California Water Boards

Protecting California's Water

Statewide
Sanitary Sewer Overflow Reduction Program
Annual Compliance Report

State Water Resources Control Board

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

FISCAL YEAR 2011 – 2012

Executive Summary

The State Water Resources Control Board (State Water Board) adopted the 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 notification and reporting of sewage spills and sewer system management with the goal of 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 annual reports. This Fiscal Year 2011 – 2012 report contains detailed information on the SSO Reduction Program, including implementation efforts, compliance, and enforcement actions.

Currently, 1081 sanitary sewer systems are enrolled under the SSS WDRs. The average monthly reporting compliance (i.e., the percent of enrollees either reporting a spill or submitting a no-spill certification during a month) for the past Fiscal Year was 93 percent which is 1 percent greater than during the 2011 annual reporting period. Overall, 778 enrollees (approximately 72 percent) have reported one or more SSOs and 303 enrollees (approximately 28 percent) have not reported an SSO since program inception.

Analyses of SSO reports show that SSOs have a seasonal pattern with more SSOs occurring and higher volumes of sewage spilled 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. Analyses also indicate that (1) the San Francisco Bay and Central Valley – Sacramento regions account for 71 percent of the reported SSOs and (2) the San Francisco Bay and San Diego regions account for 72 percent of the SSO volume spilled in the state. This report ranks the sanitary sewer systems with the largest volumes of sewage spilled since inception of the SSO Reduction Program and identifies the top 20 spillers in the state.

Staff focused their compliance and enforcement activities in Fiscal Year 2011 – 2012 on addressing violations of the SSS WDRs for failure to participate and for failure to complete and certify the required Sewer System Management Plans (SSMPs). Staff sent 148 notices of violation (NOVs) on April 10, 2012 to enrolled agencies that failed to complete and certify some or all the elements of their SSMP. Out of the 148 enrollees that received the NOV, 101 have returned to compliance by completing and certifying their SSMP. Staff also addressed reporting deficiencies by developing an automated email reminder that identifies system specific reporting deficiencies and sends email reminders to enrollees on a monthly basis. Enrollees that do not respond to the NOVs or fail to correct deficiencies identified by the automated email reminders are referred to the State Water Board's Office of Enforcement for further enforcement action.

The Office of Enforcement has been actively conducting sanitary sewer system inspections. Twenty one inspections and fifty records audits were conducted in Fiscal Year 2011 – 2012. Additionally, the Regional Water Boards have taken 213 enforcement actions for violations of the statewide SSS WDRs. One hundred and seventy-four of those enforcement actions were issued during the Fiscal Year 2011 – 2012. This is a significant increase in Regional Water Board enforcement activity from previous years.

SSO Reduction Program activities planned for the for the upcoming year include reissuing the accompanying Monitoring and Reporting Program (MRP) for the SSS WDRs in early 2013; conducting additional enforcement to address SSS WDRs participation requirements (i.e., reporting); making further refinements to the electronic SSO reporting and public reports; and providing additional written guidance to assist staff and enrollees in program implementation and interpretation of program elements.

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1. INTRODUCTION

This report provides an annual update on the statewide Sanitary Sewer Overflow Reduction Program (SSO Reduction Program). The SSO Reduction Program implements the State Water Resources Control Board's (State Water Board's) Statewide Water Quality Order No. 2006-0003-DWQ, General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems (SSS WDRs). This report contains detailed information on the SSO Reduction Program covering implementation, compliance, and enforcement for Fiscal Year 2011– 2012. Staff issued prior editions of this annual report in May 2008, May 2009, May 2010, and August 2011. Future annual reports will be released on a fiscal year basis.

All public agencies that own or operate a sanitary sewer system greater than one mile in pipe length are required to enroll in the SSS WDRs. A publicly owned sanitary sewer system is any system of pipes, pump stations, sewer lines, or other conveyances used to collect and convey wastewater to a publicly owned treatment facility. 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. 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 of the overflow 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 contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oil, and grease. SSOs 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 can also result in closure of beaches, other recreational areas, and inundate properties.

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 SSS WDRs require that any public agency with more than one mile of publicly owned sewer lines that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California must enroll for coverage, develop and implement a sewer system management plan (SSMP), and report all SSOs or, if no SSOs occur during a month, submit a no-spill certification after the end of each month.

In addition to the statewide requirements of the SSS WDRs, sanitary sewer systems owned by public agencies in the Regional Water Quality Control Board, San Diego Region (San Diego Water Board) are subject to additional 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 Quality Control Board (Regional Water Boards) may issue more stringent or prescriptive requirements for sanitary sewer systems in their regions.

The San Diego Water Board has implemented the following requirements for sanitary sewer systems that are above and beyond the requirements of the Statewide 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 San Diego 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

Since the implementation of the SSS WDRs, staff has focused its resources on outreach, reporting, database development, training, spill mapping, enforcement, and a review and update of the SSS WDRs to achieve successful Statewide implementation and compliance.

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) work group, American Public Works Association (APWA), Rural Community Assistance Corporation (RCAC), and the California Rural Water Association (CRWA)
2) Providing reporting assistance and resolving bugs in the SSO reporting database
3) Assisting in the development of the SSO Public Reports Web site
4) Developing and maintaining the SSO website
5) Broadcasting list-serve e-mail announcements regarding program activities

B. SSO Database and External Users Group

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 these 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 has coordinated and participated 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 evaluated SSO spill data collected in CIWQS, developed a sanitary sewer system performance report, revised the CIWQS spill report forms, and addressed modifying the reporting system to be event versus location based reporting.

C. Enrollee Training

Staff continues to implement 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 2012. CWEA has created training courses in cooperation with State Water Board staff on how to report a spill to the SSO database, how to develop an SSMP, how to communicate

with the media during and after spill events, and methods for estimating spill volumes. 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, media communication, and SSO volume estimation since inception of training are illustrated in Figure 1 below. In addition CWEA has 17 independent local chapters throughout the State that provide training on topics related to the SSS WDRs.

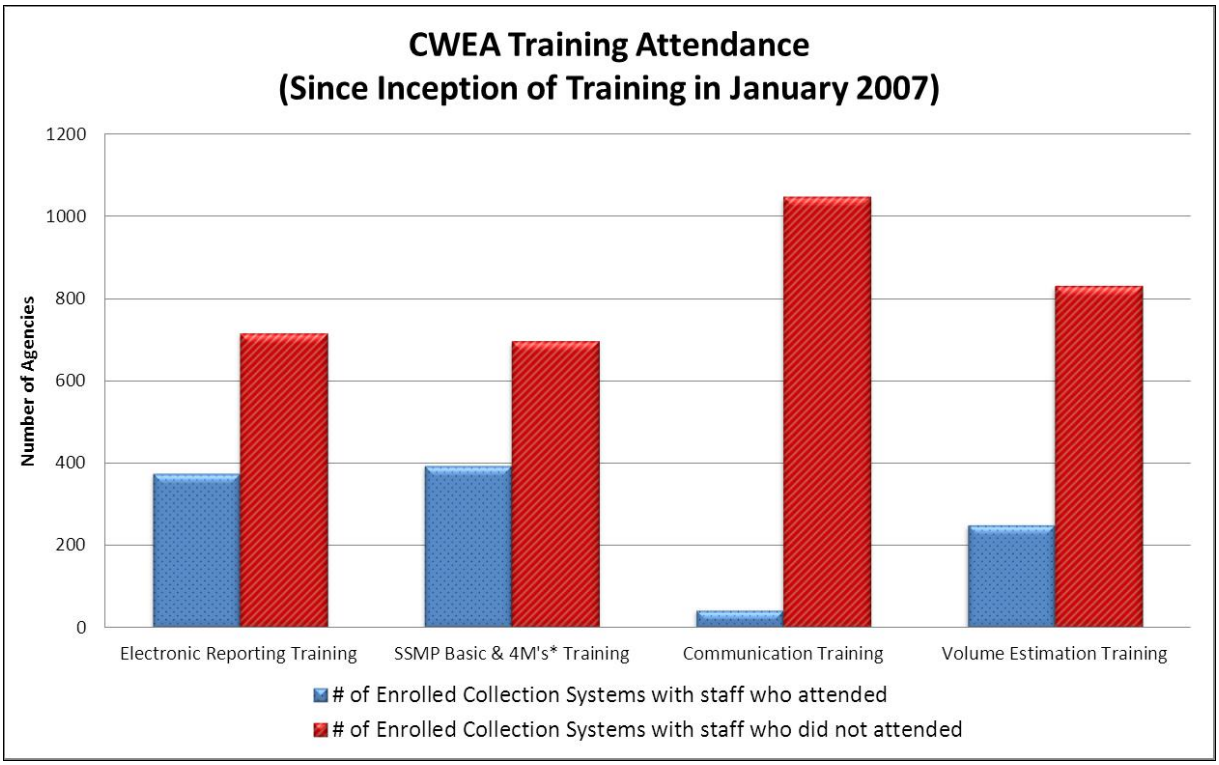


Figure 1 – CWEA Training Attendance

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. 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.

Staff has also provided training workshops aimed at small agencies (e.g. volume estimating and notification and reporting procedures) through the Rural Community Assistance Corporation (RCAC) and the California Rural Water Association (CRWA). Staff has made it a priority to assist small and disadvantaged communities through one-on-one assistance and training.

D. Regional Water Board SSO Reduction Program Training

State Water Board staff, with technical assistance from outside consultants, delivered customized training in Northern and Southern California for Regional Water Board staff in September 2008 that covered 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 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 developed GIS spill incident maps and made them available to the public in May 2009. The spill incident maps are updated daily and depict SSO and PLSD incidents that have been reported to CIWQS by enrollees. 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 during the last Fiscal Year.

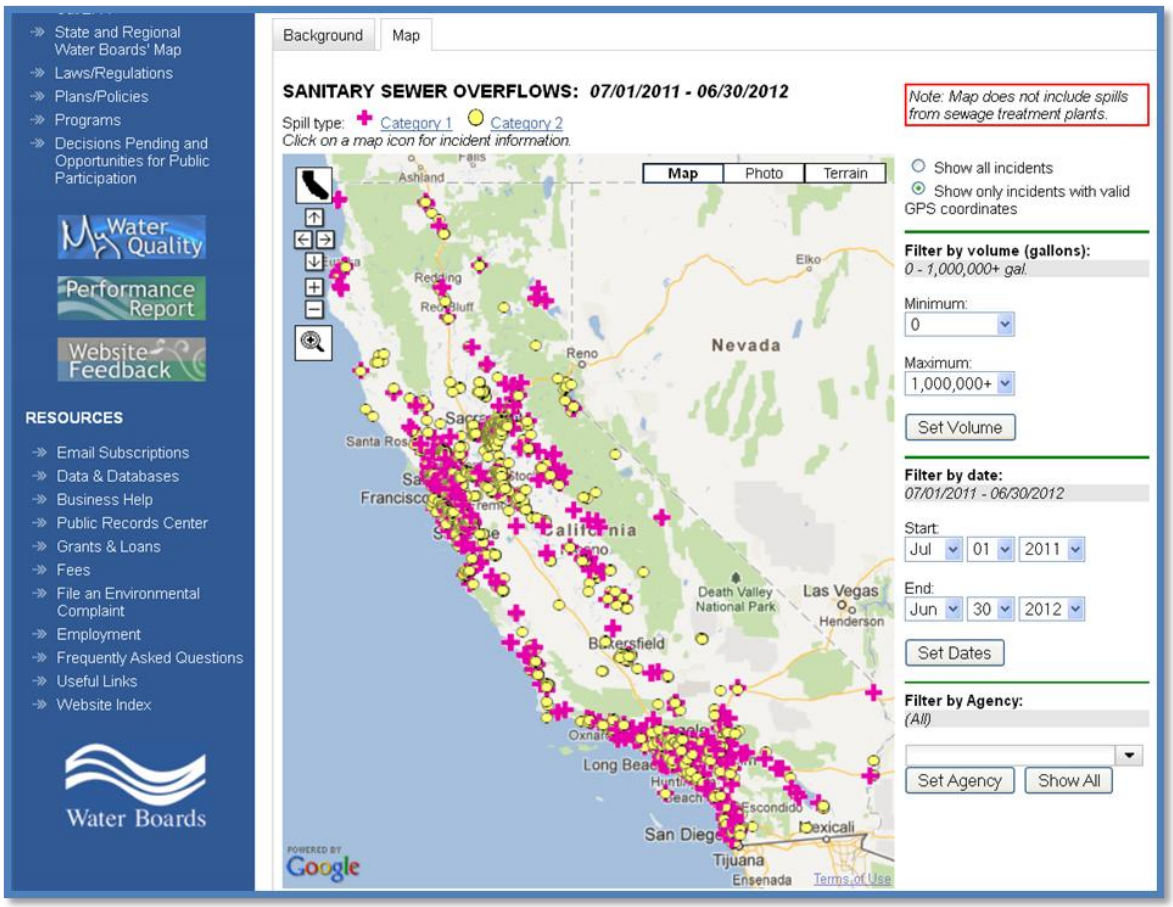


Figure 2 – SSO GIS Incident Map

F. Enforcement of the SSS WDRs

Between September 2007 and August 2012, when all Regional Water Boards were required to start reporting spills, State and Regional Water Board staffs have increased enforcement activities with respect to the SSS WRDs as illustrated in Figure 3.

