



# SOUTH PLACER MUNICIPAL UTILITY DISTRICT Sewer System Management Plan (SSMP) Biennial Audit for FY 11/12 – FY 12/13

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## SECTION 1 Audit Objectives

This report summarizes the results of the required Sewer System Management Plan (SSMP) internal audit process for the FY 11/12 and FY 12/13 evaluation period. The purpose of the SSMP is to provide a written framework for sanitary sewer collection system management, operation, and maintenance programs executed by the South Placer Municipal Utility District (District or SPMUD) with the ultimate goal of minimizing sanitary sewer overflows (SSOs) and achieving compliance with California State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP audit is based on a review of performance measures established to evaluate the District's success in achieving compliance with various requirements of the SSS WDRs and implementing programs as stated in the SSMP. The SSMP audit process allows the SSMP document to evolve over time through the identification of potential enhancements in the management, operation and maintenance of the sanitary sewer collection system, and the implementation of changes to the SSMP to address any deficiencies.

South Placer Municipal Utility District is committed to complete biennial audits of the SSMP consistent with the procedure outlined in Section 10 and Appendix B of the SSMP. To ensure that the audits are performed effectively, the District normally assigns this task to District staff selected from the Operations and Maintenance, Technical Services, and Administration departments. These individuals have a working knowledge of the collection system and have the ability to gather the appropriate data to perform the audit. The District requested that a third party (i.e., Water Work Engineers) perform this, the District's second internal SSMP audit, to obtain an additional, objective review of the SSMP's compliance and effectiveness. The following tasks will be performed as part of this internal audit:

1. Review records from previous internal audits, to ensure noted deficiencies have been addressed. (**this Section**)
2. Compare the records from the computerized maintenance management system (CMMS) of record, to the data reported to the California Integrated Water Quality System (CIWQS). (see **Section 3.1**)
3. Review preventative maintenance schedules, responses to SSOs, and mitigation of SSO causes. (see **Section 3.1**)
4. Review Emergency Response Plan (ERP) for SSOs and identify improvements if needed. (see **Section 5.6**)
5. Record all findings during the audit process and keep the audit on file. (see **Section 5.10**)

### NOTE TO REVIEWER:

This SSMP internal audit was completed in July 2014, which was after the required deadline of August 2013. The audit began in July of 2013 and Water Works Engineers was contracted to assist in the audit in August of 2013. Early in this process it was decided that additional time should be taken to increase the value and benefits of this audit by simultaneously developing a consistent process to be followed for this audit and future audits. The timeline of the audit extended longer than anticipated, but the efforts made during this process not only improved the results of this audit, it will enhance and streamline the results of future audits.



## SECTION 2 Agency Background / System Information

South Placer Municipal Utility District is located in Placer County and is situated approximately 20 miles northeast of the city of Sacramento. The District covers approximately 30 square miles at the base of the foothills of the Sierra Nevada Mountains and provides sanitary sewer service to customers in the communities of Rocklin, Loomis, Penryn, Newcastle, and portions of Granite Bay and unincorporated Placer County. The elevations in SPMUD range from approximately 115 feet to 1000 feet above sea level with an average slope of 1.3% from northeast to southwest. Several stream flow through the District (e.g., Pleasant Grove Creek, Antelope Creek, Clover Valley Creek, and Secret Ravine).

The District was established in 1956 under the State of California Municipal Utility District Act and is one of five municipal utility districts in the state. Under the Public Utilities Code of the State of California, Division 6, municipal utility districts are allowed to provide any number of utility services (e.g., sewer, water, light, power, heat, transportation, refuse, and communications). However, the District was formed and currently focuses solely on the collection and conveyance of wastewater from the customers it serves. The District is responsible for operation and maintenance of an extensive sewer collection system. The District has seen periods of tremendous growth in the recent past. The U.S. Census Bureau records show that portions of the District grew by over 1000% from 1970 to 2010. The District’s sewer collection system has grown in step with the rapid population growth. The District currently provides service to over 30,000 equivalent dwelling units (EDUs). **Table 1** provides additional information about the District collection system over the last two SSMP audit periods.

**Table 1. Overview of System Indicators**

Audit	FY 09/10 – 10/11	FY 11/12 – 12/13
Miles of Mainline	249	253
Miles of laterals (lower)		
Pump stations	11	13
Population served	70,000	70,000
Dedicated Sewer Maintenance Staff <sup>1</sup>	12	12
Annual Budget (FY1 – FY2)	\$12,671,318 / \$18,083,900	\$13,481,000 / \$13,701,700
Category 1 SSOs	0	1
Category 2 SSOs	1	3

<sup>1</sup> - Field Services Department employees (i.e., superintendent, supervisor(s), leadworker(s), maintenance worker)

The wastewater conveyed through the District collection system is discharged into the City of Roseville’s collection system and treated at two regional wastewater treatment plants (i.e., the Dry Creek and Pleasant Grove WWTPs).

### 2.1 Review of Last SSMP Audit

An internal audit of the District SSMP was conducted and concluded on August 4, 2011 which reviewed the activities and performance related to the SSMP for the fiscal years 2009/2010 (FY10) and 2010/2011 (FY11). The 2011 internal SSMP Audit was organized by SSMP section. Each section was evaluated based on the following three guiding questions:



1. Does this section of the SSMP comply with the State Order?
2. Did the District comply with this section of the SSMP?
3. Is this section of the SSMP effective?

**Table 2** summarizes the identified action items outlined in the previous SSMP audit. The table also shows if the identified deficiencies have been resolved.

**Table 2. Summary of Findings from the Last SSMP Internal Audit**

Element	Action Item	Completed
4 – O&M	Develop a formal Five-Year CIP before the end of 2011.	No
	Develop written training procedures for high pressure hydro-vac units, CCTV units, and the power rodding and hand rodding units and train staff by October 2011 and annually for four years (i.e., until 2015).	No
	Develop a training schedule of all required training, a method for monitoring the training, and assign the Foreman as the person responsible.	Yes
	Develop a documented method for tracking inventory and critical spare parts (i.e., asset labeling, logical sorting of parts, inventory audit forms, schedule of inventory bi-annual audits).	In Progress
6 – OERP	Establish a Spill Response Audit Method that includes a progression of review from the field supervisors, to the Foreman, to the Superintendent/LRO, to the Technical Services Manager.	Yes
	Develop new methods to determine spill estimation and spill start time. Implement these new methods across all staff.	Yes
9 – MMM	Review and evaluate each SSMP element quarterly using the SSMP Monitor, Measure, Modify Audit Form.	No

Three of the seven action items from the last SSMP internal audit have not been completed and one is still in progress. All of these actions items will be carried forward in this SSMP internal audit and included as recommendations to be completed. The unresolved action items may be modified to match the current needs of the District, but they are all recommended to be completed as a result of this audit.

## 2.2 Review of FY11/12 and FY12/13

Over the past two fiscal years it has been a priority of the District to clean the entire system. The intent of the District is to have CCTV inspection results drive the scheduling of cleaning. Cleaning the entire system in two years prepared the District to be able to purchase a second CCTV unit to meet this objective.

Additionally, during this audit period the District developed an operations and maintenance information technology master plan (O&M IT Master Plan), which outlines options for integrating the various software and databases that are used to support day-to-day operations. An evaluation and selection process was conducted for various software providers for computerized maintenance management systems, CCTV inspection software systems, and financial software systems. The District will soon be replacing all of its software and databases to gain additional functionality through increased database integration and more current software products.



## SECTION 3 SSO Trends

### 3.1 Historical SSO Data

One of the District-defined tasks of the internal audit is to compare the information submitted to the state CIWQS database against the information keep in the District internal records regarding SSO events. **Table 3** organizes the data by source to show discrepancies, if any, between the data reported to CIWQS and the District’s records.

**Table 3. CIWQS and District SSO Historic Data**

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 11/12 – 12/13	Internal Records FY 11/12 – 12/13
Total number of potential SSO service calls received	-	95 service calls
Total number of SSOs reported	4 SSOs	4 SSOs
Total volume of SSOs	20,204 gallons	20,204 gallons
Total volume of SSOs that reached waters of the state	0 gallons	0 gallons
Percent volume of SSOs recovered	1%	1%
Average SSO response time (SSO start time to arrival)	1.35 days	1.35 days
Average agency response time (notification to arrival)	39 minutes	39 minutes
Average SSO duration time	1.34 days	1.34 days

