Sewer System Management Plan

County of San Mateo

Department of Public Works

Prepared for

Burlingame Hills Sewer Maintenance District (WDID# 2SSO10224)

Crystal Springs County Sanitation District (WDID# 2SSO10225)

Devonshire County Sanitation District (WDID# 2SSO10226)

Edgewood Sewer Maintenance District

Emerald Lake Heights Sewer Maintenance District (WDID# 2SSO10227)

Fair Oaks Sewer Maintenance District (WDID# 2SSO10228)

Harbor Industrial Sewer Maintenance District

Kensington Square Sewer Maintenance District

Oak Knoll Sewer Maintenance District (WDID# 2SSO10229)

Scenic Heights County Sanitation District (WDID# 2SSO10230)

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WATERWORKS ENGINEERS

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List of Acronyms

APWA	American Public Works Association
ASCE	American Society of Civil Engineers
BACWA	Bay Area Clean Water Agencies
BHSMD	Burlingame Hills Sewer Maintenance District
BMP	Best Management Practice
CASA	California Association of Sanitation Agencies
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CMO	County Manager's Office
CMOM	Capacity, Management, Operations, and Maintenance
CPC	California Plumbing Code
CSCSD	Crystal Springs County Sanitation District
CSUS	California State University Sacramento
CVCWA	Central Valley Clean Water Association
CWEA	California Water Environment Association
DCSD	Devonshire County Sanitation District
E&T	Engineers and Technicians
ELHSMD	Emerald Lake Heights Sewer Maintenance District
EMA	Enhanced Maintenance Area
ESMD	Edgewood Sewer Maintenance District
FOG	Fats, Oils, and Grease
FOSMD	Fair Oaks Sewer Maintenance District
FSE	Food Service Establishments
GIS	Geographic Information System

GRD	Grease Removal Device
HISMD	Harbor Industrial Sewer Maintenance District
I/I	Infiltration and Inflow
KSSMD	Kensington Square Sewer Maintenance District
LRO	Legally Responsible Official
MOP	Manual of Practice
MRP	Monitoring and Reporting Program effective 9/9/13
MS4	Municipal Separate Storm Sewer System
NACWA	National Association of Clean Water Agencies
NASSCO	National Association of Sewer Service Companies
NGO	Non-Government Organization
NOI	Notice of Intent
NOV	Notice of Violation
O&M	Operations & Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services, State of California
OKSMD	Oak Knoll Sewer Maintenance District
PACP	Pipeline Assessment & Certification Program
PLSD	Private Sewer Lateral Discharge
PM	Preventive Maintenance
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
R&R	Rehabilitation or Repair/Replacement
RWQCB	Regional Water Quality Control Board
SECAP	System Evaluation and Capacity Assurance Plan
SHCSD	Scenic Heights County Sanitation District
SOPs	Standard Operating Procedures

SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSS WDR	Statewide General WDR for Sanitary Sewer Systems
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements
WWC	Wastewater Collection
WWTP	Waste Water Treatment Plant

List of Terms

Collection System – Generic term for any system of pipes or sewer lines used to convey wastewater to a treatment facility. The County of San Mateo does not own the lower lateral part of the collection system.

Enrollee – A public entity that owns or operates a sanitary sewer system and has submitted a complete and approved application for coverage under the SSS WDR.

Lateral (also called Service Lateral) – A segment of pipe that connects a home or building to a sewer main, which may be located beneath a street or easement. The responsibility for maintaining a lateral can be solely that of the Enrollee or the private property owner; or it can be shared between the two or more parties. Local communities dictate lateral responsibility and the basis for a shared arrangement, if it applies. See Lower Lateral and Upper Lateral definitions.

Lower Lateral – That portion of a lateral usually from the property line or easement line to the sewer main. The County of San Mateo is not responsible for maintenance of this portion of the lateral and the lower lateral is owned and maintained by the owner of the property that it serves.

Miles of Gravity Sewer – Amount of gravity sewer lines/pipes in an Enrollee's sanitary sewer system, expressed in miles.

Percent Reached Surface Water – Volume of sewage discharged from a sanitary sewer system or private lateral or collection system estimated to have reached surface water divided by the total volume of sewage discharged.

Percent Recovered – Volume of sewage discharged that was disposed of properly, divided by the total volume of sewage discharged.

Private Lateral – Privately owned sewer service lateral.

Private Lateral Sewage Discharge (PLSD) – Sewage discharges caused by blockages or other problems within privately owned laterals, collection systems or other private sewer assets that are tributary to the reporting Enrollee's sanitary sewer system. Reports of these events may be submitted by Enrollees on a voluntary basis except in San Diego Region 9, but are not the Enrollee's responsibility unless caused by issues in the main line or because of other Enrollee activity. Normally, this type of sewage discharge is the responsibility of the private lateral, private asset, or collection system owner.

Sanitary Sewer Overflow (SSO) – Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

i. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
ii. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and

iii. Wastewater backups into buildings and on private property caused by blockages or flow conditions within the publicly-owned portion of a sanitary sewer system.

Sanitary Sewer System – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a WWTP head works and which is comprised of more than one mile of pipes and sewer lines, used to collect and convey wastewater to a publicly owned treatment facility.

SSO Category 1 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system that resulted in a discharge to a drainage channel and/or surface water.

SSO Category 2 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume equal to or greater than 1,000 gallons that did not reach surface water.

SSO Category 3 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume less than 1,000 gallons that did not reach surface water.

SSO Database – Online reporting system developed, hosted, and maintained by the SWRCB for compliance with the Monitoring and Reporting Program contained in SSS WDR.

Storm Drain – For the purposes of complying with the SSS WDR, any pipe that is part of a Municipal Separate Storm Sewer System (MS4) used for collecting or conveying storm water.

Total # of SSOs per 100 miles of Sewer per Year – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the number of SSOs for which the reporting Enrollee is responsible, for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total \# of SSOs per year} = \frac{(\text{Total \# of SSOs} \times 100)}{(\text{Years}) \times (\text{Miles of Pressure Sewer} + \text{Miles of Gravity Sewer} + \text{Miles of Public Laterals})}$$

Total Volume of SSOs Reached Surface Water per 100 miles of Sewer – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting Enrollee is responsible, that reached surface water for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the threat posed by SSOs. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and vii their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

Total Annual Volume of SSOs Reaching Surface Waters =

$$\frac{(\text{Total volume of SSOs reaching Surface Waters } \times\ 100)}{(Years)\ \times\ (Miles\ of\ Pressure\ Sewer\ +\ Miles\ of\ Gravity\ Sewer\ +\ Miles\ of\ Public\ Laterals)}$$

Total Volume Reached Surface Water – Amount of sewage discharged from a sanitary sewer system, private lateral, or collection system estimated to have reached surface water.

Total Volume Recovered – Amount of sewage discharged that was captured and disposed of properly.

Upper Lateral – Portion of a lateral usually from the building foundation to the property line or easement line where it connects to the Lower Lateral. The County of San Mateo does not own and maintain this portion of the Lateral since responsibility lies with the owner of the property that the lateral serves.

WDID – Waste Discharge Identification number assigned as a unique identifier by the SWRCB to each Enrollee for regulatory recordkeeping and data management purposes.

Introduction

In 2004, the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) indicated its intent to implement new regulations to uniformly monitor and regulate sanitary sewer overflows (SSOs) due to the growing emphasis on reducing SSOs.

On May 2, 2006, the California State Water Resources Control Board (SWRCB) adopted a Statewide General Waste Discharge Requirements (WDR) order No. 2006-003, for wastewater collection agencies. The WDR requires all enrollees to develop a Sewer System Management Plan (SSMP) and make it available to public, to the State Water Resources Control Board (SWRCB), and Regional Water Quality Control Board (RWQCB). All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length are required to comply with the WDR.

This order includes eleven (11) mandatory elements that must be addressed in the SSMP. The WDR also requires that the SSMP be audited every two years and revised at least every five years. The SSMP has eleven elements and describes the activities each sewer/sanitation district will employ to manage their wastewater collection systems effectively. **Table 1** briefly summaries the WDR elements and required criteria for compliance of each element.

Table 1 – SSS WDR D.13 Required Elements

SSMP Element	Criteria
1. Goals	• Develop commitment goals
2. Organization	• Identify Legally Responsible Official (LRO) • SSMP responsibility and organization chart • Chain of communication for reporting SSOs
3. Legal Authority	• Prevent illicit discharges • Properly designed and constructed sewers • Ensure access to laterals owned/maintained by City • Limit the discharge of FOG and other debris
4. Operations and Maintenance Program	• Collection system maps • Preventive O&M activities • Rehabilitation and Replacement (R&R) plan • Training • Equipment and critical replacement parts
5. Design and Performance Provisions	• Sanitary sewer design and construction specifications • Procedures and standards for inspecting and testing new and R&R projects
6. Overflow Emergency Response Plan (OERP)	• Proper notification procedures • Program for appropriate SSO response • Procedure for prompt notification to regulatory agencies • Procedures for appropriate staff and contractor training • Procedures to address emergency operations (e.g., traffic, crowd control)

	• Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment
7. Fats, Oils, and Grease (FOG) Control Program	• Public education plan • FOG disposal plan • Legal authority to prohibit SSOs and blockages caused by FOG discharges • BMPs, grease removal devices, recordkeeping, and reporting requirements • Authority to inspect and enforce FOG ordinance • FOG Characterization Assessment and Hot Spot Cleaning Schedule • FOG Control Program Measures
8. System Evaluation and Capacity Assurance Plan ("SECAP")	• Evaluate hydraulic deficiencies • Establish design criteria • Establish short- and long-term CIP • Develop schedule of completion dates for CIP
9. Monitoring, Measurement and Program Modifications	• Maintain metrics to prioritize SSMP activities • Measure effectiveness of SSMP elements • Assess preventative maintenance program • Update elements based on evaluations • Identify and illustrate SSO trends
10. SSMP Program Audits	• Conduct periodic audits
11. Communications Program	• Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP

System Overview

The San Mateo County Department of Public Works (County) operates and maintains ten (10) sanitary sewer districts (Districts) in the various areas of the County. The County does not operate treatment plants. The San Mateo County Board of Supervisors is the governing board for the Districts. There are approximately 144 miles of sewer mains, 3,400 manholes, and 11,250 service connections within the service areas. The Districts do not maintain sewer laterals. The property owners are responsible for sewer lateral construction, repair, replacement, and maintenance. Most of the Districts collection systems are six-inch (6") vitrified clay pipe (VCP). As of 2019, the age of the collection systems ranges from 11 to 89 years old. The average age is 52 years old. The terrain of the Districts ranges from rural areas with dense vegetation, steep terrain, and easement lines, to urban type settings.

The following is a list of the ten sanitary sewer districts in the County:

- Burlingame Hills Sewer Maintenance District (BHSMD)
- Crystal Springs County Sanitation District (CSCSD)
- Devonshire County Sanitation District (DCSD)
- Edgewood Sewer Maintenance District (ESMD)
- Emerald Lake Heights Sewer Maintenance District (ELHSMD)
- Fair Oaks Sewer Maintenance District (FOSMD)
- Kensington Square Sewer Maintenance District (KSSMD)
- Harbor Industrial Sewer Maintenance District (HISMD)

- Oak Knoll Sewer Maintenance District (OKSMD)
- Scenic Heights County Sanitation District (SHCSD)

1.0. Goals

The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. With the goal of preventing Sanitary Sewer Overflows (SSOs), reducing spill volume, as well as mitigating any occurred SSOs, the County has established the following goals to guide the development, implementation, and success of this SSMP:

- Manage, operate, and maintain the condition of the wastewater collection systems to provide reliable service.
- Minimize infiltration and inflow.
- Provide adequate capacity to convey peak flows.
- Minimize the frequency of SSOs.
- Mitigate the impact of SSOs.

2.0. Organization

2.1. WDR Requirements

The WDR organization element requires each SSMP to identify the following:

(a) Legally Responsible Official (LRO)
(b) SSMP responsibility and organization chart
(c) Chain of communication for reporting SSOs

2.2. Organization Chart

Figure 1 shows the SSMP responsibility and organization chart for the County of San Mateo.

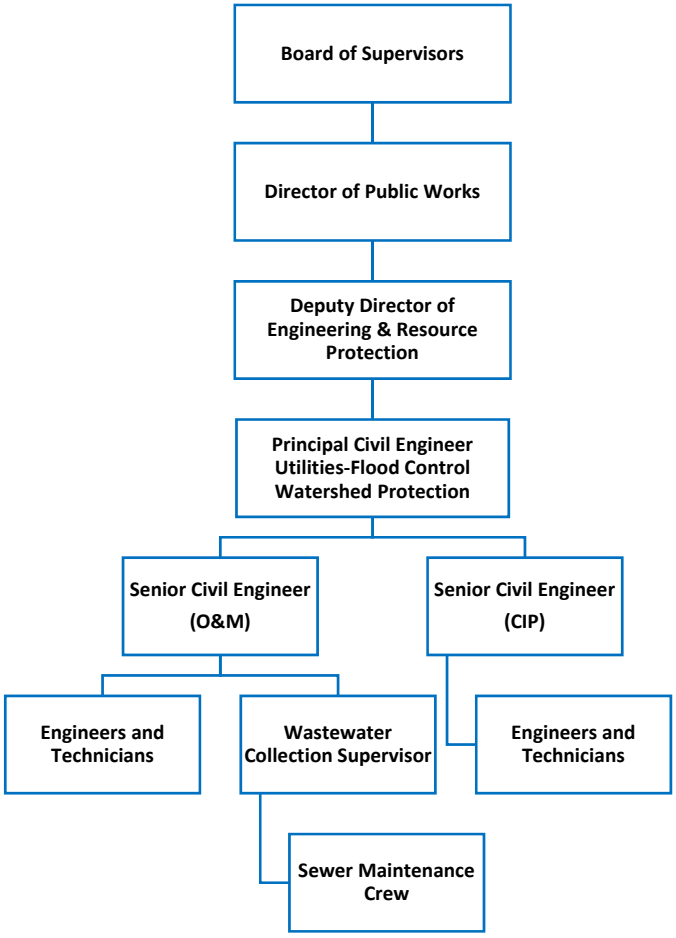


Figure 1 – SSMP Responsibility and Organization Chart

2.3. General Position Description and SSMP Responsibilities

General description of each position and SSMP responsibilities are listed here. **Appendix 2.1 – SSMP Element Responsible Personnel** shows responsible party for SSMP elements.

Board of Supervisors: Approves and certifies the County's SSMP.

Director of Public Works: Establishes policies; plans strategy; approves capital improvement projects; authorizes outside contractors to perform services; and serves as the public information officer.

Deputy Director: Implements policies; delegates responsibility; and manages staff in the division.

Principal Civil Engineer: Acts as the District Engineer (Legally Responsible Official); leads staff; allocates resources; manages capital improvement projects; manages section budget; and coordinates development and implementation of SSMP.

Senior Civil Engineers (CIP): Supervises and reviews Capital Improvement Program (CIP) performed by engineers.

Senior Civil Engineers (O&M): Supervises and reviews work performed by O&M engineers and technicians. Manages sewer operations and maintenance activities, sewer field staff, and capital improvement projects; and approves developers' sewer plans.

Engineers and Technicians: Prepares scheduled preventative maintenance work for the sewer maintenance crew; generates work orders for repairs and other services; maintains sewer data/records in CMMS; answers service request calls and relays information to sewer maintenance crew; reviews and reports SSOs; reviews developers' sewer plans; designs and manages capital improvement projects, evaluates sewer service charges and prepares report; and issues sewer inspection permits.

Wastewater Collection Supervisor: Oversees the sewer maintenance crew; ensures that new and rehabilitated assets meet District standards; responds to service requests; investigates and documents SSO incidents; trains sewer maintenance crew; and provides verbal and written reports to the office staff (engineers and technicians).

The Wastewater Collections Supervisor will have possession of a Grade III Collection System Maintenance Certification through the California Water Environment Association's (CWEA) Technical Certification Program.

Sewer Maintenance Crew: Performs preventive maintenance activities; responds to service requests and emergency repairs, and responds, investigates and documents SSO incidents;.

The Wastewater Collection Worker I will have possession of a Grade I Collection System Maintenance Certification through the California Water Environment Association's (CWEA) Technical Certification Program, within 18 months from the date of hire.

The Wastewater Collection Worker II will have possession of a Grade II Collection System Maintenance Certification through the California Water Environment Association's (CWEA) Technical Certification Program.

Refer to **Attachment A** of **Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)** for the SSMP legally responsible officials contact directory.

2.4. Reporting Structure

The engineers, technicians, and wastewater collection supervisor report to the Senior Civil Engineer, who reports to the District Engineer (Principal Civil Engineer). Office and field staff work closely together on a daily basis in response to sewer service calls and performance of scheduled and unscheduled maintenance work. Office staff and wastewater collection supervisor meet on a regular basis to discuss work status or problems and issues encountered in the field. These meetings allow adequate communication among the groups, ensure information is relayed and problems are addressed to provide better service to the customers, and improve management of the Districts.

2.5. Chain of Communication for Reporting SSOs

During business hours: The District office is open Monday through Friday, 8:00 a.m. to 5:00 p.m. All service calls received during the business hours are directed to the office technicians and engineers and the information is recorded in CMMS with a Service Request Number assigned to the service call. The office technicians and engineers then relay the information to the sewer maintenance crew.

After business hours: Service calls received after business hours are directed to the County Communications Center, and the message is relayed to the designated primary on-call crew. If the primary on-call crew needs additional support, secondary on-call crew from Road Maintenance Division is called. Sewer crew summons additional help as necessary.

Refer to **Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)** for more information regarding SSO reporting communication procedures.

Related Appendices

Appendix 2.1 – SSMP Element Responsible Personnel

Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)

3.0. Legal Authority

The WDR requires 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:

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

The County provides sewer services to the properties within the ten districts through ordinance codes listed in **Table 2**.

Table 2 – Ten Districts Ordinance Codes

Legal Authority	Ordinance Number	Ordinance Name
Public Sewers		
Ability to prevent illicit discharges into the wastewater collection system (GWDR – a)	4.28.030	General prohibitions
	4.28.040	Storm drainage and groundwater
	4.28.050	Unpolluted water
	4.28.060	Garbage grinders
	4.28.070	Point of discharge
	4.28.080	Holding tank waste
	4.28.090	Radioactive wastes
	4.28.100	Wastewater strength
	4.28.110	Additional limitations
	4.28.120	Specific user limitations
	4.28.190	Mandatory wastewater discharge permits
	4.28.360	Cease and desist orders
	4.28.390	Termination of service
Ability to require proper design and construction of new and rehabilitated sewers and connections (GWDR – b) (Regional Board – 2)	2.50.020	Special districts
	4.24.030	Opening or connection of sewers
	4.24.070	Sewer inspection permit
	4.24.080	Inspection procedure
Ability to require proper installation, testing, and inspection of new and rehabilitated sewers (Regional Board – 3)	2.50.020	Special districts
	4.24.070	Sewer inspection permit
	4.24.080	Inspection procedure
Ability to limit the discharge of fats, oils, and grease and other debris that may cause blockages (GWDR – d)	4.28.060	Garbage grinders
	4.28.110	Additional limitations
Laterals		

Legal Authority	Ordinance Number	Ordinance Name
Ability to control infiltration and inflow (I/I) from private service laterals (Regional Board – 1)	4.28.040	Storm drainage and groundwater
Provide clear support for Agency responsibility (upper and/or lower lateral) and policies (e.g. courtesy cleaning, repair, cleanout installation)	4.24.120	Overflow devices required
	4.24.130	Property owner responsibility
	4.24.131	Emergency maintenance provided by districts
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the Agency (GWDR – c)	N/A (County doesn't own or maintain sewer laterals. See 4.24.130 for property owner responsibility)	
Satellite Collection Systems		
Ability to control infiltration and inflow (I/I) from satellite collection systems (Regional Board – 1)	Three-party agreement between Woodside, FOSMD, and Redwood City dated 8/7/2001 (page 10)	
Enforcement		
Ability to enforce any violation of the Agency's sewer ordinances (GWDR – e)	4.24.132	Notification by district to owner
	4.28.340	Responsibility (for discharge)
	4.28.360	Cease and desist orders (for discharge permits)
Ability to disconnect user if fail to comply with established conditions of use	4.28.390	Termination of service
FOG Source Control		
Requirements for the installation of grease removal devices (GRD)	4.28.270	Pre-treatments
Ability to set design standards for GRDs	4.28.270	Pre-treatments
Ability to set maintenance requirements for GRDs	4.28.270	Pre-treatments
Ability to require application of best management practices	4.28.270	Pre-treatments
Ability to require record keeping and reporting of GRD maintenance and repair	4.28.270	Pre-treatments
Authority to inspect grease producing facilities	4.28.260	Inspection and sample
Other Requirements (Recommended but not required by GWDR)		
Define lateral ownership and maintenance responsibility	4.24.130	Property owner responsibility
Ability to deal effectively with private lateral problems (e.g. force property owner to correct failed/plugged private building sewer)	4.24.132 (d)	Notification by district to owner
Prohibit vandalism (tampering)	4.24.030	Opening, modifying or connection of sewers

Chapter 4.24 – Sewer Connections Link:

https://library.municode.com/ca/san_mateo_county/codes/code_of_ordinances?nodeId=TIT4SAHE_CH4.24SECO

Chapter 4.28 – Discharge of Waste into Sewer System Link:
https://library.municode.com/ca/san_mateo_county/codes/code_of_ordinances?nodeId=TIT4SAHE_CH4.28DIWAINSESY

4.0. Operation and Maintenance Program

The WDR requires the SSMP to include those elements listed below that are appropriate and applicable to the enrollee's system:

(a) 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 storm water conveyance facilities.
(b) 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.
(c) Develop 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.
(d) Provide training on a regular basis for staff in sanitary sewer system operations, maintenance, and require contractors to be appropriately trained.
(e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

4.1. Overview

In 2004, the County implemented Hansen Computerized Maintenance Management System (CMMS) for scheduling preventative maintenance work and tracking work performance. This system is also used to keep records of customer service requests and asset history.

