



**Statewide  
Sanitary Sewer Overflow Reduction Program  
Annual Compliance Report**



**State Water Resources Control Board**



**August 2011 (Revised 9/9/11)**

## Revision Sheet

**Date:** 9/9/2011

**Document:** Sanitary Sewer Overflow Reduction Program Annual Compliance Report

**Revisions:**

Table 1 – (Revised) Overall Statewide SSO and PLSD Reports (from 1/2/07 to 1/31/11)

Revised items in table:

- Total Miles of Pressure Sewer
- Total Miles of Gravity Sewer
- Total miles of Laterals Responsible
- # of Spills locations per 100 miles of Sewer
- Volume Reaching Surface Water per 100 miles of Sewer (gal/100 mi)

**Details:**

The corrections were made due to issues with the miles of pressure system user entered data. The CIWQS Sanitary Sewer Questionnaire did not recognize quantities in fraction; this issue has been fixed in CIWQS as of 9/12/2011.

## Executive Summary

The State Water Resources Control Board (State Water Board) adopted statewide general waste discharge requirements for sanitary sewer systems (SSS WDRs) as Water Quality Order No. 2006-0003-DWQ in May 2006. The purpose of the SSS WDRs is to provide consistent statewide requirements for quantifying and reducing both the number of Sanitary Sewer Overflows (SSOs) and the volume of wastewater spilled in the state. This report provides an annual update on the Statewide Sanitary Sewer Overflow Reduction Program (SSO Reduction Program) and an update to previously released reports. This August 2011 report contains detailed information on the SSO Reduction Program, including implementation efforts, compliance, and enforcement actions.

Staff focused its compliance and enforcement activities in 2010 on addressing violations of the SSS WDRs for failure to participate and for failure to accurately and completely report required information. Staff sent 119 notices of violation (NOVs) on July 20, 2010, aimed at enrolled agencies that failed to meet the required reporting elements. Staff also addressed reporting deficiencies by sending compliance e-mail reminders to 921 enrolled agencies. In total, 18 enrollees not responding to the NOVs have been referred to the State Water Board, Office of Enforcement. Office of Enforcement staff is pursuing further action against these enrollees.

Currently, 1081 sanitary sewer systems are enrolled under the SSS WDRs. The average monthly reporting compliance, the percent of enrollees either reporting a spill or submitting a no-spill certification during a month, for the past year was 92 percent, which is 13 percent greater than during the 2009 annual reporting period. Overall, 758 enrollees (approximately 67 percent) have reported one or more SSOs and 353 enrollees (approximately 33 percent) have not reported an SSO since program inception.

Analyses of SSO reports show that SSOs have a seasonal pattern; more SSOs occur and more sewage spills during the wet seasons. A significant cause of the larger SSOs appears to be excessive infiltration and inflow. Although most SSOs are small, less than 1000 gallons, the relatively few large SSOs that occur account for the majority of the sewage volume spilled. Regional analysis indicated that (1) the San Francisco Bay and Central Valley – Sacramento regions account for 81 percent of the reported SSOs, and (2) the San Francisco Bay and San Diego regions account for 67 percent of the SSO volume spilled in the state. The sanitary sewer systems with the largest volumes of sewage spilled since inception of the SSO Reduction Program were ranked, and the top 20 spillers in the state, are identified in this report.

Significant elements of the planned SSO Reduction Program activities for the upcoming year include completing the SSS WDRs review and update which will culminate in re-adoption of the WDRs (estimated for early 2012), conducting additional enforcement to address SSO Reduction Program participation with a focus on obtaining 100 percent compliance with the Sewer System Management Plan (SSMP) requirements of the SSS WDRs, making further refinements to the SSO reporting web application and public reports, and providing additional written guidance to assist staff and enrollees in program implementation and interpretation of program elements.

**TABLE OF CONTENTS**

<b>1. INTRODUCTION</b>	4
<b>2. STATEWIDE SANITARY SEWER SYSTEMS WASTE DISCHARGE REQUIREMENTS (SSS WDRs) IMPLEMENTATION</b>	5
A. Sanitary Sewer Overflow (SSO) Reduction Program Outreach	5
B. SSO Database and External Users Group	5
C. Enrollee Training	6
D. Regional Water Board SSO Reduction Program Training	7
E. SSO Incident Maps	7
F. Enforcement of the SSS WDRs	8
G. Recent Enforcement Activities	9
H. SSS WDRs Review and Update	10
<b>3. SSS WDRs COMPLIANCE SUMMARY</b>	11
A. Enrollment for Coverage	11
B. SSO Reporting	12
C. Sewer System Management Plan (SSMP) Development and Certification	15
D. Sanitary Sewer System Questionnaire	16
<b>4. SPILL DATA SUMMARY</b>	17
A. Statewide Reported Spill Data	17
B. SSO Spill Trends	19
C. Spill Causes	21
D. Sewage Spills by Pipe Characteristics	23
E. Regional Spill Trends	24
F. Spill Rate Indices	25
G. Summary of Reported Spill Data	30

**LIST OF TABLES**

Table 1 – <i>(Revised)</i> Overall Statewide SSO and PLSD Reports (from 1/2/07 to 1/31/11)	17
Table 2 – Sanitary Sewer Systems with Larger Volumes of Spilled Sewage (Twenty Highest)	30

**LIST OF FIGURES**

Figure 1 – CWEA Training Attendance	6
Figure 2 – SSO GIS Incident Map	8
Figure 3 – Number and Percent of Total Enrolled Sanitary Sewer Systems by Region	12
Figure 4 – Enrollee Month-to-Month Compliance with Spill and No-spill Reporting	13
Figure 5 – Percentage and Number of Enrollees with No SSOs Reported by Region	14
Figure 6 – Monthly Reporting Performance of Enrollees with No SSOs Reported	14
Figure 7 – SSMP Development Compliance by Year	15
Figure 8 – Sanitary Sewer System Questionnaire Yearly Compliance	16
Figure 9 – Monthly Trend in Number of SSOs	18
Figure 10 – Monthly Trend in SSO Volume	19
Figure 11 – Percentage of Spills by Spill Size Class	20
Figure 12 – Percentage of SSO Volume by Spill Size Class	20

Figure 13 – Percentage of Number of SSOs that Reached Surface Water by Size Class	21
Figure 14 – Percentage of SSO Volume that Reached Surface Water by Size Class	21
Figure 15 – Percent of SSOs and SSO Volume by Cause	22
Figure 16 – Percent of PLSDs and PLSD Volume by Cause	22
Figure 17 – Publicly Owned Sewer Pipe Age Distribution for the State of California	23
Figure 18 – Regional Trends in Number of SSOs and Miles of Sewer Pipe	24
Figure 19 – Regional SSO Volume Trends	25
Figure 20 – Enrolled Sanitary Sewer Systems by Category	26
Figure 21 – Number of Municipal Sanitary Sewer Systems by System Size	27
Figure 22 – SSO Rates for Municipal Systems by System Size (Category 1 & 2)	27
Figure 23 – Number of SSOs for Municipal Systems by System Size (Category 1 & 2)	28
Figure 24 – SSO Spill Volume Rates for Municipal Systems by System Size	29
Figure 25 – Total SSO Volume by System Size	29

## 1. INTRODUCTION

This report provides an annual update on the Statewide Sanitary Sewer Overflow Reduction Program (SSO Reduction Program), which implements the General Waste Discharge Requirements for Sanitary Sewer Systems (Water Quality Order No. 2006-0003-DWQ, Sanitary Sewer Systems WDRs or SSS WDRs). This updated report contains detailed information on the SSO Reduction Program, including implementation efforts, compliance, and enforcement actions. Prior editions of this annual report were issued in May 2008, May 2009, and May 2010.

A sanitary sewer overflow (SSO) is any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a publicly owned sanitary sewer system upstream of a treatment plant headworks. A sanitary sewer system is any system of pipes, pump stations, sewer lines, or other conveyances used to collect and convey wastewater to a treatment facility. SSOs do not include overflows from privately-owned service laterals when these overflows are caused by blockages or other problems within the privately-owned lateral but do include overflows from privately-owned laterals when the cause is a problem within the publicly-owned portion of the sanitary sewer system. Overflows caused by problems in privately owned service laterals are referred to as private lateral sewage discharges (PLSDs).

SSOs and PLSDs contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oil, and grease. SSOs and PLSDs can pollute surface water and groundwater, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface water. SSOs and PLSDs can also result in closure of beaches and other recreational areas, and inundate properties.

The SSS WDRs were developed and implemented in 2006 to address these issues. The objective of the SSS WDRs is to reduce the number of SSOs and the volume of sewage spilled across the state through the proper operation and maintenance of sanitary sewer systems. The basic requirements of the SSS WDRs are that any publicly owned agency with more than one mile of publicly-owned sewer lines connected to a publicly owned treatment facility must enroll for coverage under the SSS WDRs, develop and implement a sewer system management plan (SSMP) and report all SSOs when they occur to a statewide SSOs database, or if no SSOs occur during a month, submit a no-spill certification after the end of the month to the database.

In addition to the statewide requirements of the SSS WDRs, sanitary sewer systems owned by public agencies in the San Francisco Bay and San Diego regions are subject to additional Regional Water Quality Control Board (Regional Water Board) requirements. Although it is the State Water Board's intent that the SSS WDRs be the primary mechanism for regulation of sanitary sewer systems statewide, the SSS WDRs provide that Regional Water Boards may issue more stringent or prescriptive requirements for sanitary sewer systems in their regions.

The Regional Water Boards have implemented the following requirements for sanitary sewer systems that are above and beyond the requirements of the statewide SSS WDRs:

### **San Francisco Bay Water Board (Sanitary Sewer Overflow Reduction Program)**

- 1) Requires spills to be reported to a San Francisco Bay Water Board's online reporting system in addition to the State Water Board's California Integrated Water Quality System (CIWQS) online reporting system as the mechanism to provide the Regional Water Board notification required by the Monitoring and Reporting Program (MRP) for the statewide SSS WDRs, Water Quality Order No. 2008-0002-EXEC.

- 2) Requires submittal of an annual report to the Regional Water Board detailing spills that occurred from the sanitary sewer system during the year.
- 3) Requires sanitary sewer system agencies to develop and implement an SSMP similar to the SSMP required under the SSS WDRs, but with different development deadlines than the SSS WDRs.

**San Diego Water Board (Order No. R9-2007-0005)**

- 1) Prohibits all discharges of sewage from a sanitary sewer system at any point upstream of a sewage treatment plant.
- 2) Requires that sanitary sewer system agencies notify the Regional Water Board of all PLSDs in their service area when they become aware of them and report PLSDs to the State Water Board online SSO database.

## **2. STATEWIDE SSS WDRs IMPLEMENTATION**

Over the past four years, staff has primarily focused its resources in the following areas to achieve successful statewide implementation and compliance with the SSS WDRs.

### **A. SSO Reduction Program Outreach**

Outreach continues to play a key role in both increasing enrollee participation in the SSO Reduction Program and reaching other interested stakeholders such as environmental groups and the general public.

Specific outreach has been varied to provide information about the SSS WDRs to as many different audiences as possible. Specific tasks include the following:

- 1) Giving presentations and online training for trade and non-profit associations such as the California Water Environment Association (CWEA), Southern California Alliance of POTWs (SCAP), Bay Area Clean Water Association (BACWA), Central Valley Clean Water Association (CVCWA), California Fat, Oils, and Grease (CalFOG), Southern California Chapter of the American Public Works Association (APWA), California Sanitation Risk Management Authority (CSRMA), Rural Community Assistance Corporation (RCAC), and the California Rural Water Association (CRWA);
- 2) Providing CIWQS assistance;
- 3) Assisting in the development of the SSO Public Reports Website;
- 4) Developing and maintaining the SSO website; and
- 5) Broadcasting list-serve email announcements.

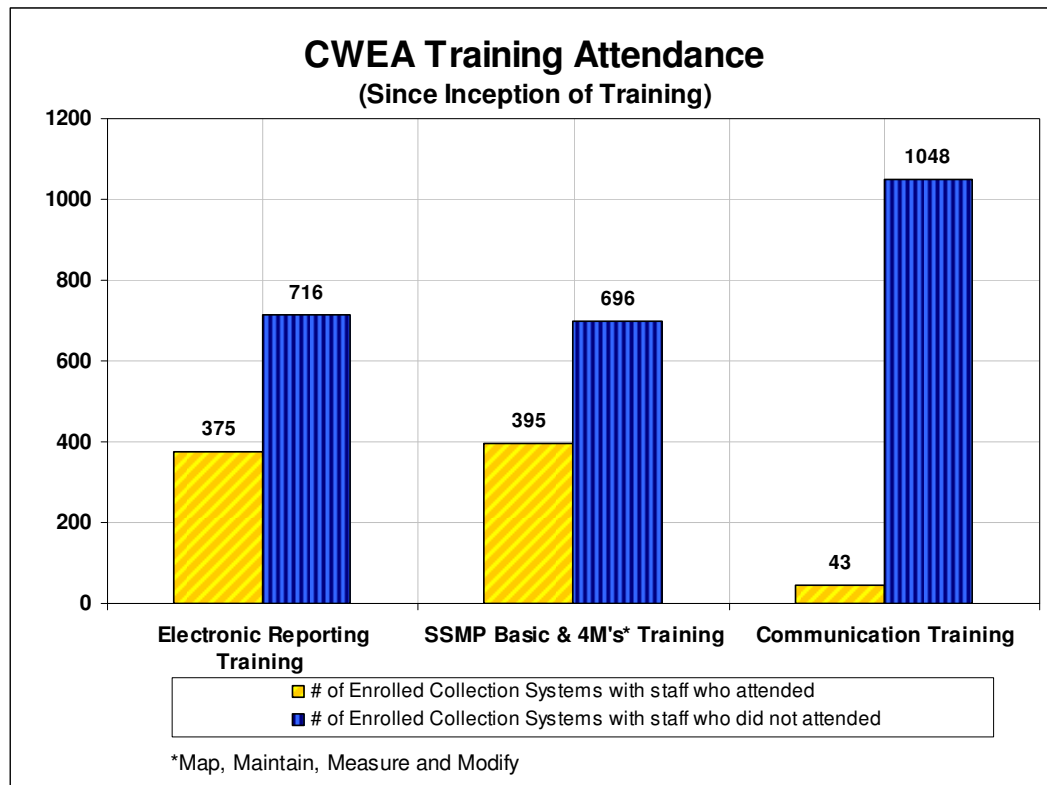
### **B. SSO Database and External Users Group**

Staff developed the SSO database, and enrollees are using it to report SSOs and PLSDs. The SSO database is part of the California Integrated Water Quality System (CIWQS). The SSO database allows online submittal of information by enrollees and makes this data available to the public through the use of the public reports. The SSO database was created in collaboration with an advisory group of enrollees with the goal of achieving accurate and consistent data collection. Staff continues to maintain and enhance the SSO database with available resources.