**Table 4. District SSO Data for FY12 and FY13**

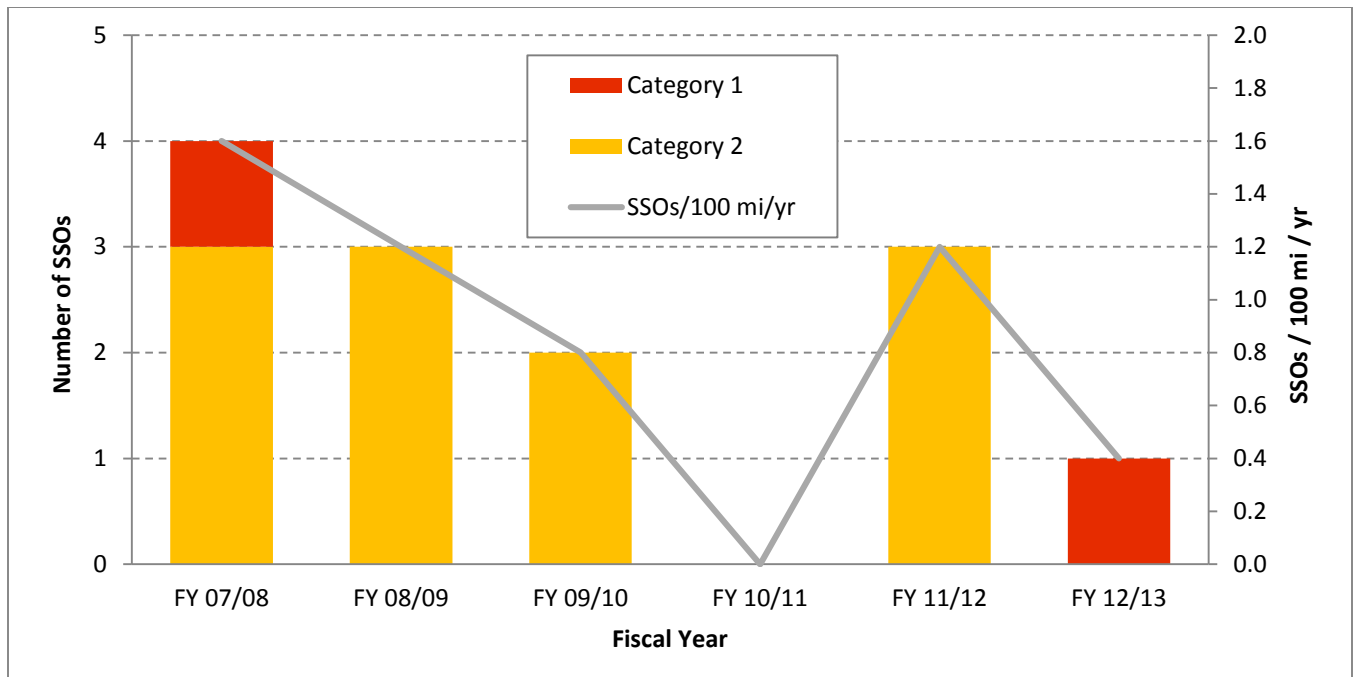
Date	Appearance Point	SSO Category	SSO Volume	Vol. Recovered	Time (Start-End)	Time (Notf.-Arrv.)	Cause
9/23/2011	D13-016	2	224 gal	224 gal	2hr 37min	52min	Roots
<p><u>Corrective Action:</u> Line cleaned-up (mitigated effects of spill); Contained all or portion of spill; Inspected sewer using CCTV to determine cause; Restored flow; Returned all or portion of spill to sanitary sewer system. Used 160 gallons of fresh water to clean up SSO, Total recovered sewage and fresh water 379 gallons, returned to system. Five gallons fresh water remained in wetted footprint of spill area.</p>							
5/18/2012	I10-030	2	114 gal	10 gal	1min	1hr 44min	Contractor
<p><u>Notes:</u> Contractor (Jordan / Michels) was lining sewer trunk mainline. The process pushed residual sewer out of manhole. The lining process had a pre-liner in place that didn't allow residual sewer to be pushed to pipe that could accept it. Sewer escaped through lowest point in this part of the District’s system.</p> <p><u>Corrective Action:</u> Cleaned-up (mitigated effects of spill); Contained all or portion of spill; The Contractor removed, bagged and disposed of 82 gallons of saturated soil, leaves, and vegetation. This material was taken to their facility in Salem Oregon at their headquarters for disposal.</p>							
5/24/2012	I10-028	2	12 gal	6 gal	1min	0min	Contractor
<p><u>Notes:</u> Contractor (Jordan / Michels) was performing a sewer by-pass operation to facilitate a cured-in-place pipe lining process. Sewer by-pass operation failure allowed sewer to spill out of manhole. District staff onsite at time of spill.</p> <p><u>Corrective Action:</u> Cleaned-up (mitigated effects of spill); Contained all or portion of spill; Returned all or portion of spill to sanitary sewer system. District issues a “Stop Work” notice until the Contractor’s management addressed issues to the satisfaction of the District.</p>							
4/20/2013	LS-06	1	19,824 gal	20 gal	5d 5hr 56m	0min	Operator Error
<p><u>Notes:</u> Lift Station was in OFF position on motor controls and telemetry. Station and Overflow storage performed as constructed. Delayed response to SSO was due to telemetry in off position. District staff discovered spill.</p> <p><u>Corrective Action:</u> Emergency Response activities were followed as trained. Crew detected SSO at lift station when doing assigned lift station wet-well maintenance (cleaning with HydroVac). Upon discovery, called Supervisor, energized pumps, and began cleanup. SOP has been developed to ensure all controls are active, following lift station checks, or activities that deactivate controls and alarm functions.</p>							

The District employs a Spill Response Audit Method that includes a progression of review from the field supervisors, to the Foreman, and finally to the Superintendent/LRO. The Technical Services Manager performs a final review of all spill reports for completeness and accuracy. An internal report is written and stored by the District for each SSO event to document the background, findings, calculations, corrective actions, and supporting information. This Spill Response Audit Method was established during the previous internal SSMP audit. The information presented in the column labeled “Internal Records” of **Table 3** represents the summarized information reported in the various performance measures maintained by the District.

The District strives to maintain quality data regarding historical SSOs so that trends in the occurrences and potential causes of SSOs can be identified and investigated. The following discussion investigates the District’s historical SSO data to identify potential SSO trends so that future efforts can be targeted to reduce SSOs.

**Figure 1** shows that the number of SSOs per year from FY07/08 to FY12/13 remains relatively small compared to the average of other municipal agencies in the state and region per the Collection System Operational Performance Report posted by SWRCB CIWQS over that time period.

**Figure 1: Number of SSOs per Fiscal Year**

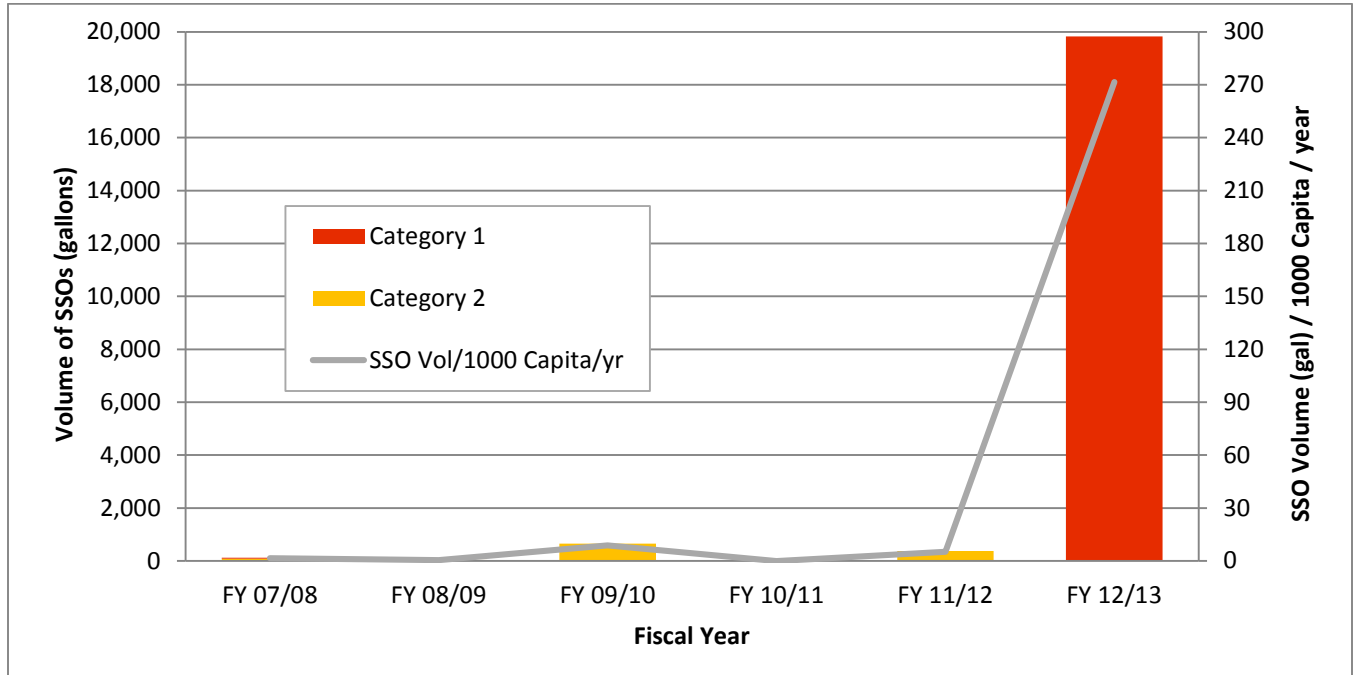


**Figure 2** shows that the total volume of SSO per year has remained very small since fiscal year 2007/2008. However, in fiscal year 2012/2013, the one SSO that occurred had a spill volume of 19,804 gallons. This is large



for the District and it is larger (~272 gallons/1000 capita/year) than the average SSO in the region (~133.5 gallons/1000 capita/year) during fiscal year 2012/2013.