The overall responsibility of the County is management and O&M of the sanitary sewer collection system, which includes inspecting, cleaning, repairing, and monitoring of the system. The following is a general description of each group within the County:

- The County's Engineers and Technicians group (office staff) prepares scheduled preventative maintenance; generates work orders for repairs and other services; maintains sewer data/records in CMMS; answers service request calls and relays information to the sewer maintenance crew; reviews and reports SSOs; reviews developers' sewer plans; designs and

manages capital improvement projects, evaluates sewer service charges and prepares report; and issues sewer inspection permits.

- The County's WWC sewer maintenance crew performs preventive maintenance activities; and responds to emergency repairs and SSOs (mobilize sewer cleaning equipment, by-pass pumping equipment, and portable generators). Also, the WWC supervisor ensures that new and rehabilitated assets meet District standards; responds to service requests; investigates and documents SSO incidents; trains sewer maintenance crew; and provides verbal and written reports to the office staff (engineers and technicians).

Figure 2 demonstrates a simplified schematic of the County's O&M program mentioned earlier. **Table 3** lists those O&M programs implemented by the County.

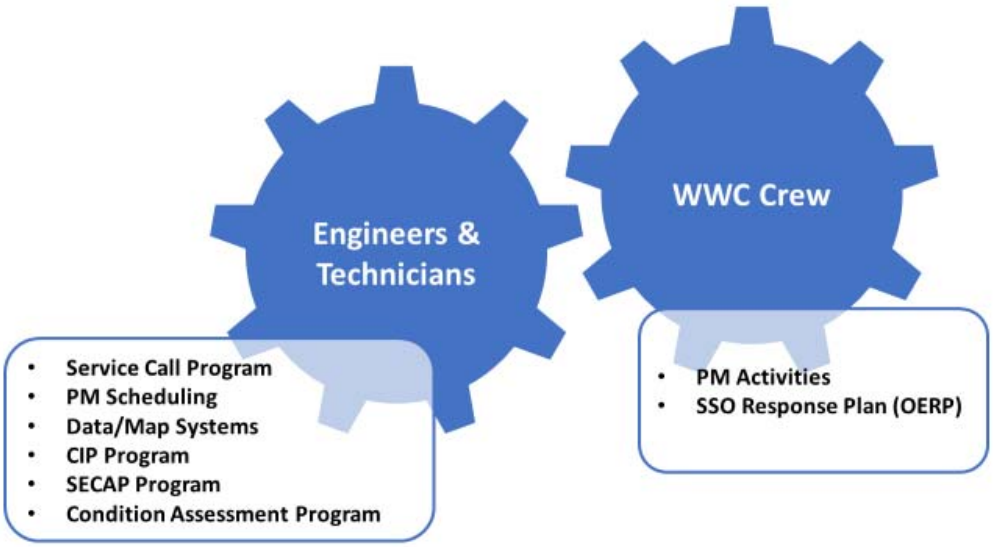


Figure 2 – O&M Programs Schematic

Table 3 – O&M Programs Maintained by the County of San Mateo

O&M Programs		Activities	Frequency	Drivers	Documentation
Service Call		Customer response	-	Service Calls	Service Request Report
SSO Response Call		OERP	-	SSO Calls	Report
Maps		GIS update	-	O&M and R&R	Updated maps
PM	Basin Cleaning (Pipe & SSMH)	Rodding, CCTV, Hydroflushing, Repairs/upgrades	3, 6, 9, 12, 18, and 36 Months	Heavy FOG, O&M, and age	Log sheet and Map

O&M Programs		Activities	Frequency	Drivers	Documentation
	High Frequency Cleaning	Hydroflushing	1, 2, 3, and 6 Months	FOG, SSO, calls, defects, roots, and access	log sheet/work order and Map
	SSMH Inspection	Complete inspection	6 Months	Roots, defects, I/I	log sheet and Map
	Pump and FM Maintenance	Maintenance	6 Months	Defects	Log sheet
R&R	Condition Assessment	CCTV	12 Years	-	Report
	CIP	Budget management	Periodic	Characteristics, condition, and O&M	Reports, R&R Schedule
	SECAP	Capacity analysis	Periodic	-	Report
Training		Crew training and public education	Annually	-	List
Equipment		Equipment inventory	-	-	List

These programs are further described in the following sections.

4.2. Service Calls Program

The County has a 24/7 call program that provides supports for the police, fire department, or citizen to talk to a live person, with the goal of quickly addressing possible issues in the system and reducing spill volume.

4.3. SSO Response Program

Refer to **Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)** for more information.

4.4. Collection System Map

The Districts' collection system maps are in the Geographic Information System (GIS) mapping system, which is linked to the CMMS. Maps are updated when new sewer main installations from mainline extensions or capital improvements are accepted. Maps are also continually updated as new or corrected data is determined.

The Districts' maps consist of the sewer information listed in **Table 4.**

Table 4 – The Districts Map Information

Facility Type	Map Information
Manhole, Drop Manhole, Flushing Inlet, Cleanout, Wye Branch, Terminus	• ID number • Location with reference to streets and addresses (latitude and longitude, or coordinates)
Pipes	• ID number • Location with reference to streets and addresses (latitude and longitude, or coordinates) • Direction of flow

The ten (10) sewer maintenance and sanitation districts within the unincorporated areas of San Mateo County are shown in **Appendix 4.1 – District Map**.
https://publicworks.smcgov.org/sites/publicworks.smcgov.org/files/District_Map.pdf

4.5. Preventive Maintenance

4.5.1. Basin Cleaning Program

The engineers and technicians (office staff) use the CMMS program to generate preventative maintenance work orders in advance for the sewer crew. The basin cleaning is scheduled for each basin and with different frequencies, in which all assets within that basin are cleaned. The County's basin cleaning activities consist of the following activities for manholes and pipelines:

- Rodding/hand rodding
- CCTV
- Hydroflushing
- Construction/Repairs/Upgrades

In 2014, the County began to implement modifications to the preventative maintenance program employed by all the Districts. The new approach involves breaking down the system into basins for hydro flushing. The goal of this basin-by-basin approach is to completely clean the entire system (i.e. continually clean until the material level becomes clear).

The start dates of the basin cleaning are listed in **Table 5.**

Table 5 - Basin Cleaning Start Dates

District	Start Date of Basin Cleaning
Burlingame Hills Sewer Maintenance District	May 2014
Crystal Springs County Sanitation District	November 2014
Devonshire County Sanitation District	November 2015

District	Start Date of Basin Cleaning
Edgewood Sewer Maintenance District	March 2020
Emerald Lake Heights Sewer Maintenance District	February 2016
Fair Oaks Sewer Maintenance District	September 2015
Harbor Industrial Sewer Maintenance District	November 2015
Kensington Square Sewer Maintenance District	December 2016
Oak Knoll Sewer Maintenance District	March 2017
Scenic Heights County Sanitation District	January 2017

Results of the basin cleaning program is reported to the E&T group for updating the data and future scheduling.

4.5.2. High Frequency Cleaning Program

High frequency maintenance, performed by the sewer maintenance crew, consists of mainlines with a history of blockages due to roots, FOG, and debris. This program targets individual assets, unlike basin cleaning that includes all assets within a basin. Also, as an on-going process, if a mainline experience an issue, such as a blockage or FOG buildup, its preventative maintenance schedule is reviewed by E&T and the cleaning frequency is increased if determined necessary. Depending on the asset, high frequency cleaning program is performed on 1, 2, 3, or 6 months frequencies.

4.5.3. Manhole Inspection Program

The County performs a 6-month manhole inspection cycle, in which the following criteria of each manhole is inspected:

- Frame
- Structural integrity/degradation
- Grade adjustment
- Flow surcharging
- Manhole bottom channels
- I/I

4.5.4. Residential Grinder Pump and Flowmeter Maintenance

The County maintains 16 grinder pumps for residential dwellings in the Emerald Lake Heights Sewer Maintenance District. Pump inspections are scheduled every 6 months, defects are recorded in log sheets, and the data is stored in the County's CMMS program.

In addition, the County maintains two flow meters, one in the Crystal Spring County Sanitation District and one in the Fair Oaks Sewer Maintenance District. Flow measurements are monitored by a telemetry system and accessible through a secure website on the Internet. Alarm and status notifications are automatically generated and sent to District staff via e-mails. The flow meters are maintained

periodically (typically twice a year) to ensure the flow rate reading transmitted from the field to office is correct.

4.6. Rehabilitation and Replacement (R&R) Program

4.6.1. Condition Assessment Program

Inspection and Identifying: In addition to the ongoing inspections during O&M activities, the County schedules a complete preventative sewer and manhole inspection every twelve years. An outside contractor is hired to complete the inspection and uses the method described in the Condition Assessment Program Standard Operating Procedures. A schedule for each collection system, determined by 1999 Master Plan recommendations and past CCTV activities is included in **Appendix 4.2 – District Based CCTV Schedule**.

Prioritizing: The County uses the Hansen CMMS program to electronically store and retrieve data such as sewer main and manhole information, preventative maintenance schedule, work orders, service calls, and inspections during O&M or CCTV program. This program is linked with the County's GIS base mapping system through an interface and is used for utilizing regular inspection data for scoring and ranking the assets based on NASSCO PACP standards. The ranking system is then used to manage risk and prioritize repairs, rehabilitation, and replacement projects.

Short-Term Actions: The County performs closed circuit television (CCTV) and manhole inspections in immediate response to an observation, data analysis, and/or field event (overflow or backup). These inspections are done by County staff with the intent of trying to pinpoint high risk problems during maintenance activities and/or emergency response conditions and are performed in accordance with the following:

- If it is determined that a repair is needed through the CCTV inspection, the repair will be put on a repair log. If the sewer crew discovers a severe defect that imposes immediate threat to the sewer mains functionality while performing maintenance activities, the sewer crew makes the immediate repair. The repairs are tracked utilizing the County's CMMS (Hansen). Labor and materials are assigned to the inspection; tracked to completion; analyzed and follow-up repair, replacement and/or enhanced maintenance scheduled using this system. The County documents the individual inspections using the procedures documented in the NASSCO Pipeline Assessment and Certification Program (PACP) Reference Manual, but the detailed inspection results are recorded as paper records (in lieu of computer based CCTV inspection software) due to the quick response nature of the activities. The video is archived in electronic media format, but the written condition logs are in paper form. If a maintenance problem that needs longer-term maintenance is discovered during an immediate response inspection, then the desired maintenance action will be included in the High Frequency maintenance program.

Long-Term Actions: The 12-year cyclic CCTV program is used to develop a long-term rehabilitation plan for low risk sewer system repair, replacement, and rehabilitation. Pipe defects are photographed and recorded in Hansen for analysis and comparison. The television inspection will be a continuous program.

Long-term rehabilitation project list will be developed in conjunction with the Master Plan Updates discussed under **System Evaluation and Capacity Assurance Plan**. The long-term rehabilitation projects will consist of three categories of repair:

1. Point repair
2. Line rehabilitation (pipe lining)
3. Pipe replacement

Lines selected for repair or replacement will generally be defects posing imminent service interruption. The low priority repairs include pipelines requiring frequent maintenance such as root intrusion, grease build-up and sags. A listing of projects will be considered each year during the budgeting process.

Flow Monitoring: As part of the master plan updates, the County plans to utilize flow monitors and corresponding software to measure both dry and wet weather flow in various areas of the systems to determine inflow/infiltration. Outside contractors may be used to conduct flow-monitoring services.

Smoke Testing: As part of the master plan updates, the County plans to use smoke testing in excessive inflow/infiltration areas of the sewer systems to detect defects, cross connections, and unauthorized connections to the systems.

4.6.2. Resources and Budget

The Districts' budget is prepared biannually between February and April of a fiscal year for the following two fiscal years. The budget includes operations and maintenance, payments to downstream agencies for transporting and treating Districts' sewage, contract services, capital improvement program, and equipment upgrades.

In 2017, the County evaluated the sewer service rates for each district and increased rates in 8 of the 10 County maintained districts. Sewer rates will continue to be evaluated for all Districts.

The County measures performance through annual and quarterly Outcome Based Management reporting. The measures being tracked are number of connections, percentages of time spent on scheduled and unscheduled work, number of SSOs, customer service surveys, and number of customer service requests resolved. The County Manager's Office (CMO) receives the results.

4.6.3. SECAP

The County performs periodic System Evaluation and Capacity Assurance Plans that are described in **Section 8.0 - System Evaluation and Capacity Assurance Plan**.

In addition, developers are required to hire an independent engineer to conduct a hydraulic capacity study for residential developments on a case-by-case basis. The study examines whether the existing mainline capacity is sufficient to accommodate the additional flow from the development. Commercial developments are also subject to the same requirements.

4.7. Training

With a goal of minimizing spill volume, increasing data accuracy, assuring crew safety, updating office staff, the County has established the following training requirements:

- Annual SSMP review trainings
- Annual O&M trainings
    - PM activities
    - O&M SOP trainings
- Annual OERP training
    - SSO response and reporting
    - Reviewing past SSOs
    - Discussing lessons learned
    - Reviewing changes made to OERP
    - Field practicing response to a simulated SSO.
- Regular in-house safety and OSHA meetings

The County utilizes Standard Operating Procedures (SOPs) for jet and mechanical rodding maintenance activities. Field staff have been trained using the SOPs for consistency of equipment use and safe practices. See **Appendix 4.3 – SOPs for Maintenance Activities** for Standard Operating Procedures (SOPs) for jet rodding and mechanical rodding.

4.8. Equipment and Replacement Part Inventories

The County maintains its collection systems with a wastewater collection supervisor and a crew of seven. Equipment used for sewer system operations and maintenance and emergency response is listed in **Attachment D** of **Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)**.

Major equipment replacement is budgeted on a 12-year cycle. As an example, a combination unit was purchased in 2014 and a flusher truck was purchased in 2017. Other miscellaneous equipment is replaced on an as-needed basis. The County's Vehicle and Equipment Services Section performs routine maintenance on sewer equipment. The County maintains an inventory of clay pipes and connectors for emergency repairs. The sewer crew relies on equipment and operators from the Road Maintenance Division to assist with repair projects where mechanized equipment is required.

Related Appendices

Appendix 4.1 – District Map

Appendix 4.2 – District Based CCTV Schedule

Appendix 4.3 – SOPs for Maintenance Activities

5.0. Design and Performance Provisions

The WDR requires enrollees to provide the following:

(a) 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.
(b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

5.1. Standards for Installation, Rehabilitation and Repair

The Districts maintain updated sewer design standards, as shown in **Appendix 5.1** – **Sanitary Sewer Standard Details and Specifications**. These standards are required to be utilized for both new installations and replacement of existing facilities. Copies of the standard details are given when sewer inspection permits are issued. These details are available to contractors and citizens at the office front counter at a minimal fee and can be downloaded for free from the County's website.

All manholes adjusted to grade or reconstructed by outside contractors in connection with County Road projects require special protections to prevent debris from being introduced into the sewer system. If proper protections were not employed by the contractor, the contractor is required to pressure clean and video inspect the downstream system to the satisfaction of the Districts.

Standard specifications and special provisions for sewer improvement projects are stored electronically on the computer network system.

5.2. Standards for Inspection and Testing of New and Rehabilitated Facilities

The wastewater collection supervisor or designated sewer crew member inspects new construction and repairs and ensures that all construction meets the Districts' standards and codes. The Construction Section of the Department of Public Works or a construction management consultant inspects all Districts' capital improvement projects. All sewers constructed by outside contractors are pressure cleaned, tested, and video inspected before acceptance.

Sanitary Sewer Standard Details and Specifications Link:
https://publicworks.smcgov.org/sanitary-sewer-standard-details-and-specifications
Sewer Plan Review Link:
https://publicworks.smcgov.org/sewer-plan-review

Sewer Inspection Guidelines and Sequence Link:
https://publicworks.smcgov.org/documents/sewer-inspection-guidelines-and-sequence

Related Appendices

Appendix 5.1 – Sanitary Sewer Standard Details and Specifications

6.0. Overflow Emergency Response Plan

The WDR requires each enrollee to 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:

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner.
(b) A program to ensure appropriate response to all overflows.
(c) 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 WDR or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification.
(d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained.
(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities.
(f) 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.

Overflow Response: The County has an Overflow Emergency Response Plan (see **Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)**) for handling service calls and sewer overflows. The plan includes notification procedures for emergency response, spill recovery, overflow mitigation, cleanup, and rehabilitation of damaged dwellings and buildings. It also includes provisions for public notification, testing for contamination, and notification to regulators.

Overflow Reporting Policy: The County defines an overflow as any time raw sewage escapes from the County maintained sewer system onto public or private property. All overflows and backups are investigated to determine the cause and corrective actions needed to prevent future incidents. All overflows are documented in CMMS for record tracking. Category 1 SSOs greater than or equal to 1,000 gallons are reported to the State Office of Emergency Services (OES). All overflows are reported in the State Water Board's electronic reporting system (CIWQS). In addition, all SSOs that pose a public health hazard are reported to the County's Environmental Health Services Division. The plan also includes reporting requirements to other regulatory agencies as may be appropriate.

Related Appendices

Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)

7.0. FOG Control Program

The WDR requires each Enrollee to 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:

(a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG.
(b) 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.
(c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG.
(d) 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.
(e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance.
(f) An identification of sanitary sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section.
(g) 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.

FOG has not been a major issue in the Districts, but it does contribute to the total overflows. The impact of FOG varies by District. The County has the following FOG programs to educate and reduce the amount of these substances discharged to sanitary sewer.

7.1. Public Education Program

The County has developed FOG outreach programs to residents, Food Service Establishments (FSEs), and plumbers on the proper disposal of FOG and impact of FOG disposal into the sewer system. This program includes the following:

- Direct mail flyers
- Online educational brochures https://publicworks.smcgov.org/documents/educational-brochures
- Community meetings
- Site visits to FSEs

The County has developed different brochures to target different users, such as residents, restaurants, or plumbers, which are available in English and Spanish. For more information refer to **Section 11.0 - Communication Program** and **Appendix 11.1 – Public Awareness Program Materials.**

7.2. Legal Authority

The County Ordinance (4.28.110) prohibits discharge of wastewater containing more than 300 mg/L of oil or grease of animal or vegetable origin into the collection system. Also, as shown in **Table 2** of **Section 3.0 - Legal Authority**, with a goal of FOG source control, the County Ordinances 4.28.270 and 4.28.260, provide instructions for GRD installation, maintenance, and inspection. The County Ordinance 4.28 includes provisions including but not limited to:

- Terminology
- General prohibition
- Limitations of (food or petroleum based) FOG disposal
- Discharge limitations, such as pH, temperature, and other contaminants such as grit and toxic waste
- GRD installation and maintenance
- Facility inspection

https://library.municode.com/ca/san_mateo_county/codes/code_of_ordinances?nodeId=TIT4SAHE_CH4.28DIWAINSESY

7.3. Source Control and GRDs Installation Requirements

The County requires that new Food Service Establishments (FSEs) and existing FSEs being remodeled install Grease Removal Device (GRD or interceptors) as a source control program (see Ordinance 4.28.270 in **Table 2**). The Districts require FSEs to provide maintenance plans for GRD or interceptors when plans to remodel existing facilities or construct new facilities are submitted for review. The maintenance plans must include the frequency of cleaning, responsible parties for regular inspection and cleaning and record keeping. The grease waste removed from the traps or interceptors must be hauled off-site and disposed of properly. A record of cleaning schedule shall always be maintained on-site. See **Appendix 7.1 – FOG Control Program Notice** for an example of the letter sent to food service establishments in the FOSMD and HISMD regarding the implementation of the FOG Control Program.

7.4. Inspection and Enforcement Authority

Silicon Valley Clean Water (SVCW) has been contracted by the County to provide periodic inspections of grease traps and interceptors of FSEs within the unincorporated areas of San Mateo County within the SVCW service area (Ordinance 4.28.260 in **Table 2**). The SVCW staff will provide technical knowledge and inspection experience in the implementation of the San Mateo County FOG Program over the next few years to prevent overflows caused by FOG. SVCW provides a report of inspection for all activities that data logged by the count. http://www.svcw.org/programs/sitePages/fog.aspx

SVCW staff has undergone extensive training by the United States Environmental Protection Agency (USEPA) and the California Water Environment Association (CWEA) related to FOG program topics including:

- Inspection of FSEs for sources of FOG within the facility.
- Types of GRD and proper installation/operation of these devices.
- Kitchen plumbing in terms of what should be plumbed to a grease trap or interceptor.
- Implementation of Best Management Practices (BMPs) used at an FSE to minimize the discharge of FOG.
- Municipal FOG ordinances.
- The use of education to increase public FOG awareness.

