

# **Ross Valley Sanitary District (RVSD)**

## **Sewer System Management Plan (SSMP) - Audit**

### **Fiscal Year 2016-17 through FY 2018-19 (through May 31, 2019)**

#### **SSMP Audit**

This audit reviews the Ross Valley Sanitary District's (District) SSMP documentation and implementation for the period of Fiscal Year (FY) 2016-17, FY 2017-18, and FY 2018-19 (through May 2019). The audit is intended to meet State Water Resources Control Board (SWRCB) 2006 waste discharge requirements (WDR), State Water Board Order No. 2006-0003-DWQ, for agencies that own or operate wastewater collection systems. Consequently, this audit assesses the current state of compliance with WDR provisions, identifies "deficiencies" found in the SSMP and recommends corrective actions to remedy those deficiencies.

Humphrey Consulting (HC) performed this third party audit on behalf of the District through evaluation of SSMP documentation provided by the District, publicly available data sources such as the District website and California Integrated Water Quality System (CIWQS), and meetings and conversations with District staff involved in the implementation of the District SSMP. The following table lists the audit participants:

**Table 1 - Audit Participants**

<b>Participant</b>	<b>Role</b>	<b>Agency</b>
Doug Humphrey	Lead Auditor	Humphrey Consulting
Katherine Hayden	District Engineer	RVSD
Steven Miksis	Operations Manager	RVSD

Humphrey met with Ms. Hayden and Mr. Miksis on March 13, April 2, and again on June 17, 2019 and provided Humphrey with SSMP information then and throughout the audit in response to requests from Humphrey.

#### **Audit Schedule**

The District's SSMP includes language that states the WDR requirement of audits every two years. Consequently, audits reports are due for completion in December (based on the May 2013 CD Order and the original SSMP adoption date), every other year, and no submittal to the RWQCB or SWRCB is required.

#### **SSMP Effectiveness**

The evaluation of effectiveness of each SSMP Element, including a brief narrative of audit findings, is provided on the attached SSMP Elements Audit Report for FY 2016-17 through FY 2018-19. Any deficiencies and subsequent corrective actions are noted in the

narratives for each element. The SSMP has also been updated at this time in accordance with this audit and its findings.

**SSO Rate and Volumes**

The rate of SSOs, SSO volume, and SSO volume that reaches waters are common measurements of SSMP effectiveness and success. The following is a summary of these parameters for RVSD for the audit period of FY 2016-17 through FY 2018-19.

- The SSO rate decreased significantly in the second and third years of the audit period but is still slightly higher than the San Francisco Bay Region (Region 2, or "Regional") rates calculated from CIWQS data. The rate was relatively high in FY 2016-17 but decreased significantly the next two years, from 18.63 SSOs/100miles/year to 8.82 in the current (FY 2018-19) fiscal year.

SSO rates were 18.63/100 miles/year (FY 2016-17), 12.25/100 miles/year (FY 2017-18), and currently 8.82/100 miles/year (FY 2018-19). That compares to Regional rates of 7.32, 5.55, and 5.74 in the corresponding fiscal years. The SSMP appears to have been effective in reducing the District's SSO rate.

**SSO Rate (SSOs/100 miles/year)**

<b>Year</b>	<b>SSOs</b>	<b>District SSOs/100mi./year</b>	<b>Region 2 (SSOs/100 mi./year)</b>
2016-17	<b>38</b>	18.63	7.32
2017-18	<b>25</b>	12.25	5.55
2018-19	<b>18</b>	8.82	5.74

- The SSO volume for FY 2016-17 is much lower than the Regional figure but higher than the Regional figure for FY 2018-19. The total volume of District SSOs in FY 2016-17 was 135,004 gallons, 18,432 gallons in FY 2017-18, and 232,475 gallons in FY 2018-19. Regional figures were 15,896,271, 978,315, and 6,893,010 for the corresponding fiscal years. The following table shows the District and Regional values for SSO volumes in gallons per year, and volume rates in gallons per 100 miles per year. It should be noted that SSO volumes and volume rates can be affected significantly by individual SSO events that are large and/or recovery is very low or very hard to achieve. Consequently, one event can impact the results in an individual year and result in misleading conclusions in the effectiveness and response of crews to SSO events.