Staff coordinates enhancements with an SSO external users group comprised of enrollees and other participating stakeholders. In addition, staff is coordinating and participating in a CIWQS SSO module Data Review Committee comprised of State Water Board staff, Regional Water Board staff, Non-Governmental Organization stakeholders, and enrollees as part of the SSS WDRs review and update process. This committee is evaluating SSO spill data collected in CIWQS to date with the goal of developing sanitary sewer system performance indicators and refining the CIWQS spill report form and data content.

**C. Enrollee Training**

State Water Board staff continues to use the Memorandum of Agreement (MOA) with the California Water Environment Association (CWEA) to offer SSS WDRs training to enrollees. This MOA is in effect until December 2011. CWEA has created, in cooperation with staff, training courses for how to report a spill to the SSO database, how to develop an SSMP, and how to communicate with the media during and after spill events. CWEA has offered these classes statewide and will continue to do so under the terms of the MOA. The number of enrollees that have participated in the CWEA classes for electronic reporting, SSMP preparation, and media communication since inception of training are illustrated on Figure 1 below.



**Figure 1 – CWEA Training Attendance**

Staff continues to provide assistance to CWEA for the production of new SSO Reduction Program education materials and for the periodic review and update of existing educational materials in accordance with the established MOA with CWEA. This task includes participation in regular CWEA Training Task Force meetings, communication with education and marketing staff at CWEA, and development and presentation of training webinars (e.g. SSS WDRs Review and Update, and Sanitary Sewer System Inspections).



One of the challenges with enrollee training continues to be reaching small agencies that either cannot afford to pay for training or cannot attend the training because of limited staff size. Rural Community Assistance Corporation (RCAC), an organization dedicated to assisting rural communities, and the State Water Board established a partnership to provide technical assistance to small agencies over the past year. Staff has provided four online training workshops aimed at small agencies (e.g. Volume Estimating and Notification and Reporting Procedures) through RCAC over the past year. Each of these online training sessions was attended by over ten enrolled agencies. In addition, the California Rural Water Association (CRWA) is providing SSS WDRs training and outreach to address the needs of small sanitary sewer system agencies and staff is providing training for the CRWA at its annual expo.

#### **D. Regional Water Board SSO Reduction Program Training**

State Water Board staff, with technical assistance from outside consultants, has delivered customized training in northern and southern California for Regional Water Board staff that covers the requirements of the SSS WDRs and proper sanitary sewer system operation and maintenance. Class curriculum included training on how to conduct audits of sanitary sewer systems, the requirements of the SSS WDRs, evaluating SSMPs, and procedures for responding to and investigating SSOs. Additional advanced training classes on this subject matter are planned for development and will be presented to applicable State and Regional Water Board staff in the future.

#### **E. SSO Incident Maps**

As part of the public spill reports, staff made GIS spill incident maps available to the public in May 2009 and continuously updates them. The spill incident maps depict SSO and PLSD incidents that have been reported to CIWQS by enrollees. This tool ([http://www.waterboards.ca.gov/water\\_issues/programs/sso/index.shtml#ssomaps](http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml#ssomaps)) shows CIWQS certified spill data on Google maps and was developed in-house. The spill maps include spills from sanitary sewer systems only and do not include spills from wastewater treatment plants. The GIS maps serve to implement the requirements in California Water Code section 13193 which requires the State Water Board to make reports available to the public using GIS maps where possible. In addition, the GIS maps support the State Water Board's Strategic Plan goal of communicating public information regarding the state's waters in an easily understood form. The mapping tool incorporates numerous recommendations from the External Users Group including the capability to search for spills by spill date, spill size, enrolled agency, county, Regional Water Board, and spill street address. Future enhancements are planned and will be made as staff time permits.

Figure 2 is a screen shot of the incident map for SSOs illustrating certified spill incidents in CIWQS entered by enrollees over a four month period.

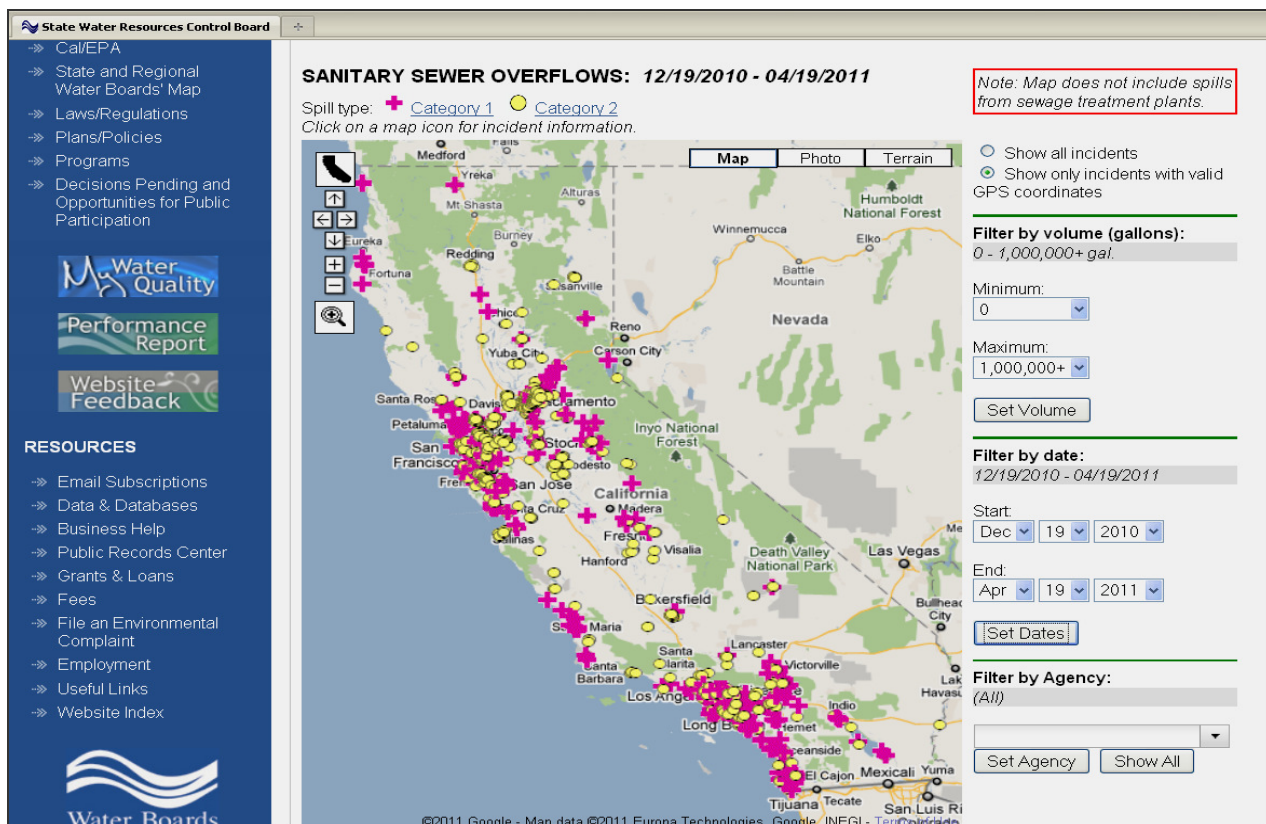


Figure 2 – SSO GIS Incident Map

**F. Enforcement of the SSS WDRs**

To ensure a fair and consistent approach to achieve statewide compliance, staff uses its Sanitary Sewer Overflow Reduction Program Compliance and Enforcement Plan. This plan identifies the specific enforcement actions to be undertaken to comprehensively address noncompliance with the SSS WDRs.

Current compliance and enforcement tasks are focused on addressing violations of the SSS WDRs in the following areas:

- a. Evaluating compliance and implementing enforcement actions for failing to provide required reporting elements (e.g. failure to participate), and
- b. Evaluating the accuracy and completeness of required reporting elements.

The first area is being handled solely by State Water Board staff. The second area is being addressed jointly with State Water Board and Regional Water Board staff working together, where possible, by way of scheduled sanitary sewer system field audits. Due to limited staff resources, a phased approach is being utilized in implementing the enforcement tasks.

**Phase I**

First, staff is addressing sanitary sewer system agencies that have not submitted applications for enrollment into the SSS WDRs or that have enrolled but have not submitted any reports. During this phase, State Water Board staff identified enrollees not meeting the basic program participation requirements (e.g., enrollment, reporting, SSMP development) and conducted enforcement actions to bring the identified noncompliant enrollees into compliance.

Specifically, staff sent 119 Notices of Violation (NOVs) on July 20, 2010. These NOVs were aimed at enrolled agencies that failed to meet the MRP requirements and complete their SSMPs on time. Additional information on these NOVs is discussed in section G. In addition, staff continues to address non-participation with the SSS WDRs by issuing NOVs for failure to participate and is tracking compliance until attained. For the next task in Phase I, staff plans to send NOVs to enrolled sanitary sewer systems that have failed to complete their SSMP on time.

### **Phase II**

In the second phase, staff addressed enrollees having some violations of the SSS WDRs reporting or implementation requirements. These agencies were sent three compliance email reminders over a four month period as described in section G below and directed to correct their reporting deficiencies. Enrollees who failed to respond to the compliance reminder will be sent NOVs directing them to correct their reporting deficiencies and maintain compliance with the SSS WDRs. Additional enforcement letters and actions will be initiated against agencies who fail to respond to the NOVs.

### **Phase III**

The third phase includes evaluation of the completeness and accuracy of enrollee SSMPs and spill reporting. Staff plans to use targeted and random sanitary sewer system inspections in this phase.

State Water Board Office of Enforcement staff is planning to conduct 25 (mostly unannounced) inspections and 40 record audits in 2011. The inspections will be conducted throughout the state and will include a mix of small, medium, and large sanitary sewer systems.

## **G. Recent Enforcement Activities**

State Water Board, Division of Water Quality, staff sent 119 Notices of Violation (NOVs) to agencies on July 20, 2010. These NOVs were aimed at agencies that enrolled under the SSS WDRs but failed to timely certify any of the required SSMP elements in CIWQS, complete and annually update the sanitary sewer system questionnaire, and submit any of the required monthly reports. The NOVs directed the agencies to submit all spill reports for their sanitary sewer systems dating back to the date on which they were required to start reporting. In addition, the NOVs directed these agencies to submit their questionnaires, a schedule for completion of their SSMPs, and maintain future compliance with the SSS WDRs.

The 119 NOV recipients were mostly small and disadvantaged communities. Overall, out of the 119 enrollees that received the NOVs, 18 submitted Notices of Non-Applicability (NONs), 83 have complied or are working to comply with the SSS WDRs, and 18 enrollees were referred to the Office of Enforcement for further enforcement action. These enforcement actions are being uploaded by staff to the enrollees' CIWQS records.

In addition, staff sent three compliance email reminders on December 2, 2010, January 31, 2011, and March 28, 2011. The email reminders were aimed at enrollees with minor reporting deficiencies identified in CIWQS. In total, 921 enrollees received the first email reminder and 499 received the final email reminder. Staff is evaluating remaining agencies with minor reporting deficiencies that are not in compliance and will issue NOVs to enrollees who fail to complete and timely certify any of the required SSMP elements, complete and annually update the sanitary sewer system questionnaire, and submit monthly no-spill certifications or enter SSO spill reports.

State Water Board, Office of Enforcement staff also conducted ten inspections in 2010 including inspections of nine separate sanitary sewer systems and one combined sanitary sewer system.

The inspections were mostly unannounced which allowed staff to evaluate sanitary sewer systems as close as possible to “normal operations.” The inspections were conducted primarily in northern California and targeted medium to large sanitary sewer systems. Enforcement actions against some enrollees are pending.

Over the past year, CIWQS data shows that Regional Water Boards have taken 34 formal enforcement actions for violations, in whole or in part, related to the statewide SSS WDRs. These actions consisted of one administrative civil liability (ACL) action issued by the North Coast Water Board; two NOVs and three oral communications by the Central Coast Water Board; two Clean-up and Abatement Orders, two letters written pursuant to Water Code Section 13267, and one NOV issued by the Los Angeles Water Board; four NOVs and one staff enforcement letter issued by the Central Valley Water Board; three NOVs and one staff enforcement letter issued by the Lahontan Water Boards two letters written pursuant to Water Code Section 13267 issued by the Colorado River Basin Water Board; one staff enforcement letter issued by the Santa Ana Water Board; and twenty staff enforcement letters, six NOVs, and one letter written pursuant to Water Code Section 13267 issued by the San Diego Water Board.

In addition, State Water Board staff sent 22 NOVs in Fiscal Year 2010-2011 to address non-payment of SSS WDRs fees.

#### **H. Sanitary Sewer Systems WDRs Review and Update**

The review and update of the SSS WDRs was initiated in September 2009. Progress to date on the review and update is summarized below.

**Staff Public Meetings** – Staff held informal public meetings on September 15, 2009, in Orange County (82 participants) and on September 29, 2009, in the City of Oakland (101 participants). Comments received were compiled, reviewed, and considered in the SSS WDRs update.

**Comment Letter Solicitation** – In follow-up to the staff workshops, comment letters were solicited. A total of 36 comment letters were received from the public and three comment letters were provided by Regional Water Boards (The San Francisco Bay, Central Coast, and San Diego Water Boards responded). Comments received were compiled, reviewed, and considered in the SSS WDRs update.

**Workshop with Regional Water Board Staff** – A workshop with staff from the North Coast, San Francisco Bay, Central Coast, Central Valley and San Diego Water Boards was conducted on January 19, 2010. Comments received were compiled, reviewed, and considered in the SSS WDRs update.

**Data Review Committee** – During the staff workshops, participation in a committee to review CIWQS SSO data collected to date was offered to interested participants (i.e., a Data Review Committee). The purpose of the committee is: (1) to review the SSO data collection process and to make improvements so that it will enhance the value of collected spill data for all stakeholders; (2) to redesign the spill database and report forms to be an event based instead of location based; and (3) to evaluate and develop indices of sanitary sewer system performance to be used in California. A total of 307 stakeholders have registered for the committee and approximately twenty registrants actively participate in the committee. Committee meetings are being held regularly and will continue through late 2012.

Staff is implementing enhancements to the CIWQS data collection process as part of the SSS WDRs review and update that include enhancing the spill report forms and questionnaire. The Data Review Committee has developed a sanitary sewer system “Facility Operational Report” that shows metrics on sanitary sewer system performance, comparisons to similar sanitary sewer systems, and basic enrollee sanitary sewer system information. The report also contains information on the percentage of spills and volume spilled by cause of spills in addition to facility information and completion dates of the SSMP elements. The “Facility Operational Report” will be publicly available in July 2011.

