City of Folsom

Environmental & Water Resources Department

2013 SSMP SELF-AUDIT

(July 1st, 2011 - July 1st, 2013)

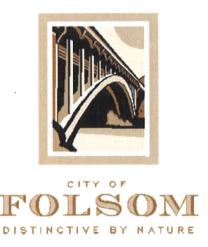




Table of Contents

2013 SSMP Internal Audit Review

Introduction	Page 1
Background	Page 1
SSMP Internal Audit Overview	Page 1
SSO History	Page 2
Performance Review	Page 3
Future Performance Improvements	Page 7
SSMP Modifications not tied to Performance	Page 8
Certification of Audit	Page 9
<u>Appendices</u>	
SSMP Assessment	Appendix A
Inspection Records & Reports	Appendix B



Introduction

On May 2, 2006, the State Water Resource Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (GWDR's) for Sanitary Sewer Systems, herein referred to as the "General Order". The purpose of the General Order is to ensure that wastewater collection systems are properly operated and maintained by the municipalities that are in charge of their operations. The General Order applies to all public collection system agencies in California that own or operate collection systems comprised of more than one mile of pipe or sewer lines and convey untreated wastewater to a publicly owned treatment facility. The principal elements of the order include requiring each agency to prepare a Sewer System Management Plan (SSMP) which outlines how the municipality operates and maintains the collection system, reporting of all Sanitary Sewer Overflow (SSOs) to the SWRCB's online SSO database (CIWQS) with the ultimate goal of minimizing sanitary sewer overflows (SSO's).

Background

The City of Folsom's (City) sanitary sewer system is made up of approximately 358 miles of sanitary sewer pipe (main lines and laterals), ranging in size from 2 to 33 inches in diameter and pumped throughout the system by fifteen pump stations. The City has three major sewer sheds that all discharge to a 54-inch main interceptor on Folsom Boulevard that is operated and maintained by Sacramento Regional County Sanitation District (SRCSD). The table below summarizes the City of Folsom's Collection System.

Collection System Overview					
Miles of Gravity Sewer Mains 264 Miles					
Miles of Sewer laterals (Lower Lateral) 94 Mile					
Number of Pump Stations 15					
Population Served	72,203				

SSMP Internal Audit Overview

Section 10 of the WDR requires agencies to perform a self-audit every two years. The audit focuses on evaluating the effectiveness of the SSMP and the Agencies compliance with the SSMP requirements. The City's SSMP internal audit assesses the City's success in achieving compliance with various requirements of the SWRCB Order No. 2006-003 and implementing programs as stated in the SSMP. The SSMP audit process allows the SSMP document to develop over time through the identification of deficiencies in the management, operation and maintenance of the sanitary sewer collection system and the implementation of changes to the SSMP to address the deficiencies. The 2013 self-audit report addresses the following items:



- SSO history over the past 2 years
- > Specific identification of performance areas in need of improvement
- > Summary of proposed modifications to the SSMP elements and programs over the next audit periods to address all identified areas of past poor performance.
- > Summary of proposed SSMP modifications (i.e. new programs, new performance indicators, etc.) not tied to poor performance, but tied to a desire to change or increase the scope of management, operations, and maintenance activities.

SSO History

Over the past two years (07/01/2011 through 07/01/2013) the City of Folsom has responded to 41 Sanitary Sewer Overflows (SSO's). Of the 41 spills, 39 SSO's were classified as Category 2 SSO's and 2 were classified as Category 1 SSO's. As shown in the tables below, the City is well below the Regional and State average for Category 1 and Category 2 SSOs.

Category 1 Spill Rate Indices (#spills/100mi/year)

Agency	Mainlines	Laterals	Other		
City of Folsom	0.38	0	0		
State - Municipal - Average	2.57	5.18	2.85		
Region - Municipal - Average	3.86	0.22	5.6		

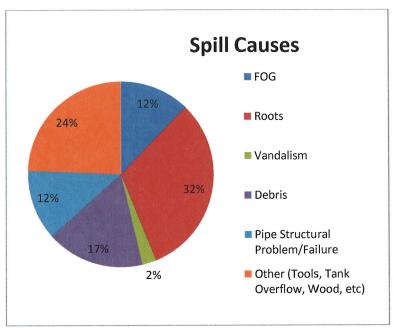
Category 2 Spill Rate Indices (#spills/100mi/year)

Agency	Mainlines	Laterals	Other
City of Folsom	3.22	9.57	0.76
State - Municipal - Average	5.06	23.46	5.26
Region - Municipal - Average	6.73	27.66	8.63

Data for State and Regional Municipal average was taken from the CIWQS database (www.waterboards.ca.gov/ciwqs/).



The City also identified the cause of each spill that occurred from 07/01/2011 through 07/01/2013 and has categorized each spill type in the pie chart below.



From the chart, the top 3 spill causes over the past two years were roots, other and debris. The "other" category represents items such as tools, wood or other foreign manmade objects that ended up in the sewer system most likely caused by new construction.

In addition to categorizing each spill type and cause the City also evaluates its SSO response time during business hours and after business hours. Between 07/01/2011 and 07/01/2013 the City responded to 25 SSO's that occurred during business hours with an average response time of 19 minutes. The remaining 17 SSO's that occurred during non-business hours yielded an average response time of 27 minutes. These response times are well within the City's goal of responding to a spill within 30 minutes during business hours and within 60 minutes during non-business hours. Response times are discussed in more detail in Appendix A, Section 1 – Goals.

Performance Review

Attached to this report are performance assessment sheets, which summarize the collection and analysis of specific data, intended to provide a basis by which performance in various areas related to the management, operation, and maintenance of the sanitary sewer collection system may be measured. During each SSMP audit period, data is collected relating to each assessed area and a grade is



provided for the City of Folsom's performance. Below is a summary of the grade given for each area assessed. For additional information, refer to Appendix A.

SSMP Performance Review

Section	No.	Description	Grade		
	1	Provide uninterrupted sewer service to meet customer's desired service levels.	Α		
	2	Minimize the risk of Sanitary Sewer Overflows (SSOs) by reducing the impact and probability of SSOs	А		
Goals	3	Mitigate any unforeseen SSOs to minimize water quality and environmental impacts	Α		
Goals	4	Ensure adequate sewer capacity to address the City's growth and storm flows	Α		
	5	Sustain aging sewer infrastructures by implementing an asset management program to extend asset lifecycle	Α		
	6	Ensure adequate funding support and resources to sustain long-term asset management	Α		
Organization	1	Update City staff responsibilities of the SSMP elements once a year due to organizational changes			
	Prevent illicit discharges into the City's sanitary sewer system including I/I from satellite wastewater collection systems and laterals, storm water, etc.		В		
	2	2 Require proper design and construction of sewers and connections			
Legal Authority	Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals		B-		
	4	Limit the discharge of FOG and other debris that may cause blockages	В		
	5	Enforce violations of its sewer ordinances			
	1.1	Update mapping system to reflect new development projects, CIP projects, asset corrections due to field investigation, etc.			
Operations & Maintenance Program I.2		Identify all sewer lines within the City that are not within the City's right of way and validate through documentation whether each of the sewer lines have dedicated sewer easements and whether the sewer is publicly or privately owned	А		



	Γ		
	1.3	Continue to populate the GIS mapping system to include information such as age of infrastructure, development associated with sewer infrastructure, pipe type, pipe size, etc.	Α
	Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc. Manhole Inspection, Flushing, CCTV, smoke testing, etc. is to be completed within a 5 year timeframe		
	11.2	Perform routine pump station inspections	Α
	11.3	Develop and implement emergency response procedures	Α
1 1		Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program	А
	11.5	.5 Establish a more effective odor control program	
III.1 Schedule and track attendance of all safety meeting operations		Schedule and track attendance of all safety meeting as it relates to sewer operations	Α
	IV.1 Maintain and update an equipment and replacement parts inventory list		
Design & Performance	Maintain design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems		Α
Program	Program Maintain procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects		A
Ensure the City's Sanitary Sewer Overflow Response Plan Flow Chart, Sanitary Sewer Overflow Report Form and the Sanitary Sewer Overflow Response Plan is up to date		А	
Emergency Response Plan 2		Review all SSO's within the CIWQS for accuracy. Compare CIWQS SSO database to City's Excel SSO database for consistency.	С
	3	Number of Category 2 SSOs	Α



4	Number of Category 1 SSOs	А	
5	Category 1 and Category 2 Spill causes	А	
6	Average response time during normal business hours		
7 Average response time after normal business hours			
1	Necessary Legal Authority to prohibit discharges of FOG into the City's sanitary sewer system	А	
2	Commercial FOG Requirements for the installation of grease removal devices (such as traps or interceptors)	В	
3	Maintain a Public Outreach Program	С	
4 FOG Inspection of FSE's		В	
5	FOG outreach found from Lateral Inspections		
1	Determination of maximum hydraulic capacity in key sewer main lines	А	
2	Determination of existing peak flow in key sewer trunk lines	В	
Evaluation and Capacity Assurance Plan Determination of existing groundwater infiltration and rain depender infiltration levels in the system		А	
		В	
1 Establish and prioritize appropriate SSMP activities		А	
1	Communication with satellite agencies	В	
2	Communication of the SSMP with the public	А	
	5 6 7 1 2 3 4 5 1 2 3 4	5 Category 1 and Category 2 Spill causes 6 Average response time during normal business hours 7 Average response time after normal business hours 1 Necessary Legal Authority to prohibit discharges of FOG into the City's sanitary sewer system 2 Commercial FOG Requirements for the installation of grease removal devices (such as traps or interceptors) 3 Maintain a Public Outreach Program 4 FOG Inspection of FSE's 5 FOG outreach found from Lateral Inspections 1 Determination of maximum hydraulic capacity in key sewer main lines 2 Determination of existing peak flow in key sewer trunk lines 3 Identification of necessary hydraulic capacity improvements 4 Determination of existing groundwater infiltration and rain dependent infiltration levels in the system 1 Establish and prioritize appropriate SSMP activities 1 Communication with satellite agencies	



Future Performance Improvements

The following items need to be addressed over the next 2 years (07/01/13 - 07/01/15). Outlined below are the most critical items identified during this audit period that are in need of improvement after assessing performance (See Appendix A for more detail).