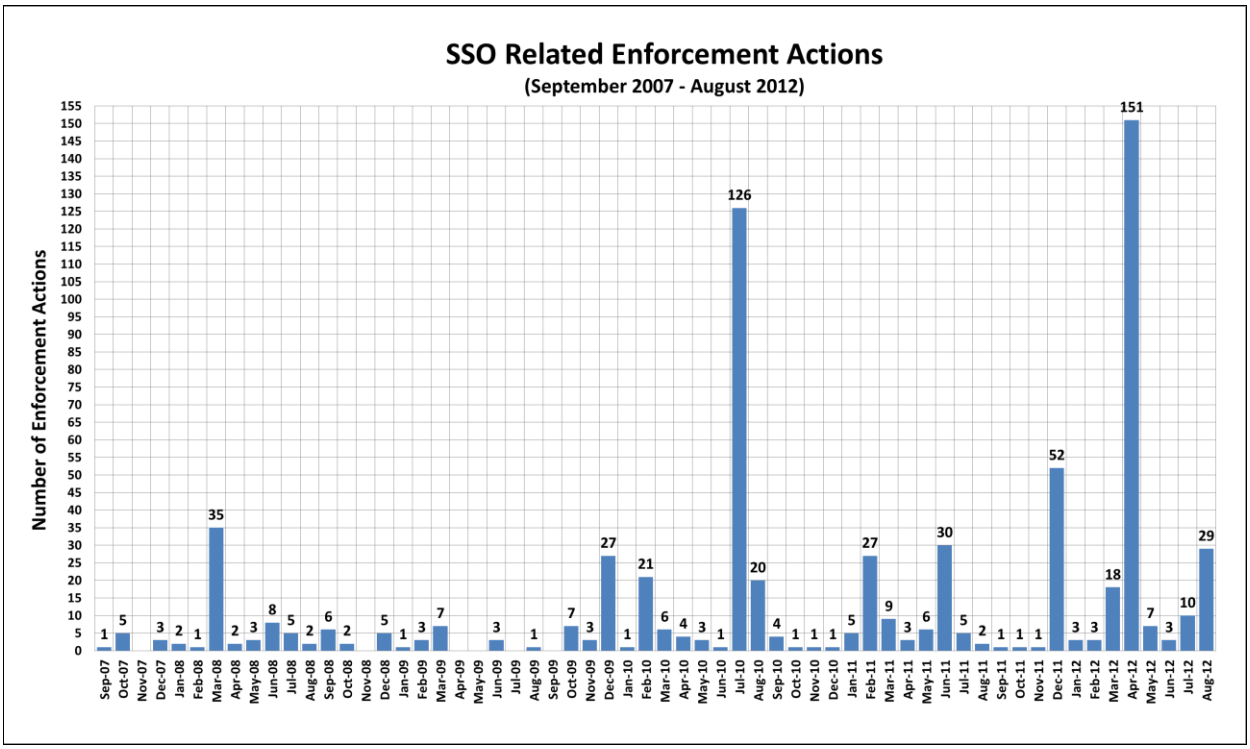


Figure 3 – SSO Enforcement Actions

To ensure a fair and consistent approach to achieve Statewide compliance, staff implements the 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 (i.e., failure to participate), and

b. Evaluating the accuracy and completeness of required reporting elements via facility inspections.

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

Phase I
During this phase, State Water Board staff identified agencies not meeting the basic program participation requirements (e.g., enrollment, reporting, and SSMP development) and conducted enforcement actions to bring the identified noncompliant agencies 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 failed to complete their SSMPs on time. Of the 119 enrollees that received the NOVs, 18 submitted Notices of Non-Applicability (NONs), 83 resolved the deficiencies and returned to compliance, and 18 enrollees were non-responsive and subsequently referred to the Office of Enforcement for further enforcement action. In addition, staff sent 148 NOVs on April 10, 2012. These NOVs were aimed at enrolled agencies that failed to complete and certify their SSMPs on time. Additional information on these NOVs is discussed in Section G.

Staff will continue to address non-compliant enrollees by providing compliance assistance, issuing NOVs, and, where necessary, applying additional enforcement actions.

Phase II
In the second phase, staff is addressing enrollees having some deficiencies with respect to the SSS WDRs reporting and implementation requirements. Staff has developed an automated email system that identifies collection system specific deficiencies and sends an email reminder monthly basis. This tool is discussed in detail in section G below.

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.

Since program inception, State Water Board Office of Enforcement staff has conducted approximately 50 inspections and 50 record audits. The inspections were conducted throughout the State and included a mix of small, medium, and large sanitary sewer systems. The basis for selection of sanitary sewer systems includes referral by Regional Water Boards, enrollees having numerous large SSOs (e.g. 50,000+ gallons), compliance data issues, suspect reporting, and complaints from the public.

Out of the 50 inspections that were conducted, 38 included a detailed review and evaluation of the enrollees' record keeping and reporting. Out of the 38 detailed inspections, four had few reporting violations, 11 had numerous reporting violations, and 23 had numerous reporting violations and known unreported SSOs.

G. Recent Enforcement Activities

State Water Board staff sent 148 NOVs to agencies on April 10, 2012. These NOVs were sent to agencies that failed to timely certify required SSMP elements in CIWQS. The NOVs directed the agencies to complete their SSMPs and certify in CIWQS that all the elements were completed and approved by their governing board. Small and disadvantaged communities have been given additional time to comply with these NOVs per the State Water Board's Enforcement Policy.

Overall, 101 enrollees have completed and certified all elements of the SSMP, 30 have completed and certified some elements of the SSMP, and 17 have not completed and certified any of the elements of the SSMP. Out of the 47 enrollees that have completed some of the SSMP elements or have not completed any elements, 22 have contacted staff requesting additional time to comply and/or submitted completion schedules. The remaining 25 non-responsive enrollees will be referred to the Office of Enforcement for further enforcement action.

In addition, staff developed an automated email system that sends email reminders to enrollees with minor reporting deficiencies identified in CIWQS. The automated email system identifies CIWQS reporting deficiencies for each enrolled sanitary sewer system (e.g., uncertified spill reports, uncertified SSSMP element, etc.) and sends an automatic monthly email reminder detailing the reporting deficiencies. The automated email system also sends courtesy reminders to enrollees as their sanitary sewer system questionnaire yearly update approaches the due date.

Staff is evaluating non-responsive agencies with minor reporting deficiencies and will pursue additional enforcement action against enrollees who fail to: 1) complete and annually update the sanitary sewer system questionnaire, 2) certify development of SSMP elements, and 3) submit monthly no-spill certifications or enter SSO spill reports each month.

State Water Board, Office of Enforcement staff conducted 21 inspections and 50 records audits in Fiscal Year 2011 – 2012. The inspections were mostly unannounced which allowed staff to evaluate sanitary sewer systems as close as possible to "normal operations." The inspections were conducted throughout California and targeted small to large sanitary sewer systems. Enforcement actions against some enrollees are pending.

Since February 2011 (i.e., the end date for data presented in the last annual report) Regional Water Board staff have taken 214 enforcement actions for violations related to the Statewide SSS WDRs. One hundred seventy four of these enforcement actions were taken during the Fiscal Year 2011 – 2012. Table 1 below contains a summary of the enforcement actions taken by the Regional Water Boards covering data since the last annual report was issued.

Regional Water Board	13267 Letter	Notice of Violation (NOV)	Administrative Civil Liability (ACL)	Cease and Desist Order (CDO)	Staff Enforcement Letter (SEL)	Settlement Court Order (SETCO)	Total
North Coast			3				**3**
San Francisco Bay		4	6	2			**12**
Central Coast	1		7				**8**
Los Angeles	5	2				1	**8**
Central Valley - Fresno	3	19					**22**
Central Valley - Redding		10					**10**
Central Valley - Sacramento		61	1				**62**
Lahontan - Tahoe			1		2		**3**
Lahontan - Victorville		3					**3**
Colorado River Basin	1						**1**
Santa Ana					3		**3**
San Diego	2		2		75		**79**
Total	**12**	**99**	**20**	**2**	**80**	**1**	**214**

Table 1 – Enforcement Actions by Regional Water Board (February 2011 to August 2012)

H. Sanitary Sewer Systems WDRs Review and Update

Staff initiated the review and update of the SSS WDRs in September 2009 At the January 24, 2012 workshop, the State Water Board decided, to only amend the MRP (Order# 2008-0002-EXEC) to the SSS WDRs.

With input from the Office of Enforcement, staff revised the MRP. Staff made the proposed revisions available for stakeholder review on August 14, 2012. Staff subsequently held two workshops on the draft MRP in Northern and Southern California on August 28, 2012 and

August 30, 2012, respectively, to receive comments. Over 90 stakeholders attended the workshops personally and over 80 attended through the Webcast. Following the meetings, staff solicited comment letters with a due date of October 2, 2012. Staff received a total of eight comment letters. Upcoming activities to finalize the MRP update include addressing stakeholder comments, revising the draft MRP, holding additional stakeholder meetings as needed, and finalizing and reissuing the revised MRP. Staff expects these activities to be completed in early 2013.

3. SSS 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 and annual update of the sanitary sewer system questionnaire.

A. Enrollment for Coverage

All public agencies that own or operate sanitary sewer systems comprised of more than one mile of pipe that collect and/or convey untreated or partially treated wastewater to a publicly owned wastewater treatment facility are 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. As illustrated in Figure 4, the Central Valley – Sacramento Water Board has the highest number of enrolled sanitary sewer systems with 181 systems enrolled. The Central Valley – Fresno Water Board has 156 systems enrolled and the Los Angeles Water Board with 145 systems enrolled.

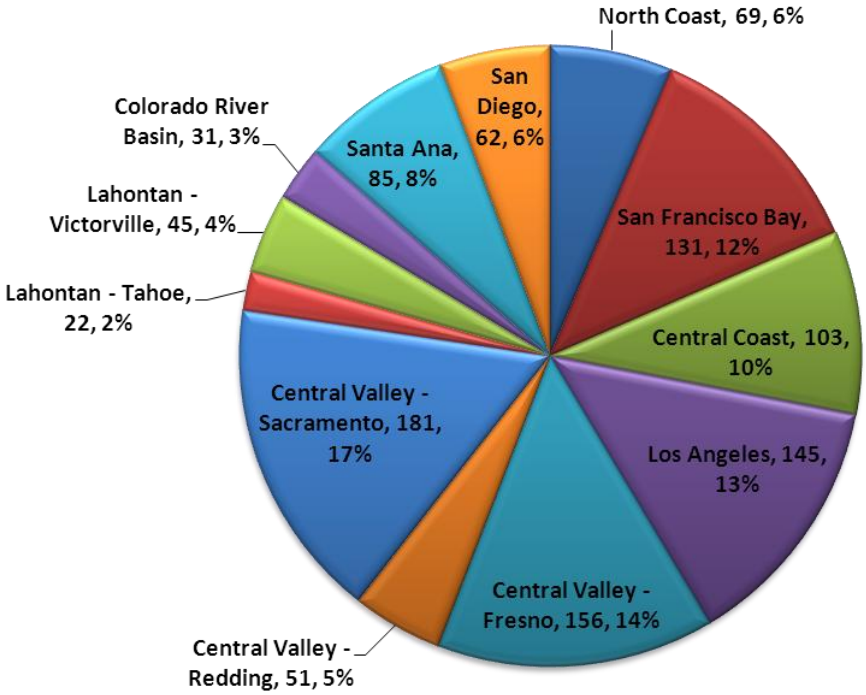


Figure 4 – Number and Percentage of Enrolled Sanitary Sewer Systems by Regional Water Board

The number of enrollees in the State varies due to new applications being received for coverage and cancellations of enrollment. Reasons for cancellations of enrollment include: 1) agency does not meet the application criteria (i.e., does not own greater than one mile of publicly owned sewer pipe) and enrolled erroneously; 2) duplicate enrollment due to submittal of multiple applications; or 3) errors in CIWQS data entry.

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

B. SSO Reporting

Monthly SSO reporting compliance rates are calculated by tallying 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 5 below for the months of September 2007 to June 2012.

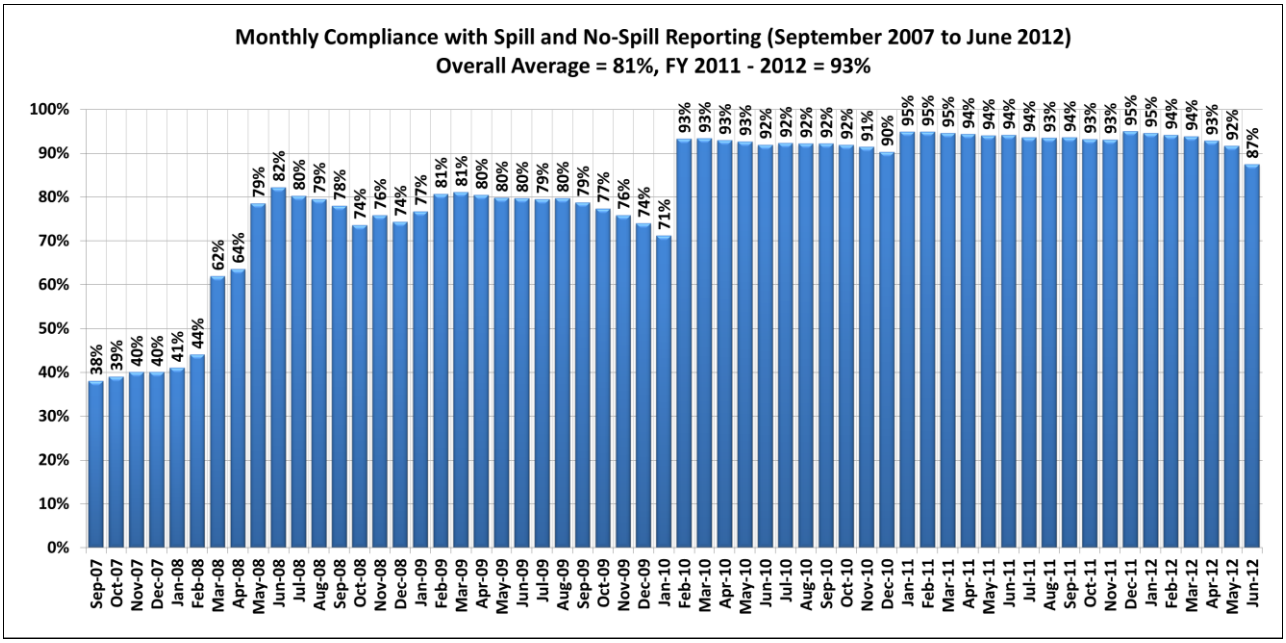


Figure 5 – Monthly Compliance with Spill and No-spill Reporting

The average reporting compliance rate is 81 percent from September 2007 to June 2012. The average monthly reporting compliance rate during the past Fiscal Year, 2011 – 2012, is 93 percent. Staff believes increased compliance rates are a result of increasing thoroughness of enrollees in reporting, increased enforcement by the State and Regional Water Boards, and implementing the automated monthly email compliance reminders.