**Figure 2: SSO Volume per Fiscal Year**



This SSO occurred as a result of operator error. One of the District’s lift stations was inadvertently left in the “off” position after annual electronic/controls maintenance inspections. The lift station was left in the “off” position for approximately 7 days until the SSO was discovered during the next weekly maintenance inspection. As a result of this incident the District took the following corrective actions.

1. The employee at fault for leaving the station in a disabled state received corrective discipline.
2. The response crew was debriefed on the findings from the report written per the Quality Assurance procedures following a SSO. Additional and enhanced training will be developed and performed.
3. The District established a new procedure (“Disabling Remote Alarms”) to help lessen the probability of another SSO as a result of operator error.



The District’s SSO records were queried to identify the leading causes of SSOs. **Table 5** shows the leading causes of SSOs in the District by 1) the number of SSOs, and 2) the spill volume of SSOs.

**Table 5. Leading Causes of SSOs in FY11/12 and FY12/13**

SSOs by Number		SSOs by Volume		
Cause	Number	Cause	Gallons	Recovered
Contractor	2	Op. Error	19,824	20
Roots	1	Roots	224	224
Op. Error	1	Contractor	156	16
FOG	0	FOG	0	-
Capacity	0	Capacity	0	-
Debris	0	Debris	0	-
Pipe Failure	0	Pipe Failure	0	-

**Table 5** shows that contractor-related operations in pipelines is the leading cause of a SSO occurrence, and operator error is the major cause for large SSO spill volumes. The actions planned as a result of this SSMP audit will target the leading causes to most effectively reduce the number and spill volume of SSOs.

### 3.2 SSO Reduction Performance Goals

The District recognizes the ultimate goal is zero SSOs, but realizes any goal has to be realistic and achievable. Though the District will continue to strive for zero SSOs, for the purposes of the SSO reduction program, the District’s goal is to have fewer SSO’s than the average of the previous five (5) years. This is consistent with one of the District’s core values – “QUALITY: We will be dedicated to continuous improvement”.

One of the goals of the District’s SSMP is to “reduce SSOs”. **Table 6** compares the District SSO goals against the actual number of SSOs during the timeframe of the current SSMP internal audit. The District SSO goals are based on the average of the respective SSO-related data from the previous five years. The table also lists the SSO goals projected before the District’s next internal SSMP audit. It should be noted that the goals for the upcoming two fiscal years reflect the change in how SSOs will be categorized and reported to the state based on the recent SSS WDR Revised Monitoring and Reporting Program (Revised MRP) (WQ 2013-0058-EXEC).

**Table 6. SSO Reduction Goals**

	FY11/12		FY12/13		FY13/14	FY14/15
	Goal	Actual	Goal	Actual	Goal	Goal
Total SSOs	1.4 <sup>1</sup>	3	1.2 <sup>1</sup>	1	1.2 <sup>1</sup>	1.2 <sup>2</sup>
Gallons Spilled	140 <sup>1</sup>	380	116 <sup>1</sup>	19,824	4071 <sup>1</sup>	4071 <sup>2</sup>
Category 1 SSOs	-	-	-	-	0	0
Category 2 or Category 3 <sup>3</sup> SSOs	-	-	-	-	2	2

<sup>1</sup> Goals are based on the average of SSO-related data from the previous five years.

<sup>2</sup> Goals for FY14/15 were kept the same as the FY13/14 goals. The goals will be updated to the 5-yr average after FY13/14.

<sup>3</sup> Category 3 was added as a new spill definition by State Order No. WQ 2013-0058-EXEC in Sept. 2013.



Currently, the District's two goals related to SSO reduction measure the number of SSOs and the volume of SSOs. The SSO reduction goals for the number and volume of SSOs in a given year is determined by the average of the respective data over the previous five years. Over the past ten years the District has consistently had a small number of low-volume SSOs. SSO reduction goals based on five-year averages have served the District well in maintaining a small number and volume of SSOs and provide a realistic goal based on past performance. However, the District experienced one large SSO in FY12/13. This effectively increases the goal for volume of SSO in FY13/14 to over 4,000 gallons (or more than 35 times the goal from the previous year). The District may choose to revisit the way in which SSO reduction goals are set to lessen the effect that anomalies have on the goals for subsequent years.

### **3.2.1 Planned Efforts to Reach Identified SSO Reduction Goals**

The following section describes specific changes to be implemented based on the identified SSO trends to meet the target reduction goals in **Table 6**. The discussion of planned efforts is broken down into a number of potential categories (i.e., cleaning, tools, maintenance schedules, BMPs, staffing, funding, and training). It is recommended that these categories for potential changes be revisited with each subsequent SSMP internal program audit to examine if they may apply to future conditions. Changes in each category may not be necessary in each audit, but addressing each category provides a holistic approach to SSO reduction.

#### **Changes to be employed to sanitary sewer system cleaning**

The District recently finished a prioritized focus on system cleaning and cleaned every pipe in the collection system in the last two years. The District plans to shift the approach it takes to system cleaning by letting observed conditions during pipeline inspections (i.e., CCTV inspect a pipeline before cleaning) drive the frequency of cleaning for each pipeline. The District is in the process of purchasing a new CCTV inspection system and retrofitting the existing CCTV inspection system. This will allow two crews to consistently inspect the collection system and dictate the schedule of the one cleaning crew. The goal is to have more targeted cleaning efforts throughout the system.

#### **Changes to be employed to sanitary sewer system tools and/or technology**

The District developed an Operations & Maintenance Information Technology (O&M IT) Master Plan in 2012. Implementation of the O&M IT Master Plan began in 2013 and will continue into 2015. The O&M IT Master Plan calls for the installation of a new virtual server to run new financial/human resources/utility billing software (Tyler Incode), a new computerized maintenance management system (Lucity), a new CCTV inspection software (IT Pipes), a new server-based GIS software (ESRI), all on a SQL database. This will provide greater interconnectivity between the various databases, which will improve the District's ability to collect, display and report the information that it manages across all positions, from office staff to field operators. These efforts will support District efforts to reach the identified SSO reduction goals. In addition the District is in the process of installing and implementing SCADA at all pump stations and flow recorder sites. This will provide real time monitoring of pump stations for performance and failures and will provide immediate data on flow characteristics during storm events.

#### **Changes to be employed to sanitary sewer system maintenance and repair schedules**

No planned changes to current maintenance and repair schedules are anticipated to meet SSO reduction goals.



### **Changes to be employed to sanitary sewer system best management practices**

Before the next internal SSMP audit, the District plans to formalize its standard operations procedures (SOPs). These procedures will likely include high velocity vacuum cleaning (Unit A), CCTV inspection (mainline) (Unit A and Unit B), confined space entry (permit required), high velocity vacuum cleaning (Unit B), emergency response/spill estimation, and responding to service calls. Formalizing these procedures will standardize the work that is done throughout the District and support the efforts to reduce SSOs through consistency.

### **Changes to be employed to sanitary sewer system staffing levels**

Like many agencies, the District has had to expend significant efforts with succession planning. Over the past two years the District has had a number of longtime employees retire, and over the next two years more key employees are scheduled to retire. The District plans to reorganize the Field Services Department and fill the positions for three leadworkers and to hire a District Engineer and a new Engineering Technician. The District is and will continue to adjust staffing plans to improve productivity and meet the goal of reducing SSOs.

### **Changes to be employed to sanitary sewer system funding levels**

No planned changes to funding levels are anticipated to meet SSO reduction goals. The District maintains a healthy budget which provides for the necessary services, equipment, and system improvements to ensure an effective means of conveying wastewater while maintaining a low monthly service fee to its customers.

### **Changes to be employed to sanitary sewer system training**

As mentioned earlier, the District plans to formalize its standard operating procedures (SOPs). As part of this process the District will incorporate a formal training program in conjunction with the developed SOPs to improve training efforts and provide a level of assurance in the competencies of staff in regards to these procedures.

The District will also continue to provide training on the revised OERP, which reflects the changes to the MRP (see **Section 5.6**) to effectively meet the SSO reduction goals.

### **Measures to Assure No Repeat SSOs**

The District employs various strategies to lessen the chance of repeat SSOs from the same location. The District completes a formal, written Spill Report for every SSO that occurs to identify any potential for a repeat blockage and the measures needed to lessen the chance of that occurring.

One of the objectives of the District R&R and CIP Programs is to correct deficiencies (i.e., condition or capacity related deficiencies) so that portions of the system that present a high risk of stoppages or SSOs are addressed. Addressing the high-risk assets in the collection system decreases the areas of the system that have an increased probability of a SSO.



## SECTION 4 Audit Procedure

Per SSS WDR Section D.13.x, the objective of this audit is to focus on evaluating the effectiveness of the SSMP and the District's compliance with the SSMP requirements identified in the SSS WDR Order. This section describes the procedure used to accomplish this objective.

### 4.1 Review of SSMP Compliance

An assessment of South Placer Municipal Utility District's SSMP was conducted as part of the audit against the requirements outlined in the SSS WDR. The subsections of **SECTION 5** below are organized by SSMP element. Each subsection contains a table which lists the requirements of section D.13 of the SSS WDR and indicates the level of compliance of the SSMP against that requirement. The compliance status of the District's SSMP is indicated with one of the following ratings; **Yes** - *in compliance*, **No** - *not in compliance*, or **N/A** – *not applicable with a written justification in the SSMP*. If there are deficiencies with regards to compliance, an explanation of the deficiency is given. Each deficiency will have associated SSMP enhancements which may include action items, SSMP adjustments, and/or timelines of planned completion.