**California Emergency Management Agency (Cal EMA) Coordination** – A meeting was held with Cal EMA staff on March 4, 2010, to discuss statewide spill notification procedures in relation to the SSS WDRs. Cal EMA confirmed that they are notifying local health department staff and Regional Water Board staff when they receive spill notifications. The SSS WDRs also require the enrollee to notify their local health department staff and Regional Water Board staff when a spill occurs. These notifications result in local health department staff and Regional Water Board staff receiving two notifications for a given spill event.

**Local Health Department Coordination** – Local health department staff provided input on the SSS WDRs to State Water Board staff via a survey form that State Water Board staff distributed to the California Conference of Directors of Environmental Health, Land Use Committee. Comments received from the surveys were compiled, reviewed, and considered in the SSS WDRs update.

**Notice Opportunity to Comment on the SSS WDRs** – Draft SSS WDRs were prepared based, in part, on information learned in the outreach activities noted above. Comments on the draft SSS WDRs were solicited by the State Water Board on March 24, 2011. The deadline to submit comments was May 13, 2011. In total, 169 comment letters were received by the due date. Comments received are being compiled as part of a response to comments document currently being prepared.

**Upcoming Activities** – Upcoming activities include drafting a response to comments document for comments received on the draft SSS WDRs, holding a public workshop and holding an adoption hearing. The workshop and adoption hearing will be held in early 2012.

### **3. STATEWIDE SANITARY SEWER SYSTEMS WDRs COMPLIANCE SUMMARY**

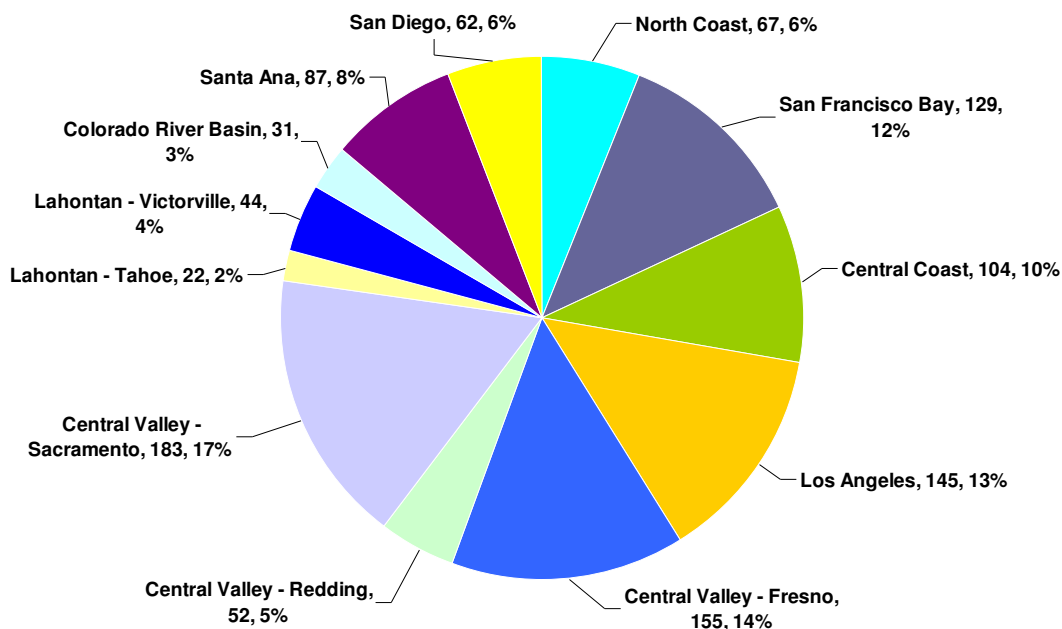
The following section provides an update on enrollee compliance with requirements of the SSS WDRs including enrollment for coverage, monthly reporting, SSMP certification, and completion of the sanitary sewer system questionnaire.

#### **A. Enrollment for Coverage**

Any public entity that owns or operates a sanitary sewer system comprised of more than one mile of pipe or sewer lines that conveys wastewater to a publicly owned treatment facility is required to apply for coverage under the SSS WDRs.

Since inception of the SSS WDRs, the number of enrolled sanitary sewer systems has varied between 1080 and 1100. Currently, 1081 sanitary sewer systems are enrolled for coverage under the SSS WDRs. As illustrated in Figure 3, the Central Valley – Sacramento region has the highest number of enrolled sanitary sewer systems with 183 systems enrolled followed by the Central

Valley – Fresno region with 155 systems enrolled and the Los Angeles region with 145 systems enrolled. The number of enrollees in the state varies due to new applications being received for coverage under the SSS WDRs and cancellations of enrollment. Reasons for cancellations of enrollment include: (1) agency does not meet the application criteria (e.g., greater than one mile of sewer pipe) and was enrolled erroneously; (2) duplicate enrollment due to submittal of multiple applications; or (3) errors in CIWQS data entry.

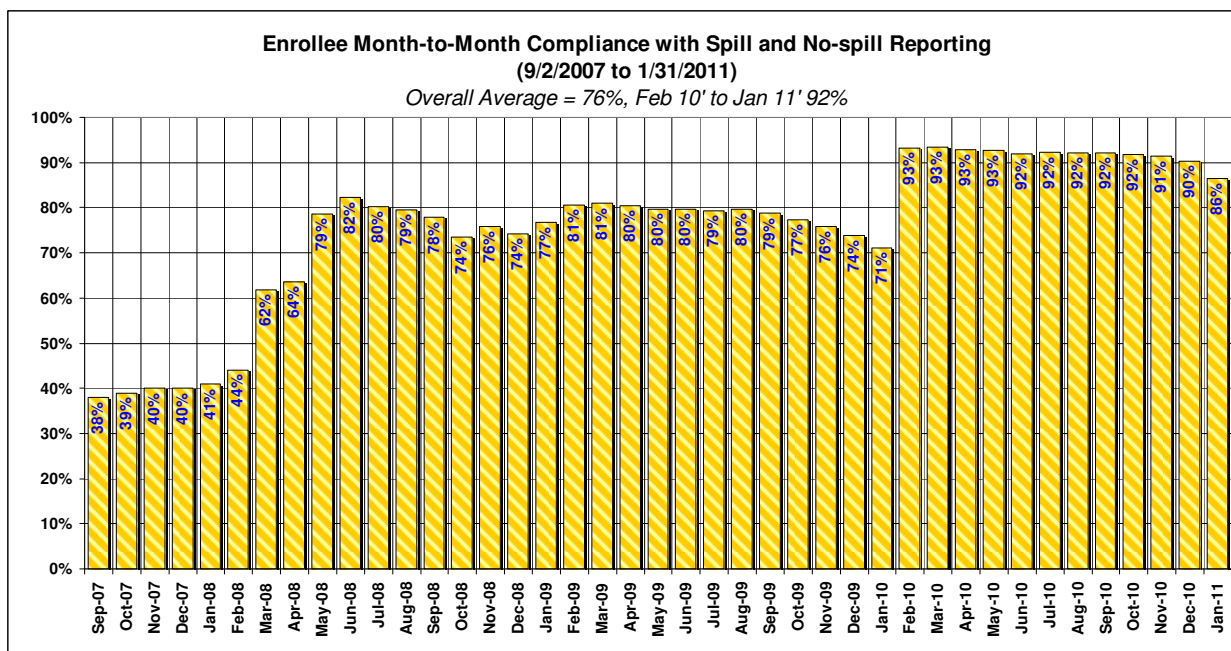


**Figure 3 – Number and Percent of Enrolled Sanitary Sewer Systems by Region**

Staff occasionally receives notifications from Regional Water Boards and other sources of sanitary sewer systems required to be covered under the SSS WDRs but not enrolled. Staff is following up on these notifications with phase I enforcement activities as previously described in section 2.F.

**B. SSO Reporting**

A monthly SSO reporting compliance rate can be established by determining how many individual enrollees submitted either an SSO report or no-spill certification for a given calendar month. Monthly reporting compliance rates are shown in Figure 4 below for the months of September 2007 to January 2011. The average reporting compliance rate is 76 percent since program inception. The average monthly reporting compliance rate during the past year is 92 percent. The monthly reporting compliance rate significantly increased over the past year. The NOV's and compliance reminders sent by the staff, in addition to the increasing thoroughness of enrollees in reporting, are credited for this increase in compliance.

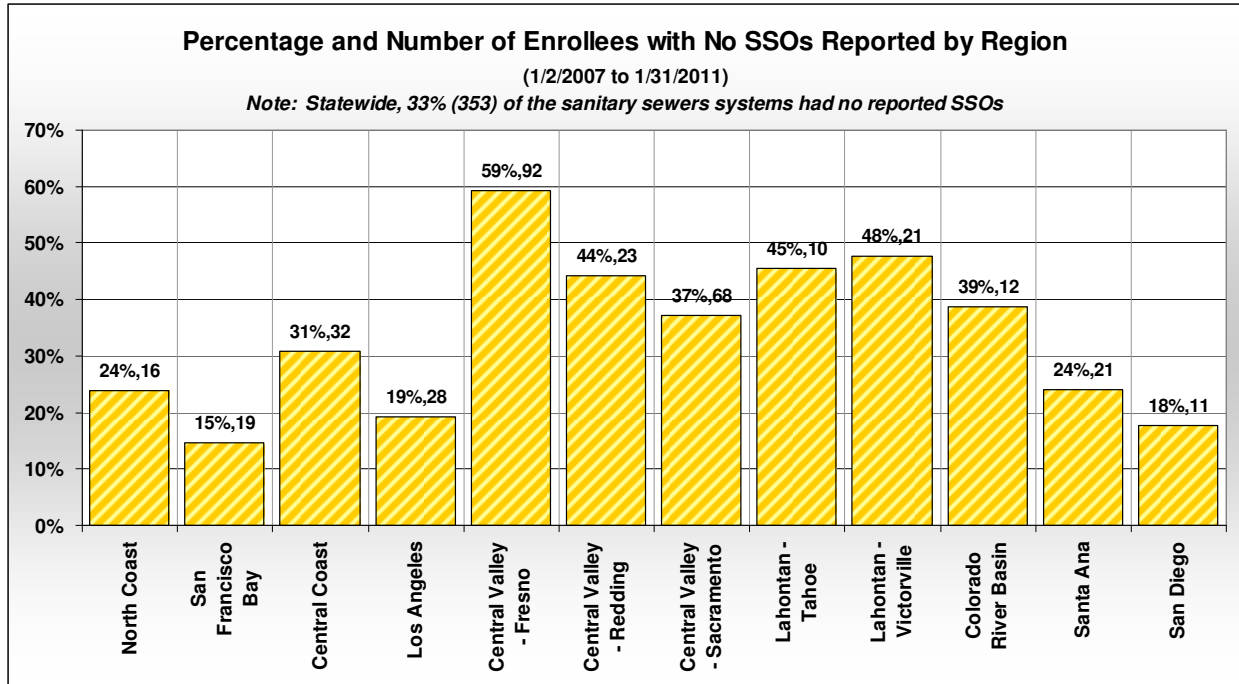


**Figure 4 – Enrollee Month-to-Month Compliance with Spill and No-spill Reporting**

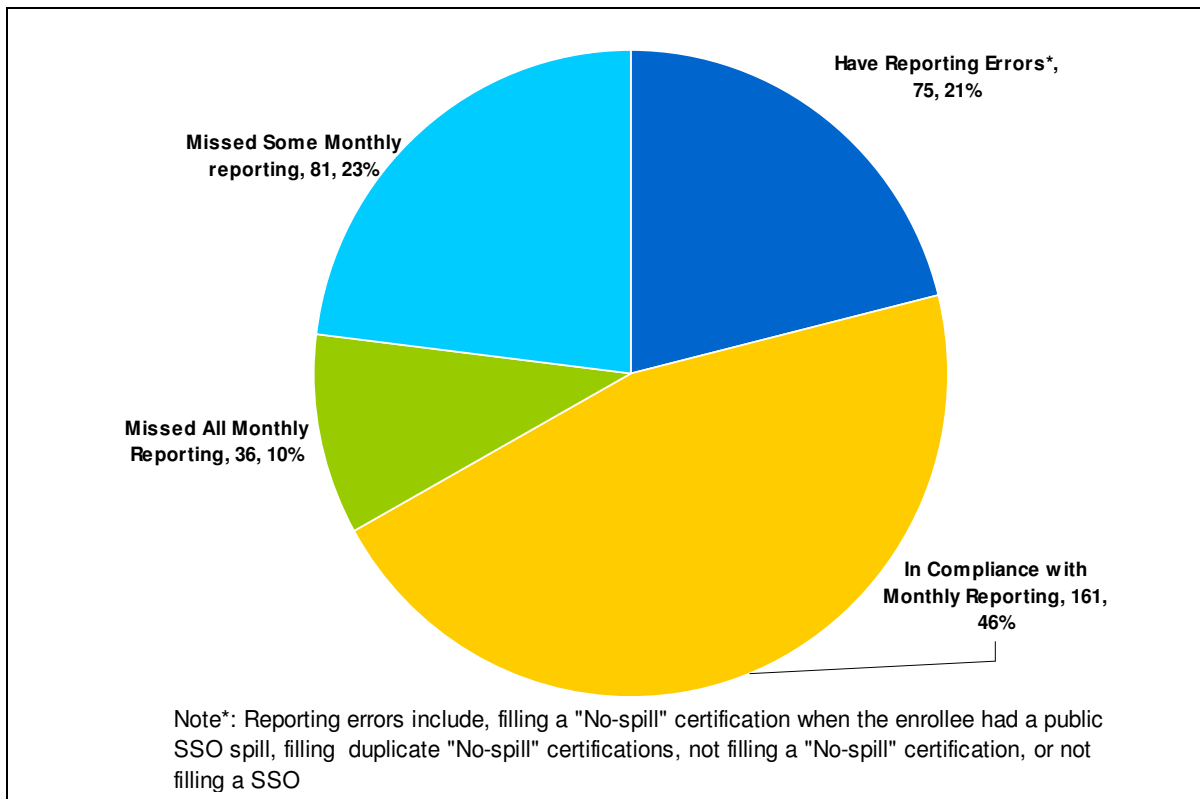
The current average monthly reporting compliance rate of 92 percent is less than the target level of 100 percent. Phase I and II enforcement activities described previously in section 2.F are being conducted to improve this compliance rate.

Although the reporting compliance has increased over the past year, only 67 percent of the enrolled sanitary sewer systems in the state have ever reported an SSO. As shown in Figure 5, the number of enrollees that have not reported any spills from their sanitary sewer systems since reporting was required is 353 (approximately 33 percent). In the Central Valley - Fresno region, 92 enrolled sanitary sewer systems (approximately 59 percent) have never reported an SSO. In the San Francisco Bay region, 19 of the enrolled sanitary sewer systems (approximately 15 percent) have not reported an SSO since reporting was required.

