

Meeting Date: 4/22/2014

Report Type: Consent

Report ID: 2014-00250

Title: Re-Certification of the Updated Sewer System Management Plan

Location: Citywide

Recommendation: Pass a Motion re-certifying that the City's updated Sewer System Management Plan (SSMP), for the City's separated sewer collection system, is in compliance with the requirements specified in the Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems (State Water Resources Control Board Order No. 2006-0003).

Contact: Bill Busath, Engineering & Water Resources Manager, (916) 808-1434; Sherill Huun, Supervising Engineer, (916) 808-1455, Department of Utilities

Presenter: None

Department: Department Of Utilities

Division: Environmental & Regulatory Com

Dept ID: 14001331

Attachments:

1-Description/Analysis

2-Background

3-2013-2014 SSMP Final v01

City Attorney Review

Approved as to Form

Joe Robinson

4/10/2014 4:38:52 PM

Approvals/Acknowledgements

Department Director or Designee: Dave Brent - 4/7/2014 10:31:33 AM

Description/Analysis

Issue Detail: As required by the State Water Resource Control Board for all publicly owned sanitary sewer collection systems, the City obtained coverage under the applicable Statewide General Waste Discharge Requirements (WDR), and complies with the WDR by maintaining and implementing a Sewer System Management Plan (SSMP). The WDR requires the SSMP to be updated every five years, and the City is required to re-certify when significant updates are made to the SSMP. The City certified the 2008-2009 SSMP in 2009. The City has updated the SSMP to reflect current activities, and the updated 2013-2014 SSMP is being presented for re-certification.

Policy Considerations: The SSMP is consistent with the City's Strategic Plan Goals of protecting, preserving, and enhancing water resources, the environment, and the community.

Economic Impacts: None

Environmental Considerations: The Community Development Department, Environmental Planning Services Division has reviewed the project and has determined that the project is exempt from the California Environmental Quality Act (CEQA), under Section 15061(b)(3) of the CEQA Guidelines. The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

Sustainability: This SSMP is consistent with the 2030 General Plan and with the goals and targets of the City's Sustainability Master Plan. Implementation of the SSMP provides for proper and efficient operation, management, and maintenance of the City's separated sewer collection system.

Commission/Committee Action: None

Rationale for Recommendation: Certification of the Sewer System Management Plan is required to comply with the State WDR that applies to the City's separated sewer collection system.

Financial Considerations: Oversight of SSMP implementation will be completed with existing resources; however, assessments to be completed with the SSMP may require the City to spend additional resources in future years for capital improvements or additional operations and maintenance activities to reduce or eliminate sewer overflows.

Local Business Enterprise (LBE): Not Applicable.

Background

On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDR) Order No. 2006-0003, for all publicly owned sanitary sewer collection systems. The intent of the State WDR is to uniformly collect information on the causes and sources of sanitary sewer overflows (SSOs). An SSO is any sewer overflow or spill of sewage that has backed up into buildings, private property or the public right-of-way or has entered a waterway. An SSO occurs when a sewer line is blocked, clogged, or otherwise obstructed. The information collected determines the full impacts of SSOs on public health and the environment, and provides a primary regulatory mechanism for statewide sanitary sewer systems to prevent future SSOs.

The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system owned by the City. The City is required to prevent SSOs within the separated system, maintain and implement a Sewer System Management Plan (SSMP) to eliminate SSOs, and comply with SSO reporting requirements. The City's SSMP provides a plan and schedule to properly manage, operate, and maintain the sanitary sewer system to reduce and prevent SSOs, as well as mitigate any SSOs that occur. The SSMP is required to include specific plan components, including goals, legal authority, operations and maintenance activities, design standards, emergency response plans, grease blockage best management practices, capacity studies, audits, and capital improvement funding.

On April 21, 2009, the City Council certified that the SSMP was in compliance with the WDR requirements. Assessments on the SSMP were conducted within the past five years. As a result, the City was required to spend additional resources for capital improvements and additional operations and maintenance activities to reduce or eliminate sewer overflows.

The WDR requires the SSMP to be updated every five years. The governing board is required to re-certify the SSMP when significant updates have been made to the SSMP. The SSMP has been updated to reflect the additional capital improvements and operations and maintenance activities implemented to further reduce sewer overflows. The updated SSMP must be re-certified by the City Council by May 2, 2014, to stay in compliance with the State WDR requirements. The updated 2013-2014 SSMP attached to this report is being presented to the City Council for Council consideration and re-certification in accordance with the WDR requirements.

Sewer System Management Plan

2013-2014

City of
SACRAMENTO

Department of Utilities

CITY OF SACRAMENTO
SEWER SYSTEM MANAGEMENT PLAN

TABLE OF CONTENTS

I. List of Abbreviations/Acronyms

II. Executive Summary

III. Sewer Collection System Overview

IV. Contact List

V. Sewer System Management Plan

CHAPTER 1. Goal

- 1.1 Goal
- 1.2 Linkage to Department-Wide Strategy

CHAPTER 2. Organizational Structure

- 2.1 State WDRs
- 2.2 Organizational Chart

CHAPTER 3. Legal Authority

- 3.1 State WDRs
- 3.2 Compliance Summary
- 3.3 Codes, Ordinances, and Agreements

CHAPTER 4. Operations and Maintenance

- 4.1 State WDRs
- 4.2 Collection System Maps and Information
- 4.3 Preventive Operation and Maintenance
- 4.4 Rehabilitation and Replacement Plan
- 4.5 Staff Training
- 4.6 Major Equipment and Critical Spare Parts Inventories

CHAPTER 5. Design and Performance

- 5.1 State WDRs
- 5.2 Design Standards
- 5.3 Inspection and Testing Standards

CHAPTER 6. Overflow Emergency Response Plan

- 6.1 State WDRs
- 6.2 Summary of Sewer Overflow Response
- 6.3 Notification

- 6.4 A Program for Overflow Response
- 6.5 Procedures for Prompt Notification
- 6.6 Ensure Staff Aware, Follow, and Trained
- 6.7 Traffic and Crowd Control and Other Activities
- 6.8 Program to Ensure Spill Containment, Prevention, and Abatement

CHAPTER 7. FOG Program

- 7.1 State WDRs
- 7.2 FOG Control Program Determination
- 7.3 Public Outreach
- 7.4 FOG Disposal
- 7.5 Legal Authority
- 7.6 Requirements for Grease Removal Devices
- 7.7 Inspection Authority
- 7.8 Areas Subject to FOG Blockages and Cleaning
- 7.9 Source Control Measures

CHAPTER 8. System Evaluation and Capacity Assurance Plan

- 8.1 State WDRs
- 8.2 Background
- 8.3 Evaluation
- 8.4 Design Criteria
- 8.5 Capacity Enhancement Measures (Capital Improvement Plan)
- 8.6 Schedule

CHAPTER 9. Monitoring and Program Modification

- 9.1 State WDRs
- 9.2 Performance Measures
- 9.3 Historical Performance Data
- 9.4 Baseline Performance
- 9.5 Performance Monitoring and Program Changes
- 9.6 SSMP Updates
- 9.7 Trends

CHAPTER 10. SSMP Program Audits

- 10.1 State WDRs
- 10.2 SSMP Audit Schedule and Procedures

CHAPTER 11. Communication Program

11.1 State WDRs

11.2 Communication Program Discussion

CHAPTER 12. SSMP Completion and Certification

12.1 State WDRs

12.2 Certification Documentation

CHAPTER 13. Appendices

VI. Audit Results and Recommendations

TABLES AND FIGURES

Table 1	Gravity Collection Pipe
Table 2	Force Mains
Table 3	Pump Stations
Table 3.1	Legal Authority Summary
Table 4.1	Separated Sewer Collection and Drainage System Map Information
Table 4.2	Training Resources (Conferences, Seminars, and Materials)
Table 8.1	Separated Sewer Basin Areas
Table 8.2	Draft Design Criteria for Calculating Peak Wet Weather Flow
Table 8.3	Completion Schedule for Capital Improvement Program
Table 9.1	Baseline Performance (9/2/07 – 2/28/09)
Table 9.2	SSO Cause Percentage by Calendar Year
Table 9.3	SSOs Less than 100 Gallons
Figure 1	Separated Sewer System
Figure 2.1	Organization Chart for the Sewer Management Plan
Figure 2.2	Sewer Overflow Response Process – Category 3 SSO
Figure 2.3	Sewer Overflow Response Process – Category 2 SSO
Figure 2.4	Sewer Overflow Response Process – Category 1 SSO
Figure 2.5	Decision Tree for SSO State Reports
Figure 9.1	SSO Rate by Calendar Year
Figure 9.2	SSO Cause by Calendar Year

DOCUMENTS INCORPORATED BY REFERENCE

- Chapter 4** Plant Operator Station Policy
Capital Improvement Programming Guide July 2012
- Chapter 5** City of Sacramento Standard Specifications June 2007
City of Sacramento Design and Procedure Manual
- Chapter 6** Wastewater Collection Standard Operating Procedures 2014

I. LIST OF ABBREVIATIONS/ACRONYMS

City	City of Sacramento
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
CWEA	California Water Environment Association
CY	Calendar Year
DOU	Department of Utilities
DS	Data Submitter
ERP	City Emergency Response Plan
FOG	Fats, Oils, and Grease
FOIS	Facilities Operations Information System
FROG	Fats, Roots, Oils, and Grease
FSE	Food Service Establishments
FY	Fiscal Year
GIS	Geographic Information System
I/I	Inflow and Infiltration
LRO	Legally Responsible Officer
MRP	Monitoring and Reporting Program
O&M	Operations and Maintenance
OES	Office of Emergency Services
PM	Preventative Maintenance
QA/QC	Quality Assurance/Quality Control
R&R	Rehabilitation and Replacement
RWQCB	Central Valley Regional Water Quality Control Board
SASD	Sacramento Area Sewer District
SCADA	Supervisory Control and Data Acquisition
SOP	Standard Operating Procedure
SRCSD	Sacramento Regional County Sanitation District (Regional San)
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSO	Sanitary Sewer Overflow is defined as any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from the separated sewer system including the following: <ul style="list-style-type: none">• Overflows that reach waters of the United States• Overflows that do not reach waters of the United States• Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of the sewer system
SSMP	Sewer System Management Plan
SSS WDR	Waste Discharge Requirements for Sanitary Sewer Systems
State WDRs	Statewide General Waste Discharge Requirements for Order No. 2006-0003-DWQ adopted May 2, 2006, also known as WDR
SWRCB	California State Water Resources Control Board
USEPA	United States Environmental Protection Agency
WDID	Waste Discharge Identification Number

WEF
WWTP

Water Environment Federation
Wastewater Treatment Plant

II. EXECUTIVE SUMMARY

On May 2, 2006, the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (State WDRs) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems. The intent of the State WDRs is to uniformly collect information on the causes and sources of sanitary sewer overflows (SSOs) to determine the full impact on public health and the environment and to provide a primary regulatory mechanism for sanitary sewer systems statewide to prevent SSOs. An SSO occurs when sewage backs up onto a public right of way and/or private property because sewer lines are blocked, clogged, or otherwise obstructed (refer to Section I List of Abbreviations/Acronyms for a more specific definition). The State WDRs require publicly owned collection systems to prevent SSOs, comply with reporting requirements, and implement a Sewer System Management Plan (SSMP). The Monitoring and Reporting Program (MRP) requirements of the State WDRs were amended in February 2008 and in September 2013. The MRP amendments include specified SSO notification, reporting, and record keeping requirements, and address compliance and enforceability of the MRP.

The City applied for coverage under the State WDRs on November 2, 2006, for the separated sewer collection system and received the Waste Discharger Identification Number (WDID) 5SSO10905. The City separated sewer collection system is shown on Figure 1 in Section III Sewer Collection System Overview and described further in Chapter 4 of this document.

As required by the State WDRs, the City began electronic reporting of sewer overflows to the State online database in September of 2007. Section IV Contact List contains a list of Legally Responsible Officers (LRO) and data submitters (DS) who are authorized to submit the required regulatory reports and subsequently certify the accuracy of the reports.

This SSMP was prepared in compliance with the State WDRs and provides a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system with the intent of reducing and preventing SSOs. Development of the initial SSMP was approved by City Council in July 2007. City Council certified compliance of the final SSMP in April 2009. Copies of the City Council resolution for SSMP development and the resolution certifying compliance of the final SSMP are included in Chapter 12 of this document. The State WDRs requires that the SSMP be updated every five years, and requires re-certification by City Council when significant updates are made. The SSMP five-year update was re-certified by City Council on April 22, 2014. A copy of the City Council resolution certifying compliance of the updated SSMP is included in Chapter 10 of this document.

About This Document

This SSMP provides a general description of how the City complies with the various provisions of the State WDRs and provides references to supporting documents. Some support materials—such as large format drawings, relational databases, and voluminous documents—may not be included in the SSMP. In these cases, a reference

will be provided within the SSMP that indicates the type, owner, and location of these support materials.

III. SEWER COLLECTION SYSTEM OVERVIEW

Wastewater collection in the City of Sacramento is provided by both the City and the County of Sacramento. The Sacramento Area Sewer District (SASD) maintains approximately 35 percent of the public collection system within the City limits, primarily in the northwest and southeast sections of the City. The City Department of Utilities (DOU) maintains the remaining portion of the public collection system, which includes a combined sewer system in the older central City area with a total service area of approximately 7,545 acres and approximately 276 miles of 4 to 120 inch diameter pipes. The separated sewer system, which is described in more detail below, is located primarily in the northeast, east and southwest sections of the City with a total service area of about 25,435 acres.

Wastewater conveyed by the City's separated sewer system, as well as the wastewater conveyed by outlying unincorporated areas within Sacramento County and the cities of West Sacramento and Folsom, is routed by the collection systems to the Sacramento Regional Wastewater Treatment Plant (SRWTP) for treatment and disposal via an interceptor system consisting of large diameter pipes and pump stations. The interceptor system and the SRWTP, located just south of the City limits, are owned and operated by Regional San, the independent Sacramento Regional County Sanitation District (SRCSD). A detail showing the City of Sacramento and SASD service areas, and the location of SRCSD interceptor pipe within the City service area, is presented in Figure 1.

Maintenance of the City sewer assets in the separated sewer system is provided by two Divisions within the DOU. The Operations and Maintenance Division maintains the pumping stations and the entire collection system infrastructure, which includes approximately 544 miles of gravity collection pipes, seven miles of force mains, and 14,400 manholes. The Engineering and Water Resources Division coordinates with the Operations and Maintenance Division to design and manage all capital improvement projects related to sewer replacement and rehabilitation. Figure 1 and Tables 1 and 2 show the size category and distribution of separated gravity and force main pipes in the City service area.

Per City Code 13.08.020, when a sewer main is located in a public right-of-way or easement, City crews are required to inspect, maintain and repair only the sewer mains and associated facilities (i.e., manholes). Services or laterals are considered private from the point of connection with the main to the private property and beyond.

The separated sewer system is composed predominately of vitrified clay pipes and reinforced concrete pipes. A majority of the pipes were installed between the 1940s and the 1970s. Pipes in the older sections of the City (Basins CS351, CS352, and CS353) were constructed in the late 1800s and early 1900s and once conveyed combined wastewater. Storm drain systems were installed in the late 1950s and 1960s, effectively separating the storm drain water from the sanitary sewer in these basins. Since the 1970s, polyvinyl chloride (PVC) pipe gradually gained acceptance, and PVC pipe is now used almost exclusively as replacement pipes and in new construction.

Figure 1 – Separated Sewer System

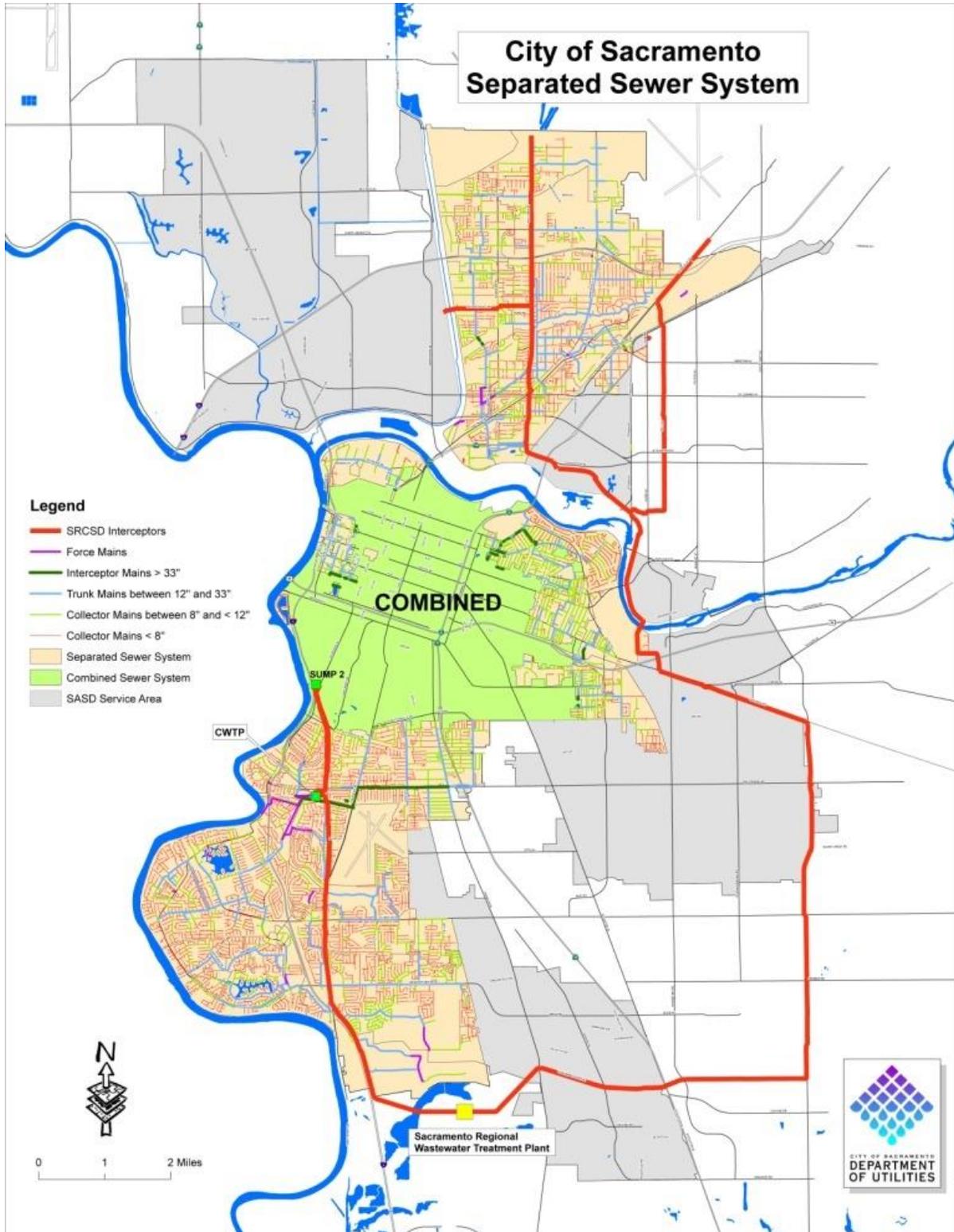


Table 1 – Gravity Collection Pipe

Pipe Diameter Size Category (inch)	GIS Length (feet)	GIS Length (miles)	Percentage of System (by GIS length)
6 inches or less	1,687,198	319.53	59
8 inches	628,277	118.99	21
9 – 18 inches	437,710	82.54	15
19 – 36 inches	106,544	20.17	3
> 36 inches	13,619	2.58	<1
Unknown	438	0.08	<1
Total	2,873,786	544.27	100

Table 2 – Force Mains

Pipe Diameter Size Category (inch)	Length (feet)	Length (miles)	Percentage of Force Main (by length)
6 inches or less	11,628	2.21	33
8 inches	3,708	0.7	11
9 – 18 inches	10,298	1.95	28
19 – 36 inches	8,323	1.58	24
> 36 inches	1,168	0.22	3
Unknown	100	0.02	<1
Total	35,225	6.67	100

The City service area is divided into 54 separated sewer basins. Forty (40) of the sewer basins are pumped through individual pump stations. Ten sewer basins gravity flow directly or indirectly into the SRCSD interceptor pipes. The remaining four basins gravity flow to the adjacent combined sewer system where flows are then pumped into the SRCSD interceptor pipes. Thirty one (31) of the pump stations were constructed between the 1940s and the 1970s; most of these pumps have been rehabilitated and/or upsized during the past ten years. The remaining nine (9) pump stations were constructed between 1985 and 2004 with only one pump station (Sump 122) rehabilitated in 1999. Many of the pump stations discharge into downstream gravity sewers which, in turn, convey the wastewater to pump stations further downstream. Because of this interconnection, changes in one basin can affect the performance of the separated sewer system in downstream basins. Table 3 presents general information for pump stations within the separated sewer system.

Table 3 – Pump Stations

Pump Station	# of Pumps	Est. Total Capacity (mgd)	Est. Firm Capacity w/ 1 Pump Out (mgd)	Ave. Annual Total Volume Pumped (mg)	Year Constructed/ Acquired by City	Year Rehabilitated
3	2	0.6	0.3	0.33	1990	
6	2	0.5	0.25	1.6	1990	
21	4	7.4	5.6	258.8	2004	
29	2	6.4	3.2	5.3	1959	1998
32	2	2.9	1.4	51.7	1970	
36	2	0.32	0.16	9.3	1959	1990
40	2	1.9	0.95	94	1958	
42	2	1	0.5	18.6	1959	
45	2	1.7	0.85	80.7	1959	
48	2	2.6	1.3	115.7	1966	
49	2	0.4	0.2	12.6	1960	
53	2	0.9	0.45	27.2	1961	
55	4	14.4	10.8	1,308.9	1963	2002
57	2	0.8	0.4	10.4	1963	
79	2	0.6	0.3	20	1964	
80	2	0.6	0.3	31.3	1964	2000
81	2	0.5	0.25	1.2	1989	
84	2	0.7	0.35	1.6	1965	
85	4	13.2	9.9	1,202.2	1961	1984
87	3	4.3	2.9	501.3	1965	1999
88	2	2	1	0	1966	
107	3	7.8	5.2	96.6	1992	
119	6	47.9	38	1,881.9	1972	2002
120	3	1.5	1	88.8	1972	1999
121	3	1.5	1	62.4	1972	1996
122	2	0.7	0.35	6.7	1990	1999
123	1	0.2	0.2	0	2000	
124	1	0.2	0.2	0.24	2000	
125	1	0.2	0.2	0.39	2000	
126	2	0.6	0.3	4.5	1974	2001
127	2	0.6	0.3	9.2	1974	2001
131	2	0.6	0.3	4.3	1975	
133	2	0.3	0.15	4.1	2000	
134	2	0.2	0.1	14.4	1979	2000
135	2	0.32	0.16	35	1979	2000
136	2	0.32	0.16	55.6	1979	2000
137	4	14.4	10.8	1,258.4	1979	2000
143	2	0.86	0.43	11.3	1985	
145	2	4.6	2.3	110.6	1985	
146	2	2.2	1.1	59.3	1985	
Total				7,456.5		

IV. SSMP CONTACT LIST

Title	Name	Phone Number	e-mail address *	Responsibility
Operations & Maintenance Manager	Michael Malone	808-6226	mmalone	LRO and management/oversight of all waste water operations
Operations & Maintenance Superintendent – Wastewater Collection	Rob Jack	808-4022	rjack	LRO , maintenance and repair operations for wastewater collection infrastructure, and SSO response
Wastewater Regulatory Compliance Program Manager	Rebecca Lane	808-1343	rlane	Oversees SSMP regulatory compliance and underlying SSMP programs
Wastewater Planner/Scheduler	Elizabeth McAllister	808-6923	emcallister	Oversees the scheduling of wastewater maintenance, managing the cleaning QA/QC Program, and updating the cleaning schedule
Wastewater, FOG and Root Maintenance Supervisor	Andy Upton	808-6233	aupton	Oversees the implementation of the Citywide Fats, Roots, Oils, and Grease Program, and manages the On-Call Process
Wastewater CCTV Supervisor	John Fick	808-6904	jfick	Oversees the CCTV inspections
Wastewater Maintenance Supervisor	Jim Boyd	808-6698	jboyd	Oversees maintenance operations in the South area
Wastewater Maintenance Supervisor	Mike Thomas	808-6905	mthomas	Oversees maintenance operations in the North area
Wastewater Repair Supervisor	Vacant	808-6699		Oversees Citywide repairs to the wastewater collection system
Operations & Maintenance Supervising Plant Operator	Kim Capaul	808-5229	kcapaul	Oversees wastewater and storm drainage sump maintenance

Title	Name	Phone Number	e-mail address *	Responsibility
Operations and Maintenance Supervisor – First Responder	Oscar Alcantar	808-6901	oalcantar	On Oversees On-Call First Responder for normal day shift (7:30 a.m. to 3:30 p.m.)
Drainage Collection Supervisor	Mike Burgan	808-6902	mburgan	Oversees On-Call First Responder for swing shift (3:30 p.m. to 12:00 a.m.)
Operations & Maintenance Superintendent – Drainage Collection	William Roberts	808-6955	wroberts	LRO , maintenance and repair operations for drainage collection infrastructure, and SSO response
Security & Emergency Preparedness Superintendent	Pete Millino	808-5173	pmillino	Pumping station mechanical maintenance, generator support, and maintains the Sump Book
Integrated Planning and Business Operations Manager	Jamille Moens	808-5988	jmoens	Management of Integrated Planning and Asset Management, Fiscal Operations and Billing
Safety Officer	Dan Driscoll	808-2276	ddriscoll	Oversees City compliance with worker-safety regulations and assists with environmental protection during incident response
Public Information Officer	Jessica Hess	808-8260	jhess	Oversees media and communications for the Department of Utilities
Integrated Planning & Asset Management Supervising Engineer	Rick Matsuo	808-1728	rmatsuo	Provide asset prioritization and funding
Information Technology Supervisor	Ron Fujioka	808-1450	rfujioka	Manages FOIS & CMMS applications
GIS/IT Supervisor	Nathan Jennings	808-7857	njennings	Manages the GIS application
Wastewater & Storm Drain Engineering Program Supervising Engineer	Brett Grant	808-1413	bgrant	Oversees master planning and infrastructure CIPs and supports Operations and Maintenance

Title	Name	Phone Number	e-mail address *	Responsibility
Engineering and Water Resources - Water & Sewer Superintendent	Charley Cunningham	808-5518	ccunningham	Oversees SCADA, electrical and instrumentation operation, and maintenance for the sewer and storm-drainage pumping stations
Environmental & Regulatory Compliance Supervising Engineer	Sherill Huun	808-1455	shuun	SSMP regulatory compliance support
Environmental & Regulatory Compliance Associate Engineer	Roxanne Dilley	808-1458	rdilley	Coordinates SSMP implementation; Updates Emergency Response Plans, and Data submitter (DS)
Wastewater Maintenance Staff	Leigh Gulley	808-4017	lgulley	DS

* Note: All e-mails are on the domain: @cityofsacramento.org

Chart last updated 3/24/14

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 1 – GOAL

This chapter provides the goals for the Sewer System Management Plan (SSMP) and complies with section D13 (i) of the State WDRs, included in Appendix A.

1.1 State WDRs

Section D13 (i) of the State WDRs identifies the following goal for the SSMP:

The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent sanitary sewer overflows (SSOs), as well as mitigate any SSOs that do occur within the City service area.

1.2 Linkage to Department-Wide Strategy

As the overall management document for the sewer collection system, the SSMP also supports the following strategic goals included in the 2013-2017 City of Sacramento Department of Utilities (DOU) Strategic Plan:

- Build and maintain public confidence and understanding through communication, delivery of quality services, responsive customer service and compliance with environmental regulations;
- Deliver reliable service through proactively monitoring and maintaining our assets and reducing system vulnerability;
- Plan for current and future generations by protecting, preserving and enhancing water resources, the environment, and the community;
- Develop and retain a competent, collaborative and adaptable workforce in an organization that demands accountability and innovation, and ensures cost-effective operations; and
- Maintain a sustainable financial structure that responsibly invests in infrastructure, ensures full cost recovery and appropriate reserves, and optimizes financial resources.

Actions that the Operations and Maintenance Division implement that align with the State WDR and the Department's Strategic Plan goals include:

- Conduct a training program that ensures regulatory awareness and best maintenance and repair practices;
- Implement a proactive and adaptive preventative maintenance program that ensures that the entire system is touched (cleaned, inspected, graded, scheduled, etc.) within a specified time interval;
- Implement best maintenance and repair practices that minimize the frequency of SSOs; and

- Maintain an integrated overflow emergency response plan designed to protect public health and the environment.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 2 – ORGANIZATIONAL STRUCTURE

This chapter describes the City organizational structure for developing and implementing the SSMP and the chain of communication for reporting and responding to overflows. The information presented complies with section D13 (ii) of the State WDRs, included in Appendix A.

2.1 State WDRs

Section D13 (ii) of the State WDRs requires the SSMP to identify the following:

- (a) The name of the responsible or authorized representative as described in Section J of the State WDRs.
- (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority using an organization chart or similar document with a narrative explanation; and
- (c) The chain of communication for reporting sanitary sewer overflows (SSOs), from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

2.2 Organizational Chart

The City Department of Utilities (DOU) is responsible for construction, design, operation and maintenance of the separated sewer system shown in Figure 1 (Section III Sewer Collection System Overview).

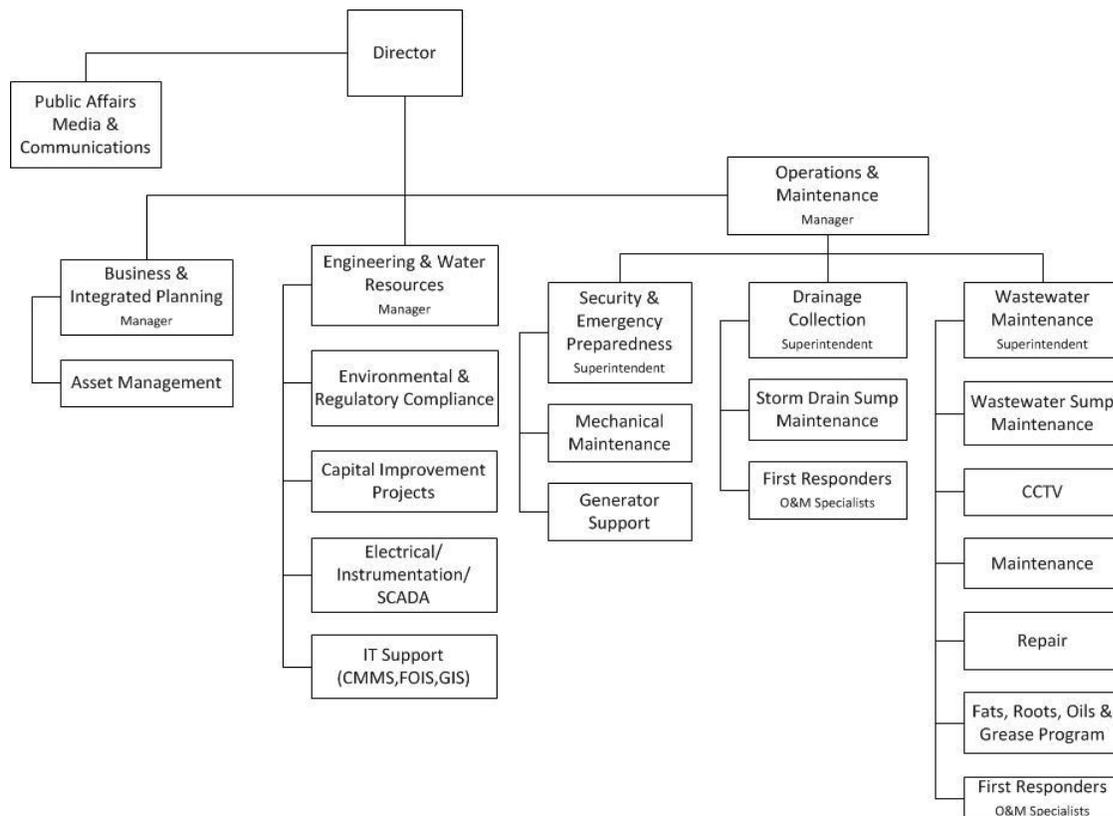
At the time the City's initial SSMP was developed and implemented, the DOU operated under four major divisions: Business Services, Engineering Services, Field Services, and Plant Services. In 2012, as part of a Department-wide organizational assessment and strategic planning effort to improve efficiencies and address future objectives, the DOU consolidated into three operating divisions: Business and Integrated Planning, Engineering and Water Resources, and Operations & Maintenance (as shown in Figure 2.1 below). The management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program are outlined in Figure 2.1, and reflect these organizational changes.