### 4.2 Review of SSMP Effectiveness

Subsequent to the indication of the level of compliance of the SSMP in relation to the requirements of the SSS WDR, an evaluation of the effectiveness of the SSMP elements will be conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. The discussion reviews if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Where appropriate, recommendations will be made based on the results of this audit to identify tasks to improve the effectiveness of SSMP activities. Wherever possible, performance metrics will be used to measure the effectiveness of SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP. The focus of these sections is to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the District SSMP to obtain the information reviewed by this audit.

A summary of the recommended modifications made throughout this SSMP internal program audit is included in **SECTION 6** – Audit Summary.



## SECTION 5 Audit of SSMP Elements

This chapter evaluates all elements of the District’s SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP required by SSS WDR section D.13. Each element is evaluated for compliance and effectiveness using the procedure described above in **Sections 4.1** and **4.2**, respectively.

### 5.1 Goals

#### 5.1.1 Compliance

**Table 7. Compliance with SSS WDR D.13.i - Goals**

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the District’s wastewater collection system.	Yes	-

#### 5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

##### Goals (SSMP Section 1)

- **Level of Effectiveness:** The District currently has six general goals identified in the SSMP. The SSMP references the District’s Strategic Plan as the source of the goals. The Strategic Plan was updated in 2013 and the goals (i.e., Key Areas of Focus) were updated and expanded. The goals that South Placer Municipal Utility District recorded in the SSMP and Strategic Plan have been effective in guiding the activities of the District to properly manage, operate, and maintain all parts of the sanitary sewer system.
- **Recommendations:**
  - Update the SSMP to list the eight (8) Key Areas of Focus (i.e. goals) listed in the 2013 Strategic Plan.

### 5.2 Organization

#### 5.2.1 Compliance

**Table 8. Compliance with SSS WDR D.13.ii - Organization**

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

#### 5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

##### Identify Legally Responsible Official (LRO) (SSMP Section 2.A)

- **Level of Effectiveness:** The General Manager is the District’s authorized representative in all wastewater collection system matters. The SSMP designates the Superintendent (Jody Allen) as the District’s legally



responsible official (LRO). The SSMP lists the Foreman (Gary Gibson), Leadworker (Joe Mooney), and Construction Manager (Sam Rose) as authorized representatives in the Superintendent's absence. The CIWQS "Facility At-A-Glance Report" at the time of this audit lists Charles W. Clark, Jody Allen, and Sam Rose as "Onsite Managers"/LROs and Gary Gibson, Frank Laguna, and Joe Mooney as "Data Submitters". The current organization of LROs and Data Submitters has proven effective in appropriately reporting SSOs to meet the requirements of the Monitoring and Reporting Program.

- Recommendations:
  - Update the information in the SSMP to reflect the changes in reporting roles due reorganization and retirement to more accurately identify individuals designated as LROs and Data Submitters. Update the CIWQS database to reflect these changes.

### **SSMP Responsibility Organization Chart (SSMP Section 2.B)**

- Level of Effectiveness: A chart in this section provides the title, name, phone number, and a short description of each individual's job responsibilities. Additionally Table 2.1 of the SSMP lists the elements of the SSMP and the responsible party. The SSMP also includes an organization chart to identify lines of authority. The combination of the two tables in the SSMP effectively outline individuals responsible for implementing the SSMP, their names and contact information, and the specific elements of the SSMP for which they are responsible.
- Recommendations:
  - Name table on page 7 for ease in referencing and update the titles, names, and phone numbers in the SSMP to reflect changes in staffing due to reorganization and retirement.

### **Chain of Communication Reporting Chart (SSMP 2.C)**

- Level of Effectiveness: The SSMP outlines the chain of communication for reporting SSOs from the receipt of complaint to CIWQS reporting. The District trains individuals in the positions of Leadworker and Field Services Technician to act as On-Call Supervisors to assure that required reporting information is properly collected during the response to a SSO. All field personnel are trained as On-Call Responders. The District's chain of communication for SSO reporting appears to be effective based on the completeness and thoroughness of the information documented in the District's internal Spill Reports and on the CIWQS database.
- Recommendations:
  - The key to the effectiveness of the chain of communication appears to be the training of the On-Call Supervisors and On-Call Responders, so that the proper information is collected during the time of the spill and relayed back to the LRO for reporting to the State and other agencies when applicable. Continued efforts should be put into training of On-Call Supervisors and On-Call Responders, especially as changes in staffing occur due to reorganization and retirement.



## 5.3 Legal Authority

### 5.3.1 Compliance

**Table 9. Compliance with SSS WDR D.13.iii – Legal Authority**

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by District	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of District ordinances	Yes	-

### 5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Prevent Illicit Discharges Authority (SSMP 3.A)

- Level of Effectiveness: Ordinance 09-02 bans inflow from storm water sources (2.04.A) and prohibits illicit discharges from service connections (2.04.B).
- Recommendations:
  - The District does not have upstream satellite collection systems, but does have several private collection systems (i.e., mobile home parks, apartment complexes). It is recommended the District establish a flow monitoring program to evaluate the impact these private systems have on the collection system and, if deemed necessary, a campaign to educate the owners of the private system of District requirements and the consequences for non-compliance.

#### Design and Construction Standards (SSMP 3.B)

- Level of Effectiveness: The MUD Act and Ordinance 09-02 provide the legal authority to require the proper design and construction of sewers and connections. Ordinance 09-02 references the District Standard Specifications and Improvement Standards for Sanitary Sewers as the requirements for proper design and construction. The legal authority for enforcing proper design and construction has been effective in ensuring that new construction and improvements are built according to District specifications.
- Recommendations: No recommended modifications at this time.

#### Sewer Access Authority (SSMP 3.C)

- Level of Effectiveness: Ordinance 09-02 provides the legal authority that ensures access for maintenance, inspection and repairs to publically owned portions of laterals and clearly defines District responsibility and policy. The legal authority for ensuring access to District facilities has been effective because all new pipelines are constructed in the public right-of-way or within an easement deeded to the District.
- Recommendations: No recommended modifications at this time.

#### Limit FOG Discharges Authority (SSMP 3.D)

- Level of Effectiveness: Ordinance 09-01 provides the legal authority to limit the discharge of FOG. The District’s legal authority has been effective in limiting the number of blockages caused by FOG as





evidenced by the fact that zero SSOs caused by FOG occurred during the period of this audit and the last FOG-related SSO occurred in 2007. The District is currently re-evaluating the implementation goals of the FOG program with the intent of establishing new goals.

- Recommendations: No recommended modifications at this time.

### Enforcement Authority (SSMP 3.E)

- Level of Effectiveness: The MUD Act provides the legal authority to enforce violations of the District’s sewer ordinances. The legal authority to enforce any violation of the District sewer ordinances provided by the MUD Act has been sufficient to ensure that the District standards and specifications are implemented.
- Recommendations: No recommended modifications at this time.

## 5.4 Operation and Maintenance Program

### 5.4.1 Compliance

Table 10. Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	No	The District does not have mapping of all of the storm drain facilities within District boundaries.
iv(b) Preventive O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	No	The District R&R plan lacks long-term planning of CIPs, and associated funding requirements, to address identified deficiencies.
iv(d) Training	Yes	The District provides regular training but additional improvements to the training program should be implemented (see below).
iv(e) Equipment and critical replacement parts	Yes	-

### 5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Collection System Maps (SSMP 4.A)

- Level of Effectiveness: The District maintains electronic and hard copy maps of the sanitary sewer system. The District does not own or operate the storm drain systems within its boundary. The storm drain systems are owned and operated by the District stakeholders (i.e, the City of Rocklin, the Town of Loomis, and unincorporated Placer County). The District has only received storm drain mapping from the City of Rocklin.  
 Electronic mapping data is accessible in the District’s GIS, and hard copy maps are located at the District offices and field crew trucks.



Maps are updated with assets from new development, after repairs to the system, or following rehabilitation/replacement of assets. However, the process for updating the District GIS has changed recently and is not documented in an SOP to assure consistency and uniformity in the creation of new data.

The collection system maps are effective in communicating the location of District assets as well as providing a geospatial database to house important attributes about each asset. The District GIS (i.e., geospatial location and associated attribution) is available only to select staff. The information stored in these databases would be more effective if it were available to all of the District staff.

- **Recommendations:**
  - Obtain storm drain mapping information from the Town of Loomis and Placer County.
  - Utilize newly purchased software (i.e., ArcGIS Server) to make the most current version of the mapping data available to all District employees through an internet browser and other applications.
  - Develop a SOP for adding new assets to the GIS database.

**Preventive Operations & Maintenance Activities (SSMP 4.B)**

- **Level of Effectiveness:** The audit identified and verified that the District engages in programs to complete the routine preventative maintenance activities listed in SSMP section 4.B.

The District utilizes a computerized maintenance management system (CMMS) to schedule cleaning of known problem areas and to document completed work orders. During the audit period, the District purchased a new CMMS software and is in the process of migrating legacy data, implementing new user interfaces, and training.

The District tracks a number of metrics related to the O&M activities. A selection of O&M activities are listed in **Table 11** with the actual quantities accomplished in FY11/12 and FY12/13.