The current average monthly reporting compliance rate of 93 percent is less than the target level of 100 percent. Phase I and II enforcement activities described previously in section 2.F will continue to be conducted to improve this compliance rate. Non-compliant enrollees that are non-responsive to compliance reminders and NOVs are referred to the Office of Enforcement for further enforcement action.

While the spill reporting compliance has increased over the past year, only 72 percent of enrolled sanitary sewer systems in the State have ever reported an SSO. As illustrated in Figure 6, 303 enrollees (approximately 28 percent) have not reported any spills since reporting was required. The monthly reporting performance for those enrollees that have never reported an SSO is illustrated in Figure 7. One hundred and eighty six of these enrollees (approximately 61 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); whereas 117 of the enrollees (approximately 39 percent) with no reported SSOs have complied fully with the required monthly reporting.

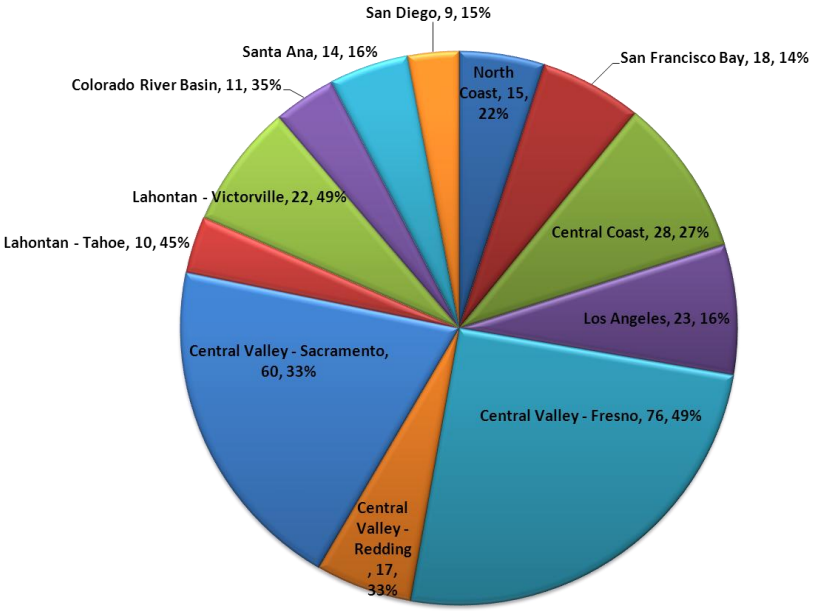
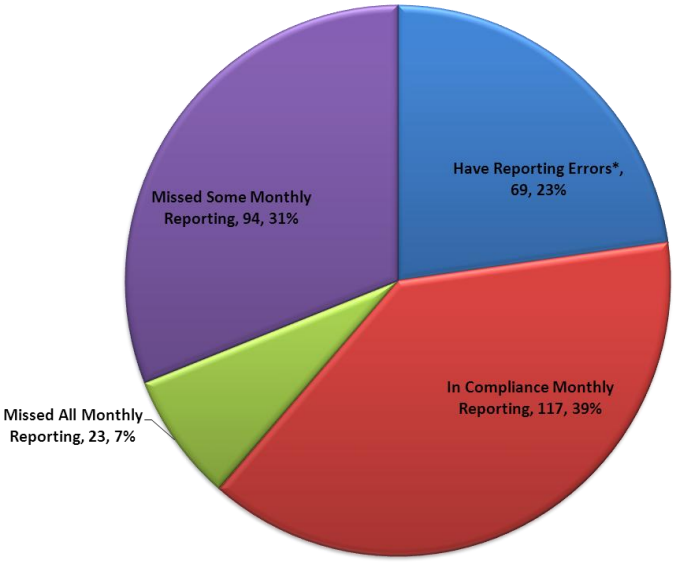


Figure 6 – Percentage and Number of Enrollees with No SSOs Reported by Regional Water Board



Note*: Reporting errors include, filling a "No-spill" certification when the enrollee had an SSO spill, filling duplicate "No-spill" certifications, not filling a "No-spill" certification, or not filling an SSO

Figure 7 – Monthly Reporting Performance of Enrollees with No SSOs Reported

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

Enrollees are required to certify that their 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 (or equivalent) approval at a public hearing for the final SSMP certification and for SSMP 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. SSMP development compliance by year is illustrated in Figure 8. The status of enrollee SSMP certification as of June 2012 is as follows:

- All enrollees (1081) were required to have their SSMPs fully developed as of August 2, 2010.
- 90 percent of enrollees (974) have completed all SSMP elements (includes those completed late in addition to on-time SSMPs).
- 5 percent of enrollees (57) have certified some but not all of their SSMP elements.
- Out of the total of 95 percent (1031) of enrollees that have completed all or some of the SSMP elements, 20 percent (218) have met all SSMP certification deadlines.
- 5 percent of enrollees (50) have not certified any of their SSMP elements and these elements are now past due.

Enforcement activities described in sections 2.F and 2.G are being conducted to improve the SSMP compliance rates.

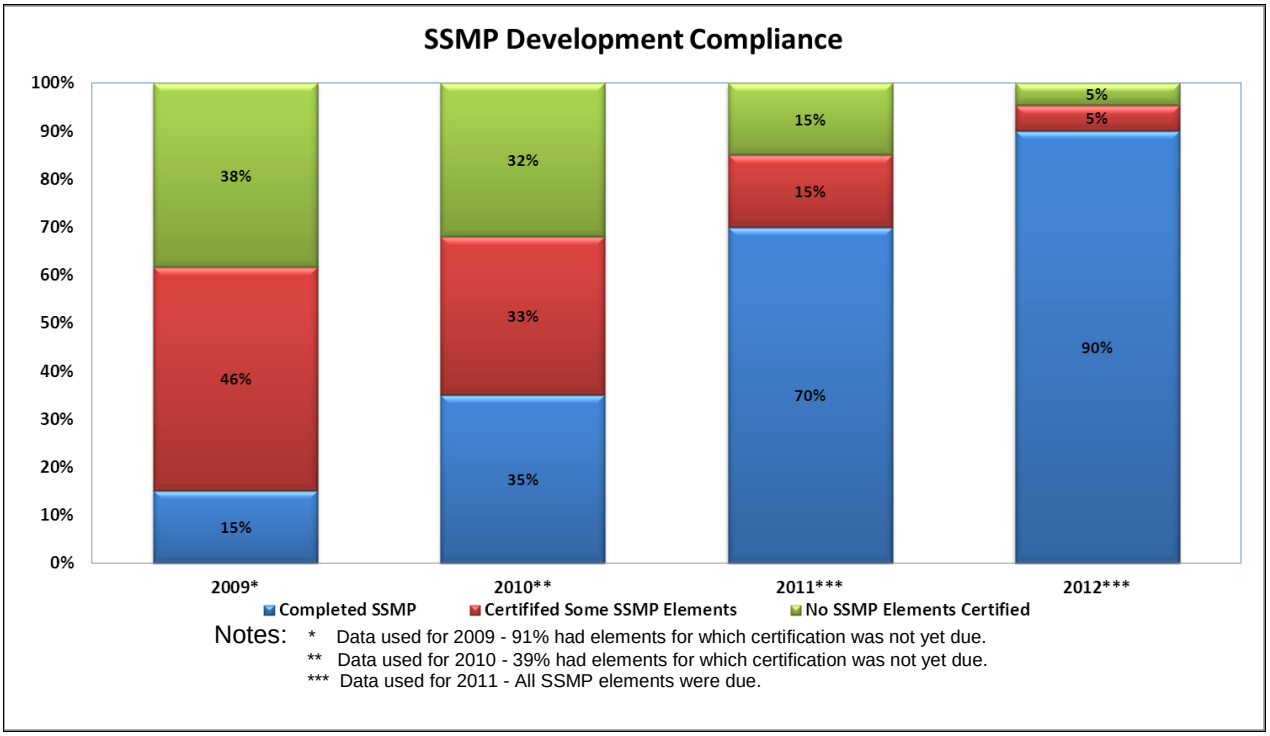


Figure 8 – SSMP Development Compliance by Year

D. Sanitary Sewer System Questionnaire

The SSS WDRs requires 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.

Currently, 94 percent of enrollees (1013) have completed the sanitary sewer system questionnaire and updated it annually, four percent (49) have completed the questionnaire but have failed to annually update it, and two percent (18) of enrollees have never completed the questionnaire. Compliance with the sanitary sewer system questionnaire has increased over the past year as illustrated in Figure 9. Phases I and II compliance assistance and enforcement activities described in section 2.F are conducted to improve the questionnaire compliance rates. Specifically, email reminders are sent to each enrollee one month before their yearly questionnaire update is due. Non-compliant enrollees who are non-responsive to compliance reminders and/or NOVs are referred to the Office of Enforcement for further enforcement action.

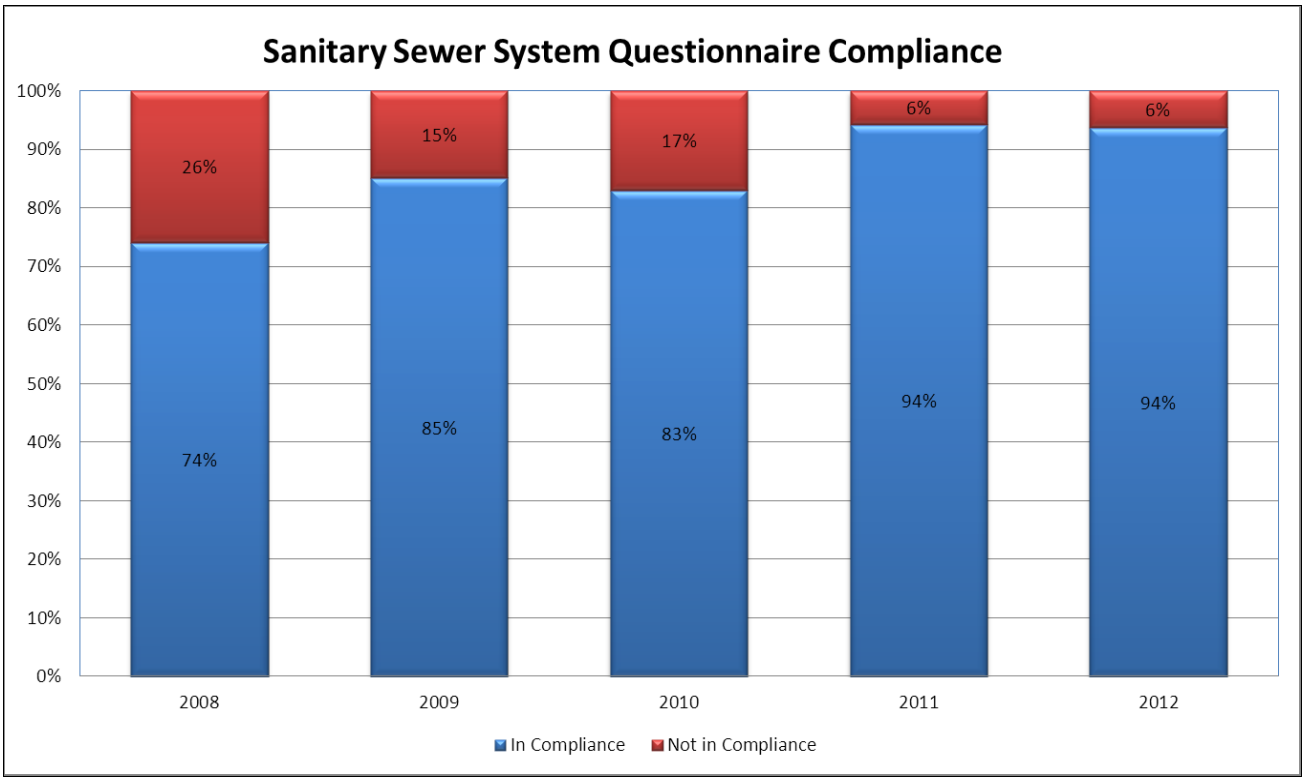


Figure 9 – Sanitary Sewer System Questionnaire Yearly Compliance

4. SPILL DATA SUMMARY

A. Statewide Reported Spill Data

A summary of Statewide SSO spill data reported by enrollees since reporting requirements became effective on January 2, 2007 and for the last Fiscal Year are presented in Table 2 below. The SSS WDRs prohibit all SSOs that reach surface water or cause a nuisance as defined in the California Water Code section 13050 (m) (2).

State Water Board staff conducts checks to ensure the accuracy of the approximately 28,900 enrollee-entered spill records. When erroneous data are identified, the enrollee responsible for the data entry error is contacted and requested to correct it.