- > Update the City's Department Organization chart as it relates to the SSMP.
- ➤ Basin 6 and Basin 17 should be a priority for smoke testing and CCTV to reduce I/I as identified in the 2007-2012 Sewer Flow Data and Capacity Analysis Update.
- Modify the City's sewer ordinance that clearly defines ownership of the sewer service lateral (upper lateral and lower lateral).
- Modify the City's sewer ordinance to require testing and inspection of the sewer service lateral upon remodeling, renovations or transfer or property. Also include language that specifically gives the City authority to inspect, maintain, clean, etc. within a sewer easement.
- > Develop a flow chart or SOP outlining the necessary steps to take when a Food Service Establishment (FSE) is found to be in violation after an FSE failed to correct the areas of non-compliance from a verbal warning issued by the City's FOG inspector.
- > Complete the identification processes of determining whether sewer lines located outside of City right-of-way are publicly or privately owned.
- > Complete population of the GIS database as it relates to sewer pipe material, age, etc.
- > Roots and debris were the primary causes of SSOs over the past two years. The City should look at evaluating and implementing a root control program.
- Work collaboratively with the Building Department to Implement Grease Control Device Guidelines to help streamline the plan review process for the Building Department.
- > Pursue improvements to the existing flow metering infrastructure as noted in the 2007-2012 Sewer Flow Data and Capacity Analysis Update.
- Continue to improve the FOG outreach program (i.e. education & outreach material, updates to the website)



- ➤ Continue to improve upon the new FOG Food Service Establishment Inspection Program recently implemented.
- > Continue to pursue odor control improvements, specifically at Pump Station No. 2, Oak Avenue Pump Station and the Rowberry/Walden/Withers residential subdivision area.
- > Continue to improve upon the new lateral inspection program recently implemented.

SSMP Modifications not tied to Performance

Below is a list of proposed SSMP modifications (i.e. new programs) not tied to poor performance, but tied to a desire to change or increase the scope of management, operations, and maintenance activities.

- > Improve Standard Operating Procedures for checking sewer assets after storm events by establishing a written document outlining all procedures
- Improve Standard Operating Procedures for checking above ground sewer lines by establishing a written document outlining all procedures.
- > Improve the visual and audible alarm system on all Pump Stations for intrusions, pumps failures, site security, etc.
- > Develop a force main maintenance program
 - Cathodic Protection system for sewer force mains that are constructed of Ductile Iron Pipe.
 - o CCTV for all force mains associated with pump stations.
 - Pigging force mains
- > Map actual GPS coordinates for all sewer pump stations
- > Evaluate the City's response time for individual pump station failure based on the holding volume of each wet well during average day and peak day dry and wet weather seasons.
- > Implement additional pre-cautionary measures for pump stations located within 100 feet of the surface water or 20 feet of a D.I. in the event of an SSO.



Certification of Audit

By signing below, we certify that the information contained in this audit report is correct to the best of our knowledge.

Name	Position	Signature	Date
Marcus Yasutake	Environmental & Water Resources Director	Marcus gester	છીયા/13
Todd Eising	Environmental & Water Resources Section Manager	Jodd & I	8/20/13
Brian Conyers	Waste Water Collections Supervisor	BC	8-16-13



Appendix A – SSMP Assessment

SSMP Section 1 - Goals

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

In 2006 when the Waste Discharge Requirements (WDR's) were adopted through Order No. 2006-0003-DWQ by the State Water Resources Control Board (SWRCB) the City's Environmental & Water Resources (EWR) Department set out to establish goals to comply with Section 1 of the SSMP. The goals set forth by the EWR Department include:

- 1. Provide uninterrupted sewer service to meet customers' desired service levels.
- 2. Minimize the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's.
- 3. Mitigate any unforeseen SSO's to minimize water quality and environmental impacts.
- 4. Ensure adequate sewer capacity to address the City's growth and storm flows.
- 5. Sustain aging sewer infrastructures by implementing asset management program to extend asset lifecycle.
- 6. Ensure adequate funding support and resources to sustain long-term asset management.

All goals were approved and adopted by the City Council on October 23rd, 2007 through Resolution No. 8160.

1. Provide uninterrupted sewer service to meet customer's desired service levels.

Discussion: To achieve uninterrupted sewer service to meet customer's desired service levels the Wastewater Department employs a full time staff person who receives calls from customers regarding wastewater complaints during the business hours of 7:00 a.m. to 3:30 p.m. Calls received during business hours that involve field investigation, require wastewater crews to be on-site within 30 minutes. Examples of field investigated calls include sewer backups, sewer spills, odor complaints, missing cleanout lids, etc. Calls that come in after hours instruct the caller to contact the Police Department (PD) in the event of an emergency. PD then proceeds to contact on-call wastewater personnel, the wastewater employee identifies the problem and proceeds to be on-site investigating the emergency within 60 minutes. Non-emergency voicemails are addressed first thing the next morning. As of October of 2012 the Wastewater Department recently transitioned to tracking all calls through the City's intranet as shown in the Figure below.

The Set Vise Preview Tools May.

Figure 1 - Call Log

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

2. Minimize the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's.

Discussion: To achieve minimizing the risk of Sanitary Sewer Overflows (SSO's) by reducing the impact and probability of SSO's the City has developed and employed a number of policies, procedures and practices. Some of the policies, procedures and practices are listed below:

- ➤ Perform Sanitary Sewer Inspection (Manhole Inspections, CCTV, flushing, etc.) of the entire wastewater system within the City of Folsom on a 5 year cycle.
- Respond to all SSO's, requires wastewater crews to be on-site within 30 minutes during normal business hours and on-site within 60 minutes during non-business hours.
- Develop Standard Operating Procedures (SOP's) and provide frequent training on the SOP's

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

3. Mitigate any unforeseen SSO's to minimize water quality and environmental impacts.

Discussion: Mitigating any unforeseen SSO's to minimize water quality and environmental impacts are achieved through various actions. Some of the actions the City employs to achieve this goal are:

- Storm Emergency Response Team Before, during and after a storm event City staff visually inspects all major wastewater facilities to ensure all assets and infrastructures are operating under normal conditions and have not been affected by the storm event. Wastewater staff also use SCADA data, rainfall data and projected weather patterns to prepare a storm event. A recent example of the SERT Program working effectively occurred during the November 29th, 2012 storm event. During this storm event when 4.22 inches of rain fell over a 66 hour period, the wastewater crew noticed through monitoring our SCADA system that the Oak Avenue Pump Station wasn't keeping up with incoming flows. In order to avoid a potential SSO, wastewater crews were stationed on-site at the Oak Avenue Pump Station for the remainder of the storm event in order to run pumps in manual mode to keep up with incoming flows. The Oak Avenue Pump Station is currently scheduled for significant upgrades, including pump replacement to handle additional flows. Construction is anticipated to occur by the second quarter of 2014.
- ➤ Annually inspect all above ground wastewater mains As of 2012 the City implemented inspection of all above ground wastewater mains. Implementing this procedure resulted in identifying an above ground wastewater main located near a creek that was overgrown with vegetation. After the initial inspection, the City worked with the State Parks and Recreation Department and the Department of Fish and Game to clear the vegetation that was located within close proximity to the above ground wastewater main.
- ➤ In April of 2013, the City improved upon its existing FOG Inspection Program to inspect all Food Service Establishments (FSEs). Refer to SSMP Section 7 FOG Control Program for more detail.
- ➤ In April of 2013, the City began a Lateral Inspection Program. The lateral inspection program is comprised of a two man crew that locates sewer cleanouts, maps all missing cleanouts, and CCTV's all sewer laterals to assess the condition. Refer to SSMP Section 4 Operations & Maintenance for more detail.
- ➤ The City also recently acquired updated software to upgrade the City's Wastewater SCADA system. Software upgrades are scheduled to be completed by December 2013.