**Table 11. Activities related to SSS WDR D.13.iv(b)**

Performance Measure	FY11/12	FY12/13
Total miles cleaned per year	116	129
Mainline pipe repairs completed	40	15
Length of pipe chemically treated for roots	7,388 LF	11,705 LF
Cleanouts installed or repaired	45	10

The District accomplishes a significant amount of maintenance-related activities each year. However, clearly-defined goals are not set for these activities so it is difficult to measure the effectiveness of planned activities against the desired outcomes.

The District does not have formal, written SOPs for its preventative maintenance programs. To increase the effectiveness of the preventative maintenance programs, the District should develop SOPs for the related activities to increase the consistency of the work product.

- **Recommendations:**
  - Use the new CMMS (Lucity) to effectively manage the District maintenance programs by scheduling/assigning/completing/QC'ing work orders.



- Develop SOPs for the regular preventative maintenance activities. The following is a list of suggested SOPs:
  - High Velocity Vacuum Cleaning
  - Corrective Maintenance (Pipe Repair)
  - Lift Station Maintenance and Troubleshooting

**Rehabilitation and Replacement Plan (SSMP 4.C)**

- Level of Effectiveness: Pipelines and manholes are regularly inspected by District crews. The District has employed a custom rating system to assign the severity of observed defects. The length of pipeline and the number of manholes inspected each year are tracked in the District’s CMMS. The District staff employ a standardized process for prioritizing rehabilitation and replacement activities and selecting the appropriate method of repair. This process involves compiling and reviewing the data the District has about each asset to assess the condition of the pipe using CCTV records, review past work order history (e.g., flushing history, root treatment, high frequency cleaning), evaluate the asset location, review pipeline attributes (e.g., age, material), review the hydraulic capacity, and gather institutional knowledge about the pipeline and previous work in the area. The highest priority assets are grouped into a project each year and repaired. The District tracks a number of metrics related to inspection activities. A selection of inspection activities are listed in **Table 12** with the actual quantities accomplished in FY11/12 and FY12/13.

**Table 12. Performance Measures related to SSS WDR D.13.iv(c)**

Performance Measure	FY11/12	FY12/13
Independent manhole inspections per year	3,668	3,373
Total miles CCTV inspected per year (main)	34	82
Average cost of CCTV	\$ 2.44 / LF	\$ 1.57 / LF

The District accomplishes a significant amount of inspection-related activities each year. However, clearly-defined goals are not set for these activities so it is difficult to measure the effectiveness of planned activities against the desired outcomes.

The current long-term capital improvement projects are based on the projects identified in the 2009 Master Plan. Long-term planning of capital improvement projects does not currently account for the replacement of system assets based on the structural or maintenance condition, the work order history, the criticality of the asset location, etc.

- Recommendations:
  - Create a Five Year CIP plan to address the highest risk assets in the system by integrating the evaluation of all available data and projecting the schedule of proposed projects over multiple years.
  - Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data.



- Develop SOPs for regular inspection activities. The following is a list of suggested SOPs based on the activities currently tracked with performance measures:
  - CCTV Inspections
  - Manhole Inspections
  - Lift Station Inspections

#### Training (SSMP 4.D)

- Level of Effectiveness: The District requires all maintenance workers and technical service staff to receive training. The District adheres to the monthly Safety and Training Schedule located in Appendix D of the SSMP. In addition, the tailgate safety meetings are, for the most part, held every 10 days. The current training program has been effective in developing safe and effective staff. Over this audit period the District reported two on-the-job accidents; two (poison oak) in FY11/12 and zero in FY12/13. The District strives for zero on-the-job accidents and uses the training programs to improve safety at work. Training on the topics listed in Appendix D of the SSMP occurs consistently. However, training on the operation of the various pieces of equipment that the District employs to complete the routine maintenance activities has not occurred regularly. To increase the likelihood that staff will safely and consistently operate the equipment needed to complete assigned O&M tasks, training on the equipment should be improved upon.
- Recommendations:
  - Identify the required training for each employee and document that each employee has received the required training.
  - Develop a schedule for regular training on the specific equipment that the District owns. The schedule equipment training should identify the frequency of training, the proposed instructors, appropriate referencing of SOPs and manuals, and the individuals required to take the training.
  - Use the SOPs (recommended in this audit) as a training tool for District staff. The SOPs should be developed so that 1) they provide a framework for the consistent delivery of required information, skills, and familiarity with equipment, and 2) they can be used to demonstrate competence of an individual in the particular subject.

#### Equipment and Critical Replacement Parts (SSMP 4.E)

- Level of Effectiveness: In response to the last SSMP audit, a method for documenting the tracking of inventory and critical spare parts was started. A list of SPMUD Lift Station Critical Spare Parts is contained in the SSO ERP in Appendix A. The SSMP calls for bi-annual audits of the critical spare parts inventory. This method is still under development and the bi-annual audits are not currently being performed. The current process of ensuring the necessary parts has proven adequate. The District has not experienced a SSO due to the lack of equipment or critical spare parts (e.g., lift station pump failure, loss of power). However, the process that was started should be finished to solidify/improve the methods used to ensure that required equipment and parts are available when necessary.
- Recommendations:
  - Finalize the program for documenting the equipment inventory and critical spare parts and implement it through bi-annual audits.



## 5.5 Design and Performance Provisions

### 5.5.1 Compliance

**Table 13. Compliance with SSS WDR D.13.v – Design and Performance Provisions**

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

### 5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Sanitary Sewer Design and Specifications (SSMP 5.A)

- Level of Effectiveness: The District Specifications and Improvement Standards for design and construction are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.  
 The District Specifications and Improvement Standards are easily accessible to interested parties through the District website so that they can be more effectively implemented.  
 The District Specifications and Improvement Standards are updated as needed.
- Recommendations:
  - Change the SSMP to state that the Standard Specifications and Improvement Standards for Sanitary Sewers are “reviewed and updated as needed to keep current with industry standards...”. Eliminate the wording “continuously reviewed and periodically updated”.

#### Sanitary Sewer System Construction and Performance Provisions (SSMP 5.B)

- Level of Effectiveness: The procedures for testing of new/rehabilitated assets are clearly defined and these procedures have been effective in ensuring that recently constructed assets perform as expected.
- Recommendations: No recommended modifications at this time.



## 5.6 Overflow Emergency Response Plan

### 5.6.1 Compliance

**Table 14. Compliance with SSS WDR D.13.vi - OERP**

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	Yes	-
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate training of staff and contractors	Yes	-
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	Yes	-

The State Water Board amended the monitoring and reporting program (MRP) with revised requirements (Revised MRP WQ 2013-0058-EXEC) that took effect September 9, 2013. The revised requirements are available at the State Water Resources Control Board’s Sanitary Sewer Overflow Reduction Program website ([http://www.waterboards.ca.gov/water\\_issues/programs/sso/](http://www.waterboards.ca.gov/water_issues/programs/sso/)). The changes from these revised requirements include the type of data that must be collected in the event of an SSO and the follow up reporting that is required.

- **Recommendations:**
  - Complete all unpopulated fields in the revised “Collection System Questionnaire” in CIWQS. Enrollees have six months from the date that the revised MRP became effective to complete the questionnaire. This means that the questionnaire must be completed by approximately March 9, 2014. If this questionnaire is not completed by that time, the system will lock the Enrollee out from all reporting capabilities.

The South Placer Municipal Utility District Sanitary Sewer Overflow Emergency Response Plan (SSO ERP) was first adopted in January 2001. The ERP will be revised in April 2014 to incorporate new requirements from the revised MRP and to reflect other modifications in the evolution of the District SSO ERP procedures.

### 5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Notification Procedures (SSMP 6.A)

- **Level of Effectiveness:** The average SSO response time (i.e., notification of SSO to operator arrival time) over the period of this audit is 39 minutes. The average SSO response time since 2007 is 26 minutes. This indicates that the notifications procedures employed by the District are effective in facilitating a rapid response from the District’s first responders.



Section 7 of the SSO ERP clearly outlines the notification procedures for the various situations that may be encountered and lists the contact information of all potentially applicable agencies. These resources have proven effective for notifying appropriate agencies in response to a SSO.

- Recommendations: No recommended modifications at this time.

### Response Program (SSMP 6.B)

- Level of Effectiveness: The District SSO ERP effectively outlines the program that the District uses to appropriately respond to a SSO event. The SSO ERP has gone through a number of iterations over the past 13 years and encapsulates the best practices of the District in responding to a SSO.

The SSO ERP has been effective in responding to SSOs. The District experienced one large SSO during the audit period that was the result of operator error. This one large event significantly skews the average SSO volume and SSO duration numbers for the period. The SSO volume, the time from SSO start to operator arrival, and the time from notification to operator arrival for the remaining three SSO events are more representative of a typical District response (126 gallons, 86 minutes, and 52 minutes respectively). These averages come from the SSO data from this audit period (i.e., last two fiscal years).

The District has implemented procedures and methods to consistently estimate and document the SSO start time and SSO volume according to the best available information.

The District also implements a Spill Response Debriefing Form after each SSO event to conduct a self-evaluation of the various aspects of a SSO response as defined in the SSO ERP. This is effective in documenting the level of effectiveness of the SSO ERP, the solutions to unique problems encountered during the response, and suggested improvements to the SSO ERP while the information from the event is still fresh in the responders' minds.