### SSO Volume (Gallons & Gallons/100 miles/year)

Year	SSO Volume (Gals.)	District Gals./100mi./year	Region 2 (Gals./100 mi./year)
2016-17	135,004	66,178	104,877
2017-18	18,432	9,035	6,373
2018-19	232,475	113,958	44,708

- The SSO volume that reached surface water was 112,815, 16,286, and 127,106 gallons in FYs 2016-17, 2017-18, and 2018-19 respectively. The percentage of SSO volume that reached surface waters was 83%, 88%, and 54% for those three years. In comparison, the Regional values were 94%, 59%, and 84% for these same years, as shown in the table below. This can be a very important indicator, since the primary goal of the SSMP is to operate and maintain the collection system so that water quality is maintained and impacts from SSOs are minimized. However, it is noted that over 98% of the SSO volume reaching water in 2018-19 is from one SSO and similarly in 2018-19 about 83% was the result of one SSO.

### SSO Volume Reaching Surface Water (Gallons & SSO % Reaching Surface Waters)

Year	RVSD SSO Volume (Gals.)	RVSD SSO Volume (% reaching water)	Region SSO Volume (% reaching water)
2016-17	112,815	83	94
2017-18	16,286	88	59
2018-19	127,106	54	84

### Strengths

The following is a summary of the strengths of the District SSMP:

- The SSO rate is decreasing and the trend is very positive for this audit period - although the rate still is slightly higher than the Regional (Region 2) average rate, the rate has reduced over 50% in the past two years.
- The SSO varies year-to-year and so does the volume to surface water. As mentioned above, one incident, which was the result of contractor activities and

- not reflective of collection crews' response and effectiveness, caused over 98% of the SSO volume in FY 2018-19. Discounting the result of this individual SSO and the contractor's activities, District staff have generally implemented the overflow emergency response plan effectively and provided efficient SSO responses, and this has resulted in fewer SSOs and lesser SSO volume in the last two years.
- The time to respond (in person) to SSO events or "response time" is good - 34 minutes, 33 minutes, and 35 minutes in FY 2016-17, FY 2017-18, and FY 2018-19 respectively. Response times are usually less than one hour. There was one SSO event in 2018 that had a 259-minute response, due to communication errors - the average for this year is 46 minutes if that event is included. The relatively fast response time average obviously helps to minimize volumes and volumes to surface water.
- SSO reporting is timely and in accordance with requirements.
- The District has a thoughtful, comprehensive, planned preventive maintenance program. Implementation of the program is thorough and effective in accomplishing proper system operations and maintenance (O&M). The District employs condition assessment (CCTV work) in addition to preventive (regular cleaning) and reactive maintenance activities, and that assessment is an important diagnostic tool and resource that assists capital planning and can help to minimize catastrophic asset failures and minimize SSOs. It appears that staff has completed planned maintenance activities as planned.
- The District Code provides adequate legal authority to meet the requirements of the WDR.
- The recordkeeping of collection system activities is of good quality and is very comprehensive and accessible. Information for this audit was easy to obtain and was readily available upon request.
- The current SSMP update is performed generally within the timelines required by the WDR and MRP.

### Deficiencies & Corrective Actions

- The reporting of SSOs in CIWQS needs to be completed accurately and within prescribed reporting timelines. It appears that this has improved in the last fiscal year, as all SSO reports have been certified within specified timelines. The District received a Violation Notice in September 2018 since 3 SSO reports in FY 2017-18 had not been certified within the required time. The LROs and Data Submitters need to continue to be careful to accurately complete information in CIWQS, check this information, then certify reports in required timelines. While

it is possible to have an immediate, 0 minute response to SSOs, it's not normal that staff is present at the exact time an SSO occurs. However, discussion with staff provided additional information related to the 0 minute response times; there were many SSOs that were related to on-going construction projects and those, as well as some related to smart cover alerts, were justifiably 0 minute response events. There were 13 events in FY 2016-17 that had a "0 minute response" and 3 each in the two succeeding fiscal years.

**Corrective Action: Ensure that information entered into the CIWQS system is correct and check reports prior to making them "final" in CIWQS, and certify SSO reports within required times.**

- SSMP audits are required to be completed every two years, and the deadline is tagged to the original SSMP completion date of December 2 (every two years).  
**Corrective Action: Revise the audit element in the SSMP and post completed audits on the District website after acceptance by the District Board.**
- There presently is no regular annual SSMP/OERP training for staff that implements the SSMP.  
**Corrective Action: Initiate annual SSMP refresher training for relevant staff.**
- The SSMP Change Log has not been kept up to date with significant SSMP revisions since the last SSMP update.  
**Corrective Action: Maintain the change log in the future by adding any significant changes to the SSMP as they occur.**
- Information regarding main line mileage in the CIWQS system differs slightly from the figures in the SSMP.  
**Corrective Action: Change the main mileage figure so that the SSMP and CIWQS system figures are correct and consistent.**  
**Status: Done, part of SSMP update.**

## Compliance

This audit finds the District to be in general compliance with the WDR.