An updated list of names and phone numbers for specific staff involved with implementing the SSMP is included in Section IV Contact List.

Authorized Representatives

Both the Operations and Maintenance Division Manager and the Operations and Maintenance Superintendent –Wastewater Maintenance are designated both the Legally Responsible Officers (LROs) for the City separated sewer system and are authorized to certify all electronic reports submitted to the California State Water Resources Control Board (SWRCB or the Regional Water Quality Control Board (RWQCB). The Engineering and Water Resources Division provides support in preparing and implementing SSMP sections, and is a backup data submitter (DS) for the Wastewater Maintenance staff.

Figure 2.1 - Organization Chart for the Sewer Management Plan



Chain of Communication for Reporting Sewer System Overflows

The chain of communication for SSO response for each SSO category is shown in Figures 2.2, 2.3 and 2.4. The internal decision matrix used to decide when to follow State WDRs reporting requirements is shown in Figure 2.5. The general response procedure begins when the City receives notification of the SSO. The Wastewater Maintenance Supervisor coordinates with the Drainage Collection Superintendent and/or Supervisor to assign the crews necessary to investigate, assess, contain and correct the reported SSO. When the SSO reports are completed, they are submitted to the SWRCB or RWQCB by the DSs listed in the contact list (Section IV) and then the reports are certified by an LRO. For more information on reporting sewer system overflows, refer to Section V Chapter 6 Overflow Emergency Response Plan.

Description of Other Responsibilities

Utilities Director – Under the direction of the City Manager, establishes policy, plans strategy, leads staff, allocates resources, delegates responsibilities, and authorizes outside contractors to perform services.

Division Managers – The managers for the Business and Integrated Planning, Engineering and Water Resources, and Operations and Maintenance Divisions direct the preparation of wastewater collection system planning documents; refine the capital improvement programs using condition assessment, master planning and maintenance history; manage the capital improvement delivery system; manage the operation and maintenance programs; document new and rehabilitated assets; and coordinate development and implementation of the SSMP.

- *Engineering and Water Resources Division, Environmental and Regulatory Compliance Section* – Environmental and Regulatory Compliance section staff oversee, coordinate, and assist in State WDR compliance.
- *Operations and Maintenance Division:*
 - o *Operations and Maintenance Manager* – The Operations and Maintenance Manager and Superintendent (Wastewater Maintenance) functions as an LRO for the City. In addition, the manager and staff oversee and conduct field operations and maintenance activities, provide relevant information to agency management, prepare and implements contingency plans, lead emergency response, investigate and report SSOs, and train field crews.
 - o *Superintendents* – Two Operations & Maintenance superintendents, Wastewater Maintenance and Drainage Collection, work collectively in the execution of the City’s Sewer System Management Plan (SSMP).
 - o *Field Crews (Lead Workers and Service Workers)* – Field crews complete preventative maintenance activities and mobilize and respond to notification of stoppages and SSOs (mobilize sewer cleaning equipment, by-pass pumping equipment, and portable generators).

Figure 2.2 – Sewer Overflow Response Process – Category 3 SSO

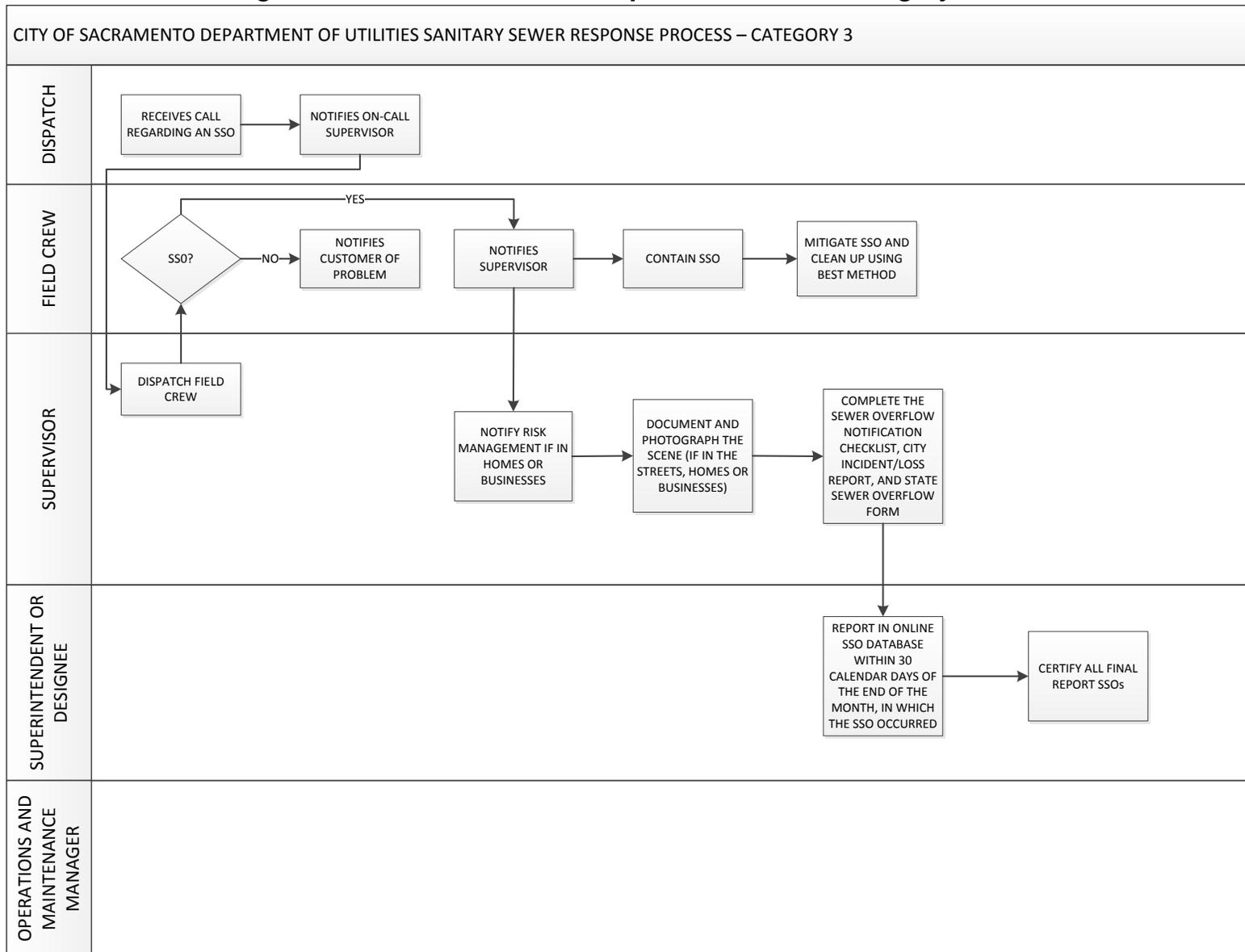


Figure 2.3 – Sewer Overflow Response Process – Category 2 SSO

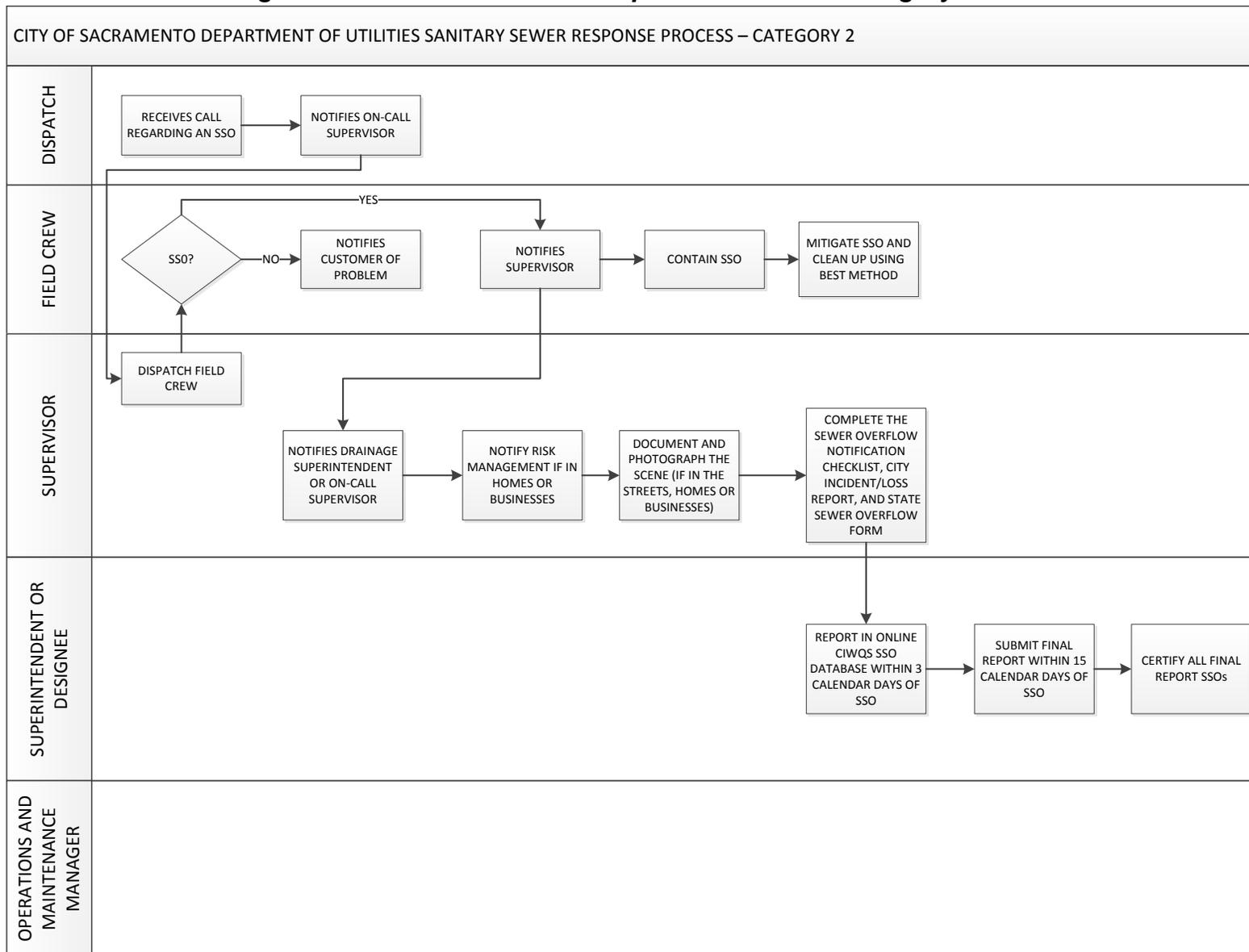


Figure 2.4 – Sewer Overflow Response Process – Category 1 SSO

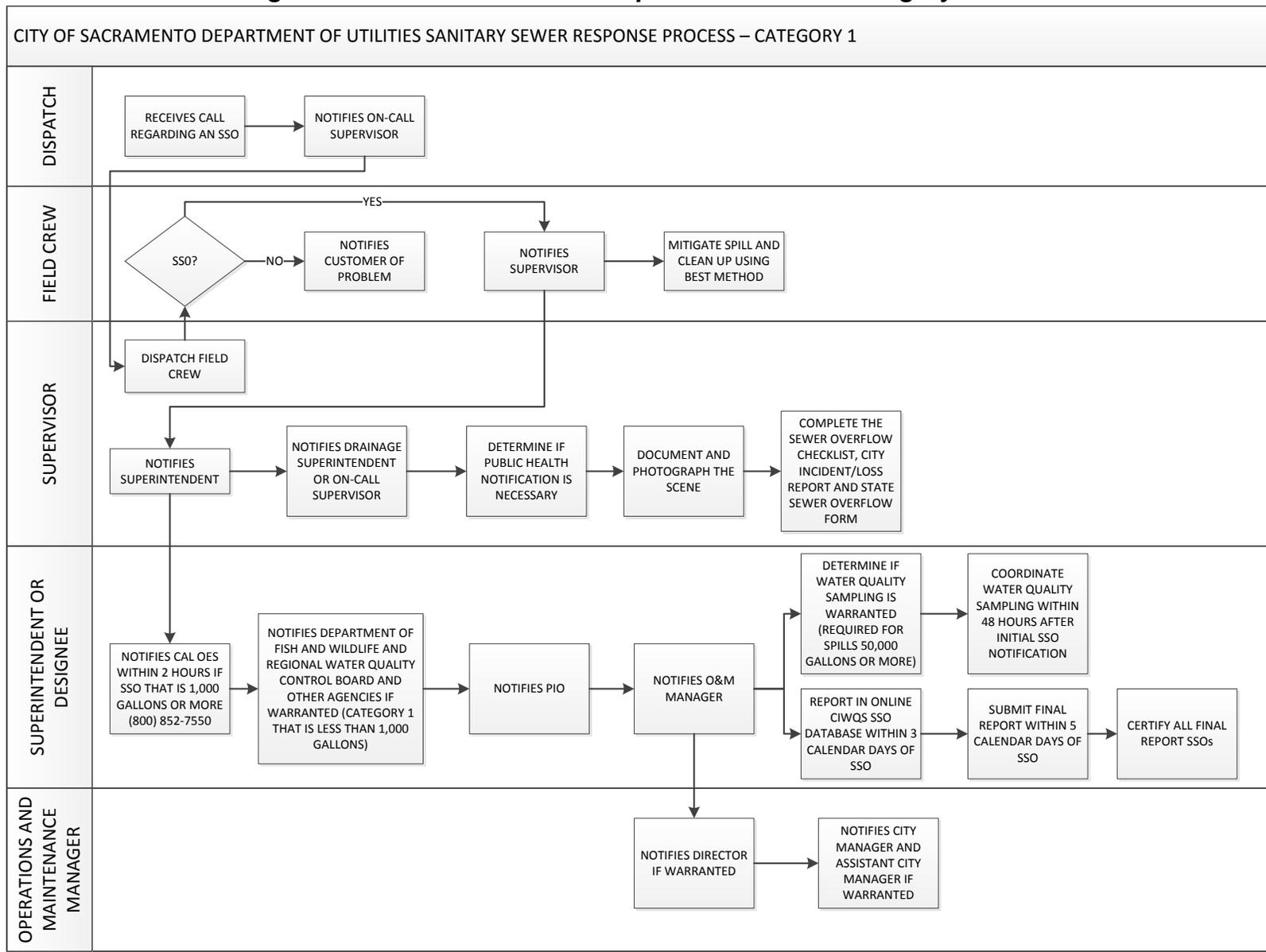
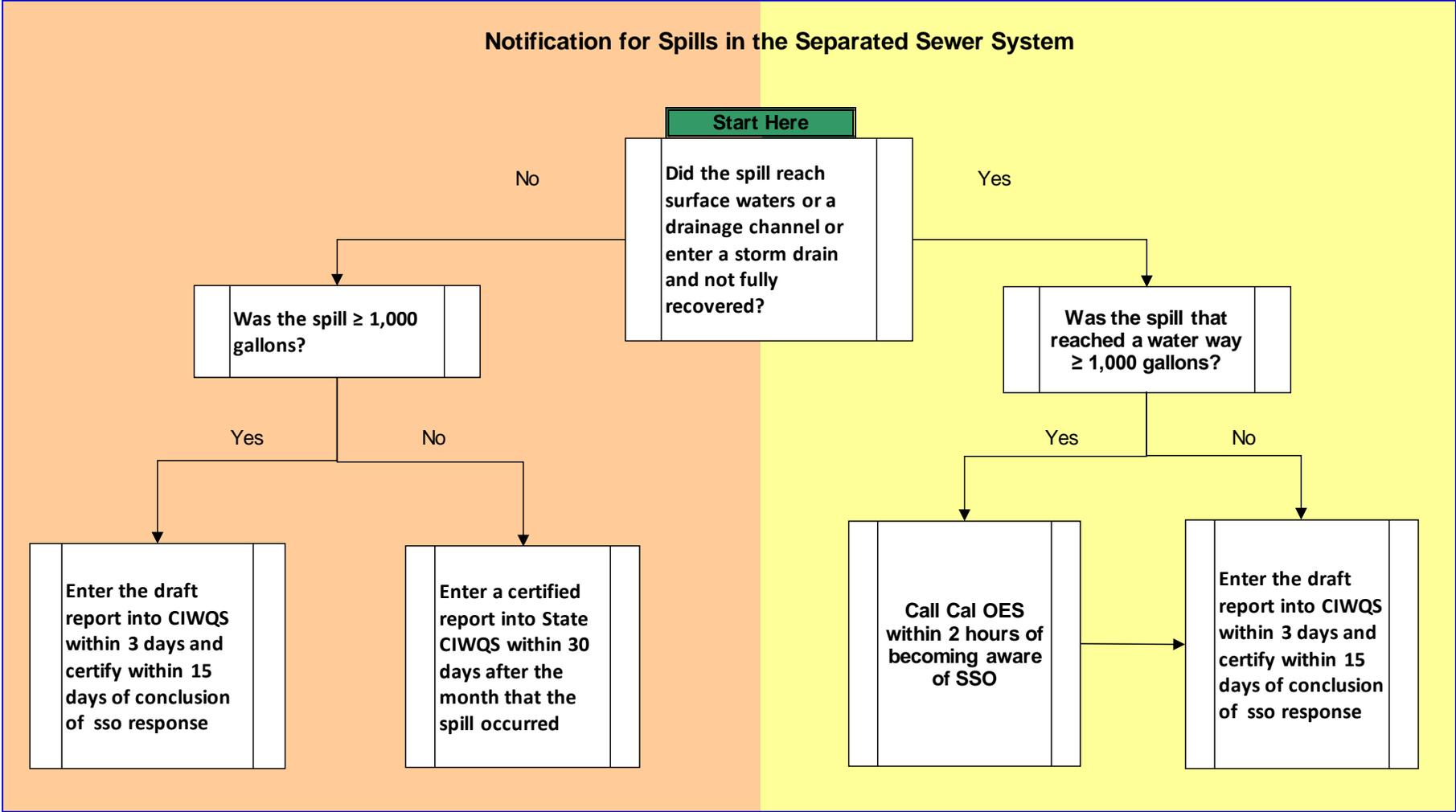


Figure 2.5 – Decision Tree for SSO State Reports



V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 3 – LEGAL AUTHORITY

This chapter of the SSMP discusses the City's Legal Authority, including its Municipal Code and agreements with other agencies. The information presented complies with section D13 (iii) of the State WDRs, included in Appendix A. This section also cross references the legal authority required for portions of section D13 (vii) of the State WDRs.

3.1 State WDRs

For section D13 (iii) of the State WDRs, 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 do the following:

- (a) Prevent illicit discharges into its sanitary sewer system (examples may include Inflow/Infiltration (I/I), stormwater, chemical dumping, unauthorized debris and cut roots, etc.);
- (b) Require that sewers and connections be properly designed and constructed;
- (c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City;
- (d) Limit the discharge of fats, oils, and grease (FOG) and other debris that may cause blockages; and
- (e) Enforce any violation of its sewer ordinances.

In addition, for section D13 (vii) of the State WDRs, the City must demonstrate as appropriate:

- (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, requirements for best management practices, record keeping and reporting requirements; and
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance.

3.2 Compliance Summary

Table 3.1 lists the City codes providing the authority required by the State WDRs as well as the authorities provided by the Sacramento Regional County Sanitation District (SRCSD) Consolidated Sewer Use Ordinance for the operation of the City collection

system.

Table 3.1 - Legal Authority Summary

State WDRs for Legal Authority	
City of Sacramento Municipal Code¹	SRCSO Consolidated Sewer Use Ordinance²
D13 (iii)(a) Prevent illicit discharges into the sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.).	
13.08.040 Prohibited discharges 13.08.120 Pretreatment requirements 13.08.130 Prohibited cross connections 13.08.160 Private sewer lines—No infiltration or leaks	2.5 Regulations
D13 (iii)(b) Require that sewers and connections be properly designed and constructed.	
13.08.360 Application for installation 13.08.370 Approval of plans 13.08.380 Inspection of installation—Property of city 15.24 Amendments to the California Plumbing Code	2.5.9 Pretreatment Facilities
D13 (iii)(c) Ensure access for maintenance, inspection, or repairs for the portions of the lateral owned or maintained by the Public Agency.	
13.08.240 Structures overlying public utilities 13.08.290 Inspections 13.08.310 Control manhole for industrial wastes	2.8.1 Rights of Entry
D13 (iii)(d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages.	
13.08.040 Prohibited discharges 13.08.090 Food service establishment (FSE) requirements 13.08.100 Interceptors for other businesses	2.5.4 Prohibited Substances or Characteristics 2.5.6 Potentially Regulated Discharges
D13 (iii)(e) Enforce any violation of its sewer ordinances.	
13.08.060 Enforcement 13.08.340 Violations	2.9 Enforcement
D13 (vii)(d) Requirements to install grease removal devices design standards, maintenance requirements, and reporting requirements.	
13.08.100 Interceptors for other businesses 15.24 Amendments to the California Plumbing Code ³ that references section Uniform Plumbing Code	2.5.12 Grease, Oil, and Sand
D13 (vii)(e) Authority to inspect grease producing facilities and enforcement authorities.	
8.04.050 Right of entry 8.04.110 Nuisance abatement 13.08.060 Enforcement 13.08.290 Inspections	2.8 Inspection and Monitoring 2.8.2 Inspection Warrants 2.8.3 Monitoring Facilities

¹ The numbers refer to applicable City Municipal Code sections.

² Numbers refer to the chaptered sections of the SRCSO Consolidated Ordinance as of December 13, 2013.

³ The Uniform Plumbing Code (UPC) is adopted by reference. Sections of the 1014.0 and 1015.0 of the UPC cover the design requirements for grease removal devices.

3.3 Codes, Ordinances, and Agreements

The legal authority required for the SSMP by the State WDRs is contained within the City's municipal code. Several chapters of the municipal code include various elements of the required authority and are available at <http://www.qcode.us/codes/sacramento/>. The chapters listed in Table 3.1 are included in Title 1 General Provisions, Title 8 Health and Safety, Title 13 Public Services, and Title 15 Buildings and Construction. The City operates its sewer collection system in accordance with the SRCSD Sewer Use Ordinance and a Master Interagency Agreement found at <http://www.regionalsan.com/ordinances-agreements>.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 4 – OPERATIONS AND MAINTENANCE

This chapter of the SSMP discusses the City's Operations and Maintenance (O&M) Procedures, including its Rehabilitation and Replacement Asset Management Program. The information presented complies with section 13 D (iv) of the State WDRs, included in Appendix A.

4.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City's system:

- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
- (b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance program should have a system to document scheduled and conducted activities, such as work orders;
- (c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
- (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and
- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

4.2 Collection System Maps and Information

Chapter 4 of Section V of the SSMP describes the information systems and other resources utilized to maintain the City's sewer collection system maps.

Facilities Operations Information System (FOIS)

The FOIS is a web-based application available on the City's intranet that serves as the Department of Utilities (DOU) repository for record drawings; improvement plans prepared by staff, outside consultants, and other agencies; specifications; operations and maintenance manuals; facility photographs, etc., as they relate to the collection system.

The FOIS is maintained by the DOU Engineering and Water Resources Division. As capital improvement projects are completed, record drawings and other related documents are entered into FOIS. Similar to public improvement projects, when the DOU receives a notice to proceed and/or a notice of completion from the City Development Engineering Department for a privately constructed development or improvement project, the project plans are entered into FOIS. If the Engineering Technician determines that a project necessitates a change or revision to the Geographic Information System (GIS) map data, a map correction request (via a map correction form and an updated log (*dsbook_map_corrections.xls*)) is sent to the GIS staff. Map corrections are reviewed, researched, and entered appropriately into the DOU GIS database. These changes show up via the CityWorks web-map based asset/work order management system as well as the electronic (PDF) Drainage/Sewer Map Book. The entire process - from receiving the record drawings or improvement plans to entering the data into FOIS and GIS - typically requires two to three weeks.

In addition, DOU staff also use the City's internal Department of Public Works GIS Archiving Interface web map application that contains numerous improvement plans. This web-based application is often used when reviewing/researching map corrections. DOU staff uses this system in combination with FOIS. When FOIS does not contain scanned documents for DOU infrastructure or FOIS is difficult to search for documents such as plans and As-Built scanned drawings, DOU staff can access this application.

Drainage/Sewer GIS Data and Map Book

In 2000, the DOU converted its sanitary sewer assets from AutoCAD into a GIS computer mapping system using ESRI's ArcGIS application. DOU's GIS staff maintain all utilities infrastructure in an enterprise version of ArcGIS. Updates and changes are made to the data on a daily basis through map corrections from field visits, data review, internal review, and new utility projects. As a result of these updates, the CityWorks web map based asset/work order management uses the GIS data directly for field operations. In addition, electronic (PDF) drainage and sewer map book pages are made as required when changes are made to the GIS data and can be accessed through the DOU intranet site. The maps show the entire separated sewer collection and drainage system and include the information listed in Table 4.1.

Table 4.1 – Separated Sewer Collection and Drainage System Map Information

Facility Type	Basic Map Information
Manholes	Identification Number Location, with reference to streets Location, with reference to property line or curb Type of Manhole; Sewer, Drainage, Summit, etc. Depth of Manhole from Rim
Pipes (Sewer and Drainage Mains)	Type of Pipe, Sewer or Drainage Owner of Pipe, City, County or Private Pipe Diameter or Size Direction of Flow Force Mains Lined Pipe Segments
Miscellaneous	Pump Stations, City Limit Line Valves and Vents Primary Sloughs, Creeks and Rivers Levees Drop Inlets and Gutter Drains Streets Parcels with Street Address Numbers

Crews from the Operations and Maintenance Division can access the electronic (PDF) map book pages via the DOU intranet. Crews and staff can print hard copy map book pages as they require. The intranet map books, which can be used to locate assets in the field, can be accessed via the mobile laptop computers provided to Wastewater Maintenance crews.

Updating the drainage and sewer GIS data is an on-going task. DOU GIS and IT staff are currently working on an electronic method of recording potential DOU GIS data changes directly into the recently updated CityWorks Server. The goal is for future corrections to be marked directly in CityWorks, and an electronic form will be completed to describe the map corrections. Subsequently, internal research and reviews of map correction requests will be made by USA (Underground Service Alert) staff and then a GIS analyst to ensure the GIS enterprise database is updated appropriately. The data changes will be seen via CityWorks the day after the GIS data is changed. The electronic (PDF) map book pages with the change will be reflected the following day in CityWorks, and within a week or two in the electronic (PDF) versions of the map book pages that can then be accessed through the DOU intranet page.

Currently, when a potential data correction is noted in the field, these are marked on a hard copy map book page. The USA group collects the various map corrections from field staff, reviews these, and possibly conducts a field visit as needed. The map corrections are consolidated and dropped off to the GIS staff for review. The GIS staff reviews the map corrections, conducts research on the changes and makes the appropriate change in the GIS database. These changes are reflected the following day in the CityWorks application and within a week or two in the electronic (PDF) versions of the map book pages that can be accessed through the DOU intranet page

A current goal is to use the CityWorks “redlining” tools and “child work order” process to facilitate and communicate GIS data and map changes.

In addition to the above process, improvement plans for public projects and private development or infrastructure may be logged, scanned, and placed in FOIS and/or provided to Engineering staff to be logged in the Department of Public Works GIS Archiving Interface web application. If there are any new infrastructure changes, these are communicated to the GIS group with the same map correction form, an entry is made into the *dsbook_map_corrections.xls* spreadsheet, and the GIS data are updated appropriately.

Sump Book

The DOU maintains a Sump Book which is also available in both hard copy format (for field crews and engineers) and electronically (on the DOU intranet). The Sump Book contains details regarding every sewer and drainage pump station maintained by the Operations and Maintenance Division, including maps showing the pump station location. Information is also included regarding the number of pumps, horsepower and pumping capacity of each pump, the force main location and discharge locations, and the maximum amount of time the pumps can be out of service before the station overflows (out of service limitations). The Sump Book is updated periodically as pump stations are rehabilitated, added, and/or removed from the system.

Computerized Maintenance Management System (CMMS)

The Operations and Maintenance Division utilizes the Azteca™ “Cityworks” CMMS system for its linear assets and the “Maintenance Connection” CMMS system for its vertical assets (pumping stations and associated mechanical, electrical and instrumentation). Both systems are used for: planning, requests for work (service requests), tracking SSOs and resident complaints, scheduling maintenance work (work orders) and maintenance activities, tracking completed work, and monitoring the type of maintenance performed on sewer assets. A recent upgrade to CMMS provides a work order/asset management system unique to the DOU Operations and Maintenance Division, and improves overall capabilities (data entry, reporting, scheduling, workflow, quality assurance/quality control, and security). The primary functions of the CMMS systems are the following:

- Maintain service request and maintenance history information for each collection system asset,
- Produce and regularly update the maintenance schedule based on feedback from the cleaning and maintenance operations,
- Generate reports that support data analysis and decision making,
- Provide documentation for use in regulatory compliance reporting, and
- Indicate pipe segments or structures that may be candidates for replacement or rehabilitation under the Capital Improvement Program (CIP).

DOU updates pipe attribute information through the map correction process described above and with information derived from CCTV inspections. These updates are completed when a discrepancy is found during an inspection. A written request for change is made listing the discrepancy and the correction to be made. This update process provides a quality assurance/quality control (QA/QC) of the pipe attribute data within the CMMS system.

4.3 Preventative Operation and Maintenance

Overview

The City has developed several maintenance approaches for the separated sewer collection system with the following goals:

1. Decrease frequency of SSOs,
2. Identify primary cause of collection system blockages and develop strategies to reduce backups,
3. Operate and maintain pump stations in order to maintain reliability and efficiency,
4. Maintain operation and maintenance records for each sewer collection system asset to support asset management decision-making, and
5. Assist with the development of CIP projects directed at maintaining or rehabilitating the current sewer assets, improving system reliability, and providing adequate future capacity.

Reactive Maintenance

Reactive maintenance activities in the separated sewer system include investigation and response to any complaints regarding a manhole overflow, missing or shifted manhole covers, manhole covers that are noisy, residential plumbing troubles, pump station malfunction, sewer odor, etc. Sewer complaints received by the DOU are investigated and the appropriate action is taken to resolve the source of the problem.

Preventative Maintenance

The City commenced a system-wide closed circuit television (CCTV) effort in 2009. The separated sewer system pipelines comprised of pipes that are 15-inches in diameter and smaller, and the CCTV on these pipes will be completed by end of 2014. CCTV of pipelines exceeding 15-inches in diameter is noted below in the bullet shown as “Large diameter pipelines.” This CCTV effort was undertaken to assess and rate the infrastructure, and to prioritize and schedule preventative maintenance activities in the separated sewer system. In addition to the CCTV evaluation, other criteria upon which preventative maintenance is based include: service requests (customer complaints), historical knowledge, experience, and CMMS data. The Preventative Maintenance Program includes scheduled cleaning, root control, FOG inspections, QA/QC and routine CCTV inspection, and regular maintenance of pump stations.