Staff is looking into the monthly reporting performance for those enrollees that have never reported an SSO. As shown in Figure 6, 192 of these enrollees (approximately 54 percent) have either missed all monthly reporting, have missed some monthly reporting, or have some reporting errors (e.g. submitted “No-spill” certification when they had SSOs). In total, 161 of the enrollees (approximately 46 percent) with no reported SSOs have complied with the required monthly reporting (i.e. filing “No-spill” Certifications). Out of the 192 enrollees with deficient reporting, 68 received a NOV under Phase I enforcement activity.



**Figure 5 – Percentage and Number of Enrollees with No SSOs Reported by Region**



**Figure 6 – Monthly Reporting Performance of the 353 Enrollees with No SSOs Reported**



### C. Sewer System Management Plan (SSMP) Development and Certification

A reasonable amount of time was provided in the SSS WDRs for enrollees to develop their SSMPs with smaller communities having more time to complete their online CIWQS certification of required SSMP elements than larger communities. Enrollees are required to certify that the final SSMPs have been developed within the time frames specified in the SSS WDRs. This certification is done electronically in the SSO database. Enrollees are required to obtain their governing board's approval at a public hearing for the plan for developing the SSMP, for the final SSMP certification, and for SSMP updates and re-certification. Enrollees do not send their SSMP to the State or Regional Water Boards for review or approval, but they must make them available for review upon request.

The CIWQS online certification system for the SSMP provides State and Regional Water Board staff the ability to evaluate compliance of enrollees with SSMP development deadlines. Figure 7 shows SSMP development compliance by year. The status as of May 2011 of the SSMP certification requirements in the SSS WDRs is as follows:

- All enrollees (1081) were required to have their SSMPs fully developed as of August 2, 2010.
- 15 percent of enrollees (161) have certified some but not all of their SSMP elements.
- 15 percent of enrollees (158) have not certified any of their SSMP elements and these elements are now past due.
- 70 percent of enrollees (762) have completed all SSMP elements (includes those completed late in addition to on-time SSMPs).
- Out of the total of 85 percent (920) of enrollees that have completed all or some of the SSMP elements, 20 percent (218) have met all SSMP certification deadlines.

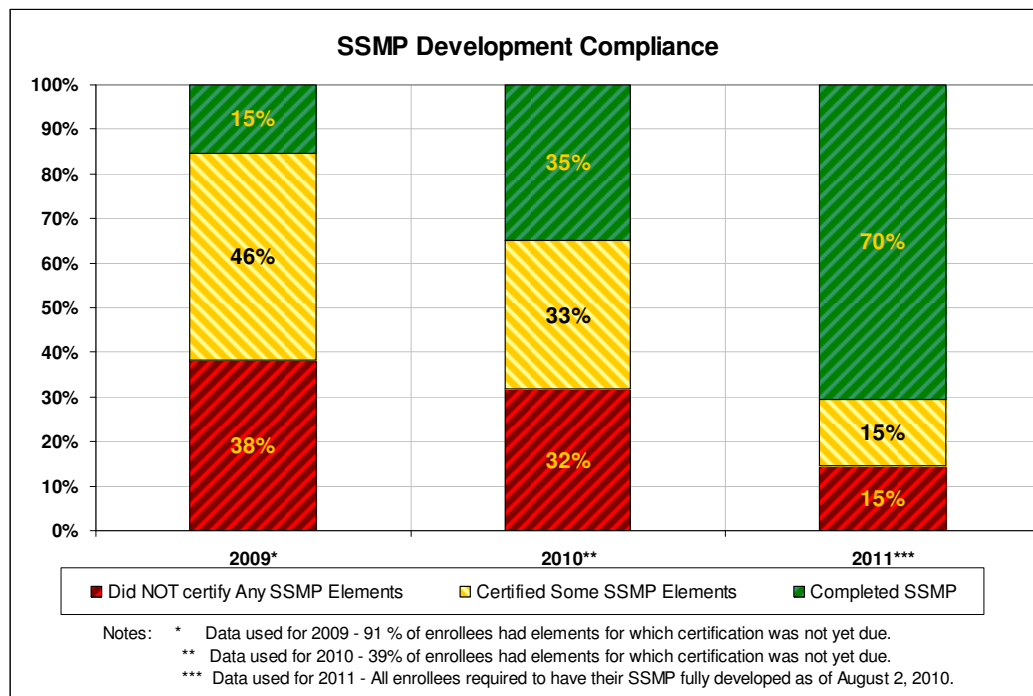


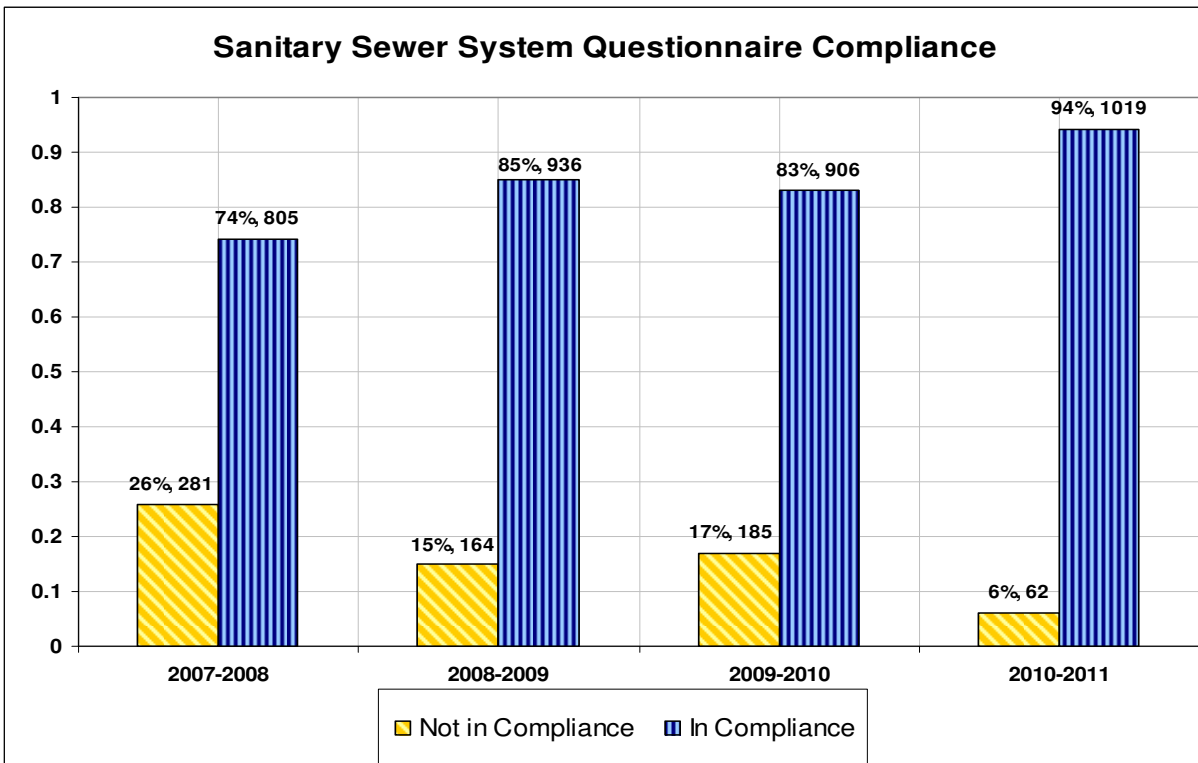
Figure 7 – SSMP Development Compliance by Year

Enforcement activities described previously in section 2.F are being conducted to improve the SSMP compliance rates.

Generally, as agencies develop and implement their SSMPs, their spill rates should decline. In the San Diego Region, 87 percent of the enrolled sanitary sewer systems have completed all the required elements of their SSMP and the average spill rate is 4.1 SSOs/100mi/yr. The Central Valley - Redding region is the region with the lowest percentage of SSMPs completed. In this Region, only 50 percent of the enrolled sanitary sewer systems have completed their SSMP and the average spill rate is 8.5 SSOs/100mi/yr.

**D. Sanitary Sewer System Questionnaire**

The SSS WDRs require enrollees to complete a sanitary sewer system questionnaire and update it every 12 months. The sanitary sewer system questionnaire is a survey of an enrollee’s organization and sanitary sewer system facilities. Enrollees are required to submit information including operating and capital expenditure budgets, miles of pipe, number of employees, and population served on the questionnaire. The purpose of this questionnaire is to put the enrollee’s SSMP and reported SSOs into context with organizational and facility characteristics. This is important because these characteristics have a significant impact on how an enrollee operates and maintains its sanitary sewer system. For example, population served represents the size of the rate paying base an enrollee has available from which to collect fees to operate and maintain the sanitary sewer system.



**Figure 8 – Sanitary Sewer System Questionnaire Yearly Compliance**

Currently, 94 percent of enrollees (1019) have completed the sanitary sewer system questionnaire and updated it annually, 3 percent (31) have completed the questionnaire but have failed to annually update it, and 3 percent (31) of enrollees have never completed the questionnaire.

As shown in Figure 8, compliance with the sanitary sewer system questionnaire has increased over the past year. Phase I and II enforcement activities described previously in section 2.F are being conducted to improve the questionnaire compliance rates.

#### 4. SPILL DATA SUMMARY

##### A. Statewide Reported Spill Data

A summary of statewide SSO and PLSD spill data reported by participating enrollees since reporting requirements became effective on January 2, 2007, is presented in Table 1 below. The SSS WDRs do not prohibit all SSOs, only those that reach surface water or cause a nuisance. As defined in the California Water Code section 13050 (m) (2), to be considered a nuisance an SSO would have to affect an entire community or neighborhood.

State Water Board staff is actively conducting checks and taking necessary actions to ensure the accuracy of the approximately 24,000 reported spill data records. When erroneous data are identified, the enrollee responsible for the data entry error is contacted and requested to correct it.

	Public Sanitary Sewer System	Private Laterals
Number of SSO locations	21,854	2,726
Total Volume of SSOs (gal)	92,699,534	2,871,262
Total Volume Recovered (gal)	18,479,773	1,558,702
Total Volume Reached Surface Water (gal)	74,170,763	1,811,742
Percent Recovered	20%	54%
Percent Reached Surface Water	80%	63%
Total Miles of Pressure Sewer	3,322	NA
Total Miles of Gravity Sewer	94,959	NA
Total miles of Laterals Responsible	12,801	4,473,591
# of Spills locations per 100 miles of Sewer	19.7	0.06
Volume Reaching Surface Water per 100 miles of Sewer (gal/100 mi)	66,771	40

Table 1 – (Revised) Overall Statewide SSO and PLSD Reports (from 1/2/07 to 1/31/11)

The data summaries presented below are from analyses of data that staff has checked and has confidence in its accuracy. Staff is examining additional metrics as ongoing data cleanup by enrollees is completed, efforts to increase reporting become effective, and additional data is collected. Overall SSO Reduction Program performance from January 2, 2007, when all regions in the state were required to start reporting, to January 31, 2011, is illustrated in Figures 9 and 10. As illustrated in Figure 9, there is a seasonal pattern with more SSO spills occurring during the wet seasons. From January 2008 to the present, the data shows a downwards trend in the number of spills occurring during the wet seasons.

Figure 10 shows the seasonal pattern with respect to spill volumes. The spill volume was significantly lower during the 2008/2009 wet season. The reason for the low wet season spill volume in 2008/2009 is being evaluated by staff. Spill volumes rose during the 2009/2010 wet season and significantly increased during the 2010/2011 wet season. The increase in spill volume during wet seasons may be caused by excessive inflow and infiltration and/or inadequate sizing of sanitary sewer systems, and the annual variation in wet season spill volume may be caused by annual variation in wet season precipitation. For the 2007-2008 water year (e.g. Oct. 1, 2007 to Sept. 30, 2008), the statewide average precipitation was 78.4 percent of normal; for the 2008-2009 water year, the statewide average precipitation was 81.8 percent of normal; and for 2009-2010 water year, the statewide average precipitation was 108.9 percent of normal.