**RVSD  
Sewer System Management  
Plan (SSMP) Audit  
FY 2016-17 through FY 2018-19**

*The purpose of the SSMP Audit is to evaluate the effectiveness of the Ross Valley Sanitary District's (District's) SSMP and to identify any needed for improvement.*

Directions: Please check YES or NO for each question. If NO is answered for any question, describe the updates/changes needed and the timeline to complete those changes.

		YES	NO
<b>INTRODUCTION</b>			
<b>A.</b>	<b>Is the current system description complete and up-to-date? Are infrastructure statistics current and complete?</b>	<b>X</b>	
<b>Discussion/Deficiencies/Corrective Actions:</b>			
		YES	NO
<b>ELEMENT 1 - GOALS</b>			
<b>A.</b>	<b>Are the goals stated in the SSMP still appropriate and accurate?</b>	<b>X</b>	
<b>Discussion/Deficiencies/Corrective Actions:</b>			
Goals are appropriate and the District monitors results relevant to their goals. There is no need to revise goals, unless the District chooses to do so in the future.			
<b>ELEMENT 2 - ORGANIZATION</b>			
<b>A.</b>	<b>Is the List of District Staff Responsible for SSMP current?</b>		<b>X</b>
<b>B.</b>	<b>Is the Sewer Staff Contact List current?</b>	<b>X</b>	
<b>C.</b>	<b>Is the District Organization Chart included and current?</b>		<b>X</b>
<b>D.</b>	<b>Are the position descriptions an accurate portrayal of staff responsibilities?</b>	<b>X</b>	
<b>E.</b>	<b>Is the Table regarding the SSO Reporting and Response Chain of Communication accurate and up-to-date?</b>	<b>X</b>	
<b>Discussion/Deficiencies/Corrective Actions:</b>			
Both responsible staff and the District organization chart were revised. The organization chart has been revised to reflect the current District organization and will be included in an updated SSMP. District staff is well aware of their SSMP responsibilities and the staff is very capable in regards to carrying out these responsibilities.			

		YES	NO
<b>ELEMENT 3 – LEGAL AUTHORITY</b>			
<b>Does the SSMP contain current references to the RVSD District Code documenting the District’s legal authority to:</b>			
<b>A.</b>	<b>Prevent illicit discharges?</b>	X	
<b>B.</b>	<b>Require proper design and construction of sewers and connections</b>	X	
<b>C.</b>	<b>Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained b the District?</b>	X	
<b>D.</b>	<b>Limit discharges of fats, oils and grease?</b>	X	
<b>E.</b>	<b>Enforce any violation of its sewer ordinances?</b>	X	
<b>F.</b>	<b>Were any changes or modifications made in the past two years (this audit period) to District Sewer Ordinances, Regulations or standards?</b>	X	
<b>Discussion/Deficiencies/Corrective Actions:</b> Changes were made to the RVSD PSL Code/requirements in 2018.			
<b>ELEMENT 4 – OPERATIONS AND MAINTENANCE</b>			
<b>Collection System Maps</b>			
<b>A.</b>	<b>Does the SSMP reference the current process and procedures for maintaining the District’s wastewater collection system maps?</b>	X	
<b>B.</b>	<b>Are the District’s wastewater collection system maps complete, current and sufficiently detailed?</b>	X	
<b>C.</b>	<b>Are storm drainage facilities identified on the collection system maps? If not, are SSO responders able to determine locations of storm drainage inlets and pipes for possible discharge to waters of the state?</b>	X	
<b>Prioritized Preventive Maintenance</b>			
<b>C.</b>	<b>Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewers?</b>	X	
<b>D.</b>	<b>Based upon information in SSO Reporting, are the District’s preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?</b>	X	
<b>Scheduled Inspections and Condition Assessments</b>			
<b>E.</b>	<b>Is there an ongoing condition assessment plan sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Does the plan include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan?</b>	X	
<b>Contingency Equipment and Replacement Inventory</b>			
<b>F.</b>	<b>Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system?</b>	X	