	Jan 2007 - Jun 2012	FY 2011 - 2012
Number of SSOs	28,903	4,738
Total Volume of SSOs (gal)	128,234,969	15,400,385
Total volume Recovered (gal)	24,630,426	3,871,701
Total Volume Reached Surface Water (gal)	103,915,871	11,785,746
Percent Recovered	14%	25%
Percent Reached Surface Water	81%	77%
Total Miles of Pressure Sewer	3,311	3,311
Total Miles of Gravity Sewer	94,231	94,231
Total Miles of laterals Responsible	13,051	13,051
SSOs per 100 miles per Year	4.75	4.28
Volume of SSOs per 100 miles per Year	21,082	13,925

Table 2 – Overall and Fiscal Year 2011 – 2012 Statewide SSO Data

The data summaries presented below are from analyses of spill data submitted by enrollees. Staff is examining additional metrics as ongoing data cleanup by enrollees is completed, efforts to improve the reporting database are implemented, and additional data are collected. Overall SSO Reduction Program performance from January 2, 2007, when the first Regional Water Boards in the State were required to start reporting, to June 30, 2012, is illustrated in Figures 10 and 11. As illustrated in Figure 10, there is a seasonal pattern with more SSO spills occurring during the wet seasons. From January 2008 to the present, a general downward trend in the number of spills occurring during all seasons is evident.

Figure 11 shows the seasonal pattern with respect to spill volumes. The total number of spills and spill volume were significantly lower during the 2008/2009 wet season. The reason for the low wet season spill volume in 2008/2009 could not be determined. Spill volumes rose during the 2009/2010 wet season, significantly increased during the 2010/2011 wet season, and decreased during the 2011/2012 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. The annual variation in wet season spill volume appears to be correlated with the annual variation in wet season precipitation with more spills and higher volumes generally correlating to higher average Statewide annual precipitation.

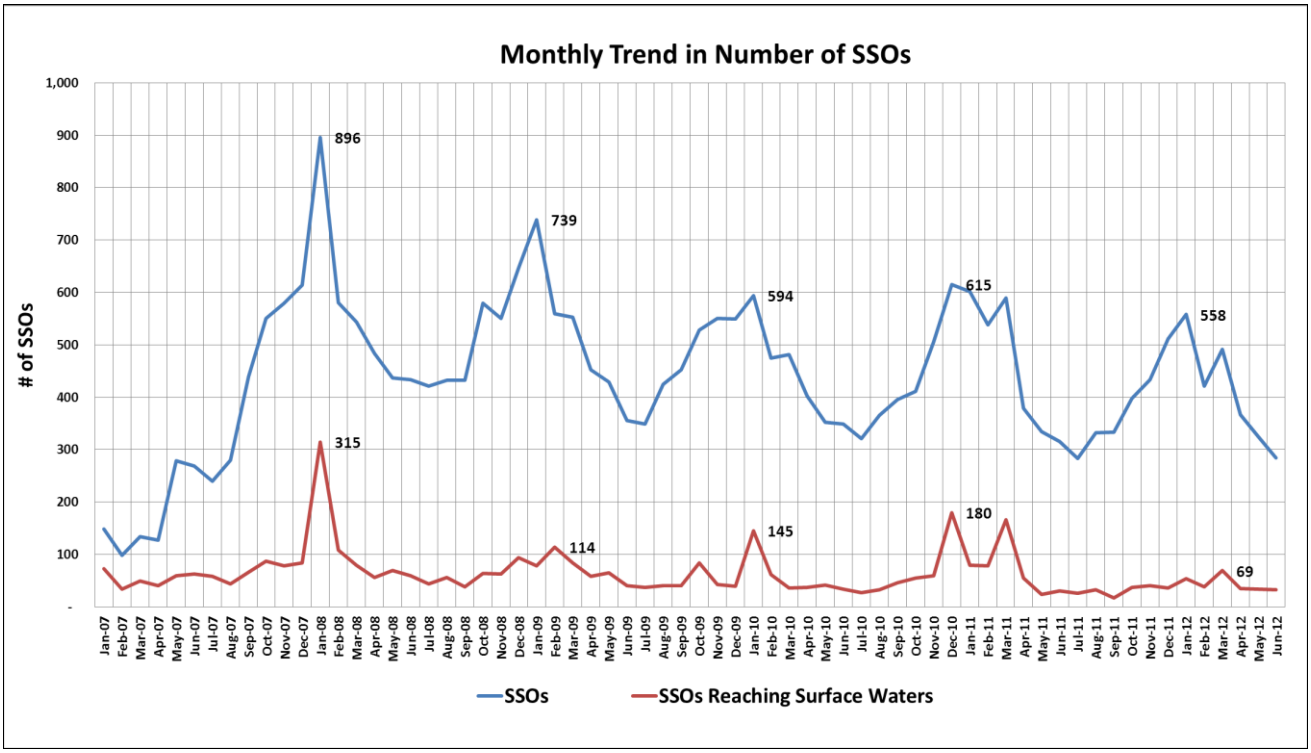


Figure 10 – Monthly Trend in Number of SSOs

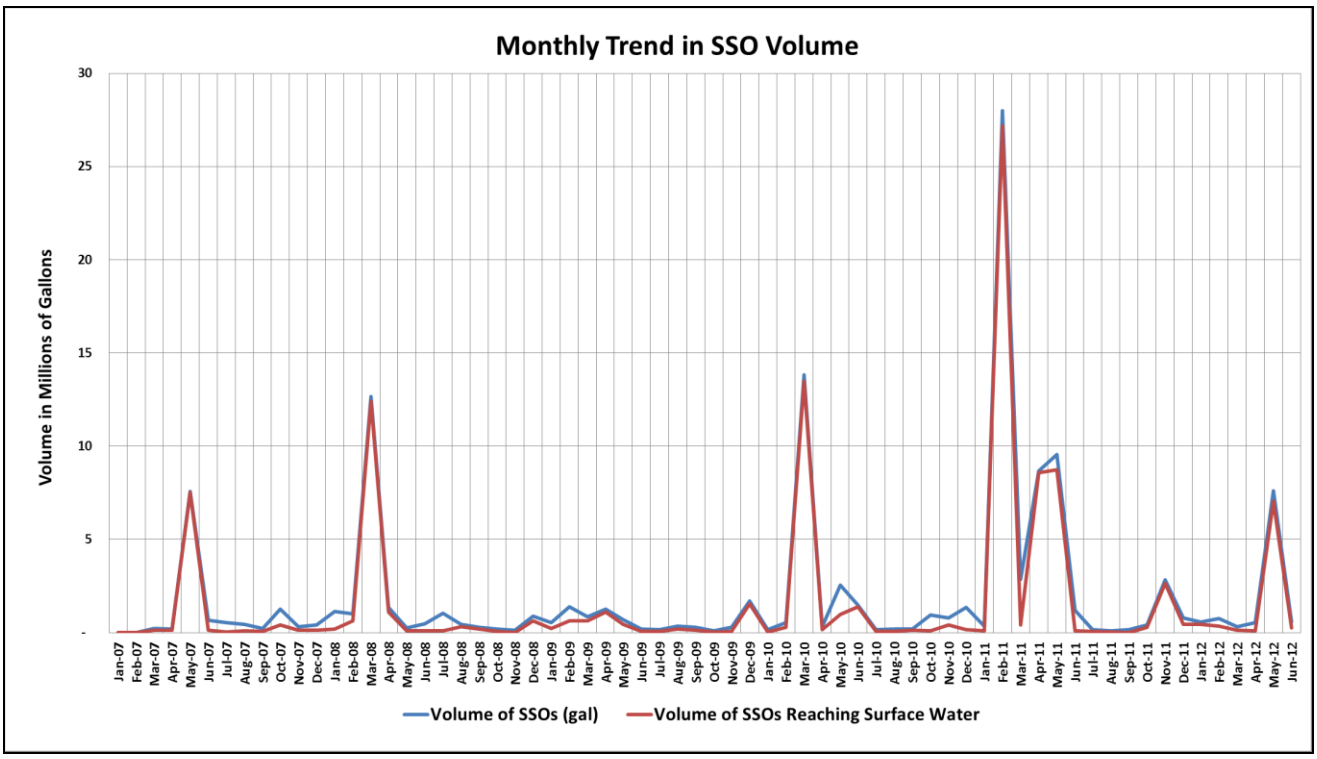


Figure 11 – Monthly Trend in SSO Volume

B. SSO Spill Trends

As illustrated in Figure 12, approximately 91.4 percent of all SSOs in the State are less than 1,000 gallons. Of the reported SSO volume released in the State, 82.5 percent of the total volume is from just 1.2 percent of the SSO events as illustrated in Figures 12 and 13. In addition, only 6.5 percent of the reported volume of SSOs in the State is from 97.2 percent of SSO events. In summary, the relatively few large spills account for the majority of the sewage spilled in the State.

The percentages of reported SSOs that reached surface water by spill size class are presented in Figure 14. Only 14.4 percent of all SSOs are reported to have reached surface waters since inception of reporting while the majority of spills are reported as not reaching surface water. Of 28,903 reported SSOs since January 2007, 4,150 were reported to have reached surface water. Of these, 2,518 (approximately 61 percent) were less than 1,000 gallons.

The percentage of SSO volume that reached surface water, categorized by spill size class, is illustrated in Figure 15. Comparing Figures 14 & 15, approximately 6 percent of spills reported to have reached surface water accounts for 86.7 percent of the total volume spilled to surface water since spill reporting was required. In addition, approximately 85 percent of the spills reported to have reached surface water accounts for only 3.1 percent of the spill volume that reached surface water since spill reporting was required.