The City’s Standard Operating Procedure (SOP) for cleaning gravity sewers in the separated sewer system is included as Appendix B. In addition to the process outlined in the SOP, sewer maintenance field crews utilize the work orders in CMMS to document the level of roots, grease, and debris found in pipes during maintenance activities.

The Operations and Maintenance Division has a Scheduled Cleaning Program for all small diameter sewer system mainlines. The schedules for these assets have been evaluated and prioritized for scheduled cleaning determined through CCTV analysis, historic knowledge, and CMMS data. In an effort to reduce the risk of an SSO, hospitals, are subject to frequent scheduling adjustments as the potential impact from an SSO could be severe.

Currently, 6,000 mainlines have cleaning frequencies ranging from one month to two years and the remaining 11,000 mainlines are set to a five year cleaning frequency. As scheduled maintenance is performed, the planner/scheduler reviews the cleaning findings on a weekly basis to adjust the scheduled maintenance cleaning frequencies. Medium and heavy findings trigger the pipe to be put on a higher frequency while light and clear findings trigger the pipe to be put on a lower frequency. Also, the planner/scheduler and maintenance supervisors meet on a monthly basis to review mainlines with SSOs and adjust their cleaning frequencies.

Minor exceptions to the Citywide sewer cleaning program for the separated sewer system will include the following:

- Large diameter pipelines. The separated sewer system is comprised of approximately 5.6% of large diameter pipelines. For large diameter sewers, the City plans to visually inspect these pipes once every five years to verify that an inordinate amount of debris has not accumulated in the pipe. If the pipe is free of debris, it will be marked as clean in the CMMS. If the pipe has a depth of debris that is greater than 20 percent of its pipe diameter or if there is evidence of other maintenance problems, the pipe will be cleaned.
- Very difficult to access pipelines. A pipeline that has both manholes located outside of public right-of-way is considered to be a very difficult to access pipeline. In most cases, these pipelines are located in the backyard of residential properties. For sewers with manholes located in remote, difficult to access areas, the City plans to visually inspect these sewers once every five years. If there is evidence of root problems or if there is an accumulation of grease or debris, the pipe will be cleaned.

Corrective Maintenance

DOU performs many of its corrective maintenance and asset rehabilitation activities internally. This includes most gravity sewer repairs. The Operations and Maintenance Division staff routinely repair and rehabilitate pump station assets.

Root Control

Root intrusion is a recognized problem in the City, particularly in older residential areas with mature trees. Collector pipes in these areas are typically six inches in diameter and

often are located in backyard easements. In the separated system, an estimated 190 miles of six-inch diameter pipes are located in backyard easements.

Backyard repair and maintenance of pipelines tends to be complicated and costly. There are two methods the City uses for root control: mechanical and chemical.

DOU created a Fats, Roots, Oil, and Grease (FROG) Control Group to evaluate requests made by the CCTV operators to address grease and root control needs. FROG determines if the pipe requires a mechanical root control schedule and, if so, sets an initial mechanical root control frequency. The frequency is adjusted based on the findings from the mechanical root control.

The pipes targeted for chemical root control are identified using a risk-based, system-wide analysis. The City's sewer attribute information, CCTV data, historical event data, and location-specific data are used to estimate the risk of a root-related SSO occurring. The extent of chemical root control performed is determined by root-control need and the evaluation of the chemical controls. The chemical root control project "treats" selected root problem areas by introducing herbicidal foam into the selected pipes. The herbicidal foam kills the roots and slows future growth. DOU randomly selects pipes subject to chemical root control for pre- and post-chemical application CCTV viewing. This allows the City to evaluate the effectiveness of chemical root control and look for ways to optimize these efforts.

If root problems cause structural failure, these locations are submitted to the Engineering and Water Resources Division to be incorporated into an annual rehabilitation or replacement project.

Fats, Oils, and Grease Control

Based on historical knowledge and CMMS data, areas of the City separated sewer system that have recurring blockages caused by FOG are placed on scheduled maintenance and jet cleaned regularly.

In an effort to reduce the number of service requests and the frequency of scheduled maintenance, the City utilizes a product called Naturclean-33[®] to address FOG blockages in the system. Naturclean-33[®] is a microbial technology that introduces bacteria into the wastewater system to digest grease that builds up on pipe walls and other facilities. Once FOG problems are identified within an area of the system, maintenance crews will typically apply Naturclean-33[®] to pipes in the area on a weekly basis in an effort to sustain effective bacteria levels. In the past six years, Naturclean-33[®] has been applied to an average of 363 miles of sewer pipeline annually. Staff uses the sewer crew feedback forms to evaluate the effectiveness of FOG cleaning efforts and looks for ways to optimize and integrate these efforts.

Closed Circuit Television (CCTV) Inspection

The City conducts CCTV inspection as part of its maintenance, condition assessment, and cleaning QA/QC activities. In 2009, the City began utilizing a national industry standard known as the National Association of Sewer Service Companies (NASSCO)

Pipeline Assessment Certification Program (PACP) as a scoring tool for coding pipeline defects. PACP coding data is also used to determine rehabilitation and replacement needs, useful life, and short-term funding projections.

Occasionally before and typically after a corrective maintenance project has been completed, CCTV inspection is performed as a quality control measure. Also, after a blockage is removed, a CCTV inspection is performed on the affected pipeline. The post-blockage inspection allows the Supervisor and/or Lead Worker to evaluate the effectiveness of the cleaning operation, assess whether scheduled maintenance is needed, adjust the frequency of scheduled maintenance, and inspect pipelines for structural defects. A determination is made as to whether the pipe needs repair, rehabilitation, or replacement. If a repair is warranted, Operations and Maintenance Division staff complete the repair. If an issue is detected that cannot be remedied by a repair, the pipe is referred to Engineering and Water Resources staff. Engineering staff evaluate the CCTV findings and, if necessary, develop a scope of work to rehabilitate, or replace the pipe through an Asset Management evaluation process.

The City has developed criteria, a process, and documentation for a cleaning QA/QC program. This program was developed by establishing an acceptable window for post-cleaning CCTV, defining a required quality level, and then developing and implementing the cleaning QA/QC plan. The City has defined 30 days as an appropriate window to CCTV following a cleaning event, and has defined a “clean pipe” as a pipe that does not have any maintenance related defects greater than 10% of the cross-sectional area at the completion of the cleaning task. In other words, at no single point along the entire pipe length shall an obstruction reduce the pipe’s design cross-section by more than 10% within 30 days of the cleaning. If the cleaning QA/QC does not pass due to grease or debris, it must be re-cleaned within 30 days. If the pipe is found to have root intrusion, it is sent to FROG to be cleaned within specific timeframes depending on the severity of the defect.

Pump Stations

Operations and Maintenance staff perform a monthly inspection of the City’s pump stations to assess the operation of the pumps, structures, and wet wells. The monthly inspections are based on the “Plant Operator Station Policy” incorporated here by reference.

Routine maintenance procedures vary from station to station. Maintenance strategies are based on knowledge of unique problems, inspection observations, and manufacturers’ specifications for the equipment at each sanitary sewer pump station. The routine maintenance tasks are specific to each individual pump station. A copy of the monthly Pump Station Preventative Maintenance Procedures is presented in Appendix C.

The City’s high priority sanitary sewer pump stations (Sump 21, 36, 49, 85, 121, and 137) have been scheduled for more frequent inspection based on the volume of flows pumped and history of overflows.

Pump stations are monitored remotely through DOU’s Supervisory Control and Data Acquisition (SCADA) Network that provides real time station status. Remote access allows

for offsite control and monitoring of pump stations and supports the deployment of maintenance personnel to address problems that may occur.

4.4 Rehabilitation and Replacement Plan

General

Wastewater infrastructure rehabilitation and replacement are an integral part of the City's operations and maintenance activities for the sewer collection system. The wastewater system is capital intensive and requires ongoing maintenance, repair, and replacement to sustain the integrity of the infrastructure. As infrastructure assets continue to age and deteriorate, the need to restore parts of the system is becoming of higher significance to the City. A significant portion of the infrastructure, including many of the critical pipelines and pump stations, are approaching, or have already passed, their designed life span.

The DOU's Integrated Planning and Asset Management (IPAM) Section has refined a CIP process to repair, replace, and/or rehabilitate aging infrastructure in a timely, cost-effective manner. This refined approach systematically incorporates infrastructure criticality; condition assessment; life cycle cost; and maintenance history. The approach includes the following:

- Identifying City-owned assets (i.e., taking inventory of all sewer assets, collecting data, and storing information in a GIS database);
- Assigning a level of relative criticality to these assets;
- Evaluating the condition of these assets to identify those nearing failure;
- Determining how and when assets are likely to fail, based on collected data; and
- Prioritizing rehabilitation projects based on anticipated failure rate or potential impact of failure

In addition, the City adopted the following criteria for initiating a CIP project in the Wastewater Fund that is directly tied to the Capital Improvement Programming Guide:

- Required by health, safety, or regulatory requirement;
- Reduce maintenance costs;
- Improve reliability and reduce service interruptions and sanitary wastewater overflows;
- Maintain and replace existing facilities;
- Meet demands of increased growth; and
- Costs offset by grants or other revenue.

Capital Improvement Programming Guide

The DOU has developed a Capital Improvement Programming Guide (Programming Guide), included here by reference, that identifies the processes, methodologies, and funding sources used in developing CIPs for the wastewater utilities. This Programming Guide provides an overview of wastewater operations and functions, explanations of criteria used to rank projects, descriptions of various types of capital improvement projects, project rankings, and project profiles for planned capital projects. In addition, the Programming

Guide includes both a long-term and short-term investment strategy (30-year, 5-year, and 3-year) for incrementally improving the utility infrastructure of the City.

Overall, the Programming Guide provides information on DOU's asset management approach to managing the City's wastewater capital assets with the goal of minimizing the total cost of owning and operating the systems over time, while also delivering the desired levels of service.

Condition Assessment

As the wastewater system ages, the risk of failure inevitably increases over time. Pipe deterioration, collapse, blockage, inflow and infiltration, overflow, and service interruptions are challenges that are faced every day. In an effort to overcome these challenges and to improve the quality of the infrastructure, DOU has stepped up its Condition Assessment Program utilizing CCTV to develop a more sustainable rehabilitation and replacement plan.

The condition assessment CCTV inspections are prioritized to focus on those pipelines thought to have the most urgent repair need and criticality factor. Additionally, maintenance history, age, and material are other factors used to prioritize the CCTV schedule. DOU's Condition Assessment Program includes the following major tasks:

- Create CMMS work order – Cityworks
- Conduct CCTV inspection – Granite XP software with PACP scoring
- Review inspection report
- Work required – spot repair, capital improvement project, or re-inspection
- Create CMMS re-inspection work order – Cityworks (scores 1, 2 and 3 only)
- CIP project – Engineering scope, cost, prioritization, and ranking (Programming Guide)
- CIP funding – IPAM forecast, review, analysis, and assessment

Short-and Long-Term Rehabilitation and Replacement Plan

DOU's short- and long-term rehabilitation and replacement needs are identified in the Programming Guide that includes prioritizing and ranking methodologies of infrastructure assets (specifically pipelines) based on CCTV inspection data, maintenance history, age, criticality, and vulnerability.

Funding

Funding needs for long-term rehabilitation and replacement capital improvements of the separated system are estimated at \$24.8 million over the next five years. These estimates are included in the City's five-year CIP for FY2015-2019. The five-year CIP is published as part of the City's Annual Budget and is available on the City's website at <http://portal.cityofsacramento.org/>.

4.5 Staff Training

In most cases, equipment and operations training in the Operations and Maintenance Division is initially provided by the vendor or manufacturer of the equipment. Ongoing technical training is provided through on-the-job training and rotation among the different maintenance crews and equipment. The City also relies on regional and statewide training available through seminars and conferences. The training resources are shown in Table 4.2.

City crews also receive annual maintenance training by an industry professional. The training program focuses on best practices for cleaning, inspecting, operating, and maintaining its mainline sewer pipes. One purpose of the training is to provide an evaluation of functions, equipment, programs, and protocols undertaken by the City and to assess the current effectiveness of collection system maintenance practices. This assessment enables the City to identify possible opportunities and/or enhancements to efforts made by the Operations and Maintenance Division that may result in more reliable collection system performance and stabilization, with a correlating reduction of SSOs and a higher level of customer service. Another purpose of the training is to introduce and reinforce maintenance best practices to the City's sewer maintenance crews.

The City Standard Specifications require that all contractors and subcontractors be experienced with sanitary sewer work and that they fully comply with all laws, regulations, and standards governing sewer work, sanitation, and public health.

Table 4.2 – Training Resources (Conferences, Seminars, and Materials)

Sponsor	Event	Timeframe	References
California Water Environment Association	State Conference	April	www.cwea.org
	Northern Regional Safety Conference	September	
	Sacramento Area Collection Systems Committee	Quarterly	
Tri-State Conference	Annual Conference	September	www.tristateseminar.com
California State University, Sacramento	Videos, manuals, home study courses		www.owp.csus.edu

4.6 Major Equipment and Critical Spare Parts Inventories

The inventory of major sewer maintenance equipment and critical parts is managed by the Operations and Maintenance Logistics Section. The database used to track equipment is dynamic and continuously being updated.

DOU is compiling a list of critical parts for the pump stations. The intent of this list is to identify critical parts that have a long lead time for purchase. The critical parts identified during this process will be acquired and stored in inventory for future use. DOU maintains multiple spare submersible pumps for use in the event of a pump station failure.

In addition to the critical parts list, DOU is planning to expand the Condition Assessment efforts to include pump station mechanical parts and equipment. The CMMS system will track comments made during condition assessment activities.

The City maintains extensively equipped fabrication shops. In an emergency, nearly all hard replacement parts for pumps and station equipment can be quickly fabricated, reducing downtime typically associated with ordering and receiving parts from suppliers. City pump stations include redundancy of critical systems to reduce the impact of failure.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 5 – DESIGN AND PERFORMANCE

This chapter of the SSMP identifies the design and performance provisions used by the sanitary sewer system and complies with section D13 (v) of the State WDRs, included in Appendix A.

5.1 State WDRs

Section D13 (v) of the State WDRs requires the SSMP to identify the following:

- (a) 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; and
- (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

5.2 Design Standards

The City Department of Utilities (DOU) has two published documents that provide guidance for planners, engineers, and construction personnel for its sewer system: The City Standard Specifications (Standard Specifications) dated June 2007, and the City of Sacramento Design and Procedure Manual (DPM). The latest versions of these two published documents, and any addenda, are hereby included in the City's SSMP by reference.

The Standard Specifications are periodically updated as changes are developed. A City-wide committee, comprised of representatives from each City department, evaluates the Standard Specifications on a semi-annual basis, votes on procedural changes, and issues an addendum upon approval. These changes are posted on the City's website. Every five years, these ad hoc changes are consolidated into an updated document that is published to replace the previous edition.

The DPM provides standards for sewer generation rates and provides general design guidelines for new sewer facilities, both pump stations and pipelines. The DPM is undergoing major revisions to reflect more realistic sewer generation rates and to reflect modern performance standards. The DPM has no formalized system for updates outside of internal discussions amongst managerial staff within the DOU Engineering and Water Resources Division. Changes made to the DPM are posted on the City's website.

A third standard, used by the DOU Engineering and Water Resources Division, is the standard Special Provisions for pipeline replacement, pipe rehabilitation, and electrical switchgear replacement projects. These standards are stored on a shared drive on the

DOU server and are continuously updated by DOU supervising engineers as improvements are identified during project implementation. These standard Special Provisions enable efficiency improvements by reducing the time needed to write project specifications and ensure that the latest designs benefit from ongoing experience. The City's standardized provisions for sewer pipe rehabilitation are found only in its standardized Special Provision for the work.

5.3 Inspection and Testing Standards

The DOU Standard Specifications are routinely referred to in construction documents to provide quality standards for all construction in the sewer system. It is utilized both for capital improvement projects and for development related infrastructure projects. The quality control of the document is managed by a DOU Supervising Engineer. The Standard Specifications include testing standards for pipe installation. Sewer system construction is overseen by Department of Public Works inspectors for DOU capital improvement projects and development related sewer construction.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 6 – OVERFLOW EMERGENCY RESPONSE PLAN

This chapter of the SSMP provides an overview of the City's emergency response procedures for sewer overflows. The information presented complies with section D13 (vi) of the State WDRs, included in Appendix A.

6.1 State WDRs

Section D13 (vi) of the State WDRs requires the City develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- (b) A program to ensure an appropriate response to all overflows;
- (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program (MRP) of the State WDRs. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or National Pollutant Discharge Elimination System (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;
- (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

6.2 Summary of Sewer Overflow Response

The City's overflow response plans are described in the Wastewater Collection Standard Operating Procedures, included by reference. This document includes information required by section D13 (vi) of the State WDR.

6.3 Notification

Where appropriate, the documents include notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner. This includes procedures needed to comply with both the February 2008 amendment and the September 2013 amendment of the State WDRs' MRP requirements. The 2013 amendment to the MRP includes a change in the notification requirements and defined new spill categories. Notification to California's Office of Emergency Services within two hours of becoming aware of a Category 1 SSO greater than or equal to 1,000 gallons is to be made.

Figure 2.5 outlines the City spill notification decision tree and is included as appropriate in the plans listed above.

6.4 A Program for Overflow Response

City staff is trained throughout the year on sewer overflow response procedures. The training includes field staff response activities, regulatory reporting requirements, and the City procedures set forth in the Wastewater Collection Standard Operating Procedures.

The specific program to ensure an appropriate response to all overflows includes the existing training efforts and the new training efforts for the notification and enforcement procedures developed as part of the SSMP.

6.5 Procedures for Prompt Notification

The documents listed in Section V Chapter 6 paragraph 6.2 include procedures for prompt notification, including the notification decision tree shown in Figure 2.5. In addition, City staff receive training regarding these procedures and new notification requirements. The officials who receive immediate notification are included in the Wastewater Collection Standard Operating Procedures.

6.6 Ensure Staff Aware, Follow, and Trained

Appropriate City staff are trained, aware of, and follow the Emergency Response Plan.

6.7 Traffic and Crowd Control and Other Activities

The Wastewater Collection Standard Operating Procedures are necessary procedures to address emergency operations, such as traffic and crowd control and other necessary response activities.

6.8 Program to Ensure Spill Containment, Prevention, and Abatement

City staff receives on-the-job training regarding reasonable steps that should be taken to contain and prevent the discharge of untreated and partially-treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs. Training will include such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 7 – FATS, OIL, AND GREASE CONTROL PROGRAM

This chapter of the SSMP provides a description of the Fats, Oil, and Grease (FOG) Program for the SSMP and complies with section D13 (vii) of the State WDRs, included in Appendix A.

7.1 State WDRs

The City is required by section D13 (vi) of the State WDRs to evaluate its service area to determine whether a FOG control program is needed. If FOG is found to be a problem, the City must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. The FOG source control program shall include the following as appropriate:

- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
- (c) The legal authority to prohibit discharges to the system and identify measures to prevent sanitary sewer overflows (SSOs) and blockages caused by FOG;
- (d) Requirements to install grease removal devices (such as traps or interceptors) design standards for the grease removal devices, maintenance requirements, requirements for best management practices, record keeping and reporting requirements;
- (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- (f) An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section; and
- (g) Development and implementation of source control measures, for all sources of FOG discharged to the sewer system, for each sewer system section identified in (f) above.

7.2 FOG Control Program Determination

The City has determined that FOG is a contributor to SSOs in the City's separated sewer system. More than 60% of the SSOs experienced in FY13 were FOG-related

SSOs. In an effort to reduce SSOs resulting from grease blockages, the City has developed and implemented a FOG control program that includes routine, scheduled cleaning, an inspection program for Food Service Establishments (FSEs), and a FOG outreach program.

7.3 Public Outreach

The City has developed and implemented a commercial and residential FOG outreach and educational programs as follows:

Commercial (Restaurants)

The commercial FOG outreach and education activities targets FSEs (i.e., restaurants). The outreach activities were designed to educate restaurant owners and managers about the City's codes regarding the need for grease traps and interceptors, the need to maintain these traps and interceptors, and the City's inspections and enforcement methods.

The commercial FOG activities initially featured a survey to gather data about local restaurants and their current practices. The City then developed the "Sacramento Fat Free Drains" website (www.sacramentofatfreedrain.com) that provides information about restaurant responsibilities and encourages restaurant owners/managers to work in partnership with the City to help ensure that the sewer system functions at its best. The City also created videos, which feature local restaurant managers and owners, that inspectors use when meeting with other restaurant owners and managers to explain the process and the reason for their visit. The videos are in multiple languages to address and accommodate the City's diverse restaurant population. The City also created information that is left with the managers and owners to help them train staff on proper FOG disposal methods and grease trap and interceptor maintenance. These materials are also located on the "Sacramento Fat Free Drains" website for ease of access by restaurant owners, managers, and/or staff, as needed.

Residential

The residential FOG outreach activities also utilizes the "Sacramento Fat Free Drains" website and features an online video for City residents. FOG outreach activities utilize bill stuffers, door tags, promotional items, and media relations.

Bill stuffers demonstrating proper FOG disposal techniques are placed in City utility bills annually each fall. Door tags are placed on the doors of apartment complex managers and/or homes that have a FOG-related SSO. Door tags are also placed on the doors of homes connecting to the main upstream of the location that experienced the FOG-related SSO incident. The City attends community events and distributes giveaways promoting proper FOG disposal. The City also works with the media to remind residents about how to properly dispose of FOG.

The City's "Sacramento Fat Free Drains" website is a significant component of both the commercial and residential FOG outreach and education activities. The website and FOG information is also promoted through DOU's Facebook and Twitter media

networks.

The City continues to work with regional partners, such as Sacramento Regional County Sanitation District (SRCSD) and Sacramento Area Sewer District (SASD), as well as various associations when opportunities arise to ensure the message about proper FOG disposal is communicated throughout the region.

7.4 FOG Disposal

The City FOG disposal plan is conducted on an on-going basis. The plan includes disposal at landfills for small quantities of grease, disposal at Household Hazardous Waste Facilities for larger quantities of grease, and disposal by commercial grease hauling companies. The public is informed of these disposal options and their respective schedules by the afore-mentioned public outreach efforts. Reference can be made to “Sacramento Fat Free Drains” (www.sacramentofatfreedrain.com) for more information regarding the FOG disposal plan (options) and schedule for residents and commercial entities within the City.

7.5 Legal Authority

Table 3.1 in Section V, Chapter 3 of this SSMP lists the City codes that provide the required legal authority to prohibit FOG discharges into the sewer system and the authority to identify measures that prevent SSOs and blockages caused by FOG.

7.6 Requirements for Grease Removal Devices

Title 15 of the Municipal Code includes requirements for the installation of grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, record keeping and reporting requirements. These requirements and standards are implemented by the City’s Community Development Department, Building Division. In addition, the City requires review by the County Environmental Management Department (EMD) - Environmental Health Division prior to approving a building permit for a restaurant. FSEs with grease removal devices are inspected by DOU as discussed further in the next section.

7.7 Inspection Authority

The City has the authority to inspect grease-producing facilities, enforce provisions of applicable sewer use ordinances, and sufficient staff to inspect and enforce the FOG provisions of applicable City ordinances. Refer to Table 3.1 in Section V, Chapter 3 for a summary of legal authority.

Recently, the City’s DOU Operations and Maintenance Division developed a FOG Control Inspection Program with dedicated inspection staff. This inspection staff has the primary responsibility of performing routine inspections and conducting enforcement to ensure FSEs are in compliance with the City’s ordinances and to verify the maintenance and performance of the FSE’s grease removal device. The goal of the program is to annually inspect all FSEs that are provided with City sewer collection services that have a grease interceptor or have been the cause of an SSO. The FSEs identified for

inspection are prioritized based on historical SSO and maintenance information, as well as the City's inspection and enforcement data. Inspection staff will conduct follow-up inspections and enforcement of FSEs that are found not maintaining their grease removal devices or implementing proper best management practices (BMPs).

7.8 Areas Subject to FOG Blockages and Cleaning

The City prioritizes its preventative maintenance activities in the separated sewer system based on service requests (customer complaints), historical knowledge, experience, CCTV inspection, and CMMS data. The preventative maintenance programs includes FOG maintenance, and the areas of the sewer system that have recurring blockages caused by FOG are placed on scheduled maintenance and jet cleaned regularly. Operation and Maintenance's planner/scheduler uses the cleaning findings on a weekly basis to adjust, as appropriate, the scheduled maintenance cleaning frequencies. For example, medium and heavy findings of grease trigger the pipe to be put on a higher frequency while clear findings trigger the pipe to be put on a lower frequency.

In addition to scheduled cleaning, the City utilizes a microbial technology called Naturclean-33[®] to reduce grease that builds up on pipe walls and other facilities. The use of this product reduces the number of service requests and the frequency of scheduled maintenance in areas impacted by FOG. See 4.3 of Section V Chapter 4 of this SSMP for more information on the Preventative Maintenance Program.

7.9 Source Control Measures

The source control measures for areas of the collection system that are subject to FOG blockages include the various public outreach, restaurant inspections, and enforcement and maintenance activities described previously in this chapter.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 8 – SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This chapter of the SSMP presents the City's System Evaluation and Capacity Assurance Plan that will determine hydraulic capacity of key sanitary sewer system elements for peak flow conditions. The information presented complies with section D13 (viii) of the State WDR, which is included in Appendix A.

8.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City's system:

- (a) Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to a sanitary sewer overflow (SSO) discharge cause by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events.
- (b) Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria.
- (c) Capacity Enhancement Measures: The steps needed to establish a short and long term Capital Improvement Plan (CIP) to address identified hydraulic deficiencies, including prioritization, alternatives analysis and schedules. The CIP may include increases in pipe sizes, inflow/infiltration (I/I) reduction, increases and redundancy in pumping capacity and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- (d) Schedule: The City shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a) – (c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D14.

8.2 Background

The sanitary sewer system that serves the City is described in Section III Sewer Collection System Overview of the SSMP. The City service area is divided into 54 separated sewer basins. The sewage from 40 of these basins is pumped by individual pump stations. Sewage from ten of the basins gravity flows directly or indirectly into SRCSD interceptor pipes. Sewage from the remaining four basins gravity flows into the

adjacent combined sewer system where flows are then pumped into the SRCSD interceptor pipes.

The 54 separated sewer basins are presented in Table 8.1 below.

Table 8.1 – Separated Sewer Basin Areas

Basin No.	Area (acres)	Area (sq. miles)	Basin No.	Area (acres)	Area (sq. miles)
G306	533.5	0.83	119	2635.0	4.12
G301	1442.5	2.25	121	182.8	0.29
G302	851.5	1.33	120	181.1	0.28
146	147.4	0.23	126	6.9	0.01
87	634.1	0.99	42	86.9	0.14
131	81.3	0.13	55	2312.4	3.61
106	257.5	0.40	G355	583.2	0.91
6	658.7	1.03	122	43.4	0.07
G303 (n)	1887.6	2.95	36	22.9	0.04
81	11.1	0.02	21	1167.2	1.82
85	1013.8	1.58	134	41.7	0.07
105	104.7	0.16	40	153.6	0.24
80	320.9	0.50	127	25.9	0.04
G303 (s)	180.1	0.28	G354	2167.9	3.39
79	35.8	0.06	57	23.6	0.04
G304	645.3	1.01	45	267.3	0.42
G305	382.2	0.60	137	870.6	1.36
84	26.5	0.04	143	28.6	0.04
133	14.4	0.02	136	130.6	0.20
107	27.5	0.04	135	266.1	0.42
32	443.7	0.69	145	94.9	0.15
29	23.3	0.04	49	55.1	0.09
3	32.1	0.05	88	871.7	1.36
123	12.2	0.02	53	163.7	0.26
124	9.7	0.02	CS351	539.7	0.84
125	7.0	0.01	CS352	262.5	0.41
48	326.3	0.51	CS353	1533.8	2.40

8.3 Evaluation

The actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency are described herein.

A review of the City SSOs occurring over the past several years indicates that all SSOs have been caused by tree roots, structural defects, and/or FOG. At this point in time, it appears that hydraulic capacity has not contributed to these recorded SSOs. Nonetheless, a capacity analysis of each of the sewer basins was undertaken to assess the hydraulic capacity of the trunk sewers. Flow monitoring has revealed I/I levels that could potentially impact available hydraulic capacity in the Pocket Area (City Sewer Basins 55, 127, 134, 137, 135, 136, 143 and 145). High ground water and rainfall events combined with leaking pipe joints produce higher flow in the involved sewer mains than typically seen in other basins. An overview of two capacity and I/I studies completed for Pocket Area Basins 55 and 137 is presented below.

Sewer Model – Existing Conditions

As noted in Table 8.1, each of the City's sewer basins is less than 10 square miles (6,400 acres) in area and, therefore, a capacity evaluation for each basin was developed using a spreadsheet analysis. The capacity evaluations were developed using the DOU's GIS-based Drainage/Sewer Maps discussed in Section V Chapter 4 paragraph 4.2. Peak sewer flows were estimated using updated design criteria discussed in paragraph 8.4 together with existing land use and connection information obtained from the City's GIS database. The design criteria included the effects of I/I based on the age of pipe within the sewer system and documented high groundwater depths. The capacity of major trunk sewer pipes was evaluated using the computed peak sewer flows.

The spreadsheet analysis indicated that 15 basins have potential capacity deficiencies for existing land use conditions. Each of the studies showed surcharging above the crown of the pipe under wet weather conditions but they did not predict SSOs would result. For each of these 15 basins, the DOU plans to develop either static or dynamic models to more accurately define flows and account for storage and routing in the pipe network. In anticipation of the modeling, the DOU has performed flow monitoring in several of the basins identified by the spreadsheet analysis as potentially having hydraulic capacity issues. The purpose was to measure sewer flows so that actual dry and wet weather flow conditions could be included in the models. The DOU plans to continue flow monitoring on an annual basis in preparation of future modeling. As models are completed, rehabilitation strategies will be developed to either increase the hydraulic capacity of the sewer systems, implement I/I reduction measures to lessen the impacts of groundwater and rainfall on the sewer system, and/or to increase preventative maintenance programs.

Sewer Model – Future Conditions

Over the next 20 years, the City's General Plan 2030 anticipates significant growth in existing or infill areas. Additional sewer connections will be made to the system and

many of these connections will serve mixed-use development that has a higher sewer flow rate than the existing land use designation. The spreadsheet analysis was used to estimate future flow conditions and evaluate the impact to the existing collection system and what improvements may be required to accommodate future growth.

Twelve of the 15 basins identified as having potential capacity deficiencies based on existing land use conditions have been identified by spreadsheet analysis as having potential capacity deficiencies when future infill and redevelopment land use conditions are considered. Also, two additional basins have been identified as potentially having capacity deficiencies when considering future land use conditions. The DOU plans to perform additional modeling evaluations for these basins to more accurately define flows and account for storage and routing in the pipe network. Like the first 15 basins, the DOU plans to perform annual flow monitoring in the two additional basins to measure sewer flows so that actual dry and wet weather flow conditions can be included in the models. As models are completed, rehabilitation strategies will be developed to either increase the hydraulic capacity of the sewer systems, implement I/I reduction measures to lessen the impacts of groundwater and rainfall on the sewer system, and/or to increase preventative maintenance programs.

