ames.

COMPARISON OF FOG CONTROL PROGRAMS:

Several communities within and outside of Iowa have FOG control programs. Highlights of some selected programs follow below:

Des Moines Wastewater Reclamation Authority: All commercial and institutional cooking establishments and some non-cooking FSEs must comply with FOG regulations. Interceptors must be cleaned at least every three months, unless a waiver is granted. If an FSE is new or has renovated, it must install a grease interceptor with a minimum size of 1,000 gallons. The interceptor must have a sampling manhole. Emulsifiers are prohibited. Discharge water may not exceed 400 milligrams per liter (mg/L) of FOG. FSEs must participate in special training if they want to clean their own interceptors. The WRA conducts unscheduled inspections to check that interceptors are less than 25% full and that maintenance records have been kept for the past three years. There is a $50 inspection fee. Violations of the FOG rules can result in warnings, fines of $100-200, civil penalties, a requirement to submit a compliance plan, and orders to pay for clean-ups resulting from sewer blockages. Non-compliance can result in an order to close the FSE.

Muscatine Water Pollution Control – All new FSEs must install grease interceptors, and existing FSEs must install interceptors if they are remodeling or if they discharge more than 100 mg/L of FOG. A Grease Discharge Permit is required for all FSEs. The permit application describes the FSE's activities, includes information regarding all chemicals on site, lists recent water bills, and includes a drawing of kitchen fixtures. The FSE must be inspected by the City before the annually renewable permit is issued. FSEs must consent to unannounced inspections (and re-inspections if a notice to correct is issued). During inspection, grease interceptors may not exceed 25% full, and written records of maintenance and cleaning must be presented for the past three years. Fees for the permit application are based on annual gross sales ($50-$225), and fees are in place for monitoring and re-inspections ($150-$500).

Cary, NC – FSEs are required to have a grease interceptor, and non-FSEs may be required to install interceptors. Interceptor design criteria are provided. Interceptors must be cleaned every 60 days unless a waiver is approved by the City. FSEs must provide a FOG program acknowledgement certificate and retain maintenance records for at least 3 years.

Duluth, MN – The FOG program was created as a result of a federal consent decree. The City requires an approved Best Management Practices (BMP) program and sets minimum standards for the BMPs. No garbage disposals are allowed in new FSE construction or renovations. Interceptors must be external and may not exceed 25% full. The City may charge FSEs for all clean up costs of a partial or full blockage, and can split costs between multiple FSEs. The City may require existing FSEs to install an interceptor if evidence exists indicating a FOG problem.

Harnett County, NC – Interceptors are required for all FSEs and any other establishment as deemed necessary by the utility. The pretreatment coordinator approves and inspects all interceptors, which must meet provided design requirements. Interceptors must be cleaned at least every 30 days. Additives are not permitted. FOG discharges must be below limits of 200 mg/L by EPA method 1664 or 150 mg/L by EPA method 413.

STAFF DISCUSSIONS WITH CITY COUNCIL, PUBLIC:

As a public outreach initiative to kick off local review of FOG, in October 2010 City staff held a discussion with local restaurant managers to outline the challenges caused by FOG and practices that could be employed by FSEs to reduce FOG discharges. In September 2011, a City Council workshop was held. At that workshop, staff outlined FOG programs in other communities and noted that after further discussions with FSEs took place, a draft program would be presented for the City Council to consider. At that time, both staff and the City Council expressed a desire to avoid implementing a one-size-fits-all approach.

After further research, in 2013 City staff met with grease-hauling contractors to discuss their experiences and how they could participate in a potential program. The haulers noted the challenges with disposal of grease at the Ames WPC facility. Later that year, a survey was sent to all 278 licensed FSEs in Ames. This provided feedback regarding existing practices, the equipment used by local restaurants to reduce FOG discharge, and maintenance procedures and costs.

The discussions with the City Council, restaurant operators, and grease haulers led City staff to identify key components of any FOG program proposal. These included:

- FSEs are major FOG producers, but all customers should be responsible
- FOG production varies among FSEs. FSEs that already do the right things should not be punished
- Keep burdens of recordkeeping and reports to a minimum
- Keep costs low
- Avoid adding City staff

PROPOSAL:

City staff proposes a two-pronged approach to address FOG. The first component would apply to all sewer customers. Currently, *Municipal Code* Section 28.306 (2) states: “No utility customer shall place, throw, dump, empty, or deposit into the municipal sewerage system […] solid or viscous substances which may cause

obstruction to the flow in the sewer or other interference with the operation of the treatment facility." Violation of this section is a municipal infraction of up to $1,000 for the first and each subsequent offense.

Although this penalty seems substantial, it does not address the actual costs of the cleanup associated with a sanitary sewer overflow. City staff proposes that the penalty be modified to include the fine plus the actual cost of the City's cleanup efforts if the sanitary sewer backs up. This would apply to all customers—including residential and commercial—who cause sanitary blockages by putting improper materials into the sewers. City staff should note that in many cases it is difficult to attribute a blockage to a single customer. In those instances, this provision could not likely be enforced. However, in some instances it can be determined that a blockage has been caused by a particular customer. It is believed by City staff that a higher potential for penalties may encourage customers to develop better procedures to avoid causing a blockage.