The following list contains an overall outline of the SVCW FOG Program:

- Identify FSEs discharging to the unincorporated areas of San Mateo County within the SVCW services area.
- Document FSE contact information.
- Distribute accepted BMPs endorsed by the California Restaurant Association, to reduce the discharge of FOG material and provide education in their implementation.
- Emphasize to the FSE owner and staff that FOG management has become a priority for San Mateo County due to changing State Water Board requirements.
- Perform inspections to locate grease removal devices, evaluate kitchen plumbing and review FOG management practices.
- Prioritize all FSEs into 3 categories; this will help identify which FSEs have the potential to be a problem source of FOG and which are implementing accepted BMPs to prevent excessive FOG discharge.
- Maintain periodic communication with Department of Public Works staff to receive feedback and keep them informed of progress and problems.
- Prepare and submit a quarterly and annual report that will identify the total number of completed inspections, total number of inspections for each priority, identify the FSEs in each of the priority and number of inspections for the FSE.
- The primary responsibility for enforcement of the municipal ordinance on sewers and industrial waste is vested in the Director of Public Works. Designated SVCW employees shall be authorized to act as enforcement agents of the County on behalf of the Director of Public Works with the power to inspect and issue notices of violation. All enforcement actions for violations of any of the provisions of the ordinance shall be the exclusive responsibility of the San Mateo County Department of Public Works.
- FSEs are responsible for recordkeeping for pumping and legal disposal of FOG from GRDs. Inspectors review recordkeeping for compliance.

Appendix 7.2 – SVCW FOG GRD Inspection (FOG GRD SOP) contains SVCW's SOP for Restaurant Grease Inspection and documents approved by the San Mateo County Board of Supervisors authorizing an agreement amendment that includes services for the FOG program.

7.5. Collection System Maintenance

Sewer lines that have FOG problems are moved into **High Frequency Cleaning Program** to be cleaned more frequently as determined through preventative maintenance activities or emergency response, as described in **Section 4.5**. Assets in preventative maintenance groups can be shifted from one type of maintenance to another depending on the field condition and sewer crew assessment. FOG collected during preventative and high frequency cleaning is disposed of in accordance with applicable sewer ordinance(s).

Related Appendices

Appendix 7.1 – FOG Control Program Notice

Appendix 7.2 – SVCW FOG GRD Inspection (FOG GRD SOP)

8.0. System Evaluation and Capacity Assurance Plan

The WDR requires the enrollee to 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:

(a) 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.

(b) Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in "a" above to establish appropriate design criteria.

(c) Capacity Enhancement Measures: The steps needed to establish a short- and long-term capital improvement plan (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.

(d) 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 SSMP review and update requirements as described in Section D. 14.

8.1. Evaluation Process

Each District, except for Edgewood Sewer Maintenance District, has a master plan prepared, during which the capacity was evaluated, by Brown and Caldwell (B&C) between 1999-2000.

In 1999-2000 master plans, hydraulic modeling was performed on major trunk sewers (6" diameter pipe size and larger), using the HYDRA model computer software. The analysis used data from 14 temporary flow monitors, 4 temporary rain gauges, and the January 18, 1998 rainfall event to determine the base sanitary sewer flows and the effects of infiltration and inflow on the capacity of the collection system. This storm event was very similar to a 5-year design storm in terms of intensity, duration, and volume. In addition to flow monitoring, manhole inspection, smoke testing, and CCTV were also used in these master plans for capacity analysis and CIP development.

Based on the information provided by Brown and Caldwell, hydraulic models of the Harbor Industrial and Kensington Square Sewer Maintenance Districts using HYDRA were not prepared due to their small size; however, a spreadsheet model was utilized to evaluate the capacities of these districts.

In addition to 1999-2000 master plans, the County has developed more recent sewer trunk capacity evaluations and improvement projects for special district with capacity issues or where growth is occurring, such as the following:

- 2009 BHSMD Sewer System Flow Monitoring and Hydraulic Modeling (B&C)
- 2011 CSCSD Sewer Repair, Rehabilitation, and Replacement Plan (Kimley-Horn/WaterWorks)
- 2015 Fair Oaks Sewer Maintenance District Master Plan (RMC)

Below is a list of all ten Districts in the County and their corresponding documentations:

- Burlingame Hills Sewer Maintenance District (BHSMD)
  https://publicworks.smcgov.org/burlingame-hills-sewer-maintenance-district
- Crystal Springs County Sanitation District (CSCSD)
  https://publicworks.smcgov.org/crystal-springs-county-sanitation-district
- Devonshire County Sanitation District (DCSD)
  https://publicworks.smcgov.org/sites/publicworks.smcgov.org/files/DCSD%20Sewer%20Master%20Plan.pdf
- Edgewood Sewer Maintenance District (ESMD)
- Emerald Lake Heights Sewer Maintenance District (ELHSMD)
  https://publicworks.smcgov.org/emerald-lake-heights-sewer-maintenance-district
- Fair Oaks Sewer Maintenance District (FOSMD)
  https://publicworks.smcgov.org/fair-oaks-sewer-maintenance-district
- Kensington Square Sewer Maintenance District (KSSMD)
- Harbor Industrial Sewer Maintenance District (HISMD)
- Oak Knoll Sewer Maintenance District (OKSMD)
- Scenic Heights County Sanitation District (SHCSD)
  - KSSMD, HISMD, OKSMD, SHCSD:
    https://publicworks.smcgov.org/sites/publicworks.smcgov.org/files/HISMD,%20SHCSD,%20OKSMD,%20KSSMD%20Sewer%20Master%20Plan.pdf

Deficiencies identified by these capacity evaluations are prioritized and incorporated into the County's capital improvement projects program.

8.2. Design Criteria

As mentioned, the 1999-2000 trunk sewer master plans were developed based on a 5-year 24-hour design storm. Like other agencies in the Bay Area, the County has adopted a specific return period of 5 or 10 years for evaluating the existing and developing new sewer systems. For instance, the 2015 Master plan update for FOSMD used a 10-year 24-hour storm for consistency with Redwood City's 2013 master plan update.

8.3. Capacity Enhancement Measures

The County has established the following Capacity enhancement measures:

The 1999 Master Plans have assessed the sewer collection systems and prioritized capital improvement projects (CIPs) for trunk sewers larger than 6" for each District, based on capacity, excessive maintenance requirements, and structural deficiencies.

The updated master plans and capacity evaluations identified short and long-term CIPs to meet current and future flow projections for trunk sewers.

Sewer main lines that require excessive maintenance and have structural deficiencies, detected by O&M programs and CCTV assessment (See **Section 4.6.1** and **Appendix 4.2 – District Based CCTV Schedule**), are also identified in the evaluation process as capital improvement projects.

The Districts maintain a list of remaining capital improvement projects and the anticipated replacement schedule in the office.

8.4. Schedule

Based on each District's Capital Improvement Projects described earlier**,** improvement projects are periodized and scheduled. **Appendix 8.1 – CIPs Schedule** shows a list of CIPs recommended by the master plans and hydraulic evaluations since 1999, their associated cost, timeline, status. The County's goal is to target CIPs with hydraulic capacity issues. The County's aims to complete CIPs within 5 to 10 years. The CCTV inspection updates associated with these districts can be found in **Appendix 4.2 – District Based CCTV Schedule.**

8.5. State Revolving Fund Loan

The County initiated a Financial Assistance Application for an SRF loan with the State Water Resources Control Board (SWRCB) in April 2009 to finance CIPs identified in the BHSMD and CSCSD Master Plans. The SRF loans received by BHSMD and CSCSD are listed in **Table 6** – SRF Loans. The SRF application approval process required an environmental review by the SWRCB. In April 2011, under the guidance of the SWRCB staff, the County submitted a California Environmental Quality Act Notice of Categorical Exemption (on the basis that the Projects consist of replacing sewer pipes in their existing locations) and the Federal Cross-cutting Environmental Regulations Evaluation Form for Environmental Review and Federal Coordination and the supporting documentations.

Table 6 – SRF Loans

District	Amount of SRF Loan	Loan Term	Rate
BHSMD	$2.30 million	30 years	1.5%
CSCSD	$1.95 million	20 years	2.1%

The County will continue to look for other funding sources including new SRF loans for upcoming CIPs.

Related Appendices

Appendix 8.1 – CIPs Schedule

9.0. Monitoring, Measurement, and Program Modifications

The WDR requires each Enrollee to do the following:

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

9.1. Performance Metrics

With the goal of reducing SSO volume and frequency, the County uses sewer maintenance metrics to monitor, measure, and adjust maintenance activities. These metrics are maintained in the CMMS and monitored regularly. In addition, the County has developed a spreadsheet to track Key Performance Indicators (KPI), which is used to evaluate the effectiveness of the SSMP elements, such as SSO trends. Also, the KPI defines goals for various SSMP elements and track the SSMP effectiveness over time. The KPI metrics is shown in **Appendix 9.1 – Key Performance Indicators (KPI)**.

In addition, as part of the County's Outcome Based Management Program, the Districts report quarterly on the number of customers served by the Districts, percent of time spent on scheduled versus unscheduled work, number of reportable SSOs, number of customers rating services good or better, and number of customer service requests resolved.

9.2. Performance Monitoring and Updates

Regular communication about preventative maintenance and emergency response activities between the field and office staff take place which is used to determine whether the prescribed preventative maintenance activities should be modified or performed at a different interval.

Office staff will be assigned to review the SSMP bi-annually to update any changes in operations and maintenance protocols, infrastructure, organizational structure, and check the effectiveness and identify potential areas for improvement. SSMP revisions will be reviewed and approved internally. Major changes to the SSMP will be approved by the Board of Supervisors. Changes made to the SSMP are documented and shown in **Appendix 9.2 – SSMP Change Log**.

Related Appendices

Appendix 9.1 – Key Performance Indicators (KPI)

Appendix 9.2 – SSMP Change Log

10.0. SSMP Program Audit

As part of the 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.

The County conducts internal audits of the SSMP every two years to evaluate the effectiveness of the SSMP for the ten (10) Districts operated and maintained by the County and to identify deficiencies and make recommendations. Audits for the Districts with populations greater than 2,500 (BHSMD, CSCSD, DCSD, ELHSMD, and FOSMD) will be completed no later than May 2 starting in 2014 for the previous two calendar years. Audits for the Districts with populations less than 2,500 (ESMD, HISMD, KSSMD, OKSMD, and SHCSD) will be completed no later than August 2 starting in 2014 for the previous two calendar years.

This SSMP will be updated every five years from the date of adoption and approval. The SSMP update will include all significant changes approved by the Board of Supervisors.

Related Appendices

Appendix 10.1 – Internal Audit Form.

11.0. Communication Program

The WDR specifies that each Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its 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.

11.1. Communication with the Public

The County maintains its website specifically for the sewer districts to inform the public of the policies, regulations, procedures, programs, and services of the Districts. The website also serves as a communication channel to provide useful information to the public and ways for the public to contact staff for any issues concerning services provided. Some of the information posted on the website include:

- English and Spanish educational brochures
- Sewer rates
- Districts' standard details and specifications
- Master plans
- County's sewer ordinance codes

https://publicworks.smcgov.org/sewer-services

This SSMP has been published on the website. The public can review the SSMP and is encouraged to provide comments and feedback on any of the elements and their implementation.

The County also communicates with the public by distributing English and Spanish versions of sewer educational brochures to the residents, holding community meetings, mailing informational letters to property owners, as well as phone assistance. **Appendix 11.1 – Public Awareness Program Materials** includes the County's educational brochures.

The 24-hour service call assistance provides an opportunity for the police, fire department, or citizens to talk to a live person. This adds positive benefits of human interaction and significantly reduces the possibility of a missed call or misunderstanding about the nature of a problem.

11.2. Communication with Plumbers and Sewer Contractors

The County participated with Bay Area Clean Water Agencies (BACWA) in developing an outreach flyer for preventing SSOs for plumbers and sewer contractors. The flyer included information on construction standards and proper maintenance activities that can be practiced by contractors to prevent SSOs in private laterals.

Copies of the flyer are placed at the front counters of the Department of Public Works. The flyers are also available to customers or contractors whenever a Sewer Inspection Permit is issued at the Department of Public Works. See **Appendix 11.1 – Public Awareness Program Materials**.

11.3. Communication with the Districts' Governing Board

As part of the communication program, the final SSMP must be approved by the County's Board of Supervisors at a public meeting. The County of San Mateo Board of Supervisors, the governing board of the Districts, has been advised of the development of the SSMP. The Board of Supervisors adopted a resolution approving the SSMP development plan and schedule on October 16, 2007. The final SSMP was approved by the Board of Supervisors on August 25, 2009. The SSMP was updated in July 2014 and the Board of Supervisors adopted Resolution No. 073304 on August 5, 2014 to re-certify the SSMP. The County shall re-certify the updated SSMP every five years per WDR requirements.

In addition, the County ensures that the SSMP legally responsible officials, mentioned in **Section 2 - Organization,** have extensive knowledge of various elements of the SSMP and WDR requirements and can convey information to public and satellite agencies.

11.4. Communication with Satellite Agencies

The Town of Woodside is the only satellite system that discharges sewage into one of the ten Districts (Fair Oaks Sewer Maintenance District), which is governed by a formal agreement. There are other agencies neighboring the Districts' boundaries that rely on the Districts' facilities to transport sewage emanating from portions of their collection systems but do not have formal agreements with the Districts.

District staff currently maintains contact with staff of other neighboring agencies. Both formal and informal meetings are being held regularly to discuss issues concerning the operation and maintenance of each other's systems such as annexations, private property development, and sewage flow reporting. Other agencies have incorporated the County's requirements into their construction documents when their projects affected the Districts' sewer facilities. The County collaborates with other contributing or neighboring agencies to provide support in response to SSOs.

Related Appendices

Appendix 11.1 – Public Awareness Program Materials

Appendix 2.1 – SSMP Element Responsible Personnel

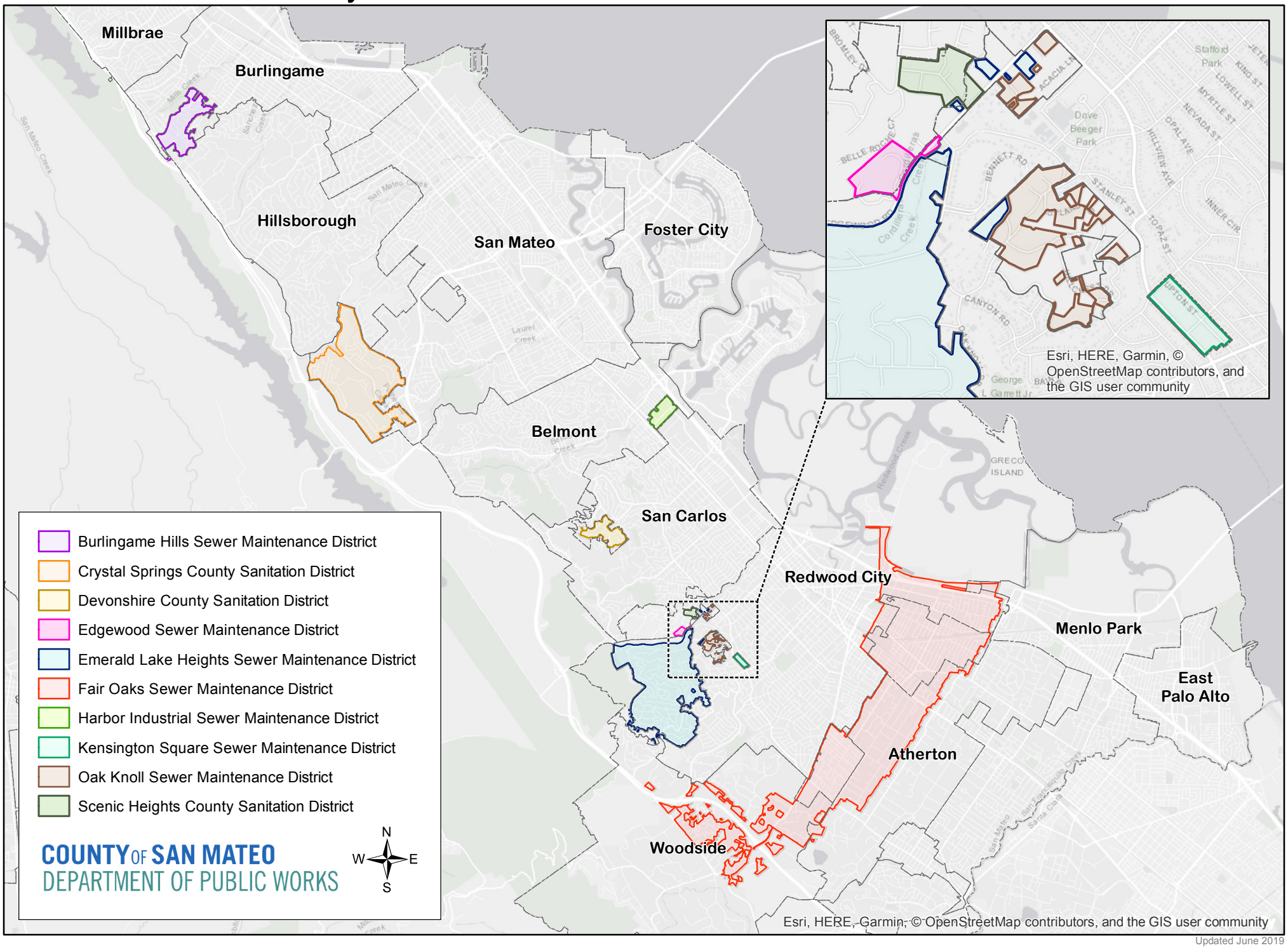
SSMP Element Responsible Personnel

SSMP Element	Responsible Party (Position)	Responsible Party (Name)	Phone Number	Email Address
Introduction	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
1 – Goals	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
2 – Organization	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
3 – Legal Authority	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
4 – O&M Program	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
5 – Design & Performance Provisions	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
6 – Overflow Emergency Response Program	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
7 – FOG Control Program	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
8 – SECAP	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
9 – Monitoring, Measurement, and Program Modifications	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
10 – SSMP Program Audits	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
11 – Communication	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org
Change Log	Principal Civil Engineer	Mark Chow	(650) 599-1489	mchow@smcgov.org

Updated: 08/02/2019

Appendix 4.1 – District Map

County Administered Sewer and Sanitation Districts



Updated June 2019

Appendix 4.2 – District Based CCTV Schedule

District Based CCTV Schedule

District	Last CCTV Inspection	Next Scheduled CCTV Inspection
Burlingame Hills Sewer Maintenance District (BHSMD)	2012, 2019*	2025
Crystal Springs County Sanitation District (CSCSD)	2011	2023
Devonshire County Sanitation District (DCSD)	2017*	2022
Edgewood Sewer Maintenance District (ESMD)	See Note 1	2020
Emerald Lake Heights Sewer Maintenance District (ELHSMD)	2012*, 2017*	2024
Fair Oaks Sewer Maintenance District (FOSMD)	2016*	2021
Harbor Industrial Sewer Maintenance District (HISMD)	2017*	2029
Kensington Square Sewer Maintenance District (KSSMD)	2017*	2029
Oak Knoll Sewer Maintenance District (OKSMD)	2017*	2022
Scenic Heights County Sanitation District (SHCSD)	2017*	2022
*Only select lines within the district were televised.		

Note 1: The Edgewood Sewer Maintenance District system was constructed between 2005 and 2008 and currently does not require regular maintenance; therefore, it has not been scheduled for CCTV Inspections until the current assessment of existing Districts has been completed.

Updated: 08/02/2019

Appendix 4.3 – SOPs for Maintenance Activities

JET RODDING

Standard Operating Procedures

SOP-CSM100-1 / SEPTEMBER 2013

Author: Water Works Engineers
Owner: County of San Mateo
Reviewers: WWE / CSM

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ADMINISTRATIVE

A. Introduction

1. This SOP contains the instructions and steps that employees will follow to clean sewer lines through jet rodding. All work shall be performed safely in compliance with applicable standards and in a manner that minimizes adverse impacts.