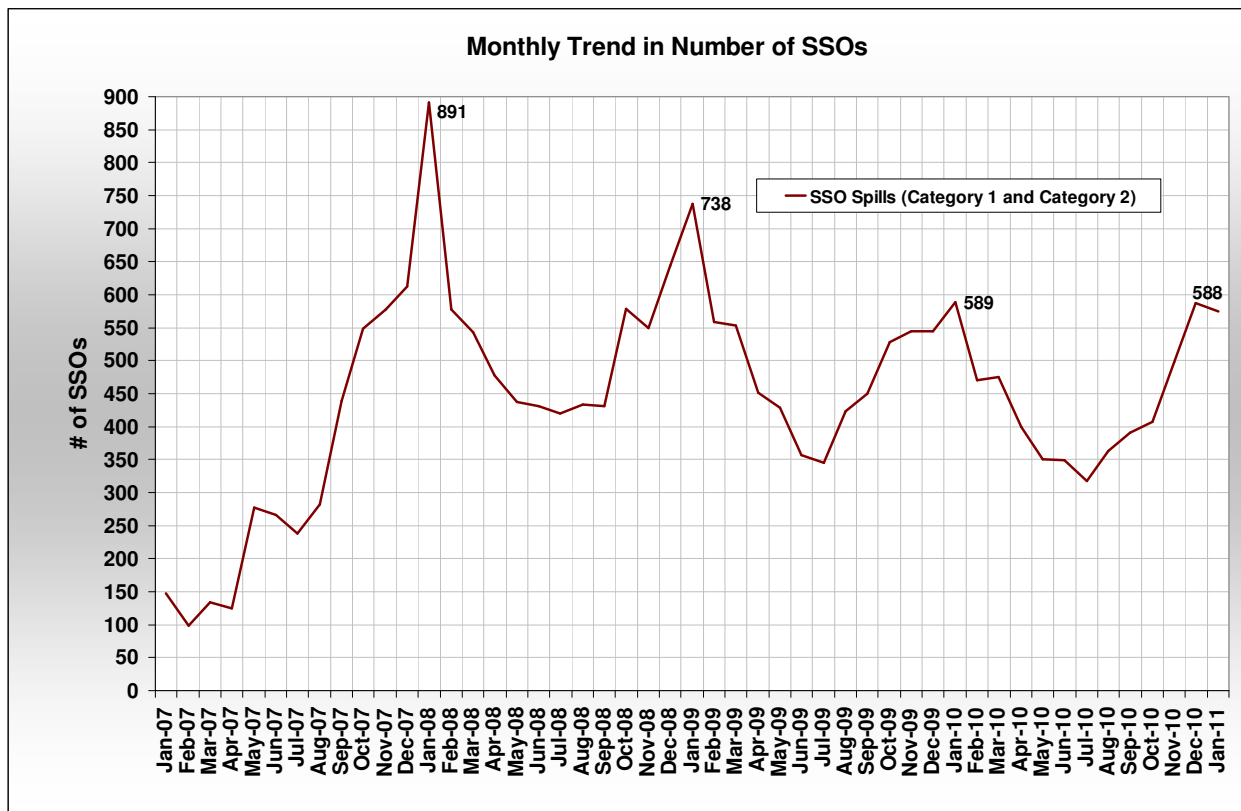


Figure 9 – Monthly Trend in Number of SSOs

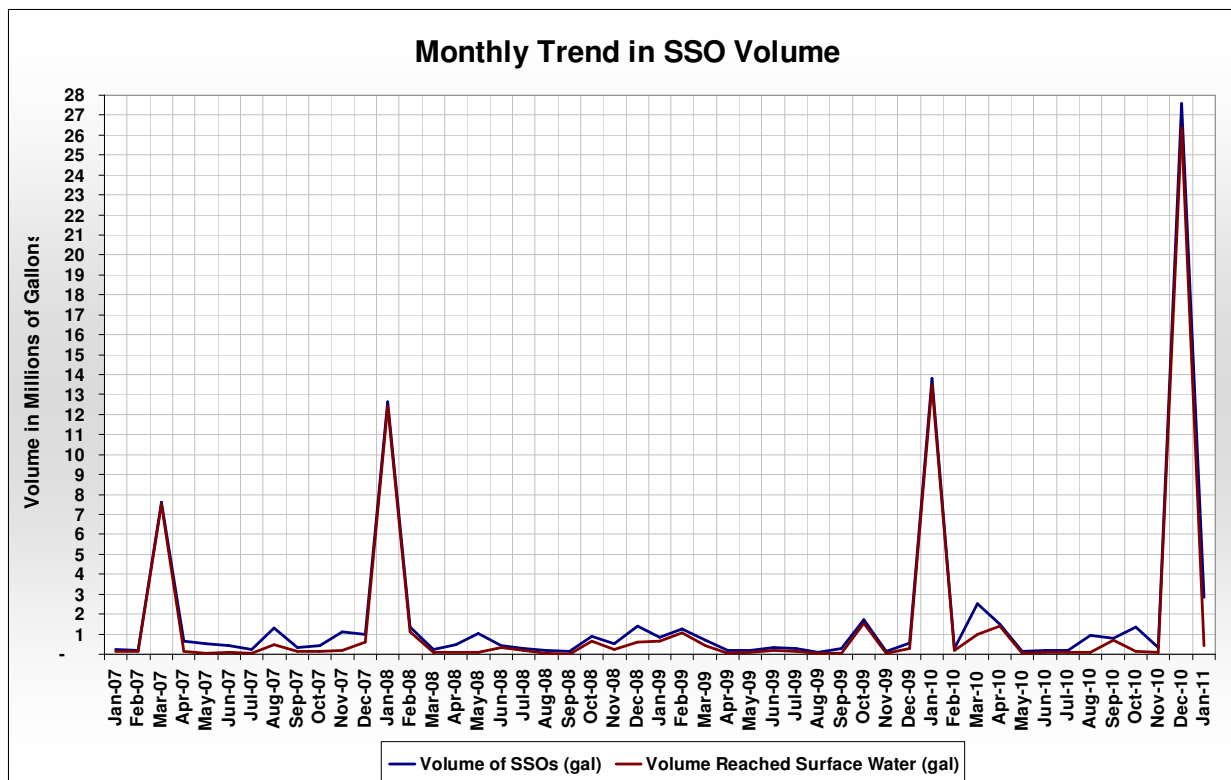


Figure 10 – Monthly Trend in SSO Volume

**B. SSO Spill Trends**

Examining the total number and volume of reported SSOs in the state by size class illustrates the trends shown above for SSOs reaching surface water. Approximately 92 percent of all SSOs in the state are less than 1,000 gallons, as illustrated in Figure 11. Of the reported SSO volume released in the state, 81.1 percent of the total volume is from just 1.2 percent of the SSO events as illustrated in Figures 11 and 12. Also, only 6.5 percent of the reported volume of SSOs in the state is from 97.1 percent of SSO spill events. In other words, most spills to surface water are low volume, likely having little environmental impact. The few large spills that occur, however, account for the majority of the sewage spilled in the state and have significant environmental impact.

The percentage of reported SSOs that reached surface water by spill size class is presented in Figure 13. Most spills never reach surface water. A small number of spills are responsible for most of the volume of wastewater that reaches surface water. Of 21,854 reported SSOs, 3,337 reached surface water. Of these, 2,084 or approximately 62 percent were less than 1,000 gallons.

Figure 14 shows the distribution of the volume of spilled sewage by spill size class. Comparison of Figures 13 & 14 show that 5.5 percent of spills to surface water account for 85.6 percent of the volume spilled to surface water since spill reporting was required. Also, 85.5 percent of the spills to surface water, since spill reporting was required, account for only 3.3 percent of the spill volume that reached surface water.

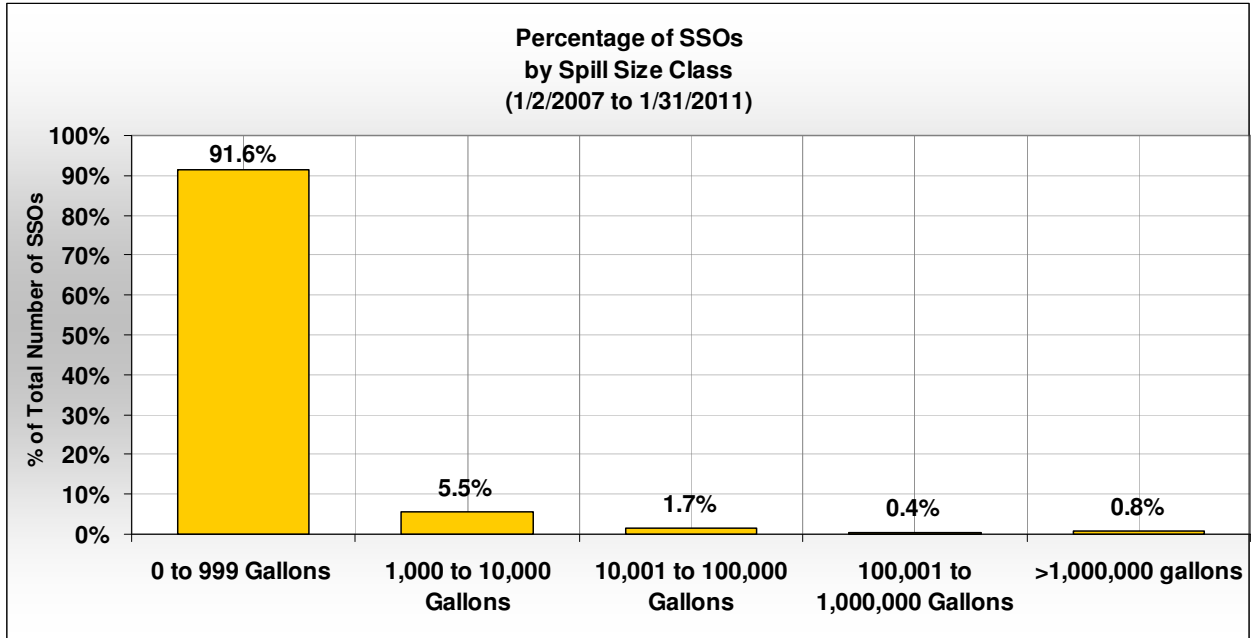


Figure 11 – Percentage of SSOs by Spill Size Class

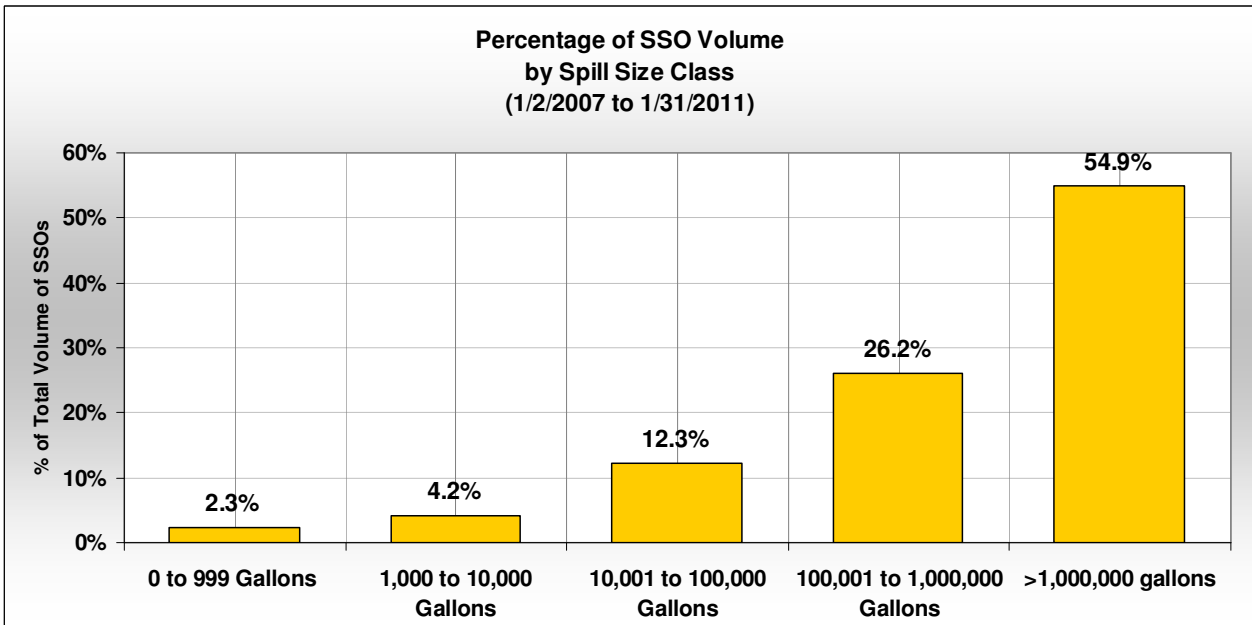


Figure 12 – Percentage of SSO Volume by Spill Size Class

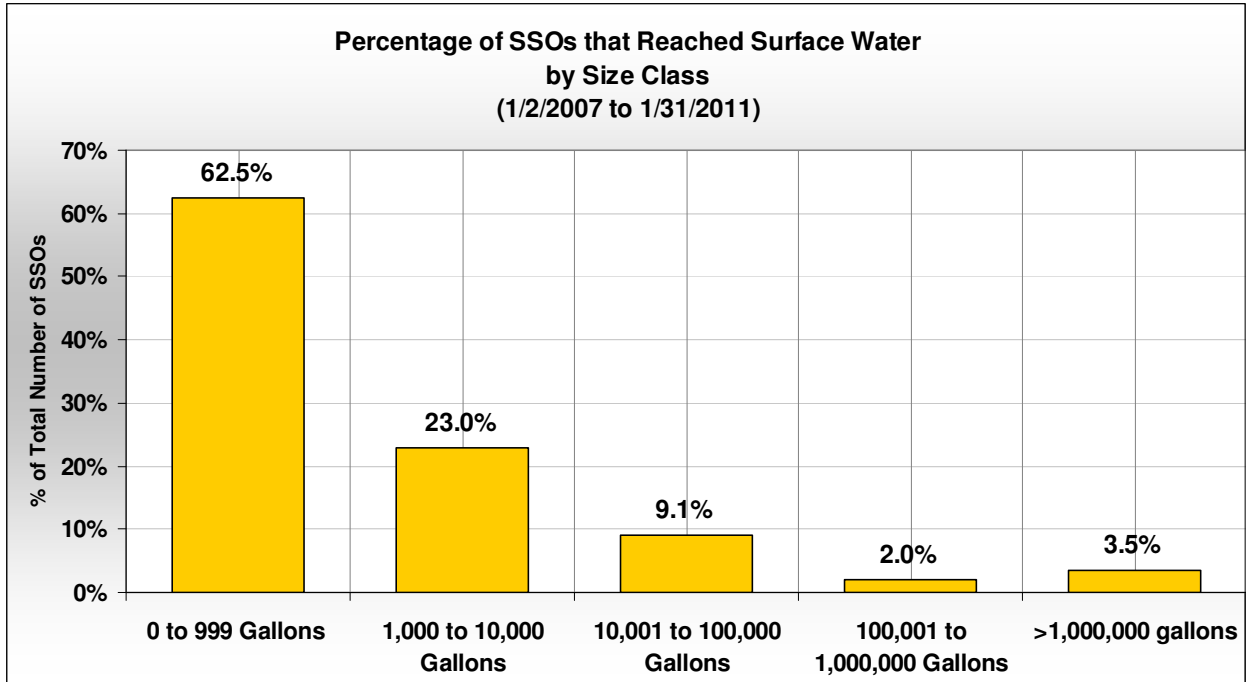


Figure 13 – Percentage of SSOs that Reached Surface Water by Size Class

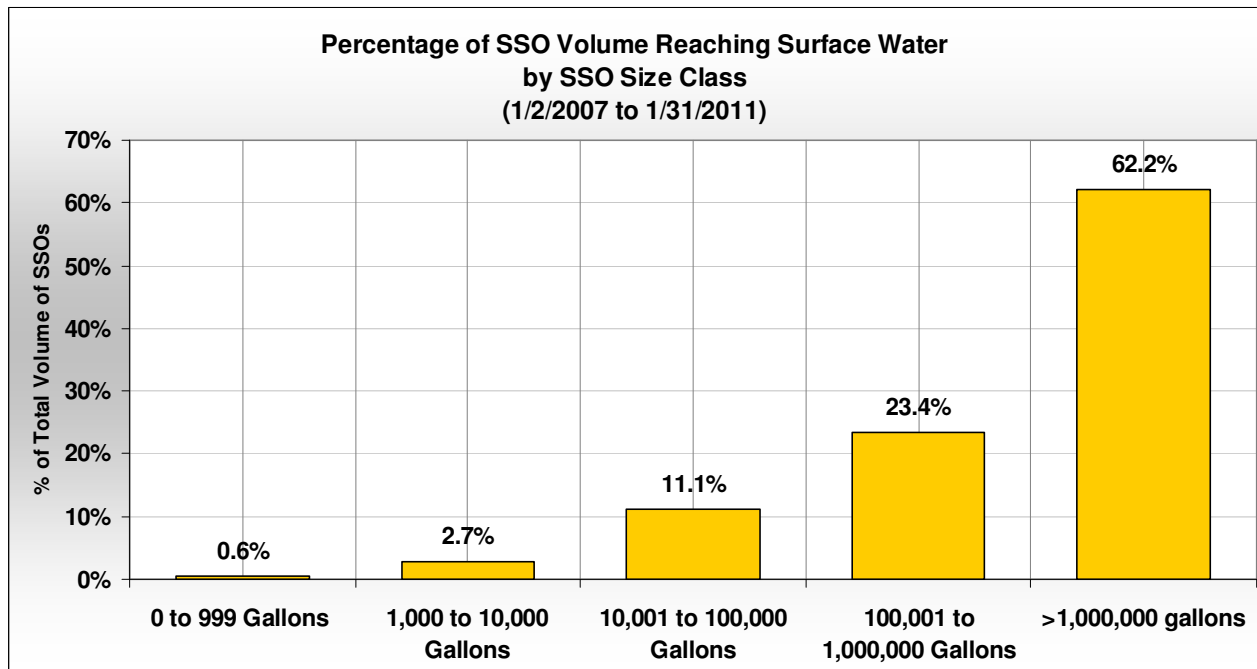


Figure 14 – Percentage of SSO Volume that Reached Surface Water by Spill Size Class

### C. Spill Causes

Percentages of total SSO and PLSD spills reported by spill causes are presented in Figures 15 and 16 below. The data indicates that common and manageable causes (root intrusion, grease deposition, debris) are responsible for 78 percent of all SSO spills and 59 percent of all PLSD

spills. In terms of volumes spilled, these causes are responsible for 9.4 percent of the volume from SSOs and 20 percent of the volume from PLSDs.