- Recommendations:
  - Consider adding the following information to Appendix D of the SSO ERP; the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as in Appendix D of the SSO ERP and the information for each lift station should be posted onsite at each respective lift station. This information is located in each combination HydroVac truck in a clearly labeled binder.

### Regulatory Notification Procedure (SSMP 6.C)

Level of Effectiveness: The current arrangement of the LRO with a group of individuals that are able to act in the absence of the LRO have met the needs of the District to effectively report to the CIWQS database in a timely manner. The SSO Supervisor is responsible for reporting SSO to Cal-OES, Placer Environmental Health Department, and other affected agencies as necessary.

The regulatory notification procedure has proven effective because to date, the District has not encountered a situation in which notification information for a required party was not available to District staff responding to a SSO.

- Recommendations: No recommended modifications at this time.





### Staff and Contractors Training (SSMP 6.D)

- Level of Effectiveness:  
Each employee is required to complete SSO response procedure training. Various aspects of SSO training are included in the monthly training schedule each year. While training on the SSO ERP has occurred over multiple years, the response procedures (e.g., estimating the spill volume) have not always been applied in accordance with the SSO ERP training. The training has led to improvement in understanding and applying documented response procedures, but there still exists a need for further training. Enhanced SSO response training has been provided to select staff who serve as On-Call Supervisors and it is required that they be contacted and involved in every SSO occurrence.  
Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system. However, two of the four SSOs during this audit period were caused by contractor error. While the contractor was solely responsible for causing the SSOs, the two occurrences emphasize the importance of ensuring that contracted resources working on the sewer system need to be trained and held accountable to the procedures of the District's ERP.
- Recommendations:
  - Add specific language to contracting specifications requiring initial and reoccurring training on the District SSO ERP for contractors working on the sewer system. Identify times (e.g., preconstruction meetings) to effectively and efficiently train contractors on the District SSO ERP by communicating the contractor's role in the ERP and impressing upon the contractor the liability they assume to ensure the SSO ERP is appropriately followed by entering into contract and working on the District system.

### Emergency Response Coordination (SSMP 6.E)

- Level of Effectiveness: Section 5 of the SSO ERP addresses emergency operations including hazardous spills, traffic control, and crowd control. The measures outlined in this section have proven effective for the situations that the District has encountered to date.
- Recommendations: No recommended modifications at this time.

### Spill Mitigation and Containment Procedure (SSMP 6.F)

- Level of Effectiveness: An SSO ERP is available for staff training and for use during a SSO event. The SSO ERP is comprehensive and indicates proper roles and responsibilities as well as SOPs for multiple items including spill rate estimation (Appendix E of SSO ERP) and water quality sampling (Appendix F of SSO ERP). The SSO ERP has been effective in defining the steps to be taken to contain and prevent a SSO from discharging to waters of the United States and to minimize any adverse impact on the environment.
- Recommendations: No recommended modifications at this time.



## 5.7 FOG Control Program

### 5.7.1 Compliance

**Table 15. Compliance with SSS WDR D.13.vii – FOG Control Program**

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	-
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	Yes	-
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Yes	-
vii(g) FOG Control Program Measures	Yes	-

The District historically has had very few problems with FOG-related blockages and SSOs. Despite that fact, the District began a FOG program in 2009 to be proactive in dealing with FOG sources. To date there has been little momentum behind the FOG program, however the District is currently re-evaluating the implementation goals of the FOG program with the intent of establishing new goals.

### 5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Public Education Plan (SSMP 7.A)

- Level of Effectiveness: The efforts the District has made to distribute information through the District website and community events appear to be effective in reaching the objective of educating the public on the proper disposal of FOG and other substances.
- Recommendations: No recommended modifications at this time.

#### FOG Disposal Plan (SSMP 7.B)

- Level of Effectiveness: The District offers free pick up of FOG from its residential customers. The FOG program also lists acceptable grease haulers and disposal facilities for FSEs to utilize to properly dispose of generated FOG. These programs appear effective because of the small number of FOG blockages in the system.
- Recommendations: No recommended modifications at this time.

#### Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.C)

- Level of Effectiveness: District ordinance 09-01, which establishes requirements regarding FOG and the Standard Specifications provide the necessary legal authority for the District to prohibit FOG. These



documents are effective in requiring the type of equipment to reduce FOG discharged from FSEs, as well as indicating the authority of the District to prohibit SSOs and blockages due to FOG.

- Recommendations: No recommended modifications at this time.

### **BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.D)**

Level of Effectiveness: District Ordinance 09-01 section 2.04 requires that all FSEs have best management practices (BMPs). The District's efforts to disseminate information regarding BMPs, grease removal devices and the associated record keeping and reporting requirements have been effective. Also each FSE must have an appropriately sized grease removal device per the Uniform Plumbing Code. The District provides information about BMP requirements, BMP posters, and BMP information sheets on the following topics; proper grease disposal, requirements for new and remodeled FSEs, grease interceptor maintenance, grease trap maintenance, selecting a grease hauler, a list of licensed grease haulers, and equipment cleaning in booklet form as a resource for FSEs within the District. The District supplements the information provided about its program through onsite inspections/meetings with FSEs to reinforce the level of understanding of the FOG program and its requirements.

District Ordinance 09-01 section 4.10 includes a list of recordkeeping items that may be required to be kept for no less than three years and made available upon request of a FOG Inspector or District representative.

- Recommendations: No recommended modifications at this time.

### **Inspection and Enforcement Authority – FOG Producers (SSMP 7.E)**

- Level of Effectiveness: Ordinance 09-01 provides District inspectors right of entry to access and inspect FSEs and take enforcement actions for non-compliance. As identified in **Section 3.1** above, FOG is not a significant contributor the number or volume of SSOs. If FOG were a significant contributor to SSOs, then it would be expected that the number of enforcement actions against FSEs contributing to the blockages might be higher. However, the low number of FOG-related SSOs correlates with the low number of FOG-related enforcement actions.
- Recommendations: No recommended modifications at this time.

### **FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.F)**

- Level of Effectiveness: The District currently has 194 pipeline segments on the high frequency (hot spot) cleaning schedule. The cleaning schedule and records of cleaning are documented in the CMMS. The District's aggressive hot spot cleaning schedule has proven effective in limiting the number of SSOs due to FOG blockages.
- Recommendations:
  - Develop a SOP describing the process of how pipelines are added to the high frequency (hot spot) cleaning schedule, how the cleaning frequency (i.e., number of months) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.



### FOG Source Control Program (SSMP 7.G)

- Level of Effectiveness: Eventually, the District will use the FOG Wastewater Discharge Permit (WDP) program as a means for FOG source control by applying incremental and progressive discipline if permit holders are in violation of the FOG ordinance until performance measurements are met. This District has not yet implemented the FOG WDP program or developed additional source control measures related to the high frequency schedule referenced above because of the lack of FOG-related blockages/SSOs.
- Recommendations:
  - Update the SSMP to reschedule the timeline when FOG source control program will be developed. Currently it states that the development will begin in fiscal year 2009/2010 and be phased over a two year period.

## 5.8 System Evaluation and Capacity Assurance Plan

### 5.8.1 Compliance

Table 16. Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	Yes	-
viii(b) Establish design criteria	Yes	-
viii(c) Establish short- and long-term CIP	Yes	-
viii(d) Develop schedule of completion dates for CIP	Yes	-

### 5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Evaluation of Hydraulic Deficiencies (SSMP 8.A)

- Level of Effectiveness: The District maintains its own hydraulic model and hydraulic modeling software. The evaluation of the hydraulic capacity of the sewer trunk system using this model identified potential deficiencies and recommended improvements at different trigger points. Having the hydraulic model maintained by the District allows for continuous use of the model results and periodic updates of the hydraulic model as needed. This is an effective method for evaluating potential deficiencies in the system and assuring capacity for customers under various scenarios.
- Recommendations:
  - Schedule the next update of the hydraulic model to evaluate the system capacity for FY2015 and every five years after that.

#### Design Criteria (SSMP 8.B)

- Level of Effectiveness: The District established a 10-year 6-hour peak wet weather design storm for the evaluation of existing collection system components and sizing of new collection system components. A 10-year 6-hour peak wet weather design storm has been effective in accounting for the impact of wet weather events on the system and planning for system improvements.



- Recommendations:
  - Add documentation to internal SSO reports checking if the amount of precipitation over a 6-hour period near the time of the SSO event exceeded 1.54 inches if the cause of the SSO is identified as “rainfall exceeded design” in CIWQS. The estimate of the 10-year 6-hour precipitation frequency estimate with a 90% confidence interval from the NOAA Atlas 14, Volume 6, Version 2 data for the Rocklin (station ID 04-7516) is 1.54 inches.

### Short-term and Long-term Capital Improvement Plan (SSMP 8.C)

- Level of Effectiveness: The District hydraulic model includes the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 10 inches. There has not been a capacity related SSO from the District system. The short-term and long-term CIPs identified in the model to address hydraulic deficiencies are effective in assuring that the system has sufficient capacity in-step with future growth.
- Recommendations:
  - Extend the hydraulic model to include all pipes within the collection system so that short-term and long-term CIPs account for hydraulic deficiencies in the collector lines of the system.
  - Post future SECAP documentation and results to the District website for public review.

