

# SEWER COLLECTION SYSTEM ANNUAL REPORT



2015/2016

City of Lancaster



A report of the history, current assessment, budget, activities, and the achievements of the Lancaster, California Sewer Collection System in Fiscal Year 2015/2016.

# Sewer Collection System Annual Report

## LANCASTER, CALIFORNIA 2015/2016

### System Overview:

A Sanitary Sewer Collection System is a series of pipes, manholes, and lift stations that convey wastewater from homes and businesses to a treatment plant. The City of Lancaster's (City) sanitary sewer collection system consists of a network of 429 miles of sewer lines, 8,965 sewer manholes, and one sewer lift station. This information is obtained from data input into the City's Geographic Information System. The oldest sewer pipes in the City were installed in 1947; our pipes average age is 33 years old. The estimated value of our sewer collection system is in excess of 300 million dollars. Our goal is to properly manage, operate, and plan for the system to ensure it is a valuable asset for many years to come.

### City of Lancaster Sanitary Sewer System Collection History:

The City assumed responsibility for the operation and maintenance of its sanitary sewer system from the County of Los Angeles Consolidated Sewer Maintenance District on July 1, 2008. At that time the City formed Utility Services, a Section of the Public Works Division. Our goal was to reduce the number of sewer overflows and to develop a program for the sustainability of the system.

**DID YOU KNOW? IF ALL OF THE SANITARY SEWER PIPES IN LANCASTER WERE STRETCHED END TO END, THEY WOULD REACH ALL THE WAY TO ENSENADA MEXICO. AND BACK!**

Working with the State and the County Sanitation District, we developed a maintenance program where we would systematically clean the sewer pipes and inspect them both visually and with cameras. We also developed a program to reduce the amount of harmful materials being discharged into the pipes. With

these efforts, we have greatly reduced the number of overflows and feel we have a reliable plan to prolong the life of our pipes and manage the orderly growth of the sewer system. We are able to accomplish this while keeping costs low and ensuring that property owners are paying only their minimal fair share for the services provided.

### Sanitary Sewer Overflow:

A collection system's greatest concern is a sanitary sewer overflow (SSO); this is where a pipe is plugged and raw sewage wastewater flows out of a manhole. SSOs are typically caused by roots growing into the pipes or a buildup of grease. Before the City maintained the system, the City suffered 20 or more SSOs every year. We now average about four. Through following our proactive plan, our number of SSOs and the volume of wastewater spilled from SSOs is typically less than half the Statewide average for similar sized systems.



**Maintenance Program:**

*Cleaning*

Cleaning consists of pipe flushing and root removal. We clean our pipes regularly using a hydrojet which is a high pressure jetting system that uses water and an optional vacuum to remove debris. This removes grease buildup as well as roots and debris to enable the wastewater to flow freely through the pipes. Lately one persistent problem has been flushable wipes clogging our lines. Blocked wastewater causes odors, SSOs, and damages pipes. The objective of sewer pipe cleaning is to prevent future blockages of the sewer system. Roots are also removed by a mechanical cutting rodder or treated with environmentally safe foam. The majority of our maintenance budget is spent on cleaning grease and removing flushable wipes and roots from the sewer lines.



*Inspections*

Waiting for damages or blockages to present themselves is an expensive maintenance strategy. Therefore, we follow a strict inspection schedule to identify problems before they result in SSOs or expensive repairs. The City owns a closed circuit television (CCTV) truck. Our operator sends a camera on a small wheeled vehicle through the sewer lines. It is controlled remotely from inside of the truck and the video is stored for further analysis. Blockages, roots, cracks, and damaged pipes are located and cleaning or repair is scheduled. CCTV greatly enhances the planning of the maintenance and repair programs.

**FLUSHABLE WIPES CLOG PIPES!**  
*FLUSHABLE WIPES DO NOT DISINTEGRATE LIKE TOILET PAPER AND EASILY GET CAUGHT IN SEWER MAINS AS WELL AS HOME PLUMBING.*

When waste water is blocked in a line it will slowly rise and fill a manhole. We have identified the locations where blockages are common. We visually inspect these manholes on a regular basis to look for impending overflows. We have installed surcharge monitors in selected manholes which have sensors on the underside of the manhole cover to measure water levels. These monitors send sewer workers advance notice of elevated flow levels in the manhole so that corrective action can be taken before an overflow occurs. This prevents costly and messy sewer overflows. Surcharge monitors are currently installed at eight locations within the City which had previously experienced sewer overflows.