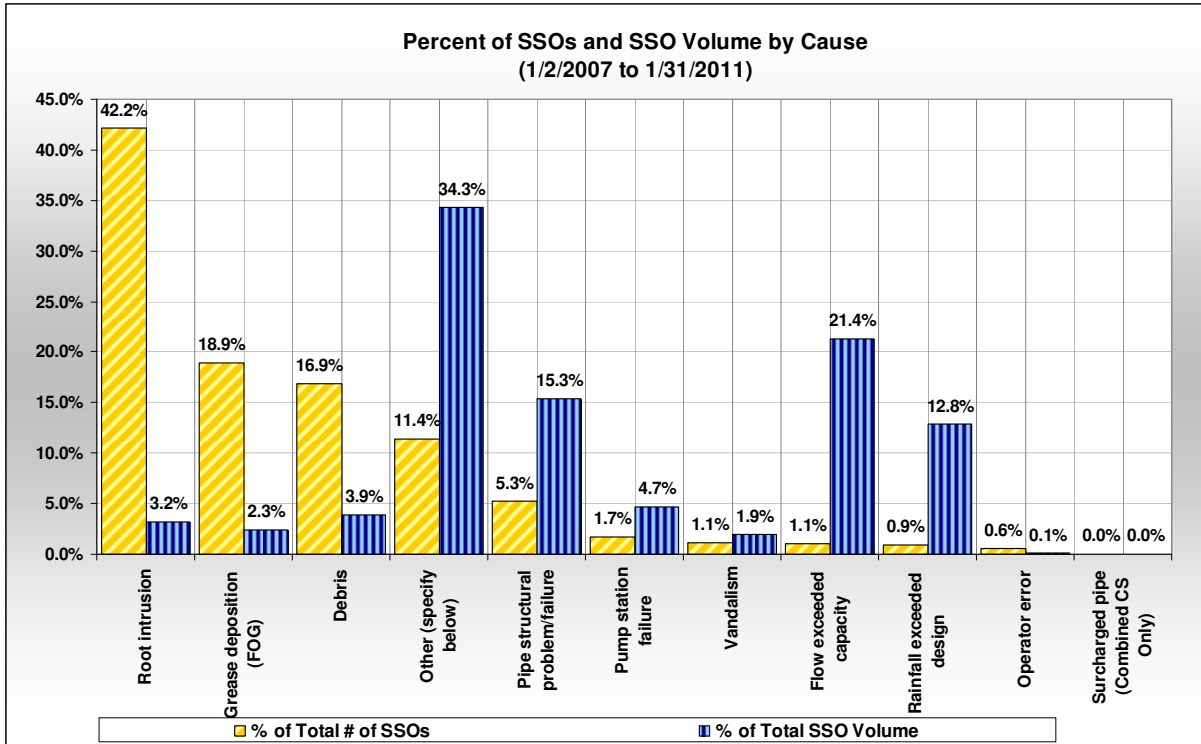


Figure 15 – Percent SSOs and SSO Volume by Cause

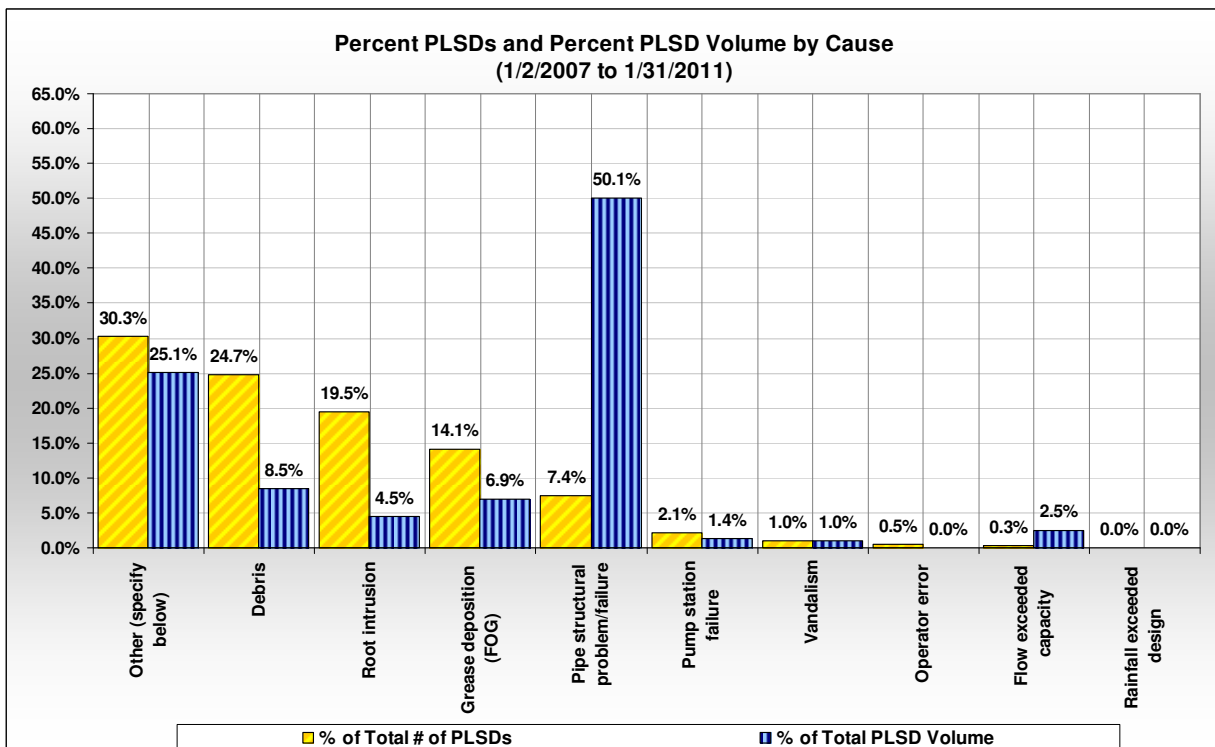


Figure 16 – Percent PLSDs and PLSD Volume by Cause



The “other” category noted in the charts includes the following causes for SSO and PLSD spills: unknown cause, multiple causes, vandalism, operator error, maintenance, improper installation, valve failure, failure from diversion during construction, siphon failure, inappropriate discharge, and non-sanitary sewer system related.

**D. Sewage Spills by Pipe Characteristics**

**Pipe Diameter** – SSO and PLSD report data indicates: (1) that many enrollees are not reporting the sewer diameter in their reports (69 percent for SSOs and 73 percent for PLSDs) and (2) that at least 27 percent of SSOs and at least 31 percent of PLSDs occur in pipe sizes of 8 inches or less. It is expected that smaller diameter pipes would be affected to a higher degree by the common causes of SSOs and PLSDs noted above (i.e., root intrusion, grease deposition, and debris).

**Pipe Material** – SSO and PLSD report data indicates: (1) that many enrollees are not reporting the pipe material in their reports (71 percent of SSOs and PLSDs reported) and (2) that at least 59 percent of the reported SSOs and PLSDs occur in vitrified clay pipes (VCP). This result is likely due to the prevalence of VCP in sanitary sewer systems piping in the state. Increased thoroughness in reporting would help to clarify any relationship between pipe material and SSOs and PLSDs.

**Sewer Age** – As illustrated in Figure 17, 35,000 miles, about 32 percent of the publicly owned sanitary sewer system piping in the state, is older than 51 years. (Because the age information was collected a year ago, the time periods are offset one year).

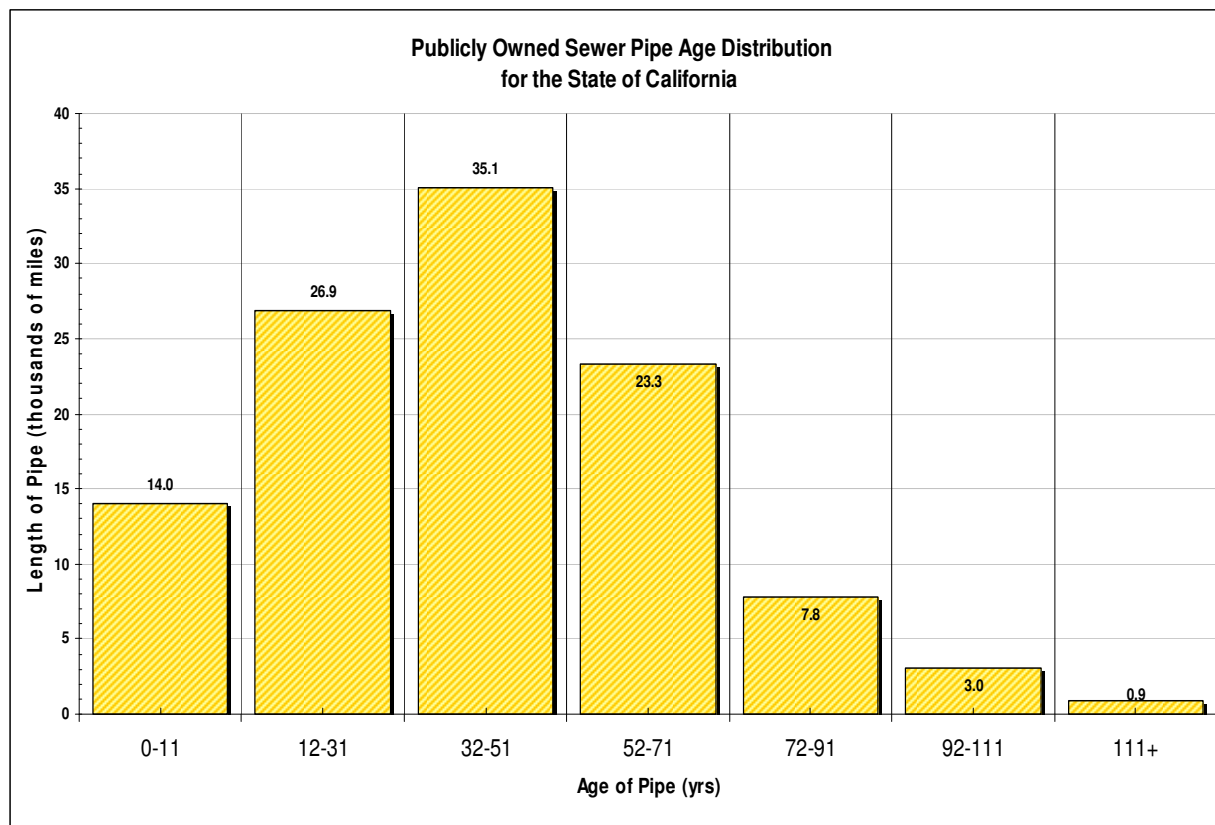


Figure 17 – Publicly Owned Sewer Pipe Age Distribution for the State of California

Sanitary sewer systems throughout the state are aging, with some segments of pipe over 90 years. In general, older sanitary sewer system pipe require more operation and maintenance than newer segments of pipe. In addition, deteriorating older sanitary sewer systems could be a cause of SSOs and eventual replacement or rehabilitation might be necessary.

### E. Regional Spill Trends

The reported percentage of the state population served by sanitary sewer systems in each region is presented in Figure 18. The data indicates that the San Francisco Bay, Los Angeles, Central Valley-Sacramento, Santa Ana, and San Diego regions account for most of the population served by sanitary sewer systems in the state.

The percentage of reported SSOs by Regional Water Board is also presented in Figure 18. The data indicates: (1) that the San Francisco Bay, Central Valley-Sacramento, and Los Angeles regions account for 81 percent of reported spills in the state (San Francisco Bay = 34 percent, Central Valley-Sacramento = 38 percent, Los Angeles = 9 percent) and (2) that about 52 percent of the publicly owned sanitary sewer system piping in the state is in the San Francisco Bay, Central Valley-Sacramento, and Los Angeles regions.

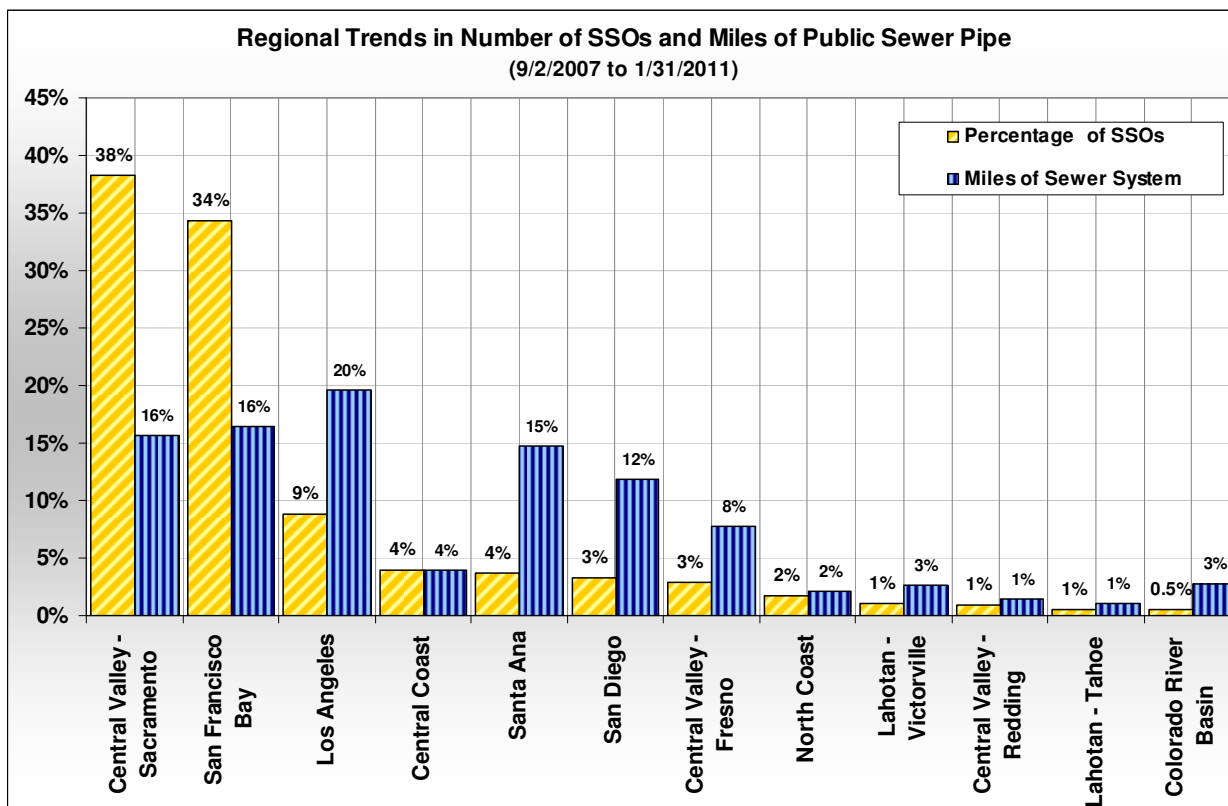


Figure 18 – Regional Trends in Number of SSOs and Miles of Public Sewer Pipe

Figure 19 shows the statewide distribution of SSO volume by Regional Water Board. The data indicates: (1) that the San Francisco Bay and San Diego Water Boards account for 67 percent of reported spill volume in the state (San Francisco Bay = 51 percent, and San Diego = 16 percent) and (2) that 76 percent of the reported spill volume reaching surface water results from spills in the San Francisco Bay and San Diego Water Board regions.

