SEWER SYSTEM MANAGEMENT PLAN

Revised September 2019
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Acronyms and Abbreviation Definitions

ASTM  American Society for Testing and Materials
AWWA  American Water Works Association
BAPPG  Bay Area Pollution Prevention Group
BMPs  Best Management Practices
CCTV  Closed Circuit Television
CIP  Capital Improvement Plan
CIWQS  California Integrated Water Quality System
CMSA  Central Marin Sanitation Agency
CWEA  California Water Environment Association
FOG  Fats, Oil and Grease
FSE  Food Service Establishment
FTE  Full-time Equivalent
FY  Fiscal Year (July 1 – June 30)
GCD  Grease Control Device
GIS  Geographical Information System
GPS  Global Positioning System
GWI  Ground Water Infiltration
IAMP  Infrastructure Asset Management Plan
I/I  Infiltration/Inflow
LRO  Legally Responsible Official
MGD  Million Gallons per Day
MRP  Monitoring and Reporting Program
MSDS  Material Safety Data Sheet
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOV</td>
<td>Notice of Violation</td>
</tr>
<tr>
<td>OERP</td>
<td>(Sanitary Sewer) Overflow Emergency Response Plan</td>
</tr>
<tr>
<td>OES</td>
<td>Office of Emergency Services</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operations and Maintenance</td>
</tr>
<tr>
<td>ORDER</td>
<td>Order No. R2-2013-0020, a Cease and Desist Order (Order) for RVSD</td>
</tr>
<tr>
<td>PE</td>
<td>Polyethylene Pipe</td>
</tr>
<tr>
<td>PM</td>
<td>Preventive Maintenance</td>
</tr>
<tr>
<td>PVC</td>
<td>Polyvinylchloride Pipe</td>
</tr>
<tr>
<td>RVSD</td>
<td>Ross Valley Sanitary District</td>
</tr>
<tr>
<td>RWQCB</td>
<td>Regional Water Quality Control Board</td>
</tr>
<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition</td>
</tr>
<tr>
<td>SECAP</td>
<td>System Evaluation and Capacity Assurance Plan</td>
</tr>
<tr>
<td>SDR</td>
<td>Standard Dimension Ratio</td>
</tr>
<tr>
<td>SHECAP</td>
<td>Sewer Hydraulic Evaluation and Capacity Assurance Plan</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>SSMP</td>
<td>Sewer System Management Plan</td>
</tr>
<tr>
<td>SSO</td>
<td>Sanitary Sewer Overflow</td>
</tr>
<tr>
<td>SWRCB</td>
<td>State Water Resources Control Board</td>
</tr>
<tr>
<td>VCP</td>
<td>Vitrified Clay Pipe</td>
</tr>
<tr>
<td>WDR</td>
<td>Waste Discharge Requirements</td>
</tr>
</tbody>
</table>
Introduction

System Overview

The Ross Valley Sanitary District (District) was established in 1899, and is believed to be California’s oldest sanitary district. The District is located in Marin County, approximately 15 miles north of San Francisco and directly south of the City of San Rafael. The service area is bounded on the east by the San Francisco Bay, and on the west by the coastal hills. Numerous seasonal and perennial waterways traverse the service area and terminate in Corte Madera Creek, which is the main drainage from the District’s service area to the San Francisco Bay.

The District serves the communities of Sleepy Hollow, Fairfax, San Anselmo, Ross, Larkspur, Kentfield, and Greenbrae, serves Murray Park by contract, and conveys wastewater to the Central Marin Sanitation Agency (CMSA) wastewater treatment plant. Figure 1-1 at the end of this section shows a map of the District service area and communities served.

The District maintains approximately 196 miles of mainline and trunk line sewers and 7.9 miles of force main pipe. These linear assets are stored in a CMMS and asset management program that uses Innovyze® InfoAsset Manager™ (formerly InfoNet) software. In addition, the District owns and operates five major pump stations, and 14 minor pump stations and lift stations. The major pump stations collect and pump flow from the minor stations and trunk lines to the CMSA treatment plant. Laterals, both lower and upper laterals, are owned and maintained by the individual private property owners.

Tables I-1 and I-2 summarize the distribution of pipeline assets by diameter and by material. This information is also shown in Figures I-2 and I-3.

Current average dry weather flow is approximately 3.8 million gallons per day (mgd). The District’s flows are ultimately conveyed to the Central Marin Sanitation Agency (CMSA) wastewater treatment plant, which is located at 1301 Anderson Drive in San Rafael, CA. CMSA was established in 1979 as a joint powers agency comprised of RVSD, the San Rafael Sanitation District, and Sanitary District No. 2 of Marin County serving the Town of Corte Madera and some surrounding areas. The City of Larkspur’s flows are conveyed to the CMSA treatment plant through Ross Valley. CMSA treats approximately 10 mgd of average dry weather flow and has 30 mgd of secondary treatment capacity. When flows exceed this capacity during peak wet weather events, the plant is permitted to blend primary and secondary treated effluent prior to discharge. The District is represented on the six-member CMSA Board of Directors by two representatives, both of whom are Ross Valley Directors.
This Sewer System Management Plan (SSMP) describes Ross Valley Sanitary District’s (District’s) wastewater collection system management activities. The purposes of these activities are to

1. Maintain and improve the condition of the collection system infrastructure,
2. Control infiltration/inflow (I/I) and provide appropriate sewer capacity, and to
3. Minimize the number and impact of sanitary sewer overflows (SSOs) that occur.

The State Water Resources Control Board (SWRCB) has issued Statewide Waste Discharge Requirements for sanitary sewer systems, which include requirements for development of an SSMP. The State Water Board requirements are outlined in Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006 (SSO WDR), and amended by Order No. 2013-0058-EXEC, dated July 30, 2013. This SSMP is organized by the SWRCB outline of elements; and contains quoted language taken from the SSO WDR and shown in the gray box at that beginning of each element. The SSO WDR uses the term

---

### Table I-1  Inventory of Sewer Lines by Size

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Approximate Percent of System</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 inches and less</td>
<td>73 percent</td>
</tr>
<tr>
<td>8 to 12 inches</td>
<td>20 percent</td>
</tr>
<tr>
<td>14 to 18 inches</td>
<td>3 percent</td>
</tr>
<tr>
<td>20 to 24 inches</td>
<td>1 percent</td>
</tr>
<tr>
<td>Greater than 24 inches</td>
<td>3 percent</td>
</tr>
</tbody>
</table>

### Table I-2  Pipeline Distribution by Material

<table>
<thead>
<tr>
<th>Pipeline Material</th>
<th>Approximate Percent of System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos Cement</td>
<td>2 percent</td>
</tr>
<tr>
<td>Cast Iron</td>
<td>3 percent</td>
</tr>
<tr>
<td>Cured-in-Place Pipe</td>
<td>Less than 1 percent</td>
</tr>
<tr>
<td>Ductile Iron Pipe</td>
<td>Less than 1 percent</td>
</tr>
<tr>
<td>High Density Polyethylene (HDPE)</td>
<td>3 percent</td>
</tr>
<tr>
<td>Polyvinyl Chloride</td>
<td>11 percent</td>
</tr>
<tr>
<td>Reinforced Concrete or Concrete Cylinder Pipe</td>
<td>2 percent</td>
</tr>
<tr>
<td>Welded Steel</td>
<td>Less than 1 percent</td>
</tr>
<tr>
<td>Techite</td>
<td>Less than 1 percent</td>
</tr>
<tr>
<td>Vitrified Clay</td>
<td>79 percent</td>
</tr>
<tr>
<td>Other</td>
<td>Less than 1 percent</td>
</tr>
</tbody>
</table>
“Enrollee” to mean each individual municipal wastewater agency that has completed and submitted the required application for coverage under the WDR (in this case, the Enrollee is the Ross Valley Sanitary District). The District’s waste discharger identification number (WDID) in the California Integrated Water Quality System (CIWQS) is 2SSO10172.

**Regulatory Requirements**

The District’s SSMP contains 11 elements and is designed to meet the SSO WDR requirements. The structure of this document follows the section numbering and nomenclature specified in the SSO WDR.
Figure I-1   RVSD Service Area & Communities Served
Figure I-2  RVSD Mainline and Trunk Lines by Diameter
Figure I-3  RVSD Mainline and Trunk Lines by Material

Element I - Goals
In August 2006 and June 2007, Ross Valley Sanitary District developed the SSMP goals based on the RWQCB SSMP Development Guidelines dated July 7, 2005. Revisions to this section were made in March 2009, March 2010, June 2010, February 2012, and again in November 2013 to address the subsequent SSO WDR requirements, including the revised Monitoring and Reporting Program (MRP) effective September 9, 2013.

The goals of the Ross Valley Sanitary District SSMP are to

- Properly manage, operate and maintain the wastewater collection system to minimize sanitary sewer overflows (SSOs) and mitigate their impacts if any occur
- Uphold the District’s construction standards and specifications for the installation of new and repair and rehabilitation of existing collection system infrastructure
- Identify, prioritize, continuously renew, and replace sewer system facilities to maintain reliability and reduce I/I
- Provide capacity for peak wastewater flows from the design storm event, as defined in the District’s Infrastructure Asset Management Plan (IAMP)
- Implement regular, proactive maintenance of the system to remove roots, debris, fats, oils, and grease in areas prone to blockages that may cause sewer backups or SSOs
- Be available and responsive to the needs of the public and work cooperatively with local, state, and federal agencies to reduce, mitigate impacts of, and properly report SSOs
Element II - Organization

SWRCB Waste Discharge Requirement:

The Sewer System Management Plan (SSMP) must identify

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

2.1 Organizational Structure

An organization chart for the District’s operation is shown in Figure 2-1. This organization shows the lines of authority for administrative and field staff who are involved with implementing the SSMP. Following Figure 2-1 are brief descriptions of the staff positions included on the organization chart.
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Figure 2-1  RVSD Organization Chart

Ross Valley Sanitary District Organization Chart

RVSD Customers

RVSD Board of Directors

General Manager

Exec. Asst. to GM Clerk of the Board

Technical Services Manager

Operations and Maintenance Manager

Finance & Administrative Services Manager/AGM

Capital Assets Analyst

Engineer

Line Maintenance Supervisor

Pump Stations Supervisor

IT Support Services

Engineering Technician

Collections System Workers

Collections System Workers

Administrative Coordinators

Accounting & Financial Analyst

Inspections Superintendent

Repair Supervisor

Condition Assessment Supervisor

Administrative Specialist

Inspectors

Collections System Workers

Collections System Workers

Collections System Workers

Collections System Workers
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2.2 Responsibility for SSMP Management, Administration and Maintenance

The District’s General Manager has the ultimate responsibility for overall management, administration, maintenance, and implementation of all elements of the District’s SSMP. The responsibility for day-to-day implementation and maintenance of each of the District’s SSMP elements has been delegated to District staff. Table 2-1 lists the District staff involved with developing, implementing, and maintaining the District’s SSMP, along with their job titles and contact information.
This page left intentionally blank.
<table>
<thead>
<tr>
<th>SSMP Element</th>
<th>Responsible District Official</th>
<th>Phone</th>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 1 – Goals</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 2 - Organization</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 3- Legal Authority</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 4- Operation and Maintenance</td>
<td>Operations and Maintenance Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smiksis@rvsd.org">smiksis@rvsd.org</a></td>
</tr>
<tr>
<td>Element 5- Design and Performance Standard</td>
<td>Technical Services Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 6- Sanitary Sewer Overflow</td>
<td>Operations and Maintenance Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smiksis@rvsd.org">smiksis@rvsd.org</a></td>
</tr>
<tr>
<td>Element 7- Fat, Oils and Grease Program</td>
<td>Operations and Maintenance Manager and CMSA by contract for FOG program</td>
<td>415-259-2949</td>
<td><a href="mailto:smiksis@rvsd.org">smiksis@rvsd.org</a></td>
</tr>
<tr>
<td>Element 8- System Evaluation and Capacity Management</td>
<td>Technical Services Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 9- Monitoring, Measurement, and Program Modifications</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 10- Program Audits</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
<tr>
<td>Element 11- Communication Program</td>
<td>General Manager</td>
<td>415-259-2949</td>
<td><a href="mailto:smoore@rvsd.org">smoore@rvsd.org</a></td>
</tr>
</tbody>
</table>
2.3 Chain-of-Communication for Reporting and Responding to SSOs

The chain-of-communication responsibilities for responding to SSOs are shown in Figure 2-2. Detailed information on the District’s overflow response procedure can be found in Element 6, Sanitary Sewer Overflow Emergency Response Plan (OERP), and in the District’s complete OERP.