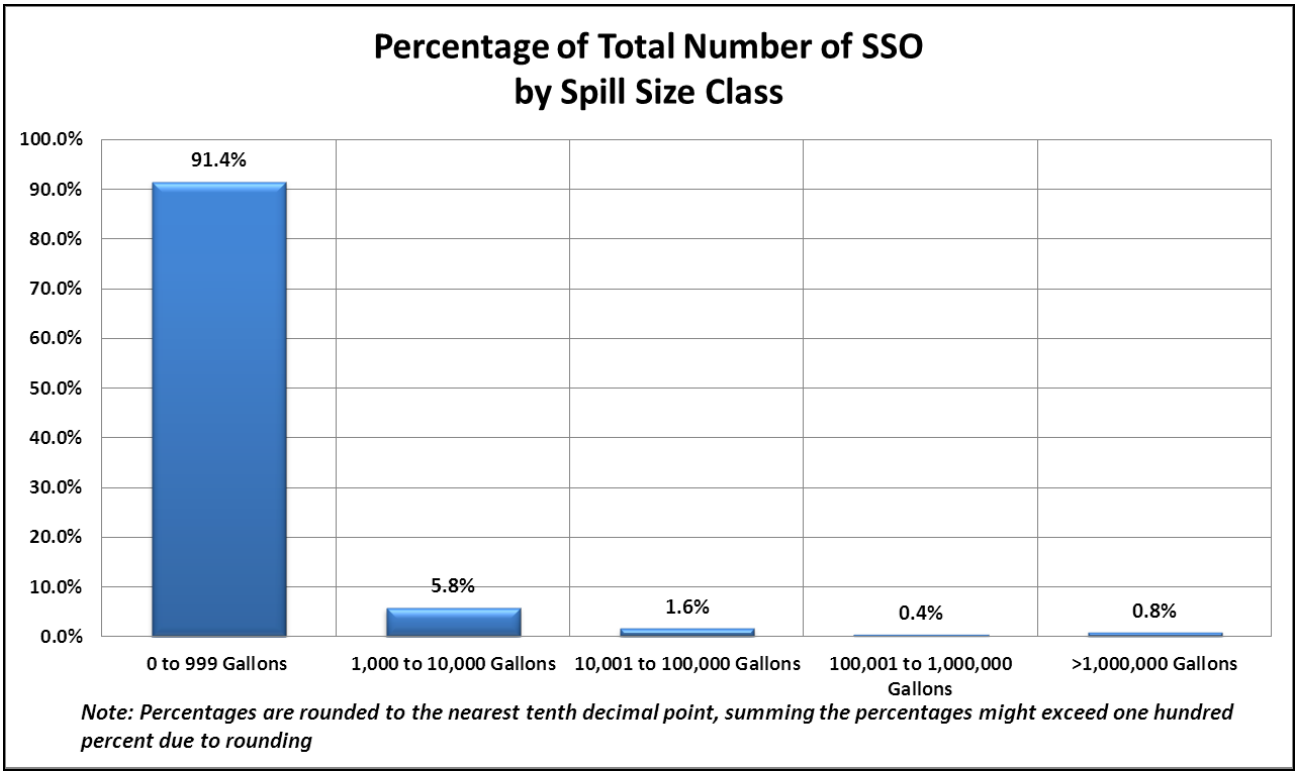


Figure 12 – Percentage of Total Number of SSOs by Spill Size Class

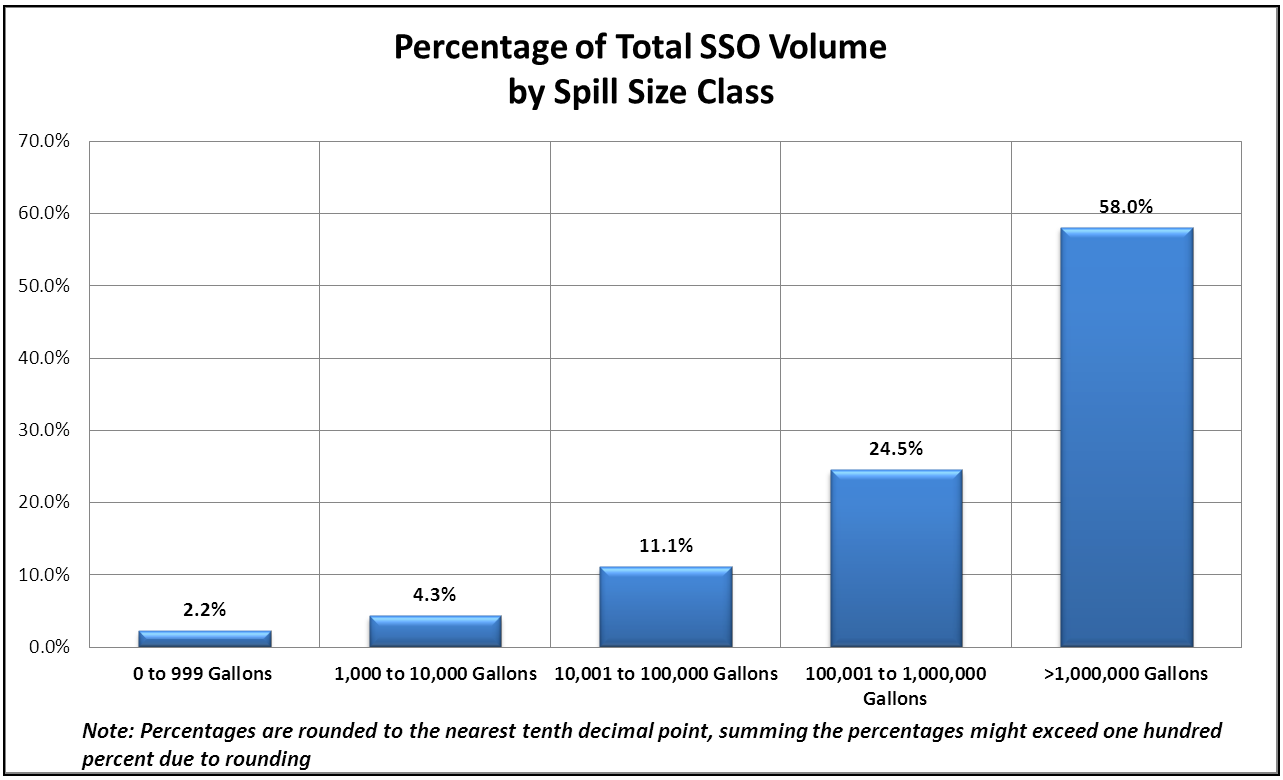


Figure 13 – Percentage Total of SSO Volume by Spill Size *Class*

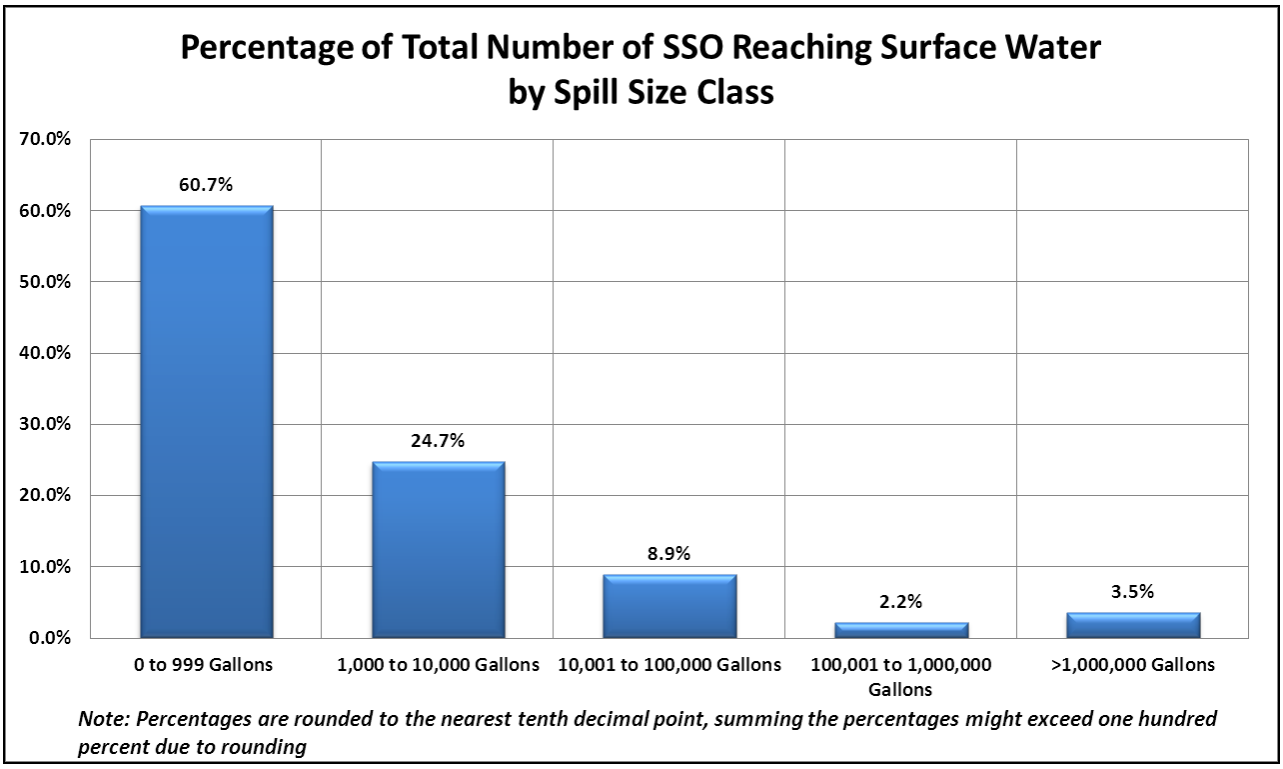


Figure 14 – Percentage of SSOs Reaching Surface Water by Size Class

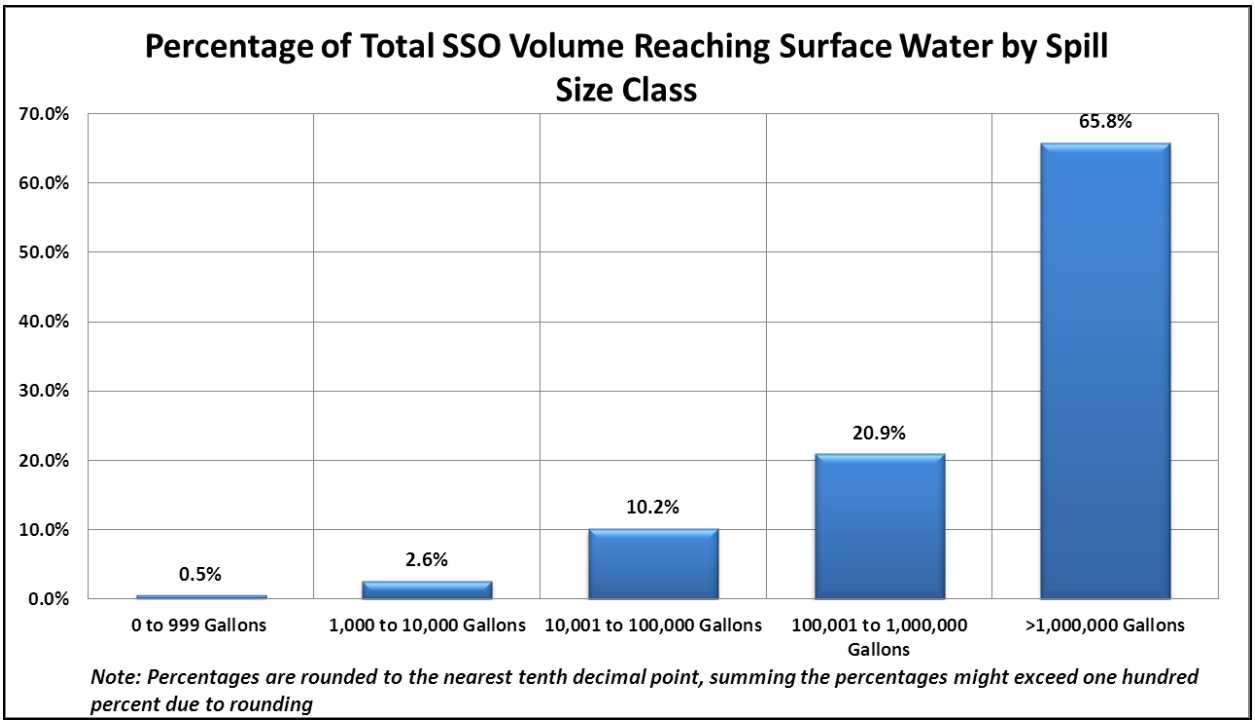


Figure 15 – Percentage of Total SSO Volume Reaching Surface Water by Spill Size Class

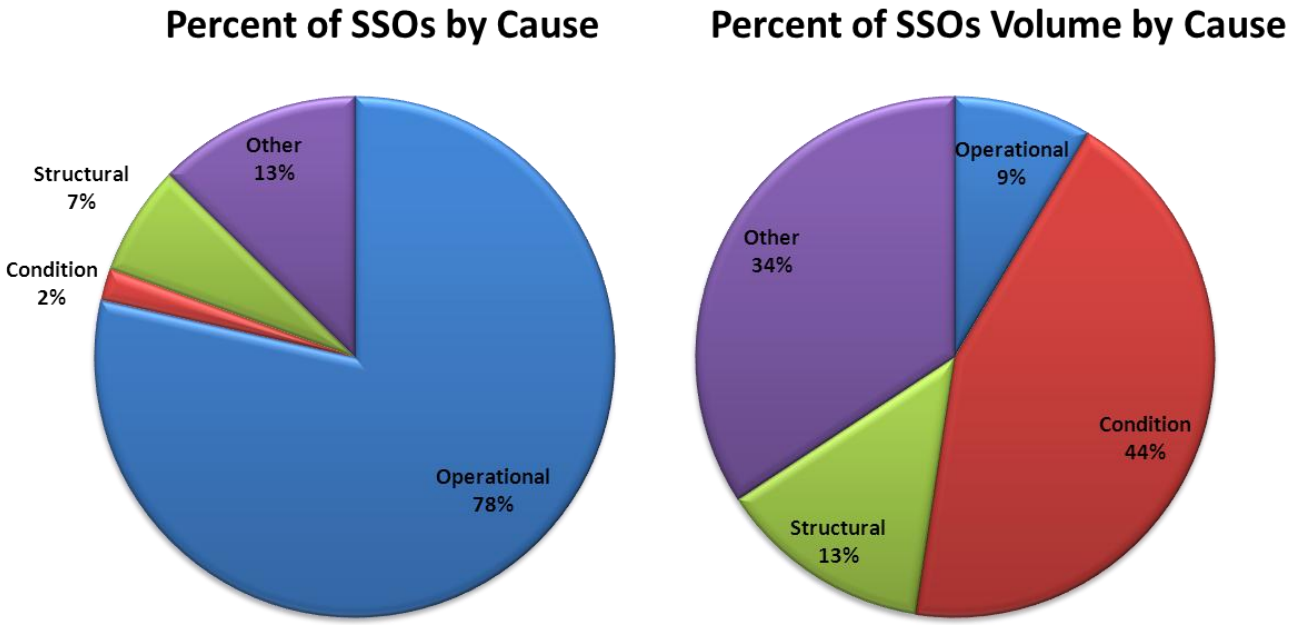
Regional Water Board	FY 07-08		FY 08-09		FY 09-10		FY 10-11		FY 11-12	
	Enrollees w/ SSOs Reaching Surface Water	SSOs Reaching Surface Water	Enrollees w/ SSOs Reaching Surface Water	SSOs Reaching Surface Water	Enrollees w/ SSOs Reaching Surface Water	SSOs Reaching Surface Water	Enrollees w/ SSOs Reaching Surface Water	SSOs Reaching Surface Water	Enrollees w/ SSOs Reaching Surface Water	SSOs Reaching Surface Water
North Coast	20	39	14	36	14	19	16	35	11	22
Bay	74	458	65	274	60	252	63	316	48	172
Central Coast	26	55	17	34	25	41	26	70	19	26
Los Angeles	60	238	52	130	47	97	42	111	35	74
Central Valley - Fresno	11	30	12	25	9	30	16	40	9	13
Central Valley - Redding	8	16	9	16	7	13	8	11	5	7
Central Valley - Sacramento	38	80	35	101	34	73	33	87	27	57
Lahontan - Tahoe	1	1	1	2	3	4	2	2	2	5
Lahontan - Victorville	7	14	7	12	6	10	10	21	4	10
Colorado River Basin	2	3	4	4	2	2	2	7	1	1
Santa Ana	30	88	29	73	27	56	29	55	22	37
San Diego	26	82	24	92	21	43	24	79	14	29
Total	**303**	**1,104**	**269**	**799**	**255**	**640**	**271**	**834**	**197**	**453**
% of Total Enrollees Reporting/Spills Reported	**60%**	**18%**	**52%**	**13%**	**50%**	**12%**	**55%**	**16%**	**41%**	**10%**

Table 3 – Number of Enrollees with SSOs to Surface Waters and Number of SSOs to Surface Water

The number of enrollees reporting SSOs to surface waters and the number of SSOs reaching surface waters over the past fiscal years are presented in Table 3 by Regional Water Board. The number of enrollees reporting SSOs to surface water ranges from 197 to 303 (18 percent to 28 percent) enrollees for the past four fiscal years. The table also shows a general decreasing trend in the number of SSOs reaching surface waters each fiscal year.

C. Spill Causes

The percentages of total SSOs by causes, from September 2007 to June 2012, are presented in Figure 16. The data indicate that operational causes (root intrusion, grease deposition, debris) are responsible for 78 percent of all SSOs. In terms of volumes spilled, these causes resulted in only 9 percent of the reported SSO volume for this time period.



NOTE: **Operational** – Includes, SSOs caused by Debris, FOG, Roots; **Condition** – Includes SSOs caused by flow exceeded capacity and Rain flow exceeded capacity; **Structural** – Includes, SSOs caused by pipe structural failures and pump station failure; **Other** – Includes, 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.

Figure 16 – Percent of SSOs and Total SSO Volume by Cause (January 2007 – June 2012)

In addition, the data indicates that SSOs caused by factors related to condition (e.g., flow exceeded capacity) and structural issues (e.g., pipe structural failures, pump station failure) account for only 9 percent of the number of SSOs reported but, account for 57 percent of the reported SSO volume.