B. Cancellation

1. None

C. References

1. Best Practices
2. Manual

D. Objectives

Upon completion the Worker will be aware of the steps to:

a. Pre-check truck/equipment
b. Use standard and spinning nozzles in a drop hole
c. Reverse clean
d. Forward clean
e. Trunk line clean
f. Post-check truck/equipment

E. Equipment/Personnel Required

1. Personnel
   a. 2 person crew
   b. Wastewater Collection Worker I
   c. Wastewater Collection Worker II
2. Equipment
   a. Traffic Control devices
   b. Portable gas detector
   c. Tiger Tails
   d. Sleds / Skids
   e. Grease gun

f. Manhole hook

g. Rollers

h. Nozzles (from left to right: “Trunk Line” nozzle, Bulldog, Spinner Nozzle Reverse Cleaning, Spinner Nozzle Forward Cleaning, Bullet)

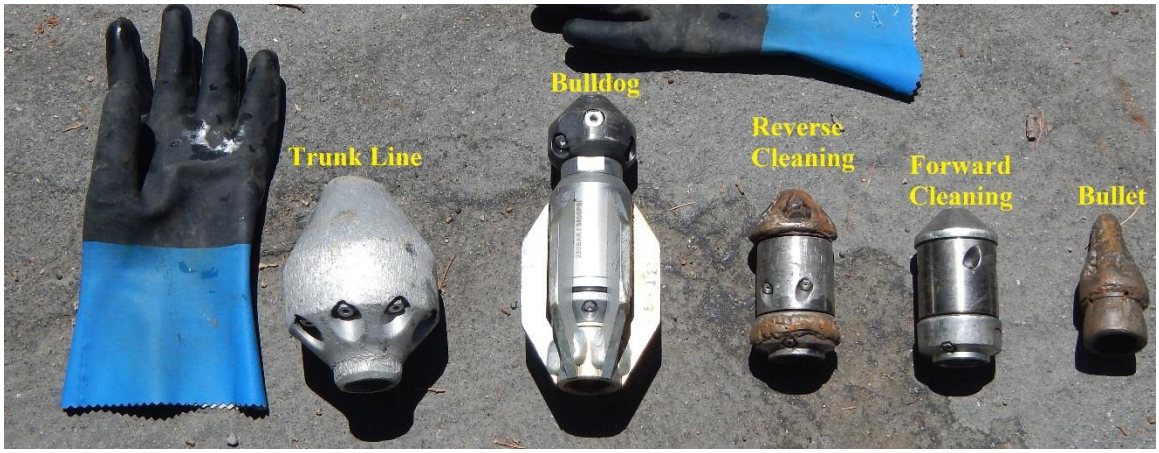

Figure 1. Nozzle Collection

i. Hand tools (scoops, forks, sledgehammer, pruners, shovels, augers, hand rods, pipe and crescent wrench, flashlight)

j. Sewer Testing Dye

k. Clam shovel

l. Map Book / Block Book / District Map Book

    1) Thomas Guide / Mapping Assistance Guide
    2) County Road Map
    3) GPS

m. Hydrant wrench

n. Water meter (switch between trucks)

o. Buckets

p. Hand gun system

q. Ropes

r. Brooms

s. Absorbents

t. Tire chocks

u. Chain

v. Fire extinguisher

w. First aid kit

x. Flares

y. PPE (Personal Protective Equipment)

1) Gloves

2) Steel-toe safety shoes

3) Eye protection (safety glasses)

4) Hearing protection

5) Class 2 safety vests (uniform in day / vest at night)

6) Hard hats (carry in vehicle, use whenever there is overhead equipment / activities)

F. Terminology

1. **NOTE** is used when information is available that can assist the Worker in accomplishing his or her task.
2. **CAUTION** is used when special precautions must be taken by the Worker. Failure to follow the prescribed steps may cause serious bodily injury and/or damage the equipment.
3. **WARNING** is used when special precautions must be taken by the Worker. Failure to follow the prescribed steps will cause loss of life or limb and/or severely damage the equipment.

G. Employee Responsibility

- Employees are responsible to follow County of San Mateo policies and procedures for the safe and effective operation of County of San Mateo equipment.

H. Management Responsibility

- Management is responsible to provide employees adequate education and training to safely and effectively operate County of San Mateo equipment.

PROCEDURES

1. Receive Daily Work Order

- ☐ Group Work Order
  - Step 1: Review items.
    - Line list
    - Map
  - Step 2: Develop the order of work.
    - Start at the terminal manholes.
    - Proceed from smallest lines to larger.
    - Work upstream to downstream.
    - If multiple segments are connected to a single main and the main is not cleaned, then start on the connecting segment furthest upstream.
  - Step 3: Determine required traffic control / creating of safe work area.
  - Step 4: Questions / Special instructions / Clarifications
    - Other workers
    - Supervisor
    - Engineering
- ☐ Individual Line (post back-up / spill / known line condition / special request)
  - Step 1: Review items.
    - As noted above for Group Work Order.
  - Step 2: Determine required traffic control / creating of safe work area.
  - Step 3: Questions / Special instructions / Clarifications
    - Other workers
    - Supervisor
    - Engineering

2. DOT Pre-Trip Check (6:45-7:15AM)

- ☐ Logbook list
- ☐ Equipment and inventory check
  - Add needed inventory and note missing/broken equipment.

CAUTION

If at any time a problem is encountered during the DOT Pre-Trip Check, notify your supervisor immediately.

3. Manhole Set-Up

NOTE

If possible, position the truck so that the side not containing the hose reel is facing oncoming traffic. This ensures the truck will be hit before the worker.

3.1 Observe Work Area

- ☐ Confirm the previously determined traffic control matches street conditions.

3.2 Create safe working area

- ☐ Residential / low capacity
  - Step 1: Set-up on the manhole.
  - Step 2: Lights / Beacon / Arrow Board / Emergency Brake
  - Step 3: Turn radio to outside / handheld radio / engage Power Take Off. (PTO) (see Figures 2 & 3 below)
  - Step 4: Put out cones (one side only) and signs.
- ☐ Arterial / greater than 500-ft line of sight / less than or equal to 35 MPH
  - Step 1: Set-up on the manhole.
  - Step 2: Lights / Beacon / Arrow Board / Emergency Brake
  - Step 3: Turn radio to outside / handheld radio / engage Power Take Off. (PTO) (see Figures 2 & 3 below)
  - Step 4: Put out cones (both sides) and signs.
  - Step 5: Place cone(s) at the target manhole (typically upstream manhole).
    - Second crew member performs this step.
- ☐ Arterial / less than 500-ft line of sight / less than or equal to 35 MPH
  - Step 1: Put out signs.
  - Step 2: Set-up on the manhole.
  - Step 3: Lights / Beacon / Arrow Board / Emergency Brake

Step 4: Turn radio to outside/ handheld radio / engage Power Take Off. (PTO) (see Figures 2 & 3 below)

Step 5: Put out cones (both sides) and signs.

Step 6: Flagger must assist with traffic control.

Step 7: Place cone(s) at the target manhole (typically upstream manhole).

- Worker I acts as the target manhole checker (or the flagger leaves to check and Worker I takes over flagging duties).

☐ Permit required / high capacity / greater than 35 MPH

Step 1: Follow MUTCD standards per permit.

Figure 2. PTO Off (gear in neutral) (513N truck)

Figure 3. PTO On (gear in neutral) (513N truck)

4. Using the Jet Rodder

CAUTION

At any time when operating the jet rodder in a location that involves traffic, set up traffic control.

WARNING

No solid cleaning tools such as porcupine, swabs, scooters or double tires are to be used under railroad tracks and freeways. The reason for this is to eliminate the possibility of getting a cleaning tool caught in the line that could only be retrieved by excavation.

4.1 Reverse Cleaning - Standard & Spinning Nozzle / Drop Holes

Step 1: If a confined space entry is necessary, test for gases using the portable gas detector.

CAUTION

If an unsafe atmosphere is encountered, stop this procedure and notify management immediately.

Step 2: Open the manhole cover.

Step 3: Remove the hand gun system.

Step 4: Unlock and extend the hose reel.

Step 5: Select the most appropriate nozzle.

Step 6: Attach the selected nozzle (with skids, if applicable) to the lead hose and lower it into the manhole with the nozzle pointing upstream in the channel.

Step 7: Position the nozzle in the line.

- Two person job: one on the reel, one on the rope.
- Make sure the tiger tail rope is positioned on the lip of the pipe entry so as to prevent damage to the hose.

CAUTION

When using a scoop to insert the nozzle into a line with a drop hole, check for overhead electrical lines due to the risk of electrocution.

Step 8: In case of a drop hole, use a scoop to align the nozzle with the line. When the nozzle is aligned, push it into the pipe. Pull up on the tiger tail rope and tie it off to hold the hose in place.

- In some situations the tiger tail rope can be wrapped once around the nozzle and used to align the nozzle along with the scoop.

Step 9: When the nozzle is just inside the line, activate the rodder pump.

- This should allow the hose to successfully travel past the vertical drop and up the sewer line while preventing the nozzle from propelling itself out of the manhole, or down the vertical drop where it might become stuck.

CAUTION

Do not raise the throttle / pressure until the nozzle starts to move up the line. It may come out of the line.

Step 10: Place a fork and/or a scoop in the downstream manhole outlet.

Step 11: If necessary, maneuver the nozzle into the sewer line by using one or more rollers.

- Place a roller at the edge of the top of the manhole.
- If there is a long distance between the truck and the manhole, place a roller at an angle to protect improvements.

NOTE

In most cases the truck is positioned at the downstream manhole.

Step 12: Note footage of the line to be cleaned.

- Use the scale to approximate if no footage is available.

Step 13: Set the footage counter to zero.

NOTE

Use lower pressures when cleaning 6” diameter or shallow sewer lines. Follow the instructions / comments on the Work Order.

Step 14: Turn on the rodder pump. (see Figure 4 below)

Figure 4. Rodder Pump Control Panel (513N truck)

Step 15: Increase the throttle and adjust to desired water pressure. (see Figures 4 & 5)

- 1150 – 1200 PSI for 6” diameter or shallow sewer lines

Figure 5. Water Pressure Gauge (513N truck)

Step 16: Pay out the hose.

NOTE

If there is a bend in the line that does not allow nozzle passage, then do a forward set-up and clean from the other end. If it still hits the bend, note this line on the work order form and terminate cleaning activity.

Step 17: Observe the footage counter and reduce reel speed as the nozzle nears the end of the line.

CAUTION

If the reel continues to rotate after the hose stops traveling, a "Rat's Nest" or "Bird's Nest" of hose on the reel will be the result.

Step 18: Worker I opens the target manhole and confirms the nozzle is ready for retraction / pull-back.

CAUTION

Confirm the nozzle is not caught on a lateral, ladder rung, or offset, and is not turned over in the target manhole.

Step 19: Retract the hose at approximately 2 ft/sec.

Step 20: Pay attention to the footage and stop retracting when the lead hose reaches the manhole.

NOTE

Watch for debris and quantify debris per the debris matrix.

Step 21: Reduce the throttle and then shut off the rodder pump.

- Allow water flow to stop. This may take several seconds.

Step 22: Retract and secure the hose for travel.

Step 23: Lock the hose reel in place and place the hand gun system in its original position.

Step 24: Place debris caught by the fork and/or scoop into a bucket.

Step 25: Replace the manhole cover.

Step 26: Clean up all the safety equipment.

Step 27: Disengage the PTO.

Step 28: Move off set-up to a safe location.

Step 29: Log the results of debris quantity on the Work Order form.

- Note whether the set-up was Reverse, Forward or Both (R, F, or FR).
- Note the lines that were gravity flushing only.
- Note when the pipe material was different than noted.

Step 30: Task is complete.

4.2 Forward Cleaning

CAUTION

It is not advisable to use forward cleaning in 6" or shallow lines where potential flooding could occur.

Step 1: Worker I places a fork and/or a scoop in the target manhole (downstream) prior to commencing any cleaning.

Step 2: Follow Steps 1 through 15 of Section 4.1 Reverse Cleaning.

Step 3: Pay out the hose at approximately 2 ft/sec.

Step 4: Observe the footage counter and reduce reel speed as the nozzle nears the end of the line.

Step 5: Worker I observes at the target manhole and confirms the nozzle is ready for retraction / pull-back.

CAUTION

Confirm the nozzle is not caught on a lateral, ladder rung, or offset, and is not turned over in the target manhole.

CAUTION

Do not use high pressures during retraction for forward cleaning so as to minimize the possibility of a lateral "burp" occurring. However, some flow/pressure is necessary to keep the hose full of water in order to properly align the hose onto the hose reel and to minimize the chance of hose stretching.

Step 6: Retract the hose with the pump idling at minimal flow/pressure.

Step 7: Turn off the pump every 25 – 50 feet to allow the line to drain so that attached laterals do not flood.

Step 8: Pay attention to the footage and stop retracting hose when the lead hose reaches the manhole.

NOTE

Watch for debris and quantify debris per the debris matrix.

Step 9: Reduce the throttle and then shut off the rodder pump.

- Allow water flow to stop. This may take several seconds.

Step 10: Follow Steps 22 through 30 of Section 4.1 Reverse Cleaning.

4.3 Trunk Line Cleaning

NOTE

Trunk line cleaning must be step cleaning. All lines with a 15" diameter and larger are considered trunk lines.

Step 1: Follow Steps 1 through 13 of Section 4.1 Reverse Cleaning.

Step 2: Turn on the rodder pump. (see Figure 4)

Step 3: Increase the throttle and adjust to desired water pressure.

- 2000 – 2250 PSI for 15" diameter or larger sewer lines

Step 4: Starting from the set-up manhole, step-clean the entire line.

- Initially clean the first 100-ft segment, then step-clean at 50-ft increments until the target manhole is reached.
- Ensure each segment is thoroughly cleaned before moving on to the next segment.

Step 5: Observe the footage counter and reduce reel speed as the nozzle nears the end of the line.

Step 6: Worker I opens the target manhole and confirms the nozzle is ready for retraction / pull-back.

CAUTION

Confirm the nozzle is not caught on a lateral, ladder rung, or offset, and is not turned over in the target manhole.

Step 7: Retract hose at approximately 1 - 2 ft/sec.

Step 8: Pay attention to the footage and stop retracting when the lead hose reaches the manhole.

NOTE

Watch for debris and quantify debris per the debris matrix.

Step 9: Reduce the throttle and then shut off the rodder pump.

- Allow water flow to stop. This may take several seconds.

Step 10: Follow Steps 22 through 30 of Section 4.1 Reverse Cleaning.

4.4 Gravity Flushing - Inaccessible Segments

Step 1: Open the set-up access point (sanitary sewer manhole, lamp hole, end of line cleanout, etc.).

Step 2: Remove the hand gun system.

Step 3: Unlock and extend the hose reel.

Step 4: Remove any nozzle attached to the hose.

Step 5: Position the lead hose into the set-up access point.

Step 6: Turn on the rodder pump. (see Figure 4)

Step 7: Run the pump at a water pressure of 1200 PSI for ½ to a full tank of water depending on the length of the line.

Step 8: Reduce the water pressure and retract and secure the hose for travel.

Step 9: Lock the hose reel in place and place the hand gun system in its original position.

Step 10: Replace the cover of the set-up access point.

Step 11: Clean up all the safety equipment.

Step 12: Disengage the PTO.

Step 13: Task is complete.

NOTE

If there is a bend in the line that does not allow hose passage, then do a forward set-up and clean from the other end. If it still hits the bend, note this line on the work order form and terminate cleaning activity.

5. DOT Post-trip Check (M-W 4:30-4:45PM, Th 3:45-4:45PM)

NOTE

When parking the truck at the end of the day, extend the hose reel out to make it easier to check the truck's oil.

- ☐ Logbook list
  - Monday through Wednesday - Standard
  - Thursday – Standard and Vehicle Maintenance
    1) Clean the truck.
    2) Wash the truck.
- ☐ Equipment and inventory check
  - Add inventory where needed and communicate missing equipment.

6. Return all Paperwork to Supervisor at End of shift

- ☐ Return Group Work Order to Supervisor
  - Include special notes / information regarding work from the day.
- ☐ Return Individual Line Order(s) to Supervisor
  - Include special notes / information regarding work from the day.
  - Post-back-up / spill / known line condition / special request

7. 572W Truck Pictures

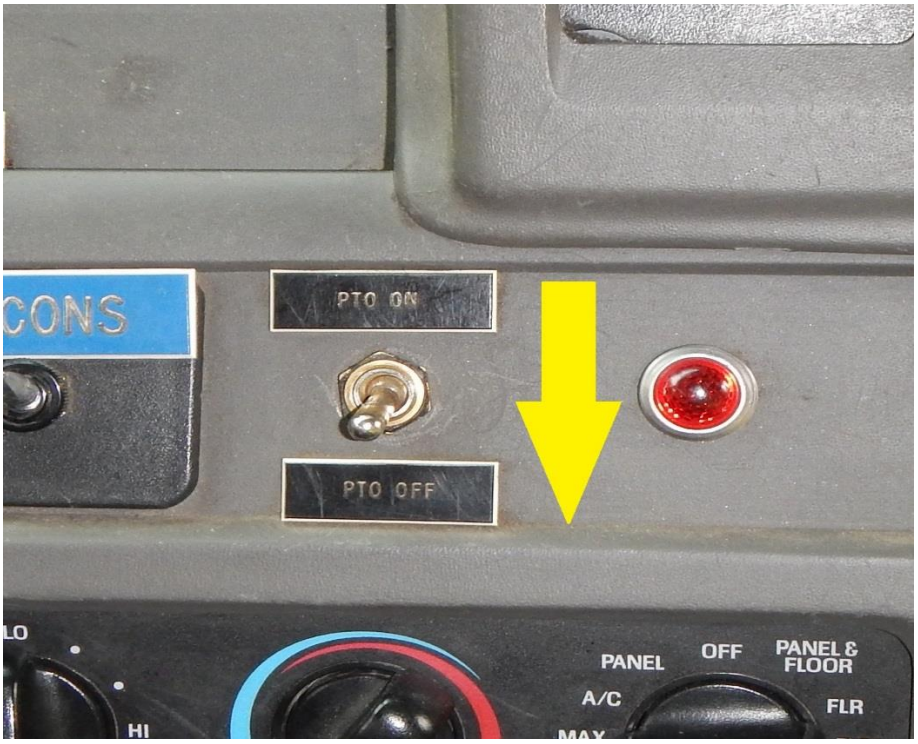

Figure 6. PTO Off (572W truck)

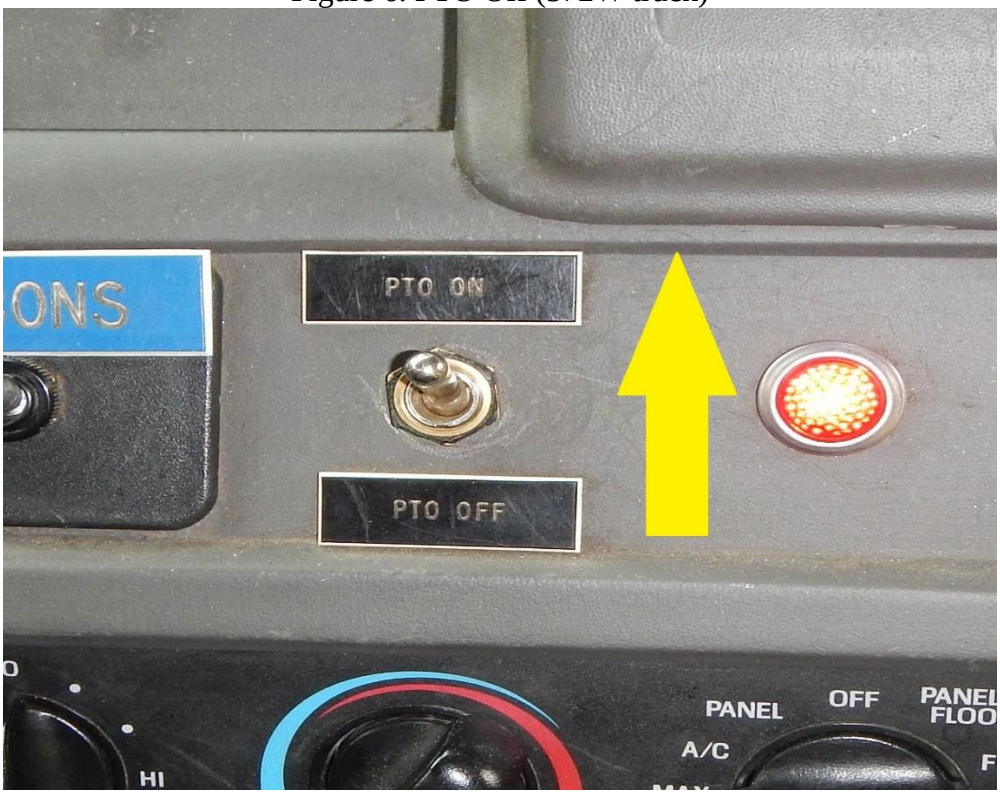

Figure 7. PTO On (572W truck)

Figure 8. Rodder Pump Control Panel (572W truck)

Figure 9. Water Pressure Gauge (572W truck)

MECHANICAL RODDING

Standard Operating Procedures

SOP-CSM103 / SEPTEMBER 2013

Author: Water Works Engineers
Owner: County of San Mateo
Reviewers: WWE / CSM

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Administrative

A. Introduction

1. This SOP contains the instructions and steps that employees will follow to clean sewer lines through mechanical rodding. All work shall be performed safely in compliance with applicable standards and in a manner that minimizes adverse impacts.