		YES	NO
<b>G.</b>	<b>Are contingency and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?</b>	X	
<b>Training</b>			
<b>H.</b>	<b>Does the SSMP document current training expectations and programs?</b>	X	
<b>I.</b>	<b>Are training records current?</b>	X	
<p><b>Discussion/Deficiencies/Corrective Actions:</b></p> <p>O&amp;M details will be revised in the SSMP update to reflect current operational practices. System maps are updated regularly. The SSMP and appendices document the O&amp;M practices. Condition assessment is used in prioritizing rehabilitation and there's a CIP plan that addresses rehabilitation needs. Training is conducted on a regular basis - the District should implement regular, annual SSMP training. Contingency parts and equipment are identified in the SSMP.</p>			
<b>ELEMENT 5 - DESIGN AND PERFORMANCE STANDARDS</b>			
<b>A.</b>	<b>Does the SSMP reference current design and construction standards for the installation for new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?</b>	X	
<b>B.</b>	<b>Does the SSMP reference current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?</b>	X	
<p><b>Discussion/Deficiencies/Corrective Actions:</b></p> <p>No changes were needed, as the District's design and performance standards all are current, appropriate, and accurately reflected in the existing SSMP.</p>			
<b>ELEMENT 6 – OVERFLOW AND EMERGENCY RESPONSE PLAN</b>			
<b>A.</b>	<b>Does the District’s Sanitary Sewer Overflow Emergency Response Plan (OERP) contain proper notification procedures so that primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSOs) as required by the WDR and MRP?</b>	X	
<b>B.</b>	<b>Does the OERP have a program to ensure an appropriate response to all overflows?</b>	X	

		YES	NO
C.	Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSOs that potentially affect public health or reach waters of the State in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSOs?	X	
D.	Are staff and contractor personnel aware of and appropriately trained on the procedures of the OERP?	X	
E.	Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?	X	
F.	Does the OERP ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	X	
G.	Was required training on SSMP and OERP completed and documented?	X	
H.	Does the OERP contain a water quality monitoring plan that is current? Have employees been trained on this plan and what is needed for an SSO with a large volume?	X	
I.	If applicable, was sampling performed within 48 hours for all SSOs greater than 50,000 gallons and was a Technical Report prepared and filed on the CIWQS website?	X	
<p><b>Discussion/Deficiencies/Corrective Actions:</b></p> <p>The OERP is still current and reflects the District's emergency response plan. All other sections are proper and address WDR requirements for emergency response.</p>			
<b>ELEMENT 7 – FATS, OILS AND GREASE (FOG) CONTROL PROGRAM</b>			
A.	Does the FOG Control Program include efforts to educate the public on proper handling and disposal of FOG?	X	
B.	Does the FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	X	
C.	Are requirements for grease removal devices, best management practices (BMPs), record keeping and reporting established in the District's FOG Control Program?	X	

		YES	NO
<b>D.</b>	<b>Does the District have sufficient legal authority to implement and enforce the FOG Control Program, including prohibition of discharges, measure to prevent SSOs and blockages caused by FOG?</b>	X	
<b>E.</b>	<b>Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?</b>	X	
<b>F.</b>	<b>Is there a plan and schedule for the disposal of FOG generated within the District?</b>	X	
<b>G.</b>	<b>Does the FOG Control Program include development and implementation of source control measures for all sources of FOG discharged to the system for each sewer system subject to FOG blockages?</b>	X	
<b>H.</b>	<b>Does the FOG Control Program include the authority to inspect grease producing facilities, enforce when necessary, and does the City have sufficient staff to inspect and enforce its FOG ordinance</b>	X	
<b>Discussion/Deficiencies/Corrective Actions:</b>			
The District has a comprehensive FOG control program that addresses all required items, with the possible exception of a FOG disposal plan. There were 4 FOG-caused SSOs in the audit period, 1 in FY 2016-17, 3 in FY 2017-18, and none in FY 2018-19. CMSA accepts FOG from grease traps and interceptors from restaurants, markets, and similar types of food service establishments at its treatment facility.			
<b>ELEMENT 8 - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN</b>			
<b>A.</b>	<b>Does the District's Sanitary Sewer Master Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with condition similar to those causing overflow events, if applicable?</b>	X	
<b>B.</b>	<b>Does the District's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?</b>	X	
<b>Discussion/Deficiencies/Corrective Actions:</b>			
No changes were needed as the District's system evaluation and capacity assurance plan is current and accurately reflected in the existing SSMP. There have been no capacity issues experienced and the District has effectively managed collection system capacity.			
<b>ELEMENT 9 - MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS</b>			
<b>A.</b>	<b>Does the District maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?</b>	X	