The responsibilities for reporting SSOs to the various regulatory agencies are shown in Figure 2-3. Detailed information on SSO reporting can be found in Element 6 and in the District’s complete OERP.

During the response time, the dispatcher is in communication with the responding team to ensure each call is being routed to the appropriate supervisor or other supporting team. The Dispatch Center records communications between the callers, the responders and any other supporting team that is being dispatched to the SSO scene.

Important phone numbers for District staff involved in SSO response are shown on Table 2-2.

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>Name</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>Administrative Staff</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On-call pager (838)-0800</td>
</tr>
<tr>
<td>Operations and Maintenance Manager</td>
<td>Stephen Miksis</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td>Legally Responsible Official (LRO)</td>
<td>Stephen Miksis</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td></td>
<td>Dennis Gavallos</td>
<td></td>
</tr>
<tr>
<td>Data Submitters</td>
<td>Noel Sandoval</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td></td>
<td>Rafael Zarco</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manuel Vigil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>John Vogel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patrick Filipelli</td>
<td></td>
</tr>
<tr>
<td>Assistant General Manager</td>
<td>Felicia Newhouse</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td>General Manager</td>
<td>Steve Moore</td>
<td>(415) 259-2949</td>
</tr>
<tr>
<td>Personnel</td>
<td>Reporting Responsibilities</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------</td>
<td></td>
</tr>
<tr>
<td>On-call Crew Member</td>
<td>Completes CMMS Service Call Work Order SSO report form</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calls OES if Category 1 or 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faxes RWQCB 24 hr report form</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For spills $\geq$ 1,000 gal or enters storm drain/waterway/ISDHH</td>
<td></td>
</tr>
<tr>
<td>Legally Responsible Official</td>
<td>• Electronically submits CIWQS Long Form ($\geq$ 1,000 gal or enters storm drain/waterway or ISDHH)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electronically submits CIWQS Short Form (all other SSOs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Annual Report to RWQCB</td>
<td></td>
</tr>
</tbody>
</table>

* ISDHH = imminent and substantial danger to human health
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Element III - Legal Authority

SWRCB Waste Discharge Requirement:

Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to

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

3.1 Legal Authority

The District has the legal authority to

- Prevent illicit discharges
- Require proper design and construction of sewers and connections
- Access facilities for maintenance, inspection and repairs
- Limit the discharge of fats, oils and grease, and debris
- Enforce the provisions of its Sanitary Code

Enforcement provisions are found in the District’s Sanitary Code (District or Sanitary Code). Violations of the Code can be addressed through criminal, judicial, and/or administrative action and the District may assess monetary fines as well.

3.2 Sanitary Code and District Ordinances (Relevant to SSMP)

The Sanitary Code, first adopted in July 1959 and most recently amended in August 2013, includes several provisions that establish the District’s legal authority to control discharges and maintain their sanitary sewer system. A full copy of the Sanitary Code is included as Appendix A and can be accessed through a link on the District’s website, under the "Sewer Installations and Extensions" link under "Customer Service" at http://www.rvsd.org.

Table 3-1 contains a summary of pertinent Sanitary Code provisions relevant to SSMP implementation. Note that this summary is provided for convenience only; users should consult with the District office to confirm that they are using the most recent version of the Sanitary Code.
Table 3-1  Ross Valley Sanitary District Code Provisions Relevant to SSMP Implementation

<table>
<thead>
<tr>
<th>Provision</th>
<th>Ross Valley Sanitary Code Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewer Use Ordinance Purpose</td>
<td>202</td>
</tr>
<tr>
<td>Responsibility for Maintenance of Laterals</td>
<td>121, 407</td>
</tr>
<tr>
<td>Prevention of Illicit Discharges &amp; Unpolluted Water</td>
<td>601</td>
</tr>
<tr>
<td>Permit required</td>
<td>401</td>
</tr>
<tr>
<td>Minimum Pipe Size &amp; Slope</td>
<td>402</td>
</tr>
<tr>
<td>Pipe Materials Allowed</td>
<td>409</td>
</tr>
<tr>
<td>Depth of Laterals</td>
<td>410</td>
</tr>
<tr>
<td>Clean-out Fittings Required</td>
<td>411</td>
</tr>
<tr>
<td>Permits Required and Compliance with Design Standards for Pump Stations and Community Force Mains</td>
<td>415</td>
</tr>
<tr>
<td>Permits for Public Sewer Extensions</td>
<td>501</td>
</tr>
<tr>
<td>Plans, Profiles, &amp; Specifications for Public Sewer Construction by Registered Civil Engineers</td>
<td>502</td>
</tr>
<tr>
<td>Sewer Design &amp; Construction in Accordance with District Standards</td>
<td>509</td>
</tr>
<tr>
<td>District Authority for Access for Maintenance, Inspection, &amp; Repairs</td>
<td>210</td>
</tr>
<tr>
<td>District Inspection of All Sewer Work</td>
<td>709 (ORD. 64 as of 2013)</td>
</tr>
<tr>
<td>Fats, Oils, &amp; Grease (FOG) Limit</td>
<td>602 B</td>
</tr>
<tr>
<td>Prohibited Discharges of Debris</td>
<td>602 E</td>
</tr>
<tr>
<td>Enforcement – Misdemeanor &amp; Fines</td>
<td>802</td>
</tr>
<tr>
<td>Enforcement – Abatement of Public Nuisance, Right to Terminate Discharge</td>
<td>805</td>
</tr>
</tbody>
</table>

Responsibility for Maintenance of Laterals

The District’s Sanitary Code (Article I, Section 121 and Article IV, Section 407) establishes the property owners as the responsible party for ownership and maintenance of both the upper and lower lateral as follows:

*Lateral or Side Sewer shall mean the sewer line beginning two feet from the foundation wall of any building and terminating at the Public Sewer and includes the Building Sewer and Lateral Stub together (Article I, §121).*

*Side Sewers shall be owned and maintained by the owner of the property served thereby (Article IV, §407).*
Prevention of Illicit Discharges

The District’s Sanitary Code (Article VI, Section 601) prohibits drainage to the District’s sanitary sewers as follows:

*No leaders from roofs and no surface drains for rain water shall be connected to any sanitary sewer. No surface or subsurface drainage, rain water, storm water, seepage, cooling water or unpolluted industrial process waters shall be permitted to enter any sanitary sewer by any device or method whatsoever.*

While the Sanitary Code includes a prohibition against extraneous discharges, which includes I/I, and the general authority to access private property for purposes of enforcement of the provisions of the Code, it does not provide the specific vehicle for identifying or requiring correction of I/I on private property. The District has reviewed several options for a new or upgraded Private Lateral Policy that more effectively achieves the District’s goal of reducing I/I from private properties, deciding on a Lateral Grant Program. The Lateral Policy Options Technical Memorandum (Draft, December 2006) is on-file at the District office. The District finalized a Lateral Replacement Grant Program and implemented it FY 2010.

The District’s Sanitary Code (Article IV - Specifications for Side Sewers, Building Sewers, Lateral Sewers and Connections and Article V - Public Sewer Construction) outlines the District’s authority regarding proper design and construction of sewers and connections including:

- Prohibiting connections to the public sewer without a permit (Article IV, §401)
- Specifying requirements for minimum pipe size and slope for sewers (Article IV, §402)
- Requiring separate sewers for every house and building (Article IV, §403)
- Specifying requirements for pipe materials (Article IV, §409)
- Specifying requirements for depth of lateral sewers (Article IV, §410)
- Requiring wye clean-out fittings for lateral sewers (Article IV, §411)
- Requiring permits and compliance with design standards for Pump Stations and Community Force Mains (Article IV, §415)
- Requiring permits for Public Sewer Extensions (Article V, §501)
- Requiring plans, profiles and specifications prepared by a registered civil engineer for all public sewer construction applications (Article V, §502)
- Requiring sewer design and construction in accordance with District Standards (Article V, §509)

Access for Maintenance, Inspection and Repairs

The District’s Sanitary Code (Article II, Section 210 - Powers and Authorities of Inspectors) details the District’s authority to enter buildings for the purpose of protecting the public sewer system and enforcing provisions of the Sanitary Code as follows:
The officers, inspectors, managers or any employees duly authorized by the manager of the district, upon identification, shall be permitted to enter in and upon any and all buildings, industrial facilities and properties for the purpose of inspection, observation, measurement, sampling, testing or otherwise performing such duties as may be necessary for the protection of the public sewer system and the enforcement of the provisions of this Ordinance and rules and regulations of the District.

The District’s Sanitary Code (Article VII, Superseded by Ordinance 64, Section 18 in August 2013 - All Work to Be Inspected) provides the District with the authority to inspect all sewer construction work prior to connection to the public sewer as follows:

All sewer construction work, both public sewer and private sewer laterals, shall be inspected by an inspector acting for the District to insure compliance with all requirements of the District. No New Service Connection or Expanded Use of an Existing Connection work shall be covered to any point until it has been inspected and passed for acceptance. No New Service Connection or Expanded Use of an Existing Connection shall be connected to the District's public sewer until the work covered by the Permit has been completed, inspected and approved by the District Inspector. If the test proves satisfactory, the District Inspector shall issue a certificate of satisfactory completion.

Limit Discharges of Fats, Oils and Grease, and Debris

As discussed in Element 7 – Fats, Oils and Grease Control Program, the District has the legal authority to control the discharge of fats, oils and grease (along with other substances) to the public sewer.

The District’s Sanitary Code (Article VI, Section 602, Item B – Types of wastes prohibited) prohibits the discharge of fats, oils and grease as follows:

Except as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to the public sewer...Any water or waste which contains more than 100 parts per million, by weight, of fat, oil or grease.

The District’s Sanitary Code (Article VI, Section 602, Item E – Types of wastes prohibited) prohibits the discharge of debris as follows:

Except as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to the public sewer...Any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure or any other solid or viscous substance capable of causing obstruction to the flow in sewers or other interference with the proper operation of the sewage works.

Enforcement Measures

The District’s Sanitary Code (Article VIII, Section 802 – Misdemeanor) details the District’s ability to enforce provisions of the Sanitary Code as follows:
A violation of a regulation or ordinance of this District is a misdemeanor punishable by fine not to exceed one thousand dollars ($1,000.00), imprisonment in the County jail not to exceed thirty (30) days, or both. Each and every violation of the Ordinance or regulations of the District shall be deemed a separate violation and each and every day or part of a day a violation of the Ordinance or regulation continues shall be deemed a separate offense hereunder and shall be punishable as such.

