



City of Richmond

Report to Committee

To: Public Works and Transportation Committee
From: Milton Chan, P.Eng.
 Director, Engineering
Re: Grease Management Program Update

Date: November 16, 2021
File: 10-6060-03-01/2021-
 Vol 01

Staff Recommendation

That the staff report titled “Grease Management Program Update”, dated November 16, 2021, from the Director, Engineering be received for information.

Milton Chan, P.Eng.
 Director, Engineering
 (604-276-4377)

REPORT CONCURRENCE		
ROUTED TO: Sewerage and Drainage	CONCURRENCE <input checked="" type="checkbox"/>	CONCURRENCE OF GENERAL MANAGER
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

The impacts of grease in the sanitary system are a significant concern for the City of Richmond and Metro Vancouver. Grease accumulation can result in sewer blockages, reduced system capacity, service disruptions, and costly premature replacement of major infrastructure. In 2011, the Lansdowne Forcemain became completely plugged with grease, resulting in extensive emergency repairs at a cost of approximately \$900,000.

The City has an ongoing Grease Management Program to reduce the risk of grease-related sanitary system failures. Initiatives implemented under this program include grease source control, public education and communications, preventative maintenance works, and monitoring and inspection. A Multi-Family Grease Collection Pilot initiative will also be conducted in 2022 to further expand the Grease Management Program. This report provides an overview of current and upcoming initiatives undertaken as part of the Grease Management Program.

The City's Grease Management Program supports the following strategies within Council's 2018-2022 Strategic Plan:

Strategy #1 A Safe and Resilient City:

Enhance and protect the safety and well-being of Richmond.

1.1 Enhance safety services and strategies to meet community needs.

1.2 Future-proof and maintain city infrastructure to keep the community safe.

Strategy #4 An Active and Thriving Richmond:

An active and thriving community characterized by diverse social and wellness programs, services and spaces that foster health and well-being for all.

4.2 Ensure infrastructure meets changing community needs, current trends, and best practices.

Analysis

The Grease Management Program includes grease source control, public education and communications, and preventative maintenance programs to reduce grease build-up in the sanitary sewer system.

The City has also been conducting a grease monitoring program since 2018, with the objectives of identifying sources of significant grease discharges to the sanitary system, establishing baseline grease levels, and optimizing preventative maintenance programs by targeting areas that are identified to have higher levels of grease accumulation. A Multi-Family Grease Collection Pilot is proposed for 2022 to measure the impact of residential grease collection on reducing

grease accumulation in the sanitary system. These programs may be expanded in the future if shown to be effective.

Grease Source Control

Controlling grease at the source is the most effective way to reduce grease-related issues. Drainage, Dyke, and Sanitary System Bylaw No. 7551 requires that food sector establishments install and maintain grease interceptors to prevent grease from entering the sanitary system. In 2008, Council approved a part-time grease inspector position to enforce the maintenance of grease interceptors according to the bylaw. This position was upgraded from part-time to full-time in 2017, leading to increased inspection rates, greater opportunities for public education, and collaboration between the grease inspector and Public Works Operations.

The grease inspector’s primary responsibility is to conduct inspections to confirm if establishments are disposing of grease and maintaining their grease interceptors in accordance with Bylaw No. 7551. As violations are often attributed to property owners or staff that are unaware of bylaw requirements, the grease inspector provides education on the negative impacts of grease, and proper practices for grease disposal and grease interceptor maintenance. Figure 1 shows grease inspection and enforcement statistics from 2012 to present. While there is a high level of compliance, inspection and enforcement remains an important tool for grease management.

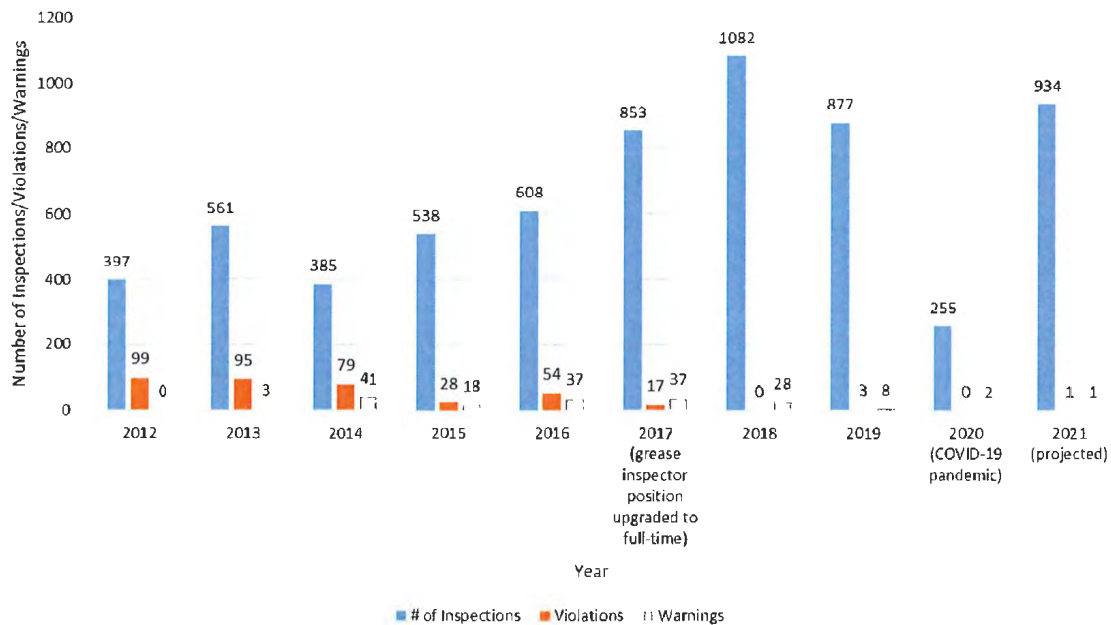


Figure 1: Grease Inspection and Enforcement Statistics (2012 to present)