B. Cancellation

1. None

C. References

1. Best Practices
2. Manual

D. Objectives

Upon completion the Worker will be aware of the steps to:

a. Pre-check truck/equipment
b. Set up the mechanical rodder
c. Operate the mechanical rodder
d. Retrieve rod and store equipment
e. Replace saw end of rod head
f. Post-check truck/equipment

E. Equipment/Personnel Required

1. Personnel
   a. 2 person crew
   b. Wastewater Collection Worker I
   c. Wastewater Collection Worker II
2. Equipment
   a. Traffic Control devices
   b. Portable gas detector
   c. Manhole Hook
   d. Hand tools (scoops, forks, sledgehammer, pruners, shovels, augers, hand rods, pipe and crescent wrench, flashlight)

e. Dye
f. Map Book / Block Book / District Map Book
    1) Thomas Guide / Mapping Assistance Guide
    2) County Road Map
    3) GPS
g. Buckets
h. Ropes
i. Water pump
j. Air grinder
k. Augers / Tools
    1) Auger / Corkscrew (6” / 8” / 10”)
    2) Root Saw / Cutter (6” / 8”)
    3) Brush / Porcupine (6” / 8”)
    4) Bullet
l. Retriever
m. Bending block
n. Cheater bar / breaker bar (piece of pipe with threaded knuckle)
o. Double hook (for rod retrieval)
p. Rod guide hose (and extension)
q. Manhole brace bar
r. Brooms
s. Absorbents
t. Tire Chocks
u. Chain
v. Fire extinguisher
w. First aid kit
x. Flares
y. Vice
z. PPE (Personal Protective Equipment)
    1) Gloves
    2) Steel-toe safety shoes
    3) Eye protection (safety glasses)

4) Hearing protection

5) Class 2 safety vests (uniform in day / vest at night)

6) Hard hats (carry in vehicle, use whenever there is overhead equipment / activities)

F. Terminology

1. **NOTE** is used when information is available that can assist the Worker in accomplishing his or her task.
2. **CAUTION** is used when special precautions must be taken by the Worker. Failure to follow the prescribed steps may cause serious bodily injury and/or damage the equipment.
3. **WARNING** is used when special precautions must be taken by the Worker. Failure to follow the prescribed steps will cause loss of life or limb and/or severely damage the equipment.

G. Employee Responsibility

- Employees are responsible to follow County of San Mateo policies and procedures for the safe and effective operation of County of San Mateo equipment.

H. Management Responsibility

- Management is responsible to provide employees adequate education and training to safely and effectively operate County of San Mateo equipment.

PROCEDURES

1. Receive Daily Work Order

☐ Group Work Order

Step 1: Review items.

- Line list
- Map

Step 2: Develop the order of work.

- Identify the manholes that can be used for multiple runs from a single setup.
- Choose a route that minimizes the number of individual setups.

CAUTION

No mechanical rodding of lines larger than 10" unless special instructions exist.
No mechanical rodding for PVC lines unless special instructions exist. (Use brush if necessary)
No mechanical rodding of lines with offsets. (back check against old work orders and CCTV data)

Step 3: Determine required traffic control / creating of safe work area.

Step 4: Questions / Special instructions / Clarifications

- Other workers
- Supervisor
- Engineering

☐ Individual line (post back-up / spill / know line condition / special request)

Step 1: Review items.

- As noted above for Group Work Order.

Step 2: Determine required traffic control / creating of safe work area.

Step 3: Questions / Special instructions / Clarifications

- Other workers
- Supervisor
- Engineering

2. DOT Pre-trip Check (6:45-7:15AM)

- ☐ Log book list
- ☐ Equipment and inventory check
  - Add needed inventory and not missing/broken equipment.

> **CAUTION**
>
> If at any time a problem is encountered during the DOT Pre-Trip Check, notify your supervisor immediately.

3. Manhole set-up

> **NOTE**
>
> If possible, position the truck so that the front side is facing oncoming traffic. This ensures the truck will be hit before the worker.

3.1 Observe Work Area

- ☐ Confirm the previously determined traffic control matches street conditions.

3.2 Create safe working area

- ☐ Residential / low capacity

  Step 1: Set-up on the manhole.

  Step 2: Lights / Beacon / Arrow Board / Emergency Brake

  Step 3: Turn radio to outside / handheld radio

  Step 4: Put out cones (one side only) and signs.

- ☐ Arterial / greater than 500-ft line of sight / less than or equal to 35 MPH

  Step 1: Set-up on the manhole.

  Step 2: Lights / Beacon / Arrow Board / Emergency Brake

  Step 3: Turn radio to outside / handheld radio

  Step 4: Put out cones (both sides) and signs.

  Step 5: Place cone(s) at the target manhole (typically upstream manhole).
  - Second crew member performs this step.

- ☐ Arterial / less than 500-ft line of sight / less than or equal to 35 MPH

Step 1: Put out signs.

Step 2: Set-up on the manhole.

Step 3: Lights / Beacon / Arrow Board / Emergency Brake

Step 4: Turn radio to outside/ handheld radio

Step 5: Put out cones (both sides) and signs.

Step 6: Flagger must assist with traffic control.

Step 7: Place cone(s) at the target manhole (typically upstream manhole).

- Worker I acts as the target manhole checker (or the flagger leaves to check and Worker I takes over flagging duties).

☐ Permit required / high capacity / greater than 35 MPH

Step 1: Follow MUTCD standards per permit.

4. Using the Mechanical Rodder

CAUTION

At any time when operating the mechanical rodder in a location that involves traffic, set up traffic control.

WARNING

No solid cleaning tools such as porcupine, swabs, scooters or double tires are to be used under railroad tracks and freeways. The reason for this is to eliminate the possibility of getting a cleaning tool caught in the line that could only be retrieved by excavation.

4.1 Setup the Mechanical Rodder

Step 1: If a confined space entry is necessary, test for gases using the portable gas detector.

CAUTION

If an unsafe atmosphere is encountered, stop this procedure and notify management immediately.

Step 2: Open the manhole cover.

Step 3: Worker I acts as the spotter and assesses the depth of the manhole.

- The depth dictates how far the truck will be set up from the edge of the manhole.
- The deeper the manhole, the closer the truck will be to the edge of the manhole.

Step 4: Worker I directs Worker II where to position the truck.

- The 10’ guide limit dictates how far you can go from the back of the truck to the invert of the pipe.

Step 5: Confirm that no additional traffic control is necessary.

Step 6: Before getting out of the truck:

- Turn on the PTO. (see Figures 1 & 2 below)

Figure 1. PTO Off (510N and 509N trucks)

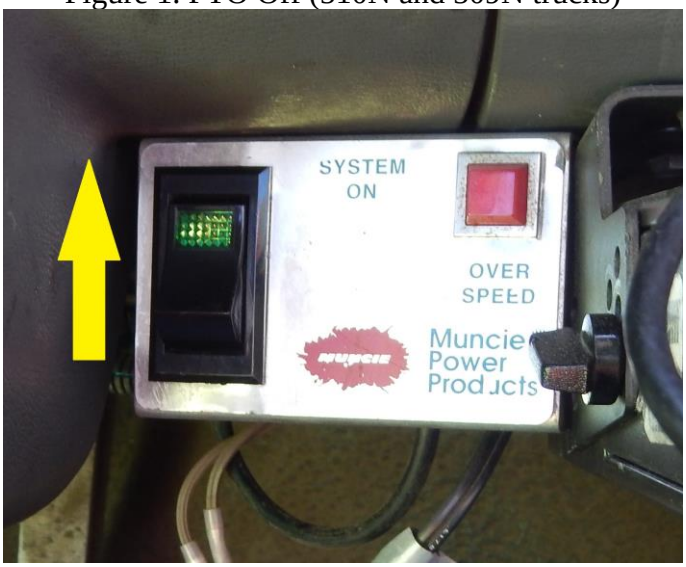


Figure 2. PTO On (510N and 509N trucks)

- Confirm that the lights, beacon, and arrow board are all engaged.

Step 7: Both Workers I and II work together to lay the hose on the ground.

Step 8: Thread the rod through the guide hose.

- Ensure the switch that controls the rod feed direction is in the OFF/FORWARD position.

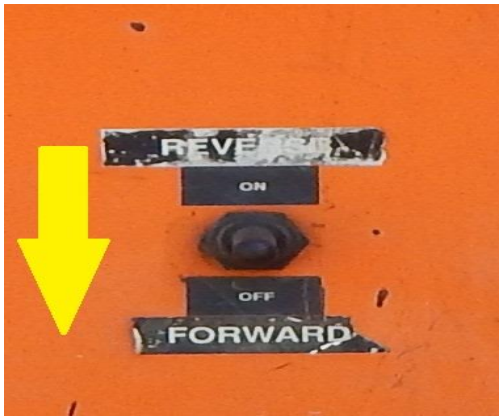


Figure 3. Forward Direction (510N and 509N trucks)

- Feed the rod out enough so that tool detachment is easily achieved.

Step 9: Disconnect the bullet from the rod end.

Step 10: Connect the appropriate tool to the rod end.

Step 11: Both Workers place the rodder in the manhole.

- Place the rodder in the manhole trough at the sewer line opening.
- Slide the bell up to the pipe.

Step 12: Re-position the truck as necessary to minimize slack or pull closer.

- The spotter ensures the rodder is over the manhole with slack in the line to allow for manipulation into the manhole by the crew.
- Pull any unnecessary slack out of the line.

Step 13: Place the brace bar against the wall such that the hose will not escape the manhole when an obstruction increases the hydraulic oil pressure.

Step 14: Tie off the brace bar with the attached rope.

Step 15: Place a fork in the downstream line.

Step 16: Task is complete.

4.2 Operation of the Mechanical Rodder

CAUTION

The rod should never be rotated in the following circumstances:

- When pulling winch lines, cables, etc., even with a swivel on the end of the rod.

- When the rod or tool is wedged tight.

Rotating too fast can cause the auger to snap if it comes in contact with an object.

Step 1: Take position at the operational panel.

CAUTION

The operator must remain at the controls at all times while operating the mechanical rodder. Do not leave the controls while the rodder is running and keep your hands on the controls at all times. There is no dead-man switch.

Step 2: Adjust the throttle to the typical level.

- Typical operating level
  - ☐ 510N Truck: ~ 900 RPM (see Figure 4 below)
  - ☐ 509N Truck: ~ 1200 RPM (see Figure 4 below)

Figure 4. Typical Operating RPM for 510N Truck (Left) and 509N Truck (Right)

- The truck will experience moderate to severe movement if the RPMs are raised above around 1600 RPM.
- The maximum operating limit is 2000 RPM.

Step 2: Check that the hydraulic oil pressure is around 300 to 350 PSI. (see Figure 5 below)

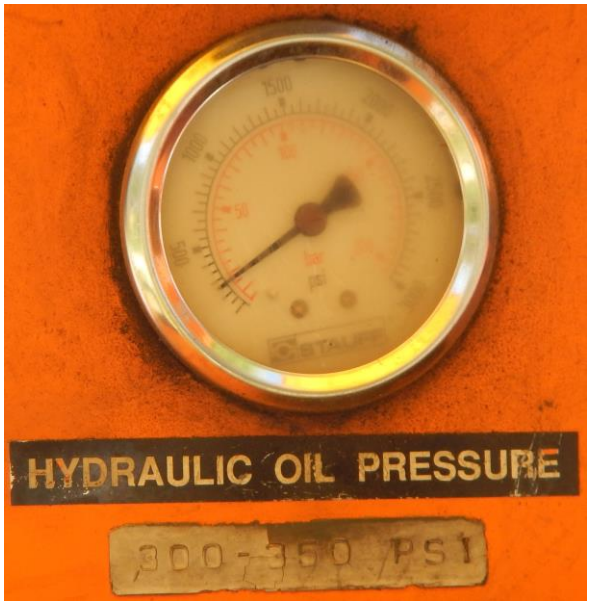


Figure 5. Hydraulic Oil Pressure

Step 3: Advance the rod through the line with no reel rotation.

- Rotate only when an obstruction is encountered.

Step 4: After opening the target manhole, communicate to stop rod advancement through the handheld radio when the rod has reached the target manhole.

Step 5: At the target manhole, determine which tool to use for retraction by analyzing the type of debris found on the rod end.

- Roots: Use the saw and clockwise rotate at a slow speed unless an obstruction is hit, then work the area to clear the obstruction.
- Grease: Use the brush and clockwise rotate the entire way back.
- Clear: Use the auger with no rotation unless an obstruction is hit, then rotate and work the area to clear the obstruction.

CAUTION

Never adjust the reel rotation lever to counter-clockwise (to the left) during retraction except for very brief periods. The auger / tool can become unscrewed from the head.

Step 6: Clean the line by retracting the rod back towards the truck.

- Ensure the reel is rotating clockwise.
- Observe the reel counter for the line length. (see Figure 6 below)

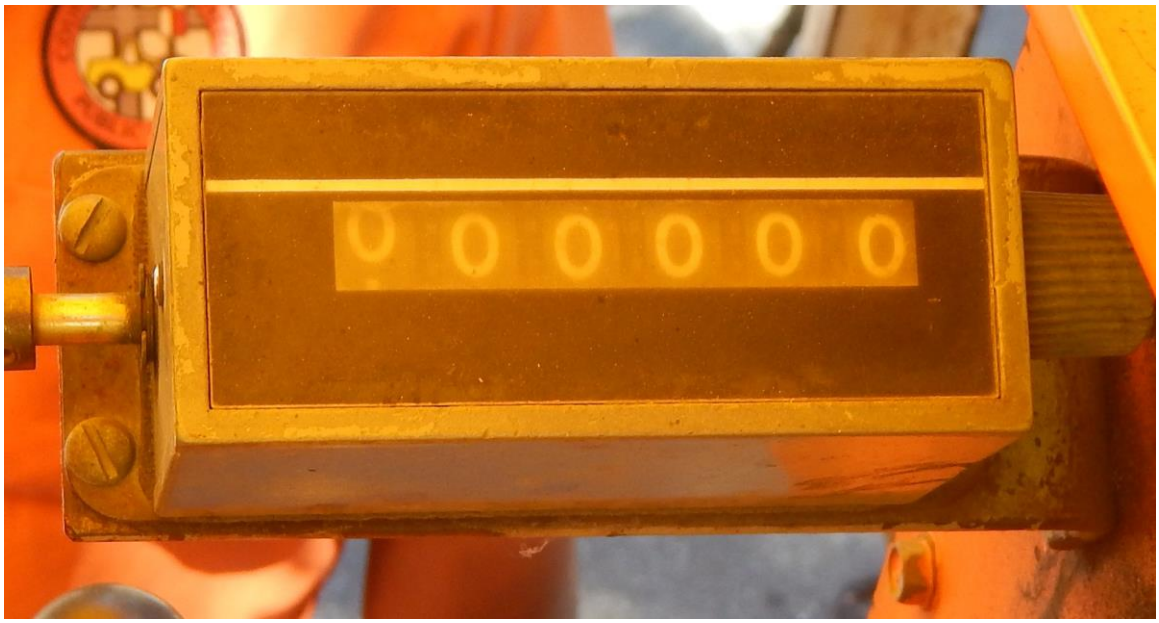


Figure 6. Reel Footage Counter

Step 7: Replace the target manhole cover.

Step 8: Stop retracting the rod by listening for the sound of the tool as it approaches the manhole.

Step 9: Complete the debris analysis on the Work Order form.

- In the comment section on the Work Order form, note any problems/obstructions that required extensive "working" (greater than 5 minutes).
- Note the work limits (footage counter start and finish) for this extensive "working".
- Note the type of debris.

Step 10: Pay out a little slack on the hose.

Step 11: Task is complete.

4.3 Rod Retrieval and Equipment Storage

Step 1: Using the attached rope, loosen the brace bar.

Step 2: Remove the guide hose from the manhole.

- At least two people are required for this action.

Step 3: Feed the rod out enough so that tool detachment is easily achieved.

Step 4: Both Workers I and II work together to lay the hose on the ground.

Step 5: Disconnect the attached tool and store it away.

Step 6: If you are completing the last mechanical rodding of the day, connect the bullet on the rod end.

Step 7: Retract the rod through the guide hose until the tool is resting in the starting position inside the guide.

Step 8: Both Workers I and II work together to store the hose onto the left side of the truck. (see Figure 7 below)

Figure 7. Hose Storage

Step 9: Tie down and secure the hose on the side of the truck.

Step 10: Turn the water pump on.

Step 11: Using the wash down handgun, wash down the area around the manhole. The rod reed can be washed down if desired.

Step 12: Turn the water pump off.

Step 13: Replace the manhole cover.

Step 14: Clean up all the safety equipment.

Step 15: Disengage the PTO.

Step 16: Task is complete.

4.4 Replacing Saw End of Rod Head

Step 1: Remove the coupling from the rod.

Step 2: Place the bending block in the vice. (see Figure 8 below)

Figure 8. Bending Block

Step 3: Place the rod into the groove of the bending block.

Step 4: Use the cheater bar to bend the rod without snapping it.

Step 5: Cut the rod at the desired point using the air grinder.

Step 6: Slide the coupling onto the rod.

Step 7: Mark the holes with a felt tip pen.

Step 8: Remove the coupling.

Step 9: Grind grooves on the rod end.

Step 10: Replace the coupling and secure it with bolts.

Step 11: Verify the coupling is secure.

Step 12: Task is complete.

5. DOT Post-trip Check (M-W 4:30-4:45PM, Th 3:45-4:45PM)

- ☐ Logbook list
  - Monday through Wednesday - Standard
  - Thursday – Standard and Vehicle Maintenance
    1) Clean the truck.
    2) Wash the truck.
- ☐ Equipment and inventory check
  - Add inventory where needed and communicate missing equipment.

6. Return all Paperwork to Supervisor at End of shift

- ☐ Return Group Work Order to Supervisor
  - Include special notes / information regarding work from the day.
- ☐ Return Individual Line Order(s) to Supervisor
  - Include special notes / information regarding work from the day.
  - Post-back-up / spill / known line condition / special request

Appendix 5.1 – Sanitary Sewer Standard Details and Specifications

County of San Mateo

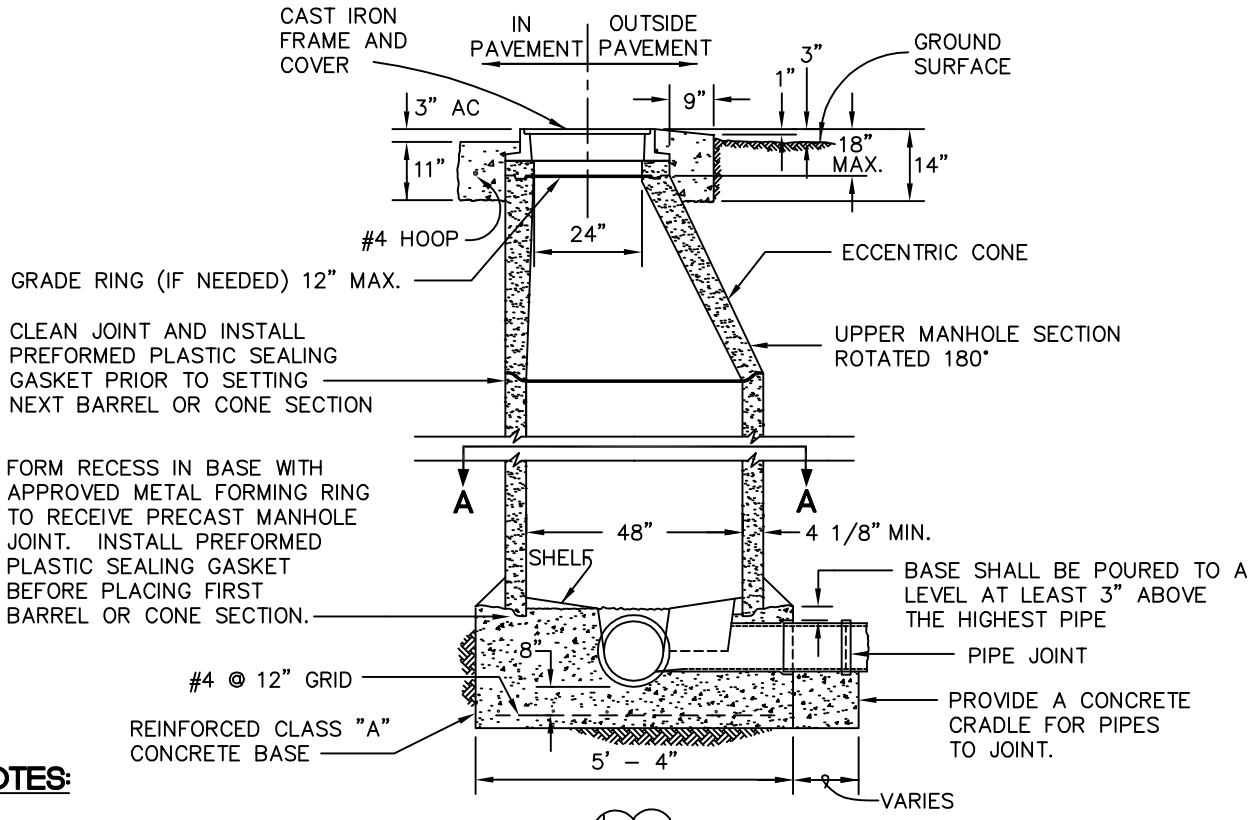
Sanitary Sewer Standard Details and Specifications

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

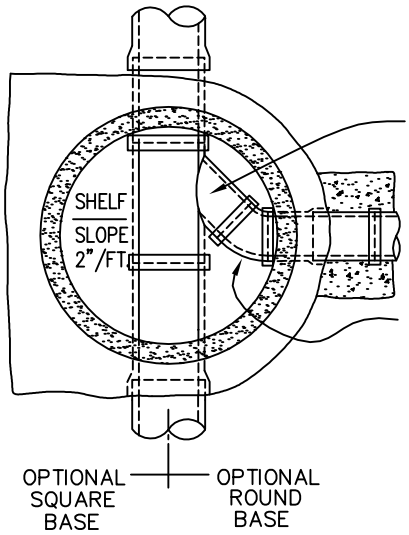
DRAWN BY: D.P.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 7/97



NOTES:

1. ALL STEEL TO BE 3" CLEAR.
2. LAY PIPE THRU M.H. WHEN POSSIBLE.
3. M.H. SHELF SHALL BE MORTARED TO A SLOPE OF 2"/FT.
4. THERE SHALL BE NO STEPS IN THE MANHOLE.
5. PREFORMED PLASTIC SEALING GASKET SHALL BE "RAM–NEK" OR APPROVED EQUAL.
6. IN THE EVENT PVC OR ABS PIPES ARE APPROVED, STANDARD WATER STOPS SHALL BE INCORPORATED INTO THE MANHOLE BASE.
7. OTHER APPLICABLE DETAIL: C–2
8. MANHOLE THROAT LOCATION TO BE OPPOSITE THE LARGEST SHELF AREA OR AS DIRECTED BY THE ENGINEER



SECTION A-A

SANITARY SEWER MANHOLE DETAIL

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

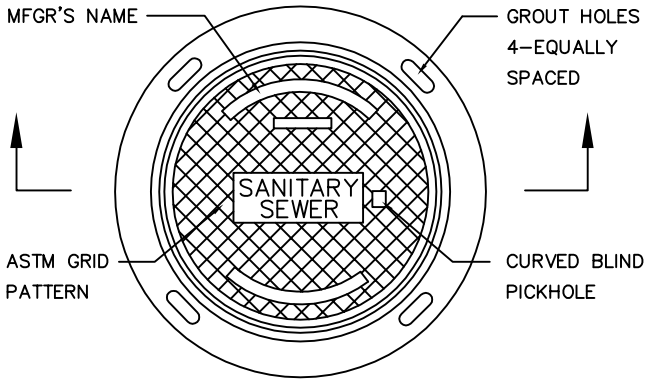
REDWOOD CITY
CALIFORNIA

DRAWN BY: M.L.
CHECK BY: R.O.
APPROVED BY: N.R.C.