Also, Article VIII, Section 805 – Abatement of Public Nuisance enables the District to terminate discharges:

The District Manager may cause a letter to be sent to the address set forth on the application or to the Premises involved in the District forth the facts constituting any violation of this Ordinance on the premises that unless the violation is corrected within the time specified in Section 801 said premises shall be disconnected from the sewage facilities of the District and the matter referred to the Marin County Health Department. If said notice is sent and the corrections are not made within the time limits specified by the District Manager, the District Manager may summarily enter upon the premises and disconnect any side sewers or laterals, which are in violation of this ordinance from the sewage facilities of the District. All costs of disconnection and any possible future reconnection shall be paid by the owner of the premises or applicant, as the case may be, in the amount fixed by the Board.

**Lateral Maintenance, Testing, and Replacement Responsibilities (District Ordinance No. 100)**

In addition to the District Code, the District has an ordinance that specifically addresses private lateral ownership and the responsibilities and requirements regarding maintenance, testing and replacement of laterals. The Ordinance can be accessed through a link on the District’s website, under the "Ordinances and Resolutions" link under "Open Government" at (http //www.rvsd.org)

**FOG (District Ordinance No. 62 and CMSA FOG Ordinance)**

In addition to the District Code, District Ordinance No. 62 details requirements regarding FOG and CMSA also has an ordinance specific to FOG that is relevant to the District since it has agreed to utilize CMSA forces for source control of FOG and enforce the CMSA FOG ordinance as well. The Ordinance can be accessed through a link on the District’s website, under the "Ordinances and Resolutions" link under "Open Government" at (http //www.rvsd.org)

**3.3 Agreements with Other Agencies**

The District has received wastewater from Sanitary District No. 2 (Corte Madera) since 1985. The District also maintains, but does not own, collection system facilities in the Murray Park Sewer Maintenance District under a maintenance agreement. The City of Larkspur and Sanitary District No. 2 entered into an agreement in 1982 to provide sewerage service for properties for which sewer flows crossed jurisdictions. In 1993, the Larkspur Sanitation Area was annexed to RVSD at the request of the City of Larkspur. The District assumed ownership and maintenance of Larkspur's wastewater collection system. The District also replaced Sanitary District No. 2 in the contract
with Larkspur for sewerage service to properties with sewer flows that crossed jurisdictions. Through the Larkspur annexation agreement, the District has access to all lands and right-of-ways for maintenance and repair of sanitary sewer facilities within the City of Larkspur.

Copies of agreements related to these satellite systems are available through a link on the District’s website, under the "SSMP" link (Appendices) under "Open Government" at (http://www.rvsd.org)

The District is a member agency of Central Marin Sanitation Agency (CMSA), a joint powers agency that provides treatment and disposal of wastewater flows through a deep water outfall to the San Francisco Bay. CMSA is comprised of the District, San Rafael Sanitation District, and Sanitary District No. 2. The CMSA wastewater treatment facility was commissioned in 1985.

A copy of the CMSA Exercise of Joint Powers Agreement is available through a link on the District’s website, under the "SSMP" link (Appendices) under "Open Government" at (http://www.rvsd.org)

3.4 Supporting Documents for Element III

- Ross Valley Sanitary District Sanitary Code
- RVSD Ordinance No. 100 (PSLs)
- RVSD Ordinance No. 62 (FOG)
- Service Agreements with Satellite Systems
- CMSA Exercise of Joint Powers Agreement
Element IV - Operation and Maintenance Program

SWRCB Waste Discharge Requirement:

The Sewer System Management Plan (SSMP) must include those elements listed below that are appropriate and applicable to the Enrollee’s system:

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

4.1 Sanitary Sewer System Mapping

The District maintains a GIS system and Computerized Maintenance Management System (CMMS) that uses the InfoAsset program for mapping and work orders. Maps include manholes with identifying number, pipe diameters, and callouts for inverted siphons, pump stations, valve boxes, street names, and some pipe materials.

The District Engineer and Inspection Superintendent are responsible for updating field maps as facilities are added, rehabilitated, and as corrections are identified through field work.
Field personnel formerly carried a hard-copy map book that contains the entire sewer system at a scale of 1” = 225’. As of the beginning of calendar year 2010, field personnel have been issued laptop notebooks with wireless internet and intranet access with the CMMS software and mapping software installed on them. This provides personnel with real-time reporting and mapping capability and enhances staff efficiency.

**Updates to Existing Drawings**

Field crews use GIS maps that are maintained by the Engineering staff. Corrections are made to maps in the GIS system by Engineering staff when provided by the field staff. Hard copy versions of the full map books are provided to the collection field staff by Engineering on a regular basis, as the information is updated. Interim changes on individual pages can be downloaded from the GIS system and given to collection system personnel prior to the distribution of full map books.

**Storm Drain Information**

Storm drain information is available through the cities and towns that are located within the service area, as well as the County of Marin. This information is available as separate layers in the District’s GIS, and is maintained by the responsible jurisdiction. The storm drain maps, if accurate and current, can be used to determine the routing of SSOs, in order to potentially block storm drains and contain the volume of overflows before they reach waters.

**New Improvement Plan Drawings**

Upon acceptance by the District Board of all new and dedicated infrastructure, record drawings are provided to the District Engineer for inclusion in the GIS and sewer maps. A copy of record drawings are scanned for map updates, catalogued, and inserted into the GIS system after installation of newly constructed and dedicated sewer mains and associated facilities. Drawings are submitted in both hard copy and electronic format. A scanned copy of record drawings from contractors and developers is provided to the field staff so they have a record of improvements and facilities on hand prior to the publication and receipt of updated system maps. The hardcopies of records are maintained in the District office.

4.2 Preventive Operation and Maintenance

**Gravity Sewers**

Gravity sewer maintenance is currently scheduled using the computerized maintenance management system. Maintenance activities and cleaning results are recorded in CMMS for each segment of pipe cleaned. Work orders generated from the CMMS system are used for the scheduling of cleaning of “Hotspot” or high frequency sewers as well as for the system-wide cleaning of all other pipes and siphons. Field staff enter field data into hand-held tablets during each work day.

The District cleans the majority of the sewer system approximately every 1 to 8 years, and cleans specific portions of the system with known problems on a more frequent basis. The District cleans
mainline sewer pipe segments in its wastewater collection system using in-house staff, and plans to contract out the cleaning of the trunk lines greater than 15 inches in diameter. Lines are targeted for cleaning on a preventive maintenance schedule on a 6- or 12-month schedule, depending upon the history of the individual line segment. Figure 4-1 provides a map of the District’s sewer system and cleaning frequencies as of May 2013, which is the computerized maintenance management system (CMMS) download date that was established for the 2013 IAMP.

As of March 2019, approximately 22% of the pipeline asset inventory was on a 6-month preventive maintenance schedule. Mainline cleaning is performed by four maintenance crews that are dedicated to both maintenance and sanitary sewer overflow (SSO) response. Two crews are dedicated to the “hot spot” or six-month frequency lines (one hand-rodding crew and one flushing crew), and two crews work on the annual or twelve-month frequency lines, in the north and south areas of the system, respectively. Lines are placed in the “hot spot” frequency category if they are siphons, have a history of heavy grease accumulation, have a history of SSOs, or are deemed to present a high risk of SSOs based on condition assessment or cleaning results.

An important aspect of the District’s sewer cleaning program is the recording of cleaning results for each manhole-to-manhole pipe segment. The results provide a basis for the Operations and Maintenance Manager to modify the frequency or method of cleaning for that pipe segment to reflect current field conditions. Follow-up video inspections and/or repairs are requested as needed by the Operations and Maintenance Manager to improve the quality of cleaning and for training of District employees. This process is shown in Figure 4-2.

The District monitors technology changes in sewer cleaning tools to identify potential additions to the standard array of tools available to District cleaning crews.

**Siphons**

The District is developing a process to define the cleaning and maintenance requirements of all system siphons that have in the past not had regular maintenance on these line segments. This program will evaluate required equipment, procedures, frequency of evaluation and cleaning and the possible use of contractors to conduct this work when required.

**Pump and Lift Stations**

All major pump stations (PS-10 through 15, which pump directly to CMSA) are checked routinely and all minor pump stations or lift stations (PS-20 through 37, which pump to small force mains (pump stations) or gravity sewers (lift stations) are checked on Saturdays and Sundays by the pump station crew during wet weather.
Figure 4-1 Sewer System Cleaning Frequencies (as of March 2019)
The District’s system includes 8.4 miles of force main pipelines, ranging from 4 to 54 inches in diameter. The District performs periodic inspections of the force main points of discharge for visible signs of corrosion or material degradation. District staff has included the addition of cathodic test stations and other activities to help improve force main condition monitoring in the coming years.
Maintenance Management System

The District uses InfoAsset as its computerized maintenance management system, which keeps records of service calls and generates automatic work orders for regular and 6-month maintenance. The CMMS tracks historical information about each pipe segment that is used to help define the six-month priority maintenance schedule. Work order functionality in CMMS was implemented in August 2007, and upgraded in 2019.

All District service calls and work orders are recorded in CMMS. District staff and an after-hours answering service are available to receive customer phone calls 24 hours a day, 7 days a week. All customer calls are recorded and a work order is generated through the CMMS to address the customer’s complaint or request.

QA/QC

The District is considering future implementation of a QA/QC program. In this program, Maintenance Supervisors would provide feedback to cleaning crews to support modification of cleaning processes, practices, techniques, and tool use to improve line cleaning quality. Feedback would generally be provided in staff meetings and in one-on-one meetings with employees.

4.3 Rehabilitation and Replacement Plan

Over the past several years, the District has completed various sewer rehabilitation and replacement projects and maintains a list of identified sewer rehabilitation needs. Between 2007 and 2013, the District followed recommendations from the Sewer System Replacement Master Plan (SSRMP). The SSRMP included sewer rehabilitation needs as well as the capacity projects identified in the 2006 Sanitary Sewer Hydraulic Evaluation and Capacity Assurance Plan (SHECAP) study.

These documents have been superseded by the 2013 IAMP, which was developed in response to the Order, which was issued in May 2013. The IAMP presents a CIP that represents a snapshot in time based on data collected in the CMMS to May 2013. Additional closed circuit television (CCTV) inspection, pipeline cleaning activities, and pipeline repairs have been and will continue to be done as part of the District’s on-going asset management program. The results from these activities have been and future activities will continue to be recorded in the District’s CMMS and integrated into future analyses and reports.

The updated IAMP is intended to be a flexible planning document that will be reviewed and amended periodically to incorporate and accommodate new information. Figure 4-3 shows the IAMP components and their relationships. The IAMP continues the District’s vision for sewer collection system asset management and capital planning.
Condition Assessment

The District dedicates one crew to the pipeline CCTV inspection program. The District’s mainline sewer condition assessment program includes CCTV inspection of main line pipes to determine their condition and to identify cleaning issues. The District also follows up all SSOs with video inspections. If an SSO resulted from a main line structural defect, in most cases, depending upon the video results, repairs or replacements are generally made within one month after the SSO (and follow-up investigation thereof) to prevent the defect in question from leading to a second SSO.

Using the industry-standard National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP), all structural and O&M defects discovered in main lines are assigned a condition grade from 1 to 5.