D. Sanitary Sewer Overflows by Pipe Characteristics

Pipe Diameter – Reported SSO data indicate: (1) that many enrollees are not reporting the sewer pipe diameter in their reports (70 percent) and (2) that at least 35 percent of SSOs where pipe data are reported occur in pipe sizes of eight inches or less. It is expected that smaller diameter pipes would be affected to a higher degree by the most common causes of SSOs (i.e., root intrusion, grease deposition, and debris). Increased thoroughness in reporting would help to clarify if there is any relationship between pipe diameter and SSOs.

Pipe Material – Reported SSO data indicate: (1) that many enrollees are not reporting the pipe material in their reports (74 percent) and (2) that at least 62 percent of the SSOs where pipe material is reported 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 if there is any relationship between pipe material and SSOs.

Sewer Age – As illustrated in Figure 17, approximately 31 percent (34,000 miles) of the publicly owned sanitary sewer system piping in the State is older than 52 years. Since the pipe age information was collected up to a year ago, the time periods have been offset one year.

In general, older sanitary sewer system pipes require more maintenance than newer segments of pipe and may be more prone to SSOs.

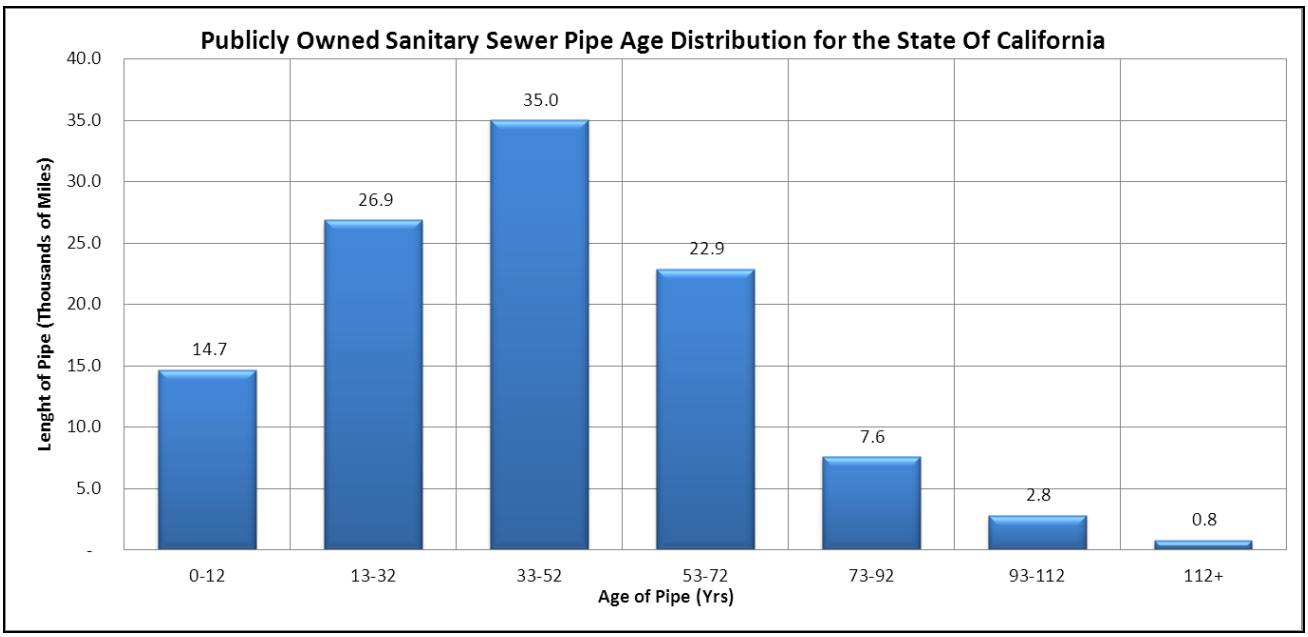


Figure 17 – Publicly Owned Sanitary Sewer Pipe Age Distribution for the State of California

E. 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 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 Regional Water Board since each Regional Water Board was required to start reporting SSOs at different times (i.e., Los Angeles, Santa Ana and San Diego Water Boards started on January 2, 2007; North Coast, San Francisco Bay and Central Coast Water Boards started on May 2, 2007; and Central Valley, Lahontan and Colorado River Water Boards started on September 2, 2007). This spill rate metric is calculated as follows:

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

This metric is an indicator of an enrollee's overall sanitary sewer system performance and can provide insight into 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 of sanitary sewer system (e.g., municipal, prison, school, etc.) and the size of the sanitary sewer system when using spill rate indices for comparing sanitary sewer system performance. As illustrated in Figure 18, of the 1081 enrolled sanitary sewer systems, 85 percent (923) serve municipalities and 14 percent (158) serve other public entities including airports, hospitals, military facilities, parks, ports, prisons, and schools. The distribution of municipal sanitary sewer systems by system size in miles of publicly owned pipe is illustrated in Figure 19.

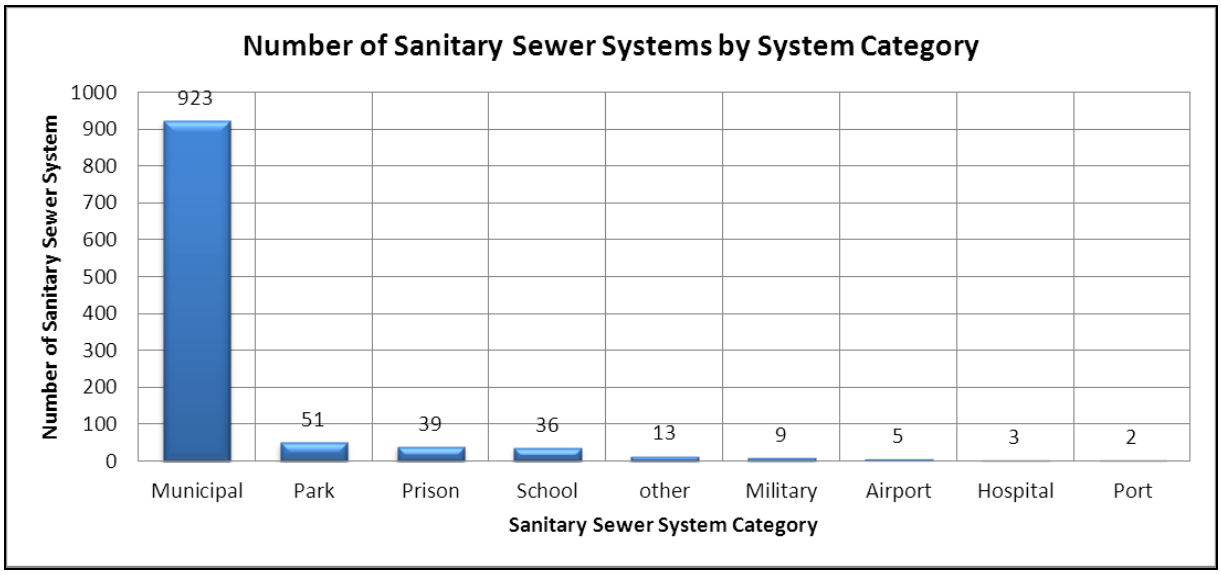


Figure 18 – Number of Sanitary Sewer Systems by Category

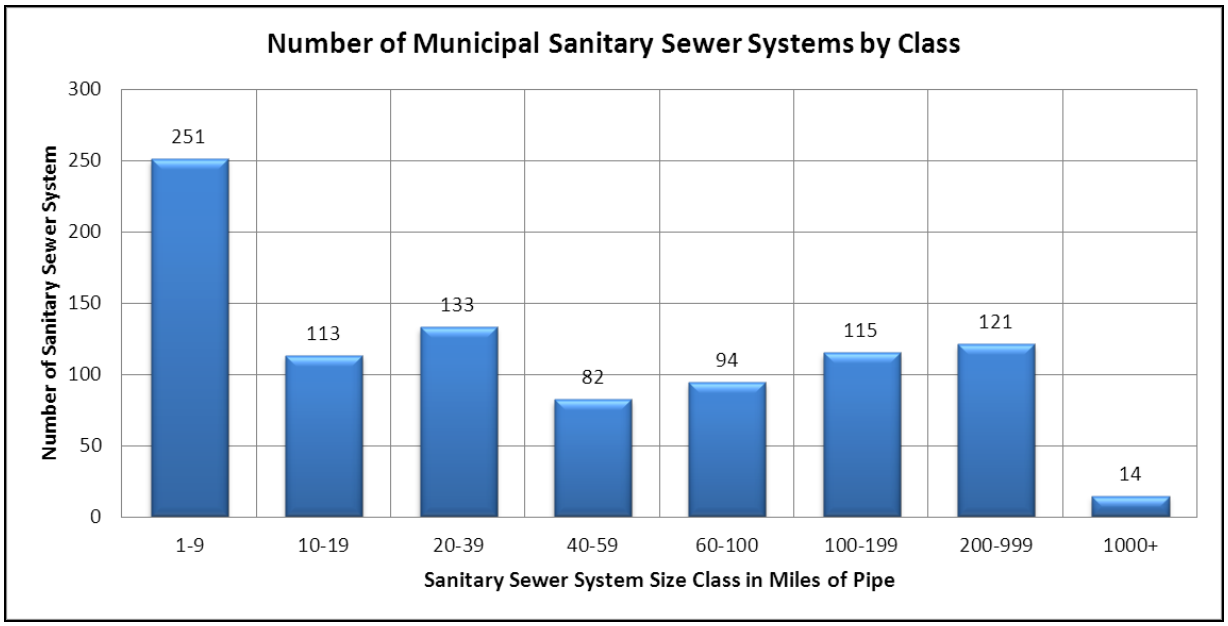


Figure 19 – Number of Municipal Sanitary Sewer Systems by System Size

The spill rates for enrolled municipal sanitary sewer systems grouped by system size in miles of publicly owned pipe is illustrated in Figure 20. The Statewide average spill rate since inception of reporting is 7.4 SSOs/100 mi/yr and the Statewide median spill rate is 3.4 SSOs/100mi/yr for municipal sanitary sewer systems.

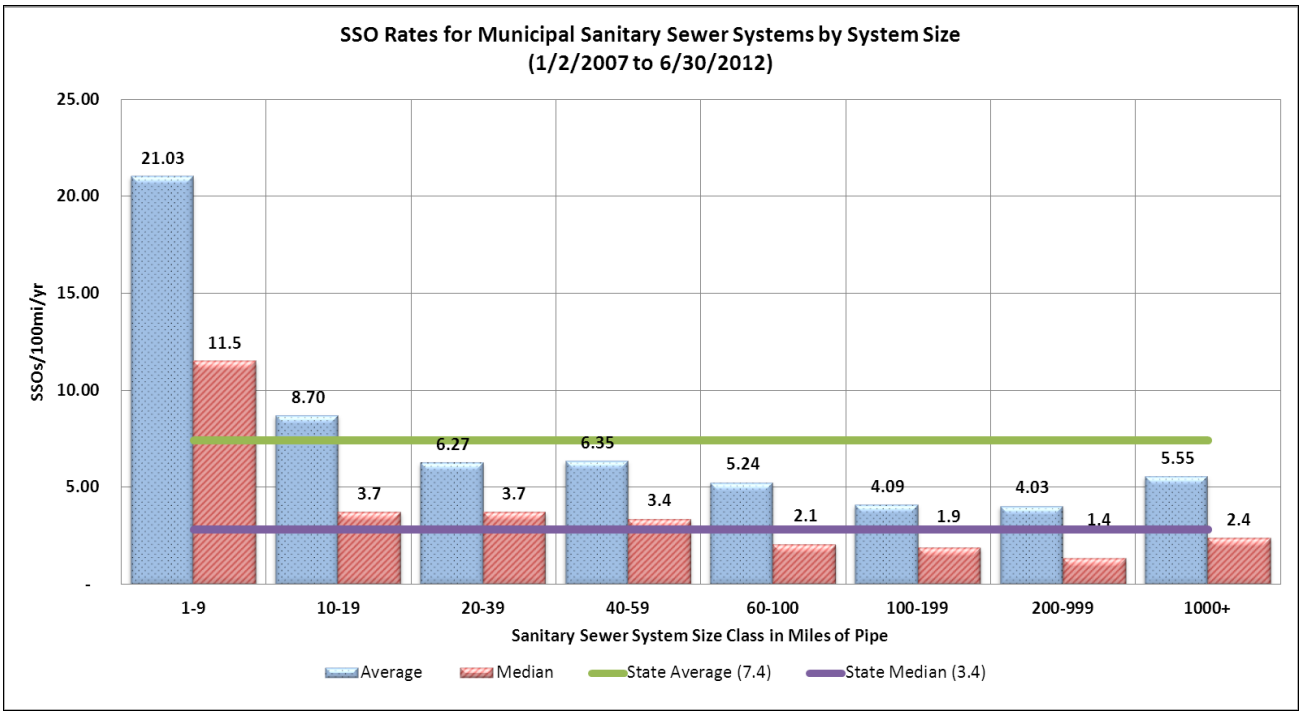


Figure 20 – SSO Rates for Municipal Sanitary Sewer Systems by System Size

As illustrated in Figure 20, small municipal sanitary sewer systems with fewer than 20 miles of pipes generally have spill rates above the State average for municipalities. This trend is likely a reflection of 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, municipal sanitary sewer systems greater than 20 miles in length generally have spill rates below the State average for municipalities. The lower spill rates for larger sanitary sewer systems are likely attributable, in part, to having more resources to manage their sanitary sewer systems. In addition, the lower spill rates for the larger systems may be, in part, a reflection of earlier development and implementation of SSMPS. For instance, agencies that own larger sanitary sewer systems were required to develop and implement their SSMPs earlier than agencies that own smaller sanitary sewer systems. The smallest agencies had a deadline of August 2, 2010 to complete development and start implementation of their SSMPs; whereas the largest agencies had a deadline of May 2, 2009 to complete development and start implementing their SSMPs.