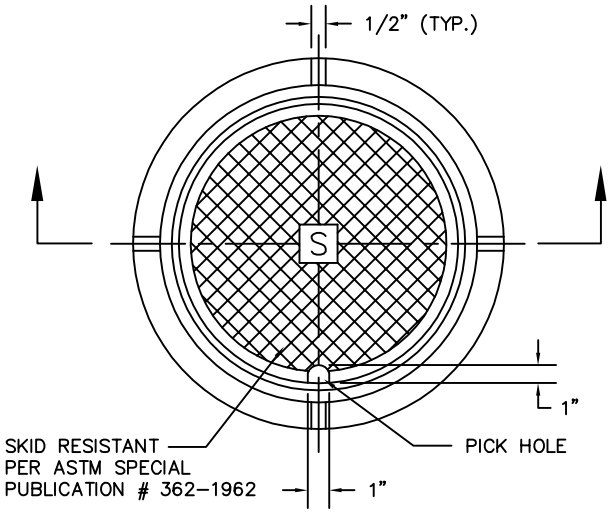
SCALE: NONE
DATE: 6/95
REVISED:

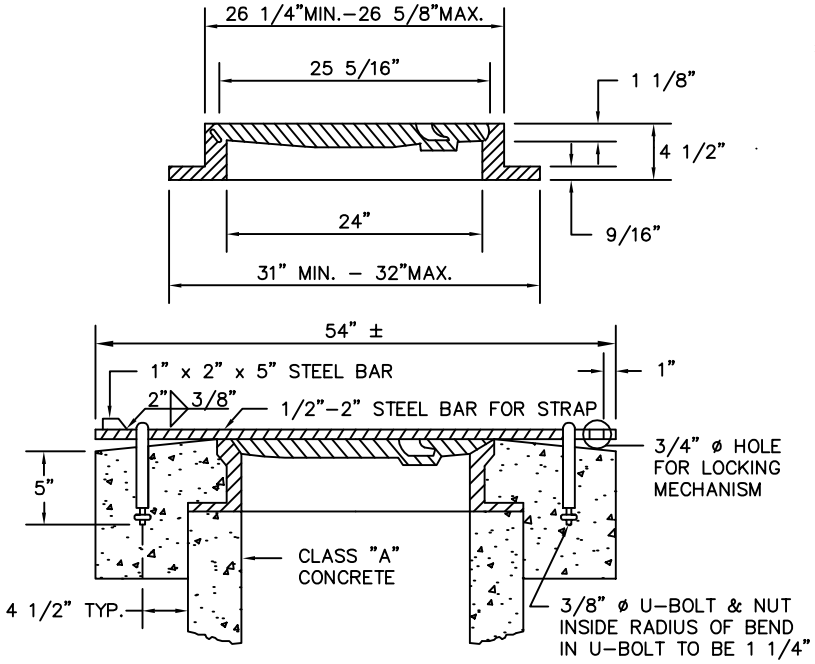
GENERAL NOTE:

FRAME AND COVER SHALL MEET OR EXCEED THE REQUIREMENTS OF AASHTO H-20 LOADING.



* ALL MATERIALS USED SHALL CONFORM TO ASTM SPEC. A-159-70T-G3000 OR U.S. GOV'T SPEC. QQ1-653

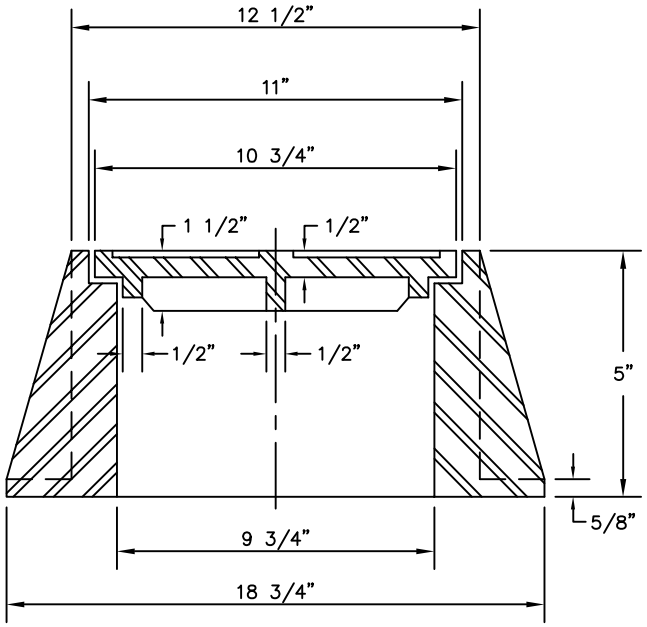




* MANHOLE STRAP TO BE USED IN OFF ROAD AREA WHERE SPECIFIED BY THE ENGINEER

* U-BOLTS, NUT & STRAP SHALL BE HOT DIP GALVANIZED AFTER FABRICATION

* ALL MATERIALS USED SHALL CONFORM TO ASTM SPEC. A-159-64T-G3000 OR U.S. GOV'T SPEC. QQ1-653



SECTION

SANITARY SEWER MANHOLE COVER, FRAME AND STRAP DETAIL

SECTION

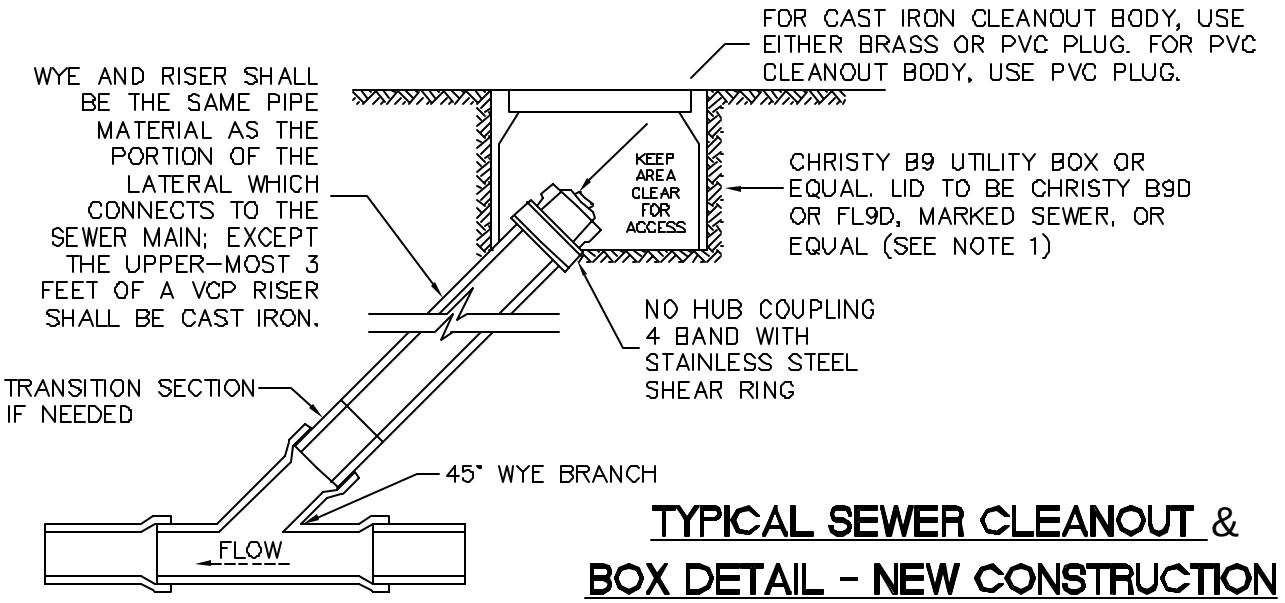
SANITARY SEWER FLUSHING INLET COVER

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

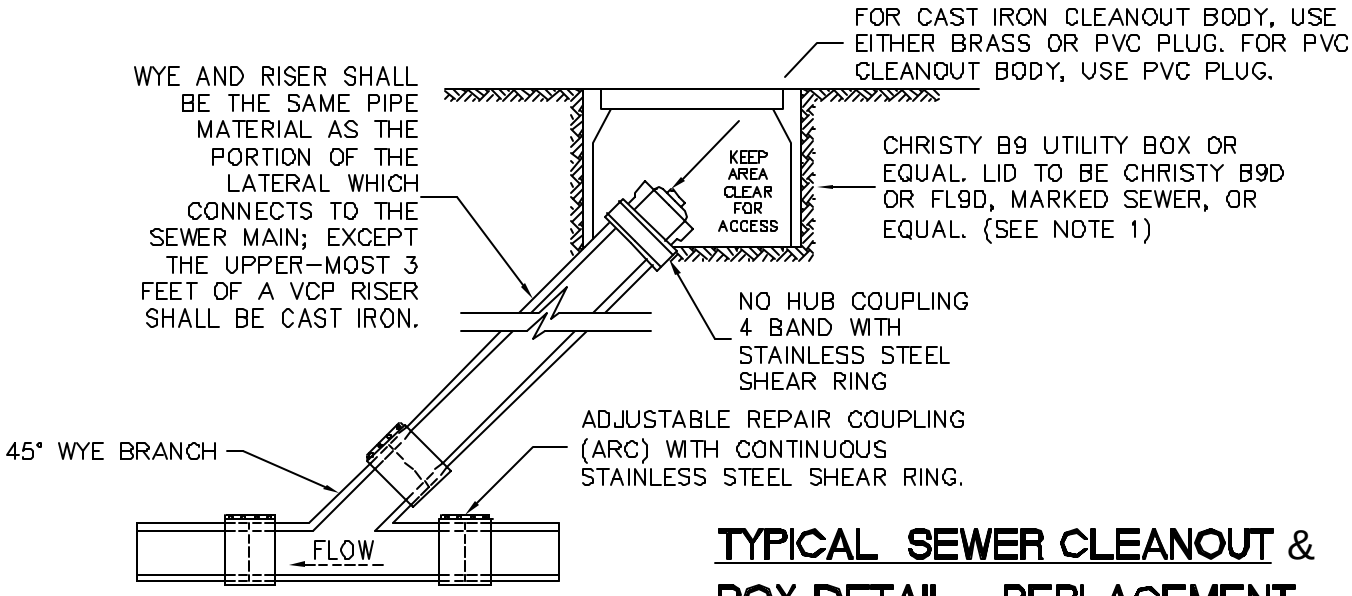
REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.
CHECK BY: A.M.S.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 8/06
REVISED:



TYPICAL SEWER CLEANOUT & BOX DETAIL - NEW CONSTRUCTION



TYPICAL SEWER CLEANOUT & BOX DETAIL - REPLACEMENT

NOTES:

1. WHEN BOX IS SUBJECT TO TRAFFIC LOADING, PROVIDE CAST IRON LID.
2. BOX TO BE PLACED SUCH THAT CLEANOUT CAP CAN BE EASILY REMOVED, SEE ILLUSTRATION.
3. PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING LATERAL FROM THE PROPERTY STRUCTURE TO DISTRICT MAIN. DISTRICT PROVIDES COURTESY SERVICE FROM DISTRICT STANDARD PROPERTY LINE CLEANOUT TO THE MAIN.
4. SDR-26 WYE, RISER, CLEANOUT BODY AND CAP CAN BE USED ONLY WHEN LATERAL FROM PROPERTY LINE TO MAIN LINE IS REPLACED WITH SDR-26.
5. WHEN ENTIRE LATERAL IS REPLACED, LATERAL FROM PROPERTY LINE CLEANOUT TO MAIN LINE SHALL HAVE A 14-1-UF GUAGE MINIMUM SINGLE CONDUCTOR TRACER WIRE TAPED TO THE ENTIRE LENGTH OF THE PIPE.

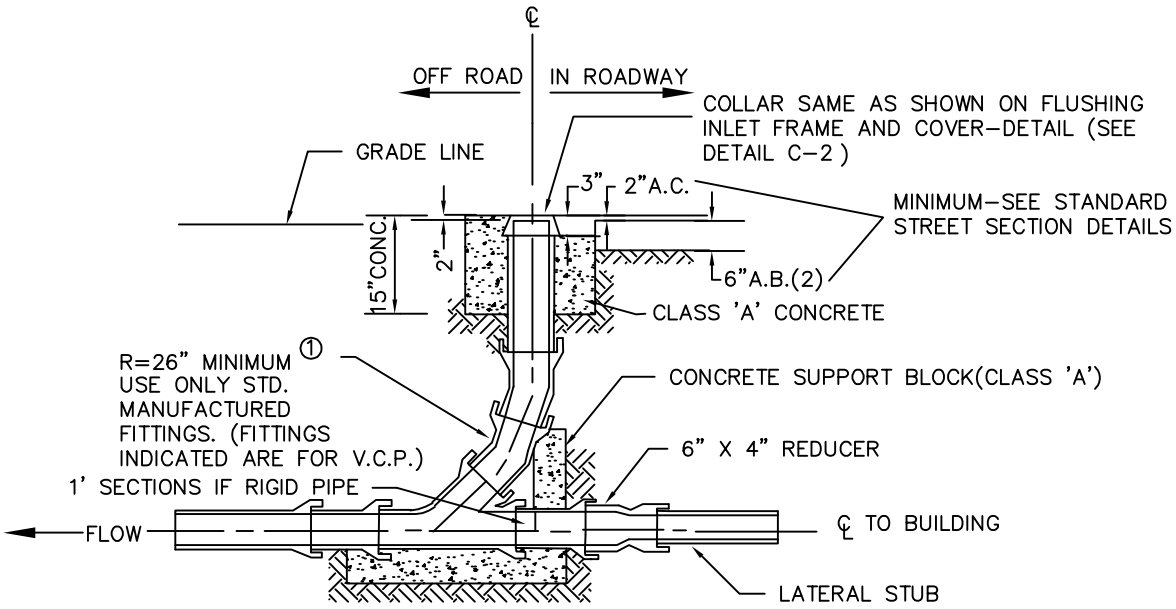
CONSTRUCTION OF A STANDARD CLEANOUT REQUIRES MULTIPLE INSPECTIONS BY DISTRICT PERSONEL:
1. FIRST INSPECTION - TO INSPECT WYE AND RISER, WYE AND RISER MUST BE EXPOSED.
2. SECOND INSPECTION - TO INSPECT PLACEMENT OF BOX, LID AND LOCATION OF CLEANOUT WITHIN BOX .

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

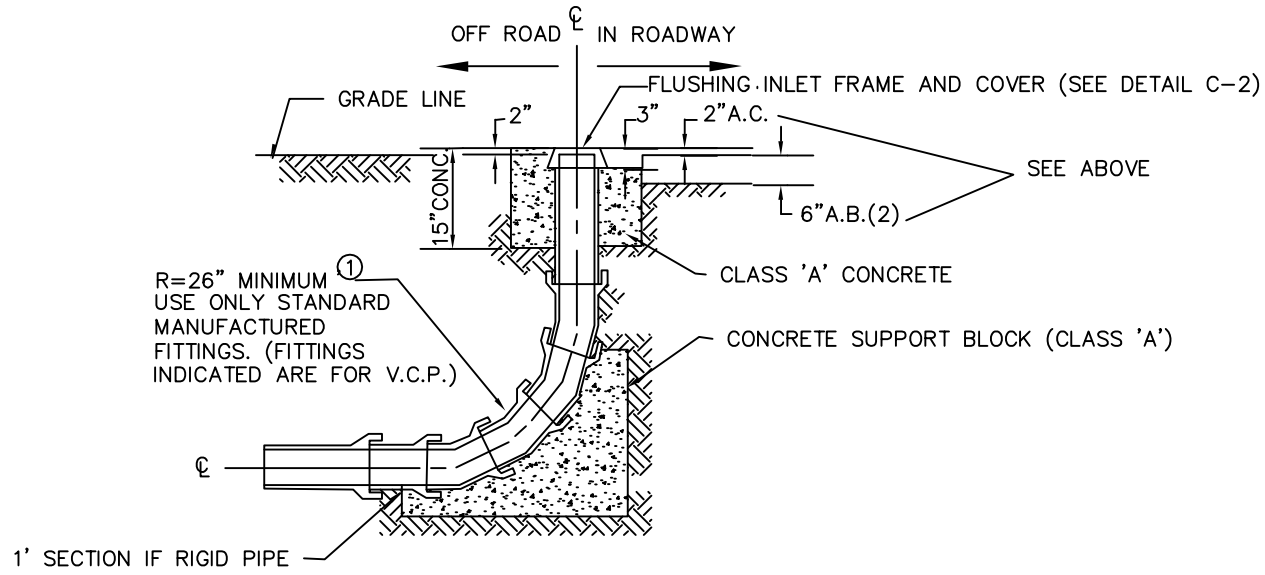
REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____



FLUSHING INLET WITH LATERAL STUB



NOTE: ① FOR P.V.C. PIPE, LARGE 90° MANUFACTURED SWEEPS MAY BE USED IF R=36" OR GREATER

FLUSHING INLET

SANITARY SEWER FLUSHING INLET DETAIL

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

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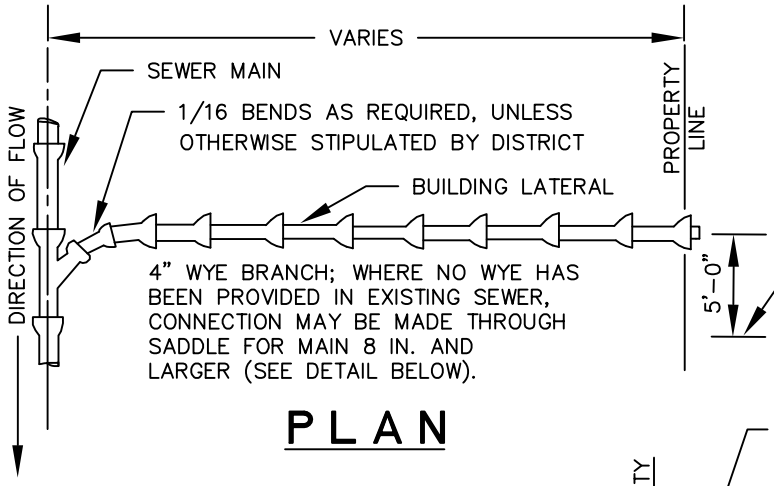
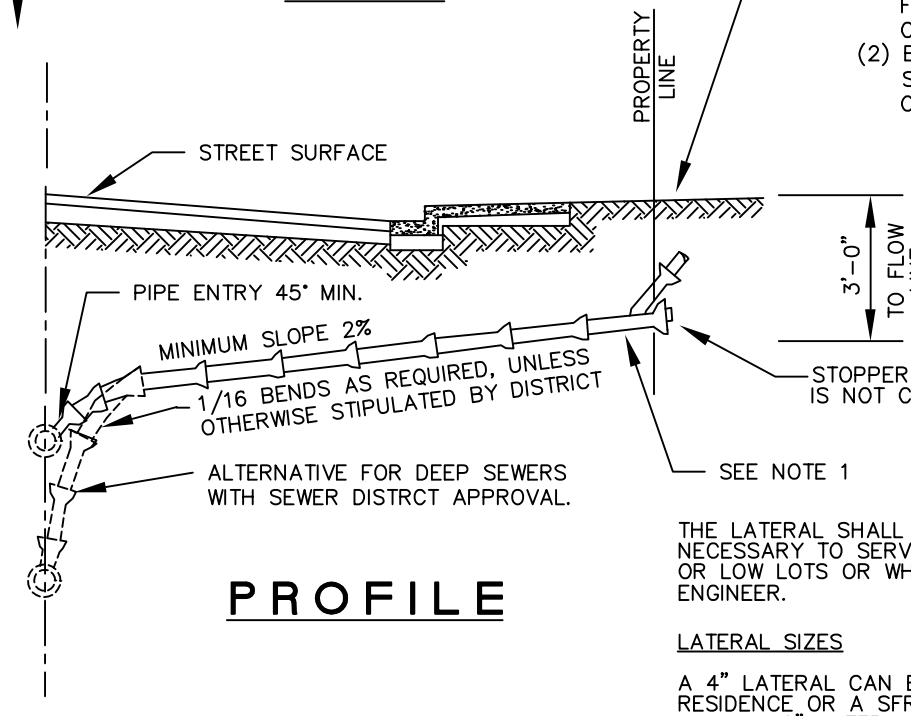


ON NEW CONSTRUCTION–LATERAL TO BE PLACED 5' ABOVE LOWER LOT LINE UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE WYE LATERAL AND PROPERTY LINE CLEAN OUT SHALL BE OF THE SAME MATERIAL

PLAN



NOTE: (1) SEE DETAIL SHEET NO. C–3 FOR SAN MATEO COUNTY STANDARD CLEANOUT DETAIL.
(2) BEDDING AND BACKFILL MATERIAL SEE DETAILS C–6 (TYPE A OR B) OR C–7

STOPPER OR PLUG (IF BUILDING LATERAL IS NOT CONNECTED AT THE SAME TIME)

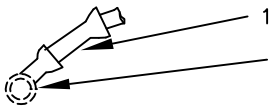
PROFILE

THE LATERAL SHALL BE LOWER WHERE NECESSARY TO SERVE EXISTING PLUMBING OR LOW LOTS OR WHEN DIRECTED BY THE ENGINEER.