NASSCO provides the following general guidelines to aide in the interpretation of PACP condition grades:

- PACP Structural Grade 5 – has failed or is likely to fail in five years
NASSCO provides a clarification statement that the “condition grading system alone is inadequate for determining if a pipe segment should be rehabilitated or replaced.”

Each pipe segment, defined as a length of pipe from manhole to manhole, is also assigned a NASSCO PACP Quick Rating. The quick rating comprises four individual numbers that, together, describe the number of occurrences of the two highest PACP scores. For example, a PACP Quick Rating of 5134 describes a pipe segment with one PACP Grade 5 defect and four PACP Grade 3 defects. This pipe segment would have no PACP Grade 4 defects. Separate PACP Quick Ratings are assigned for structural and O&M defects within a single pipe segment.

cycle will generally follow the frequencies shown in Table 4-1, below.

### Table 4-1 Approximate CCTV Inspection Plan for Future Inspection

<table>
<thead>
<tr>
<th>Condition</th>
<th>NASSCO PACP Structural Condition Grade</th>
<th>Inspection Frequency, Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure unlikely in the foreseeable future</td>
<td>0 or 1</td>
<td>10 to 20</td>
</tr>
<tr>
<td>Unlikely to fail for at least 20 years</td>
<td>2</td>
<td>10 to 20</td>
</tr>
<tr>
<td>May fail in 10 to 20 years</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Likely to fail in 5 to 10 years</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Has failed or is likely to fail in five years</td>
<td>5</td>
<td>3 (if not repaired prior to re-inspection)</td>
</tr>
</tbody>
</table>

### Pipeline Risk-Based Prioritization

The IAMP used a numerical database model to assign risk to every mainline and trunk line pipe segment in the CMMS database. This model, also known as the RVSD Sewer Main Asset Replacement Tool (SMARTool), was developed in Microsoft® Access. The SMARTool evaluates the Risk of Failure for an individual pipe segment, given that asset’s Likelihood and Consequence of Failure. Risk is measured with respect to the District’s ability to meet established Level of Service goals.

The SMARTool database contains over 5,000 unique pipeline segments which span from node to node and represent the District’s sewer pipeline network. The District regularly adds new CCTV inspection data to the CMMS database, and plans to update the SMARTool results periodically to integrate this new data. Assets without CCTV data received lower Risk Scores and were not prioritized for replacement. Although attributes such as age and proximity to a waterway may indicate that the asset may need replacement, an asset’s theoretical useful life may vary greatly
from actual useful life depending on actual condition, setting, use, and maintenance history. Therefore, assigning a Risk Score to a single pipe segment without having first inspected this segment would be speculative.

**Manhole Inspection**

The District has limited information on the condition of manholes and other structures, and typically collects this information during the CCTV inspection work using visual inspection methods. Crew members are developing a simplified manhole inspection form that incorporates relevant aspects of the Manhole Assessment and Certification Program (MACP) approach. The District most commonly assesses the condition of the manholes and other structures using District field crews and visual inspection methods during its system-wide sewer cleaning.

**Pump and Lift Stations**

The 2013 IAMP included field evaluations for six of the District’s 19 pump and lift stations with regard to reliability, safety, and capacity. Improvements and operational changes to the pump stations and adjoining force main system were proposed to improve the capacity, operation, and reliability of the pump stations.

**Force Mains**

Limited force main assessments were conducted as part of the initial IAMP development. The evaluation focused on force mains comprised of welded steel or concrete cylinder pipe with significant length and flow. The force main pipes that were not assessed are relative new, comprised of HDPE or PVC pipe, or receive flow from small pump and lift stations. The evaluation reviewed approximately 42 percent of the District’s force mains by length, and 100 percent of the originally installed force main pipelines greater than 10 inches in diameter.

**Capital Improvement Program**

The sewer system rehabilitation and replacement projects are included in the District’s Capital Improvement Program (CIP), now the “IAMP and Capital Program Implementation Plan”. Annual expenditures for the District’s CIP average over $10 million annually for wastewater collection system rehabilitation and replacement.

### 4.4 Training Program

The District uses a tailored Competency Based - Training System to train and qualify employees in the knowledge and skills necessary to safely and effectively complete assigned tasks. For overflows, this involves training in the response, mitigation, and reporting of an overflow.

**Employees Receive Training in the Following Areas**
1. Response: Receiving an overflow report and documenting the location and reporting party.

2. Mitigation: If upon arrival it is determined that the event is a Sanitary Sewer Overflow, training is provided to allow the employee to:
   a. Complete steps to mitigate the overflow
   b. Protect human health
   c. Capture overflow information to establish start time and overflow volume
   d. Capture photo and video evidence to support overflow reporting

3. Reporting: Completion of the SSO Packet and submission to management for review and entry into CIWQS. Training is provided to designated employees who enter data into CIWQS (data Submitters) and to the Legally responsible Official (LRO).

Training Process

Employees receive annual SSO training to comply with the requirements of the State Waste Discharge Requirements (WDR). This training involved both classroom and practical scenario-based training in the response, mitigation, and reporting of overflows. The recurrent training will cover any updates/changes to documentation and/or process since the most recent training event. Training is provided by in-house supervisory staff that have been qualified to provide overflow training.

Data Submitters and Legally Responsible officials will receive additional training from an external training resource. This training involves classroom and practical/scenario-based training. Both actual and hypothetical overflow scenarios are used to provide participants a wide variety of overflow scenarios.

The safety officer at (California Sanitation Risk Management Authority) CSRMA provides training to District staff for confined space, bloodborne pathogens, and general emergency response.

The District provides training on system equipment, operations and maintenance, and annual lockout/tagout procedures. When new equipment is acquired, the District utilizes the equipment supplier to provide training to appropriate crew members. The District maintains a log of safety training activities that is kept at the District office.

District Staff
The District uses a combination of on-the-job training, conferences, seminars, and other training opportunities to provide technical training for its wastewater collection system staff. Vendors provide training for new tools or equipment. The sources of technical training and training materials for the District’s wastewater collection staff are listed in Table 4-3 and Table 4-4.

Table 4-2  Training Resources (Conferences, Seminars, and Courses)

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Event</th>
<th>Timeframe</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Water Environment Association (CWEA)</td>
<td>State Conference</td>
<td>April</td>
<td><a href="http://www.cwea.org">www.cwea.org</a></td>
</tr>
<tr>
<td></td>
<td>Northern Regional Safety Conference</td>
<td>September</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Santa Clara Valley Section Meetings &amp; collections training events &amp; classes</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>CWEA - San Francisco Bay Area section</td>
<td>Meetings and collections training events &amp; classes</td>
<td>Monthly</td>
<td><a href="http://www.cwea.org">www.cwea.org</a></td>
</tr>
<tr>
<td>Bay Area Clean Water Association (BACWA) Collection Systems Committee</td>
<td>Collection System Committee meetings</td>
<td>Monthly</td>
<td><a href="http://www.bacwa.org">www.bacwa.org</a></td>
</tr>
</tbody>
</table>

Table 4-3  Training Resources (Materials)

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Materials</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>California State University, Sacramento</td>
<td>Videos, manuals, home study courses</td>
<td><a href="http://www.owp.csus.edu">www.owp.csus.edu</a></td>
</tr>
</tbody>
</table>

Other potential sources of training include the Water Environment Federation specialty conferences on collection system operations, webinars and publications that support sewer system education and training including the District’s risk management and insurance program pools that provide specific risk based training for claims and risk reduction.

District staff receives regular training on the following topics: volume estimation, storm water pollution prevention, confined space entry, biological and chemical hazards, flusher and rodder safety, underground construction, gas detector use, application of overflow control materials, back injury prevention, overflow reporting and field documentation, and the content and procedures of the SSMP. In addition, from time to time, District staff receives training on various professional development topics such as computer applications and CMMS implementation.

Individual training records are documented and maintained by the District’s administrative staff.
Contractors Working on District Sewer Projects

The District requires contractors working on its wastewater collection system to have been trained on the District’s Sanitary Sewer Overflow Emergency Response Plan. In addition, as a future practice, all District projects that may impact District collection system lines or facilities will require that the emergency procedures be discussed regularly, and especially at the pre-construction conference at the start of a project.

4.5 Equipment and Parts Inventory

The District has equipment available for regular maintenance and repairs, and to respond to an SSO event. Table 4-5 contains a current list of the District’s equipment including quantities and location where the equipment is kept. The District also has a list of contractors that can be contacted during an SSO event to provide a variety of services including private residence cleaning, force main and pipeline repairs, welding, diesel fuel, and tank trucks. Table 4-6 contains a current list of local contractors.
Table 4-4  Tools and Equipment Inventory List

<table>
<thead>
<tr>
<th>Item</th>
<th>Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination Cleaner</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rodders</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Heavy Duty Service Truck</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Traffic Control Devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trash Pump with Hose (for emergency bypass)</td>
<td>2</td>
<td>Also have two submersible pumps</td>
</tr>
<tr>
<td>Clamps (for force mains)</td>
<td>various</td>
<td></td>
</tr>
<tr>
<td>Repair Bands (all sizes)</td>
<td>various</td>
<td></td>
</tr>
<tr>
<td>36-inch Welded Steel Concrete Lined Pipe (for force mains)</td>
<td>various</td>
<td></td>
</tr>
<tr>
<td>Polyethylene Pipe (for force mains)</td>
<td>various</td>
<td></td>
</tr>
<tr>
<td>Tools</td>
<td>various</td>
<td></td>
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<tr>
<td>Forklift</td>
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<tr>
<td>Dump Trucks</td>
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<tr>
<td>Backhoe with Trailer</td>
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<tr>
<td>Sports Utility Vehicles (SUVs)</td>
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<tr>
<td>Pump Service Truck</td>
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<td>Pickup trucks</td>
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<tr>
<td>Pickup with Containment Tools and Materials</td>
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<tr>
<td>Van with Full CCTV Equipment setup plus push camera</td>
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<td></td>
</tr>
<tr>
<td>Van with RST Technical push camera and confined space equipment</td>
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<td>Also have separate RST push camera – not truck mounted</td>
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<tr>
<td>Small Excavator with Trailer</td>
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<tr>
<td>4-inch pipe (for gravity lines)</td>
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<td>RVSD Storage</td>
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<tr>
<td>6-inch pipe (for gravity lines)</td>
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<td></td>
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<tr>
<td>8-inch pipe (for gravity lines)</td>
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<td></td>
</tr>
<tr>
<td>10-inch pipe (for gravity lines)</td>
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</tr>
<tr>
<td>Parts for PS-10 and PS-13</td>
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<td>RVSD Shop</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Pump for PS-20, PS-31 and PS-32</td>
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<td></td>
</tr>
<tr>
<td>Name</td>
<td>Number</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Restoration Management</td>
<td>(800) 400-5058</td>
<td>Private Residence Cleaning/Restoration</td>
</tr>
<tr>
<td>Linscott Construction</td>
<td>(415) 492-1755 (Main Line)</td>
<td>Force Main or Pipeline</td>
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<tr>
<td></td>
<td>(415) 457-5669 (Roy Linscott after hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(707) 644-6599 (Bruce Linscott after hrs)</td>
<td></td>
</tr>
<tr>
<td>Maggiori &amp; Ghilotti</td>
<td>(415) 459-8640 (Main Line switches to dispatch after-hours)</td>
<td>Force Main or Pipeline</td>
</tr>
<tr>
<td>Ghilotti Bros.</td>
<td>(415) 454-7011 (Main Line)</td>
<td>Force Main or Pipeline</td>
</tr>
<tr>
<td></td>
<td>(415) 720-4451 (Dave Mariani--after hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(415) 760-0700 (Michael Ghilotti--after hrs)</td>
<td></td>
</tr>
<tr>
<td>Ghilotti Construction</td>
<td>(415) 256-1525 (Main Line switches to dispatch after-hours)</td>
<td>Force Main or Pipeline</td>
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<tr>
<td>W. R. Forde</td>
<td>(415) 924-3072</td>
<td>Force Main or Pipeline</td>
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<tr>
<td>TelStar</td>
<td>(925) 671-2888 (Main Line)</td>
<td>Electrical/Controls</td>
</tr>
<tr>
<td></td>
<td>(510) 693-8043 (Cell)</td>
<td></td>
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<tr>
<td>Zappetini Welding</td>
<td>(415) 454-2511</td>
<td>Welder</td>
</tr>
<tr>
<td>Sun Ironworks</td>
<td>(415) 453-7562</td>
<td>Welder</td>
</tr>
<tr>
<td>Victor’s Ironworks</td>
<td>(415) 454-6284</td>
<td>Welder</td>
</tr>
<tr>
<td>Irish Welding</td>
<td>(415) 488-0230</td>
<td>Welder</td>
</tr>
<tr>
<td>United Site Services</td>
<td>(510) 563-0479</td>
<td>Large (4000 gal.) Tank Truck</td>
</tr>
<tr>
<td>Denbeste Services</td>
<td>(800) 838-1477</td>
<td>Large (5000 gal) Tank Truck</td>
</tr>
<tr>
<td>Roto-Rooter</td>
<td>(415) 898-2700</td>
<td>Small (2000 gal.) Tank Truck</td>
</tr>
<tr>
<td>Roy’s Sewer Service</td>
<td>(415) 381-0256</td>
<td>Small (2000 gal.) Tank Truck</td>
</tr>
<tr>
<td>Royal Petroleum</td>
<td>(707) 540-0054</td>
<td>Diesel Fuel</td>
</tr>
<tr>
<td>Hertz Pump Rents – Thompson Pumps</td>
<td>(510) 633-2040</td>
<td>Pump Rental</td>
</tr>
</tbody>
</table>
Element V - Design and Performance Provisions