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

4. Ensure adequate sewer capacity to address the City's growth and storm flows.

Discussion: In order to ensure adequate sewer capacity to address the City's growth and storm flows, the City conducts an updated sewer capacity and assurance plan approximately every 3 to 4 years. The most recent Sewer Evaluation and Capacity Assurance Plan was conducted in April of 2013 and addresses the following items:

- Dry Weather Flows
- Wet Weather Flows
- Total Peak Flow Comparison to Prior Years & Studies
- Areas of Hydraulic Capacity Concern
- Conclusions & Recommendations

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

5. Sustain aging sewer infrastructure by implementing asset management program to extend asset life cycle.

Discussion: In order to sustain aging sewer infrastructure the City continues to implement its asset management program to extend the life of each asset. This is achieved through various methods. It begins with inspecting each of the assets such as manhole inspections, pipeline inspections (CCTV), flushing, cleaning, etc. Once the inspections have occurred and a priority rating has been assigned to each asset an action plan is developed based on that priority. Priorities are listed below:

- ➢ Priority 1 − Re-inspect within 5 years
- ➤ Priority 2 Re-inspect within 2 years
- ➤ Priority 3 Re-inspect within 6 months
- ➢ Priority 4 − Re-inspect within 1 month
- Priority 5 Re-inspect within 2 weeks

Once the affected asset has been assigned a priority, different methods to rehabilitate the asset and extend its life are implemented. Some examples include:

- Clean and flush the sewer line to remove roots, debris, etc.
- Manhole Lining (Seals cracks and holes resulting in a reduction in Inflow and Infiltration)
- Cured in Place Pipe (Lining the inside of a sewer line to extend service life of pipe)

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

6. Ensure adequate funding support and resources to sustain long-term asset management.

Discussion: In order to ensure adequate funding support and resources for sustaining long-term asset management, the City develops a 5 year Capital Improvement Plan (CIP) along with a Wastewater Operations & Maintenance Budget. Each year this plan is approved and adopted by City Council. The City's annual wastewater budget is \$6 Million dollars. Of the \$6 Million dollars, \$2 Million dollars is set aside for rehabilitation and replacement projects which are consistent with the CIP Plan. The remaining \$4 Million is set aside for Wastewater Operations and Maintenance activities.

Grade: A

Recommendation: No action needed, the City will continue to uphold the goals as outlined above.

SSMP Section 2 - Organization

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

Under the City's organizational structure, defined roles and responsibilities were established during the initial implementation of the City's SSMP. The Environmental & Water Resources (EWR) Department uses this organizational structure to assign tasks to individuals for each element of the SSMP.

1. Update City staff responsibilities of the SSMP elements once a year due to organizational changes.

Discussion: Prior to this last year, the City's organizational changes had remained relatively unchanged since implementing the SSMP in 2009. However, within the latter part of 2012 and 2013, quite a few organization changes have been made.

Grade: A

Recommendation: Update the City's Department Organization chart and employees responsible for each SSMP element due to organizational changes.

SSMP Section 3 - Legal Authority

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

The City must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- ➤ Prevent illicit discharges into its sanitary sewer system, including I/I from satellite wastewater collection systems and laterals, storm water, unauthorized debris, etc.
- Require proper design and construction of sewers and connections
- > Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals
- Limit the discharge of FOG and other debris that may cause blockages
- Enforce violations of its sewer ordinances
- 1. Prevent illicit discharges into the City's sanitary sewer system including I/I from satellite wastewater collection systems and laterals, storm water, etc.

Discussion: There are multiple areas in which the City strives to prevent illicit discharges. Folsom Municipal Code Title 13, Chapter 13.08 (Municipal Sewer System Regulations) provides the City with the legal authority to limit and enforce illicit discharges from upstream public and/or private satellite collection systems. Within the past two years the City has continued certain I/I reduction programs while implementing a number of new programs in order to help reduce I/I. Currently I/I reduction programs and procedures include:

- Continue the manhole inspection program. Over the past two years during the City's manhole inspection program the City identified 14 manholes that had I/I issues. Of those 14, 1 manhole (B17-3204) has been repaired during this time frame that resulted in stopping approximately 7,200 gallons per day. There are 4 other manholes that were identified as needing I/I repair. All 4 manholes have been placed on the construction rehabilitation list and are scheduled to be repaired by August 2013. The manholes scheduled for repair are:
 - o B13-9255 Priority 3
 - o B13-0677 Priority 3
 - o B14-2506 Priority 3
 - o B14-2500 Priority 3

Some of the manholes that cannot be rehabilitated by the City's Utilities Maintenance crew are placed on a CIP list. Once the list reaches between 20 and 30 manholes needing

I/I rehabilitation, the City will go out for a Manhole Rehabilitation CIP Project to repair all I/I.

- Continued communication efforts with the Folsom Prison (The City's satellite agency) staff in regards to the agreement set forth between the City and the Prison for ongoing maintenance, I/I reduction, etc.
- ▶ Began a lateral inspection program in April of 2013. After inspection, each lateral is assigned a rating. Ratings with a 3 or higher are placed on the repair list for the City's Utilities Maintenance Division. To date (07/01/13) the City has inspected 132 laterals. Of the 132 laterals, 14 laterals were found to have a structural failure with a priority rating of 3, 4 or 5 and were considered a potential I/I source. Of those 14 laterals, 10 have been repaired as of July 1st, 2013. The other 4 are scheduled for rehabilitation. Future lateral inspections and repairs will be tracked through the City's CMMS program (Lucity).
- ➤ The City typically smoke tests as a source to identify I/I. Although no smoke testing was conducted during 07/01/11 through 07/01/13, the City plans on having 40% of the City smoke tested by the end of 2014.
- In April of 2013, Water Works Engineers updated the City's Sewer Capacity Analysis and Assurance Plan by reviewing all sewer flow data from 2007 through 2012. The report found that of the 17 sewer basins within the City, Basin 6 ranked the highest in both R-value and peaking factor analysis. Water Works recommended that Basin 6 be the next target for the City's I/I reduction program using CCTV inspection combined with smoke testing to identify areas of I/I.
- ➤ The City has also implemented numerous CIP projects to help reduce I/I. These projects include:
 - o Sutter St Improvements (Complete: October 2011)
 - o Basin 6 Flow Diversion Project (Complete: December 2011)
 - FY 13-14 Natoma Alley Sewer Rehabilitation Project (Design Phase)
 - o FY 13-14 Hinkle Creek Sewer Rehabilitation Project (Design Phase)
 - FY 13-14 Old Town Water/Wastewater Rehabilitation Project (Design Phase)
 - Wool Street CIPP Project

Grade: B

Recommendation: Modify the smoke testing and CCTV schedule to begin in Basin 6. This recommendation is based on the updated sewer capacity report prepared by Water Works. Once Basin 6 is completed, continue to the next worse basin as identified in the Sewer Flow Data and Capacity Analysis Update Report. Continue to identify areas of I/I through CCTV, manhole inspections, lateral inspections, etc. Continue to hold ongoing meeting between the City and its

satellite agency (Folsom State Prison). Begin entering all sewer lateral inspections through the City's CMMS program (Lucity).

2. Require proper design and construction of sewers and connections.

Discussion: Folsom Municipal Code Title 16, Chapter 16.08.010 (Definitions & Responsibilities) and Chapter 16.36 (Improvements), requires all sewers and connections to be properly designed and constructed. Specific design and construction of sewers is covered within the City of Folsom Design Standards and the City of Folsom Construction Standards. Also, representatives from both engineering and operations are involved in the plan check and plan review process to ensure all sewers are designed and installed properly. Last, the City of Folsom has been working on updating its design standards and construction specifications with the goal of adopting these documents by the end of 2013.

Grade: A

Recommendation: Adopt and implement the new design standards and construction specifications by the end of 2013.

3. Ensure access for maintenance, inspection and repairs to publicly owned portions of laterals.

Discussion: The Folsom Municipal Code Title 16, Chapter 16.32.010 (Dedication of streets, alleys and other public right-of-way or easements) states that, "as a condition of approval of a tentative map, the sub-divider shall dedicate or make an irrevocable offer of dedication of all parcels of land within the subdivision that are needed for streets and alleys, local transit facilities, public access easement, including access rights and abutters' rights, drainage, public greenways, bicycle paths, trans, open space easements, sunlight easements, landscape easements, scenic easements, public utility easement and other public easements...". Having this in place, allows the City to operate, maintain, inspect and fix any portion of the sewer system located within an easement. However, the City's ordinance does not specify who owns and/or maintains the sewer service lateral from the building foundation to the property line (upper lateral portion) nor does the ordinance specify who owns and/or maintains the sewer main line (lower lateral portion).

Grade: B-

Recommendation: The City needs to adopt an ordinance that clearly defines who owns and maintains the upper sewer service lateral as well as the lower sewer service lateral. The ordinance should be adopted within the next two years (2015). In addition, the City should add language in its ordinance to require testing and inspection of the sewer service lateral upon remodeling, renovations or transfer of property. Lastly, language should be added to the ordinance to give the City the authority to inspect, maintain, clean, etc. within a sewer easement.