		YES	NO
<b>B.</b>	<b>Does the District monitor implementation and, where appropriate, measure the effectiveness of each element of the SSMP?</b>	X	
<b>C.</b>	<b>Does the District assess the success of the preventive maintenance program?</b>	X	
<b>D.</b>	<b>Does the District update program elements, as appropriate, based on monitoring or performance evaluations</b>	X	
<b>E.</b>	<b>Does the District identify and illustrate SSO trends?</b>	X	
<b>ELEMENT 10 – SSMP AUDITS</b>			
<b>A.</b>	<b>Does the audit focus on evaluating the effectiveness of the SSMP?</b>	X	
<b>B.</b>	<b>Was the audit completed on time, every two years, and kept on file (preferably as an appendix to the SSMP)?</b>		X

**Discussion/Deficiencies/Corrective Actions:**  
 ELEMENT 9 - There have been no updates of program elements based on evaluations, but none have been needed prior to this Update.  
 ELEMENT 10 - The SSMP has been revised to implement the biennial audit, as required by the SWRCB. Future audits will be performed every two years and the last audit report should be retained as an appendix to the SSMP.

<b>ELEMENT 11 – COMMUNICATION PROGRAM</b>			
<b>A.</b>	<b>Does the District communicate with the public on a regular basis about the implementation and performance of the SSMP, and provide the public and opportunity for input? feedback?</b>	X	
<b>B.</b>	<b>Did District staff communicate with satellite collection systems? Are all agreements with satellite systems current or are changes necessary to these agreements?</b>	X	

**Discussion/Deficiencies/Corrective Actions:**  
 The public has the opportunity for input at every District Board meeting. The current SSMP and appendices are posted on the District website. The updated SSMP should be posted on this page once completed and approved by the District Board. There is a monthly (and an annual) metrics report on performance that is included in RVSD Board meeting packets, which are posted on the RVSD website and available to the public. Staff could consider posting SSO data and the metrics report separately on the website for greater public visibility.  
 There are also monthly GM bulletins and RVSD accepts comments through the Next Door application, both of which enhance public communications.

<b>Change Log</b>		
<b>A.</b>	<b>Is the SSMP Change Log, current and up to date?</b>	<b>X</b>
<b>Discussion/Deficiencies/Corrective Actions:</b> The Change Log or "Revisions List" as it was previously termed was not current at the time of the audit. However, a new Change Log was completed and prepared that notes the major changes made in the SSMP update subsequent to the audit, and is now current. This Log should be kept current and used anytime there are significant changes made to SSMP items prior to the next audit and SSMP update.		

**Prepared By: Douglas Humphrey, Humphrey Consulting**

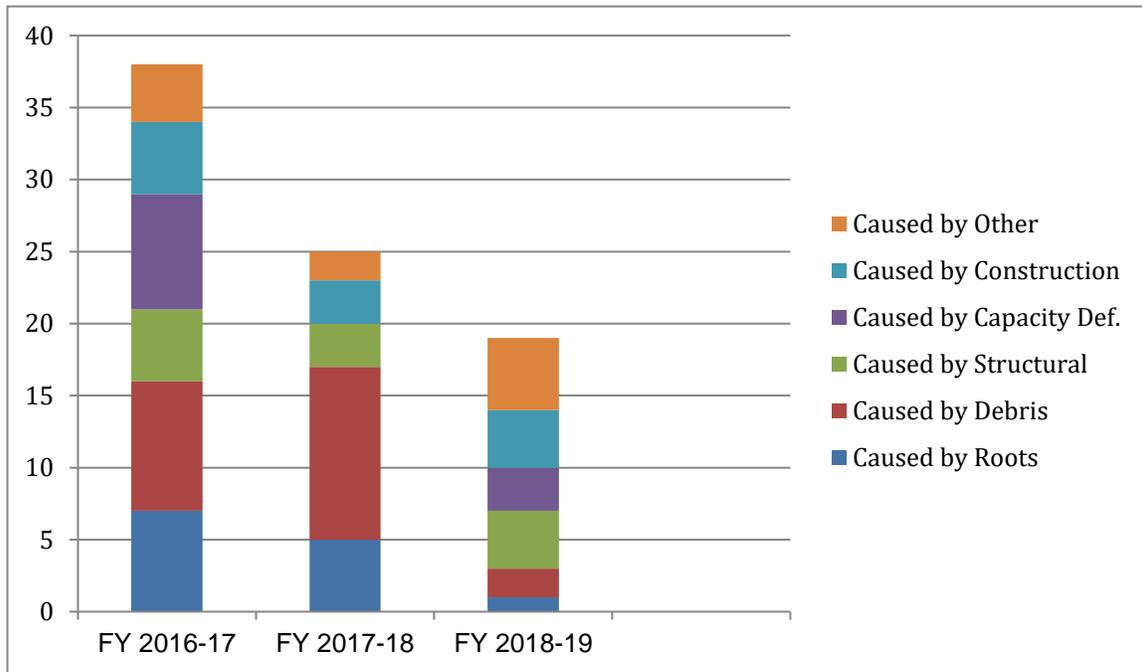
**Reviewed By: Katherine Hayden & Stephen Miksis, RVSD**