SWRCB Waste Discharge Requirement:

- Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
- Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

5.1. Design and Construction Standards for Installation, Rehabilitation and Repair

The District maintains Standard Specifications and Drawings (Standards), last updated in 2015, that are posted and available by order on the District’s website under "SSMP " and the "Open Government" link at http://www.rvsd.org/.

The Standards include information on both installation and inspection of sewer and force mains as discussed below. Specifications for pump stations have historically been developed on a case-by-case basis as needed for construction of specific pump station facilities or for improvements to facilities. With little to no development in the District’s service area, new pump stations are seldom required, and specific needs can be addressed on a case-by-case basis, so no development of pump station standards is necessary. In recent pump station rehabilitation projects the District has begun to "Standardize" the type of mechanical, electrical, and instrumentation and controls (I&C) equipment used in District pump stations.

A summary of the Standards relevant to SSMP implementation and collection system design and rehabilitation are included in Table 5-1. As these Standards are periodically updated, please note that this summary is provided for convenience only. Consult the website listed above for the most current version of the Standards.

Table 5-1 Relevant Sections of District Standard Specifications and Drawings (as of March 2019)

<table>
<thead>
<tr>
<th>Section Title</th>
<th>Section Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Excavation and Backfill</td>
<td>Technical Specifications (TS), Division 2</td>
</tr>
<tr>
<td>Sewer Pipelines</td>
<td>TS Division 15</td>
</tr>
<tr>
<td>Design Standards</td>
<td>4</td>
</tr>
<tr>
<td>Side Sewer Standards and Testing</td>
<td>4 and 14</td>
</tr>
<tr>
<td>Manholes</td>
<td>TS Division 2 and SD-01 to SD-13</td>
</tr>
<tr>
<td>Standard Drawings</td>
<td>SD-01 through SD-36</td>
</tr>
</tbody>
</table>
5.2 Procedures and Standards for Inspection, Testing, Rehabilitation and Repair

Design and Construction

Criteria for the design of new sewer lines and manholes are detailed in Section 4 of the District’s Standards. Criteria include design flows, pipe materials, minimum pipe sizes and slopes, pipe depths and clearance with other utilities, and required fittings. Section 4 of the District’s Standards also includes design requirements for private laterals including minimum slopes and cleanouts. Detailed technical requirements for pipe materials and appurtenances are also included in the Technical Specifications (TS), Division 15 of the Standards.

Criteria for the construction of new sewer lines and force mains are detailed in TS Division 15 of the District’s Standards. This information includes trench widths, pipe jointing, connections to existing systems, and trenchless installations.

Criteria for testing and inspecting of new and rehabilitated sewers and force mains are detailed in TS Division 14 of the District’s Standards. This section describes water tests, air tests, infiltration tests, deflection tests, cleaning and television inspection.

Project Approval

Requirements for the preparation, submittal, and approval of plans and specifications are described in Section 5 of the District’s Standards. All new construction plans are required to be prepared by a registered civil engineer and submitted to the District for review and approval prior to Board approval and permit issuance.

The District has two full time inspectors and also uses outside contract forces to monitor the construction of CIP projects and customer service installations to ensure compliance with the District’s specifications.

All District and private projects must be tested according to the requirements outlined in the specifications prior to consideration for District acceptance for maintenance. In addition, record drawings of all final project elements must be submitted and approved by District staff prior to final acceptance of any project on District infrastructure.

5.3 Supporting Documents for Element V

- Standard Specifications and Drawings (2015)
Element VI - Sanitary Sewer Overflow Emergency Response Plan

SWRCB Waste Discharge Requirement:

Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

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

The components of the District’s Sanitary Sewer Overflow Emergency Response Plan (OERP) are summarized below. A complete, standalone OERP is included in Supporting Documents to this SSMP.

6.1 OERP Goals

The purpose of the Overflow Emergency Response Plan (OERP) is to support an orderly and effective response to Sanitary Sewer Overflows (SSOs). The OERP provides guidelines for District staff to follow in responding to, cleaning up, and reporting SSOs that may occur within the District’s service area.

The District’s goals with respect to responding to SSOs are:

- Work safely
- Respond quickly to minimize the volume of the SSO
• Eliminate the cause of the SSO
• Prevent sewage system overflows from entering known storm drain facilities or receiving waters to the maximum extent practicable
• Contain the spilled wastewater to the extent feasible
• Minimize public contact with the spilled wastewater
• Mitigate the impact of the SSO
• Meet the regulatory reporting requirements
• Evaluate the causes of failure related to certain SSOs
• Revise response procedures resulting from the debrief and failure analysis of certain SSOs

6.2 SSO Categories

The responsibilities of the SSO Response Team depend on the volume and location of an incident. Three categories of SSOs are defined by the SWRCB:

• Category 1 SSO: Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
  – Reach surface water and/or reach a drainage channel tributary to a surface water; or
  – Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).
• Category 2 SSO: Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
• Category 3 SSO: All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.

6.3 SSO Notification Procedures

Several processes are employed to notify the District of the occurrence of an SSO. These include:

• Observation by the public
• Receipt of an alarm
• Observation by District staff during the normal course of their work

Figure 6-1 shows the process for SSO initial response.
Figure 6-1 District SSO Initial Response

Business Hours:
Administration
(415) 259-2949

Forward Request to:
Senior Supervisor or Line Maintenance Supervisor

Non-Business Hours
(413) 259-2949
Calls are routed to the standby service which will call the on call employee pager or call phone. Service will follow the phone tree until an employee is reached.

Receive notification of Overflow/Backup

On-Call Employee:
Contact customer reporting the problem.

Is the overflow/backup in the service area?

NO

YES

Is the spill inside a building in the street?

IN THE STREET

1. Dispatch Collections Crew
2. Instruct Collections Crew to complete the Sanitary Sewer Overflow Response Plan Envelope.

INSIDE

1. Provide Customer with the contact info for the responsible Agency.
2. Then notify the responsible Agency

WHAT TO TELL THE CUSTOMER (See Field Guide for tips)
• Clearly communicate who will respond, estimated time they will arrive and what area(s) will need to be accessed.
• Clearly communicate that a blockage in the sewer main line will be promptly cleared, but that the City is not allowed to work on a blockage in the property owner's/resident's service lateral line. Use general terms that the caller can understand, and give the caller your name for future reference.
• Show concern and empathy for the property owner/resident, but do not admit or deny liability.
• Instruct the caller to turn off any appliances that use water and to shut off any faucets inside the home.
• Instruct the caller to keep all family members and pets away from the affected area.
• Instruct the caller to place towels, rags, blankets, etc. between areas that have been affected and areas that have not been affected.
• Instruct the caller to not remove any contaminated items – let the professionals do this.
• Instruct the caller to turn off their HVAC system.
• Instruct the caller to move any uncontaminated property away from impacted areas.

INSIDE

A Collections Crew will be dispatched to the scene and will complete the Sanitary Sewer Backup Response Packet.
Observation by the Public

Public observation is the most common way that the District is notified of blockages and spills. Contact numbers and information for reporting sewer spills and backups are listed in the phone directory and also on the District’s website: http://www.rvsd.org.

The District’s telephone number for reporting sewer problems during normal work hours is (415) 259-2949. The after-hours, on-call pager number is (415) 838-0800.

When calls are received, either during normal work hours or after hours, the individual receiving the call collects the following information:

- Time and date of call
- Specific location of potential problem
- Nature of call
- In case of SSO, estimated start time of overflow
- Caller’s name and telephone number
- Caller’s observation (e.g., odor, duration, location on property, known impacts, indication if surface water impacted, appearance at cleanout or manhole)
- Other relevant information

Response During Normal Work Hours

When a report of a sewer spill or backup is made during normal work hours, District administration receives the call, and forwards the call to the Senior Supervisor or Line Maintenance Supervisor. The Senior Supervisor or Line Maintenance Supervisor gathers information from the caller and dispatch the Field Crew as needed.

After Hours Response

After-hours calls are answered by the District’s standby service. The call recipient contacts the on-call pager and then will systematically call the District’s on-call phone numbers. The standby service has been instructed to follow the phone tree until an employee is reached. The phone tree is included in the standalone OERP, and updated as changes in staff or staff responsibilities occur.

The standby service is responsible for collecting the following information from all collection system related incoming calls:

- Time and date of call
- Specific location of potential problem
- Caller’s address if different than location of SSO
- Nature of call
- In case of SSO, estimated start time of overflow
- Caller’s name and phone number
- Caller’s observation (e.g., odor, duration, location on property, known impacts, indication if surface water impacted, appearance at cleanout or manhole)
• Other relevant information

Receipt of an Alarm

The District owns and operates 19 wastewater pump and lift stations. In the event of any pump failure, a high level sensor activates the SCADA alarm system that directly contacts the District office or, if after hours, the standby service. Response proceeds as described above.

To prevent overflow, wastewater from the wet well is either be pumped into a vacuum truck for disposal to a nearby sanitary sewer manhole, or bypassed around the station into the sanitary sewer system.

Observation by District Staff

District staff conducts periodic inspections of its sewer system facilities as part of their routine activities. Any problems noted with the sewer system facilities are reported to appropriate supervisory staff. The supervisory staff responds to emergency situations. Work orders are issued to correct non-emergency conditions.