4. Limit the discharge of FOG and other debris that may cause blockages.

Discussion: The Folsom Municipal Code Title 13, Chapter 13.03 discusses the regulations to prohibit and control the discharge of Fats, Oils and Grease (FOG) into the Sanitary Sewer Collection System. Recently, as of April 3rd, 2013, the City improved its FOG inspection program of all Food Service Establishments (FSE). The inspection program collects data specific to each FSE, educates the FSE of FOG Best Management Practices (BMP's) and notes when an FSE has violated any part of the City's FOG Ordinance. Once the first round of FSE's have been inspected, the City will analyze the results and note FSE's in violation of the FOG ordinance and begin a notice of violation program. The City also educated residents and the public about Fats, Oils and Grease through Best Management Practice tips via the City's website and through various community events such as Public Works Day.

Grade: B

Recommendation: Continue to inspect FSE's on an annual basis. Establish procedures for FSE's who have failed to comply with the City's FOG ordinance.

5. Enforce violations of its sewer ordinances

Discussion: The City's ordinance provides the City with the proper authority to issue notices to correct and notices of violation through the Folsom Municipal Code Title 13, Chapter 13.03.170 and Folsom Municipal Code Title 1, Chapters 1.08, 1.09 and 1.10. Although the modifications to the FOG inspection program of Food Service Establishments (FSEs) are relatively new (began in April 2013) the City has inspected 107 Food Service Establishments (FSE's) and given verbal warnings to 13 FSE's that were out of compliance with the City's FOG ordinance. Of those 13 FSE's given a verbal warning, 6 have been corrected and re-inspected as of July 1st, 2013. The City is currently working with the other 7 FSE's to achieve compliance. Over the past two years the City has not found or issued violations relating to illegal taps, storm drain discharge to sewer, etc.

Grade: B

Recommendation: Develop template letters pertaining to FSE's who have violated the FOG ordinance. Develop a flow chart or Standard Operating Procedure outlining the necessary steps to take when an FSE is found to be in violation after an FSE failed to correct the areas of noncompliance after a verbal warning was given by the FOG inspector.

SSMP Section 4 - Operations & Maintenance Program

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

Section 4 – Operations & Maintenance Program of the SSMP requires a variety of elements the each

agency must comply with. These include:

I. Maintaining an up-to-date map of the sanitary sewer system

II. Routine operation and maintenance activities & Rehabilitation & Replacement Program

III. Training

IV. Equipment Inventory

I. Sewer System Mapping: The City of Folsom maintains a GIS map of the City's utility infrastructure,

which includes the sanitary sewer collection system. The GIS map was generated from importing existing AutoCAD maps based on recorded as-built plans in order to create an inventory of utility infrastructure

assets for the purpose of tracking and asset management.

1. Update mapping system to reflect new development projects, CIP projects, asset corrections

due to field investigation, etc.

Discussion: As new development projects and CIP projects are completed, as-built information is

given to the Utilities Engineering Technician to update the City's GIS system. The same process is

used when field personnel find mapping errors. Corrections are drawn on a map and changes are made by the Utilities Engineering Technician in GIS. To date all projects and known map errors have

been revised.

Grade: A

Recommendation: No action needed.

2. Identify all sewer lines within the City that are not within the City's right of way and validate

through documentation whether each of the sewer lines have dedicated sewer easements

and whether the sewer is publicly or privately owned.

Discussion: The City began working on this task in January of 2013. To date the City has identified

54 miles of sewer infrastructure that is located outside of the City's right of way. Of the 54 miles, 15

miles have been identified as public or private sewer lines. The City plans to investigate the remaining 39 miles of sewer segments over the next two years with the goal of completing 20 miles

each year.

A-11

Grade: A

Recommendation: Since 100% of all sewer lines located outside of City right of way have been identified and mapped within the City's GIS system, the next step is to continue to focus on completing the process of identifying sewer lines that have dedicated sewer easements and whether the sewer is publicly or privately owned. Over the next two years the City needs to investigate the remaining 39 miles of unidentified sewer pipe and reclassify these sewer lines as public or private.

3. Continue to populate the GIS mapping system to include information such as age of infrastructure, development associated with sewer infrastructure, pipe type, pipe size, etc.

Discussion: The City began working on this task in 2004 when the City switched from AutoCAD to GIS. Listed below is a table identifying the assets that are complete and those assets that still need additional information and the timeline for completing each task.

	Complete (%)	Incomplete (%)	%/year	Complete by
Pipe Material	53%	47%	23.5%	2015
Pipe Age	42%	58%	29%	2015
Manhole	0%	100%	50%	2015
Development	66%	34%	17%	2015

Grade: A

Recommendation: Continue populating the GIS database as described in the table listed above.

- **II. Preventive Operation & Maintenance and Rehabilitation & Replacement Program:** The Preventive Maintenance and Rehabilitation & Replacement Program outlines routine sewer operation and maintenance activities that the City implements as part of the SSMP. The goal of the program is to:
 - Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc.
 - Perform routine pump station inspections
 - > Develop and implement emergency response procedures
 - Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program.

1. Develop and implement standard operating procedures (SOPs) such as CCTV, manhole inspections, flushing, smoke testing, etc. Manhole Inspection, Flushing, CCTV, smoke testing, etc. is to be completed within a 5 year timeframe.

Discussion: The City first developed SOP's when it received an NPDES and Cease and Desist Order from the State Water Resources Control Board (SWRCB) in 2001. Since this time, new SOP's have been developed and modified as part of the City's SSMP required by the SWRCB Waste Discharge Requirements (WDR) Order No. 2006-003 that was implemented in 2006 and was formally adopted and approved by City Council in August of 2009. SOP's developed by the City include pump station inspections, manhole inspections, CCTV, flushing inspections, etc. Recently the City included a "confined space entry" SOP.

Looking forward, the City recently purchased a new small 5 yard vacuuming/flushing truck. Once the truck is built and delivered to the City (estimated arrival time: January 2014), an SOP will be developed.

In addition to maintaining SOP's, the City also tracks performance of the SOP's critical to maintaining sewer infrastructure. The City has a goal of inspecting manholes, smoke testing, flushing, CCTV, etc. within a 5 year cycle. Listed below is the City's performance metrics through 2013.

Wastewater Inspections

PRIORITY	BASIN #	CALENDAR YEAR	ZOOM	MANHOLE	SMOKE	FLUSH	ссту
1	3	2012	100%	100%	20%	100%	0%
2	4	2012	100%	100%	0%	100%	0%
3	7	2012	100%	100%	0%	100%	0%
4	10	2012	99%	99%	0%	100%	0%
5	13	2013	99%	99%	0%	99%	0%
6	14	2013	99%	99%	0%	0%	0%
7	6	2013	0%	0%	0%	0%	0%
8	17	2014					
9	12	2014					
10	15	2015					
11	1	2015					
12	11	2015					
13	2	2016					
14	9	2016					
15	8	2016					
16	16	2016					

Wastewater Inspections Cont'd

PRIORITY	BASIN #	CALENDA YEAR	FOG	PRIORITY	BASIN#	YEAR	Laterals
1	3	2013	100%	1	3	2013	0%
2	2	2013	100%	2	4	2013	0%
3	1	2013	100%	3	7	2013	0%
4	16	2014	50%	4	10	2014	0%
5	9	2014		5	13	2014	
6	6	2015		6	14	2015	
7	4	2015		7	6	2015	
8	15	2015		8	17	2015	
9	13	2016		9	12	2016	
10	14	2016		10	15	2016	
11	11	2016		11	1	2016	
12	8	2016		12	11	2016	
13	7	2017		13	2	2017	
14	10	2017		14	9	2017	
15	12	2017		15	8	2017	
16	17	2017		16	16	2017	

To date Zoom Cam Inspections, manhole inspections, flushing, FOG and FOG inspections are on track or ahead of schedule. However, smoke testing and CCTV Inspections are behind schedule.

Also, in 2002, as a result of the City's NPDES permit issued by the Regional Water Quality Control Board (RWQCB), the City of Folsom Environmental & Water Resources Department (EWR) Wastewater Division started inspecting sewer infrastructure using closed-circuit television (CCTV) inspection as the primary means of inspecting. At that point in time, the Wastewater Division CCTV'd every foot of the City's wastewater system over a five year period (2002 – 2006). The findings indicated that a majority of the problems were located within 20 feet of the manhole.

Based on the above findings, it was determined by EWR to zoom-cam the City's wastewater system, which can detect pipe defects within 20 to 40 feet of the manhole depending on pipe size and flow. This was the primary method of inspection during the next five years cycle (2007 - 2011). A full CCTV work order inspection during this five year period was required when the following scenarios were encountered:

- 1. Responding to all Sanitary Sewer Overflows (SSO's).
- 2. Zoom-Cam inspections indicated that there could be a possible pipeline integrity issues such as surcharges, high grease line, or Inflow and Infiltration (I & I).

2012 marked the third five year cycle of inspections (2012 – 2016). The City planned to CCTV a majority of the older sections (40 years old and greater) of the City's wastewater system during this five year cycle. However, beginning in 2012 the City's CCTV ability was limited because of the camera age and increase in frequency of camera repairs. At this point in time, the City relied on

zoom cam inspection while working on procuring new CCTV camera equipment. The new camera was delivered to the City in May and has been used extensively to aid in current CIP Projects. Full CCTV is planned to begin in Basin 6 (as recommended by Water Works from their 2013 Sewer Capacity Analysis and Assurance Plan by September 2013. CCTV work will continue based on prioritizing those basins with high Inflow & Infiltration, infrastructure age, and frequent repair & replacement work orders.