Basin 55 and 137

As noted above, sewer flows in the Pocket Area are impacted by high groundwater and rainfall events. In an effort to quantify I/I, the City has completed the following studies: (1) City of Sacramento Basin 55 Infiltration and Inflow Analysis – Phase 1, December, 20, 2006 and (2) City of Sacramento Basin 137 (South Pocket Area) Infiltration and Inflow Analysis, December, 21, 2006. The purpose of these studies was to determine the location and estimate the quantity of I/I entering the wastewater collection system. Flow monitoring devices and rainfall gauges were installed to measure sewer flow and quantify rainfall in the area. Groundwater levels at selected locations were measured to determine if groundwater levels influenced infiltration and correlated with the Sacramento River stage.

The Basin 55 study concluded that groundwater infiltration (GWI) appeared to be the primary source of I/I in the basin. The Basin 137 study concluded that both rainfall-dependent infiltration/ inflow (RDI/I) and GWI were significant contributors to I/I. While sewer pipes in Basin 55 and 137 are often surcharged under wet weather conditions or when river levels rise significantly, the study did not predict that SSOs would necessarily result.

Since SSOs have not been identified as an issue in the Pocket Area, the City does not currently plan to complete a comprehensive hydraulic evaluation or master plan for this area. The reduction of I/I, however, is a concern to the City. Therefore, as in the past, the City plans to perform various pilot studies using flow monitoring and CCTV in an effort to identify areas producing the most I/I. Once identified, the City plans to implement specific structural techniques to reduce the I/I which may include: (1) lining of sewer mains, (2) point repairs of joints, (3) lining of sewer service laterals, and (4) using resin, chemical grout, or cured-in-place material to seal sewer service lateral connections to the main. The proposed project will measure pre-project and post-project flows in sewer mains to determine which method or combination of methods is most

successful in reducing I/I. Information gained from various pilot I/I reduction projects and studies will guide the City's approach in the creation of CIP projects to reduce I/I in priority sewer basins.

8.4 Design Criteria

The DOU has undertaken a study to update its design parameters for calculating average dry weather flow (ADWF), peak dry weather flow (PDWF), GWI, RDI/I and peak wet weather flow (PWWF). At this time, the results are preliminary and subject to revision, and will be finalized with the update of the City's Design and Procedures manual.

Preliminary results of the study are based on flow monitoring data collected by the City and other agencies in the Sacramento area. DOU's updated design criteria are consistent with published data as well as flow or planning studies performed by various agencies and cities. The study determined that the magnitude of GWI is a function of groundwater elevation and the magnitude of RDI/I is a function of the pipe age for the selected design storm (10-year, 6-hour rainfall event). The draft, updated design criteria for determining the various flow rates used by the spreadsheet analysis are summarized in Table 8.2. Once adopted by the DOU, these design criteria, or a modification thereof, will be used in developing future sewer models for the existing conditions and future conditions as discussed in paragraph 8.3.

Updated land use and corresponding ESD factors will be incorporated in the design criteria when available.

Table 8.2 – Draft Design Criteria for Calculating Peak Wet Weather Flow

Item	Design Flow Calculation Parameters
Land Use Single Family Residence Multi-Family Residence Retail/Commercial School Hospital	ESD Factors 1.0 0.75 0.2 per 1000 ft ² of gross building area 40 gallons/day/capita 1 per every 2 beds
Flow Factor	310 gpd/ESD
Average Dry Weather Flow (ADWF)	ADWF = ESDs x Flow Factor
Peaking Factor (PF)	$PF = 1.9 \times (ADWF)^{-0.1}$ (minimum PF =1.5, maximum PF = 3.0)
Peak Dry Weather Flow (PDWF)	PDWF = ADWF x PF
*Ground Water Infiltration (GWI)	GWI = 0 if groundwater depth ≥ 15 feet GWI = 300 gpda if groundwater depth < 15 feet
*Rainfall- Dependent Infiltration/Inflow (RDI/I)	1,600 gpda for sewers less than 20 old 2,500 gpda for sewers 20 to 50 years old 3,000 gpda for sewers greater than 50 years old
Peak Wet Weather Flow (PWWF)	PWWF = PDWF + GWI + RDI/I
Notes	ESD = equivalent single family dwelling unit gpd = gallons per day gpda = gallons per day per acre * = rates not applicable for Pocket Area

8.5 Capacity Enhancement Measures (Capital Improvement Plan)

Improvements to the sewer system to correct hydraulic deficiencies identified in paragraph 8.3 are described herein. Funding mechanisms for these improvements will also be presented.

Hydraulic deficiencies in the sewer system can be corrected by installing larger pipes, increasing pump station capacity, providing storage, re-routing flows within the collection system, reducing I/I and/or implementing and enforcing water conservation measures. The City is currently implementing a water meter retrofit program that will have all water customers within the City metered by the year 2025. This program is expected to reduce water use and resultant sewer flows. This may result in a smaller peaking factor than that listed in Table 8.2 and reduce the design PWWF.

The Engineering and Water Resource Division of the DOU has planning and project delivery groups that will study various CIP alternatives to correct hydraulic deficiencies within the City’s sewer system. The DOU also has an Asset Management Section that will assist with prioritization of proposed CIPs.

Funding sources for the proposed CIPs include: monthly ratepayer charges, developer funding, and impact fees or connection fees. Rate payer charges may be used to fund rehabilitation and replacement of the existing sewer system. A three-year rate increase for fiscal years FY 2013-15 was presented to the Rate Advisory Commission and approved by City Council in March of 2012. The DOU is currently working on a budget for fiscal years FY 2016-18. Ratepayer charges in support of the next budget cycle will be presented to the Rate Advisory Commission and, if approved, proposed rates will be presented to City Council for approval. Projects to increase sewer capacity associated with future growth in existing sewer basins are funded by developers and/or by an impact fee (connection fee).

8.6 Schedule

A schedule of completion dates for all portions of the Capital Improvement Program delineated in paragraphs 8.3, 8.4, and 8.5 is presented herein. The schedule is shown in Table 8.3.

Table 8.3 – Completion Schedule for Capital Improvement Program

Task No.	Task	Completion Date
1	Finalize proposed modifications to sewer design criteria in the Design and Procedure Manual update	June 30, 2015
2	Create sewer models for the 12 basins - the spreadsheet analysis indicated potential capacity problems. Goal: model 4 basins per year	June 30, 2018
3	Submit Rate Study for Fiscal years 2016-2018 to City Council for approval	March 30, 2015
4	Complete Pocket AD2 I/I Reduction project	June 30, 2015
5	Identify scope and funding for Implementation of I&I reduction program	June 30, 2016
6	Prioritize projects identified in task 5	January 1, 2017

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This chapter of the SSMP discusses the City's Monitoring, Measurement, and Program Modifications. The information presented complies with section D13 (ix) of the State WDRs, included in Appendix A.

9.1 State WDRs

The SSMP must include those elements listed below that are appropriate and applicable to the City's system:

- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
- (c) Assess the success of the preventative maintenance program;
- (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
- (e) Identify and illustrate sanitary sewer overflow (SSO) trends, including: frequency, location, and volume.

9.2 Performance Measures

The City will use the following measures to evaluate the performance of its wastewater collection system and the effectiveness of its SSMP:

- SSO Rate (SSOs/100 miles/year);
- Number of SSOs for each cause (roots, grease, debris, pipe failure, capacity, lift station failures, and other);
- Median SSO volume (gallons);
- Percentage of SSOs greater than 100 gallons;
- Percentage of SSOs reported as Category 1;
- Percentage of sewage contained compared to total volume spilled; and
- Percentage of total spilled sewage discharged to surface water.

9.3 Historical Performance Data

The City has been reporting SSOs to the California Integrated Water Quality System (CIWQS) since September 2, 2007. CIWQS data, which is included as Appendix D, will be used as the City's historical performance data.

9.4 Baseline Performance

The baseline performance, which shows the performance of the City’s separated system prior to the implementation of the SSMP, is shown in Table 9.1.

Table 9.1 - Baseline Performance (9/2/2007 – 2/28/2009)

Performance Indicator		Value
SSO Rate, SSOs/100 miles/year		13.5
Primary Cause of SSOs	Roots	33%
	Grease	64%
	Debris	2%
	Pipe Failure	0%
	Lift Station Failure	0%
	Other	1%
Median SSO Volume, gallons		138
Portion of SSOs ≤ 100 gallons		63%
Portion of SSOs Reported as Category 1*		0%
Portion of Spilled Sewage Contained and Recovered		100%
Portion of Spilled Sewage Entering Storm Drains		56%
<i>Data Source: CIWQS</i>		

*Baseline Category 1 SSOs based on pre-September 2013 MRP amendments to SSO categories

9.5 Performance Monitoring and Program Changes

The City will annually evaluate the performance of its wastewater collection system using the performance measures discussed in paragraph 9.2, above.. The data will be updated and analyzed to determine whether the elements set forth in this SSMP are effective in accomplishing the established goals. The City may also use other performance measures in its evaluation. Elements of the SSMP will be modified, as appropriate, based on the results of this annual analysis of performance measures. Additionally, elements of the SSMP may be revised based on the results of the bi-annual audits conducted, as described in Section V Chapter 10 of this SSMP.

9.6 SSMP Updates

The City will conduct a comprehensive review of the SSMP and update the SSMP as needed. An update should be conducted a minimum of every five years.

The City will determine the need to comprehensively review or update its SSMP more frequently based on the results of the bi-annual audit and annual performance evaluation of its sanitary sewer system, as noted above.

9.7 Trends

The City analyzes the SSO data from CIWQS to identify trends of SSO causes, spill volumes, and recovery volumes to gauge the effectiveness of the SSMP over time. This analysis also indicates spill causes that the City may need to focus on. The following figures and tables identify the SSO calendar year (CY) trends since CY 2007.

Figure 9.1 - SSO Rate by Calendar Year

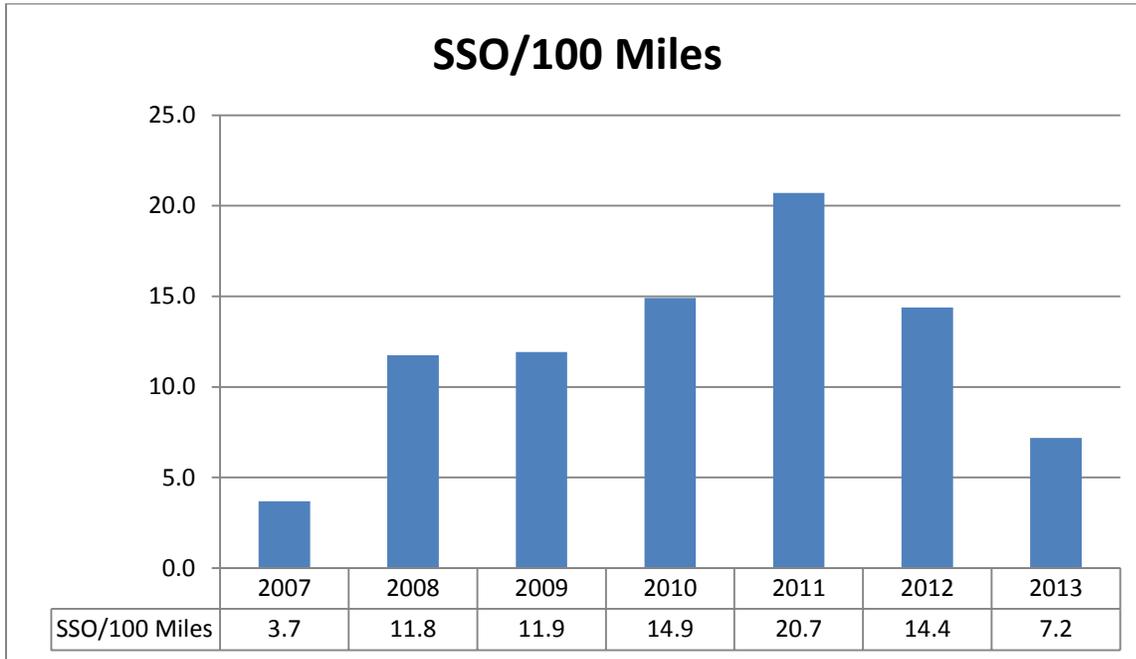


Figure 9.2 - SSO Cause by Calendar Year

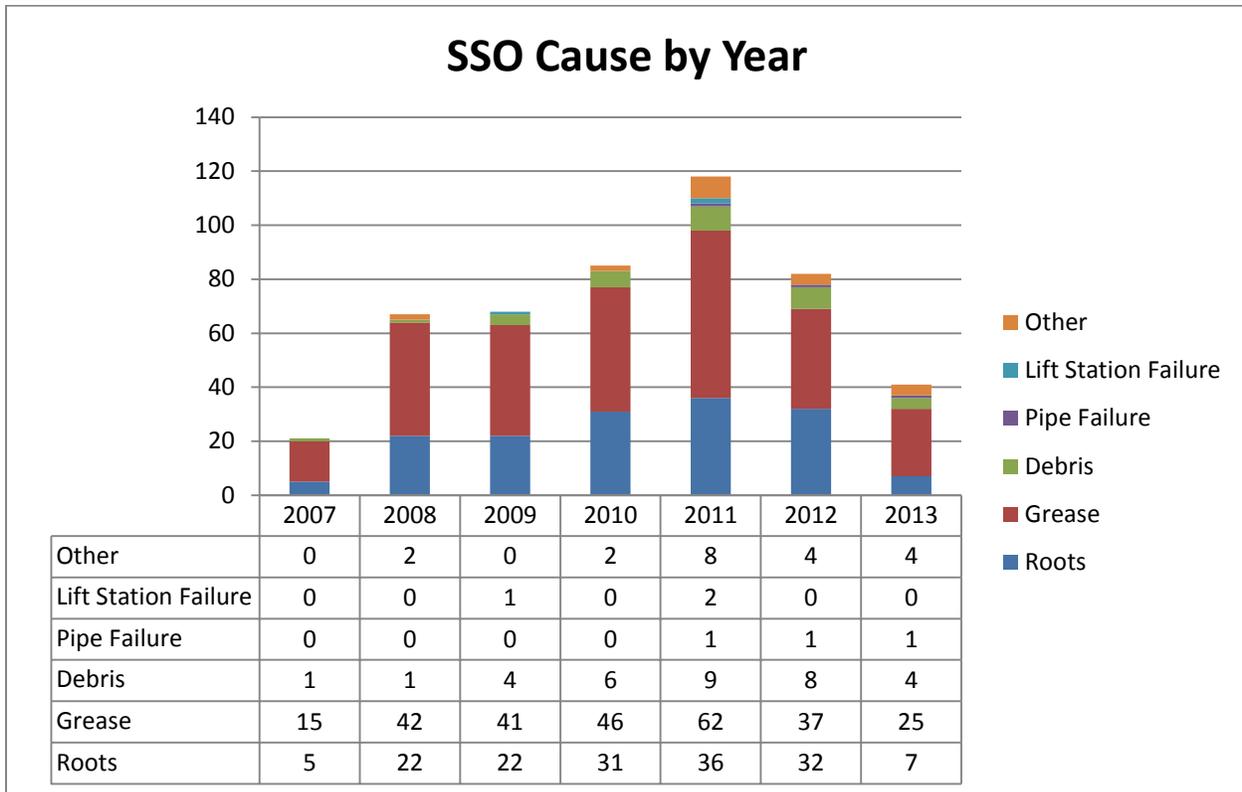


Table 9.2 - SSO Cause Percentage by Calendar Year

Year	Roots	Grease	Debris	Pipe Failure	Lift Station Failure	Other
2007	23.8%	71.4%	4.8%	0.0%	0.0%	0.0%
2008	32.8%	62.7%	1.5%	0.0%	0.0%	3.0%
2009	32.4%	60.3%	5.9%	0.0%	1.5%	0.0%
2010	36.5%	54.1%	7.1%	0.0%	0.0%	2.4%
2011	30.5%	52.5%	7.6%	0.8%	1.7%	6.8%
2012	39.0%	45.1%	9.8%	1.2%	0.0%	4.9%
2013	17.1%	61.0%	9.8%	2.4%	0.0%	9.8%

Table 9.3 – SSOs Less Than 100 Gallons

Year	Total SSOs	SSOs ≤ 100 Gallons	% SSOs ≤ 100 Gallons	% SSOs Discharge to Storm Drain
2007	21	11	52.4%	0.0%
2008	67	43	64.2%	56.7%
2009	68	43	63.2%	88.2%
2010	85	76	89.4%	49.4%
2011	118	88	74.6%	61.0%
2012	82	65	79.3%	62.2%
2013	41	34	82.9%	53.7%

The City has made significant efforts in the operation and maintenance of the collection system such that it has resulted in a significant decrease in SSOs since CY 2011. The total SSOs have decreased from 118 in CY 2011 to 41 in CY 2013. SSOs less than 100 gallons have decreased from 88 in CY 2011 to 34 in 2013. The number of SSOs per 100 miles is trending downward from 20.7 in CY 2011 to 7.2 in CY 2013.

A list of SSOs between CY 2007 and CY 2013 for the separated sewer collection system can be seen in Appendix D.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 10 – SSMP PROGRAM AUDITS

This chapter describes the schedule and methods the City will utilize in evaluating the effectiveness of the SSMP and making revisions to the program. The information contained within this chapter complies with section D13 (x) and D14 of the State WDRs, included in Appendix A.

10.1 State WDRs

Section D13 (x) of the State WDRs requires that, as part of the SSMP, the City must conduct periodic internal audits appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit will focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements identified in this subsection of the State WDRs, including identification of any deficiencies in the SSMP and steps to correct them.

Section D14 of the State WDRs requires the SSMP be updated every five years, and must include any significant program changes. Re-certification by the governing board of the City is required when significant updates to the SSMP are made.

10.2 SSMP Audit Schedule and Procedures

It is the City's intent to maintain an effective SSMP that continues to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur within the City service area.

To assure the SSMP continues to meet these goals, the City proposes to evaluate and modify the program as follows:

- Annual Evaluations – City staff will evaluate the effectiveness and compliance of the operations and maintenance programs.
- Bi-annual Audits – The DOU Environmental and Regulatory Compliance section will conduct audits of SSMP effectiveness and compliance with the State WDRs. The audits will occur every two years from the fiscal year (FY) 2008-2009 SSMP implementation. The first audit was completed in FY 2011/2012, and a second bi-annual audit was completed in FY 2012/2013. The results and recommendations developed from audits will be included in the SSMP as Section VI Audit Results and Recommendations.

The criteria evaluated, analysis conducted, and audit documentation utilized in the bi-annual audit will include the performance measures discussed in Section V Chapter 9 Monitoring, Measurement, and Program Modification of this SSMP. At a minimum the audits will include the following:

- ✓ Review of progress made in development of SSMP elements
 - ✓ Review of monitoring and measurement outlined in Section V Chapter 9 of this SSMP
 - ✓ Identification of successes of implementing SSMP elements and needed improvements
 - ✓ Description of system improvements during the past year
 - ✓ Description of system improvements planned for the upcoming year, with an estimated schedule for implementation
- Comprehensive Review – The DOU Environmental and Regulatory Compliance section will conduct a comprehensive review every five years of SSMP effectiveness and State WDR compliance. The review will be similar to the bi-annual audit with the exception that opportunities for long-term improvements to the SSMP will be researched. Re-certification by the City Council will be requested should the comprehensive review result in significant updates to the SSMP. Significant updates generally mean SSMP updates requiring additional monies to implement the SSMP that must be approved by the governing board.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 11 – COMMUNICATION PROGRAM

This chapter describes the City SSMP communication program. The information presented complies with section D13 (xi) of the State WDRs, included in Appendix A.

11.1 State WDRs

The City must communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the City as the program is developed and implemented.

The City will also create a plan of communication with systems that are tributary and/or satellite to the City's sanitary sewer system.

11.2 Communication Program Discussion

The City will communicate on a regular basis with the public on the implementation and performance of the SSMP using various types of outreach including print media, social media, websites (internet), and public hearings. The City will utilize DOU bill stuffers to inform customers of upcoming issues of concerns related to the SSMP (e.g., upcoming rate changes). The City also maintains a website (www.cityofsacramento.org/utilities) to inform the public about City utilities activities. The City's SSMP will also be published on the DOU's website and will provide a forum in which the public can provide comment on the document.

The updated SSMP will be certified by the City Council at a public meeting.

The City will communicate with systems that are related to the City's sewer system by continuing to participate in the regional State WDRs' coordinating committee that includes SASD, which services residents inside the City, and SRCSD, which delivers flows from the City service area to the wastewater treatment plant. The City attends quarterly regional coordination meetings at SRCSD, at which time both regional collection system and local collection system issues are discussed.

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 12 – SSMP COMPLETION AND CERTIFICATION

This chapter provides the required certifications of compliance for the Sewer System Management Plan (SSMP) and complies with section D14 of the State WDRs, included in Appendix A.

12.1 State WDRs

Both the SSMP and the City's program to implement the SSMP must be certified by the City to be in compliance with the requirements set forth above and must be presented to the City's governing board for approval at a public meeting. The City shall certify that the SSMP and subparts thereof are in compliance with the general WDRs within the time frames required.

12.2 Certification Documentation

The SSMP Development Plan and Schedule was adopted by City Council in July 2007, and City Council certified compliance of the original SSMP in April 2009. Copies of the City Council resolution for SSMP development and the resolution certifying compliance of the original SSMP are included in this chapter.

The State WDRs requires that the SSMP be updated every five years, and also requires re-certification by City Council when significant updates are made. The 2014 SSMP update was re-certified by City Council on April 22, 2014. A copy of the City Council consent to certify compliance of the 2013-2014 SSMP is also included in Chapter 12 of this document.

RESOLUTION NO. 2007-523

Adopted by the Sacramento City Council

July 17, 2007

SEWER SYSTEM MANAGEMENT PLAN – DEVELOPMENT PLAN AND SCHEDULE

BACKGROUND

- A. On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDRs). Order No. 2006-0003, for all publicly owned sanitary sewer collection systems.
- B. The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system.
- C. The WDR require publicly owned collection systems to prevent sanitary sewer overflows (SSOs), develop a Sewer System management Plan (SSMP) to eliminate SSOs, and comply with reporting requirements. In addition, the agency governing board is required to approve at a public meeting the Development Plan and Schedule for preparing the SSMP.
- D. Adoption of the proposed Sewer System Management Plan - Development Plan and Schedule (Exhibit A) will satisfy the WDR requirement.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. The Sewer System Management Plan – Development Plan and Schedule at Exhibit A is approved and adopted.

Table of Contents:

Exhibit A Sewer System Management Plan - Development Plan and Schedule

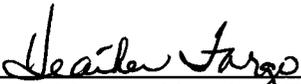
Adopted by the City of Sacramento City Council on July 17, 2007 by the following vote:

Ayes: Councilmembers, Fong, Hammond, McCarty, Pannell, Sheedy,
Tretheway, Waters, and Mayor Fargo.

Noes: None.

Abstain: None.

Absent: Councilmember Cohn.

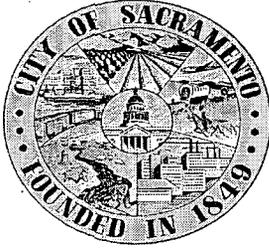


Mayor, Heather Fargo

Attest


Shirley Concolino, City Clerk

City Separated Sewer System Management Plan – Development Plan and Schedule	
Main Task	Due Date
SSMP Development Plan and Schedule	August 2, 2007
Goals and Organizational Structure	November 2, 2007
Overflow Emergency Response Plan	November 2, 2008
Legal Authority	November 2, 2008
Operation and Maintenance Program	November 2, 2008
Fats, Oils and Grease Control Program	November 2, 2008
Design and Performance	May 2, 2009
System Evaluation and Capacity Assurance Plan	May 2, 2009
Monitoring and Program Modifications	May 2, 2009
Program Audits	May 2, 2009
Communication Program	May 2, 2009
Final SSMP, incorporating all of the SSMP requirements	May 2, 2009



REPORT TO COUNCIL

City of Sacramento

915 I Street, Sacramento, CA 95814-2604
www.CityofSacramento.org

Consent
April 21, 2009

Honorable Mayor and
Members of the City Council

Title: Certification of a Sewer System Management Plan

Location/Council District: Citywide

Recommendation: Adopt a **Resolution** certifying compliance of the City Sewer System Management Plan with the State Waste Discharge Requirements for the City separated sewer collection system.

Contact: David L. Brent, Engineering Manager, 808-1420; Sherill Huun, Supervising Engineer, 808-1455

Presenters: N/A

Department: Department of Utilities (DOU)

Division: Engineering Services

Organization No: 14000

Description/Analysis

Issue: As required by the State, the City has coverage under the recently adopted Statewide General Waste Discharge Requirements (WDR) for all publicly owned sanitary sewer collection systems. The City is required by the State to develop and implement a Sewer System Management Plan (SSMP) to eliminate sewer overflows from the separated sewer system owned by the City (see Attachment 2). The City is also required to certify at a public meeting compliance of the SSMP with the State WDR. Adoption of the attached resolution satisfies this certification requirement.

Policy Considerations: Compliance with the WDR, specifically, the requirement to eliminate sanitary sewer overflows, is consistent with the City Council focus areas of public safety, economic development, and sustainability and livability.

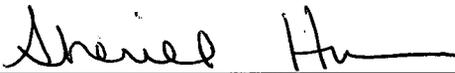
Environmental Considerations: This report concerns administrative activities that will not have any significant effect on the environment and that do not constitute a "project" as defined by the California Environmental Quality Act (CEQA)[CEQA Guideline Sections 15061(b)(3); 15378(b)(2)].

Rationale for Recommendation: With the adoption of the resolution, the City

will comply with the State WDR for the City separated sewer collection system.

Financial Considerations: Oversight of SSMP implementation will be completed with existing resources; however, assessments to be completed with the SSMP may require the City spend additional resources in future years for capital improvements or additional operations and maintenance activities to reduce or eliminate sewer overflows.

Emerging Small Business Development (ESBD): none

Respectfully Submitted by: 
for David L. Brent
Engineering Services Manager

Approved by: 
Marty Hanneman
ACM/Director of Utilities

Recommendation Approved:


for Ray Kerridge
City Manager

Table of Contents:

Report	pg. 1
Attachments	
1 Background	pg. 3
2 Resolution	pg. 4
3 Cd copy of 2008-2009 SSMP	

Attachment 1

Background

On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDR) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems. The purpose of the WDR is to prevent Sewer System Overflows (SSOs). A SSO is any overflow or spill of sewage that has backed up into buildings or private property, or that has entered a waterway, or a spill that has entered the public right-of-way.

The City applied for coverage under the WDR on November 2, 2006 for the separated sewer collection system from the separated system owned by the City (see Attachment 2). The City is required to prevent SSOs from the separated system, develop and implement a Sewer System Management Plan (SSMP) to eliminate SSOs, and comply with SSO reporting requirements. The City Council is also required to certify at a public meeting that the City's SSMP complies with the requirements set forth in the WDR.

The purpose of the City SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system, and to reduce and prevent SSOs, as well as mitigate any SSOs that do occur. The SSMP is required to include specific plan components including goals, legal authority, operations and maintenance activities, design standards, emergency response plans, grease blockage best management practices, capacity studies, audits and capital improvement funding.

The WDR specify the due dates for completion of the SSMP document. The final SSMP must be certified as complying with State WDR by May 2, 2009. The 2008-2009 SSMP attached to this report in electronic format and presented for Council consideration complies with the requirements set forth in the State WDR.

RESOLUTION NO.

Adopted by the Sacramento City Council

CERTIFICATION OF THE 2008-2009 SEWER SYSTEM MANAGEMENT PLAN

BACKGROUND

- A. On May 2, 2006 the California State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (WDR) Order No. 2006-0003 for all publicly owned sanitary sewer collection systems.
- B. The City applied for coverage under the WDR on November 2, 2006 for the City's separated sewer collection system.
- C. The City is required to prevent sanitary sewer overflows (SSOs), develop a Sewer System Management Plan (SSMP) to eliminate SSOs, and comply with reporting requirements. In addition, the City Council is required to certify at a public meeting compliance of the SSMP with the State WDR.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

- Section 1. The City's 2008-2009 Sewer System Management Plan complies with the State WDR and is approved and adopted.

Insert: Certifying Compliance April 2014

V. SEWER SYSTEM MANAGEMENT PLAN

CHAPTER 13 – APPENDICES

Appendix A	State WDRs
Appendix B	Standard Operating Procedure for Cleaning Gravity Sewers
Appendix C	Monthly Wastewater Pump Station Preventative Maintenance Procedures
Appendix D	California Integrated Water Quality System SSO Data

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix A State WDRs

**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as “State Water Board”, finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as “Enrollees”.
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
 - (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (i) **Goal:** The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.
- (ii) **Organization:** The SSMP must identify:
 - (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
 - (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).
- (iii) **Legal Authority:** Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:
 - (a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

- (b) Require that sewers and connections be properly designed and constructed;
 - (c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
 - (d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
 - (e) Enforce any violation of its sewer ordinances.
- (iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:
- (a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
 - (b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
 - (c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
 - (d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

- (e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(v) **Design and Performance Provisions:**

- (a) 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; and
- (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

(vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- (b) A program to ensure an appropriate response to all overflows;
- (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
- (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;
- (e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- (f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

- (vii) **FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:
- (a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
 - (b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
 - (c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
 - (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
 - (e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
 - (f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and
 - (g) Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.
- (viii) **System Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:
- (a) **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

- (b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
 - (c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
 - (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.
- (ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:
- (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
 - (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
 - (c) Assess the success of the preventative maintenance program;
 - (d) Update program elements, as appropriate, based on monitoring or performance evaluations; and
 - (e) Identify and illustrate SSO trends, including: frequency, location, and volume.
- (x) **SSMP Program Audits** - As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the

Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

- (xi) **Communication Program** – The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
Design and Performance Section D 13 (v)				
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee’s offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee’s premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at <http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/ssor/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, “Statewide General Waste Discharge Requirements for Sanitary Sewer Systems” (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that: <ul style="list-style-type: none"> • Reach surface water and/or reach a drainage channel tributary to a surface water; or • Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee’s sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> • Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> • Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> • Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> • SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. **REPORTING REQUIREMENTS**

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13

Date



Jeanine Townsend
Clerk to the Board

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix B Standard Operating Procedure for Cleaning Gravity Sewers

Standard Operating Procedure for Cleaning Gravity Sewers

Purpose

The purpose of this Standard Operating Procedure is to ensure that sewer cleaning is performed in a manner that will produce a high quality work product. Quality is important because it ensures that the sanitary sewers will not experience problems prior to their next scheduled cleaning.

Goal

The goal of cleaning a gravity sewer is to restore the flow area to 95% of the original flow area of the pipe.

Required Equipment and Tools

1. Personal protective equipment (hardhat, steel toe boots, gloves, eye/face protection, hearing protection)
2. Calibrated gas detector
3. Proper safety cones, barricades, flagging, signs or other traffic control devices
4. Confined space equipment (tripod, harness, and ventilation blower)
5. Sanitary sewer system map book
6. Combo sewer cleaner
7. Cleaning nozzle
8. Root saw
9. Debris traps in the sizes that will be encountered during the day
10. Manhole hook or pick-axe
11. Measuring wheel
12. Disinfectant

Required Forms

1. Cleaning Work Order
2. Pre Trip Inspection Form
3. Injury/Damage Report Form

Procedures for Sewer Cleaning Crew

Prior to Leaving the Yard

1. Plan the work so that it starts in the upstream portion of the area and moves downstream.
2. Wherever possible, plan to clean sewers from the downstream manhole.
3. Inspect the sewer cleaning nozzles for wear. Replace nozzles that are excessively worn.
4. If this is the first day that this cleaning unit is being used this week, inspect the first 200 feet of hose and couplings for damage or wear.

At the Jobsite

5. Wear proper personnel protective equipment (PPE).
6. Fill the water tank at or near the first jobsite.
7. Determine and confirm location of upstream and downstream manholes (use street addresses, if possible).
8. Look for any overhead utilities that may come into contact with the vacuum boom during the cleaning operation.
9. Set up proper traffic control by placing traffic signs, flags, cones and other traffic control devices.
10. Move the cleaning unit into the traffic control so that the hose reel is positioned over the manhole.
11. Install the cleaning nozzle on the hose.