If a contractor causes or witnesses a Sanitary Sewer Overflow, the contractor must do the following:

1. Immediately notify the District
2. Protect storm drains
3. Protect the public.
4. Provide information to the District collections crew such as start time, appearance point, suspected cause, weather conditions, etc.
5. Direct all media and public relations requests to the District General Manager

6.4 SSO Response Activities

First Responder

First Responder priorities include the following:

• Follow safety procedures at all times
• Respond promptly with the appropriate and necessary equipment. SSO response time, determined as the difference in time from the incoming service call to arrival at the site, must be no greater than 60 minutes (1 hour).
• Contain the spill wherever feasible
• Restore the flow as soon as practicable
• Minimize public access to and/or contact with the spilled sewage
• Promptly notify the Operations and Maintenance Manager in event of Category 1 or 2 SSO
• Return the spilled sewage to the sewer system.
Site Response

The First Responder must respond to the reporting party/problem site and visually check for potential sewer stoppages or overflows. At the site, the following list summarizes the responsibilities of the first responder and field response team:

- Document arrival time and verify the existence of a sewer system spill or backup
- Contact caller if time permits
- Identify and assess the affected area and extent of spill
- Determine if the overflow or blockage is from a public or private sewer
- If from the public sewer, determine cause of overflow
- If the spill is large or in a sensitive area, document conditions upon arrival with photographs. Decide whether to proceed with clearing the blockage to restore the flow or to initiate containment measures. The guidance for this decision is described in additional detail in the standalone OERP
- Post raw sewage signs, as necessary
- Collect wastewater and debris from the site and storm drain and if possible, return the wastewater to the collection system
- Disinfect the affected area and mitigate all other impacts of the SSO
- The First Responder should collect and document all event information on the District’s Overflow Report Form
6.5 Impact to Waters of United States

If an SSO is confirmed to have entered waters of the United States\(^1\), the Operations and Maintenance Manager is immediately notified. The response team then proceeds with the following additional activities:

- Determine the extent of the SSO by investigating downstream until there is no evidence of sewage or debris along the creek or water body
- Conduct Water Quality Sampling, following the process described below. If the SSO is 50,000 gallons or greater, collect water quality samples within 48 hours of becoming aware of the SSO
- Immediately post contaminated water sign(s) and protect the waterbody from public access on all sides
- Photograph sign placement and evidence of the overflow in and around the waterbody to the farthest point reached by the sewage
- Determines if the waterbody is safe to enter. During the winter storm season, cleaning the waterbody may not be feasible due to high water flows
- If feasible, block the waterbody downstream of the affected area in a location that is safe to enter and is accessible to set up a pump or utilize other sewer cleaning equipment
- To the extent feasible, recover and return contaminated water to the collection system
- Perform follow-up sampling until the area shows no water quality impairment and the posted signs can be removed. The Operations and Maintenance Manager ultimately determines when this happens and makes any follow up calls to affected agencies

6.6 Water Quality Sampling and Testing

Water quality sampling and testing is completed where feasible when spilled sewage enters a water body to determine the extent and impact of the SSO. The water quality sampling procedures are as follows:

- First Responder should collect samples as soon as possible after the discovery and mitigation of the SSO event, following the procedure outlined below
- The water quality samples should be collected near the point of entry of the spilled sewage
- The water quality samples should also be collected from upstream of the spill, from the spill area, and downstream of the spill in flowing water (e.g. creeks)
- The samples shall then be brought to CMSA for analysis for coliform and ammonia.

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\(^1\) 40 CFR 230.3\(\text{s}\) defines the term “waters of the United States.” This term includes all lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, or natural ponds, or waters that could be used for recreational or other purposes.
The recommended process to obtain samples is provided by the EPA and included in Appendix D. The process includes a discussion of the following:

- Where to take the sample
- Handling of sample collection bags
- Methods for collecting water using screw-cap bottles

6.7 Water Quality Monitoring Plan

A Water Quality Monitoring Plan must be implemented immediately upon discovery of any Category 1 SSO of 50,000 gallons or more in order to assess impacts from SSOs to surface waters. Water quality testing must be completed within 48 hours of the District becoming aware of the SSO.

The District’s SSO Water Quality Monitoring Program includes the following:

- Protocols for water quality monitoring
- Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.)
- Requirement for water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory
- Requirement for monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy

6.8 SSO Technical Report

If 50,000 gallons or greater from an SSO reaches surface waters, an SSO Technical Report must be prepared and submitted to the CIWQS online SSO database within 45 calendar days of the SSO end date. The SSO Technical Report must include, at a minimum, the following:

1. Causes and Circumstances of the SSOs
2. Complete and detailed explanation of how and when the SSO was discovered
3. Diagram showing the SSO failure point, appearance point(s), and final destination(s)
4. Detailed description of the causes(s) of the SSO
5. Copies of the original field crew records used to document the SSO
6. Historical maintenance records for the failure location
7. Response to SSO:
8. Chronological narrative description of all actions taken to terminate the SSO
9. Explanation of how the OERP was implemented to respond to and mitigate the SSO
10. Final corrective action(s) completed and/or planned to be completed, including a schedule or actions not yet completed
11. Water Quality Monitoring:
12. Description of all water quality sampling activities conducted including analytical results and evaluation of the results
13. Detailed location map illustrating all water quality sampling points

The District Engineer is responsible for the development and certification of the SSO Technical Report.

6.9 Recovery and Cleanup

The recovery and cleanup phase begins immediately after the flow has been restored and the SSO has been contained to the extent possible. The SSO recovery and cleanup procedures include volume estimation, sewage recovery, and cleanup and disinfection.

**Estimate the Volume of Spilled Sewage**

Use the methods outlined in the SSO Response Field Documentation Form and/or the Field Guide in Appendix E to estimate the volume of the spilled sewage. Wherever possible, document the estimate using photos of the SSO site before and during the recovery operation.

**Recover Spilled Sewage**

Vacuum up and/or pump the spilled sewage and discharge it back into the sanitary sewer system.

**Complete Clean-up and Disinfection**

Cleanup and disinfection procedures should be implemented to reduce the potential for human health issues and adverse environmental impacts that are associated with an SSO event. The procedures described are for dry weather conditions and should be modified as required for wet weather conditions. Where cleanup is beyond the capabilities of District staff, a cleanup contractor will be used.

**Private Property**

District crews are responsible for the cleanup when the property damage is minor in nature and is outside of private building dwellings. In all other cases, affected property owners can call a water damage restoration contractor to complete the cleanup and restoration. If the overflow into property is the definite cause of District system failure, the property owner can call out a water damage restoration contractor to complete the cleanup and restoration. In both cases, District claim forms may be issued if requested by the property owners.

Collect all signs of sewage solids and sewage-related material either by protected hand or with the use of rakes and brooms. Wash down the affected area with clean water until the water runs clear. Take reasonable steps to contain and vacuum up the wastewater. Allow area to dry. Repeat the process if additional cleaning is required.
Landscaped and Unimproved Natural Vegetation

Collect all signs of sewage solids and sewage-related material either by protected hand or with the use of rakes and brooms. Wash down the affected area with clean water until the water runs clear. The flushing volume should be approximately three times the estimated volume of the spill. Either contain or vacuum up the wash water so that none is released. Allow the area to dry. Repeat the process if additional cleaning is required.

Natural Waterways

The Department of Fish and Wildlife will be notified by OES as appropriate in the event of a fish kill or SSO greater than 1,000 gallons.

Fish and Wildlife will provide the professional guidance needed to effectively clean up spills that occur in these sensitive environments. Clean up should proceed quickly in order to minimize negative impact. Sewage causes depletion of dissolved oxygen, which will kill aquatic life. Any water that is used in the cleanup should be dechlorinated prior to use.

Wet Weather Modifications

Omit flushing and sampling during heavy storm events (i.e., sheet of rainwater across paved surfaces) with heavy runoff where flushing is not required and sampling would not provide meaningful results.

6.10 SSO Failure Analysis

It is the responsibility of the Operations and Maintenance Manager to investigate an SSO and to ensure that the procedures in the OERP are followed or modified as a result of the incident failure analysis. The failure analysis is intended to determine if additional maintenance, repair/replacement or other follow-up actions or response procedures changes are needed to reduce or eliminate the likelihood of future SSOs. The procedures for investigating an SSO are as follows:

- Reviewing and completing the Sewer Overflow Report
- Reviewing the incident timeline and other documentation regarding the incident
- Review actions by all persons involved in the response, including the initial recipient of the complaint
- Reviewing communications with the all reporting parties, and witnesses
- Review volume estimate, volume recovered estimate, volume estimation assumptions and associated drawings
- Reviewing available photographs
- Interviewing staff that responded to the spill
- Reviewing past maintenance records of all affected manholes and pipe segments
- Reviewing past CCTV records
- Conducting a CCTV inspection to determine the condition of the line segment immediately following the SSO and reviewing the video and logs
• Reviewing any FOG related information or results
• Identify any changes or additions needed to the OERP and SSMP following the event

The product of the failure analysis investigation should be the determination of the root cause and identification of the corrective actions. The Collection System Failure Analysis Form Appendix E should be used to document the investigation.

6.11 SSO Documentation and Recordkeeping

In accordance with the WDR, the Ross Valley Sanitary District maintains records for each sanitary sewer overflow. Records include:

• Documentation of response steps and/or remedial actions
• Photographic evidence to document the extent of the SSO, field crew response operations
• Site conditions after field crew SSO response operations have been completed
• The date, time, location, and direction of photographs taken will be documented
• Documentation of how any estimations of the volume of discharged and/or recovered overflow were calculated

The records are maintained at the District office and are also entered into the District’s CMMS system.

The District maintains also maintains records of all complaints received, whether or not they result in an SSO. Each complaint record includes:

• Date, time, and method of notification
• Date and time the complainant or informant first noticed the SSO
• Narrative description describing the complaint
• A statement from the complainant or informant, if they know, of whether or not the potential SSO may have reached waters of the United States
• Name, address, and contact telephone number of the complainant or informant reporting the potential SSO (if not reported anonymously)
• Follow-up return contact information for each complaint received (if not reported anonymously)
• Final resolution of the complaint
• Work service request information used to document all feasible and remedial actions taken

6.12 Notification to Regulatory Agencies and Regulatory Reporting
Table 6-1 summarizes the regulatory reporting requirements that are also described in the paragraphs following the table.

**Multiple Appearance Points – Single SSO**

For reporting purposes, if one SSO event of whatever category results in multiple appearance points in a sewer system, a single SSO report is required in CIWQS which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and descriptions of the locations of all other discharge points associated with the single SSO event.

**2-Hour Notification to Regulatory Agencies of SSOs**

The Office of Emergency Services (OES) is only to be notified of a Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water. The First Responder is responsible for reviewing field data for reporting to regulatory agencies. If it is determined that the criteria for OES notification was met, than the First Responder must notify OES of the event no later than two (2) hours after:

1. The District has knowledge of the SSO;
2. Notification is possible; and
3. Notification can be provided without substantially impeding cleanup or other emergency measures.