**Approved for Filing on: July 5, 2019**

# ATTACHMENT - SSO PERFORMANCE

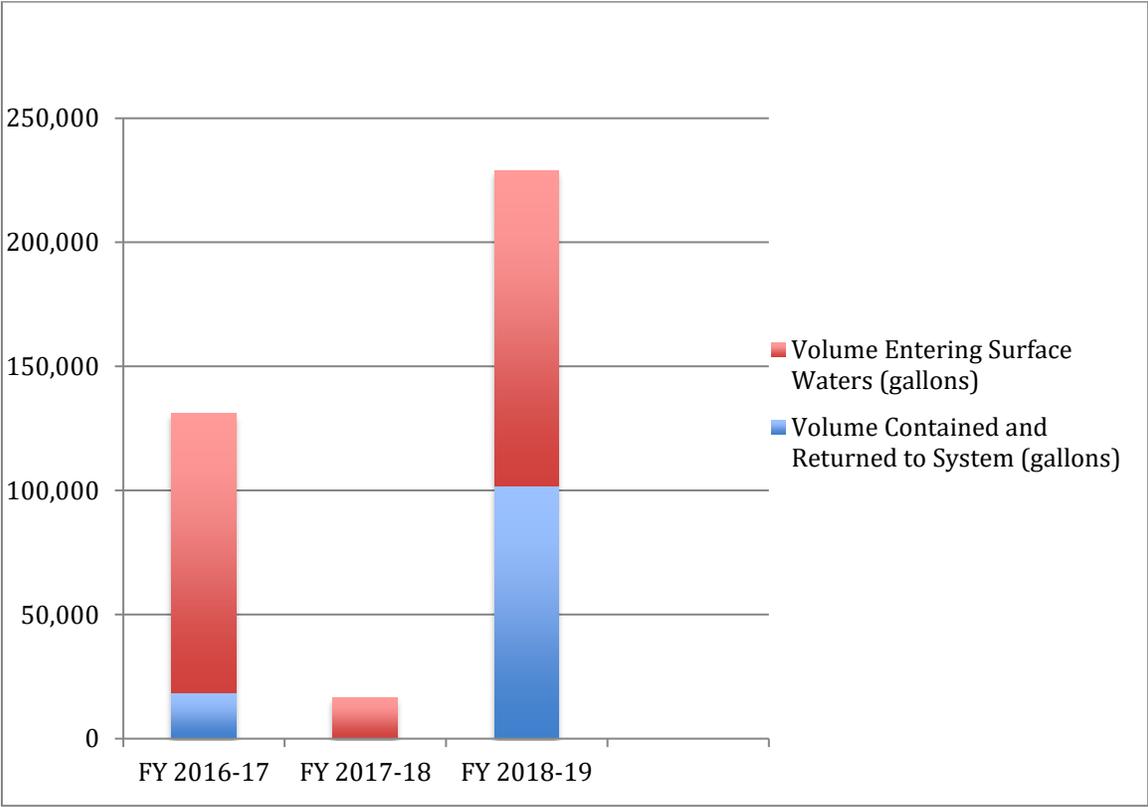
## SSO RATES, CAUSES, & VOLUMES TO WATERS

### SSOs by Cause, 2016-19



□

# RVSD - SSO Volumes Returned to System, Entering Surface Waters



## RVSD - Comparison to Region 2 SSO Rate (#/100 miles/year)