Cleaning Operation

12. Insert the debris trap.
13. Start the auxiliary engine.
14. Lower the hose, with a guide or roller to protect the hose, into the manhole and direct it into the sewer to be cleaned.
15. Start the high pressure pump and set the engine speed to provide adequate pressure for the sewer cleaning operation.
16. Open the water valve and allow the hose to proceed up the sewer. The hose speed should not exceed 3 feet per minute.
17. Allow the hose to proceed 25% of the length of the sewer and pull the hose back.
18. Observe the nature and the quantity of debris pulled back to the manhole.
19. If there is little or no debris, allow the hose to proceed to the upstream manhole.
20. If there is moderate to heavy debris, clean the remaining portion of the sewer in steps not to exceed 25% of the length of the sewer.
21. Open the upstream manhole and verify that the nozzle is at or past the manhole.
22. The sewer has been adequately cleaned when:

- Successive passes with a cleaning nozzle do not produce any additional debris, and
23. Determine the nature and quantity of the debris removed during the cleaning operation. Use the codes in Table 4-B-1 to report the nature and quantity of debris. Figure 4-B-1 is an excerpt from the CWEA “Hydroflush Best Practices Manual” publication and sets guidelines for coding debris found during field work.

Table 1 – Criterion for Coding Debris Found During Cleaning

Type of Debris	Clear (no debris)	Light	Moderate	Heavy
Sand, grit, rock	CLR	DL	DM	DH
Grease	CLR	GL	GM	GH
Roots	CLR	RL	RM	RH
Other (specify)	CLR	OL	OM	OH

24. Remove the debris from the manhole using the vacuum unit.
25. Rewind the hose on the reel.
26. Remove the debris trap.
27. Clean the mating surface and close the manhole. Ensure that the manhole is properly seated.
28. Enter the results on the Work Order.
29. Move the cleaning unit, break down and stow the traffic controls.
30. Proceed to the next cleaning jobsite.

At the End of the Day

31. Inspect the equipment and tools for problems.
32. Report any problems with equipment, tools, or sewers that were cleaned during the day to the Supervisor.
33. Turn in all completed Cleaning Work Orders to the Supervisor at end of shift.

Table 2 – Excerpt from CWEA publication, “Hydroflush Best Practices Manual”

Standard Measures of Observed Results			
<p>Next to cleaning the sewer line, effective observation of results is the most important work product of the crew. This information is the basis for defining future maintenance activities. Consistency is important. The standards for “results” for six- and eight-inch diameter sewers are:</p>			
	Clear	Moderate	Heavy
Grit	No observable grit	Less than 5 gallons 15-20 minutes to clean 1-2 passes required Requires cleaning twice or less per year Only fine grit	More than 5 gallons More than 30 minutes to clean More than 4 passes required Requires cleaning four times per year
Grease	No observable grease	Small chunks/no “logs” 15-20 minutes to clean 1-2 passes required Requires cleaning twice or less per year	Big chunks/“logs” Operator concern for downstream plugging More than 30 minutes to clean More than 4 passes required
Liquefied grease		Vacuuming not required	Vacuuming not required
Roots	No observable roots	Thin/stringy roots present No large “clumps” 15-20 minutes to clean 1-2 passes required	Thick roots present Large “clumps” More than 30 minutes to clean More than 4 passes required
Other condition observations: - Pipe material fragments - Soil/dirt - Rock (pipe bedding) - Lost nozzle			

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix C Monthly Wastewater Pump Station Preventative Maintenance Procedures

MONTHLY WASTEWATER PUMP STATION PREVENTATIVE MAINTENANCE PROCEDURES

Separated Wastewater Control System

Sump 003	Procedures
	Blow clean int. of electronics to remove dust and lint. Inspect high sump float.
Sump 006	Procedures
	Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent valve on Pump 1. Exercise influent valve on Pump 2. Exercise effluent valve on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.
Sump 021	Procedures
	Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Clean building. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent valve on Pump 1. Exercise influent valve on Pump 2. Exercise effluent valve on Pump 2. Exercise influent valve on Pump 3. Exercise effluent valve on Pump 3. Exercise influent valve on Pump 4. Exercise effluent valve on Pump 4. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Derag Pump 4 as needed.
Sump 029	Procedures
	inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent valve on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.

Sump 032	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 036	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 040	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 042	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks.</p>

Sump 045	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 048	Procedures
	<p>Task Group #1</p> <p>Replace grease canister as needed on Pump 1. Replace grease canister as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check valve. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks. Check ventilation fan(s).</p>
Sump 049	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 053	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 055	Procedures
	<p>Inspect fencing, gates, openings, etc. Inspect and clean roof drains, downspouts, and gutters. Inspect MCC air filters. Inspect lighting. Inspect and clean deck. Inspect high sump float. Inspect piping, fittings, valves, etc. for damage and leaks. Blow clean int. of electronics to remove dust and lint.</p>
Sump 057	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 079	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 080	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 081	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 084	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor 1. Inspect and purge air compressor 2. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean cotnrol cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 085	Procedures
	<p>Task Group #1 Grease pump bearings on Pump 1 Grease pump bearings on Pump 2 Grease pump bearings on Pump 3 Grease pump bearings on Pump 4 Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect Sump Pump 1. Inspect Sump Pump 2. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Exercise influent vavle on Pump 4. Exercise effluent vavle on Pump 4. Inspect check valves on Pump 1. Inspect check valves on Pump 2. Inspect check valves on Pump 3. Inspect check valves on Pump 4. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Derag Pump 4 as needed. Lubricate locks. Inspect spill kit. Inspect fuel tank. Clean generator room. Inspect ICE log book.</p>

Sump 087	Procedures
	<p>Task Group #1</p> <p>Replace and grease canister as needed on Pump 1. Replace and grease canister as needed on Pump 2. Replace and grease canister as needed on Pump 3. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Inspect check vavles on Pump 3. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Derag Pump 3 as needed. Lubricate locks.</p>
Sump 088	Procedures
	<p>Task Group #1</p> <p>Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 107	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect station lighting outside. Inspect station lighting inside. Wash down wetwell. Lubricate locks.</p>

Sump 119	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect station lighting. Inspect intake air filters Inspect fencing, gates, openings, etc. Inspect piping, fittings, valves, etc. for damage and leaks. Blow clean int. of electronics to remove dust and lint.</p>
Sump 120	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 121	Procedures
	<p>Inspect and clean deck. Inspect high sump float. Inspect fencing, gates, openings, etc. Inspect lighting. Blow clean int. of electronics to remove dust and lint.</p>
Sump 122	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 123	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>
Sump 124	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>
Sump 125	Procedures
	<p>Blow clean int. of electronics to remove dust and lint. Inspect high sump float.</p>

Sump 126	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 127	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Inspect locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 131	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>
Sump 133	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

Sump 134	Procedures
	<p>Inspect high sump float. Inspect and purge air compressor. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Wash down wetwell. Lubricate locks. Derag Pump 1 as needed. Derag Pump 2 as needed. Inspect exhaust fan.</p>
Sump 135	Procedures
	<p>Task Group #1 Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 136	Procedures
	<p>Task Group #1 Replace grease canisters as needed on Pump 1. Replace grease canisters as needed on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed.</p>

| Lubricate locks. |

Sump 137	Procedures
	<p>Task Group #1</p> <p>Grease pump bearings on Pump 1. Grease pump bearings on Pump 2. Grease pump bearings on Pump 3. Grease pump bearings on Pump 4. Inspect and purge air compressor. Inspect and grease driveshaft u joints on pump #1. Inspect and grease driveshaft u joints on pump #2. Inspect and grease u joints on pump #1. Inspect and grease driveshaft u joints on pump #4. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Exercise influent vavle on Pump 3. Exercise effluent vavle on Pump 3. Exercise influent vavle on Pump 4. Exercise effluent vavle on Pump 4. Inspect check vavles on Pump 1. Inspect check vavles on Pump 2. Inspect check vavles on Pump 3. Inspect check vavles on Pump 4. Lubricate locks. Wash down wetwell. Inspect spill kit. Inspect fuel tank. Clean generator. Inspect ICE log book.</p>
Sump 143	Procedures
	<p>Task Group #1</p> <p>Grease pump bearings on Pump 1. Grease pump bearings on Pump 2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>

Sump 145	Procedures
	<p>Task Group #1</p> <p>Replace grease canister as needed on Pump 1. Replace grease canister as needed on Pump 2. Inspect and grease driveshaft u joints on pump #1. Inspect and grease driveshaft u joints on pump #2. Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>
Sump 146	Procedures
	<p>Task Group #1</p> <p>Inspect high sump float. Inspect and purge air compressor. Inspect roof vent. Inspect exhaust fan. Inspect and clean building. Inspect and clean deck. Inspect and clean yard. Inspect fence. Inspect and clean control cabinets. Inspect station lighting outside. Inspect station lighting inside. Inspect sump pump. Exercise influent vavle on Pump 1. Exercise effluent vavle on Pump 1. Exercise influent vavle on Pump 2. Exercise effluent vavle on Pump 2. Inspect check vavle 1. Inspect check vavle 2. Wash down wetwell. Derag Pump 1 as needed. Derag Pump 2 as needed. Lubricate locks.</p>

V. SEWER SYSTEM MANAGEMENT PLAN

Appendix D California Integrated Water Quality System SSO Data

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
657342	12-Sep-07	679	679	6001 43rd Ave.	Grease deposition (FOG)
705991	22-Oct-07	50	50	2076 Acoma St.	Grease deposition (FOG)
706002	22-Oct-07	127	127	1761 59TH AVE	Root intrusion
706810	30-Oct-07	144	144	2600 Fairfield Street	Grease deposition (FOG)
707499	9-Nov-07	85	85	42 Riverstar Circle	Grease deposition (FOG)
707500	9-Nov-07	50	50	7000 Catlen Way	Grease deposition (FOG)
707686	14-Nov-07	100	100	4511 Crestwood	Root intrusion
707902	19-Nov-07	300	300	400 R STREET	Debris
707933	20-Nov-07	550	550	1199 43RD AVENUE	Grease deposition (FOG)
708164	26-Nov-07	20	20	2155 Bernard Way	Root intrusion
708390	29-Nov-07	50	50	3900 FRANKLIN BLVD.	Grease deposition (FOG)
708391	29-Nov-07	600	600	2282 Craig Ave.	Grease deposition (FOG)
708909	10-Dec-07	150	150	7300 Stockdale Street	Grease deposition (FOG)
709623	17-Dec-07	750	750	Sutterville Road & Babich Ave.	Root intrusion
709624	17-Dec-07	35	35	2387 ERICKSON ST.	Root intrusion
709625	17-Dec-07	65	65	2842 SWIFT WAY	Grease deposition (FOG)
710387	26-Dec-07	10	10	3675 REDDING AVE.	Grease deposition (FOG)
710389	26-Dec-07	400	400	3501 BELDEN ST	Grease deposition (FOG)
710390	26-Dec-07	250	250	6745 PENDLETON ST	Grease deposition (FOG)
710574	2-Jan-08	100	100	7020 WILSHIRE CIR	Grease deposition (FOG)
710575	2-Jan-08	100	100	7394 STRATFORD ST	Grease deposition (FOG)
711314	16-Jan-08	150	150	7079 REMO WAY	Grease deposition (FOG)
711315	16-Jan-08	150	150	7651 LAURIE WAY	Grease deposition (FOG)
711316	16-Jan-08	160	160	4591 76TH ST	Grease deposition (FOG)
711317	16-Jan-08	300	300	325 EL CAMINO AVE	Root intrusion
711460	22-Jan-08	60	60	15 Stanislaus Circle	Grease deposition (FOG)
711591	23-Jan-08	125	125	6200 FORDHAM WAY	Root intrusion
711939	28-Jan-08	50	50	6985 Flintwood Way	Grease deposition (FOG)
712047	30-Jan-08	50	50	1466 Janrick Ave.	Grease deposition (FOG)
712248	4-Feb-08	332	332	517 38th STREET	Root intrusion
712249	4-Feb-08	150	150	4230 WARREN AVE	Root intrusion
713035	19-Feb-08	175	175	515 Redwood Ave.	Grease deposition (FOG)
713036	19-Feb-08	150	150	2981 Loma Verde Way	Grease deposition (FOG)
713178	20-Feb-08	400	400	7279 AMHERST	Grease deposition (FOG)
713933	26-Feb-08	65	65	7400 BALFOUR WAY	Grease deposition (FOG)
714046	27-Feb-08	125	125	2665 DEL PASO BLVD	Grease deposition (FOG)
714390	3-Mar-08	50	50	5051 DARIEL DR.	Grease deposition (FOG)
714442	4-Mar-08	25	25	6690 GOLF VIEW DR.	Grease deposition (FOG)
714547	5-Mar-08	75	75	6142 BELLEAU WOOD LN	Grease deposition (FOG)
714937	17-Mar-08	10	10	357 DU BOIS AVE	Grease deposition (FOG)
714942	17-Mar-08	100	100	1009 OLIVERA WAY	Debris
714943	17-Mar-08	25	25	1055 JOHNFER WAY	Vandalism

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
715233	24-Mar-08	10	10	5001 E STREET	Root intrusion
715234	24-Mar-08	50	50	1264 NOONAN DRIVE	Root intrusion
715652	1-Apr-08	425	425	2436 38th AVE	Grease deposition (FOG)
716106	14-Apr-08	15	15	3830 U STREET	Grease deposition (FOG)
716236	17-Apr-08	10	10	476 BLACKWOOD ST	Root intrusion
716731	29-Apr-08	114	114	6401 Hogan Drive	Root intrusion
716825	1-May-08	60	60	1241 MONTE VISTA WAY	Root intrusion
716930	5-May-08	55	55	3234 20th AVE	Grease deposition (FOG)
717570	19-May-08	25	25	15 DON MERLINO CT.	Grease deposition (FOG)
717649	20-May-08	10	10	5620 KINGSTON WAY	Other (specify below)
717724	21-May-08	34	34	6795 Riptide Way	Grease deposition (FOG)
718992	5-Jun-08	50	50	1801 MATSON DR.	Grease deposition (FOG)
719828	18-Jun-08	40	40	7536 Eddylee Way	Grease deposition (FOG)
721807	9-Jul-08	165	165	2328 66th AVE	Root intrusion
722180	14-Jul-08	499	499	2376 CRAIG AVE	Grease deposition (FOG)
723556	25-Jul-08	75	75	6801 DEMARET DR.	Grease deposition (FOG)
724462	11-Aug-08	20	20	4300 ASTORIA ST	Grease deposition (FOG)
724785	18-Aug-08	5	5	6485 OAKRIDGE WAY	Root intrusion
725793	4-Sep-08	75	75	6717 DEMARET DR.	Root intrusion
725795	4-Sep-08	25	25	6637 23RD ST	Grease deposition (FOG)
725854	5-Sep-08	185	185	6717 DEMARET DR	Root intrusion
726243	15-Sep-08	125	125	5712 SURF WAY	Root intrusion
727440	6-Oct-08	20	20	4931 FLORA VISTA LANE	Root intrusion
727768	13-Oct-08	50	50	1000 KATZ AVE	Grease deposition (FOG)
727769	13-Oct-08	175	175	2301 51ST AVE	Root intrusion
728668	29-Oct-08	30	30	7244 AMHERST ST	Root intrusion
728780	31-Oct-08	250	250	5213 G ST	Root intrusion
728876	3-Nov-08	105	105	11 GRANVILLE CT.	Grease deposition (FOG)
728880	3-Nov-08	5	5	7586 MYRTLE VISTA	Root intrusion
729182	12-Nov-08	10	10	400 L STREET	Grease deposition (FOG)
729301	17-Nov-08	440	440	7409 BRAERIDGE WAY	Root intrusion
729302	17-Nov-08	90	90	4120 FRUITA CT	Grease deposition (FOG)
729414	19-Nov-08	30	30	833 PARKLIN AVE.	Grease deposition (FOG)
729964	1-Dec-08	275	275	6500 GREENHAVEN DR	Grease deposition (FOG)
729967	1-Dec-08	95	95	2062 EDGEWATER RD	Grease deposition (FOG)
730194	4-Dec-08	200	200	6691 21st ST	Grease deposition (FOG)
730434	11-Dec-08	105	105	1304 Silver Ridge Way	Grease deposition (FOG)
730435	11-Dec-08	100	100	7255 Riverwind	Grease deposition (FOG)
730530	15-Dec-08	25	25	2984 DEL PASO BLVD	Grease deposition (FOG)
730531	15-Dec-08	50	50	2781 CROMWELL WAY	Grease deposition (FOG)
730532	15-Dec-08	55	55	1043 JOHNFER WAY	Grease deposition (FOG)
730534	15-Dec-08	50	50	6589 DEMARET DR	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
730539	15-Dec-08	60	60	6715 MIDDLECOFF WAY	Grease deposition (FOG)
730596	16-Dec-08	81	81	596 YORK ST	Grease deposition (FOG)
730706	18-Dec-08	100	100	4511 CRESTWOOD WAY	Root intrusion
730719	18-Dec-08	45	45	4208 CANBY WAY	Root intrusion
731446	5-Jan-09	25	25	4308 F ST	Root intrusion
731673	9-Jan-09	500	500	1338 PALOMAR CIRCLE	Grease deposition (FOG)
731719	12-Jan-09	90	90	4861 34TH ST	Grease deposition (FOG)
731999	16-Jan-09	375	375	6510 13TH ST	Root intrusion
732001	16-Jan-09	225	225	4690 CABANA WAY	Grease deposition (FOG)
732168	20-Jan-09	17	17	5191 24TH ST	Root intrusion
732175	21-Jan-09	18	18	2361 GIBSON ST	Grease deposition (FOG)
732176	21-Jan-09	89	89	2152 EDISON AVE	Grease deposition (FOG)
732720	28-Jan-09	45	45	866 EDGEWOOD AVE	Grease deposition (FOG)
732826	30-Jan-09	55	55	2241 HOOKE WAY	Root intrusion
733199	6-Feb-09	200	200	5100 D STREET	Root intrusion
733915	20-Feb-09	60	60	2230 34th ave	Root intrusion
733916	20-Feb-09	50	50	2158 CALLECITA ST	Grease deposition (FOG)
733917	20-Feb-09	150	150	4431 STANDRICH ST	Grease deposition (FOG)
733918	20-Feb-09	30	30	2500 26TH AVE	Root intrusion
733919	20-Feb-09	325	325	2501 ATLAS AVE	Grease deposition (FOG)
733922	20-Feb-09	100	100	3100 ST JOSEPHS DR	Root intrusion
733942	23-Feb-09	500	500	4240 DYMIC WAY	Grease deposition (FOG)
733947	23-Feb-09	60	60	98 ARCADE BLVD	Root intrusion
734820	11-Mar-09	550	550	2293 BABBETTE WAY	Debri-General
734898	12-Mar-09	65	65	5281 25TH ST	Root intrusion
735480	26-Mar-09	25	25	7079 REMO WAY	Grease deposition (FOG)
735481	26-Mar-09	225	225	2293 BABBETTE WAY	Grease deposition (FOG)
735724	31-Mar-09	100	100	Norwood Ave & Silver Eagle Road	Grease deposition (FOG)
736248	13-Apr-09	350	350	777 BELASCO AVE	Grease deposition (FOG)
736929	29-Apr-09	30	30	2466 18th AVE	Grease deposition (FOG)
737292	11-May-09	25	25	1421 CAMPBELL LANE	Grease deposition (FOG)
737293	11-May-09	25	25	4100 28TH ST	Debri-Rags
737328	12-May-09	5	5	7388 WILLOW LAKE WAY	Grease deposition (FOG)
737341	12-May-09	200	200	6300 FENNWOOD CT	Grease deposition (FOG)
737910	26-May-09	125	125	1034 NOGALES ST	Grease deposition (FOG)
738511	4-Jun-09	750	750	STILLBREEZE WAY & 638 LAKEFRONT DRIVE	Debri-General
738660	8-Jun-09	150	150	1861 GLENROSE AVE	Grease deposition (FOG)
738823	9-Jun-09	50	50	1369 LAS LOMITAS CIR.	Root intrusion
738883	10-Jun-09	15	15	3000 SAINT JOSEPH DR.	Grease deposition (FOG)
740747	7-Jul-09	30	30	7304 BENBOW ST	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
740905	9-Jul-09	150	150	7551 GREENHAVEN DR	Pump station failure
743080	14-Aug-09	50	50	7000 23rd STREET	Grease deposition (FOG)
743877	27-Aug-09	40	40	7522 FLORES WAY	Root intrusion
743881	27-Aug-09	200	200	1861 NIANTIC WAY	Root intrusion
743945	28-Aug-09	50	50	2225 63RD AVE	Grease deposition (FOG)
743947	28-Aug-09	109	109	53 DEAN ROAD	Grease deposition (FOG)
744091	1-Sep-09	300	300	1440 OAKHURST WAY	Debri-General
744301	4-Sep-09	50	50	7135 LYNHOLLEN WAY	Grease deposition (FOG)
744412	9-Sep-09	300	300	3951 14TH AVE	Root intrusion
744981	24-Sep-09	50	50	7055 REMO WAY	Root intrusion
744983	24-Sep-09	50	50	2981 LOMA VERDE WAY	Grease deposition (FOG)
745104	28-Sep-09	20	20	1527 LINDA VISTA DR	Root intrusion
745105	28-Sep-09	40	40	2992 ALTOS AVE	Grease deposition (FOG)
745617	14-Oct-09	65	65	7572 COSGROVE WAY	Grease deposition (FOG)
745652	15-Oct-09	150	150	686 ARCADE BLVD	Root intrusion
745715	19-Oct-09	350	350	781 WOODLAKE DR	Root intrusion
745741	19-Oct-09	100	100	6475 GREENHAVEN DR	Grease deposition (FOG)
746641	9-Nov-09	10	10	111 52ND ST	Grease deposition (FOG)
746768	16-Nov-09	80	80	2095 OXFORD ST	Grease deposition (FOG)
746769	16-Nov-09	100	100	341 BELLO RIO WAY	Grease deposition (FOG)
746770	16-Nov-09	100	100	7471 CARELLA	Grease deposition (FOG)
746809	17-Nov-09	75	75	1045 GRAND AVE	Grease deposition (FOG)
746861	18-Nov-09	100	100	4991 CABANA WAY	Grease deposition (FOG)
747189	30-Nov-09	25	25	1008 CONGRESS AVE	Root intrusion
747190	30-Nov-09	100	100	797 BELASCO AVE	Grease deposition (FOG)
747339	7-Dec-09	20	20	4640 S LAND PARK DR.	Root intrusion
747388	8-Dec-09	70	70	7040 13TH ST	Grease deposition (FOG)
747484	14-Dec-09	200	200	1000 KATZ AVE	Grease deposition (FOG)
747510	15-Dec-09	240	240	2020 QUINCY AVE	Grease deposition (FOG)
747612	17-Dec-09	300	300	936 DONDRA WAY	Grease deposition (FOG)
747790	22-Dec-09	60	60	6556 24TH ST	Root intrusion
747882	28-Dec-09	200	200	1840 60TH AVE	Root intrusion
748338	14-Jan-10	50	50	1421 34TH AVE	Grease deposition (FOG)
749009	1-Feb-10	10	10	1145 34th AVE	Grease deposition (FOG)
749282	11-Feb-10	60	60	7416 19TH ST	Grease deposition (FOG)
749571	22-Feb-10	80	80	7720 25TH ST	Grease deposition (FOG)
749742	24-Feb-10	10	10	834 PROW CT	Root intrusion
749743	24-Feb-10	50	50	1370 PALOMAR CIR	Root intrusion
749920	1-Mar-10	100	100	4221 32ND ST	Grease deposition (FOG)
749921	1-Mar-10	100	100	153 JOHNSTON RD	Root intrusion
749922	1-Mar-10	100	100	637 PLAZA AVE	Grease deposition (FOG)
749961	2-Mar-10	50	50	317 ARCADE AVE	Root intrusion

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
750170	5-Mar-10	30	30	3528 OSMER LANE	Grease deposition (FOG)
750172	5-Mar-10	30	30	7013 MIATA CIR	Grease deposition (FOG)
750532	12-Mar-10	60	60	1500 FLORIN ROAD	Other (specify below)
750545	15-Mar-10	75	75	4490 BOLLENBACHER AVE	Grease deposition (FOG)
750602	16-Mar-10	30	30	4361 CURTIS AVE.	Root intrusion
750611	16-Mar-10	20	20	671 LAS PALMAS AVE	Grease deposition (FOG)
751118	30-Mar-10	5	5	3460 MARJORIE WAY	Debri-General
751158	31-Mar-10	50	50	4308 ULRICH WAY	Root intrusion
751247	2-Apr-10	150	150	7788 FREEPORT BLVD.	Debri-General
751310	6-Apr-10	10	10	145 GLOBE AVE	Debri-General
751311	6-Apr-10	30	30	5484 CARLSON DR	Root intrusion
751397	8-Apr-10	20	20	200 39TH ST	Root intrusion
751736	16-Apr-10	46	46	2512 CASA LINDA DR	Debri-General
751781	20-Apr-10	60	60	5600 FRANKLIN BLVD	Grease deposition (FOG)
751811	21-Apr-10	20	20	1095 ARCADE BLVD	Grease deposition (FOG)
751877	22-Apr-10	20	20	735 SANTIAGO AVE	Grease deposition (FOG)
752069	30-Apr-10	1	1	5484 CARLSON DR	Root intrusion
752105	3-May-10	10	10	6142 BELLEAU WOOD LANE	Root intrusion
752490	17-May-10	75	75	7362 STOCKDALE ST	Root intrusion
752565	20-May-10	20	20	7269 CAMINO DEL REY	Grease deposition (FOG)
752566	20-May-10	20	20	2985 DEL PASO BLVD	Other (specify below)
752732	27-May-10	1	1	29 CASWELL CT	Grease deposition (FOG)
753316	14-Jun-10	150	150	500 LAS PALMAS AVE	Grease deposition (FOG)
753317	14-Jun-10	200	200	7415 21ST ST	Grease deposition (FOG)
753719	22-Jun-10	100	100	2124 ROANOKE AVE	Grease deposition (FOG)
754025	28-Jun-10	5	5	5172 TEICHERT AVE	Root intrusion
754026	28-Jun-10	400	400	4901 RIO LINDA BLVD	Grease deposition (FOG)
754359	2-Jul-10	80	80	100 FAIRGROUNDS DR	Root intrusion
754423	6-Jul-10	3	3	949 ACACIA AVE	Grease deposition (FOG)
754704	9-Jul-10	10	10	7 SANTIAGO AVE	Root intrusion
755310	20-Jul-10	50	50	9 RIVERSTAR CIR	Grease deposition (FOG)
755313	20-Jul-10	30	30	2231 KENWORTHY WAY	Grease deposition (FOG)
755340	21-Jul-10	20	20	1634 GLENROSE AVE	Grease deposition (FOG)
755381	22-Jul-10	50	50	1401 CAMPBELL LN	Root intrusion
755449	26-Jul-10	10	10	2241 MURIETA WAY	Root intrusion
756111	17-Aug-10	30	30	1724 FREINZA	Grease deposition (FOG)
756131	18-Aug-10	10	10	207 JOHNSTON ROAD	Root intrusion
756172	19-Aug-10	25	25	2771 FRUITRIDGE RD	Root intrusion
756252	23-Aug-10	100	100	6151 14th ST	Root intrusion
756413	26-Aug-10	10	10	801 ARCADE BLVD	Root intrusion
756476	30-Aug-10	1	1	150 JOHNSTON ROAD	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
756509	1-Sep-10	5	5	6516 HOGAN DR	Grease deposition (FOG)
756637	7-Sep-10	100	100	1543 STERLING ST	Root intrusion
756973	20-Sep-10	60	60	7515 21ST ST	Grease deposition (FOG)
757062	22-Sep-10	50	50	26 SMOKEY LEAF CT	Debri-General
757289	1-Oct-10	65	65	836 57th ST	Grease deposition (FOG)
757396	6-Oct-10	200	200	2226 67TH AVE	Grease deposition (FOG)
757462	8-Oct-10	10	10	2055 CANTERBURY RD	Root intrusion
757463	8-Oct-10	100	100	777 BELASCO	Grease deposition (FOG)
757627	13-Oct-10	5	5	2320 CRAIG AVE	Grease deposition (FOG)
757628	13-Oct-10	25	25	604 DITTMAR WAY	Root intrusion
758098	25-Oct-10	10	10	451 ELEANOR AVE	Grease deposition (FOG)
758180	27-Oct-10	20	20	2001 BERG AVE	Grease deposition (FOG)
758387	5-Nov-10	20	20	7300 24TH ST	Root intrusion
758390	5-Nov-10	100	100	2530 RIO LINDA BLVD	Grease deposition (FOG)
758434	9-Nov-10	10	10	7355 22ND ST	Grease deposition (FOG)
758435	9-Nov-10	50	50	5961 NEWMAN CT	Root intrusion
758458	10-Nov-10	1	1	7553 32ND ST	Grease deposition (FOG)
758734	18-Nov-10	55	55	2225 HOOKE WAY	Root intrusion
759039	2-Dec-10	170	170	3937 PALMETTO ST.	Grease deposition (FOG)
759040	2-Dec-10	500	500	11 GRANVILLE CT.	Grease deposition (FOG)
759041	2-Dec-10	20	20	3848 KROY WAY	Root intrusion
759042	2-Dec-10	15	15	1842 67TH AVE	Grease deposition (FOG)
759044	2-Dec-10	30	30	10 NOAH CT.	Grease deposition (FOG)
759045	2-Dec-10	1	1	6965 MCQUILLAN CIR.	Debri-General
759159	7-Dec-10	100	100	1004 OLIVERA WAY	Grease deposition (FOG)
759160	7-Dec-10	80	80	2412 37TH AVE	Root intrusion
759280	10-Dec-10	10	10	7534 SKELTON WAY	Grease deposition (FOG)
759502	17-Dec-10	15	15	6201 ELVAS AVE	Root intrusion
759611	20-Dec-10	60	60	1871 FERRAN AVE	Grease deposition (FOG)
759614	20-Dec-10	200	200	7554 LOMA VERDE WAY	Grease deposition (FOG)
759615	20-Dec-10	400	400	7443 WINKLEY WAY	Grease deposition (FOG)
759646	21-Dec-10	50	50	7307 22ND ST	Grease deposition (FOG)
759978	29-Dec-10	20	20	5010 DEL RIO RD	Root intrusion
760002	30-Dec-10	100	100	4933 CRESTWOOD WAY	Root intrusion
760088	3-Jan-11	10	10	2605 FAIRFIELD STREET	Grease deposition (FOG)
760090	3-Jan-11	50	50	4661 LARSON WAY	Root intrusion
760372	7-Jan-11	110	110	615 LAMPASAS AVE	Grease deposition (FOG)
760373	7-Jan-11	100	100	7501 MUIRFIELD WAY	Grease deposition (FOG)
760808	11-Jan-11	100	100	1021 JOHNFER WAY	Grease deposition (FOG)
760809	11-Jan-11	60	60	1104 SILVER RIDGE WAY	Root intrusion
760810	11-Jan-11	200	200	7684 19 TH STREET	Grease deposition (FOG)
760811	11-Jan-11	75	75	1636 ROANOKE AVE	Root intrusion