*Vermin Abatement*

The City has started a vermin abatement program within sewer manholes. The product used to treat manholes for roaches is called Zone Defense (boric acid). Boric acid, or Boron, is used in many household products; boric acid is safe for humans, unless ingested in large quantities. The product is applied by trained professionals using compressed air with a high pressure hose to

spread the product inside of the manhole. The product is pulled from the container and blown through the vent hole on the manhole lid to produce a dusting of powder throughout the manhole. A six-month follow-up inspection of the manhole is performed to evaluate the treatment. If necessary, the manhole is re-treated to eliminate vermin.

### **Prevention Program:**

#### *Fats, Oils, and Grease (FOG)*

Keeping harmful substances from going into the sewer is much easier than trying to get them out. Fats, Oils, and Grease are harmful to sewers. FOG feed the bacteria that create hydrogen sulfide gas. Hydrogen sulfide causes a rotten egg smell, is a health risk, and deteriorates sewer pipes. FOG builds up in clumps in pipes and leads to blockages and SSOs.

Food service establishments (restaurants, cafeterias, etc.) produce a significant amount of FOG.



Lancaster is among many cities that work with restaurants to reduce the amount of FOG they send down the drain. Minimally, a business will maintain best management practices to prevent FOG discharge like wiping off of pans and dishes into the trash before they go in the sink. Ideally, a business will have a grease removal device like a grease interceptor or trap. We are working to educate businesses on how to best reduce their FOG impact on the sewer system.

#### *Industrial Waste Water Discharge*

Some businesses manufacture or generate harmful chemicals that pose a health risk and damage sewer pipes, if not properly disposed of or treated. The City is beginning a program to help businesses identify their hazards and ensure they are mitigated.

### **Capital Improvements:**

A capital improvement program helps turn expensive emergency repairs into planned affordable improvements. With an investment as large as our sewer system, financial reserves and good planning are crucial.

As sewer pipes age or are exposed to chemicals, they can wear, crack, or collapse resulting in wastewater flowing out, and ground water seeping into the pipe. Once we have identified the sites in need of repair or replacement, we develop a plan to fix them in the most cost effective manner. New methods such as cured in place lining using trenchless technology to rehabilitate pipes, are proving to be an economical alternative to digging up streets and installing new pipe. The City is utilizing these and other cutting edge techniques to stretch our capital budget. Our

#### **YOU CAN HELP:**

*NEVER POUR GREASE DOWN THE DRAIN. PUT IT IN A CAN OR SOAK IT UP IN A PAPER TOWEL AND PUT IT INTO THE TRASH OR SAVE YOUR GREASE & DELIVER TO CITY MAINTENANCE YARD AT 615 W. AVENUE H, FOR RECYCLING.*

trucks, equipment, and pumps require regular overhauls or replacement. We have developed, and are constantly enhancing, our long-term capital improvement program to ensure that major expenses are identified early and financial reserves are established.

**Staffing:**

The Utility Services Section currently consists of a staff of 23, including the Utility Services Manager, Assistant Engineer, Industrial Waste Technician I, Industrial Waste Technician II, Secretary II, Public Works Supervisor, two Lead Maintenance Workers, six Maintenance Worker IIs and nine Maintenance Worker Is.

**Training:**

Our staff holds memberships in the following organizations:

- National Association of Sewer Service Companies, Inc. (NASSCO),
- Water Environment Federation (WEF),
- American Water Works Association (AWWA),
- California Water & Environment Association (CWEA),
- American Public Works Association (APWA),
- California Land Surveyor's Association (CLSA), and
- Association for GIS Professionals (URISA).

These organizations provide training and certification to ensure our workers are able to safely and proficiently maintain our system. In fiscal year 2015-2016, staff members received 4 new certifications and 12 re-certifications.