LATERAL SIZES

A 4" LATERAL CAN BE USED FOR A SINGLE FAMILY RESIDENCE OR A SFR WITH A SECOND UNIT. A MINIMUM 6" LATERAL SHALL BE USED FOR ALL OTHER DEVELOPMENTS.

METHOD OF ATTACHING LATERAL TO EXISTING SEWER WHERE NO WYE HAS BEEN PROVIDED



1. EXISTING MAIN ≤ 8": FOR MEANS BY WHICH CONNECTION IS TO BE MADE TO MAIN LINE SEE DETAIL C–8.
2. EXISTING MAIN 10"–18": CONNECTION BY MEANS OF AN APPROVED SADDLE "TEE"
3. EXISTING MAIN >18": CONNECTION SHALL BE AT A MANHOLE UNLESS OTHERWISE APPROVED BY THE SEWER DISTRICT.

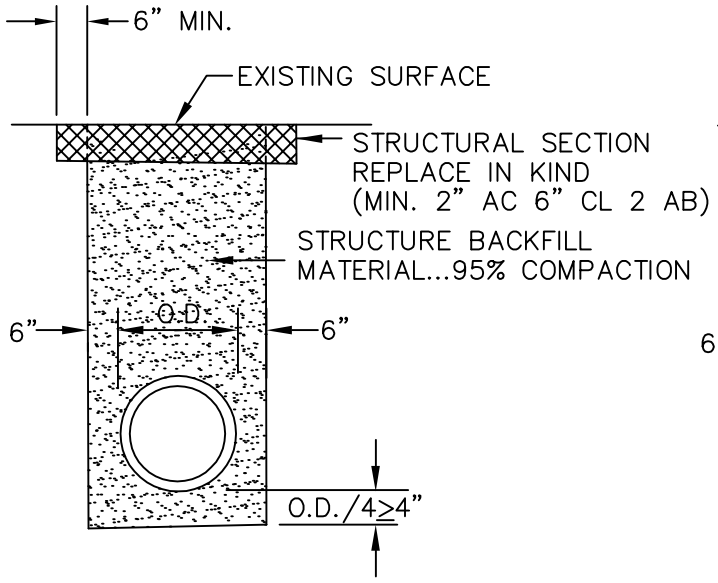
SEWER LATERAL DETAIL

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

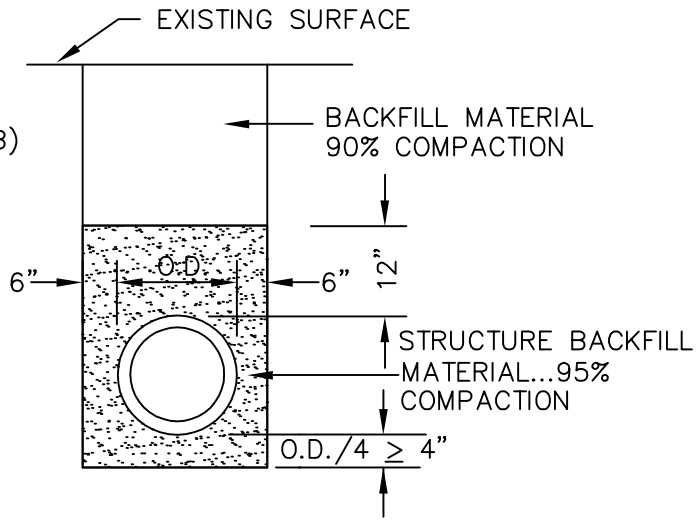
REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 7/97



TYPE A (IN ROADWAY)



TYPE B (OUTSIDE ROADWAY)

1. STRUCTURE BACKFILL MATERIAL....MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

2. BACKFILL MATERIAL.... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL

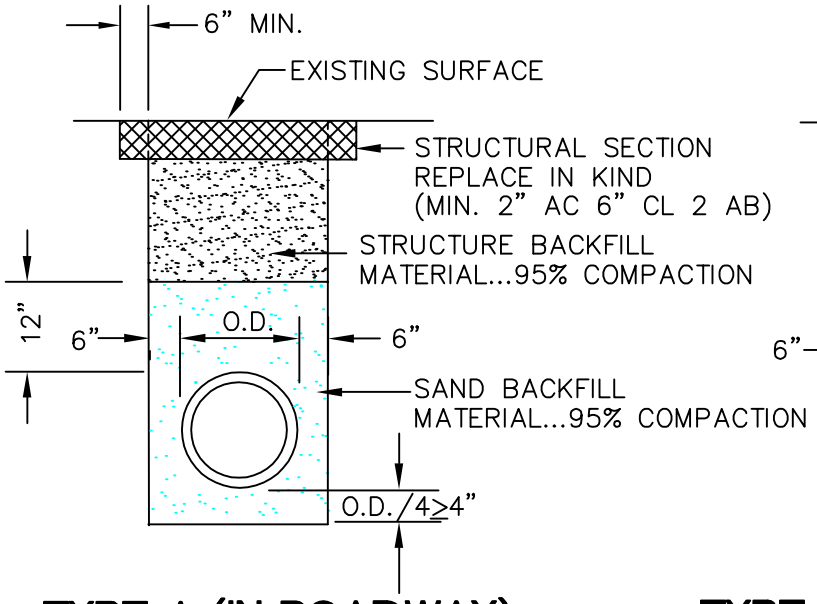
STANDARD TRENCH BACKFILL AND BEDDING DETAIL FOR VITRIFIED CLAY AND DUCTILE IRON SEWER PIPE

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

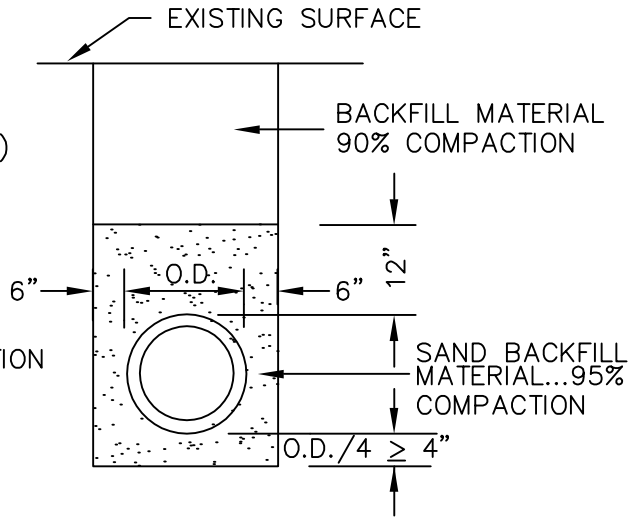
REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 7/97



TYPE A (IN ROADWAY)



TYPE B (OUTSIDE ROADWAY)

NOTES:

1. SAND.... MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
No. 4	100
No. 200	0–5

2. STRUCTURE BACKFILL MATERIAL.... MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

3. BACKFILL MATERIAL.... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL.

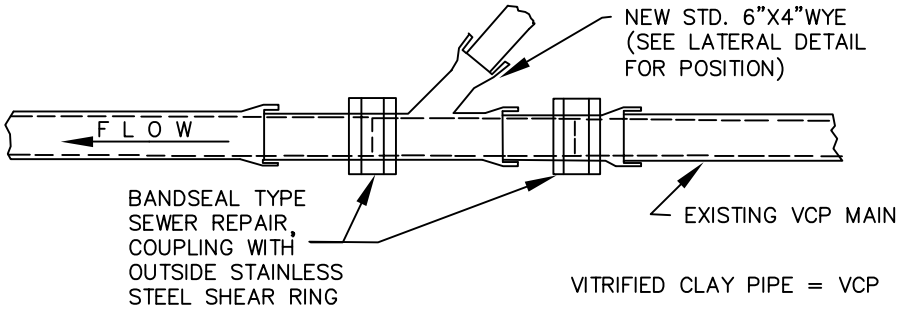
STANDARD TRENCH BACKFILL AND BEDDING DETAIL FOR PVC SEWER PIPE

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

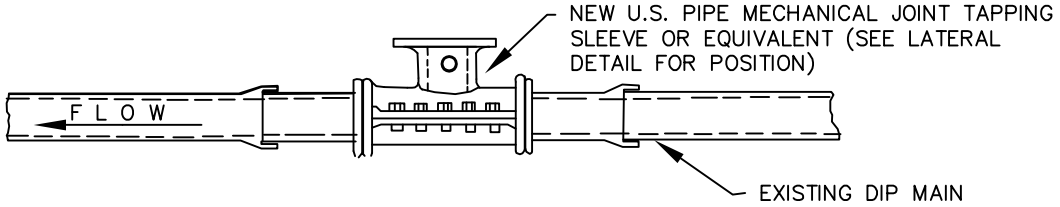
DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____



NOTE: (1) THE NEWLY INSTALLED WYE SHALL BE OF THE SAME MATERIAL AS THE EXISTING MAIN.

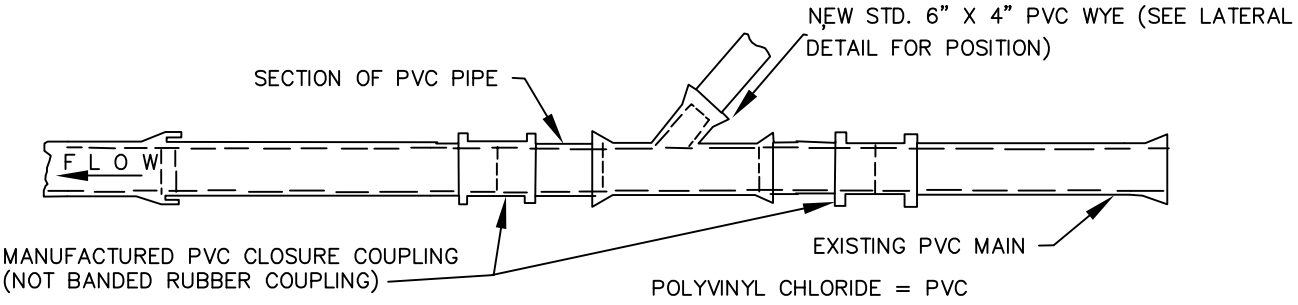
PLAN
VITRIFIED CLAY



NOTES: HORIZONTAL PIPE ENTRY ANGLE WILL BE 90 ^{0}, INSTEAD OF 45 ^{0}
(SEE LATERAL DETAIL, PLAN VIEW)

VERTICAL PIPE ENTRY ANGLE SHALL BE 45 ^{0} MINIMUM (SEE LATERAL DETAIL PROFILE VIEW)

PLAN
DUCTILE IRON PIPE



NOTE: ALL PVC, PIPE AND FITTINGS SHALL BE SDR 35 35 AND SHALL HAVE RUBBER GASKETED JOINTS. SOLVENT WELDED JOINTS SHALL NOT BE ALLOWED.

PLAN
POLYVINYL CHLORIDE PIPE

LATERAL CONNECTION INSTALLATION DETAIL ON EXISTING PIPE

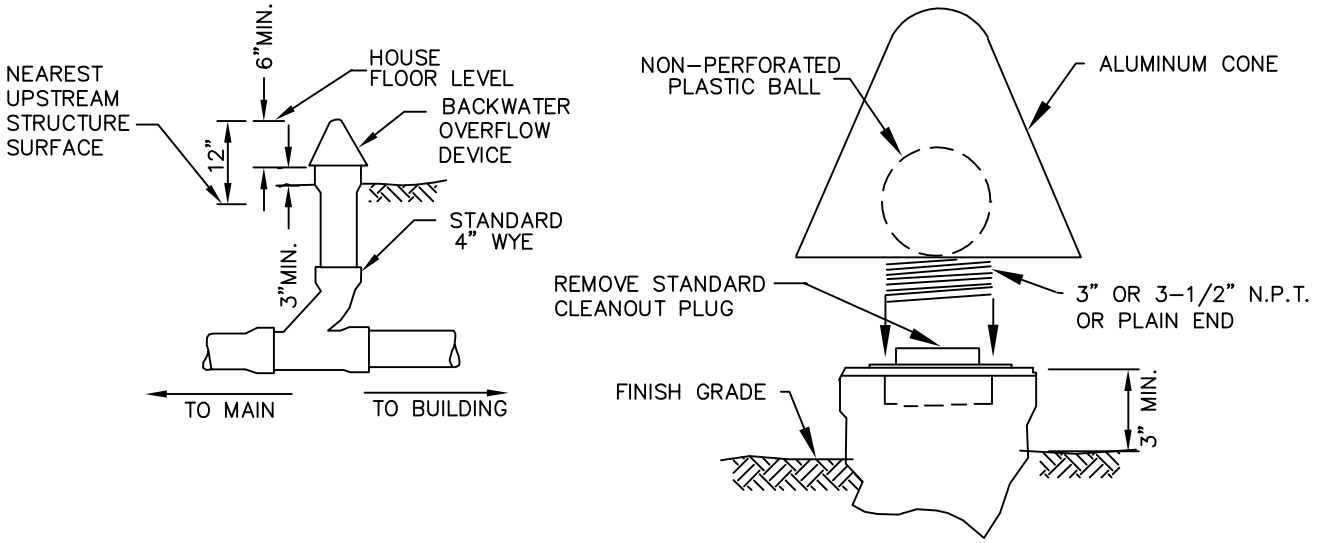
NOTE: LATERAL CONNECTION INSTALLATION ON NEWLY INSTALLED PIPE WILL BE AS DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS.

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

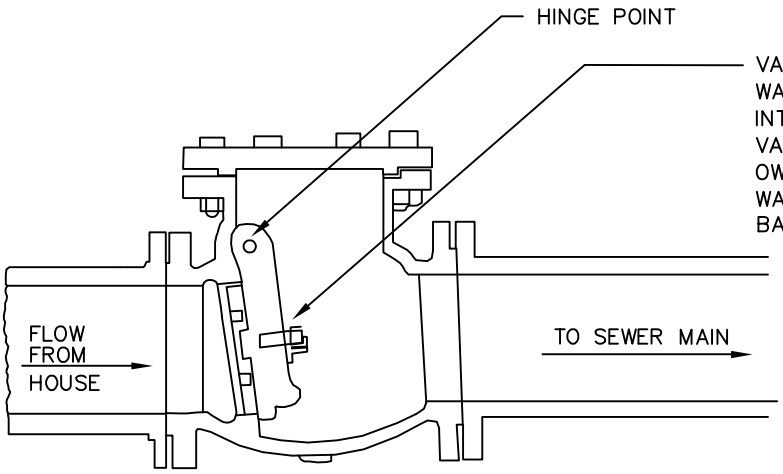
DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____



OVERFLOW DEVICE

NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION



NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION

BACKFLOW DEVICE

OVERFLOW AND BACKFLOW DEVICE DETAIL

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

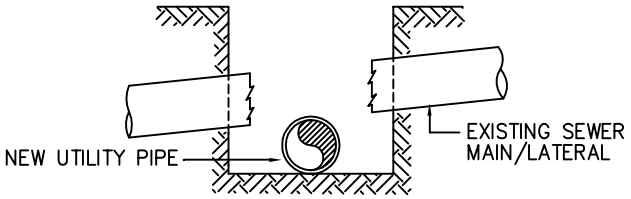
REDWOOD CITY
CALIFORNIA

DRAWN BY: M.L.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____

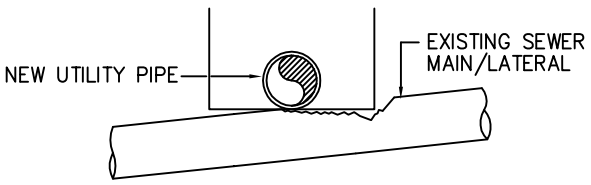
NOTICE:

CALL SANITARY DISTRICT (363–4765 OR 363–4100) BEFORE MAKING ANY SEWER REPAIRS. ALL REPAIRS MUST BE DONE IN THE PRESENCE OF A DISTRICT INSPECTOR.



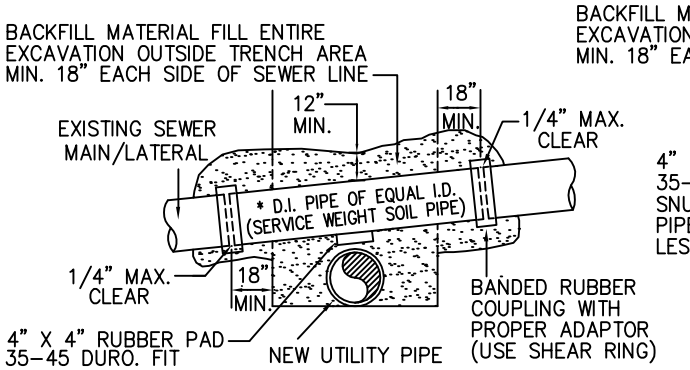
SIMPLE SEWER MAIN/LATERAL BREAK
(NO CONFLICT IN GRADE)

BREAK



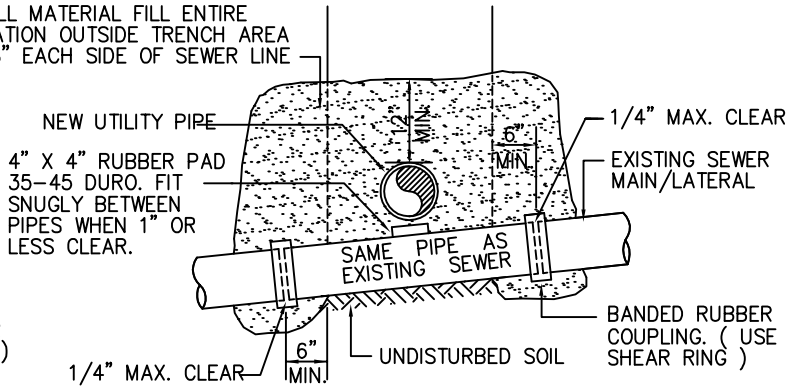
SIMPLE SEWER MAIN/LATERAL BREAK
(NO CONFLICT IN GRADE)

BREAK



REPAIR

* D.I. = DUCTILE IRON



REPAIR

PROCEDURE:

1. NOTIFY SANITARY DISTRICT (363–4765 OR 363–4100)
2. TRIM SEWER PIPE TO A CLEAN CUT UNDAMAGED END, A MINIMUM OF 18" INTO TRENCH WALL. CUT PIECE OF NEW DUCTILE IRON PIPE (D.I.P.) OF EQUAL DIAMETER TO FIT SPACE BETWEEN TRIMMED ENDS WITH A MAXIMUM CLEARANCE OF 1/4 INCH AT EACH END. ALIGN PIPES AT UPSTREAM END AND SLIDE COUPLING DOWNSTREAM, CENTERING IT OVER THE JOINT, TIGHTEN COUPLING BANDS. WHEN O.D. OF PIPES ARE WITHIN 1" OF EACH OTHER, THERE SHALL BE A 4"X4" PAD OF 35–45 DUROMETER RUBBER PLACED SNUGLY BETWEEN THE PIPES.
3. CONCRETE ENCASEMENT SHALL BE REQUIRED IN THE EVENT THE ADJACENT SOIL IS DISTURBED. LIMITS SHALL BE DETERMINED BY THE DISTRICT.