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
761379	19-Jan-11	20	20	73 DEAN ROAD	Grease deposition (FOG)
761380	19-Jan-11	150	150	81 DEAN ROAD	Grease deposition (FOG)
761381	19-Jan-11	50	50	2935 CLAY STREET	Grease deposition (FOG)
761583	21-Jan-11	20	20	2573 LEXINGTON ST.	Grease deposition (FOG)
762220	31-Jan-11	30	30	142 BAXTER AVE	Root intrusion
762222	31-Jan-11	25	25	1182 SILVER RIDE WAY	Root intrusion
762224	31-Jan-11	200	200	2297 BABETTE WAY	Grease deposition (FOG)
762226	31-Jan-11	85	85	6507 4TH AVE	Grease deposition (FOG)
762473	4-Feb-11	50	50	5661 DANA WAY	Grease deposition (FOG)
762474	4-Feb-11	25	25	700 SOUTHGATE RD.	Root intrusion
762521	7-Feb-11	100	100	2285 BABETTE WAY	Root intrusion
762522	7-Feb-11	30	30	4350 BURGESS DR.	Grease deposition (FOG)
762524	7-Feb-11	35	35	2780 WOOD VIOLET WAY	Grease deposition (FOG)
762875	11-Feb-11	30	30	2009 EDISON AVE	Grease deposition (FOG)
762880	11-Feb-11	10	10	567 GARDEN ST.	Other (specify below)
763104	16-Feb-11	20	20	85 BAY DR	Debri-General
763105	16-Feb-11	10	10	7540 18TH ST	Grease deposition (FOG)
763117	16-Feb-11	20	20	2009 EDISON AVE	Grease deposition (FOG)
763343	22-Feb-11	50	50	2225 22nd Ave	Root intrusion
763344	22-Feb-11	50	50	6475 DRIFTWOOD ST.	Grease deposition (FOG)
763690	25-Feb-11	50	50	2547 EDGEWATER RD.	Grease deposition (FOG)
763691	25-Feb-11	25	25	6205 RIVERSIDE BLVD	Grease deposition (FOG)
763692	25-Feb-11	200	200	3925 DRY CREEK RD.	Grease deposition (FOG)
763695	25-Feb-11	250	250	107 GOSS CT.	Grease deposition (FOG)
763789	28-Feb-11	200	200	7208 21ST STREET	Root intrusion
763943	2-Mar-11	20	20	930 ROEDER WAY	Grease deposition (FOG)
764069	7-Mar-11	23	23	5451 PLEASANT DR	Root intrusion
764339	14-Mar-11	85	85	1771 59TH AVE	Root intrusion
764341	14-Mar-11	50	50	7421 CANDLEWOOD WAY	Root intrusion
764606	22-Mar-11	50	50	1125 GLENROSE AVE	Debri-Rags
764607	22-Mar-11	150	150	2621 BEAUMONT ST	Grease deposition (FOG)
764608	22-Mar-11	120	120	5601 CAZADERO WAY	Root intrusion
764663	23-Mar-11	65	65	7437 COSGROVE WAY	Grease deposition (FOG)
764870	29-Mar-11	2500	2500	7600 Green Haven Dr.	Surcharged pipe (Combined CS Only)
764977	31-Mar-11	300	300	2765 FAIRFIELD ST.	Pump station failure
764978	31-Mar-11	100	100	6861 DIEGLE CIR	Grease deposition (FOG)
764980	31-Mar-11	50	50	6985 FLINTWOOD WAY	Flow exceeded capacity (Separate CS Only)
765195	6-Apr-11	100	100	171 51ST STREET	Root intrusion
765535	14-Apr-11	100	100	2424 40th AVENUE	Grease deposition (FOG)
765552	15-Apr-11	25	25	2166 53rd AVE	Other (specify below)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
765799	26-Apr-11	75	75	47 SANDBURG DR	Other (specify below)
765941	29-Apr-11	80	80	5669 EL GRANERO WAY	Debri-Rags
765942	29-Apr-11	35	35	1840 FLORIN RD.	Root intrusion
765972	2-May-11	20	20	7331 CRANSTON WAY	Grease deposition (FOG)
766158	4-May-11	200	200	6655 14TH ST	Grease deposition (FOG)
766159	4-May-11	100	100	1052 GRAND AVE	Grease deposition (FOG)
766250	9-May-11	118	118	808 UNION ST	Grease deposition (FOG)
766315	11-May-11	110	110	5200 RIVERSIDE BLVD	Grease deposition (FOG)
766395	12-May-11	75	75	2166 53RD AVE	Root intrusion
766544	16-May-11	200	200	1134 NOGALES ST	Grease deposition (FOG)
766743	19-May-11	50	50	4318 F STREET	Root intrusion
767236	8-Jun-11	46	46	2941 DEL PASO BLVD	Pump station failure
767483	15-Jun-11	46	46	2724 DEL PASO BLVD	Debri-General
767538	16-Jun-11	76	76	2270 COLFAX ST	Debri-General
767661	21-Jun-11	200	200	1109 LAKE GLEN WAY	Pipe structural problem/failure
767770	23-Jun-11	10	10	3847 SAN CARLOS WAY	Other (specify below)
768032	30-Jun-11	56	56	1239 GRAND AVE	Grease deposition (FOG)
768033	30-Jun-11	50	50	4762 NORM CIR.	Grease deposition (FOG)
768122	5-Jul-11	20	20	6601 FORDHAM WAY	Root intrusion
768167	6-Jul-11	25	25	6801 DEMARET DR.	Grease deposition (FOG)
768238	8-Jul-11	10	10	5961 13th ST	Root intrusion
768335	12-Jul-11	55	55	2964 DEL PASO ROAD	Other (specify below)
768336	12-Jul-11	50	50	6473 OAKRIDGE WAY	Root intrusion
768985	26-Jul-11	200	200	7029 13th ST	Grease deposition (FOG)
769003	27-Jul-11	100	100	763 HAYES AVE	Grease deposition (FOG)
769320	1-Aug-11	300	300	2512 RIO LINDA BLVD	Grease deposition (FOG)
769662	10-Aug-11	16	16	6849 DEMARET DR	Root intrusion
769755	12-Aug-11	3	3	7023 CROMWELL WAY	Grease deposition (FOG)
770039	22-Aug-11	100	100	7320 FLOWERWOOD WAY	Grease deposition (FOG)
770450	30-Aug-11	10	10	762 DIXIEANNE AVE	Grease deposition (FOG)
770509	31-Aug-11	20	20	4631 ATTAWA AVE	Root intrusion
770633	1-Sep-11	23	23	5704 ROSEDALE WAY	Root intrusion
770692	6-Sep-11	200	200	2665 DEL PASO BLVD	Other (specify below)
771011	14-Sep-11	5	5	3936 FELL ST.	Grease deposition (FOG)
771241	20-Sep-11	15	15	1831 60TH AVE	Debri-General
771432	26-Sep-11	20	20	7393 FLORES WAY	Grease deposition (FOG)
771434	26-Sep-11	200	200	5641 JAMES WAY	Grease deposition (FOG)
771564	29-Sep-11	256	256	1654 69th AVENUE	Grease deposition (FOG)
771565	29-Sep-11	22	22	57 STARLIT CIRCLE	Debri-Rags
771583	30-Sep-11	30	30	7466 21st ST.	Grease deposition (FOG)
771636	3-Oct-11	100	100	7200 TAMOSHANTER WAY	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
771637	3-Oct-11	10	10	3908 SAN CARLOS WAY	Grease deposition (FOG)
771638	3-Oct-11	5	5	42 RIVERSTAR CIRCLE	Grease deposition (FOG)
771729	5-Oct-11	15	15	2610 NORWOOD AVE	Root intrusion
771947	12-Oct-11	150	150	1311 NORMANDY LANE	Root intrusion
772191	19-Oct-11	20	20	5121 25th ST	Grease deposition (FOG)
772285	24-Oct-11	5	5	457 SOUTHGATE ROAD	Root intrusion
772358	26-Oct-11	130	130	2334 CORK CIRCLE	Root intrusion
772465	28-Oct-11	50	50	14 DON MERLINO CT	Grease deposition (FOG)
772469	28-Oct-11	86	86	1907 SOUTH AVE	Grease deposition (FOG)
772555	31-Oct-11	374	374	5021 FREEPORT BLVD	Grease deposition (FOG)
772929	9-Nov-11	10	10	2301 51st AVE	Root intrusion
773086	14-Nov-11	134	134	2040 56th AVE	Root intrusion
773372	22-Nov-11	1515	1415	716 Grand Ave.	Grease deposition (FOG)
773496	28-Nov-11	135	100	2611 23rd AVE	Root intrusion
773554	29-Nov-11	10	10	3050 ST JOSEPHS DR	Grease deposition (FOG)
773733	5-Dec-11	366	366	2394 GLEN ELLEN CIRCLE	Grease deposition (FOG)
773761	6-Dec-11	10	10	3072 CALLECITA ST.	Grease deposition (FOG)
773816	8-Dec-11	4	4	3725 CYPRESS ST	Root intrusion
774041	13-Dec-11	30	30	7386 CRANSTON WAY	Root intrusion
774042	13-Dec-11	400	400	420 SANDBURG DR	Root intrusion
774043	13-Dec-11	21	21	2129 56TH AVE	Root intrusion
774045	13-Dec-11	10	8	2163 51ST AVE	Root intrusion
774129	15-Dec-11	45	45	2250 24th AVE	Debri-General
774583	22-Dec-11	20	20	2671 BEESTON AVE	Grease deposition (FOG)
774760	27-Dec-11	42	42	6867 GREENHAVEN DR.	Grease deposition (FOG)
774761	27-Dec-11	30	25	1315 TUGGLE WAY	Grease deposition (FOG)
774762	27-Dec-11	10	10	5014 ASHLAND WAY	Debri-Rags
774765	27-Dec-11	1	1	3250 PALMER ST.	Grease deposition (FOG)
774932	29-Dec-11	185	165	2771 63RD ST.	Root intrusion
775331	4-Jan-12	1	1	781 WOODLAKE DR	Root intrusion
775332	4-Jan-12	7	7	772 LAMPASAS DR	Grease deposition (FOG)
775355	5-Jan-12	249	249	2140 34th AVE	Debri-General
775717	11-Jan-12	10	8	285 ELANOR AVE	Grease deposition (FOG)
775985	18-Jan-12	65	60	1217 RIDGEWAY DRIVE	Grease deposition (FOG)
775986	18-Jan-12	3	0	2256 ARLISS WAY	Root intrusion
776030	19-Jan-12	49	49	5488 CARLSON DR	Root intrusion
776370	25-Jan-12	80	80	1956 NEWPORT AVE	Root intrusion
776372	25-Jan-12	40	40	4605 SUNSET DR	Root intrusion
776556	30-Jan-12	163	163	6260 BELLEAU WOOD LANE	Grease deposition (FOG)
776572	30-Jan-12	182	182	5709 MONTEREY WAY	Root intrusion
776794	2-Feb-12	565	565	925 SECRET RIVER DR	Grease deposition (FOG)
776851	6-Feb-12	5	5	1600 ALVINA AVE	Debri-General

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
777089	9-Feb-12	6	5	2075 OXFORD ST	Root intrusion
777111	10-Feb-12	30	30	2208 AMANDA WAY	Root intrusion
777396	13-Feb-12	1	1	6985 FLINTWOOD WAY	Grease deposition (FOG)
777397	13-Feb-12	2	2	2147 60TH AVE	Grease deposition (FOG)
777398	13-Feb-12	2	2	3447 63RD ST	Root intrusion
777577	16-Feb-12	31	25	453 S. LAND PARK DR	Root intrusion
777578	16-Feb-12	147	140	7031 REMO WAY	Grease deposition (FOG)
777855	23-Feb-12	9	9	4301 EUCLID AVE	Root intrusion
777856	23-Feb-12	2	2	4601 LARSON WAY	Root intrusion
777857	23-Feb-12	21	21	7352 STRATFORD ST	Grease deposition (FOG)
777858	23-Feb-12	73	73	2124 KIRK WAY	Grease deposition (FOG)
777859	23-Feb-12	31	31	7352 STRATFORD ST	Grease deposition (FOG)
777900	24-Feb-12	5	5	5200 RIVERSIDE BLVD	Grease deposition (FOG)
778329	5-Mar-12	139	139	2220 67th AVE	Root intrusion
778330	5-Mar-12	37	37	2152 EDISON AVE	Root intrusion
778331	5-Mar-12	47	47	4691 CABANA WAY	Root intrusion
778642	14-Mar-12	480	480	1504 34th AVE	Root intrusion
778848	20-Mar-12	165	165	173 LOVELAND AVE	Grease deposition (FOG)
778955	22-Mar-12	128	128	1256 47th AVE	Root intrusion
778956	22-Mar-12	48	46	5306 GILGUNN WAY	Grease deposition (FOG)
778957	22-Mar-12	8	6	4108 MCKINLEY BLVD	Root intrusion
779111	27-Mar-12	14	14	4695 FRANCIS CT	Root intrusion
779144	27-Mar-12	45	45	2682 GARY WAY	Grease deposition (FOG)
779215	29-Mar-12	14	14	4661 LARSON WAY	Grease deposition (FOG)
779475	4-Apr-12	278	278	2297BABETTE WAY	Grease deposition (FOG)
779825	10-Apr-12	42	20	4037 MARYSVILLE BLVD	Root intrusion
780468	23-Apr-12	552	552	4520 CRESTWOOD WAY	Debri-General
780690	26-Apr-12	386	386	2432 40th AVE	Grease deposition (FOG)
780812	1-May-12	10	10	5673 LA CAMPANA WAY	Debri-General
780818	1-May-12	19	19	5430 PLEASANT DR	Root intrusion
780819	1-May-12	7	7	7470 29TH ST	Grease deposition (FOG)
781080	9-May-12	99	99	1256 47TH AVE	Debri-General
781081	9-May-12	37	37	2174 56TH AVE	Root intrusion
781157	10-May-12	353	353	1224 40TH AVE	Root intrusion
781377	16-May-12	24	24	3730 MODELL WAY	Grease deposition (FOG)
781499	21-May-12	4	0	4100 ARLINGTON AVE	Root intrusion
782232	18-Jun-12	57	43	5830 BELLEAU WOOD LANE	Grease deposition (FOG)
782558	27-Jun-12	10	10	4591 76th st.	Grease deposition (FOG)
782719	2-Jul-12	3	3	2224 HOOKE WAY	Root intrusion
783262	11-Jul-12	40	40	4270 ATTAWA AVE	Debri-General
783917	23-Jul-12	67	67	5451 PLEASANT DR	Root intrusion
784698	6-Aug-12	12	0	1212 43rd AVE	Root intrusion

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
784724	7-Aug-12	22	22	2511 65th AVE	Grease deposition (FOG)
784725	7-Aug-12	20	20	805 ROUNDTREE CT	Root intrusion
785811	31-Aug-12	252	252	7526 ADDISON WAY	Grease deposition (FOG)
786219	14-Sep-12	75	75	7405 GREENHAVEN DR	Other (specify below)
786290	18-Sep-12	41	22	2641 KIM AVE	Grease deposition (FOG)
786662	27-Sep-12	19	19	89 ARCADE BLVD	Pipe structural problem/failure
786664	27-Sep-12	31	21	7800 FREEPORT BLVD	Debri-General
786665	27-Sep-12	23	23	3824 14TH AVE	Grease deposition (FOG)
786672	27-Sep-12	5	3	5020 34TH ST	Root intrusion
786890	2-Oct-12	94	87	282 RIVERTREE WAY	Grease deposition (FOG)
787024	8-Oct-12	5	5	1179 THEO WAY	Other (specify below)
787060	9-Oct-12	10	2	5025 23RD ST	Root intrusion
787664	29-Oct-12	78	78	1300 58th AVE	Grease deposition (FOG)
787899	6-Nov-12	34	34	7032 EL SERENO CR	Root intrusion
788369	27-Nov-12	33	33	7261 LOMA VERDE WAY	Grease deposition (FOG)
788586	30-Nov-12	28	28	GREENHAVEN DR & MOONLIT CIRCLE	Grease deposition (FOG)
788589	30-Nov-12	1557	1557	924 57TH ST	Grease deposition (FOG)
788786	5-Dec-12	1259	1259	1307 58th AVE	Grease deposition (FOG)
788790	5-Dec-12	913	63	3706 WILLOW ST	Grease deposition (FOG)
788838	6-Dec-12	24	24	7416 19th ST	Root intrusion
788977	12-Dec-12	17	17	3621 27TH AVE	Debri-Rags
788978	12-Dec-12	28	28	7495 21ST STREET	Grease deposition (FOG)
788979	12-Dec-12	92	50	4530 SOUTH LAND PARK DRIVE	Other (specify below)
788980	12-Dec-12	3	3	1024 LAS PALMAS AVE	Grease deposition (FOG)
789235	21-Dec-12	67	67	1209 ridgeway drive	Grease deposition (FOG)
789483	27-Dec-12	19	19	6985 FLINTWOOD WAY	Grease deposition (FOG)
789511	28-Dec-12	75	75	500 N STREET	Other (specify below)
790534	18-Jan-13	12	8	6641 HOGAN DR	Root intrusion
790696	23-Jan-13	3	3	4350 TAYLOR ST	Grease deposition (FOG)
790823	28-Jan-13	3	1	2525 MEADOW WOOD CR.	Grease deposition (FOG)
791092	1-Feb-13	1800	1800	5730 24TH STREET	Root intrusion
791236	5-Feb-13	18	18	617 36TH ST	Debri-General
791237	5-Feb-13	17	5	135 BAXTER AVE	Grease deposition (FOG)
791830	20-Feb-13	31	31	2801 65TH AVE	Grease deposition (FOG)
791831	20-Feb-13	37	37	1785 ARMINGTON AVE	Other (specify below)
791833	20-Feb-13	34	34	2424 40th AVE	Other (specify below)
791876	21-Feb-13	10	3	495 SPINNAKER WAY	Grease deposition (FOG)
792177	27-Feb-13	12	12	7760 FREEPORT BLVD	Debri-General
792261	1-Mar-13	30	30	26 SMOKEY LEAF CT	Grease deposition (FOG)

**California Integrated Water Quality System SSO Data
September 2007 - December 2013**

Spill ID	Spill Date	Estimated Volume, gallons	Estimated Volume Recovered, gallons	Spill Location	Spill Cause
792522	11-Mar-13	10	10	6016 14TH ST	Root intrusion
792754	20-Mar-13	27	27	3941 ELM ST	Grease deposition (FOG)
792914	26-Mar-13	15	15	7518 FLORES WAY	Grease deposition (FOG)
793354	12-Apr-13	40	20	3732 RIPLEY STREET	Grease deposition (FOG)
793386	16-Apr-13	1	1	5121 ELMER WAY	Debri-Rags
793425	17-Apr-13	20	20	1901 MEADOWVIEW RD	Grease deposition (FOG)
793571	23-Apr-13	5	5	612 GRAND AVE	Grease deposition (FOG)
793674	26-Apr-13	61	61	7415 21st ST	Grease deposition (FOG)
794052	10-May-13	70	70	3840 TAYLOR ST	Grease deposition (FOG)
794122	13-May-13	3	0	2171 MEADOWVIEW ROAD	Grease deposition (FOG)
794124	13-May-13	26	26	3437 JOLA CIR	Grease deposition (FOG)
794399	22-May-13	699	699	1042 CLAIRE AVE	Grease deposition (FOG)
794525	28-May-13	516	516	1370 palomar cir	Root intrusion
794955	10-Jun-13	15	0	7337 BENBOW ST	Grease deposition (FOG)
795504	13-Jun-13	118	118	Approximate Location: Sump 53, Basin 88 (Thomas Bros Pg 337 E-5)	Other (specify below)
795765	19-Jun-13	5	5	4651 BRADFORD DRIVE	Grease deposition (FOG)
798969	23-Sep-13	136	106	1000 FRONT STREET	Grease Deposition (FOG)
799159	26-Sep-13	17	17	3736 SCHUTT WAY	Root Intrusion
799691	11-Oct-13	30	30	7079 REMO WAY	Grease Deposition (FOG)
800234	25-Oct-13	28	28	6661 FORDHAM WAY	Other (specify below)
800466	1-Nov-13	119	119	695 PLAZA AVE	Grease Deposition (FOG)
800499	4-Nov-13	140	140	6589 DEMARET DR	Root Intrusion
800669	12-Nov-13	6	6	5011 SOUTH LAND PARK DR	Root Intrusion
800852	19-Nov-13	14	14	5352 Karbet Way	Debris-General
800941	21-Nov-13	10	8	2101 Catskill Way	Grease Deposition (FOG)
801209	27-Nov-13	5	5	2101 Catskill Way	Grease Deposition (FOG)
801348	4-Dec-13	19	19	15 DON MERLINO CT	Grease Deposition (FOG)
801584	11-Dec-13	34	34	100 LINDLEY DR	Grease Deposition (FOG)

VI. AUDIT RESULTS AND RECOMMENDATIONS

The results and recommendations developed from the audit will be included in this SSMP as Section VI Audit Results and Recommendations.

Final SSMP Audit Report



Sacramento SSMP Audit

Subject: Final SSMP Audit Findings

Prepared For: City of Sacramento

Prepared by: Michael Flores, RMC
Gisa Ju, RMC
Glenn Hermanson, RMC

Date: May 20, 2011

The purpose of this document is to report the results of the Sewer System Management Plan (SSMP) Audit conducted by the City of Sacramento (City) covering Calendar Year (CY) 2009 and CY 2010. This report is submitted pursuant to the requirements included in the State Water Resources Control Board Order No. 2006-0003 – Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. The audit requirements are:

“As part of the Sewer System Management Plan (SSMP), the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept in file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee’s compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.”

1 Background

On April 21, 2009, the Sacramento City Council adopted Resolution No. 2009-236 certifying compliance of the SSMP with the State WDR for the City separated sewer collection system. The City certified the completion of the SSMP through the State Water Resources Control Board (SWRCB) California Integrated Water Quality System (CIWQS) in time to meet the May 2, 2009 deadline established by the SWRCB.

The City of Sacramento Department of Utilities is responsible for management, operation, and maintenance of the separated sewer system consisting of 563¹ miles of gravity collection pipes, seven¹ miles of force mains, 14,400² manholes, and 40² pumps stations. The City does not own and is not responsible for maintenance of the lower laterals. The separated sewer system is located primarily in the northeast, east, and southwest sections of the City.

The Department of Utilities is also responsible for management, operation, and maintenance of 257¹ miles of combined sewer system located in the older central City area. Management, operation, and maintenance of the combined sewer system is not included as part of this audit since the SWRCB WDR does not currently require the inclusion of the combined sewer system in the SSMP.

¹ CIWQS Collection System Questionnaire

² 2008-2009 Sewer System Management Plan

In addition, approximately 35 percent of the public collection system within the City limits, in the northwest and southeast sections of the City, are managed, operated, and maintained by Sacramento Area Sewer District (SASD). This portion of the system is also not included in this audit since SASD is responsible for management, operation, and maintenance of this portion of the system.

2 SSMP Audit

This audit, covering from May 2010 through March 2011, is the first SSMP Audit performed to meet WDR requirements for completion of an audit a minimum of once every two years. This audit assesses the current state of SSMP compliance with Provision D.13 of the WDR, identifies any deficiencies found in the SSMP, and recommends corrective actions. In addition the audit provides an evaluation of SSMP effectiveness. The City intends to use the audit results to improve SSMP compliance and performance in reducing sewer overflows.

RMC Water and Environment conducted the audit along with City of Sacramento staff. City staff involved with implementation of activities required by provisions included in Provision D.13 of the WDR were interviewed to develop the findings identified in this audit. The RMC Audit Team members and City of Sacramento staff supporting the audit interviews and audit process include:

Audit Team

Agency	Team Member
RMC	Michael Flores
RMC	Gisa Ju
RMC	Glenn Hermanson
City of Sacramento	Delia McGrath

SSMP audit interviews were primarily performed over a two-day period on March 15, 2011 through March 16, 2011. In addition, a follow-up interview was performed on May 2 and May 3, 2011. The order of the audit interviews, WDR provision audited, and City staff interviewed is documented in the following table:

SSMP Audit Interviewees

Date	WDR Provision Section	Topics	Interviewees (Role)	Meeting Time
3/15/2011	D.13 (vii) D.13 (xi)	FOG Control – Inspection Program Communication Program	Jessica Hess (Public Information Officer)	45 minutes
3/15/2011	D.13 (vii)	FOG Control – Grease Control Devices	Jeffrey Brooks (Building Inspector)	1 hour
3/15/2011	D.13 (vi) D.13 (iv)	Overflow Emergency Response Plan – Field Activities and Reporting Measures and Activities – O&M	Rob Jack (Field Services Superintendent) John Fick (Field Supervisor) Jim Boyd (Field Supervisor) Gilbert Archuleta (Field Supervisor)	3.5 hours

SSMP Audit Interviewees (Continued)

3/15/2011	D. 13 (vi)	Overflow Emergency Response Plan - Dispatch	Gina Knepp (311 Program Manager) Maria Lovato (Field Services Dispatch Staff)	1 hour
3/16/2011	D.13 (iv)	Measures and Activities – O&M (Cont'd)	Rob Jack (Field Services Superintendent) John Fick (Field Supervisor) Jim Boyd (Field Supervisor) Gilbert Archuleta (Field Supervisor)	3 hours
3/16/2011	D.13 (iii)	Legal Authority – Illicit Discharges	Humberto Amador (Water Quality Associate Engineer)	30 minutes
3/16/2011	D.13 (iv) D.13 (viii) D.13 (v)	Measures and Activities – Renewal Program Capacity Management Design and Construction Standards	Rick Batha (Supervising Engineer - CIP) Rick Matsuo (Supervising Engineer – Asset Management) John Fick (Field Supervisor)	2.5 hours
3/16/2011	D.13 (iv)(b) D.13 (vi)(b)	Measures and Activities – O&M – Pump Stations Overflow Emergency Response Plan – Pump Stations	Bruce Baker (Supervising Plant Operator)	1.5 hours

3 Definitions

STRENGTHS AND KEY ACCOMPLISHMENTS:

Areas where the requirements of the SSMP and the goals of the organization have been met or exceeded.

NON-COMPLIANCE:

A process or outcome resulting in the SSMP not currently being in compliance with the WDR/SSMP requirements.

MAJOR NON-CONFORMANCE:

Moderate to high risk that a process or outcome of a process will result in WDR non-compliance or in not meeting accepted practices, prescribed rules or regulations, or specific standards.

MINOR NON-CONFORMANCE:

Low risk that a process or outcome of a process will result in WDR non-compliance or in not meeting accepted practices, prescribed rules or regulations, or specific standards.

OTHER FINDINGS AND OPPORTUNITIES:

Findings presenting opportunities to improve current plan, programs, processes or procedures.

4 Summary of Audit Results

The following is a summary of the audit results:

- The audit identified 6 strengths and implementation accomplishment identified in Section 5.
- The audit found 3 non-compliance deficiencies associated with Waste Discharge Requirements. These are explained in Section 6.1.
- The audit found 10 major non-conformance deficiencies which are not direct violations of the WDR requirements yet are considered key breakdowns in either programs or processes that may potentially result in future regulatory or compliance issues. These are explained in Section 6.2.
- The audit found 9 minor non-conformance deficiencies, many of which will be resolved with a comprehensive update of the SSMP document. These are explained in Section 6.3.
- The audit identified 7 other findings and opportunities which, if implemented, will improve the effectiveness of the SSMP. These are explained in Section 6.4.

Audit results are further summarized in the following table.

Finding Type	Number of Findings
Strengths and Implementation Accomplishments	23
Non-Compliance	4
Major Non-Conformance	12
Minor Non-Conformance	10
Other Findings and Opportunities	9

5 Strengths and Implementation Accomplishments

The following strengths and implementation accomplishments were identified during the audit.

Strengths and Implementation Accomplishments

WDR Provision	Strengths and Implementation Accomplishments
D.13 (iv)(a)	The City has Geographical Information System (GIS) based mapping for all sewer and drainage pipelines and structures. The GIS mapping includes important attribute information regarding manholes, gravity sewer pipes, drainage pipes, force mains. The GIS also includes pump stations, valves and vents, waterways, levees, drop inlets, and gutter drains. Having both sewer and drainage systems on one set of GIS maps is an important tool in containing SSOs which enter the drainage system.
D.13 (iv)(a) D.13 (iv)(b)	The City has developed mapping tools for tracking sewer cleaning efforts, sewer overflows, and areas of the City with accumulation of roots and grease.
D.13 (iv)(a) D.13 (iv)(b)	The City has installed SCADA in all pump stations and monitors pump stations 24-7. Pump station alarms are communicated through SCADA and response is dispatched immediately.
D.13 (iv)(b)	The City has either on-site secondary power or a selection of City-owned generators available to provide power to the City's pump stations. A flat bed truck with an auxillary diesel fuel tank is utilized to re-fuel generators.
D.13 (iv)(b)	The City re-organized to create crews dedicated to achieving the overall system-wide cleaning and inspection goals of the SSMP. This has enabled the City to maintain a focus on accomplishing objectives of the SSMP even in the midst of staffing reductions over the past two years.
D.13 (iv)(b)	Plant Services maintains a database of prioritized maintenance needs which is reviewed once per week by the Maintenance Superintendent. Higher priority needs are communicated to up the chain-of-command once per week to generate additional organizational focus.
D.13 (v)	One extra pump is constructed into each pump station and is kept active and operational at all times. This extra pump provides redundancy in the case of a pump failure.
D.13 (vi)(b)	The City has a process to quickly update the cell phone contact lists of all collection system field employees, supervisors, and management staff. This process keeps the contact phone numbers for emergency response up-to-date.
D.13 (vi)(b)	The City has installed GPS on all first responder vehicle to support efficient routing of first responder resources to sewer overflow calls. Dispatches utilize a system enabling them to map the location of customer complaints and to determine the location of an event such as an overflow and whether the Department of Utilities has responsibility for overflow response or another entity.

WDR Provision	Strengths and Implementation Accomplishments
D.13 (vi)(f)	Field Services has implemented a program to perform event-driven preventive maintenance activities during rain events called Rain Patrol. This program includes a Winter Prep Manual communicating the activities to be performed. The program is focused on addressing potential maintenance issues in known to be problem locations during rain events.
D.13 (vi)(f)	Plant Services has implemented a Rain Patrol activity that performs a route readiness inspection prior to rain events. Operators complete a questionnaire identifying issues might improve pump station reliability for the coming winter season.
D.13 (vi)(f)	The City maintains a Sump Book documenting every sewer and drainage pump station including maps of the station location, number of pumps, horsepower and pumping capacity of pumps, force main locations and discharge locations, and the amount of time the pumps can be out of service before the station overflows. This is an important tool for supporting emergency response to a pump station-related failure potentially resulting in an SSO event.
D.13 (iv)(e)	The City has machinists and a fabrication shop capable of manufacturing a majority of mechanical pump station components in the case of mechanical component wear or failure.
D.13 (vi)(a)	The City has developed a reliable sewer overflow reporting process and procedures along with training and quality control protocols resulting in consistent internal and external documentation. Reporting consistency has been recognized in the 2010 Statewide report.
D.13 (vi)(b)	The City has implemented a swing shift to improve SSO response in the evenings.
D.13 (vi)(d)	The City has implemented an internal training program for SSO emergency response training to appropriately train staff on an on-going basis. The training includes staff from both sewer and drainage maintenance, both of which support overflow response activities. Training materials include an SSO response training manual.
D.13 (vi)(f)	The City's geographical, system configuration, and protocols for coordination between Field Services and Plant Services results in a very high capture rate for sewage spilled from the system. Since 2007, the City has not released any sewage to surface waters.
D.13 (vi)(f)	The City has installed quick connects at pump stations to enable Plant Services crews to quickly bypass the flow from a pump station.