This data indicates that increased compliance efforts in the San Francisco Bay, San Diego, and Central Valley-Sacramento Water Board regions may yield the best results for reduction of the number of SSOs and the SSO volume.

Ongoing data quality control, cleanup, and collection efforts by staff are expected to improve the quality of spill data reported in the SSO online reporting system and allow additional trend analyses to be conducted with the data. These efforts will assist staff and enrollees in understanding the causes of sewage spills and in identifying sanitary sewer system management and regulatory efforts yielding the greatest reductions in SSOs.

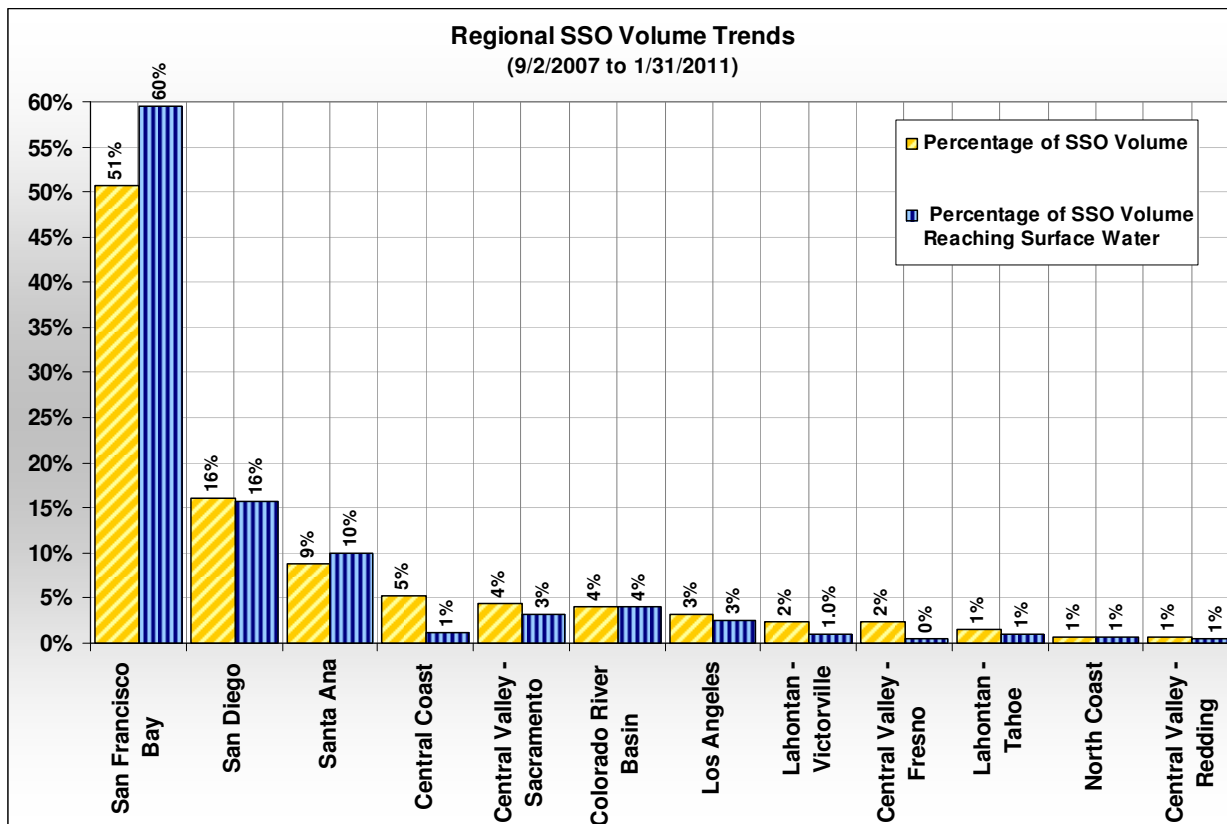


Figure 19 – Regional SSO Volume Trends

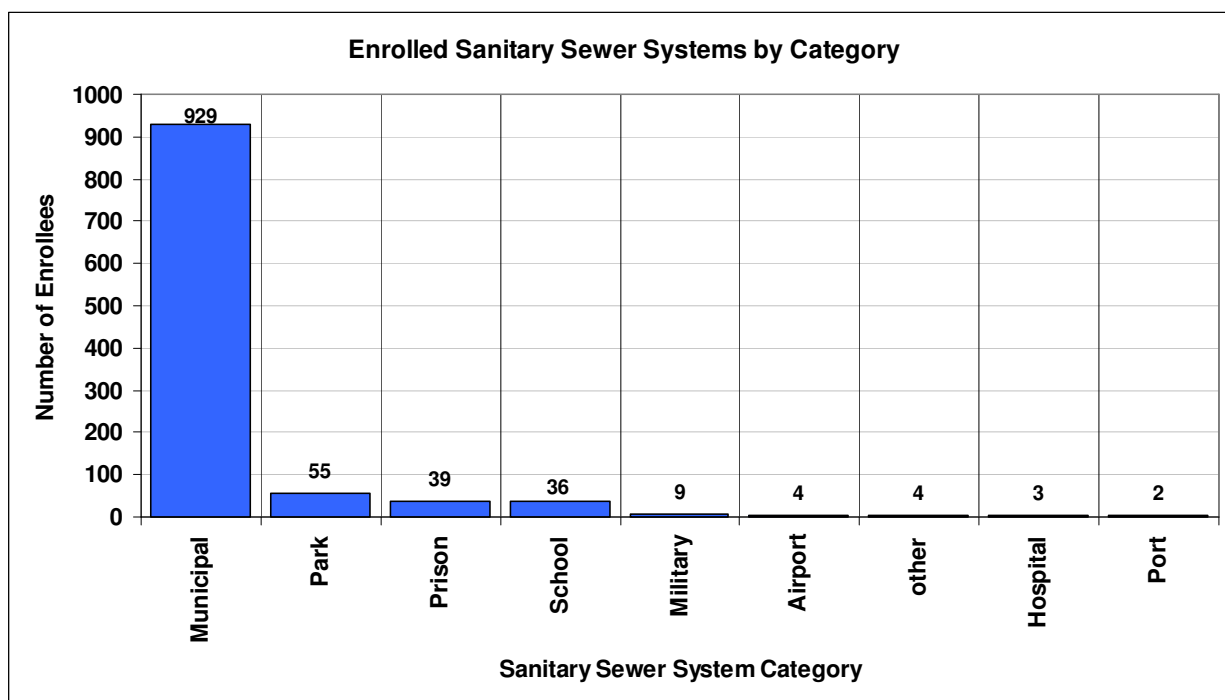
### F. Spill Rate Indices

Spill rate indices are normalized metrics of spill frequencies that allow for comparison of sanitary sewer systems of different sizes. The number of SSOs per 100 miles of pipe per year metric is used to compare the relative performance of enrollees and their sanitary sewer systems. This metric expresses the number of SSOs, for which the reporting enrollee is responsible, for every 100 miles of pipe or sewer lines owned by the enrollee multiplied by a year factor (number of days since reporting was required, divided by 365 days). The factor varies by region as they were required to start reporting SSOs at different times (i.e., Regions 4, 8 and 9 started on December 2, 2007; Regions 1, 2 and 3 started on May 2, 2007; and Regions 5, 6 and 7 started on September 2, 2007). This spill rate metric is calculated as follows:

$$= \left( \frac{\# \text{ of SSOs}}{\text{Total miles pipe responsible}} \div \text{Factor} \right) \times 100 \text{ miles}$$

This metric is a common indicator of an enrollee’s overall sanitary sewer system performance and can provide insight on its management, operations, and maintenance practices. A well managed and maintained system with adequate capacity tends to have a lower spill rate than a poorly managed system or a system with inadequate capacity.

It is important to consider the type (e.g. municipal, school, etc.) and the size of the sanitary sewer system when using spill rate indices for comparison. As shown in Figure 20, out of the 1081 enrolled sanitary sewer systems, 86 percent (929) serve municipalities, and 14 percent (152) serve other public areas including airports, hospitals, military facilities, parks, ports, prisons, and schools. Figure 21 illustrates the distribution of municipal sanitary sewer systems by system size in miles of publicly owned pipe.



**Figure 20 – Enrolled Sanitary Sewer Systems by Category**

Figure 22 illustrates the spill rates for enrolled municipal sanitary sewer systems by system size in miles of publicly owned pipe. The state spill rate average is 8.2 SSOs/100mi/yr and the median is 3.4 SSOs/100mi/yr (municipal only). As seen in Figure 22, small sanitary sewer systems with under 40 miles of pipes have spill rates above the state average for municipalities; this is likely a reflection on economies of scale in managing a sanitary sewer system. In other words, smaller sanitary sewer systems generally have smaller budgets and fewer resources dedicated to manage and operate their sanitary sewer system. On the other hand, sanitary sewer systems greater than 40 miles have spill rates below the state average for municipalities. The lower spill rates for larger sanitary sewer systems are likely, in part, due to greater economic resources in managing a sanitary sewer system. In addition, larger sanitary sewer systems were required to develop and implement their SSMPs before the smaller agencies and the lower spill rates for the larger systems may, in part, be a reflection of this. The smallest agencies had a deadline of August 2, 2010 to complete development and start implementing their SSMPs.

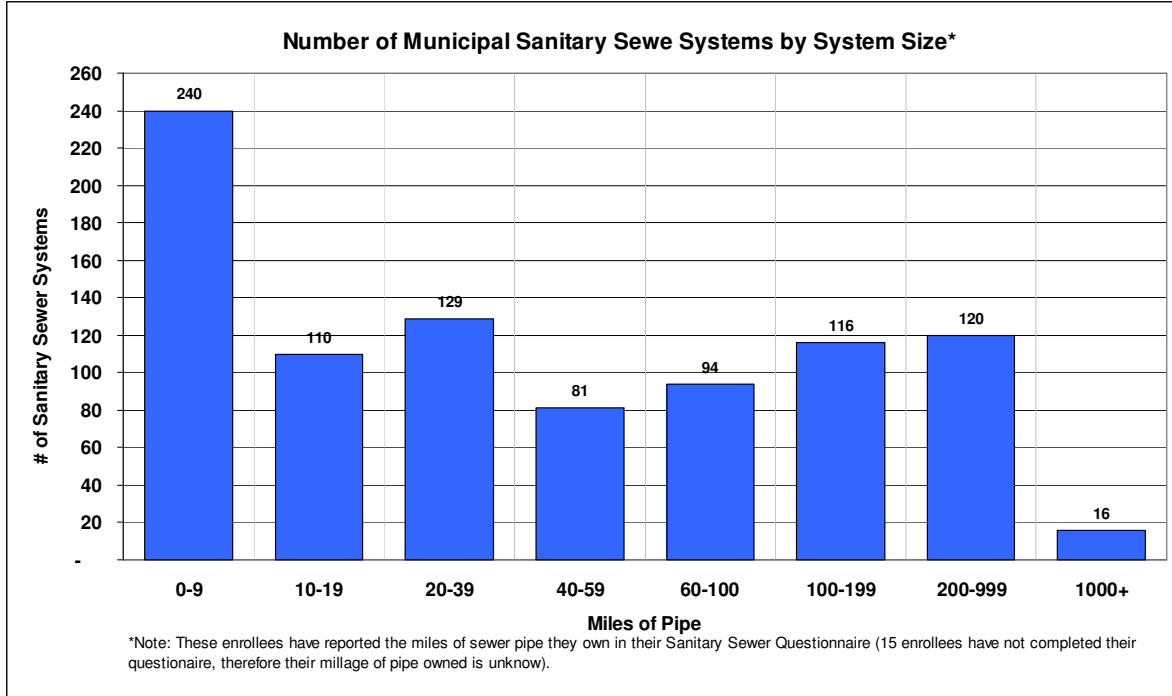


Figure 21 – Number of Municipal Sanitary Sewer Systems by System Size (Revised)

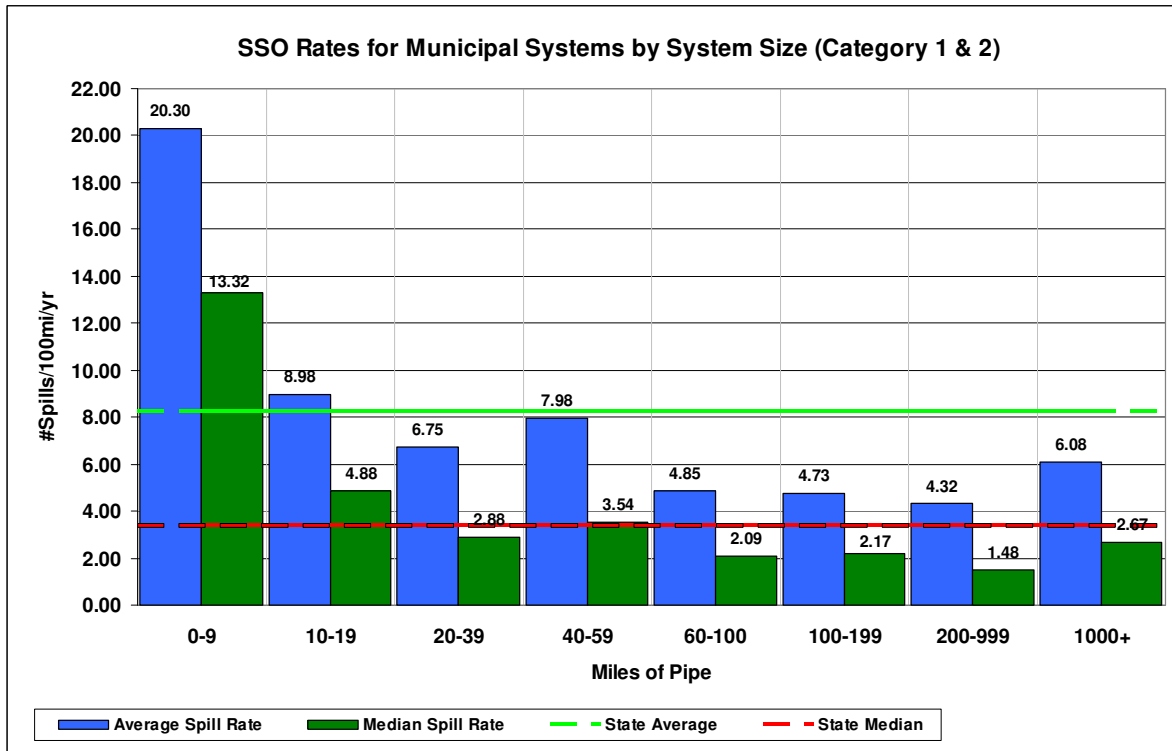


Figure 22 – SSO Rates for Municipal Systems by System Size (Category 1 & 2)

Although Figure 22 illustrates that sanitary sewer systems with less than 40 miles have the highest spill rates per mile of pipe, the SSO numbers in the state are driven by the larger sanitary sewer systems as illustrated in Figure 23.