### Capital Improvement Program Schedule (SSMP 8.D)

- Level of Effectiveness: The hydraulic model identified a number of sewer trunk segments that need additional capacity as new development continues to connect to the collection system. The schedule of capital improvement projects to address potential hydraulic deficiencies in the system has been effective in identifying the order and timing in which projects need to be accomplished.
- Recommendations: No recommended modifications at this time.

## 5.9 Monitoring, Measurement, and Program Modifications

### 5.9.1 Compliance

**Table 17. Compliance with SSS WDR D.13.ix – MMM**

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	No	The District currently does not maintain a set of clear measurable goals that can be used as performance indicators for specific elements of the SSMP.
ix(c) Assess preventative maintenance program	Yes	-
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-



## 5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

### Relevant Information to Prioritize SSMP Activities (SSMP 9.A)

- Level of Effectiveness: The District tracks a number of metrics to prioritize SSMP activities and assess the associated production and level of effort. The performance of the two departments in the District is summarized in annual reports. These reports are effective in presenting the level of performance and the efficiency of the work completed throughout the year. This information is used as a tool to prioritize future work.
- Recommendations: No recommended modifications at this time.

### Metrics to Monitor Effectiveness of SSMP (SSMP 9.B)

- Level of Effectiveness: The District currently tracks performance using a number of metrics. However, none of these metrics are associated with specific SSMP elements. Very few of these metrics have identified targets or goals. These metrics can be used to measure the level of effort, but without associating metrics to specific SSMP elements and without setting goals for each metric it is difficult to monitor the effectiveness of the SSMP.
- Recommendations:
  - Identify metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the District can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in **Appendix 7.2** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit.

### Metrics to Assess Preventative Maintenance Program (SSMP 9.C)

- Level of Effectiveness: The District tracks a number of metrics to quantitatively evaluate the performance of the activities of the preventative maintenance program. This is effective because it allows the District to monitor the performance of particular activities over time and against other metrics (e.g., staffing levels, SSO trends) to determine correlations between the data. However, not all of the metrics have an associated goal, which makes it difficult to assess whether or not that activity is meeting the intended result.



- Recommendations:
  - Develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.

### **SSMP Performance Monitoring and Update Process (SSMP 9.D)**

- Level of Effectiveness: The District tracks revisions/updates to the SSMP using Track Changes in Microsoft Word and is maintained by the Technical Services Manager. The Track Changes to the SSMP is effective in documenting the changes to the SSMP over time. Track Changes allows for multiple individuals to suggest modifications to the SSMP. The Track Changes program documents who made the suggested changes and when and allows for the suggested changes to be accepted or rejected in the next SSMP revision.
- Recommendations:
  - Document a process for responsible parties to suggest changes in Track Changes to the electronic version of the SSMP and provide training to all responsible parties on how to add Track Changes, so that more individuals are involved with the SSMP modification process. The process may also include, the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the District website and archiving SSMP versions.

### **SSO Trends – Frequency, Location and Volume (SSMP 9.E)**

- Level of Effectiveness: The District tracks a number of key pieces of information in order to attempt to identify trends in SSO data. Appendix C in the SSMP summarizes key pieces of information (e.g., pipe age, pipe material, pipe diameter, SSO cause) about each SSO event as well as the results of SSO trending to communicate the highest priorities for attempting to minimize the number and severity of SSOs.
- Recommendations: No recommended modifications at this time.





## 5.10 SSMP Program Audits

### 5.10.1 Compliance

**Table 18. Compliance with SSS WDR D.13.x – SSMP Program Audits**

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	Yes	-

### 5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Periodic SSMP Internal Audits (SSMP 10)

- Level of Effectiveness: The District conducts an internal audit biennially with a primary focus on the evaluation of system metrics towards the elimination of preventable SSO and the reduction of the impact of those SSOs that do occur. The internal audit is helpful in identifying areas of improvement. The past audit identified enhancements and plans were put in place to improve the SSMP. This audit has specified additional recommended enhancements. The regular review of the SSMP assures the usefulness of the planned activities.
- Recommendations:
  - Post this SSMP internal audit to the District website.
  - Schedule the next internal SSMP audit for July - August 2015.
  - Use the format of this audit for future internal audits.
  - The SSMP must be recertified by the District Board before August 2014. Per SSS WDR D.14, the District must have the SSMP updated and re-certified by the governing board (i.e., Board of Directors) every five years. The Board approved the original SSMP on August 2009 which sets the date for re-certification on August 2014.



## 5.11 Communication Program

### 5.11.1 Compliance

**Table 19. Compliance with SSS WDR D.13.xi – Communications Program**

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

### 5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

#### Internal Communication – Staff and Board of Directors (SSMP 11)

- Level of Effectiveness: The District communicates information about the SSMP and the related programs to the Board of Directors periodically through the General Manager. This communication is important to inform the Board of implementation and performance of the District against the SSMP. The District communicates the implementation and performance of the SSMP to the public via the District website, quarterly billing statements, and the CIWQS database. The public can provide feedback on anything related to the District, including the SSMP and its related activities, through the Customer Survey available on the website. It is difficult to assess the level of effectiveness of the communication of SSMP-related information because of the limited response. The District does not have any satellite agencies that discharge into the District’s collection system. However, the District discharges into the City of Roseville collection system and the Placer County SMD No.2 collection system. The City of Roseville and Placer County are regional partners with the District in the South Placer Wastewater Authority (SPWA). Quarterly meetings with the regional partners have proven effective to discuss the ongoing coordination between the tributary/satellite systems.
- Recommendations:
  - Develop the Communication Program of the SSMP into three focus areas.
    - Internal Communication – Staff and Board of Directors
    - Stakeholder Communication – City of Rocklin, Town of Loomis, Placer County
    - Regional Partners – City of Roseville, Placer County



## SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and the identified deficiencies as described in **Section 4.1**. **Table 20** is a summary of the results of that evaluation.

**Table 20. Summary of SSMP Compliance Deficiencies**

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	No	The District does not have mapping of all of the storm drain facilities within District boundaries.
iv(c) Rehabilitation and Replacement (R&R) plan	No	The District R&R plan lacks long-term planning of CIPs, and associated funding requirements, to address identified deficiencies.
ix(b) Measure effectiveness of SSMP elements	No	The District currently does not maintain a set of clear measurable goals that can be used as performance indicators for specific elements of the SSMP.

This section also summarizes the recommended enhancements made during the process of evaluating each SSMP elements effectiveness as described in **Section 4.2**. **Table 21** is a summary of those recommendations.

**Table 21. Summary of Audit Recommendations**

SSMP Section	Recommendation	Timeline for Completion
1	Update the SSMP to list the eight (8) Key Areas of Focus (i.e. goals) listed in the 2013 Strategic Plan.	*July 2014
2.A	Update the information in the SSMP to reflect the changes in reporting roles due reorganization and retirement to more accurately identify individuals designated as LROs and Data Submitters. Update the CIWQS database to reflect these changes.	*July 2013
2.B	Name table on page 7 for ease in referencing and update the titles, names, and phone numbers in the SSMP to reflect changes in staffing due to reorganization and retirement.	*July 2014
2.C	The key to the effectiveness of the chain of communication appears to be the training of the On-Call Supervisors and On-Call Responders, so that the proper information is collected during the time of the spill and relayed back to the LRO for reporting to the State and other agencies when applicable. Continued efforts should be put into training of On-Call Supervisors and On-Call Responders, especially as changes in staffing occur due to reorganization and retirement.	*March 2014
4.A	Obtain storm drain mapping information from the Town of Loomis and Placer County.	November 2014
4.A	Utilize newly purchased software (i.e., ArcGIS Server) to make the most current version of the mapping data available to all District employees through an internet browser and other applications.	December 2014
4.A	Develop a SOP for adding new assets to the GIS database.	August 2014



SSMP Section	Recommendation	Timeline for Completion
4.B	Use the new CMMS (Lucity) to effectively manage the District maintenance programs by scheduling/assigning/completing/QC'ing work orders.	November 2014
4.B	Develop SOPs for the regular preventative maintenance activities. The following is a list of suggested SOPs: High velocity vacuum cleaning.	June 2015
4.C	Create a Five Year CIP plan to address the highest risk assets in the system by integrating the evaluation of all available data and projecting the schedule of proposed projects over multiple years.	March 2015
4.C	Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data.	March 2015
4.C	Develop SOPs for regular inspection activities. The following is a list of suggested SOPs based on the activities currently tracked with performance measures: CCTV	March 2015
4.D	Identify the required training for each employee and document that each employee has received the required training.	December 2014
4.D	Develop a schedule for regular training on the specific equipment that the District owns. The schedule equipment training should identify the frequency of training, the proposed instructors, appropriate referencing of SOPs and manuals, and the individuals required to take the training.	June 2015
4.D	Use the SOPs (recommended in this audit) as a training tool for District staff. The SOPs should be developed so that 1) they provide a framework for the consistent delivery of required information, skills, and familiarity with equipment, and 2) they can be used to demonstrate competence of an individual in the particular subject.	June 2015
4.E	Finalize the program for documenting the equipment inventory and critical spare parts and implement it through bi-annual audits.	February 2015
5.A	Change the SSMP to state that the Standard Specifications and Improvement Standards for Sanitary Sewers are "reviewed and updated as needed to keep current with industry standards...". Eliminate the wording "continuously reviewed and periodically updated".	July 2014
6	Complete all unpopulated fields in the revised "Collection System Questionnaire" in CIWQS. Enrollees have six months from the date that the revised MRP became effective to complete the questionnaire. This means that the questionnaire must be completed by approximately March 9, 2014. If this questionnaire is not completed by that time, the system will lock the Enrollee out from all reporting capabilities.	September 2014
6.B	Consider adding the following information to Appendix D of the SSO ERP; the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as in Appendix of the SSO ERP and the information for each lift station should be posted onsite at each respective lift station.	*August 2014