In April of 2013, the City began a lateral inspection program to inspect all sewer laterals. The lateral inspection program is comprised of a two man crew that locates sewer cleanouts, maps all missing cleanouts, and CCTV's all sewer laterals to assess the condition. The goal is to inspect all 22,137 laterals within a 5 year time period or approximately 4,463 laterals per year. Laterals with a priority of a 3, 4 or 5 that is related to FOG, is placed on a work order and sent to the City's Wastewater Division for flushing and cleaning within either a two week, 1 month or 6 month time frame . From April of 2013 through July 1st, 2013 the City has inspected 132 of the 22,137 laterals, 16 laterals inspected had FOG issues with a priority rating of 3 or higher and 14 laterals inspected had structural issues with a priority of 3 or higher. The 30 laterals have been placed on the Utility Maintenance list and are scheduled for repair. Although only 132 laterals were inspected in a 3 month time frame, the first 3 months were used as a training period for staff. Beginning July 1st, 2013 approximately 372 laterals should be inspected per month.

Grade: B

Recommendation: All SOP's are up to date and in place. However, the City did not begin CCTV in 2012 as planned due to camera issues. Instead, zoom cam was the primary inspection action taken for CCTV work between 2012 and 2013. Since the new camera has been purchased, the City needs to catch up on CCTV camera inspections. Also, smoke testing is behind schedule. Recommend evaluating staff levels and/or contract out some of the inspection work in order to meet the 5 year time schedule. Possibly look at contract out smoke testing and lateral inspection program.

2. Perform routine pump station inspections

Discussion: Pump Station inspections are inspected on a weekly, monthly, semi-yearly and yearly basis. The scope of pump station inspection varies depending on the inspection interval. An SOP has been developed for each specific pump station and the necessary action items that field staff needs to follow based on the type of inspection (weekly, monthly, semi-annual or annual inspection). Inspections are recorded on Preventive Maintenance Templates and input by City staff in Lucity (The City's CMMS System). To date, all pump station inspections are on schedule.

Recommendation: No action needed, all pump station inspections are up to date and recorded in Lucity. Continue inspections and documentation.

3. Develop and implement emergency response procedures

Discussion: In addition to Standard Operating Procedures, the City has also developed Emergency Operating Procedures. The procedures include topics such as sewer force-main break, sewer main break, pump station failure, etc. In 2010 the City completed construction of bypass pumping at Pump Station No. 2. Completion of bypass pumping at this station gives the City the ability to bypass pump at all pump stations within the City of Folsom in the event of a complete pump station failure. Emergency bypass pumping procedures have been written for each of these stations and the crews are trained regularly on performing bypass pumping as seen in the chart below.

Bypass Pump Station Training				
Pump Station Date				
Pump Station 6A	6/26/2012			
Lake Forest PS	1/10/2013			
Orangevale Ave	5/28/2013			

The ability to bypass pumping capability at each of the stations reduces the risk of SSO's.

Recent modifications to the emergency procedures for Lake Forest Pump Station and Pump Station

No. 2 were made to better accommodate bypass pumping procedures.

Grade: A

Recommendation: No action needed, continue to update and implement new emergency procedures as necessary and continue continue training on all emergency procedures such as bypass pumping.

4. Develop a list of construction related projects that identifies and prioritizes system deficiencies by implementing a short-term and long-term rehabilitation program to address each deficiency and create a time schedule for developing and implementing the rehabilitation program.

Discussion: During each of the inspections (manhole, CCTV, lateral inspections, etc.) performed by the City's Wastewater Department, an overall condition assessment is assigned as outlined below:

- ➤ Rating 1 Noted and follow up inspection within 5 years
- ▶ Rating 2 Noted and follow up inspection within 2 to 3 years
- ➤ Rating 3 Replace within 6 months
- ➤ Rating 4 Replace within 1 month
- Rating 5 Emergency (Replace within 2 weeks)

If the asset rating is a 3 or higher, the asset is categorized into one of two areas. Once the inspection request is completed and a rating of 3 or higher is assigned to that asset, a work order is generated and scheduled for repair or replacement by the City's Utilities Maintenance Crew within the timeframe listed above. Typical repair or replacement projects performed by the Utility Maintenance Crew include: replacing cleanouts, repairing/replacing laterals, and repairing/replacing main lines. For FY 11-12 & FY 12-13, 180 sewer construction requests were made and 176 of the 180 (98%) were completed within the past two fiscal years (FY 11-12 & FY 12-13). The 4 remaining requests made in FY 12-13 will be completed in the beginning part of FY 13-14.

Assets such as sewer pipelines with a rating of 3 or higher that are large enough in scope of work are placed on a CIP list. Listed below are the projects that were completed within the past two years and the projects that are currently in the design phase.

- Sutter St Improvements (Complete: October 2011)
 - o Replaced approximately 2,500 feet of aging sewer infrastructure
- Basin 6 Flow Diversion Project (Complete: December 2011)
 - Transferred sewer flows off of the 27-inch trunk sewer and over to the 33-inch trunk sewer to help relieve capacity on the 27-inch trunk sewer
- Wool Street CIPP Project
- > FY 13-14 Natoma Alley Sewer Rehabilitation Project (Design Phase)
 - o Replace approximately 4,000 feet of sewer lines
- > FY 13-14 Hinkle Creek Sewer Rehabilitation Project (Design Phase)
 - o Replace approximately 3,500 feet of sewer lines
- > FY 13-14 Old Town Water/Wastewater Rehabilitation Project (Design Phase)
 - o Replace approximately 3,000 feet of sewer lines

Grade: A

Recommendation: Continue to proceed with Utility Maintenance repair/replacement work and CIP Projects.

5. Establish a more effective odor control program

Discussion: Currently the City of Folsom has three known locations that cause odor issues. The three areas are; Pump Station No. 2, Oak Avenue Pump Station and the Rowberry/Walden/Withers residential subdivision area.

Pump Station No. 2 currently utilizes Vapex. Vapex is the process of combining ozone with a rapid application of micron-size water particles to create a hydroxyl radical fog that is dispersed throughout the entire odorous air space. Currently, vapex is applied within the wet well space of Pump Station No. 2. Although vapex is effective at reducing odors it also creates corrosion issues.

The City is currently looking at alternative methods to reducing odors more effectively and mitigate corrosion problems.

Oak Avenue Lift Station utilizes Bioxide. Bioxide introduces nitrate oxygen into the wastewater stream and creates an environment in which certain naturally occurring bacteria thrive. These bacteria utilize the dissolved hydrogen sulfide which is present as a part of their metabolism, thereby effectively removing any dissolved hydrogen sulfide from the wastewater. Although bioxide is effective at reducing odors, the City is currently looking at alternative methods to reduce odors more effectively. Recently the City conducted a pilot study with ANUE Technologies to evaluate its effectiveness in reducing odors. The results of the pilot study are still being assessed and compared against the current Bioxide system.

Lastly, odor issues are prominent in the Rowberry/Walden/Withers residential subdivision area. Odors in this area are a result of numerous factors that include: wastewater age, large sewer mains transporting significant amounts of wastewater flow within close proximity to the subdivision and abrupt changes in pipe alignment. The City is currently working with HDR on various alternatives to mitigate odor within this subdivision.

Grade: B

Recommendation: Based on pilot study results, The City may need to begin implementing a new odor control system at Pump Station No. 2 and/or at Oak Avenue Pump Station. Once HDR has completed the Odor Control Analysis for the Rowberry/Walden/Wither subdivision and the preferred alternative is agreed upon, move forward with implementing the odor control alternative selected.

III. Sewer System Operations and Maintenance Training: Training is a critical element to the SSMP. Training employees helps increase employee knowledge and operational know how. Ultimately, training staff on various elements of the SSMP is critical to reducing the number of SSO's. Training of City staff occurs in many different forms such as; tailgate meetings, formal meetings, seminars, educational classes, etc.

1. Schedule and track attendance of all safety meeting as it relates to sewer operations.

Discussion: Training frequency and dates are logged and can be seen in the table listed below. Frequency of training depends on the importance of the topic. Some topics are reviewed whenever there is a new hire while other topics are reviewed on an ongoing or annual basis.