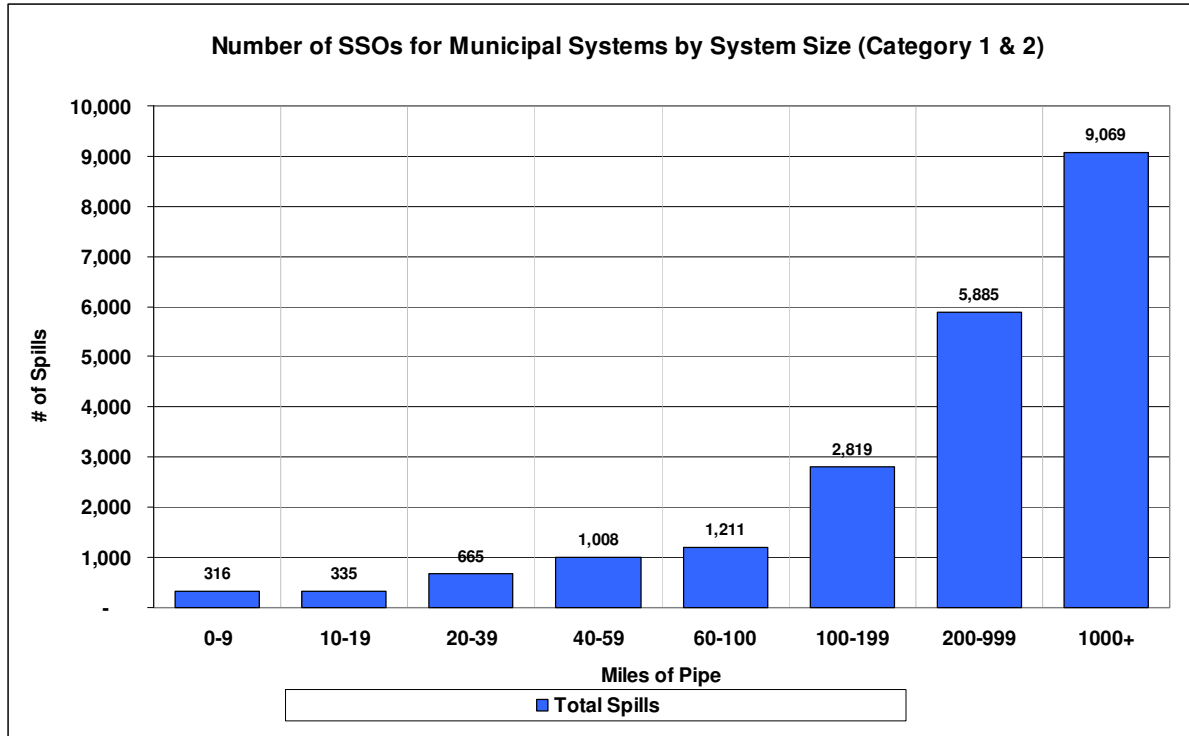


Figure 23 – Number of SSOs for Municipal Systems by System Size (Category 1 & 2)

The SSO volume per 1000 people served per year is another metric that can be used to compare the relative performance of enrollees’ sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting enrollee is responsible, per 1000 people served per year. This metric is calculated as follows:

$$= \left( \frac{\text{Total Volume Spilled}}{\text{Population Served}} \div \text{Factor} \right) \times 1000$$

The SSO spill volume rate for enrolled municipal sanitary sewer systems by system size classes is illustrated on Figure 24. Sanitary sewer systems with less than ten miles of pipe and between 60 and 100 miles of pipe have the highest SSO spill volume rates with 2,502 gallons/1000capita/yr and 3,663 gallons/1000capita/yr, respectively. Sanitary sewer systems with more than 1000 miles of pipe have the lowest average SSO spill volume rate with 234 gallons/1000capita/yr.

Although sanitary sewer systems with less than 60 miles of pipe show relatively high SSO spill volume rates, sanitary sewer systems with 60 miles of pipe or more are responsible for 79 percent (~72 million gallons) of the SSO volume spilled in the state (municipal sanitary sewer systems only) as illustrated on Figure 25.

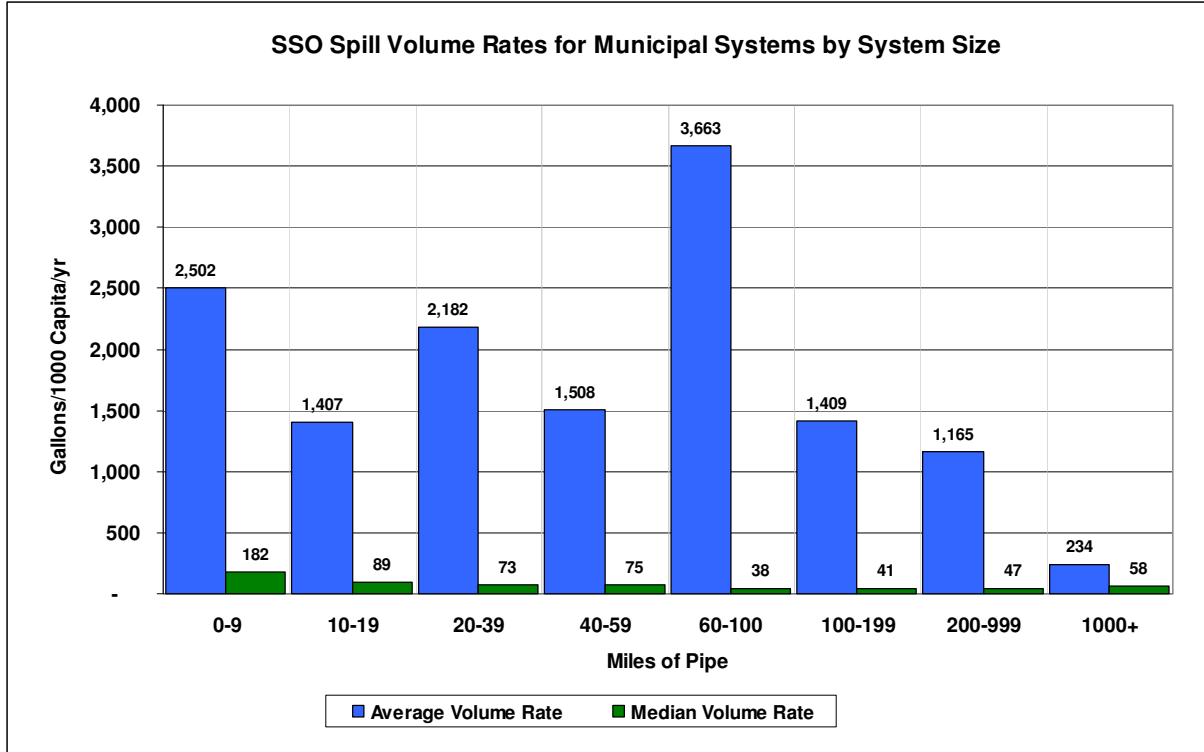


Figure 24 – SSO Spill Volume Rates for Municipal Systems by System Size

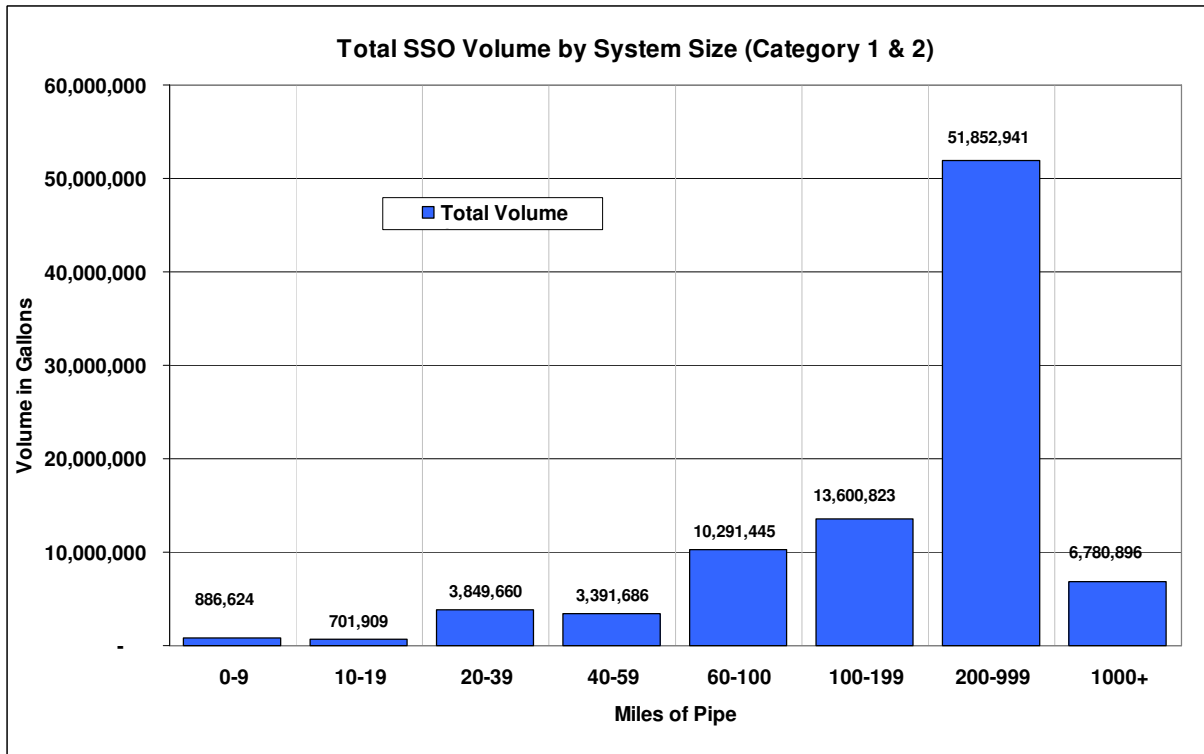


Figure 25 – Total SSO Volume by System Size

Of note in both Figures 22 and 24 is the difference in mean and median rates. The median rate is the rate at which half the sanitary sewer systems in the category have rates higher and half have rates lower. The mean is the sum of the rates of all sanitary sewer systems in the category divided by the number of systems in the category. The difference between the mean and median rates indicates that a number of sanitary sewer systems are performing significantly poorer than others and these poor performers are driving the average rates well above the median rates.

**G. Summary of Reported Spill Data**

SSO data collected since January 2, 2007, indicates that 90 percent of the volume of sewage spilled in the state has occurred from only 54 out of 1,081 sanitary sewer systems enrolled in the SSS WDRs. A summary of the twenty sanitary sewer systems with the largest volumes of spilled sewage (i.e., spills greater than 50,000 gallons) ranked from highest volume of sewage spilled to lowest volume of sewage spilled since reporting was required is presented in Table 2 below. The change in rankings since the 2009 and 2010 Annual Compliance Reports are also noted. Where a dash is noted in the 2009 or 2010 rank, this indicates the sanitary sewer system was not ranked in the top twenty in 2009 and/or 2010.

As illustrated in Table 2, a range of sanitary sewer systems are among the twenty sanitary sewer systems with the highest volumes of spilled sewage. All of the sanitary sewer systems on the list serve municipalities and they range from 51 to 6,147 miles of pipe and service populations from approximately 5,500 to 4 million. Sixty percent of the twenty sanitary sewer systems are in the San Francisco Bay Water Board region and San Diego Region Water Board region with 6 sanitary sewer systems in each region.

Region	Sanitary Sewer System	Population Served	Miles of Pipe Responsible	# of Events >=50k Gallons	2011 Rank	2010 Rank	2009 Rank
2	Richmond City CS	130,000	202	21	1	1	4
9	Carlsbad MWD CS	69,100	287	2	2	2	1
8	Running Springs CS	5,632	68	1	3	-	-
9	La Salina WWTP, Oceanside CS	180,000	490	2	4	-	-
2	San Mateo CS	94,650	236	20	5	3	2
2	Town Of Hillsborough CS	10,983	117	10	6	5	3
2	San Dist #1 of Marin CS	50,000	204	2	7	-	-
9	Santa Margarita Water District CS	153,000	777	1	8	-	7
3	Vandenberg Village Csd CS	6,000	38	1	9	-	-
2	San Bruno City CS	40,165	118	5	10	6	5
7	Coachella Valley Water District CS	267,260	1,161	3	11	18	18
7	Calexico CS	38,000	78	1	12	-	-
9	City Of La Mesa CS	55,724	155	2	13	-	-
5S	Sacramento Area Sewer District CS	1,100,000	4,363	3	14	11	10
9	Padre Dam CS	59,000	166	1	15	-	-
6A	Susanville Csd CS	9,960	51	1	16	7	6
2	Sonoma Valley County S.D. CS	44,706	135	5	17	15	14
4	Hyperion CS	4,000,000	6,147	5	18	-	-
9	San Diego City CS	2,140,000	5,147	2	19	8	16
3	Marina Coast Wd CS	32,000	154	1	20	-	-

**Table 2 – Sanitary Sewer Systems with Larger Volumes of Spilled Sewage (Twenty Highest)**