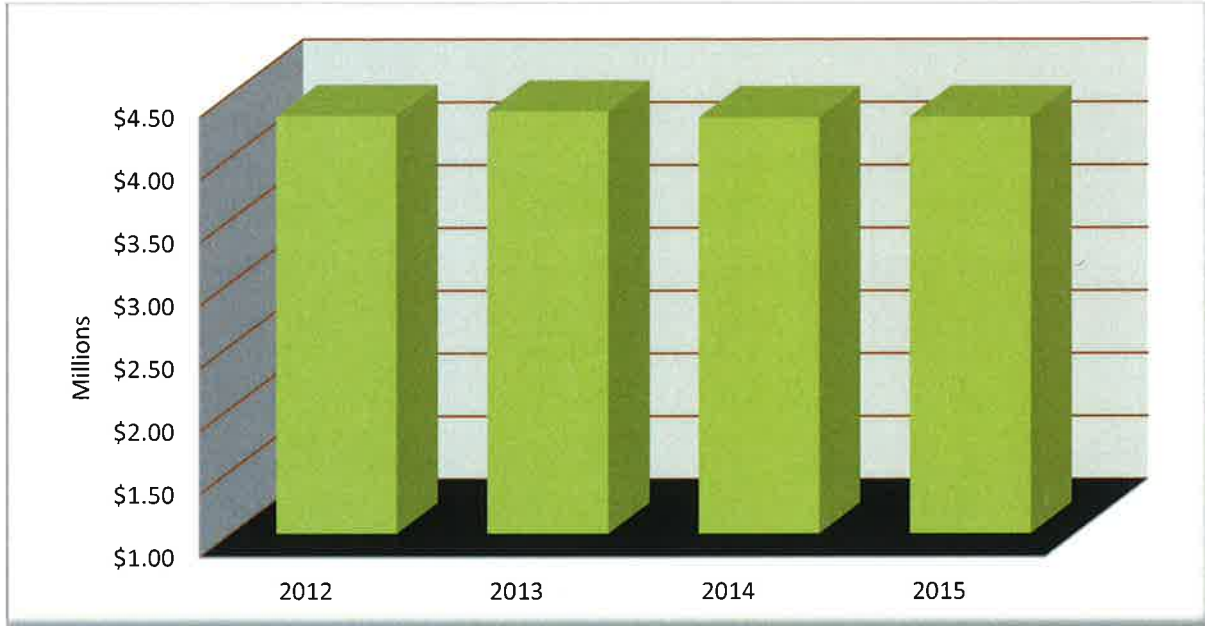


**Conclusion:**

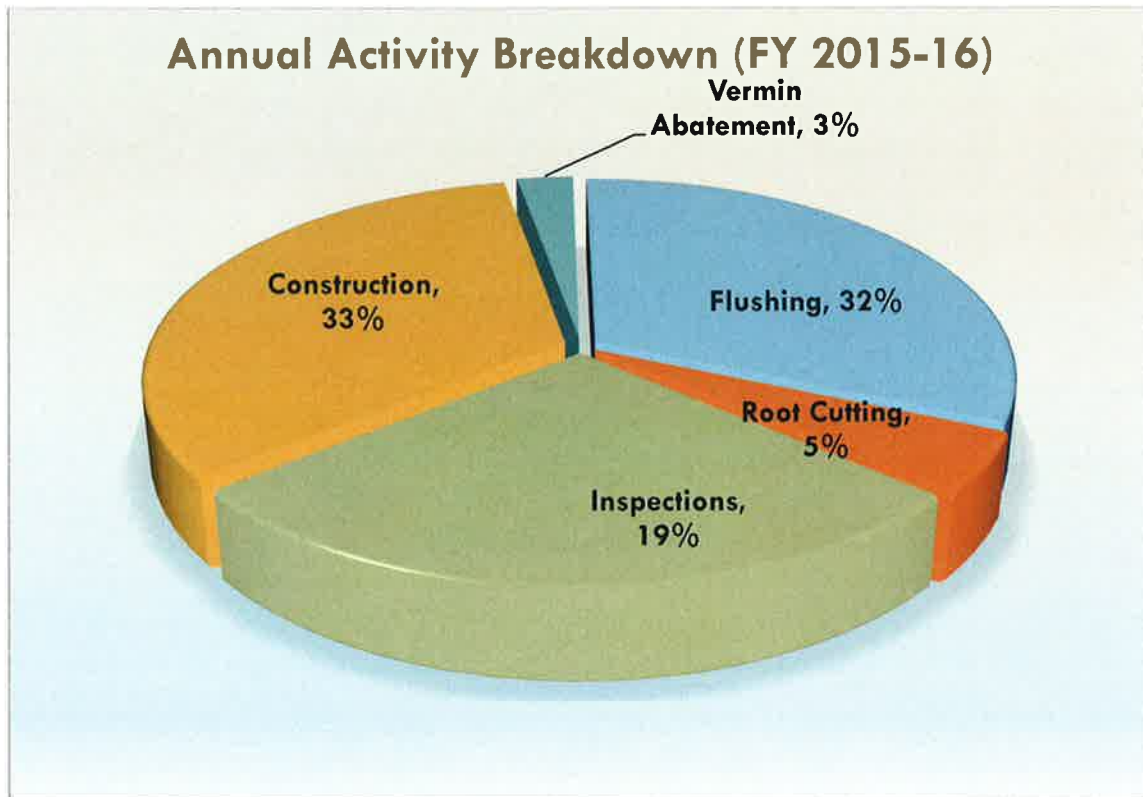
This year has been an exciting year for the City's Utility Services Section. The confidence of the crews has grown as we enter our eighth year. Our maintenance, investigation, and prevention programs are proving to be successful and our capital program provides assurance that our system will be successful for future generations. We enjoy our work and we are proud to serve the residents of the City.

**Sewer District Revenue:**

The City collects fees from property owners whose properties are connected to the sewer system. As shown in the exhibit below, the City has been consistently collecting over \$4,000,000 in sewer charges over the last four years. These funds are used for sewer and equipment maintenance.