		T	
Environmental & Water Services Training Log Legend: N=New Employee A=Annual Training O=Ongoing Training	Training Frequency	Training Dates	Scheduled 2013
Aerial Devices	N		
Asbestos Awareness	N/A		
Battery Handling & Maintenance	N		
Blood borne Pathogens	N/A	4/16/2013	
Compressed Gas Safety	N		
Confined Space Entry	N/O	11/8/2012	
Defensive Driving (staff who drive at work)	N		
Electrical Safety	N		
Emergency Action/Fire Prevention	N/O		
Emergency Eye Wash	N		
Equipment Operation Safety (department specific)	N/O		
Ergonomics- Office	N		
Ergonomics- Back Safety	N		
Excavation/Trenching/Shorting	N	2/11/2009	
Fall Protection	N	11/8/2012	
First Aid/CPR (designated staff)	N/ 2Year	11/8/2012	
Forklift	N/ 3Year		
Hazard Communication/Hazardous Waste	N/O		
Hearing Conservation	N/A		
Heat Illness Prevention	A-SPRING		
Heavy Equipment Operations	N/O		
Injury & Illness Prevention Program	N/O		
Ladder Safety	N		
Lead Awareness	N/O		
Lockout/Tag Out	N/O		
New Employees Safety Orientation/Specific Job Hazards	N		

Outdoor Hazards (plants, animals, insects)	A-SPRING		
Personal Protective Equipment Requirements			
(PPE)	N/O	4/2/2013	
Pesticide Use Safety	N/O		
Rigging/Hoisting	N	11/8/2012	
Supervisor Safety Training (designated employees)	N/O		
Tools-Hand & Power (department specific)	N/O		
Traffic Control & Flagger Training	N	2/11/2009	
Tree Work	N		
Welding & Cutting Safety/Fire Watch/Hot Work	N		
Workplace Violence	N		
Chemical or Petroleum Surface Spill	Α		
Mountain Oak SOP including Bypass	Α		
Stress in the Work Place	A		
SSMP Overview	A	Safety Training Forms\2012\SSMP overview.pdf	
Lake Forest SOP including Bypass	A	1/10/2013	
Blood borne Pathogens	A	4/16/2013	
Del Norte SOP including Bypass	Α		
Hazards of Working in Hot Weather	Α	5/8/2013	
Young Wo SOP including Bypass	A		
Estimating SSO Spill Volume	A		
Orangevale Ave SOP including Bypass	A	Safety Training Forms\2013\Orangevale SOP.pdf	
	1007	<u>SOF IPUI</u>	6/12/2013
SSO Spill Refresher	A		
6A-ARC SOP including Bypass	A	Safety Training	6/26/2012
SSO reporting /Spill Volume/ Refresher	Bi-A	Forms\2012\SSO spill Refresher.pdf	
Competent Person Training		nelleslier.pai	5/8/2009
	N	0/12/2012	
Respirator Fit Test	Α	8/12/2012	8/24/2011
ARC Flash/ 2 Day Class	N/O	<u>2/15/2013</u>	

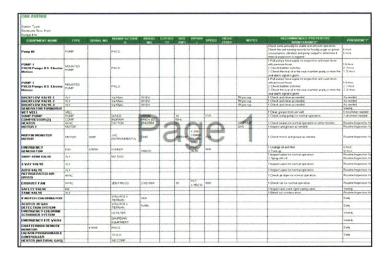
Grade: A

Recommendation: Continue Training Efforts as outlined in the schedule above.

IV. Equipment & Replacement Parts Inventory: Maintaining an Equipment & Replacement Parts Inventory is critical to the operation of an agencies sewer system. During an emergency such as a pump failure it is important to have spare parts on hand to be able to react quickly to the emergency and minimize the down time due to a failure.

1. Maintain and update an equipment and replacement parts inventory list.

Discussion: As shown in the figure below, the City maintains a spreadsheet that lists all of the critical equipment relevant to the City's sewer system. Items such pump manufacturers, pump horse power, manufacturers of various items, serial numbers, generators, etc.



Grade: A

Recommendation: No action needed, continue to update the spreadsheet as necessary.

SSMP Section 5 - Design & Performance Program

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

Design and Construction Standards are important to help streamline the process for both design review and construction. It is important to recognize the close relationship between design and construction. These processes can best be viewed as an integrated system. Design is the process of creating something new like sewer system infrastructure, usually represented by detailed plans and specifications while construction is the process of identifying activities and resources required to make the design a physical reality.

1. Maintain design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems.

Discussion: The City requires design engineers and contractors to adhere to the most recent version of the City of Folsom Standards. The City currently has the following documents:

- Design Manual
- Standard Specifications
- Standard Details

The last update to these documents was in May of 2004. However, the City has been going through the process of updating each of these documents with the goal of having an approved set of documents by the end of 2013. In addition the City of Folsom conducts plan review meetings with both the engineering and operations division to ensure all sewers are properly designed and installed.

Grade: A

Recommendation: Incorporate the new standards once approval and adoption has occurred by the end of 2013.

2. Maintain procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

Discussion: The City of Folsom lays out a detailed standard construction specification that all construction must adhere to. In addition City inspectors oversee each aspect of the construction project including the installation and testing of new sewers, pumps, etc. The City will be updating the standard specifications and construction details by the end of 2013.

Grade: A

Recommendation: Ensure City inspectors become familiar with the new standards once they have been adopted.

SSMP Section 6 - Overflow Emergency Response Plan

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

In the event of a Sanitary Sewer Overflow (SSO), it is of greatest importance to limit the liability, severity of damage, and protect the natural resources of the City of Folsom. The source of the SSO should be stopped and contained as soon as possible. In addition to cleanup procedures, the City is responsible for notification of affected residents, property owners, and agencies that could be impacted by an SSO. The City's Overflow Emergency Response Plan is intended to provide City staff with procedures to be followed for SSO response and notification. The City of Folsom's success in preventing the occurrence of sanitary sewer overflows is a key metric in gauging the overall success of several SSMP programs. Proper procedures, response & notification so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner are critical to an SSO event.

1. Ensure the City's Sanitary Sewer Overflow Response Plan Flow Chart, Sanitary Sewer Overflow Report Form and the Sanitary Sewer Overflow Response Plan is up to date.

Discussion: All documents listed above are up to date.

Grade: A

Recommendation: No action needed.

2. Review all SSO's within CIWQS for accuracy. Compare CIWQS SSO database to City's Excel SSO Database for consistency.

Discussion: Based on an audit conducted by the State Water Resources Control Board on October 3rd and 4th of 2012, the City of Folsom re-evaluated its QA/QC process when inputting spills into the California Integrated Water Quality System (CIWQS) database. After evaluating data input into the CIWQS system, it was found that the following areas could be improved upon:

- Category 1 vs. Category 2 spill identification procedures
- ➤ Latitude & Longitude
- > Spill Volume Recovered
- Private or Public Spill
- Estimated Operator arrival date/time
- > Comparing CIWQS database against the City's Excel SSO database

Grade: C

Recommendation: Adhere to the new SSO QA/QC process to ensure spills do not need to be amended and recertified. Also QA/QC the City's SSO Excel database against the CIWQS database on a monthly basis to ensure there aren't inconsistencies.

3. Number of Category 2 SSOs.

Discussion: Utilizing the data from the CIWQS website, of the 41 spills that occurred from 07/01/2011 through 07/01/2013, 39 spills were classified as Category 2 SSOs. The number of spills per 100 miles per year within the City was compared against the State and Regional average. As shown in the table below, the City is well below the Regional and State average.

Category 2 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	3.22	9.57	0.76
State - Municipal - Average	5.06	23.46	5.26
Region - Municipal - Average	6.73	27.66	8.63

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 2 SSO spills. However, as you can see from the chart, the City's main cause of SSO's is roots and debris. The City should look into a root control problem to help reduce SSOs.

4. Number of Category 1 SSOs.

Discussion: Utilizing the sewer asset database and the CIWQS website, there were 2 Category 1 SSOs occurring within the past two years. The first spill was caused by vandalism, a rock, larger than the inlet pipe was found at the bottom of the manhole. The second spill occurred due to a metal pipe blocking flow within a manhole causing a spill. As shown in the table below, the City is well below the Regional and State average.

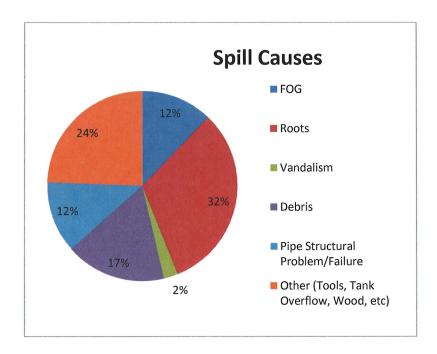
Category 1 Spill Rate Indices (#spills/100mi/year)			
Agency	Mainlines	Laterals	Other
City of Folsom	0.38	0	0
State - Municipal - Average	2.57	5.18	2.85
Region - Municipal - Average	3.86	0.22	5.6

Grade: A

Recommendation: The City of Folsom is well below the regional and statewide average of Category 1 SSO spills. Both spills were caused by events outside of the City's control.

5. Category 1 and Category 2 Spill Causes

Discussion: The chart below evaluates the cause of the 41 spills that occurred from 07/01/2011 through 07/01/2013.



As you can see from the pie chart, the top 3 spill causes over the past two years were roots, other and debris. The "other" category represents items such as tools, wood or other foreign manmade objects that ended up in the sewer system most likely caused by new construction.

Grade: A

Recommendation: The City should look into a proactive root control program to help reduce root related SSOs. The "other" category which represents manmade objects can be better controlled through construction inspection.

6. Average response time during normal business hours.

Discussion: The City had 25 spills during normal business hours between July 1st, 2011 and July 1st, 2013. The average response time of those 25 spills was 19 minutes.

Grade: A

Recommendation: Ensure staff members are thoroughly aware of spill response procedures in the event of future SSOs, per the requirement of the SSMP Section VI – Overflow Emergency Response Plan.