WDR Provision	Strengths and Implementation Accomplishments
D.10	No observed capacity-related SSOs.
D.13 (viii)(a)	City has assessed capacity of backbone (trunk sewer) network for entire separated system (49 basins) using a spreadsheet analysis which compares estimated peak wet weather flows for a design event to an estimate of full pipe capacity based on a uniform set of design criteria. Master Plans based on flow monitoring and hydraulic modeling have been prepared for some basins. City is also conducting a sewer rehabilitation program (including pre- and post-rehab flow monitoring) in one basin identified as having high I/I to identify most effective approaches to reduce infiltration.
D.13 (vii)(f)	The City has developed a fats, oils, and grease (FOG) door hanger for use by collection system crews in communicating best practices to customers when grease issues are identified in the sewer system.
D.13 (vii)(f)	The City has a media packet utilized by FOG control inspectors in communicating the overall FOG program to food service establishments. The media packet includes information about the overall program, best management practices for grease source control including a DVD and best practices poster.
D.13 (ix)	The City has developed an technical team focused on reviewing SSO data and mapping to develop enhance sewer cleaning strategies and to identify needed cleaning resources.
D.13 (xi)	The City participates in periodic meetings with regional partners including Sacramento Regional County Sanitation District, Sacramento Area Sewer District, and City of Folsom. These meetings provide an effective and timely forum for communicating and resolving issues between regional agencies as well as opportunities for working together on initiatives such as the Sacramento Regional FOG Program which facilitates the development of outreach and educational materials for businesses and residences in the Sacramento area.

6 Deficiencies and Corrective Actions

Several deficiencies were identified during the audit and are shown in the table on the following page with the planned corrective actions. The City intends to complete these corrective actions during CY 2012 and CY2013. Deficiencies were divided into four categories and coded with a letter. The deficiency categories are coded and defined as follows:

Deficiency Definitions

Deficiency Type	Deficiency Type	Deficiency Definition
A	Non-Compliance	A process or outcome resulting in the SSMP not currently being in compliance with the WDR/SSMP requirements.
B-major	Major Non-Conformance	Moderate to high risk that a statement in the SSMP is not fully conformed. Moderate to high risk to the success of the SSMP.
B-minor	Minor Non-Conformance	Low risk that a statement in the SSMP is not fully conformed. Low risk to the success of the SSMP.
C	Other Findings	Areas where there is an opportunity for greater efficiency and to streamline processes.

6.1 Non-Compliance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	<p>The SSMP does not include a plan and schedule for regular inspection of sewer pipes. Appendix E of the SSMP includes information regarding the plan for inspection of the system. It states that the system will be inspected in two phases beginning in 2009. The first phase is to inspect approximately 70 miles over the first two years of the program which amounts to approximately 36 miles in Year 1 and 34 miles in Year 2. Based on Appendix E the initial phase should have been completed by December 2010. The City is currently behind schedule in Phase 1 of the inspection program. The remaining 482 miles of the system is planned to be inspected in the following 5 years. This amounts to approximately 96 miles of inspection per year. This is near three-fold the amount of inspection currently being performed. It is not clear whether the City has identified adequate resources to achieve a three-fold increase in inspection production.</p>	<p>Update the SSMP to include a plan and schedule for achieving the initial CCTV inspection of the sewer mains. The plan and schedule should indicate the miles of inspection planned per year.</p>	A

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	The rehabilitation and replacement plan included in the SSMP does not address proper management and protection of the infrastructure assets. It is understood the City is in the process of collecting CCTV data to project the long-term needs of the infrastructure, yet, the SSMP does not include a plan and schedule for performing condition assessment, prioritizing needs, identifying projects, and developing a long-term capital improvement program plan along with a schedule for developing funds for the long-term capital improvement plan.	Update the SSMP to include a plan and schedule for completing condition assessment, identifying capital improvement projects, and developing funds for the long-term capital improvement plan.	A
D.13 (iv)(c)	The SSMP does not include a plan and schedule for regular inspection of manholes.	Update the SSMP to include a process and plan for inspecting and evaluating manhole condition.	A
D.13 (iv)(e)	Although the City has performed criticality analyses for pump stations at the station level, an analysis has not been performed to identify specific critical replacement parts required.	Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure.	A

6.2 Major Non-Conformance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.10	Spreadsheet hydraulic analysis has identified potential capacity deficiencies in some basins based on design criteria used for the evaluation. It is not known whether or not those deficiencies could result in overflows during a design peak wet weather event.	Conduct further verification and analysis of these identified deficiencies to determine potential risk of overflows. This work could include verification of pipe slopes and depths to refine pipe capacity and/or acceptable surcharge, flow monitoring to verify flows and flow criteria, surcharge monitoring to verify flow levels during large storm events, and/or dynamic hydraulic modeling. Also, consider developing criteria defining allowable surcharge (or minimum freeboard) that provides for an acceptable risk of overflows.	B-major
D.13 (ii)(c) D.13 (vi)(a) D.13 (vi)(c)	The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP or the Standard Operating Procedures for Emergency Response, especially with respect to who is responsible for notifications CalEMA and County Health and reporting to SWRCB and RWQCB in the case of an SSO released from a pump station site or due to a pump station failure.	Clarify the existence of geographical division of responsibilities for North and South emergency response during daytime operations for sewer collections. Incorporate chain of communication in the event of a pump station SSO. Clarify chain of communication during after-hours operation.	B-major
D.13 (iv)(b)	The SSMP states that part of the sewer cleaning effectiveness evaluation includes a review of the data collected in the maintenance crew feedback forms. The City does not appear to be using the maintenance feedback forms or collecting maintenance feedback information by specific asset.	Update the SSMP to reflect actual business process for evaluation of the Targeted Maintenance Program.	B-major

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(b)	The City uses Azteca Cityworks to document scheduled and conducted activities. Although possible, the current process and system configuration available for documenting work order activities does not enable the City to accurately document the maintenance date or feedback for specific assets in an easily analyzable manner. It is difficult to analyze and use information stored in work orders pertaining to specific assets for management reporting, decision-making, or mapping.	Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture. Incorporate data analysis, especially in the form of mapping of data, into the data QA/QC process.	B-major
D.13 (iv)(b)	Over 60 percent of sewer overflows reported in the SWRCB CIWQS database since 2007 were caused by grease accumulation. This is an indicator the current strategy to control grease accumulation is not working.	Analyze known grease overflows, areas with high levels of grease generation, and other available maintenance data to update Fats, Oils, and Grease blockage control strategies. Include enhanced source control strategies.	B-major
D.13 (iv)(b)	Over 33 percent of sewer overflows reported in the SWRCB CIWQS database since 2007 were caused by root blockages. This is an indicator the current strategy to control root accumulation is not working.	Analyze known root blockage overflows, areas with high levels of root blockages, and other available maintenance data to update control strategies.	B-major
D.13 (iv)(c)	The SSMP documents \$3.3 million of rehabilitation and replacement capital improvements over the next five years with an approved five-year capital improvement program funding for \$2.08 million for the separated system. The City is underfunding currently identified rehabilitation and replacement needs.	Identify funding and implement projects to address currently known rehabilitation and replacement needs or explain why currently known rehabilitation and replacement needs are not being addressed in the 5-year CIP program.	B-major

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (vi)(b)	SSO response documents do not address overflows from pump stations and force mains. Overflows from these locations can create significant volumes of sewage in a short amount of time and benefit from having contingency plans in place in the event of a failure.	Develop pump station failure contingency plans indicating each pump station, location, whether it is equipped with alarms, on-site back-up pumps, and back-up power generators. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. In addition, the wet well capacity at each pump station should be provided along with an estimate of how much storage time the wet wells would provide under different flow conditions. It should identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up. Finally, the plan should identify an operations or bypass approach in the case force main failure.	B-major
D.13 (vii)(e)	The City currently does not have adequate staffing assigned to perform FOG investigations, initial Food Service Establishment inspections, and follow-up inspections required to effectively enforce and impact FOG generation from FSEs.	Perform an analysis to estimate staffing required to accomplish FOG investigations, initial FSE inspections, and follow-up FSE inspections and enforcement. At a minimum, identify staffing required to perform inspections on FSEs located within areas having higher SSO rates due to grease accumulation (grease zones). Include a plan to either hire staff or hire contractors to perform FSE inspections and enforcement.	B-major

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (vii)(f)	<p>Although the City has a Targeted Maintenance Program for sewer pipe susceptible to blockages, the original reason for a pipe being place on the Targeted Maintenance schedule is not documented in a way that is easily analyzed. In addition, since maintenance feedback is not being collected and documented in the CMMS for specific pipes, it is difficult to analyze ongoing maintenance issues on specific pipes. Therefore, it is difficult to determine which pipes are on a Targeted Maintenance Program due to roots, grease, debris, etc.</p>	<p>Implement a process to document the type and severity of maintenance issues associated with specific pipe assets within work orders along with date the issue was identified.</p>	<p>B-major</p>

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
<p>D.13 (vii)(g)</p>	<p>The City has not implemented an effective source control program for food service establishments (FSEs). Several City departments are involved in different aspects of the FOG control program involving FSEs including:</p> <ul style="list-style-type: none"> • City Development Department Building Division (grease removal device installation) • County Environmental Management Department, Environmental Health Division (Responsible for building permit approval) • DOU Field Services Division field crews, EMD Water Protection Division stormwater inspectors, and EMD Health Inspectors (Responsible for enforcement) <p>Once an FSE is in operation with a grease removal device that has been accepted by the City, several departments are involved in FSE inspections, yet none of these currently have a primary responsibility of performing periodic inspections of the maintenance and performance of the grease removal device.</p> <p>The City has initiated a program to target 50 FSEs for inspection based on known grease problems location in the system. This is a step in the right direction, yet is potentially too small of a set of FSEs to address all of the FSEs having grease removal challenges that are connected to the City system. There are approximately 2,000 FSEs in the City and 50 FSEs represent only 2.5 percent of the total.</p>	<p>Develop and implement a program to perform food service establishment (FSE) inspections for all FSEs flowing into areas with known grease accumulation issues in the collection system.</p> <p>Perform analysis of sewer cleaning findings and CCTV inspection data to define grease accumulation zones and develop a plan to perform inspections of FSEs flowing into these zones, including inspections of grease removal equipment and maintenance records.</p> <p>Clearly define roles and responsibilities of the different City departments and divisions responsible for accomplishing activities in the program plan.</p> <p>Develop a staffing plan to perform the planned inspections. Include the staffing required to perform follow-up inspections and enforcement, if necessary.</p>	<p>B-major</p>

Sacramento SSMP Audit

SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (viii)(c),(d)	City's CIP does not address all (most?) identified capacity deficiencies.	Further evaluate deficiencies (see Corrective Action for WDR Provision D10) and identify projects to be included in CIP with schedules and budgets	B-major

6.3 Minor Non-Conformance Deficiencies and Corrective Actions

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (ii)	The maintenance supervisors responsible for implementing key maintenance programs included in the SSMP are not included on the SSMP Contact List.	Include contact names, phone numbers, and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs.	B-minor
D.13 (ii)	The division of responsibility between Field Services and Plant Services is not clear within the SSMP document. Field Services is responsible for management, operations, and maintenance of the separate sewer systems including sewer mains, manholes, and force mains beyond the fenceline of pump station facilities. Plant Services is responsible for management, operations, and maintenance of pump stations within the separate sewer system including underground piping within the fenceline of these pump station facilities.	Clarify responsibility of the sewer mains, manholes, and force mains versus the pump stations within the Chapter 2 – Organization section.	B-minor
D.13 (iv)(b)	The SSMP does not clearly state the magnitude of the sewer preventive maintenance program activities (i.e., approximate annual miles of preventive maintenance, routine maintenance, root control, CCTV inspection, etc.)	Update the SSMP to include the approximate magnitude of preventive maintenance activities being performed annually to maintain the sewer system.	B-minor
D.13 (iv)(b)	Maintenance feedback forms for documenting the level of debris found in pipes during maintenance activities are not currently stored in the CMMS. The CMMS is not currently configured to capture this information for individual assets when more than one asset is included on a work order.	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning. This should result in an electronic database of coded maintenance feedback history by specific asset.	B-minor
D.13 (iv)(b)	Chemical root control activities are not documented in the CMMS.	Document chemical root control activities in the CMMS including date, pipeline asset, and crew or contractor that performed the chemical treatment.	B-minor

Sacramento SSMP Audit

SSMP Audit Findings

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (iv)(c)	The SSMP does not discuss the current magnitude of repair activities performed to address known sewer main deficiencies. Currently, sewer repairs are the primary means for addressing system deficiencies and should be discussed in more detail to show the City is addressing known system deficiencies.	Update the SSMP to include additional detail documenting the number of repairs performed in recent history and on an annual basis.	B-minor
D.12	Technical memorandum and hydraulic analysis report were prepared by qualified engineers but not stamped	Capacity assessment documents should be stamped by a registered engineer.	B-minor
D.13 (viii)(a)	Although most assumptions used for the hydraulic analysis appear to be reasonably conservative (e.g., flow factors, minimum pipe slope), there may be some areas where the assumptions are not conservative (areas with higher than typical I/I rates, sewers with less than minimum slope).	Conduct additional analyses (e.g., flow monitoring, surveying or as-built drawing research, sensitivity analyses) to confirm or refine analysis assumptions in areas where flatter slopes or higher I/I are suspected.	B-minor
D.13 (viii)(b)	Design criteria not officially adopted	Update Design and Procedures Manual to include design criteria used for the hydraulic analysis. In future, update design criteria as needed based on results of additional flow monitoring and modeling to refine flow factors.	B-minor

WDR Provision	Identified Deficiency	Corrective Action	Deficiency Type
D.13 (xi)	<p>The regular communication with the public of the implementation and performance of the SSMP can be improved. Currently, a search on the City website for “SSMP” or “Sewer System Management Plan” does not result in a link to any information on the SSMP. Within the Utilities Department webpage under Sewer there is mention of a draft “Sanitary Sewer Management Plan” being available for review at 1395 35th Ave. On the main Utilities webpage, a “Sewer Management Plan” link provides access to a .pdf of the current final Sewer System Management Plan.</p>	<p>At a minimum, the City should update the City website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should have a webpage on the City’s website containing a paragraph describing the SSMP and explaining where additional information is available. The City should correct the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave. This should be updated to indicate the final version is available or should provide a link to the .pdf. The website should also indicate a process for the public to provide comment either through an e-mail address or contact person.</p>	<p>B-minor</p>

6.4 Other Findings and Opportunities

WDR Provision	Finding	Opportunity	Deficiency Type
D.13 (i)	Chapter 1-Goal includes additional definitions, linkages to other goals, and identification of parties responsible for meeting the goal. Most of this information belongs in other portions of the document.	<p>The definition of SSO is already included on the Abbreviations and Acronyms page.</p> <p>The linkage of the SSMP to larger DOU Strategy should be separated from the SSMP Goal by a new sub-section heading such as “Linkage to Department-Wide Strategy”.</p> <p>The identification of the Departments responsible for meeting collection management goals belongs in the Chapter 2 - Organization.</p>	C
D.13 (ii)	Plant Services is responsible for responding to pump station SSOs and performing notifications and reporting associated with pump station overflows. The City does not currently have a Legally Responsible Official in CIWQS from Plant Services.	A representative from Plant Services should be included as an authorized representative for plans, programs, procedures, and reporting related to pump station facilities and submitted as a Legally Responsible Official in CIWQS.	C
D.13 (iv)(b)	The system for identifying sewer pipelines requiring more frequent cleaning and targeting maintenance at known problem areas is not effectively supported by maintenance feedback collected and stored in the CMMS from preventive and routine cleaning activities. The actual process currently utilized to identify and update target and frequent cleaning continues to rely on communication processes outside of the CMMS.	<p>Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning. This should result in an electronic database of coded maintenance feedback history by specific asset.</p> <p>Build on this process with the implementation of a standardized approach to analyzing coded maintenance data to determine changes to maintenance frequency and maintenance method.</p>	C

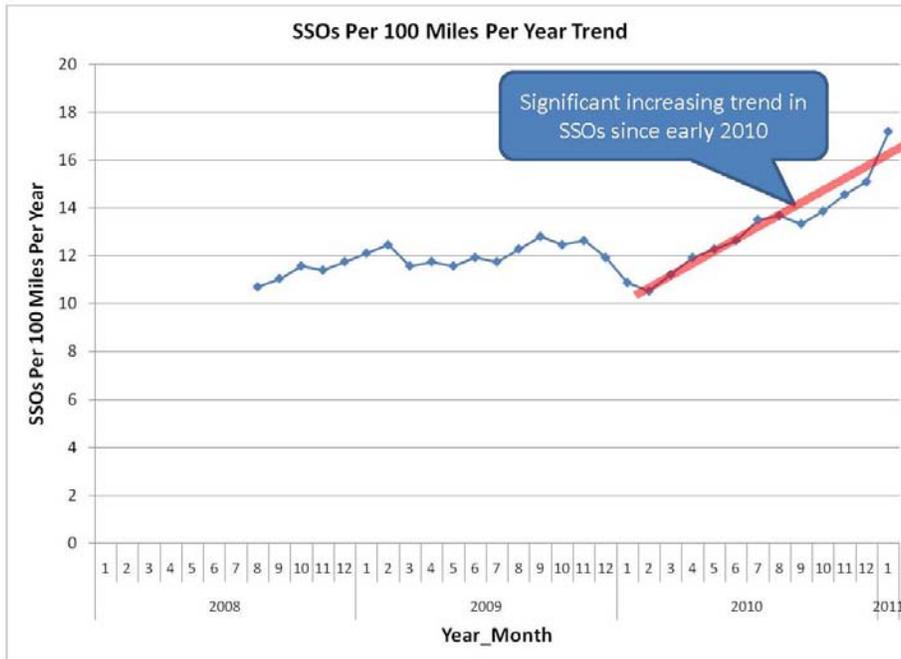
Sacramento SSMP Audit

SSMP Audit Findings

WDR Provision	Finding	Opportunity	Deficiency Type
D.13 (iv)(b)	Chemical root control activities performed by contractors are not coordinated with on-going sewer preventive maintenance activities.	Implement a process to coordinate chemical root control activities with other sewer maintenance activities. At a minimum, the date and location of foaming should be communicated with Field Services to give Field Services the opportunity to remove pipeline assets recently foamed from the hydroflushing schedule so as not to negate the effects of the chemical treatment.	C
D.13 (vii)(g)	The City Development Department Building Division and the Department of Utilities Field Services Division has not developed an effective process for communicating information with each other regarding grease removal equipment existence, acceptance, or attributes.	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the food service establishment inspection program.	C
D.13 (viii)(a)	For most basins, flow estimates are not confirmed by flow monitoring	Conduct flow monitoring in selected basins, particularly those where the preliminary hydraulic analysis indicates potential capacity deficiencies	C
D.13 (viii)(a)	Maps and tables in Basin Summary Reports are not clear enough to identify which pipes were included in the analyzed backbone system and specific segments associated with each node	Improve mapping in reports. Also consider including a schematic diagram of basin configuration showing which basins pump or discharge into other basins and where they are connected to the SRCSD interceptor system.	C
D.13 (viii)(a)	Little I/I source detection has been done to identify potential inflow sources that could result in high peak flows and potential SSOs	Consider I/I source detection program (e.g., smoke testing) in targeted basins with highest peak flows or areas suspected of having greater probability of direct inflow sources	C
D.13 (ix)	Current version of the SSMP includes an Update Schedule indicating that the City will be performing Quarterly Updates of the document. It is not clear whether any updates have been performed to the document since the initial version was generated.	Remove the Update Schedule page from the SSMP. Perform updates as appropriate and at least once every 5 years.	C

7 SSMP Effectiveness

Analysis of City SSOs in the State Water Resources Control Board CIWQS database indicates an increasing trend in SSOs since early 2010.



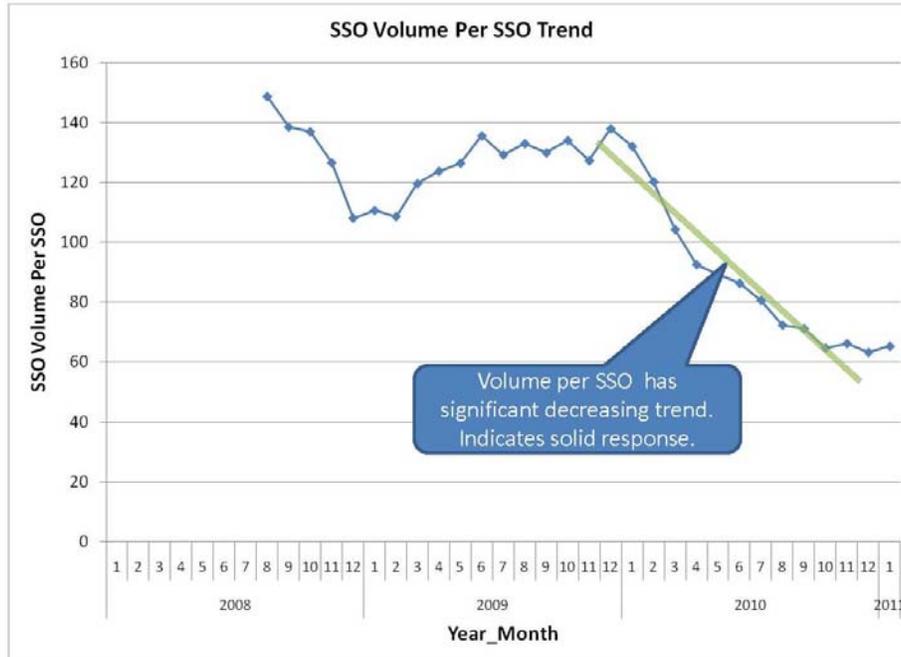
Although City SSOs are increasing in frequency, the total volume spilled per 100 miles of sewers is decreasing steadily.



Sacramento SSMP Audit

SSMP Audit Findings

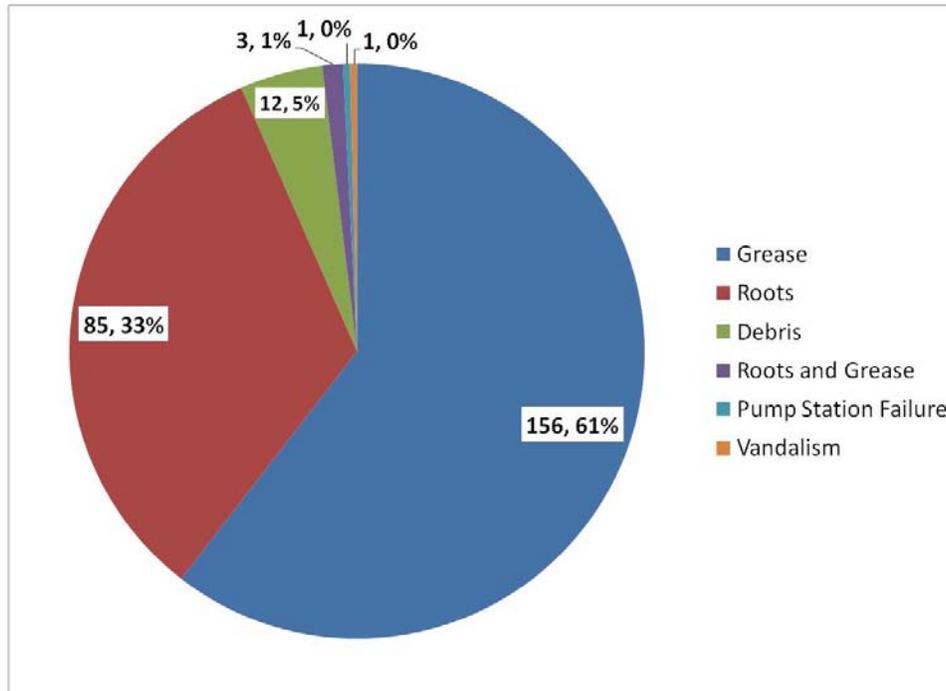
City SSO volume is decreasing due to a decreasing trend in the volume per SSO. This indicates the City is effectively responding to SSO events.



This is further illustrated by the steady decrease in the City's average response time to SSOs which is between 25 to 30 minutes on average.



An analysis of all City separated system sewer overflows in the SWRCB CIWQS database reported between September 5, 2007 and February 18, 2011 indicate majority of SSOs (61 percent) are caused due to grease accumulation. The next highest cause of SSOs is root blockages.

Breakdown of SSO Causes for SSOs Occurring Since September 5, 2007

The overall State average as of the May 2010 Statewide SSO Reduction Program Annual Compliance Update noted similar trend reversals in overflow volumes. However, only 25 percent of the statewide spill volume is recovered, while the City routinely recovers 100 percent of spill volume. In addition, 82 percent of all statewide sewage spills reached a surface water while the City did not experience any spill volume reaching surface waters during the same period.

With respect to collection system performance, Statewide grease and roots blockages were found to occur in similar ratio to the City's with approximately 78 percent of the SSOs in the State caused by grease and root blockages. However, City overflow rates overall were higher than the statewide averages. Approximately 56 percent of the City pipes are 6 inches in diameter. This size pipe has been found to result in higher overflow rates.

7.1 Overall Conclusion of SSMP Effectiveness Analysis

The City has made progress in improving emergency response and reducing the amount of sewer overflow spill volume per SSO. Due to staffing constraints and reductions as well as information system implementation challenges within the Field Services section, the City has not been able to fully implement key strategies which lead to improved SSO performance. SSMP performance can be improved through full implementation of key strategies already identified by the City as well as implementation of the compliance corrective actions listed in Section 6.

2013 City of Sacramento Sewer System Management Plan Audit

May 2011 thru June 2013

INTRODUCTION

In 2006 the State Water Resources Control Board issued Order No. 2006-0003, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WDR). The purpose of the WDR is to help reduce and prevent sanitary sewer overflows (SSOs). As part of the WDR, all public agencies that own or operate more than one mile of sanitary sewer systems were required to enroll. As part of enrollment, agencies are required to prepare a Sewer System Management Plan (SSMP) to document and assist in the management, operation, and maintenance of their sewer system. As part of the SSMP, agencies are required to conduct an internal program audit of the SSMP appropriate to the size of the system at least every two years. This report describes the City of Sacramento's (City) SSMP program audits and its associated tasks. This SSMP audit is being performed to:

- Evaluate the effectiveness of the current SSMP program
- Identify potential weaknesses of the current SSMP program
- Determine corrective actions to address deficiencies and/or improvement compliance with the SSMP requirements

WDR REQUIREMENTS FOR SSMP ELEMENT 10: SSMP PROGRAM AUDITS

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

CITY OF SACRAMENTO COMPLIANCE APPROACH – AS STATED IN THE SSMP

The City of Sacramento (City) will produce internal audits every two years to determine the effectiveness of the SSMP elements and programs. The program audit will include a review of relevant data and trends maintained as part of the SSMP Monitoring and Measurements Program to determine opportunities to improve compliance with the WDR requirements. A list of recommended corrective actions will be updated as part of the audit program. Recommended corrective actions will be used to develop program modifications. An overview of SSMP related work completed between audits will be included in the program audit.

The City will review the SSOs from the previous year and provide details in the audit on the causes of the SSOs and what actions were taken to prevent similar SSOs from occurring in the future. If any deficiencies are determined, the list of recommended corrective actions will be updated accordingly.

The program audit will include a final report reviewing the City's performance and identifying findings.

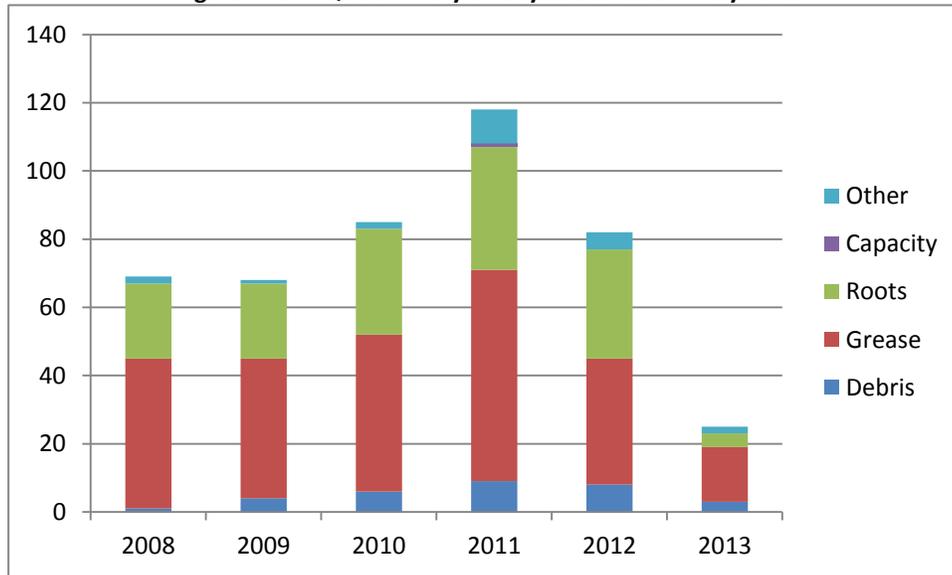
CITY OF SACRAMENTO SYSTEM DESCRIPTION AND PERFORMANCE

Wastewater collection in the City of Sacramento is provided by both the City and the County of Sacramento. The Sacramento Area Sewer District (SASD) maintains approximately 35 percent of the public collection system within the City limits, primarily in the northwest and southeast sections of the City. The City Department of Utilities (DOU) maintains the remaining portion of the public collection system, which includes a combined sewer system in the older central City area with a total service area of approximately 7,545 acres and approximately 305 miles of 4 to 120 inch diameter pipes. The separated sewer system is located primarily in the northeast, east and southwest sections of the City with a total service area of about 25,435 acres.

Table 1. CIWQS Summary of City SSO's 2008 – May 2013

Calendar Year	SSO Count	SSO Cause				
		Debris	Grease	Roots	Capacity	Other
2008	69	1	44	22	0	2
2009	68	4	41	22	0	1
2010	85	6	46	31	0	2
2011	118	9	62	36	1	10
2012	82	8	37	32	0	5
2013	25	3	16	4	0	2

Figure 2. CIWQS Summary of City SSO's 2008 – May 2013



AUDIT TASKS

To ensure that the audit is performed objectively, this task has been assigned to individuals that are fairly well removed from the day-to-day activities of the City’s collection system operations and have enough authority to carry out the necessary data gathering to perform the audit. In addition to filling out the attached SSMP Audit Form, the following tasks are associated with the SSMP audits:

1. Review operation and maintenance philosophy/strategy with field staff including preventative maintenance.
2. Conduct interviews of operational staff and staff that respond to SSOs to verify familiarity with the SSMP and SSO response procedures.
3. Review maintenance records to ensure that a match exists between operation and maintenance philosophy/strategy and everyday practice.
4. Review condition assessment/rehabilitation philosophy/strategy and discuss with the Asset Management Section. Ensure that there is a condition assessment/rehabilitation schedule.
5. Review the 2011 Audit to verify that previous audit findings have been addressed.
6. Review the past 5 years of SSO data and verify if additional corrective action is needed.
7. Record all findings during the audit process on the attached SSMP Audit Form. This form will be the final audit report for the City’s performance and recommended corrective actions. The report will be kept on file.

8. Conduct interviews with City staff to assist in the audit tasks listed above.

This internal audit is focused on the eleven categories as required by the State WDR. The evaluation of each element in each category is herewith standardized with a WDR compliance ranking, the measure of evidence obtained from City staff during the audit process. Compliance ranking is based on WDR audit guidelines and sufficiency. Recommendations have been provided when there is enough information to support it. The City's compliance ranking pertains to its compliance with the State WDR and may not be in compliance with what is stated in the SSMP. In such cases, recommendations for an update to the SSMP language will be issued as a corrective action.

WDR Compliance Ranking:

- In Compliance – SSMP and/or City programs address the requirements of the WDR.
- Partial Compliance – SSMP and/or City programs make significant strides in achieving the WDR goals and requirements but need updates and revisions to be fully compliant.
- Not in Compliance - SSMP and City programs do not address requirements of the WDR.