The OES phone number is (800) 852-7550. The First Responder is responsible for obtaining an OES Control number. Following the initial notification to OES and until the SSO report is certified in the SWRCB online SSO Database, the LRO will provide updates (or provide direction for updates to be provided) to OES regarding substantial changes to estimated volume of untreated or partially treated sewage discharged and any substantial changes to known impact(s).
### Table 6-1 Regulatory Reporting Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>Requirement</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOTIFICATION</strong></td>
<td>Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, the District will notify the California Office of Emergency Services (OES) and obtain a notification control number.</td>
<td>Call OES at: (800) 852-7550</td>
</tr>
</tbody>
</table>
| **REPORTING**                            | • Category 1 SSO: The District will submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date.  
• Category 2 SSO: The District will submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date.  
• Category 3 SSO: The District will submit certified report within 30 calendar days of the end of month in which SSO the occurred.  
• SSO Technical Report: The District will submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters.  
• "No Spill" Certification: The District will certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred.  
• Collection System Questionnaire: The District will update and certify every 12 months | • Enter data into the CIWQS Online SSO Database ([http://ciwqs.waterboards.ca.gov/](http://ciwqs.waterboards.ca.gov/)), certified by the Legally Responsible Official(s).  
• All information required by CIWQS will be captured in the Sanitary Sewer Overflow Report.  
• Certified SSO reports may be updated by amending the report or adding an attachment to the SSO report within 120 calendar days after the SSO end date. After 120 days, the State SSO Program Manager must be contacted to request to amend an SSO report along with a justification for why the additional information was not available prior to the end of the 120 days. |
| **WATER QUALITY MONITORING**             | • The District will conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. | Water quality results will be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. |
| **RECORD KEEPING**                       | The District will maintain the following records:  
• SSO event records.  
• Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP.  
• Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters.  
• Collection system telemetry records if relied upon to document and/or estimate SSO Volume. | Self-maintained records shall be available during inspections or upon request. |
SSO Reporting for Category 1 SSOs

OES shall receive notification of Category 1 SSOs greater than or equal to 1,000 gallons, as stated earlier in this Section.

The Data Submitter must then submit the initial draft report to the SWRCB’s CIWQS Online SSO database @ http://ciwqs.waterboards.ca.gov/ciwqs within 3 business days of becoming aware of the SSO,

Within 15 calendar days of the SSO end date, the LRO must review and certify the report in the CIWQS Online SSO database @ http://ciwqs.waterboards.ca.gov/ciwqs

At minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report:

Draft Category 1 SSO

1. SSO Contact Information: Name and telephone number of staff who can answer specific questions about the SSO being reported
2. SSO Location Name
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field
4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure
5. Whether or not the SSO reached a municipal separate storm drain system
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered
7. Estimate of the SSO volume, inclusive of all discharge point(s)
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain
9. Estimate of the SSO volume recovered (if applicable)
10. Number of SSO appearance point(s)
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time
13. Date and time the enrollee was notified of, or self-discovered, the SSO
14. Estimated operator arrival time
15. For spills greater than or equal to 1,000 gallons, the date and time OES was called
16. For spills greater than or equal to 1,000 gallons, the OES control number
Certified Category 1 SSO
At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to items 1-16 above:

1. Description of SSO destination(s)
2. SSO end date and time
3. SSO causes (mainline blockage, roots, etc.)
4. SSO failure point (main, lateral, etc.)
5. Whether or not the spill was associated with a storm event
6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps
7. Description of spill response activities
8. Spill response completion date
9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion
10. Whether or not a beach closure occurred or may have occurred as a result of the SSO
11. Whether or not health warnings were posted as a result of the SSO
12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA must be selected
13. Name of surface water(s) impacted
14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected
15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected
16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered
17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number

SSO Reporting for Category 2 SSOs
Within 3 business days of becoming aware if the SSO, the Supervisor must submit the initial report to the SWRCB’s CWIQS Online SSO database @ http://ciwqs.waterboards.ca.gov/ciwqs.

Within 15 calendar days of the SSO end date, the LRO must review and certify the report in the CWIQS Online SSO database @ http://ciwqs.waterboards.ca.gov/ciwqs.

Draft Category 2 SSO
At minimum, Items 1-14 in the Draft Category 1 section above shall be reported prior to finalizing and certifying a Category 2 SSO report. In addition to Items 1-14 in the Draft Category 1 section, Items 1-9, and 17 in the Certified Category 1 SSO section above shall be included in the certified report.
SSO Reporting for Category 3 SSOs

Within 30 calendar days of the end of the calendar month in which the SSO occurred, the LRO must submit and certify a report to the SWRCB’s CIWQS Online SSO database @ http://ciwqs.waterboards.ca.gov/ciwqs.

At minimum, in addition to Items 1-14 in the Draft Category 1 section, Items 1-6, and 17 in the Certified Category 1 SSO section above shall be reported prior to finalizing and certifying a Category 3 SSO report.

No Spill Certification (Monthly)

Within 30 calendar days of the end of a calendar month that there are no SSO’s, the LRO must submit and certify a “No Spill” certification to the CIWQS online SSO database.

CIWQS Not Available

In the event that the CIWQS online SSO database is not available, the LRO will fax or e-mail all required information to the RWQCB office at (510) 622-2460 in accordance with the time schedules identified above. In such an event, the District will submit the appropriate reports using the CIWQS online SSO database when the database becomes available. A copy of all documents that certify the submittal in fulfillment of this section shall be retained in the SSO document file.

Amending SSO Reports

The LRO is responsible for amending SSO reports. Certified SSO reports may be updated by amending the report or adding an attachment to the SSO report within 120 calendar days after the SSO end date. After 120 days, the District must contact the State SSO Program Manager to request to amend an SSO report along with a justification for why the additional information was not available prior to the end of the 120 days. The SWRCB SSO Program Manager contact information follows:

State Water Resources Control Board
Division of Water Quality
1001 I Street 15th Floor
Sacramento, CA 95814
E-mail: Russell.norman@waterboards.ca.gov
Phone: (916) 323-5598

Technical Report

If 50,000 gallons or greater from an SSO reaches surface waters, an SSO Technical Report must be prepared and submitted to the CIWQS online SSO database within 45 calendar days of the SSO end date. The District Engineer is response for submitting the Technical Report, which is described in further detail earlier in this Section.

6.13 Equipment

RVSD Sewer System Management Plan
This section provides a list of specialized equipment that is required to support this Overflow Emergency Response Plan.

Closed Circuit Television (CCTV) Inspection Unit – A CCTV Inspection Unit is required to determine the root cause for all SSOs from gravity sewers.

Camera – A digital or disposable camera is required to record the conditions upon arrival, during clean up, and upon departure.

Emergency Response Trucks -- A utility body pickup truck, or open bed is required to store and transport the equipment needed to effectively respond to sewer emergencies. The equipment and tools should include containment and clean up materials.

Portable Generators, Portable Pumps, Piping, and Hoses – Equipment used to bypass pump, divert, or power equipment to mitigate an SSO.

Combination Sewer Cleaning Trucks -- Combination high velocity sewer cleaning trucks with vacuum tanks are required to clear blockages in gravity sewers, vacuum spilled sewage, and wash down the impacted area following the SSO event.

### 6.14 Contractors Working On District Sewer Facilities

All contractors working on District sewer facilities will be trained in the District’s OERP and will be required to follow the OERP in the event that they cause or observe an SSO.

### 6.15 Training

SSO Response Training

This section provides information on the training that is required to support this Overflow Emergency Response Plan.

Initial and Annual Refresher Training

All District personnel who may have a role in responding to, reporting, and/or mitigating a sewer system overflow should receive training on the contents of this OERP. All new employees should receive training before they are placed in a position where they may have to respond. Current employees should receive annual refresher training on this plan and the procedures to be followed. Affected employees will receive annual training on the following topics, at a minimum, by knowledgeable trainers:

- The District’s Overflow Emergency Response Plan
- SSO Volume Estimation Techniques
- Impacted Surface Waters: Response Procedures
The District will verify that annual safety training requirements are current for each employee, and that employees are competent in the performance of all core competencies. The District will address, through additional training/instruction, any identified gaps in required core competencies.

**SSO Response Drills**

Periodic training drills should be held to ensure that employees are up to date on these procedures, equipment is in working order, and the required materials are readily available. The training drills will cover scenarios typically observed during sewer related emergencies (e.g. mainline blockage, mainline failure, force main failure, pump station failure, and lateral blockage). The results and the observations during the drills will be recorded and action items should be tracked to ensure completion.

**SSO Training Record Keeping**

Records should be kept of all training that is provided in support of this plan. The records for all scheduled training courses and for each overflow emergency response training event and will include date, time, place, content, name of trainer(s), and names of attendees.

**6.16 Supporting Documents for Element VI**

- Overflow Emergency Response Plan
- Water Quality Management Plan (WQMP)
Element VII - Fats, Oils, and Grease (FOG) Control Program

SWRCB Waste Discharge Requirement:

Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

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

Fats, oils, and grease, abbreviated as FOG, may create an issue due to their ability to cause sanitary sewer blockages that may result in SSOs.

The District has approximately 86 Food Service Establishments (FSEs). As discussed later in this section, CMSA implements the FOG Source Control Program by contract. The District performs preventive sewer cleaning for identified grease hot spots and has the legal authority to require installation of grease interceptors at non-residential locations. The elements of the CMSA FOG control program and planned FOG control activities are described below.

7.1. Goals for the FOG Program

The FOG program is designed to accomplish the following goals:

- Maintenance of the database of District FSE information
- Identification and documentation of new FOG hot spots in the sewer system
• Notification for new and remodeled FSEs of the Program and Ordinance requirements
• Implementation of the FOG control program for new and remodeled FSEs, including permit issuance and field inspections
• Administration of the Program including coordination with District staff, periodic inspections of permitted FSEs, and follow-up inspections and enforcement as needed

7.2 Sewer Cleaning Activities

The District established a grease hotspot GIS database in 2006, as well as a six-month priority maintenance schedule for flushing and/or rodding problem sewer lines. The District has reduced the number of FOG-related SSOs since this time.

7.3 Outreach

Regional Outreach
Residential Outreach

Information regarding keeping FOG out of the sewer system is included in many of the General Manager's monthly bulletins and is also available via the District’s website under the "Fats, Oils, and Grease link under "Sustainability" (www.rvsd.org).

7.4 FOG Disposal

Adequate disposal options for FOG are available in the region. CMSA currently accepts grease hauled from restaurant grease traps within their service area (www.cmsa.us/services/vactor).

7.5 Legal Authority

Through its Sanitary Code, the District has legal authority to regulate FOG discharges to the sewer system, including:

• Limit types of wastes discharged to public sewers
• Require installation of grease interceptors
• Require maintenance of grease interceptors

Types of Wastes Discharged to Public Sewers

Article VI, Section 602, Item B prohibits the discharge of fats, oils and grease as follows:

Exception as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to the public sewer...Any water or waste which contains more than 100 parts per million, by weight, of fat, oil or grease.