7. Average response time after normal business hours.

Discussion: The City had 17 spills after hours between July 1st, 2011 and July 1st, 2013. The average response time of those 17 spills was 27 minutes.

Grade: A

Recommendation: Ensure staff members are thoroughly aware of spill response procedures in the event of future SSOs, per the requirement of the SSMP Section VI – Overflow Emergency Response Plan.

SSMP Section 7 - FOG Control Program

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

The purpose of the FOG Control Program is to control the discharge of FOG from City of Folsom facilities, such as food services establishments, apartments, single family homes, etc., in order to reduce the potential for FOG accumulation in the sanitary sewer collection system.

1. Necessary Legal Authority to prohibit discharges of FOG into the City's sanitary sewer system.

Discussion: On March 13th, 2007, the City Council adopted Ordinance No. 1071 which addresses the prohibition and control of discharging fats, oils and grease into the City's Sanitary Sewer System. The ordinance can be found in Title 13, Section 13.03 of the City's Folsom Municipal Code.

Grade: A

Recommendation: No action needed at this time. Review the ordinance periodically to ensure the ordinance is still relevant and up to date.

2. Commercial FOG Requirements for the installation of grease removal devices such as traps or interceptors.

Discussion: Currently, the building department and community development department in conjunction with the Environmental & Water Resources (EWR) Department work together during the plan review process to ensure all food service establishments are installing the proper grease control device. Prior to 2012, most decisions were made through verbal discussions. To help streamline the process the EWR Department, has been working on a set of "Grease Control Device Guidelines" for the Building Department to refer to when reviewing plans. The estimated time for completing these guidelines is by the end of 2013.

Grade: B

Recommendation: Continue the plan review process as described above. Complete the Grease Control Device Guidelines.

3. Maintain a Public Outreach Program

Discussion: Within the past year, the City developed numerous articles to help provide residents and business owners within the City of Folsom with the proper tools and knowledge to prevent

sanitary sewer pipe blockages that cause backups and sanitary sewer overflows. The articles are posted on the City's website (www.folsom.ca.us) and include material such as:

Commercial FOG

- Why a FOG Program
- Proper Disposal of FOG BMP's
- Grease Removal Devices
- Grease Interceptor Maintenance
- Grease Trap Maintenance
- ➢ How To Recycle Kitchen Grease
- Selecting a Grease hauler
- Requirements for New & Remodeled FSE's
- Dumpster & Recycling Containers
- > Equipment Cleaning
- Grease Interceptor Cleaning Record Form
- Employee FOG Training Log

Residential FOG

- ➤ Why a FOG Program
- > The Do's and Don'ts of FOG

In addition, there is additional FOG outreach and educational materials listed on the website for residents and business owners to view.

Grade: C

Recommendation: Update the FOG material as necessary.

4. FOG Inspection of FSE's

Discussion: In April of 2013, the City began a more robust FOG inspection program to inspect all Food Service Establishments (FSEs). The inspection program collects data specific to each FSE, educates the FSE of FOG Best Management Practices (BMP's) and notes when an FSE has violated any part of the City's FOG Ordinance. There are a total of 345 FSE's within the City of Folsom. The City's goal was to inspect all FSE's within a two year cycle. From April 2013 through July 1st, 2013 the City has inspected 107 of the 345 FSE's within Folsom. Of the 107 FSEs inspected as of 07/01/13, 13 FSE's were found to be in violation of the City's FOG ordinance with a priority of 3 or higher. Each violation is given a priority 1 through 5. Those FSE's with a priority of 3 or higher, require the inspector to re-inspect the restaurant within a scheduled time frame. Through the re-inspection process (April 2013 through July 1st, 2013) 6 out of the 13 FSE's have corrected their violation. The

City still needs to develop an SOP for those FSE's who have failed to correct their violation after the first re-inspection.

Grade: B

Recommendation: Continue FSE inspections as scheduled. Develop an SOP that outlines the necessary steps to take when an FSE is found to be in violation of the FOG ordinance after an initial verbal warning is given.

5. FOG outreach found from Lateral Inspections

Discussion: In April of 2013, the City began a lateral inspection program to inspect all sewer laterals. The lateral inspection program is comprised of (2) two man crew that locates sewer cleanouts, maps all missing cleanouts, and CCTV's all sewer laterals to assess the condition. The goal is to inspect all 22,317 laterals within a 5 year time period or approximately 4,463 laterals per year. Laterals with a priority of a 3, 4 or 5 that is related to FOG, is placed on a work order and sent to the City's Wastewater Division for flushing and cleaning within either a two week, 1 month or 6 month time frame. From April of 2013 through July 1st, 2013 the City has inspected 132 of the 22,137 laterals, 16 laterals were found to be FOG related with a priority rating of 3 or higher. Out of the 16 laterals, 1 has lateral has been cleaned, flushed and a notice given to the owner regarding FOG BMP's was given. The remaining laterals have been placed on a list and are scheduled for repair. Implementation of a lateral inspection program should help reduce the number of FOG related lateral SSOs. Although only 132 laterals were inspected in a 3 month time frame, the first 3 months were used as a training period for staff. Beginning July 1st, 2013 approximately 372 laterals should be inspected per month.

Grade: A

Recommendation: Adhere to the lateral inspection schedule as outlined above. Make sure to notify sewer lateral owners of the FOG related issue to comply with the City's FOG public outreach program. Also, monitor SSOs over the next 2 years to see if there is an improvement in fewer FOG related SSOs.

SSMP Section 8 - Sewer Evaluation and Capacity Assurance Plan

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

The Environmental & Water Resources Department (EWR) uses Sewer InfoWorks to evaluate the hydraulic capacity of key portions of the City's sanitary sewer collection system which is broken up into 17 basins. The hydraulic capacity of these key portions of the system are compared to existing flow monitoring data to determine the potential for SSOs due to the capacity being exceeded during peak wet weather sewer flows. Additionally, the City analyzes flow monitoring data to quantify actual I/I rates experienced by the sanitary sewer collection system.

1. Determination of maximum hydraulic capacity in key sewer main lines.

Discussion: In 2008, the City's Capacity Analysis Update listed 4 primary areas of concern with respect to hydraulic capacity for the 10-year design storm. The areas of concern included:

- Blue Ravine Road from Oak Avenue to Flower Drive: The most recent hydraulic model (2005-2006 data) included the diversion of Basin B07 to the Oak Avenue Lift Station, however, still showed some surcharging, but within acceptable limits.
- 2. Folsom Prison Interceptor: The most recent hydraulic model (2005-2006 data) showed surcharging within acceptable limits. More significant surcharging has been observed when the interceptor is not cleaned and debris accumulates, which can be heavy at times from the Prison.
- 3. Folsom Boulevard 27" Interceptor: Capacity concerns were addressed in 2010 via construction of the Basin B06 diversion project.
- 4. Basin B17/B10/Lexington Area: The most recent hydraulic model showed surcharging in the 15" main connecting B17 to B10. The previous Capacity Analysis Updated recommended that this area be monitored further, but otherwise recommended no infrastructure improvements.

In 2013, Water Works Engineers reviewed sewer depths of flow from 2007 through 2012, particularly during the November 29th, 2012 storm to verify that no significant surcharging that would indicate capacity restrictions had occurred. The November 29th, 2012 storm event represents approximately a 5-year 48-hour event, and was almost two back-to-back, 2-year 24-hour return period events. The results of analyzing this storm generally corroborate the conclusions regarding the areas of capacity concern identified in the 2008 Capacity Analysis update:

- 1. Metering site B06-3432 (B06B) on Blue Ravine just downstream of the area of concern shows a low peak d/D ratio.
- 2. The Folsom Prison interceptor was flowing full or slightly surcharging during the November 20th, 2012 storm, but was within acceptable limits.
- 3. The 27" Interceptor did not experience surcharging following the B06 diversion project.
- 4. No surcharging was observed at metering site B10-3208 (B17), the flow monitor within the area of concern.

Grade: A

Recommendation: Continue to obtain missing invert elevations or verify existing invert elevations during future CCTV surveys. This information will help refine the hydraulic capacity modeling process.

2. Determination of existing peak flow in key sewer trunk lines.

Discussion: The table below compares peak flows from the previous Capacity Analysis Update (winter 2005-2006 data) and from the 2007-2012 data analysis. It should be noted that peak flows in the 27" and 33" sheds for the March 23rd, 2011 and November 29th, 2012 storms are considered estimates given potential calibration issues at the sewer interceptor Palmer-Bowlus flume sites.

Peak Flow Comparison

	Previous Study Existing Conditions 10-Yr Storm Peak (MGD) [3.3"/24 hrs]	Previous Study Future 10-Yr Storm Peak (MGD) [3.3"/24 hrs]	December 29th 2005 Storm Peak (MGD) [3.4"/61 hrs]	March 23rd 2011 Storm Peak (MGD) [2.3"/87 hrs]	November 29th 2012 Storm Peak (MGD) [4.22"/66 hrs]
27" Shed	12.1	12.2	11.1	8.4	9.3
33" Shed	13.5	13.5	12.3	8.6	10.4
FE3 Shed	6.2	8.9	6.5	5.1	6.7
City Total	31.8	34.6	29.9	22.1	26.4
SRCSD Monitor	N/A	N/A	N/A	N/A	26.4

Total City flows for the two largest storm events from 2007-2012 were lower than the largest storm experienced in the Winter 2005/2006 study, and lower than the projected 10-year design storm flows from the previous study. The November 29th, 2012 storm event had more rainfall in a comparable period to the December 29th, 2005 event, and produced less peak flow. 2012 was the only year in which consistent data was available from SRCSD metering site on the 54" FE2

interceptor downstream of the City's service area, which indicated the 26.4 MGD peak flow during the November 29th, 2012 storm event.