Although Figure 20 illustrates that sanitary sewer systems with less than 20 miles of pipe have the highest spill rates per mile of pipe, overall these systems have relatively fewer spills than larger systems as illustrated in Figure 21.

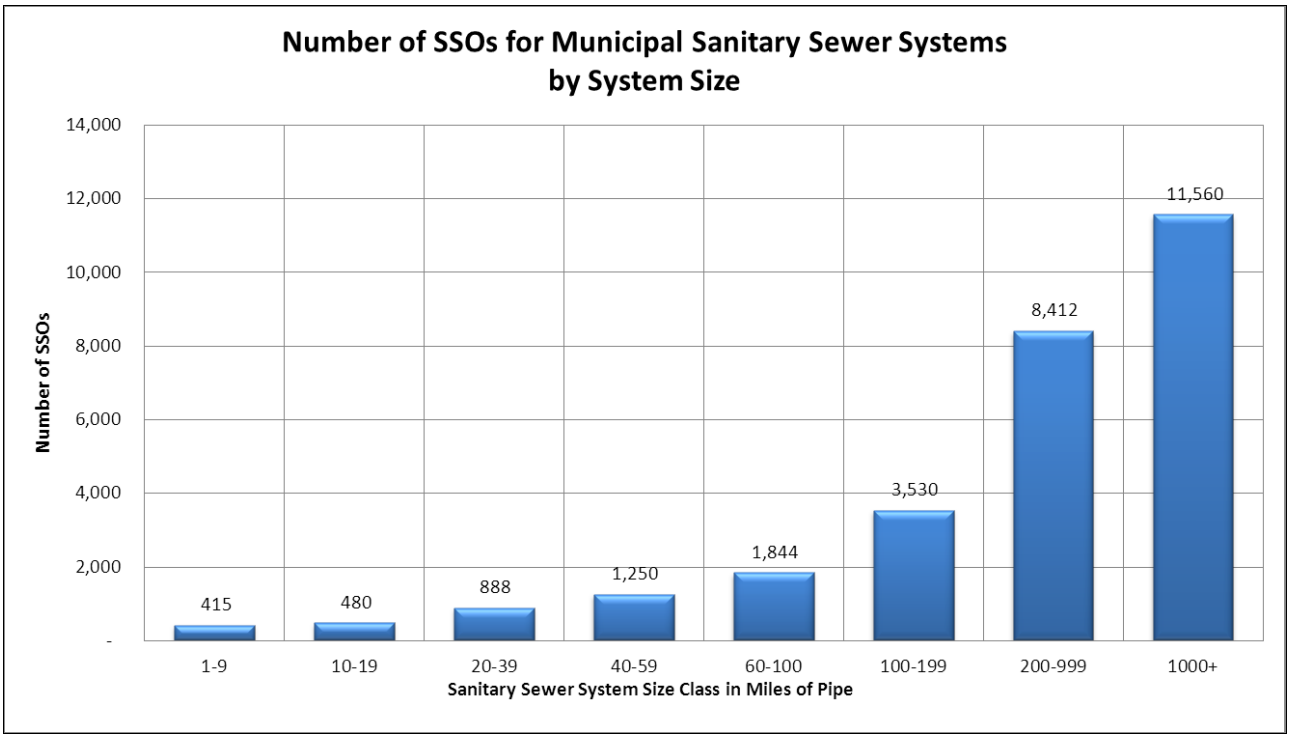


Figure 21 – Number of SSOs for Municipal Systems by System Size

The SSO volume per 1000 people served per year is another metric that is used to compare the relative performance of sanitary sewer systems. This metric expresses the volume of SSOs per 1000 people served multiplied by a year factor (number of days since reporting was required, divided by 365 days). The factor varies by Regional Water Board since each Regional Water Board was required to start reporting SSOs at different times. This metric is calculated as follows:

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

The SSO spill volume rate for enrolled municipal sanitary sewer systems by system size classes is illustrated in Figure 22. 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 at 9,414 gallons/1000 capita/yr and 3,682 gallons/1000 capita/yr, respectively. Sanitary sewer systems with more than 1000 miles of pipe have the lowest average SSO spill volume rate at 225 gallons/1000 capita/yr.

Although municipal sanitary sewer systems with less than 60 miles of pipe show relatively high SSO volume rates, sanitary sewer systems with 60 miles of pipe or more are responsible for 92 percent (~116 million gallons) of the SSO volume spilled in the State since inception of reporting on January 2, 2007, as illustrated in Figure 23.

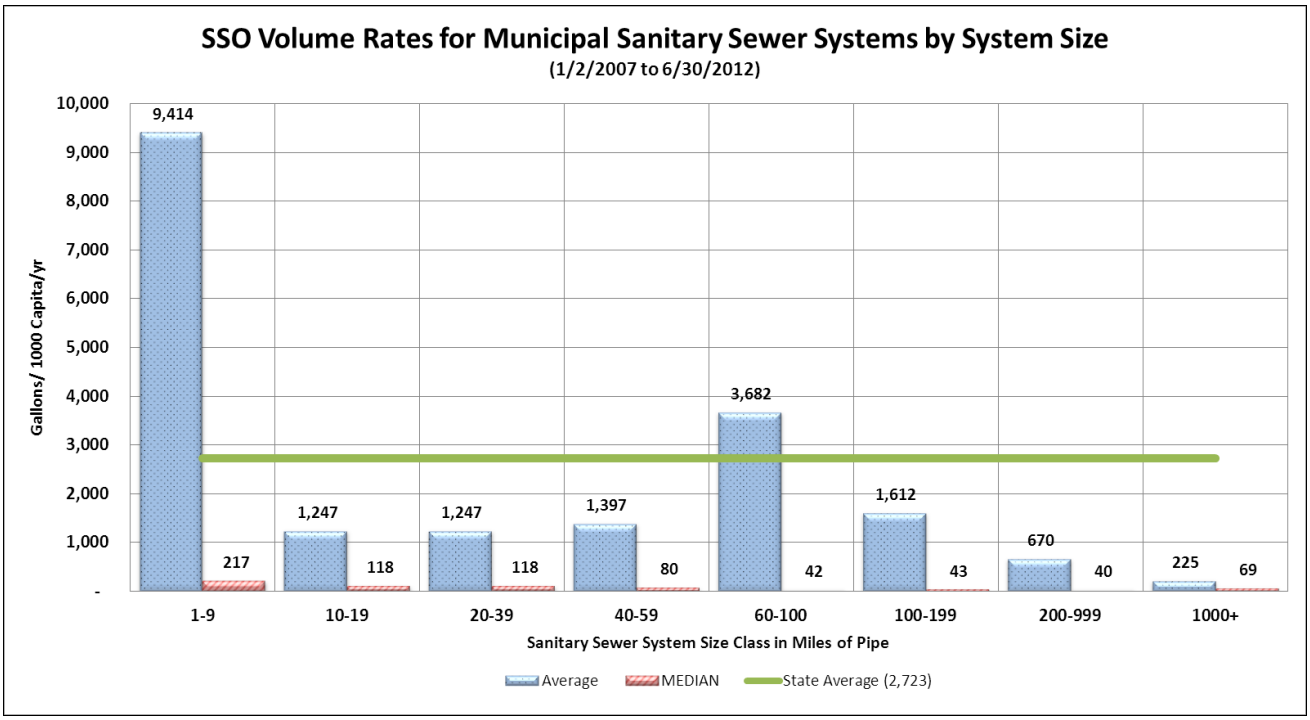


Figure 22 – SSO Spill Volume Rates for Municipal Systems by System Size

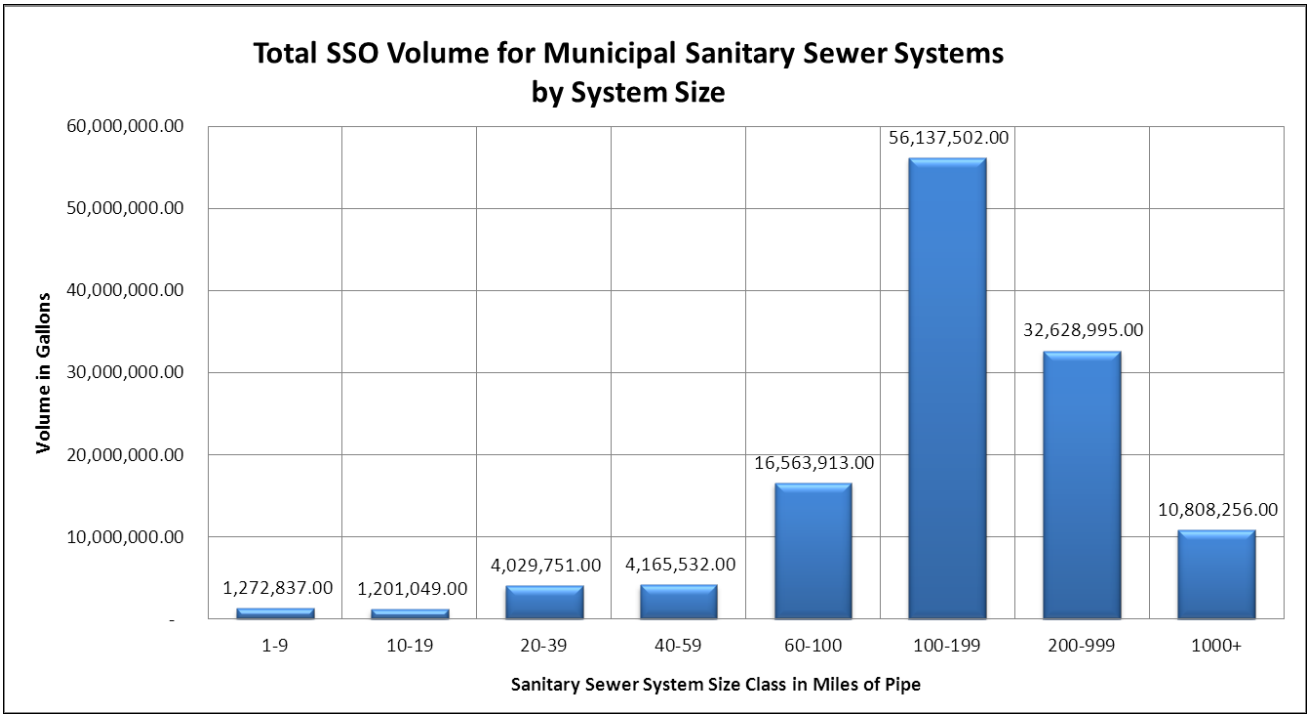


Figure 23 – Total SSO Volume for Municipal Sanitary Sewer Systems by System Size

As shown in Figures 20 and 22 there is a significant 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 more poorly than others and these poor performers are driving the average rates well above the median rates.

F. Regional Spill Data and Trends

A summary of Statewide SSO data reported since requirements became effective on January 2, 2007 and organized by Regional Water Board is presented in Table 4. As illustrated in Table 4, since inception of the program through June 2012, the Central Valley – Sacramento and San Francisco Bay Water Boards regions have the highest SSO rates with 13.1SSOs/100mi/yr and 10.5 SSOs/100mi/yr, respectively. The San Diego and San Francisco Water Boards regions have the highest SSO volume rates with 72,815 gallons/100mi/yr and 38,242 gallons/100mi/yr, respectively. A summary of the State wide SSO data for Fiscal Year 2011 – 2012 is shown in Table 5. As illustrated in Table 5, the SSO Rates in terms of number and volume are highest for the same regions noted above.

Regional Water Board	Miles of Sanitary Sewer System	# of SSOs	Volume of SSOs (gal)	Volume of SSOs Reaching Surface Water (gal)	Percent Reaching Surface Water	SSOs per 100 miles per Year	Volume of SSOs per 100 miles per Year
North Coast	2,349	488	1,302,109	827,408	64%	4.0	10,715
San Francisco Bay	17,870	9,699	67,307,123	63,492,278	94%	10.5	72,815
Central Coast	4,437	1,174	4,845,847	1,195,401	25%	5.1	21,112
Los Angeles	21,668	2,845	3,894,801	2,098,559	54%	2.4	3,267
Central Valley - Fresno	8,627	835	2,296,866	440,516	19%	2.0	5,506
Central Valley - Redding	1,606	236	594,171	424,872	72%	3.0	7,652
Central Valley - Sacramento	17,154	10,830	4,842,427	2,908,472	60%	13.1	5,838
Lahontan - Tahoe	1,145	149	1,200,138	663,571	55%	2.7	21,668
Lahontan - Victorville	3,041	302	2,124,113	751,046	35%	2.1	14,443
Colorado River Basin	3,018	143	3,560,857	2,625,450	74%	1.0	24,398
Santa Ana	16,414	1,147	10,032,864	6,895,181	69%	1.3	11,111
San Diego	13,262	1,055	26,233,653	21,593,117	82%	1.4	38,242

Table 4 – Overall Regional SSO Data (January 2007 – June 2012)

Regional Water Board	Miles of Sanitary Sewer System	# of SSOs	Volume of SSOs (gal)	Volume of SSOs Reaching Surface Water (gal)	Percent Reaching Surface Water	SSOs per 100 miles per Year	Volume of SSOs per 100 miles Per Year
North Coast	2,349	72	490,819	169,414	35%	3.1	20,891
San Francisco Bay	17,870	1,356	8,417,684	7,588,754	90%	7.6	47,105
Central Coast	4,437	208	198,878	92,978	47%	4.7	4,482
Los Angeles	21,668	361	412,901	167,160	40%	1.7	1,906
Central Valley - Fresno	8,627	135	158,717	8,725	5%	1.6	1,840
Central Valley - Redding	1,606	40	85,384	77,955	91%	2.5	5,318
Central Valley - Sacramento	17,154	2,129	582,589	187,679	32%	12.4	3,396
Lahontan - Tahoe	1,145	29	21,054	13,480	64%	2.5	1,838
Lahontan - Victorville	3,041	43	122,581	37,945	31%	1.4	4,030
Colorado River Basin	3,018	29	248,680	50	0.02%	1.0	8,239
Santa Ana	16,414	173	1,390,214	338,749	24%	1.1	8,470
San Diego	13,262	163	3,270,884	3,102,857	95%	1.2	24,664

Table 5 – Fiscal Year 2011- 2012 Regional SSO Data

The reported percentage of the total miles of sanitary sewer system piping in the State by Regional Water Board is presented in Figure 24. The data indicate that the San Francisco Bay, Los Angeles, Central Valley-Sacramento, Santa Ana, and San Diego Water Boards regions have the majority of sanitary sewer system piping owned by public agencies in the State.