Installation of Grease Interceptors
Article VI, Section 603 allows for the District to require installation of grease interceptors at non-residential buildings as follows:

*Grease, oil and sand interceptors shall be provided when in the opinion of the Manager, they are necessary for the proper handling of liquid wastes, containing grease in excessive amounts, or any flammable wastes, sand and other harmful ingredients; except that such interceptors shall not be required for buildings used for residential purposes. All interceptors shall be of a type and capacity approved by the Manager and shall be so located as to be readily and easily accessible for cleaning and inspection.*

**Maintenance of Grease Interceptors**

Article VI, Section 604 places responsibility for maintenance of grease interceptors to their owners as follows:

*All grease, oil and sand interceptors shall be maintained by the Owner, at his expense, in continuously efficient operation at all times.*

**Table 7-1** is a summary of the Sanitary Code provisions pertinent to FOG control.

<table>
<thead>
<tr>
<th>Provision</th>
<th>Ross Valley Sanitary Code Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prohibitions</td>
<td>601</td>
</tr>
<tr>
<td>Unpolluted Water</td>
<td>601</td>
</tr>
<tr>
<td>Grease Disposal Prohibited</td>
<td>602</td>
</tr>
<tr>
<td>Interceptors Required</td>
<td>603</td>
</tr>
<tr>
<td>Maintenance of Interceptors</td>
<td>604</td>
</tr>
<tr>
<td>Standards for Other Industrial Wastes</td>
<td>605</td>
</tr>
<tr>
<td>Enforcement – Misdemeanor &amp; Fines</td>
<td>802</td>
</tr>
<tr>
<td>Enforcement – Nuisance Abatement</td>
<td>805</td>
</tr>
<tr>
<td>Enforcement – Terminate Discharge</td>
<td>805</td>
</tr>
</tbody>
</table>
7.6 Source Control

Between 2007 and 2012, the District contracted with CMSA to implement a FOG control program. In 2007, the District adopted CMSA’s FOG-related Ordinances and in May 2012 the District adopted its own ordinance regulating FOG, Ordinance No. 62. In February 2013, the District entered into a new agreement with CMSA to provide a FOG control program.

7.7 Compliance

CMSA inspects FSE’s on a monthly basis and provides a report to RVSD.

7.8 Supporting Documents for Element VII

- Agreement with CMSA for Fats, Oil, and Grease Control program
Element VIII - System Evaluation and Capacity Assurance Plan

SWRCB Waste Discharge Requirement:

The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
- Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
- Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- Schedule: The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the Sewer System Management Plan (SSMP) review and update requirements as described in Section D. 14.

8.1 Evaluation

The District completed a capacity assessment named the Sewer Hydraulic Evaluation and Capacity Assurance Plan (SHECAP) in August 2006. The recommendations from the SHECAP were superseded by the recommendations from the 2013 Infrastructure Asset Management Plan (IAMP). The 2006 SHECAP identified the need for 21 sewer improvement projects to meet the long-term hydraulic capacity requirements of the District’s service area. SHECAP recommendations that had not been implemented as of December 2012 were included in Attachment D of the 2013 Cease and Desist Order (CDO) issued by the Regional Water Quality Control Board. These projects were reviewed as part of the IAMP project. In order to further test
the recommendations from Attachment D of the Order, the IAMP capacity analysis was conducted using 10-year, 24-hour design storm criteria.

### 8.2 Design Criteria

The IAMP utilizes the calibrated hydraulic model that was developed for the SHECAP project and applies a 10-year, 24-hour design storm, using National Oceanographic and Atmospheric Administration (NOAA) precipitation data and a SCS-1A rainfall distribution curve. Pipes were considered under-capacity if the hydraulic model predicted an SSO under this design storm. Pump stations were considered under-capacity if they were unable to convey peak flows from this storm with the largest pump out of service.

### 8.3 Capacity Enhancement Measures

The capacity improvement projects from Attachment D of the CDO were reviewed and updated for the IAMP. The updated hydraulic model did not predict SSOs for two of the projects that were listed in Attachment D of the CDO (these projects were also not predicted to have SSOs in the SHECAP analysis). Therefore, these two projects were removed from the CIP list. The District recently has proposed an update of the 2013 IAMP by March 2021 to establish a revised list of risk-based and data-driven rehabilitation and capital improvement commitments. This IAMP update in 2020-21 will include updated hydraulic modeling and capacity assurance analysis based on incorporating into the system the extensive capital improvement projects completed in accordance with the 2013 IAMP and the large diameter sewer condition assessment work of 2014.

As of June 30, 2019, the District has expended about $83 Million, almost $22 million in completed "Attachment D" projects, compared to the $57.1 Million planned in the 2013 IAMP. This includes construction work on 15 gravity sewer projects, 3 pump station projects, and 2 force main projects, and design work on 5 additional projects,

The project list established in the 2013 CDO and 2013 IAMP has been modified and re-prioritized based on updated condition assessment and monitoring information, and the recent compliance report sent to the Regional Board on July 30, 2019 proposes these modifications and additions and a current capital improvement plan. This report also provides the rationale for revising the scope and schedule of certain projects, the addition of certain projects, and the removal of certain projects. The capital improvement plan will be updated based on recommendations of the updated IAMP in 2020-21.

### 8.4 Supporting Documents for Element VIII

Element IX - Monitoring, Measurement and Program Modifications

SWRCB Waste Discharge Requirement:

The Enrollee shall:

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

9.1. Maintenance of Relevant Data

The District maintains complaint and blockage records in electronic and report format, maintains electronic logs of cleaning, repairs, other preventive maintenance activities, and records problems (e.g., excessive debris, observed manhole defects) identified through regular sewer maintenance activities on special report forms and in CMMS. This information is used to establish and prioritize appropriate SSMP activities.

In 2007, the District began reporting in the SWRCB’s CIWQS electronic SSO reporting system which records the number, volume, location, and cause of SSOs.

9.2 Monitoring and Assessment

The District is currently using the sewer inventory and CMMS to more efficiently track and utilize records related to any segment of pipe in their system. With the available information, the District is able to track various parameters related to service calls, maintenance, and inspection activities, and can also compare SSO trends from previous years and identify system components that continually contribute to system failures. Specifically, the District tracks the following parameters with which to measure the effectiveness of the SSMP and its effectiveness in reducing SSOs:

- Number of SSOs per year
- Volume of SSOs per year
- Number of SSOs per year by cause
- Number of dry weather SSOs per year
- Response time to SSOs and other service calls (time from call received to time First Responder arrived on site)
- Length of gravity sewers cleaned annually (at least one time and in total)
• Length of gravity sewers CCTV inspected annually (at least one time and in total)
• Record of pump station maintenance work orders completed annually
• Footage of sewer mainlines rehabilitation
• Capital projects completed

The SSMP will be biennially audited as described in Element 10 SSMP Audits, based on this performance data.

9.3 Performance Metrics

Table 9-1 includes the metrics that will be used to measure progress on the performance indicators in the District's annual Metrics Report, in the "District Studies and Reports" link under "Open Government" on the District website at (www.rvsd.org).

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Measured Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Stations</td>
<td>• Work Orders</td>
</tr>
<tr>
<td></td>
<td>• Maintenance Hours</td>
</tr>
<tr>
<td></td>
<td>• Power Useage and Cost</td>
</tr>
<tr>
<td>Line Maintenance</td>
<td>• Work Orders</td>
</tr>
<tr>
<td></td>
<td>• Maintenance, - Length &amp; Hours</td>
</tr>
<tr>
<td></td>
<td>• Line Cleaning - By Frequency &amp; Category</td>
</tr>
<tr>
<td></td>
<td>• Cleaning - Efficiency</td>
</tr>
<tr>
<td></td>
<td>• Cleaning - # Soft Blockages Broken</td>
</tr>
<tr>
<td>Service Calls</td>
<td>• Number</td>
</tr>
<tr>
<td></td>
<td>• Response Time (SSOs)</td>
</tr>
<tr>
<td></td>
<td>• SSOs</td>
</tr>
<tr>
<td></td>
<td>• SSOs - By Category</td>
</tr>
<tr>
<td></td>
<td>• SSOs - By Volume</td>
</tr>
<tr>
<td></td>
<td>• SSOs - By Cause</td>
</tr>
<tr>
<td>Condition Assessment</td>
<td>• Pipe Surveys by CCTV</td>
</tr>
<tr>
<td></td>
<td>• Manhole Surveys - Number &amp; Hours</td>
</tr>
<tr>
<td>Repair</td>
<td>• By Type</td>
</tr>
<tr>
<td></td>
<td>• Number</td>
</tr>
<tr>
<td></td>
<td>• Hours</td>
</tr>
<tr>
<td>Inspections</td>
<td>• USA Responses</td>
</tr>
<tr>
<td></td>
<td>• Laterals - Number &amp; length</td>
</tr>
<tr>
<td>Lateral Programs</td>
<td>• Grant Program</td>
</tr>
<tr>
<td></td>
<td>• Number &amp; Dollars</td>
</tr>
</tbody>
</table>


9.4 Performance Monitoring and Program Modifications

The District will evaluate the performance of its SSMP on a biennial basis using the performance indicators noted in Section 9.3. Any operational changes that are made to improve specific performance indicators will be documented in the SSMP Audit and reflected in the revised language of the SSMP. Element 10 discusses the SSMP Audit process in detail.

9.5 Sanitary Sewer Overflow Trends

Table 9-2 and Figure 9-1 display the SSO causes and trends for 2016-2017 through 2018-19.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total SSOs</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Roots</td>
</tr>
<tr>
<td>2016-2017</td>
<td>38</td>
<td>7</td>
</tr>
<tr>
<td>2017-2018</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>2018-2019</td>
<td>19</td>
<td>1</td>
</tr>
</tbody>
</table>
Figure 9-1  SSOs by Cause, 2016 - 2019

- Caused by Other
- Caused by Construction
- Caused by Capacity Def.
- Caused by Structural
- Caused by Debris
- Caused by Roots
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Element X - Program Audits

SWRCB Waste Discharge Requirement:

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

10.1 Summary

The District will audit and update its SSMP at least every two years as required by the WDR, unless the District determines that significant modifications to its Plan should be documented earlier, or if regulations significantly change between audits. The audit process is documented in the Annual SSMP Audit Form shown in the "Documents" Link under "Our Projects" on the District website (http://www.rvsd.org).

The audit form provides structure for a systematic review of each SSMP element in order to ensure the SSMP contains current information, regulatory requirements are satisfied, and programs are effective and meeting District goals for the operation of the collection system stated in Element I. If updates or changes are required, the content and timeline to complete those change will be described in the audit form.

As part of the audit process, District staff will update critical information in the SSMP, such as contact information, names of the key staff in the response chain of communication, or other similar data as needed. A comprehensive SSMP update will occur every 5 years, as required by the WDR.

Changes made to the SSMP will be documented in the Change Log located in the "Documents." Link under "Our Projects" on the District website (www.rvsd.org).

The SSMP Audit results will also be included in this Documents link, effective 2019.

10.2 Supporting Documents for Element X

- SSMP Audit Form
- Sewer System Management Plan - Change Log
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Element XI - Communication Program

SWRCB Waste Discharge Requirement:

- The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its Sewer System Management Plan (SSMP). The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.
- The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee’s sanitary sewer system.

A copy of the Ross Valley SSMP is available under "Documents" in the "CIP Program" section, under the "Our Projects" link on the District’s website at (www.rvsd.org). The District also publishes a "General Manager's bulletin" periodically to inform the public about District activities (on website under "District News and GM Bulletin, in the "About" link). Information on the development and implementation of SSMP elements has and will continue to be included in the periodic bulletin.

District staff reports on SSMP performance through a monthly metrics report to the District Board. The progress of SSMP development and implementation is also periodically reported at District Board Meetings, which are held monthly and open to the public.

Minutes from the Board Meetings are also available on the District website. As a member of the CMSA joint powers agency, the District communicates with other CMSA member agency managers approximately monthly.

The District has recently updated its website to enhance its communication of important information to rate payers. The site now has a variety of information and materials designed to describe issues and relay information to the public, through the use of interactive maps under a link under "Our Projects" and "CIP" on the District website (http://www.rvsd.org), commercials, and brochures.
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<th>Date</th>
<th>SSMP Element</th>
<th>Description of Change/Revision Made</th>
<th>Change Authorized by:</th>
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