Flow in the City's 27" sewer Shed showed a decrease following the Basin 06 Diversion Project, which diverted a significant portion of the original Basin 06 flow off of the 27" Sewer Shed and into the 33" Sewer Shed. This project was the major recommendation of the previous Capacity Analysis, which predicted that peak flows following the diversion would be reduced to approximately 10.2 MGD at the 10-year design storm, and reduces surcharging in the 27" interceptor to acceptably minimal levels. The observed flow on the November 29th, 2012 storm was 0.9 MGD lower than the modeled peak flow after the Basin 06 Diversion improvements in the previous study.

Despite the additional flow due to the Basin 06 Diversion, the 33" Sewer Shed showed lower peak flows in the November 29th, 2012 storm than in the December 29th, 2005 storm event.

Although peak flows were identified in all key trunk sewer lines, Water Works recommended pursuing improvements to the existing flow metering infrastructure since most of the meters are approaching the end of their serviceable life. Along with replacing the sewer flow meters, Water Works also recommended obtaining a minimum of one more year of winter flow monitoring data with the improved infrastructure prior to completing an update to the City's hydraulic model in 2014-2015.

Grade: B

Recommendation: Pursue improvements to the existing flow metering infrastructure. Specifically, relocate existing B03 metering site from MH B02-9283 to MH B02-9348, relocate existing B09 metering site from MH B09-6724 to a new manhole downstream of MH B09-6726, add a new metering site at MH B06-2253 for Basin B06B, modify the 3 existing Palmer-Bowlus metering sites, and replace existing flow metering equipment at 17 metering sites.

3. Identification of necessary hydraulic capacity improvements.

Discussion: No hydraulic capacity improvements were deemed necessary based on the 2007-2012 Sewer Flow Data and Capacity Analysis Update Report. Additional flow data and invert elevation data will increase the accuracy of these calculations but the conservative estimates indicate that the hydraulic capacity is not a concern at this time.

Grade: A

Recommendation: Continue to refine analysis of peak wet weather flow versus hydraulic capacity through ongoing data collection and improving metering data quality.

Determination of existing groundwater infiltration and rain dependent infiltration levels in the system.

Discussion: For the 2007-2012 data, R-values for the storm events that produces the larges peak flows (03/23/11 and 11/29/12 storms), and one other even that produced the next largest R-value for each basin were chosen. The averages of all the available R-values for each basin were determined, and then basins were ranked in order of average R-value as shown in the Table below:

Basin	Current Priority	Previous Study Priority
B13/B13S	1	1
B10	2	1
B06A	3	2
В06В	4	2
B12	5	3

The results for B12 and B13 are questionable, as the analysis is affected by problematic data from the 33" Palmer Bowlus flume site (B13-9183). Basin 10 and Basin 6 are the best candidates for future targeted CCTV inspection work to identify major sources of leakage in the system.

The table listed below summarizes storm event peak flows from the Winter 2005/2006 Study, and select storm events from the 2007-2012 data. For the 2007-2012 data, peaking factors for the storm events that produced the largest peak flows (03/23/11 and 11/29/12 storms), and one other event that produced the next larges peaking factor for each basin were chosen. The basins were ranked in order of the largest single peaking factor recorded among the analyzed storms.

Basin	Current Priority	Previous Study Priority
B06B	1	8
B13/B13S	2	1
B17	3	3
B15	4	11
B12	5	N/A

The results for B12 and B13 are questionable, as the analysis is affected by problematic data from the 33" Palmer Bowlus flume site (B13-9183). Basins 6 and 17 showed the most pronounced peak flows during the largest storm events and are the best candidates for smoke testing to identify major sources of inflow in the system.

Grade: B

Recommendation: Based on the above recommendations Basin 6 and Basin 17 should be smoke tested, zoom-cam, and CCTV'd as outlined in the table below:

Activity	Inspection Date
Basin 6 Smoke Testing	2013/2014
Basin 6 Zoom Cam	2013
Basin 6 CCTV	2013/2014
Basin 17 Smoke Testing	2014
Basin 17 Zoom Cam	2014
Basin 17 CCTV	2014

Also, the City is currently working with Water Works Engineers to develop a more robust SCADA program that will allow the Wastewater Department to monitor Inflow and Infiltration in more detail. The goal of the program is to continuously monitor I/I within each wastewater basin and identify those basins during storm events that have significant I/I issues. Once areas showing significant I/I are identified, a work order will be generated for the Utilities Maintenance Crew to repair the I/I. I/I repairs include installing cleanout caps, repairing manholes to reduce I/I, replacing mainline and later lines where offset joints occur and are a potential sources of I/I, etc.

SSMP Section 9 - Monitoring, Measurement, and Program Modifications

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

The WDR/SSMP Monitoring, Measurement, and Program Modification requirement specifies that each enrollee shall establish and prioritize appropriate SSMP activities.

1. Establish and prioritize appropriate SSMP activities.

Discussion: The following audit elements are used to help establish and prioritize appropriate SSMP activities:

- Preventive, Corrective, and Emergency Work Order History These items are tracked, updated and input through the City's CMMS program (Lucity).
- > PM Schedules All PM are tracked through Lucity. A work order is generated for each item on the PM schedule. This includes routine flushing of trouble lines, pump station inspections, etc. All PM's over the past two years have been met.
- SSO History All SSO's are reported through the California Integrated Water Quality System (CIWQS). Furthermore, the City keeps a copy of all SSO's categorized by year and address on the local City server. All spills as of 07/01/13 have been input into CIWQS and saved to the City's local server.
- Performance Measures Performance Measures such as flushing, manhole inspections, CCTV, etc. are updated quarterly. All performance measures information is up to date as of 07/01/13.
- > Staff Training Records All training records are schedule and logged on the City's local server. All scheduled training as of 07/01/13 has been met.
- Condition Assessment Data The condition of all assets such as manholes, pipes, etc. are logged within the City's CMMS (Lucity). Any asset with a priority rating of 3 or higher is scheduled for replacement within 6 months or sooner. All scheduled repairs are logged and kept track of via an Excel spreadsheet. As of July 1st, 2013 all scheduled maintenance has been met.
- Program Improvements Program Improvements are assessed and implemented throughout each Calendar Year. The two most recent programs implemented to improve the effectiveness of the City's SSMP include the lateral inspection program and the FOG inspection program.

Grade: A

Recommendation: No Action needed. Continue to monitor, measure and modify programs within the SSMP to improve the effectiveness of the SSMP.

SSMP Section 11 - Communications Program

Responsible Person (RP):

Environmental & Water Resources Director

Summary:

The City shall communicate on a regular basis with the public on the development, implementation and performance of its SSMP.

1. Communication with satellite agencies

Discussion: The City's only satellite agency is the Folsom State Prison (FSP). The City began more frequent ongoing communication with FSP starting in 2012. At the meeting that was held on October 24th, 2012, the City and FSP discussed and clarified the following outstanding items:

- > The City of Folsom and FSP Sewer Line Agreement
- > Annual Operations and Maintenance of joint facilities
- Upcoming CIP projects that affect the joint facilities
- Sewer System Management Plan
- > Area of responsibility/ownership of the joint sewer line

The City plans to hold annual meetings to continue ongoing communication with its satellite agency. Special meetings to address items such as updates to the Waste Discharge Requirements (WDR's) may occur more frequently.

Grade: B

Recommendation: Continue meeting with the Folsom State Prison on an annual basis to maintain communication compliance as outlined within the SSMP. The City should schedule additional meetings as necessary to address updates to the WDR.

2. Communication of the SSMP with the public.

Discussion: Communication with the public about the City's SSMP is accomplished through two avenues. First, communication is achieved through City Council meetings where the public has the opportunity to comment on any element of the City's SSMP at any of the scheduled City Council Meetings throughout the year. Second, the City developed a link on the City of Folsom website (www.folsom.ca.us) where the public can view and provide input on the City's SSMP. Comments are addressed and corrected accordingly. All applicable comments are taken into consideration during the annual audit and review process. Currently, the City of Folsom's website provides the following list of documents for public review:

- > State Water Resources Control Board Order No. 2006-003
- > State Water Resources Control Board Order No. 2008-002
- SSO on-line database (CIWQS)
- City of Folsom SSMP
- > Resolution No. 8526 adopting the City's SSMP
- August 2nd, 2011 SSMP Audit

Grade: A

Recommendation: Continue to update the City's website as necessary.



2013 SSMP Self-Audit Environmental & Water Resources Department

Appendix B – Inspection Records

(Due to the large file size, these records are available by request through contacting the City Clerk's Office at (916) 355-7270)