SSMP Section	Recommendation	Timeline for Completion
6.D	Add specific language to contracting specifications requiring initial and reoccurring training on the District SSO ERP for contractors working on the sewer system. Identify times (e.g., preconstruction meetings) to effectively and efficiently train contractors on the District SSO ERP by communicating the contractor’s role in the ERP and impressing upon the contractor the liability they assume to ensure the SSO ERP is appropriately followed by entering into contract and working on the District system.	June 2015
7.F	Develop a SOP describing the process of how pipelines are added to the high frequency (hot spot) cleaning schedule, how the cleaning frequency (i.e., number of months) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.	December 2014
7.G	Update the SSMP to reschedule the timeline when FOG source control program will be developed. Currently is states that the development will begin in fiscal year 2009/2010 and be phased over a two year period.	December 2014
8.A	Schedule the next update of the hydraulic model to evaluate the system capacity for FY2015 and every five years after that.	June 2015
8.B	Add documentation to internal SSO reports checking if the amount of precipitation over a 6-hour period near the time of the SSO event exceeded 1.54 inches if the cause of the SSO is identified as “rainfall exceeded design” in CIWQS. The estimate of the 10-year 6-hour precipitation frequency estimate with a 90% confidence interval from the NOAA Atlas 14, Volume 6, Version 2 data for the Rocklin (station ID 04-7516) is 1.54 inches.	*July 2014
8.C	Extend the hydraulic model to include all pipes within the collection system so that short-term and long-term CIPs account for hydraulic deficiencies in the collector lines of the system.	June 2015
8.C	Post future SECAP documentation and results to the District website for public review.	December 2014



SSMP Section	Recommendation	Timeline for Completion
9.B	<p>Identify metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the District can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. A sample Performance Indicator Assessment Form is included in <b>Appendix 7.2</b> of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit.</p>	December 2014
9.C	<p>Develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals.</p>	December 2014
9.D	<p>Document a process for responsible parties to suggest changes in Track Changes to the electronic version of the SSMP and provide training to all responsible parties on how to add Track Changes, so that more individuals are involved with the SSMP modification process. The process may also include, the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the District website and archiving SSMP versions.</p>	December 2014
10	<p>Post this SSMP internal audit to the District website.</p>	Oct. 2014
10	<p>Schedule the next internal SSMP audit for July - August 2015.</p>	July 2014
10	<p>Use the format of this audit for future internal audits.</p>	August 2015
10	<p>The SSMP must be recertified by the District Board before August 2014. Per SSS WDR D.14, the District must have the SSMP updated and re-certified by the governing board (i.e., Board of Directors) every five years. The Board approved the original SSMP on August 2009 which sets the date for re-certification on August 2014.</p>	August 2014
11	<p>Develop the Communication Program of the SSMP into three focus areas.</p> <ul style="list-style-type: none"> <li>▪ Internal Communication – Staff and Board of Directors</li> <li>▪ Stakeholder Communication – City of Rocklin, Town of Loomis, Placer County</li> <li>▪ Regional Partners – City of Roseville, Placer County</li> </ul>	December 2014



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## SECTION 7 Appendices

### 7.1 Appendix – Sample Performance Indicator Assessment Form



<b>Goal:</b>	<b>O&amp;M PM – SSS WDR-D.iv.b</b>			
<b>Responsible Person (RP):</b>	Field Supervisor			
<b><u>Description of Performance Indicator(s) (PIs):</u></b>				
The PIs listed below will be used to measure the effectiveness of the activities outlined in the District SSMP related to the requirements of section D.iv.b of the SSS WDR.				
<b><u>PIs and Data Analysis Methods:</u></b>				
<p>1. <i>Number of manholes cleaned and visually inspected.</i>  <b>Discussion &amp; Scoring Criteria:</b> This PI measures the number of manholes that maintenance staff clean and inspect each year.</p> <p>2. <i>Miles of sewer main flushed each year.</i>  <b>Discussion &amp; Scoring Criteria:</b> This PI measures the miles of collection system flushed with high velocity vacuum cleaning as part of the preventative maintenance program. Cleaning the entire collection system (~250 miles) every 5 years is acceptable per industry standards, every 3 years is good, and every 2 year is excellent. The District consistently tracks this data throughout the year.</p>				
<b>PI</b>	<b>Excellent</b>	<b>Good</b>	<b>Acceptable</b>	<b>Below Goal</b>
1	> 1200	> 1050	> 900	< 900
2	> 125	> 85	> 50	< 50

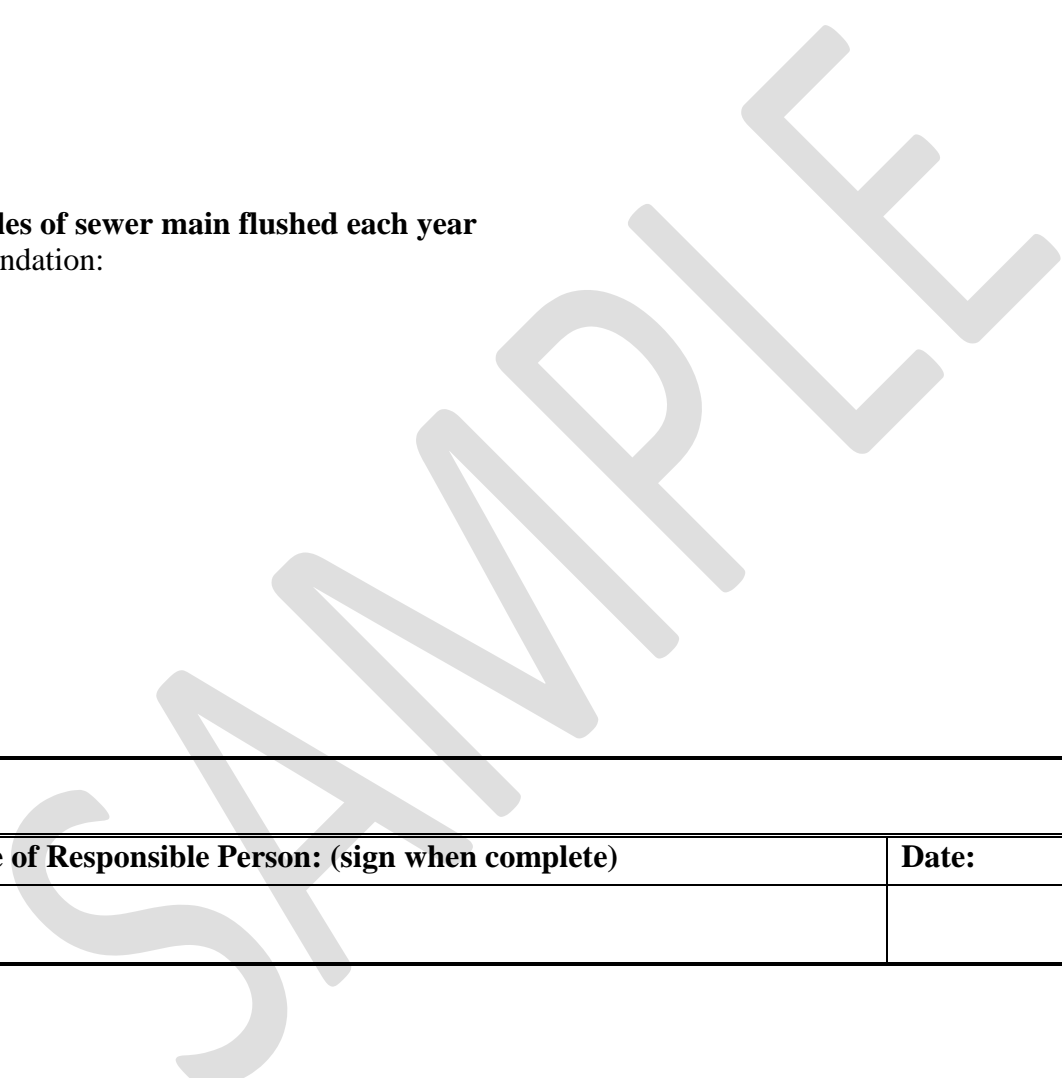
<b>Performance Tracking</b>		
<b>PI</b>	<b>Measured Value</b>	<b>Performance Assessment Comments / Related Information / Justification</b>
1		
2		

SAMPLE

**Recommendations for Programmatic or SSMP Updates**

**PI 1 – Number of manholes cleaned and visually inspected**  
Recommendation:

**PI 2 – Miles of sewer main flushed each year**  
Recommendation:



<b>Signature of Responsible Person: (sign when complete)</b>	<b>Date:</b>