CONCLUSION

The City adopted the SSMP in 2008-09 and conducted an audit in 2011. The past five (5) years has seen dramatic changes of the number of SSOs in the City's separated sewer collection system. The downturn in the economy caused the City to reduce its budget which resulted in the elimination of some maintenance staff positions and a reduced capacity to purchase and replace equipment. This restricted financial capacity may have contributed to an increase in SSOs in 2010 and 2011. Over the past two (2) years the City has made significant strides to reduce SSOs and has restructured their organization to provide more efficient and effective management as well as implemented new programs to improve maintenance and operations of the collection system. These changes have resulted in a downward trend of SSOs since 2012.

This biennial SSMP audit consists of a WDR compliance ranking for all eleven (11) elements of the SSMP requirements. The rankings are based on available information referenced to the WDR requirements. This audit identifies the recommended corrective actions to bring the SSMP into full compliance with the WDRs. A list of the recommended corrective actions can be seen in the following section. The findings of this audit will be used to gauge the City's performance in the next biennial SSMP audit.

RECOMMENED CORRECTIVE ACTIONS

As a summary of the attached SSMP Audit Form, the following recommended corrective actions are identified in Table 3 below.

Table 3. 2013 SSMP Recommended Corrective Actions

SSMP Section	Recommended Corrective Action	Previous Audit Recommendation
II	Update the SSMP to reflect the City's reorganization as well as include updated contact information and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs.	Yes
II	Review and revise sewer overflow response procedure and notification flow charts in the SSMP that identifies the chain of communication from receipt of the complaint to applicable notifications. Ensure flow charts developed for the emergency overflow SOP also incorporates the changes within the organizational	No

	structure.	
III	Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues.	No
III	Update references within the SSMP to include 2013 changes to the SRCSD ordinance.	No
IV.a	Provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities	No
IV.b	Update the SSMP to reflect actual business process for evaluation of the Targeted Maintenance Program.	Yes
IV.b	Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture.	Yes
IV.b	Develop and implement a cleaning schedule for every pipe in the system so that findings are documented and tracked.	No
IV.b	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. This should result in an electronic database of coded maintenance feedback history by specific asset. Continue to build on this process with the implementation of a risked based approach for updating frequency and schedule dates.	Yes
IV.b	Fully implement the root control program. The root control program should focus on pipes with an elevated risk for a root related SSOs and should schedule root control treatment for elevated risk pipes.	No
IV.b	Coordinate pump station work orders such that they can be scheduled on a station by station basis. Pump stations are shut down for quarterly wet well cleaning, coordinate electrical and mechanical work orders and inspections to coincide with the pump station shut down.	No
IV.c	Update the SSMP to reference the CIP Programming Guide (Guide) and annually adopted CIP to provide information on the projected CIP project lists and anticipated funding levels. The Guide will include the CIP projects and their priority based on, but not limited to, condition assessment, work order history, criticality, and design life.	Yes
IV.c	Update the SSMP to reflect the current inspection plan and schedule.	Yes
IV.c	Consider the development of a manhole inspection program using NASSCO's MACP defect coding system.	No
IV.c	Develop and implement an automated pipe re-inspection	No

	process through CMMS.	
IV.c	Provide further QA/QC of Granite XP pip inspection data.	No
IV.d	Update the SSMP to include a description of the newly developed training program as well as a description of the SSO emergency overflow response training program.	No
IV.e	Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure.	Yes
IV.e	Implement the condition assessment program for pump station mechanical parts and equipment. The condition assessment comments should be tracked in CMMS. Update the SSMP to reflect the condition assessment program implementation.	No
V	Update the Design and Procedures Manual.	No
V	Update the SSMP to reference the updated Standard Specifications and Design Procedures Manual when they are completed and post the updated documents online.	No
VI	Update SSMP to adequately incorporate descriptions of the most current SSO response and notification procedures.	No
VI	Develop pump station failure contingency standard procedures indicating each pump station's: location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up.	Yes
VII	Update the SSMP to reflect the current FOG Source Control Program being implemented by the FROG group.	No
VII	Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. See Section IV.b. Preventative Operations & Maintenance for more information.	No
VII	Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require	No

	FSEs to install interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.	
VII	Develop “FOG Program Rules and Regulations” and refer to these guidelines within the SSMP when discussing FOG related items.	No
VII	Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the FSEs inspection inventory.	Yes
VII	Refer to the proper use of interceptor and grease removal terminology such that the language within the City Code and the SSMP are compatible.	No
VII	Develop formalized interceptor inspection procedures.	No
VII	Develop standardized interceptor sizing requirements in design codes and interceptor requirements for specific locations.	No
VII	Develop servicing/maintenance requirements of interceptors by FSEs.	No
VII	Develop an enforcement response guide.	No
VIII	Expand flow monitoring and implement an I/I Reduction Program in 2014.	No
VIII	Utilize the collected flow data to compare against the previously completed spreadsheet analysis capacity assessments and identify any projects that are needed to address capacity needs.	No
VIII	Update the Design and Procedures Manual to include design criteria used for hydraulic analysis.	No
IX	Remove the Update Schedule page from the SSMP.	No
IX	Update the SSMP to indicate the most current preventative maintenance and inspection programs.	No
X	Conduct the 2 year audit frequency and annually evaluate the effectiveness and compliance of the operations and maintenance programs.	No
XI	The City should update the City of Sacramento public website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should remove the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave and update the information to indicate the final version is available and provide a link to the pdf. The DOU website should also indicate a process for the public to provide comment that is directed to the appropriate City contact person.	Yes

ATTACHMENT 1

SSMP AUDIT FORM

Agency & System	City of Sacramento		
Name of Auditor	Alex Palmatier and Gabe Apgar, HDR Engineering; Sherill Huun and Roxanne Dilley, City of Sacramento, Department of Utilities		
Date of Audit	July 2013	Audit Period	1/1/2011 – 6/30/2013
System Overview			
Miles of gravity sewer mains	563 miles		
Miles of force main	7 miles		
Total Miles of all sewer lines	563 miles		
Number of pump stations	40 pump stations		
Population served	169,980		

I. GOALS

- Are the goals stated in the SSMP still appropriate and accurate?

Audit Elements

- City’s SSMP Section V Chapter 1

Audit Findings

- The goals stated in the SSMP are still appropriate and accurate. The purpose of the City’s SSMP is to properly manage, operate, and maintain all parts of the sanitary sewer system to reduce and prevent SSOs, as well as mitigate any SSOs that do occur. The City’s stated goal is also to comply with the requirements set forth in Section D-13 of the WDR (Order No. 2006-0003).

Recommended Corrective Actions and Current Status

- None.

WDR Compliance Ranking: In Compliance

II. ORGANIZATIONAL STRUCTURE

- Is the SSMP’s organization chart & phone list up-to-date?

Audit Elements

- City’s SSMP Organizational Charts
- SSO Response Plan
- SSO Reporting Chain of Communication Organizational Charts

Audit Findings

- The maintenance supervisors responsible for implementing key maintenance programs included in the SSMP are not included on the SSMP Contact List.
- The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP. The Standard Operating Procedures (SOP) for Emergency Response is in the process of being updated, and includes more detailed chain of communications, spill response procedure flow charts and notification flow charts.

- The City has undergone reorganization during the 2012/2013 fiscal year, which has redefined the operations roles and responsibilities.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect the City’s reorganization as well as include updated contact information and responsibilities of operations and maintenance supervisors responsible for implementing key SSMP initiatives or programs. (Outstanding 2011 Audit Finding.)
- Review and revise sewer overflow response procedure and notification flow charts in the SSMP that identify the chain of communication from receipt of the complaint to applicable notifications. Ensure flow charts developed for the emergency overflow SOP also incorporate the changes within the organizational structure.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

III. LEGAL AUTHORITY

- Does the SSMP contain up-to-date information about the City’s legal authority?
- Does the City have sufficient legal authority to control sewer use and maintenance?

Audit Elements

- City’s Municipal Code
- Sacramento Regional County Sewer District (SCRSD) Sewer Use Ordinance

Audit Findings

- The City’s SSMP contains references to the City’s legal authority through the use of the local municipal codes relating to the sanitary sewer system required by the WDR. The City is also granted legal authority by the SRCSD Sewer Use Ordinance for the operation of the City collection system. SRCSD ordinances have been consolidated and updated in February 2010. This ordinance is now known as the “Consolidated Ordinance,” and the most recent update to this ordinance occurred in February of 2013.
- The City changed its legal authority to address FOG related issues.

Recommended Corrective Actions and Current Status

- Consider expansion of the City’s legal authority to provide additional tools for FOG enforcement related issues.
- Update references within the SSMP to include 2013 changes to the SRCSD ordinance.

WDR Compliance Ranking: In Compliance

IV. OPERATIONS & MAINTENANCE PROGRAM

a. Collection System Maps & Information

- Does the SSMP contain up-to-date information about the City’s maps?
- Are the City’s collection system maps complete, up-to-date, and sufficiently detailed?

Audit Elements

- City’s Facilities Operations Information System (FIOS)
- City’s Geographic Information System (GIS)
- Staff interviews of collection system O&M staff

Audit Findings

- The City has Geographic Information System (GIS) based mapping for all sewer and drainage pipelines and structures. The GIS mapping includes important attribute information regarding manholes, gravity sewer pipes, drainage pipes, and force mains. The GIS also includes pump stations, valves and vents, waterways,

levees, drop inlets, and gutter drains. Having both sewer and drainage systems on one set of GIS maps is an important tool in containing SSOs that may enter the drainage system. Pipe installation dates have been added to the pipe attribute data in the GIS layers. Also, known pipe material is validated through CCTV inspections, and when the pipe material is missing it is added to the GIS database.

- The City's FOIS web-based application serves as a repository for record drawings; improvement plans prepared by staff, outside consultants, and other agencies; specifications; operations and maintenance manuals; and facility photographs as they relate to the collection system.
- The City has developed mapping tools for tracking sewer cleaning efforts, sewer overflows, and areas of the City with accumulation of roots and grease.
- The City has installed SCADA in all pump stations and monitors pump stations 24-7. Pump station alarms are communicated through SCADA and response is dispatched immediately.
- Current system is regularly updated and meets the needs of the City.

Recommended Corrective Actions and Current Status

- The GIS mapping system meets the City's needs.
- Provide further QA/QC of pipe attribute information, such as pipe material, that is being identified with CCTV inspection activities.

WDR Compliance Ranking: In Compliance

b. Preventative Operations & Maintenance

- Does the SSMP contain up-to-date information about the City's preventative maintenance activities?
- Are the City's preventative maintenance activities sufficient and effective in reducing and preventing SSOs?

Audit Elements

- Work orders, service requests, SSO tracking, and planning in Computerized Maintenance Management System (CMMS)
- Staff interviews of collection system O&M staff

Audit Findings

- The City re-organized to create crews dedicated to achieving the overall system-wide cleaning and inspection goals of the SSMP. This has enabled the City to maintain a focus on accomplishing objectives of the SSMP. The City has also hired additional personnel to expand the number of crews and has established positions for a scheduler and an IT manager for improved maintenance organization and optimization.
- Currently the City has embarked on a system-wide cleaning program with the goal of cleaning the entire system in 5 years. All feedback and information obtained during cleaning will be used to develop a system-wide, risk based cleaning schedule.
- The SSMP states that part of the sewer cleaning effectiveness evaluation includes a review of the data collected in the maintenance crew feedback forms. These forms do not appear to be in use. Cleaning condition data is collected in the CMMS however the data is generalized across every pipe segment within the work order.
- At this time, the collection system CMMS is not used for scheduling most work and is only used as a tracking tool for completed work. The City is moving towards a risk-based cleaning schedule based on data currently being collected.
- Beginning in 2012, the City is continuously evaluating the causes of SSOs and rescheduling cleaning of all pipes based on the risk of an SSO and other relevant data.

- SSOs are tracked in a separate spreadsheet to report to the State and not tracked in CMMS as stated in the SSMP.
- The City has implemented a cleaning QA/QC program to ensure the pipes are being properly cleaned.
- The City has recently developed a Fats, Roots, Oils, and Grease (FROG) group to take a more focused and proactive approach to dealing with FOG and roots.
- The City is developing a root control program to reduce the number and impact of root related SSOs. The root control program will focus on pipes with an elevated risk for a root related SSOs. The root control program will schedule chemical root treatment for the elevated risk pipes.
- Pump stations are visited weekly, wet wells are cleaned quarterly, mechanical and electrical equipment is inspected annually. All maintenance and inspection activities are tracked in CMMS. If an immediate need is observed, a work order is generated through CMMS.
- Plant Services maintains a database of prioritized pump station maintenance needs, which is reviewed once per week by the Maintenance Supervisor. Feedback is entered into CMMS in the work order comments section.
- Pump station maintenance inspections are not coordinated to occur during the quarterly cleaning and shut-down event.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect actual business process for implementation and evaluation of the Targeted Maintenance Program. (Outstanding 2011 Audit Action.)
- Implement a data capture process, CMMS system configuration, and data QA/QC process resulting in more accurate maintenance history data capture. (Outstanding 2011 Audit Action.)
- Develop and implement a cleaning schedule for every pipe in the system so that findings are documented and tracked.
- Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. This should result in an electronic database of coded maintenance feedback history by specific asset. Continue to build on this process with the implementation of a risk based approach for updating frequency and schedule dates. (Outstanding 2011 Audit Action.)
- Fully implement the root control program. The root control program should focus on pipes with an elevated risk for a root related SSOs and should schedule root control treatment for elevated risk pipes.
- Coordinate pump station work orders such that they can be scheduled on a station-by-station basis. Pump stations are shut down for quarterly wet well cleaning. The electrical and mechanical work orders and inspections should be scheduled to coincide with the pump station wet well cleaning and shut down.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

c. Rehabilitation & Replacement Plan

- Does the SSMP contain up-to-date information about the City’s inspections and condition assessment?
- Are the City’s scheduled inspections and condition assessment system effective in locating, identifying, and addressing deficiencies?

Audit Elements

- Interview Asset Management Staff

Audit Findings

- The City is projected to spend \$13.2 million of rehabilitation and replacement capital improvements over the next five years on the separated system.

- The City has embarked on an inspection program for pipes with small diameter (less than 16-inches) and greater than 10 years old. The CCTV inspection program has been expanded to include all 525 (285 miles completed to date) miles of the small diameter separated system pipes. The goal is to inspect the entire system by June 2017.
- The City has developed a pipe decision workflow process for repair, rehabilitation, and replacement.
- Each pipe segment inspected will be scheduled for re-inspection based on a pipe assessment decision matrix.
- The City tracks all pipe repair, rehabilitation, and replacement work in CMMS and GIS.
- Manhole repair is issued on an as-needed basis. Field staff issue a work order through CMMS if manhole damage is observed during cleaning and/or CCTV inspection activities.
- The CIP Programming Guide (Guide) identifies the processes, methodologies, and funding sources used in developing the Wastewater Capital Improvement Program (CIP). Such methodologies are used to rank and prioritize the repair, rehabilitation, and replacement of infrastructure assets.

Recommended Corrective Actions and Current Status

- Update the SSMP to reference the Guide and annually adopted CIP to provide information on the projected CIP project lists and anticipated funding levels. The Guide will include the CIP projects and their priority based on, but not limited to, condition assessment, work order history, criticality, and design life. (Outstanding 2011 Audit Action.)
- Update the SSMP to reflect the current inspection plan and schedule. (Outstanding 2011 Audit Action.)
- Consider the development of a manhole inspection program using NASSCO’s MACP defect coding system.
- Develop and implement an automated pipe re-inspection process through CMMS.
- Provide further QA/QC of Granite XP pipe inspection data

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

d. Staff Training

- Does the SSMP contain up-to-date information about the City’s training expectations and programs?
- Do supervisors believe that their staff is sufficiently trained?
- Are staff satisfied with the training opportunities and support offered?

Audit Elements

- Employee training records
- Interview collection system staff

Audit Findings

- Training to implement sanitary sewer system operation and maintenance procedures identified in the SSMP was evaluated, and an additional training program was developed. Implementation of this was conducted in June 2013, and refresher training will be conducted annually thereafter.
- The City has developed and implemented an internal training program for SSO emergency response training. See Section VI for more information.

Recommended Corrective Actions and Current Status

- Update the SSMP to include a description of the newly developed training program as well as a description of the SSO emergency overflow response training program.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed to reflect current training practices.

e. Major Equipment & Critical Spare Parts Inventories

- Does the SSMP contain up-to-date information about equipment and replacement inventories?
- Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?

Audit Elements

- Equipment and parts inventory
- Interview collection system staff

Audit Findings

- The City has machinists and a fabrication shop capable of manufacturing a majority of mechanical pump station components in the case of mechanical component wear or failure.
- All replacement parts and inventory is tracked in CMMS. Purchase orders for replacement parts are made as they leave inventory via a CMMS work order.
- The City maintains multiple spare submersible pumps in the event that they are needed during a pump station failure.
- The City does not have a critical spare parts list; however, spare parts with long lead times are contained in the inventory.
- The City is developing a condition assessment plan for mechanical pump station components that is to be integrated with CMMS and will provide criticality for CIP prioritization.

Recommended Corrective Actions and Current Status

- Identify critical spare parts required at pump stations. Include a plan to either acquire spare parts in the replacement parts inventories or a timely means for fabricating or acquiring critical spare parts in the event of a failure. (Outstanding 2011 Audit Action.)
- Implement the condition assessment program for pump station mechanical parts and equipment. The condition assessment comments should be tracked in CMMS. Update the SSMP to reflect the condition assessment program implementation.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed, critical parts list needed.

V. DESIGN AND PERFORMANCE

- Does the SSMP contain up-to-date information about the City’s design and construction standards?
- Are design and construction standards, as well as standards for inspection and testing of new and rehabilitated facilities sufficiently comprehensive and up-to-date?

Audit Elements

- The City Standard Specifications
- City of Sacramento Design and Procedure Manual
- Department of Utilities Engineering Division - Standard Special Provisions

Audit Findings

- A City-wide committee evaluates the Standard Specifications and meets on a semi-annual basis. The committee represents each City department and votes on procedural changes and issues an addendum upon approval. This is an on-going process, and the approved Specification addenda’s are posted online. The City-wide goal is to update the Specifications every 5 years.
- The Design and Procedures Manual is in the process of being updated. There is no formalized system for recommended updates outside of internal discussions amongst managerial staff within the Department of Utilities Engineering Division.
- Standard Special Provisions are updated on an as-needed basis. The Standard Special Provisions are

maintained on a restricted server to prevent unintended modifications to the documents. Review and recommendations of the Provisions are done on an on-going and as-needed basis.

Recommended Corrective Actions and Current Status

- Update the Design and Procedures Manual.
- Update the SSMP to reference the updated Standard Specifications and Design Procedures Manual when they are completed and post the updated documents online.

WDR Compliance Ranking: In Compliance

VI. OVERFLOW EMERGENCY RESPONSE PLAN

- Does the SSMP contain up-to-date version of the City's Overflow Emergency Response Plan?
- Considering the information in table 1 (SSO history), is the Overflow Emergency Response Plan effective in handling SSO's?

Audit Elements

- Compare CIWQS data with City records
- SSO Response Plan for the City collection system
- SSO Response Plan Quick Reference
- SSO Response Plan website on City Intranet?

Audit Findings

- The City has developed a reliable sewer overflow reporting process and procedures along with training and quality control protocols resulting in consistent internal and external documentation.
- The chain of communication for reporting SSOs including person responsible for reporting SSOs to the State and Regional Water Board and other agencies is not adequately documented in Chapter 2 or Chapter 6 of the SSMP. The Standard Operating Procedures (SOP) for Sewer Overflow/Outflow Emergency Response is in the process of being updated, and includes more detailed chain of communication, response procedure and notification flow charts.
- The City has a process to quickly update the cell phone contact lists of all collection system field employees, supervisors, and management staff. This process keeps the contact phone numbers for emergency response up-to-date.
- The City has installed GPS on all first responder vehicles to support efficient routing of first responder resources to sewer overflow calls. Dispatch utilizes a system enabling them to map the location of customer complaints, to determine the location of an event such as an overflow, and whether the department has responsibility for overflow response or another entity.
- The City has implemented a swing shift to improve SSO response in the evenings.
- The update to the overflow emergency response SOP is considering language for SSO response and notifications for overflows from pump stations. Overflows from pump station locations can create significant volumes of sewage in a short amount of time and benefit from having contingency plans in place in the event of a failure.
- The City has implemented a program to perform event-driven preventive maintenance activities during rain events called Rain Patrol. This program includes a Winter Prep Manual communicating the activities to be performed. The program is focused on addressing potential maintenance issues in known problem locations during rain events.

- The City maintains a Sump Book documenting every sewer and drainage pump station including maps of the station location, number of pumps, horsepower and pumping capacity of pumps, force main locations and discharge locations, and the amount of time the pumps can be out of service before the station overflows. This is an important tool for supporting emergency response to a pump station-related failure potentially resulting in an SSO event.
- The City's geographical system configuration and protocols for coordination between Field Services and Plant Services results in a very high capture rate for sewage spilled from the system. Since 2007, the City has not released any sewage to surface waters.
- The City has installed quick connects at pump stations to enable Plant Services crews to quickly bypass the flow from a pump station.

Recommended Corrective Actions and Current Status

- Update SSMP to adequately incorporate descriptions of the most current SSO response and notification procedures.
- Develop pump station failure contingency standard procedures indicating each pump station's: location, wet well capacity, estimate of how much storage time the wet wells would provide under different flow conditions, alarm capacities, on-site back-up pumps, back-up power generators, and an operations or bypass approach in the case of a force main failure. For any stations that lack back-up pumps and generators, the plan should specify a protocol for prompt delivery of portable pumps or generators in the event of a station failure. The procedures should also identify where an SSO will occur if a station fails and where bypass intake and discharge should be set up. (Outstanding 2011 Audit Action.)

WDR Compliance Ranking: Partial Compliance – SSMP updates needed, development of general pump station spill response standard operating procedure needed.

VII. FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

- Does the SSMP contain up-to-date version of the City's FOG control program?
- Is the City's FOG control program sufficient to reducing FOG related SSO's?

Audit Elements

- FOG related work orders in Cityworks
- Interview FOG control program staff

Audit Findings

- The City has developed a fats, oils, and grease (FOG) door hanger to communicate best practices to customers and collection system crews are distributing the door hangers when grease issues are identified in the sewer system. First responder crews and/or maintenance crews distribute the door hangers to homes and apartment complex managers found to be the cause of a FOG-related SSO and in areas where maintenance crews find heavy grease in the system.
- The City developed a FOG microsite (www.sacramentofatfreedrain.com) with information and videos for residential customers to learn how to use best practices for FOG disposal and Food Service Establishments (FSEs) to learn about the ordinance, inspection program and best practices.
- A FOG bill stuffer was developed and inserted in the November 2012 utility bills encouraging residents to follow best practices for FOG disposal and directing them to the website.
- The City utilized electronic billboards and the Sacramento Bee to promote proper FOG disposal during the winter holidays. Additionally, the City and Sacramento Area Sewer District (SASD) partnered for three on-air interviews on local television stations to promote use of best FOG disposal practices for residential customers.
- The City developed a media packet that is utilized by FOG control inspectors in communicating the overall FOG program to food service establishments (FSEs). The media packet includes information about the

overall program, best management practices for grease source control, a list of local haulers, and a best practices poster.

- The City developed a multi-lingual video in the 2012/2013 fiscal year on the FOG program and best management practices for grease source control for the FOG control inspectors to use during FSE inspections. The video is available in English, Spanish, Hmong, and Chinese.
- Beginning in 2012, the City is continuously evaluating the causes of SSOs (e.g., grease) and rescheduling all pipes based on the risk of an SSO and other relevant data.
- Several City departments are involved in different aspects of the FOG control program involving FSEs including:
 - City Development Department Building Division (Responsible for building permit approval and grease removal device installation)
 - County Environmental Management Department, Environmental Health Division (Reviews health department permits prior to permit issuance)
 - City FOG control staff (Responsible for routine inspections and enforcement)
 - EMD Water Protection Division stormwater inspectors and EMD Health Inspectors (Refer issues to City FOG control staff and conduct enforcement)
- The City developed a Fats, Roots, Oils, and Grease (FROG) group to take a more focused and proactive approach to dealing with FOG and roots in 2012/2013 fiscal year.
 - The City purchased additional equipment to support the FOG control program (two trucks, inspection dip rods, tablets, and a sea snake with a laptop interface.)
- DOU allocated 2.5 full time staff to implement the FOG control inspection program in the 2012/2013 fiscal year. Annual inspection will be conducted starting in the 2013/2014 fiscal year and will be prioritized based on CCTV and maintenance data showing heavy grease.
 - This inspection staff has the primary responsibility of performing routine inspections and conducting enforcement to ensure food service establishments (FSEs) are in compliance with the City's ordinance and to verify the maintenance and performance of the FSE's grease removal device.
 - The inspectors started inspections at FSEs in January 2013 and have inspected approximately 248 FSEs as of June 5, 2013. The first inspection at an FSE focused on providing information about proper fats, oils and grease disposal and the City's requirements and an inspection of their grease removal device.
 - The City Community Development Department Building Division and the DOU Field Services Division has not developed an effective process for communicating information with each other regarding grease removal equipment existence, acceptance, or attributes.

Recommended Corrective Actions and Current Status

- Update the SSMP to reflect the current FOG Source Control Program being implemented by the FROG group.
- Implement a process and information system to capture and store coded maintenance feedback for sewer cleaning when the new CMMS is implemented in 2014. See Section IV.b. Preventative Operations & Maintenance for more information. (Outstanding 2011 Audit Action.)
- Consider expansion of the City's legal authority to provide additional tools for FOG enforcement related issues. Add language in the legal authority to require FSEs to install interceptors as well as language that clearly identify FOG BMPs and FSE inspection procedures.
- Develop "FOG Program Rules and Regulations" and refer to these guidelines within the SSMP when discussing FOG related items.

- Develop a process to routinely transmit data regarding building permits involving new or modified grease removal equipment to Department of Utilities for use in updating the FSEs inspection inventory. (Outstanding 2011 Audit Action.)
- Refer to the proper use of interceptor and grease removal terminology such that the language within the City Code and the SSMP are compatible.
- Develop formalized interceptor inspection procedures.
- Develop standardized interceptor sizing requirements in design codes and interceptor requirements for specific locations.
- Develop servicing/maintenance requirements of interceptors by FSEs.
- Develop an enforcement response guide.

WDR Compliance Ranking: In Compliance – Update the SSMP to reflect current FOG program.

VIII. SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

- Does the SSMP contain up-to-date information about the City’s capacity assessment?
- Has the City completed a capacity assessment and identified and addressed any hydraulic deficiencies in the system?

Audit Elements

- Master Interagency Agreement
- Collection System Master Plan
- Construction projects list
- SSO data

Audit Findings

- The City has been installing more flow monitoring equipment in areas where capacity issues are of concern. A contractor manages the installation and data management.
- The City has begun installing “smart” lids in manholes in 2012. This equipment is used to identify SSOs. A contractor manages the installation and data management of the equipment.
- The City is planning to expand its Inflow/Infiltration (I/I) Reduction Program. Funding for the I/I Reduction Program is included in the CIP.
- Master plans based on flow monitoring and hydraulic modeling have been prepared for some basins. City is also conducting a sewer rehabilitation program (including pre- and post-rehab flow monitoring) in one basin identified as having high I/I to identify most effective approaches to reduce infiltration.
- The City has assessed capacity of trunk sewer network for entire separated system (49 basins) using a spreadsheet analysis which compares estimated peak wet weather flows for a design event to an estimate of full pipe capacity based on a uniform set of design criteria. Mini-Master Plans were developed for all basins that include the spreadsheet analysis, and available flow data in some basins indicate that the assumptions within these mini-master plans are conservative. Additional analyses (e.g., flow monitoring, surveying or as-built drawing research) are conducted on an ongoing basis, and are compared with the spreadsheet analysis.
- As additional analysis, including flow data, has been evaluated, the design criteria for calculating the various flow rates will be modified.
- The City has experienced one (1) capacity related SSO in the past five (5) years and does not have hydraulic and capacity deficiencies.

Recommended Corrective Actions and Current Status

- Expand flow monitoring and implement an I/I Reduction Program.
- Utilize the collected flow data to compare against the previously completed spreadsheet analysis capacity assessments and identify any projects that are needed to address capacity needs.
- Update the Design and Procedures Manual to include design criteria used for hydraulic analysis.

WDR Compliance Ranking: Partial Compliance – update Design and Procedures Manual.

IX. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

- Does the SSMP contain up-to-date information about the City’s data collection and organization?
- Is the City’s data collection and organization sufficient to evaluate the effectiveness of your SSMP?

Audit Elements

- PM/CM/EM Work History
- Job Plans and Schedules
- List of Assets and Spare Parts
- SSO History and Details
- Staff Training Records
- Condition Assessment Data
- Hydraulic Modeling Results/Capacity Assurance
- Flow Monitoring Data

Audit Findings

- The City has tracked progress and collects enough data to conduct an audit that evaluates its current collection system activity effectiveness and performance goals with respect to the State WDRs.
- The City conducts an audit at the minimum required frequency, biennial, but missed this frequency by two months on the 2013 audit due to City staffing issues.
- The SSMP has not been updated to reflect any changes in the City’s organization or maintenance and inspection programs since the SSMP was adopted in 2008-09.

Recommended Corrective Actions and Current Status

- Remove the Update Schedule page from the SSMP.
- Update the SSMP to indicate the most current preventative maintenance and inspection programs.

WDR Compliance Ranking: Partial Compliance – SSMP updates needed.

X. SSMP PROGRAM AUDITS

- Does the City conduct periodic internal audits appropriate to the size of the system and the number of SSOs?

Audit Findings

- The City formally audits the SSMP every 2 years and annually evaluates the effectiveness and compliance of the operations and maintenance programs with the State WDRs.

Recommended Corrective Actions and Current Status

- Conduct the 2-year-audit frequency and annually evaluate the effectiveness and compliance of the operations

and maintenance programs.

WDR Compliance Ranking: In Compliance

XI. COMMUNICATION PROGRAM

- Does the SSMP contain up-to-date information about the City’s public outreach activities?
- Does the SSMP contain up-to-date information about the City’s communications with satellite and tributary agencies?
- Has the City effectively communicated with the public and other agencies about the SSMP, and addressed feedback?

Audit Elements

- City website
- Evaluate frequency and effectiveness of WDR Coordination Meetings

Audit Findings

- The City participates in periodic meetings with regional partners including Sacramento Regional County Sanitation District, Sacramento Area Sewer District, and City of Folsom. These meetings provide an effective and timely forum for communicating and resolving issues between regional agencies as well as opportunities for working together on regional initiatives or sharing information on effective programs.
- The regular communication with the public of the implementation and performance of the SSMP can be improved. Currently, a search on the City of Sacramento’s public website for “SSMP” or “Sewer System Management Plan” does not result in a link to any information on the SSMP. Within the Department of Utilities (DOU) public webpage under Sewer, there is mention of a draft “Sanitary Sewer Management Plan” being available for review at 1395 35th Ave. On the main Utilities public webpage, a “Sewer Management Plan” link provides access to a pdf of the current final Sewer System Management Plan. The SSMP can also be accessed on the Utilities Department webpage within the Publications found under the Media Room link.

Recommended Corrective Actions and Current Status

- The City should update the City of Sacramento public website to return a link related to the Sewer System Management Plan if a search is performed for “SSMP” or “Sewer System Management Plan”. The City should remove the information on the Sewer webpage indicating that a draft SSMP is available for viewing at 1395 35th Ave and update the information to indicate the final version is available and provide a link to the pdf. The DOU website should also indicate a process for the public to provide comment that is directed to the appropriate City contact person.

WDR Compliance Ranking: Partial Compliance – City’s website updates needed.