The percentage of the total number of reported SSOs in the State by Regional Water Board is also presented in Figure 24. The data indicate: (1) that the San Francisco Bay, Central Valley-Sacramento, and Los Angeles Water Board regions account for 81 percent of reported spills in the State (San Francisco Bay Water Board = 33.6 percent, Central Valley-Sacramento Water Board = 37.5 percent, Los Angeles Water Board = 9.8 percent) and (2) approximately 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 Water Board regions.

The Statewide distribution of the total SSO volume reported since program inception is illustrated in Figure 25 as the percentage of total Statewide SSO volume reported in each Regional Water Board. The data indicate: (1) that the San Francisco Bay and San Diego Water Board regions account for 72 percent of reported spill volume in the State (San Francisco Bay = 52 percent, and San Diego = 20 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.

The data indicate 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 volume of sewage spilled.

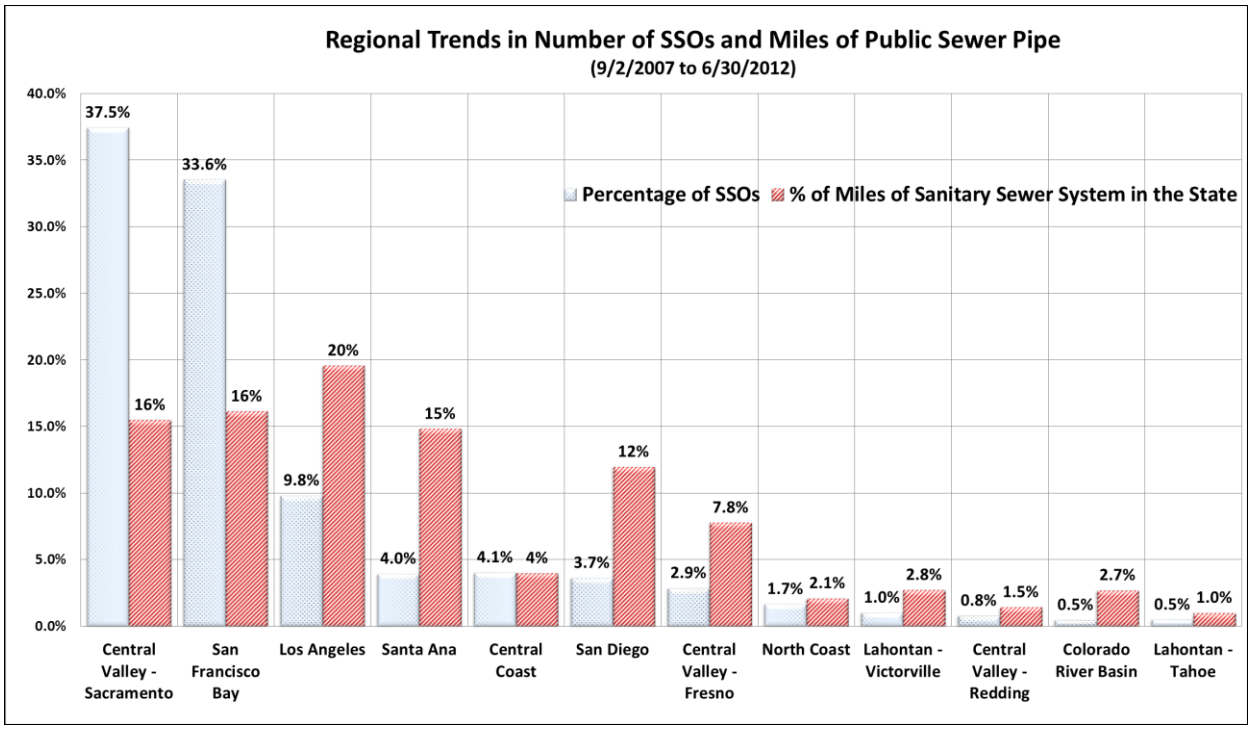


Figure 24 – Regional Trends in Number of SSOs and Miles of Public Sewer Pipe

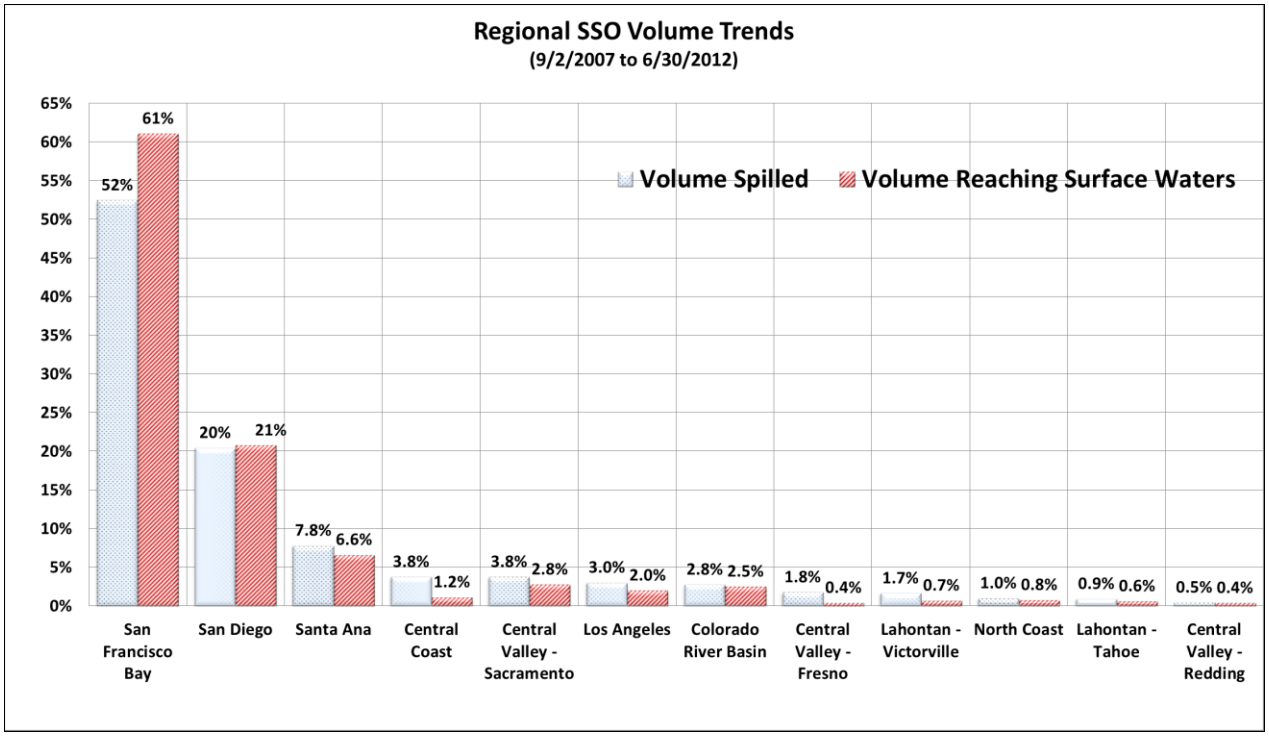


Figure 25 – Regional SSO Volume Trends

G. Summary of Reported Spill Data

SSO data collected since January 2, 2007, indicate that 90 percent of the volume of sewage spilled in the State has occurred from only 57 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 ranked from highest volume of sewage spilled to lowest volume of sewage spilled since reporting was required is presented in Table 6. This table also shows the number of spill events with volumes greater than 50,000 gallons for each of the ranked sanitary sewer systems. The change in rankings since the 2009, 2010 and 2011 Annual Compliance Reports are also noted. Where a dash is noted in the 2009, 2010 or 2011 rank, this indicates the sanitary sewer system was not ranked in the top twenty in 2009, 2010, and/or 2011.

As illustrated in Table 6, 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. Six of the twenty sanitary sewer systems are in the San Diego Water Board region and five are in the San Francisco Bay Water Board.

Regional Water Board	Sanitary Sewer System	Pop. Served	Total SSO Volume Spilled (MG)	Miles of Pipe	# of Events >=50k Gallons	2012 Rank	2011 Rank	2010 Rank	2009 Rank
San Francisco Bay	Richmond City CS	68,240	45.30	191	36	**1**	1	1	4
San Diego	Carlsbad MWD CS	69,420	7.62	287	2	**2**	2	2	1
Santa Ana	Running Springs CS	5,632	5.90	68	1	**3**	3	-	-
San Diego	La Salina WWTP, Oceanside CS	180,000	5.81	475	2	**4**	4	-	-
San Francisco Bay	Town Of Hillsborough CS	11,395	4.82	99	17	**5**	6	5	3
San Francisco Bay	San Mateo CS	94,650	4.36	236	22	**6**	5	3	2
San Diego	San Diego City CS	2,186,810	3.72	5,147	4	**7**	19	8	16
San Francisco Bay	San Dist. #1 of Marin CS	50,000	3.22	204	4	**8**	7	-	-
San Diego	Santa Margarita Water District CS	153,000	2.32	777	1	**9**	8	-	7
Central Valley	Vandenberg Village CSD CS	6,500	2.20	38	1	**10**	9	-	-
San Francisco Bay	San Bruno City CS	40,165	1.74	130	5	**11**	10	6	5
Colorado River	Coachella Valley Water District CS	266,823	1.72	1,166	3	**12**	11	18	18
San Francisco Bay	Oakland City CS	400,000	1.38	930	5	**13**	-	-	-
Colorado River	Calexico CS	38,000	1.35	78	1	**14**	12	-	-
San Diego	City Of La Mesa CS	55,724	1.33	155	2	**15**	13	-	-
Los Angeles	Hyperion CS	3,551,984	1.31	6,141	6	**16**	18	-	-
Central Valley - Sacramento	Sacramento Area Sewer District CS	1,100,000	1.24	4,363	3	**17**	14	11	10
Santa Ana	Eastern Municipal Water District CS	549,805	1.09	1,148	1	**18**	-	-	-
San Diego	Padre Dam CS	71,188	1.04	166	1	**19**	15	-	-
Lahontan - Tahoe	Susanville CSD CS	9,960	1.02	51	1	**20**	16	7	6

Table 6 – Top Twenty Sanitary Sewer Systems Ranked by Volume of Sewage Spilled Since January 2007 – June 2011

Over the last Fiscal Year 2011 – 2012, twenty six enrollees were responsible for 90 percent of the volume spilled. The twenty sanitary sewer systems with the largest volumes of spilled sewage ranked from highest volume of sewage spilled to lowest volume of sewage spilled for Fiscal Year 2011 – 2012 is presented in Table 7. The population and mileage of the ranked sanitary sewer systems for Fiscal Year 2011 – 2012 also vary from small to large systems. Table 7 also shows the total volume spilled in millions of gallons and the number of spill events that exceeded 50,000 gallons.

Regional Water Board	Sanitary Sewer System	Pop. Served	Total SSO Volume Spilled (MG)	Miles of Pipe	# of Events >=50k Gallons	2012 Rank
San Francisco Bay	Richmond City CS	68,240	6.87	191	7	**1**
San Diego	San Diego City CS	2,186,810	2.70	5,147	2	**2**
San Francisco Bay	Town Of Hillsborough CS	11,395	0.74	99	5	**3**
Santa Ana	SAWPA & Member Agencies CS	3,415,953	0.51	72	2	**4**
Santa Ana	Jurupa Community Services Dist CS	90,000	0.31	333	1	**5**
North Coast	Fortuna City CS	12,500	0.30	47	1	**6**
Santa Ana	Chino Hills City CS	75,345	0.25	203	1	**7**
San Diego	Escondido City (Harrf Disch To San Elijo Oo CS)	142,000	0.25	381	1	**8**
Colorado River	Salton City Oxid Basin CS	4,303	0.21	306	1	**9**
San Francisco Bay	Hayward City CS	151,000	0.19	319	1	**10**
San Diego	City of Encinitas CS	36,100	0.18	127	1	**11**
Los Angeles	Alhambra City CS	83,089	0.14	131	1	**12**
San Francisco Bay	San Jose City CS	945,942	0.12	2,273	-	**13**
North Coast	Eureka City CS	50,000	0.11	175	1	**14**
Central Valley - Sacramento	Ceres CS	42,690	0.10	133	1	**15**
Santa Ana	Inland Empire Utilities Agency CS	832,400	0.09	125	1	**16**
San Francisco Bay	Oakland City CS	400,000	0.08	930	-	**17**
Lahontan - Victorville	Victorville SD CS	94,550	0.08	623	1	**18**
Los Angeles	Hyperion CS	3,551,984	0.08	6,141	-	**19**
Central Valley - Sacramento	Sacramento Area Sewer District CS	1,100,000	0.08	4,363	-	**20**

Table 7 – Top Twenty Sanitary Sewer Systems Ranked by Volume of Sewage Spilled for FY 2011-2012