The second prong to the approach involves FSEs specifically. City staff proposes the creation of a new sewer rate class called a "Restaurant Rate." This rate has not yet been determined, but would be higher than the normally applicable commercial rate. It would apply to any state-licensed FSE connected to the City's sewer system. The rates would be applied on a six-month basis. FSEs could submit information to receive an exemption of their choice from the rate for the next six-month period. **Three exemptions** to this higher rate have been proposed by staff:

1. **Records from the FSE indicating that the grease interceptor has been cleaned out by a grease hauler, that the interceptor was less than 25% full when it was cleaned out, and that the equipment was in good repair.** Interceptor cleanouts from an FSE during a reporting period must average less than 25% full, and no single instance may be more than 35% full. City staff would develop a reporting system that would allow the grease haulers to submit the documentation directly to the City, eliminating any extra steps from the FSE itself. This is similar to the Des Moines WRA reporting system, where the grease hauler completes the report. City staff discussed this with local grease haulers, and their response was positive to this proposal.

2. **Results of a City-approved FOG test indicating that the FOG content of the FSE's wastewater is less than a pre-established concentration. Staff believes 100 mg/L to be an appropriate concentration threshold, but would propose to review this threshold after the program has been in place for a period of time to determine whether it should be adjusted.** This would require the FSE to have a sampling port, which is currently not available at all FSEs. The City would provide a list of approved outside laboratories that could conduct the test, which costs approximately $45. The test would be required during a time of day which coincides with the FSE's peak operation.

3. **Spot checks of compliance with kitchen best practices.** This option may be attractive for FSEs that maintain their own grease interceptors or have smaller operations. FSEs would routinely maintain a logbook of their interceptor maintenance, staff training, and measures taken to reduce or eliminate FOG discharge. When the review period approaches, City staff would request the logbook pages for a randomly selected period. If the logbook is complete, the exemption would be granted.

Also exempted would be any customer participating in the Non-Domestic Waste Pretreatment Program (NDWPP). This existing program is for customers who discharge wastewater that is not similar to domestic wastewater because it includes higher concentrations of certain compounds or pollutants. Through periodic sampling, program customers pay wastewater surcharges based on the cost to treat their sewage's content. **City staff proposes adding FOG as a measured criterion to the NDWPP.** Existing NDWPP customers such as Iowa State University and Danfoss, which operate FSEs, would then develop their own practices to control FOG. City staff believes this solution would be easier for those customers to incorporate into their existing wastewater treatment programs rather than attempting to test or keep records on several locations within that customer's internal wastewater system.

In order to verify submitted documents and attempt to troubleshoot areas where sewer line blockages continue to occur, the City would retain the power to inspect logbooks, service lines, and other equipment within FSEs on an as-needed basis. Under this proposal, City staff believes the program could be managed without adding additional staff.

In January 2014, City staff invited all licensed FSEs in Ames to attend a presentation outlining the above proposal. The response was largely positive, particularly with regard to having multiple methods of compliance. Those present also appreciated the concept of the grease haulers completing the paperwork and submitting it. Several suggestions from the sessions have been incorporated into the proposal to be implemented immediately, and suggestions which may be considered in the future are discussed below.

IMPLEMENTATION PROCESS AND FUTURE STEPS:

Because staff's proposal would implement a variety of limits that have not been in place before, City staff proposes that the first year of implementation should be a data collection period. No changes in fees or rates would be imposed during that period, but FSEs would be asked to provide the required documentation as if the program was in effect. This would allow City staff to adjust the proposed numerical

limits and costs to best match the goals of the program. It would also provide FSEs a year to understand the program.

Additionally, during the open forums, several suggestions were raised by FSE representatives that City staff believes would be worthwhile to pursue, but should wait until the program has been in place for at least two years. This included a suggestion to allow a compliance period of longer than six months for those customers who have a record of compliance. City staff would need to collect several years' worth of data before a recommendation could be developed regarding such an exemption.

During the first two years, City staff would also like to investigate the effect of using emulsifiers to the wastewater. Additionally, car wash operations must also be examined during this trial period. These have the capability to introduce large quantities of grit, oil, and other compounds that could be detrimental to the sewer system. City staff would need to further evaluate the best methods to control this source of FOG.

During the open forums, implementation of a grant program was suggested to help FSEs install more effective FOG control equipment. The City has used a similar program in the past to assist with costs of moving residential footing drain discharges out of sanitary sewers and into storm sewers. City staff would need to evaluate the costs of such a program and whether it may qualify for state or federal funding.

Finally, City staff would like to evaluate the fees for FOG disposal at the WPC facility. These fees are higher than neighboring wastewater facilities. In addition to the planned equipment modifications, staff could change the fees to make disposal of Ames FOG at WPC more economical for haulers, who could then pass the savings on to local FSEs. This would require further study.