**Annual Sewer Maintenance Activity at a Glance:**



**Sewer System Performance Review:**

<b>Sewer System Performance</b>	<b>7/1/12 to 6/30/13</b>	<b>7/1/13 to 6/30/14</b>	<b>7/1/14 to 6/30/15</b>	<b>7/1/15 to 6/30/16</b>
<u>Pipe Cleaning:</u>				
Pipe Flushing	209,616 LF, or 39.7 Miles	176,880 LF, or 33.5 Miles	257,242 LF, or 48.7 Miles	313,137 LF, or 59.3 Miles
Root Removal	155,967 LF, or 29.5 Miles	111,408 LF, or 21.1 Miles	117,296 LF, or 22.2 Miles	39,380 LF, or 7.5 Miles
<u>Closed-Circuit TV Inspection:</u>	167,851 LF, or 31.8 Miles	68,640 LF, or 13 Miles	85,834 LF, or 16.3 Miles	55,095 LF, or 10.4 Miles
<u>Manholes:</u>				
Inspected	1,507	96	2,127	3,223
Repaired	9	3	30	10
Vermin Abatement		848 Manholes	233 Manholes	219 Manholes
<u>Sewer Overflow (SSOs):</u>	3	5	4	4
Annual SSO Rate (SSO/100 miles of pipe)	0.69	1.16	0.93	0.93
Portion of SSO Runoff Contained	95%	100%	32% <sup>1</sup>	98%
<u>Main SSO Causes</u>				
Grease	100%	80%	75%	80%
Roots	0%	20%	0%	10%
Flushable Wipes			25%	10%

1. The percentage of run-off contained for fiscal year 2015-2016 is lower, compared to the other years, due to the fact that two of the four spills occurred in dirt fields where the liquid soaked into the ground and could not be recovered.

**Your Role:**

Help keep costs down:

- ◆ Never put food in a drain; soak up grease and oil in a paper towel and put it in the trash or pour into a container and drop it off at the City Yard at Ave H & 7th Street West.



- ◆ Report spills, strong sewage odors, or any suspicious activity around manholes to the City at (661) 723-5985 or after hours at (661) 510-4362.

**Wipes Clog Pipes!**

Only water, human waste, and toilet paper belong in the toilet, anything else -including items labeled "flushable"- may clog pipes and should never be flushed.

**No Drugs in the Drain**

Drop off medications, syringes, or lancets at the Sheriff's Station located at: Sierra Highway & Lancaster Blvd, (661) 948-8466.



Utility workers operating a jetting machine to clean grease and clear flushable wipes from sewer pipes

**2015/2016  
Sewer System  
Annual  
Performance Report**



<b>Sewer System Performance</b>	<b>7/01/15 to 6/30/16</b>
<u>Pipe Cleaning</u>	
Flushing	59.3 Miles
Root Removal	7.5 Miles
<u>CCTV Inspection</u>	10.4 Miles
<u>Vermin Abatement</u>	219 manholes
<u>Manholes</u>	
Inspected	3,223
Repaired	10
<u>Number of Sanitary Sewer Over-flows (SSOs)</u>	4
Annual SSO Rate: SSOs/100 miles of pipe	0.93
Portion of SSO Contained	98%
<u>SSO Causes</u>	
Grease Flushable Wipes	80%
Roots	10%
Flushable Wipes	10%



# 2015-2016 Sanitary Sewer System Annual Performance Report

The Public Works Department, Utility Services Division, is responsible for operating and maintaining the sewer collection pipe system. Estimated value of the City's sewer system is in excess of \$300 million.



**Sewer System Includes:**

- ◆ 429 miles of sewer lines
- ◆ 8,965 sewer manholes
- ◆ One sewer lift station



**Goals:**

- ◆ Prevent Sanitary Sewer Overflows.
- ◆ Maintain the existing sewer system including sewer manholes to lengthen its life.
- ◆ Improve sewer system with new construction.
- ◆ Public education to prevent fats, oils & grease (FOG) in sewer lines.



**Cleaning:**  
We regularly clean our pipes with a hydro-jet; a high pressure water nozzle and vacuum. The hydro-jet has enough power to blast through debris and grease build-up in the



pipes.

**Vermin Abatement**

The City started this program to get rid of cockroaches within sewer manholes. Boric acid is sprayed into manholes. Boric acid, the main ingredient in silly putty, is relatively harmless to humans but deadly to roaches.

**Repair:**

We use a computerized system to prioritize which sections of the network



**Maintenance Program:**

We inspect the system for any problems. We use a video camera mounted on a robotic vehicle, which is run down the sewer line. It



is controlled remotely from the truck. Blockages, roots, cracks, and damaged pipes are located and maintenance is scheduled.