The grease inspector regularly coordinates with Public Works Operations to investigate and address grease issues. The grease inspector is notified when Public Works staff identify significant quantities of grease within the sanitary sewer system. The team then works collaboratively to trace the source of grease discharge, allowing staff to identify problematic

areas and address significant sources of grease discharge. This integrated approach to target problem areas has made inspection and sanitary sewer maintenance efforts more effective.

As shown in Figure 1, the full-time grease inspector is able to conduct 800 to 1,100 inspections annually, which is approximately 60% to 80% of all the food establishments in the City. As a result, the majority of food establishments are inspected at least once every two years. In recent years, the inspection scope has expanded to include non-food sector establishments (e.g. care homes, hospital, factories, and residential properties), which are now recognized as common sources of grease discharges in the sanitary sewer system.

Public Education and Communication

In addition to education provided by the grease inspector, the City provides general education on proper grease disposal measures through online resources, pamphlets, and social media. Residents are encouraged to dispose of small amounts of grease in their green carts, which are then collected as part of the City's solid waste and recycling services. Larger amounts of household grease are accepted at the City's Recycling Depot. The City also has a joint campaign with Metro Vancouver known as the "Fats, Oils and Grease (FOG) Wipe it, Green Bin It" campaign, which is run annually around key holiday cooking times such as Thanksgiving and Christmas.

Door hangers with proper grease disposal procedures are also distributed to households which appear to be contributing to grease accumulations found in the sanitary sewer system.

The education and communications campaigns also promote disposing of food waste into green carts, rather than into garburators or other in-sink disposal systems. Use of garburators can introduce food waste containing grease and other solids into the sewer system, requires considerable amounts of water to run, and increases the cost of treatment at Metro Vancouver's wastewater treatment plants.

Preventative Maintenance, Inspection and Monitoring

The City performs routine preventative maintenance to remove grease accumulation from the sanitary system. This includes flushing of gravity sewers and forcemains, and regular cleaning of pump stations.

All gravity sewers are inspected using Closed-Circuit Television (CCTV) at least once every 20 years, allowing structural and operational defects to be identified and addressed. Visual inspection of manholes are conducted more frequently in areas known to have grease accumulation issues. Pressure monitoring is also conducted at each pump station to identify constrictions caused by grease accumulation in forcemains. These inspection and monitoring measures allows for proactive response to grease issues, minimizing rehabilitation cost and service disruption.

Grease Monitoring Program

A grease monitoring program commenced in 2018, which includes tracking the location and severity of grease accumulation while conducting routine maintenance on the sanitary sewer

system. This information is entered into the City's asset management system, allowing the data to be used for analysis. Public Works uses this information to identify possible sources of grease and advises when grease inspector intervention is needed.

Public Works also uses this information to schedule preventative maintenance using a condition-based approach, where problematic sewers are targeted for more frequent inspection and flushing. This results in more effective use of resources compared to implementing preventative maintenance schedules simply based on best practice frequencies.

Data has been collected for approximately 50% to 60% of the City's sanitary sewers and manholes. Public Works continues to collect grease accumulation data while conducting routine maintenance and inspection activities, such as flushing and CCTV inspection of the sanitary sewer system.

Multi-Family Grease Collection Pilot

As part of the staff report titled, "2022 Utility Budgets and Rates", dated October 22, 2021, from the General Manager, Engineering and Public Works and the Acting General Manager, Finance and Corporate Services, Council endorsed a one-year pilot program to collect waste grease from a select number of multi-family complexes and measure subsequent impacts to grease accumulation in the sanitary sewer system.

Under this initiative, waste household cooking grease will be collected from up to ten multi-family sites (approximately 500-800 units) and taken to a processing facility where it will be de-packaged, put through an anaerobic digester, and used to produce renewable natural gas through a direct connection to a natural gas pipeline.

This pilot program will be used to evaluate the feasibility of residential grease collection and its effect on reducing grease in the sanitary system.

Financial Impact

None at this time.

Conclusion

The City's Grease Management Program includes initiatives such as grease source control, public communication, sanitary sewer system monitoring and inspection, on-going maintenance, and pilot programs. Although grease in the sanitary system continues to be a concern, the City's proactive approach to grease management has prevented grease-related sanitary system failures, educated the City's growing population, and encouraged proper grease disposal among the general public.



Jason Ho, P.Eng.
Manager, Engineering Planning
(604-244-1281)

JH:sw



Stephenie Wong, P.Eng.
Project Manager
(604-204-8516)