PROCEDURE:

1. NOTIFY SANITARY DISTRICT (363–4765 OR 363–4100)
2. REPAIR SHALL BE MADE AS SHOWN ABOVE WHEN CLEARANCE BETWEEN SEWER PIPE AND UTILITY PIPE IS 6" OR MORE, REPAIR MAY BE MADE WITH THE SAME TYPE OF PIPE AS THE EXISTING SEWER. WHEN O.D. OF PIPES ARE WITHIN 1" OF EACH OTHER, THERE SHALL BE A 4" X 4" PAD OF 35–45 DUROMETER RUBBER PLACED SNUGLY BETWEEN THE PIPES.
3. IF EXISTING SEWER PIPE IS PVC OR ABS, USE MANUFACTURED COUPLINGS AND NOT BANDED RUBBER COUPLINGS.
4. CONCRETE ENCASEMENT SHALL BE REQUIRED IN THE EVENT THE ADJACENT SOIL IS DISTURBED. LIMITS SHALL BE DETERMINED BY THE DISTRICT.

STANDARD DRAWING
VITRIFIED CLAY AND DUCTILE IRON SEWER PIPE
PIPE CROSSING REPAIR

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

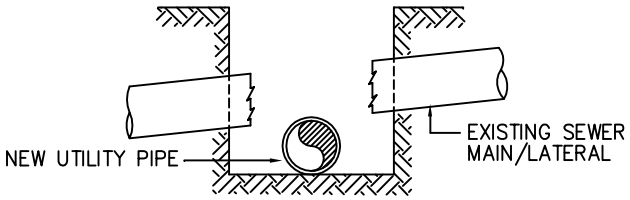
REDWOOD CITY
CALIFORNIA

DRAWN BY: M.L.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____

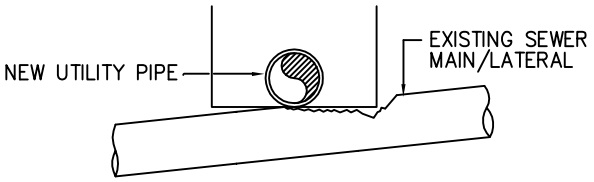
NOTICE:

CALL SANITARY DISTRICT (363–4765 OR 363–4100) BEFORE MAKING ANY SEWER REPAIRS. ALL REPAIRS MUST BE DONE IN THE PRESENCE OF A DISTRICT INSPECTOR.



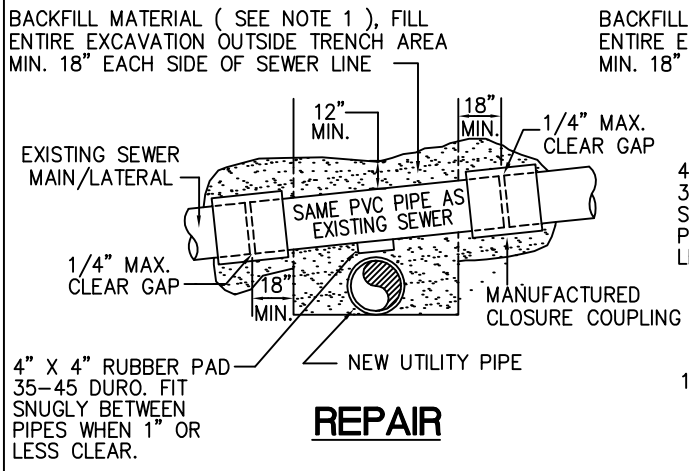
SIMPLE SEWER MAIN/LATERAL BREAK
(NO CONFLICT IN GRADE)

BREAK

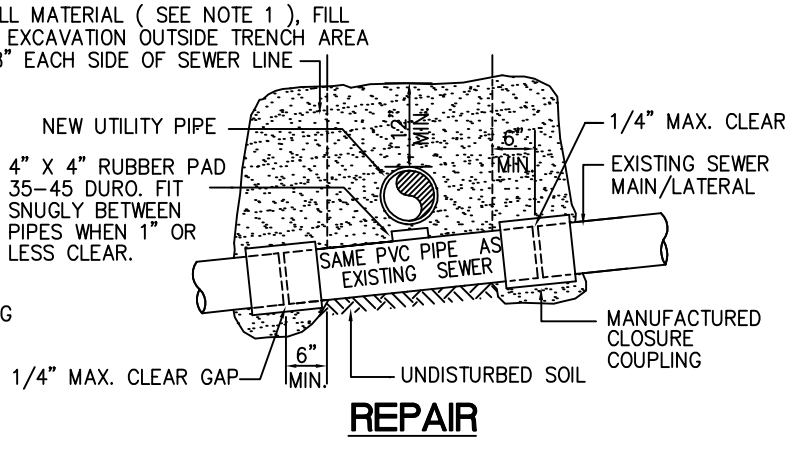


SIMPLE SEWER MAIN/LATERAL BREAK
(NO CONFLICT IN GRADE)

BREAK



REPAIR



REPAIR

NOTES:

1. BACKFILL MATERIAL SHALL BE SAND AS SPECIFIED IN STANDARD TRENCH BACKFILL AND BEDDING DETAIL FOR P.V.C. SEWER PIPE (C–7) OR OTHER MATERIAL APPROVED EQUAL BY THE SEWER DIVISION.
2. THE USE OF BANDED RUBBER COUPLINGS IS PROHIBITED.

PROCEDURE:

1. NOTIFY SANITARY DISTRICT (363–4765 OR 363–4100)
2. TRIM SEWER MAIN/LATERAL TO A CLEAN–CUT, UNDAMAGED END, A MINIMUM OF 18" INTO TRENCH WALL. INSTALL NEW PVC PIPE WITH MANUFACTURED CLOSURE COUPLINGS (IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS).
3. WHEN OUTSIDE DIAMETER OF THE CROSSING PIPES ARE WITHIN 1" OF EACH OTHER, THERE SHALL BE A 4" X 4" PAD OF 35–45 DUROMETER RUBBER PLACED SNUGLY BETWEEN THE PIPES.

PROCEDURE:

1. NOTIFY SANITARY DISTRICT (363–4765 OR 363–4100)
2. WHEN O.D. OF PIPES ARE WITHIN 1" OF EACH OTHER, THERE SHALL BE A 4" X 4" PAD OF 35–45 DUROMETER RUBBER PLACED SNUGLY BETWEEN THE PIPES.

STANDARD DRAWING

POLYVINYL CHLORIDE (PVC) SEWER PIPE

PIPE CROSSING REPAIR

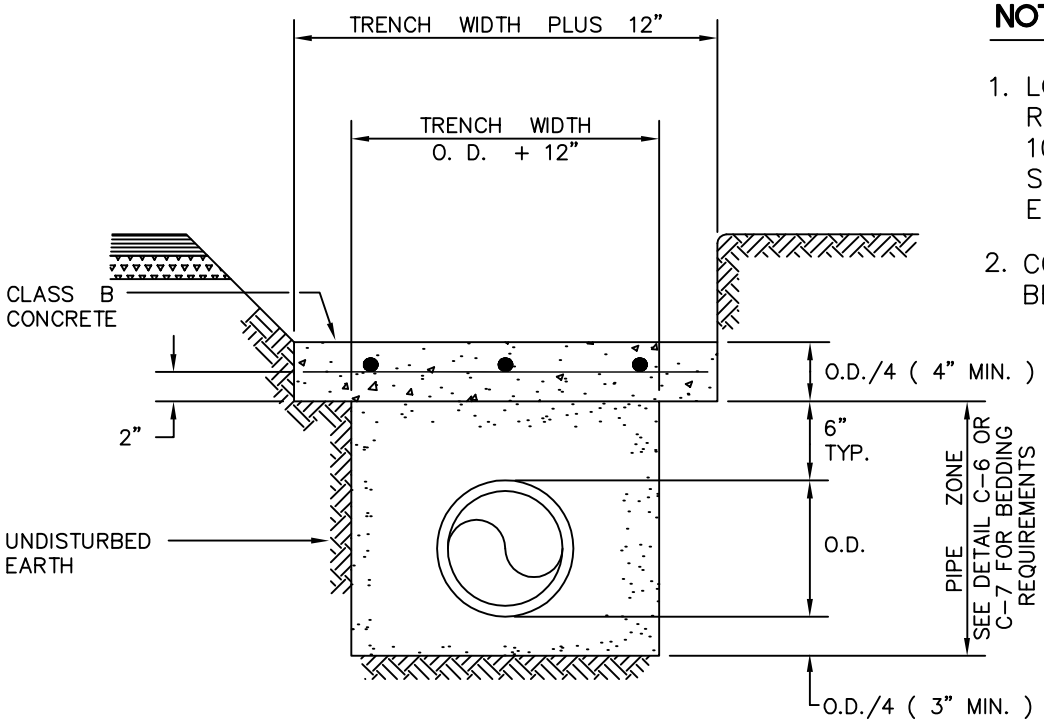
C–11

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: M.L.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____

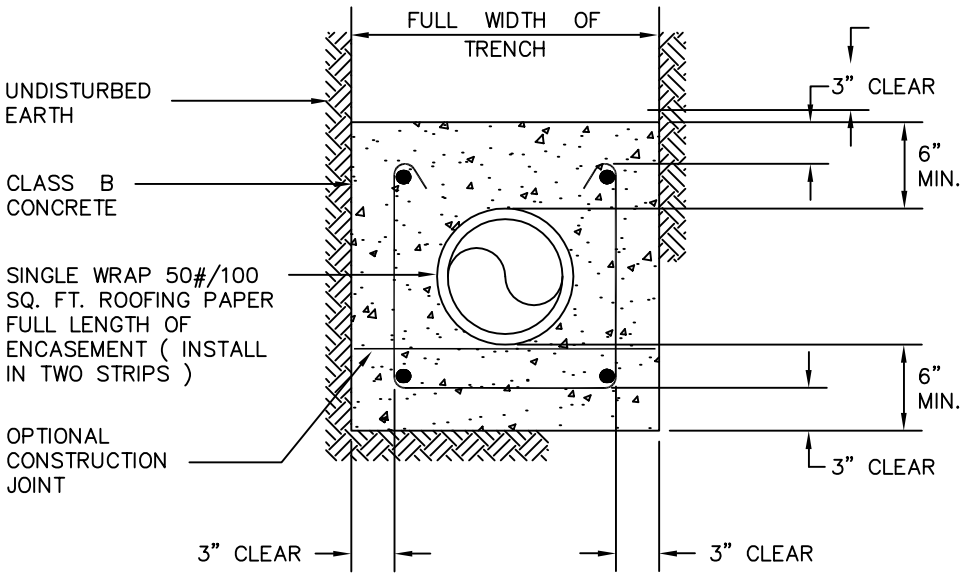


NOTE:

1. LONGITUDINAL TRENCH SLAB REINFORCING: #4 BARS AT 10" O.C. TRANSVERSE TRENCH SLAB REINFORCING: 1–#4 EVERY 20" OF SLAB LENGTH.
2. CONCRETE CAPS SHALL NOT BE USED OVER PLASTIC PIPE.

REINFORCED CONCRETE CAP

NON - PLASTIC PIPE ONLY



NOTE:

1. LONGITUDINAL REINFORCING: 4–#4 BARS AS SHOWN. STIRRUP REINFORCING: 1–#4 BAR EVERY 24" OF CONCRETE ENCASEMENT LENGTH.
2. PLASTIC PIPE SHALL NOT BE ENCASED.

CONCRETE ENCASEMENT

NON - PLASTIC PIPE ONLY

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____

SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS

GENERAL NOTES

1. ALL REFERENCES TO "DISTRICT" IN THESE GENERAL NOTES SHALL MEAN THE APPROPRIATE COUNTY SEWER OR SANITATION DISTRICT.

2. THE APPROVAL OF THESE PLANS BY THE DISTRICT SHALL BE INTERPRETED TO MEAN THAT THE SANITARY SEWER DESIGN SHOWN ON THESE PLANS MEETS THE DISTRICT'S STANDARDS. THE DISTRICT'S APPROVAL IN NO WAY GUARANTEES ANY OTHER ASPECT OF THIS PLAN OR ITS ACCURACY RELATIVE TO ACTUAL FIELD CONDITIONS.

3. THE CONTRACTOR SHALL CONTACT THE DISTRICT AT 363-4765 OR 363-4100 TWO (2) WOKING DAYS IN ADVANCE OF BEGINNING ANY SANITARY SEWER WORK. THE CONTRACTOR SHALL THEREAFTER KEEP THE INSPECTOR FOR THE DISTRICT INFORMED OF HIS SCHEDULE FOR SANITARY SEWER WORK.

4. ALL SANITARY SEWER WORK CONSTRUCTED WITHOUT INSPECTION BY THE DISTRICT SHALL BE REMOVED AND RECONSTRUCTED WITH INSPECTION.

5. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT FORTY-EIGHT (48) HOURS IN ADVANCE OF BEGINNING ANY WORK.

6. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES BEFORE BEGINNING ANY EXCAVATING.

7. THE CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS REQUIRED BY THE COUNTY OR CITY BEFORE BEGINNING ANY SANITARY SEWER WORK.

8. UPON THE COMPLETION OF CONSTRUCTION A COMPLETE SET OF REPRODUCIBLE "AS-CONSTRUCTED" PLANS SHALL BE PROVIDED TO THE DISTRICT.

9. SANITARY SEWER SERVICE SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL USE WHATEVER MEANS ARE NECESSARY (E.G. PUMPS, ETC.) TO MAINTAIN THIS SERVICE DURING CONSTRUCTION.

10. PRIOR TO COMMENCING ANY SANITARY SEWER WORK IN OFF-SITE EASEMENTS THE CONTRACTOR SHALL PROVIDE THE DISTRICT WITH ADEQUATE EVIDENCE THAT ALL AFFECTED PROPERTY OWNERS (AND TENANTS WHERE APPLICABLE) WERE NOTIFIED WELL IN ADVANCE OF THE DATE WORK IN THESE EASEMENTS WAS TO BEGIN AND THAT THEY HAVE UPDATED THAT NOTICE IN A TIMELY MANNER WHEN THOSE DATES HAVE CHANGED.

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 4/97

SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS

PIPE AND FITTINGS

POLYVINYL CHLORIDE PIPE (PVC)

1. ALL PIPE AND FITTINGS SHALL CONFORM TO ASTM SPECIFICATIONS D3034, SDR 35.

2. ALL JOINTS SHALL BE A BELL AND SPIGOT ASSEMBLY WITH ELASTOMERIC SEALING GASKETS. SEALING GASKETS SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATION D1869. SOLVENT CEMENT JOINTS ARE NOT PERMITTED.

3. ALL PIPE ENTERING OR LEAVING A CONCRETE STRUCTURE SHALL HAVE A RUBBER WATERSTOP GASKET ATTACHED TO IT. THE WATERSTOP GASKET SHALL CONFORM TO THE PIPE MANUFACTURER'S SPECIFICATIONS. THE WATERSTOP GASKET SHALL BE SEATED FIRMLY AROUND THE PIPE EXTERIOR AND BE CAST INTO THE CONCRETE STRUCTURE.

4. ALL PIPE JOINTS SHALL BE MADE USING MANUFACTURED PVC COUPLINGS. BAND TYPE COMPRESSION COUPLINGS ARE NOT PERMITTED.

DUCTILE IRON PIPE (DIP)

1. ALL PIPE SHALL BE THICKNESS CLASS 50 (FOUR INCH PIPE SHALL BE THICKNESS CLASS 51) IN ACCORDANCE WITH ANSI SPECIFICATIONS A21.51. FITTINGS SHALL BE IN ACCORDANCE WITH ANSI SPECIFICATION A21.10.

2. JOINTS SHALL BE PUSH–ON TYPE OR MECHANICAL JOINT TYPE IN ACCORDANCE WITH ANSI SPECIFICATION A21.11. RUBBER GASKETS FOR PUSH–ON JOINTS SHALL BE IN ACCORDANCE WITH ANSI SPECIFICATIONS HEREIN.

3. PIPE AND FITTINGS SHALL HAVE A BITUMINOUS COATING OUTSIDE IN ACCORDANCE WITH ASTM SPECIFICATION A746–86, UNLESS OTHERWISE SPECIFIED HEREIN.

4. PIPE AND FITTINGS SHALL HAVE A 1/16" (ONE–SIXTEENTH INCH) CEMENT–MORTAR LINING WITH AN ASPHALTIC SEAL COAT.

VITRIFIED CLAY PIPE (VCP)

1. PIPE AND FITTINGS SHALL BE EXTRA STRENGTH, UNGLAZED, BELL AND SPIGOT, CONFORMING TO THE LATEST REVISION OF ASTM SPECIFICATION C700.

2. JOINTS SHALL BE A BELL AND SPIGOT ASSEMBLY WITH FACTORY INSTALLED FLEXIBLE COMPRESSSION TYPE GASKETS MADE OF PLASTICIZED POLYVINYL OR POLYURETHANE CONFORMING TO THE LATEST REVISION OF ASTM SPECIFICATIONS C425. BAND TYPE COUPLINGS ARE NOT ALLOW.

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

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CHECK BY: R.O.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: _____

SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS
STANDARD SPECIFICATIONS

TESTING REQUIREMENTS

1. ALL REFERENCES TO "DISTRICT" IN THESE TESTING REQUIREMENTS SHALL MEAN THE APPROPRIATE COUNTY SEWER OR SANITATION DISTRICT.

2. ALL REQUIRED CLEANING AND TESTING OF SANITARY SEWER MAINS AND LATERALS SHALL BE PERFORMED IN THE PRESENCE OF A REPRESENTATIVE OF THE DISTRICT.

3. ALL SANITARY SEWER MAINS BEING CONSTRUCTED SHALL BE CLEANED BY MEANS OF A HIGH SPEED JET RODDER PRIOR TO TESTING. VCP AND DIP SHALL BE TESTED FOR OBSTRUCTION BY BALL ROLLING.

4. ALL SANITARY SEWER MAINS BEING CONSTRUCTED SHALL PASS A LOW PRESSURE AIR TEST. EACH SECTION OF MAIN SHALL BE TESTED BETWEEN SUCCESSIVE MANHOLES. THE LOW PRESSURE AIR TEST SHALL BE CONDUCTED IN THE FOLLOWING MANNER.

   A COMPRESSED AIR SUPPLY SHALL BE ATTACHED TO AN AIR FITTING ON THE MAIN AND THE AIR PRESSURE WITHIN THE LINE INCREASED TO FOUR (4) POUNDS PER SQUARE INCH. (PSI). AFTER THE AIR SUPPLY IS SECURELY TURNED OFF OR DISCONNECTED, THERE SHALL BE A TWO (2) MINUTE WAITING PERIOD BEFORE THE ACTUAL TEST PERIOD BEGINS TO ALLOW STABILIZATION OF AIR WITHIN THE MAIN.

   IN NO CASE SHALL THE AIR PRESSURE WITHIN THE LINE BE LESS THAN 3.5 PSI AT THE BEGINNING OF THE TEST PERIOD. REFER TO THE CHART WHICH FOLLOWS FOR THE LENGTH OF THE TEST PERIOD. THE MINIMUM LENGTH OF TEST IS TWO (2) MINUTES). THE ALLOWABLE AIR PRESSURE LOSS DURING THE TEST PERIOD SHALL BE 1.0 PSI. A WRITTEN RECORD OF THE TEST SHALL BE SUBMITTED TO THE DISTRICT BY THE CONTRACTOR.

NOMINAL PIPE SIZE (inches)	LENGTH OF LINE (feet)	LENGTH OF TEST (minutes)
4	ALL	2
6	0 – 300	2
6	300 – 370	2 1/2
6	370 AND GREATER	3
8	0 – 170	2
8	170 – 210	2 1/2
8	210 – 250	3
8	250 – 290	3 1/2
8	290 AND GREATER	3 3/4
10	0 – 110	2
10	110 – 165	3
10	165 – 215	4
10	215 AND GREATER	4 3/4

5. A TELEVISION INSPECTION SHALL BE MADE OF ALL SANITARY SEWER MAINS BEING CONSTRUCTED. IMMEDIATELY PRIOR TO TELEVISING THE SEWER, AN AMOUNT OF WATER ACCEPTABLE TO THE DISTRICT'S REPRESENTATIVE SHALL BE INTRODUCED INTO THE SEWER MAIN BEING INSPECTED.

   A VIDEO TAPE IN VHS FORMAT AT SP, OR EQUIVALENT, SPEED SHALL BE MADE OF THE INSPECTION AND DELIVERED ALONG WITH A TYPED LOG OF THE INSPECTION TO THE DISTRICT (SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS) FOR REVIEW AND ACCEPTANCE.

   SUBMITTED VIDEO TAPES SHALL INCLUDE A CONTINUOUS ON-SCREEN DISPLAY WHICH CONTAINS, AS A MINIMUM, THE DATE OF THE FILMING, IDENTIFICATION OF THE LINE AND SEGMENT (REACH) OF THE LINE BEING VIEWED, AND A READOUT, IN FEET, SHOWING THE DISTANCE TO THE ENTRY POINT.

   IF, IN THE OPINION OF THE DISTRICT, THE SUBMITTED VIDEO TAPES ARE OF POOR QUALITY, THE DISTRICT MAY REJECT THE VIDEO TAPES AND REQUIRE THE VIDEO INSPECTION TO BE REPEATED AND NEW VIDEO TAPES SUBMITTED TO THE DISTRICT FOR REVIEW AND ACCEPTANCE. ALL VIDEO TAPES SHALL BECOME THE PROPERTY OF THE DISTRICT.

6. DEFLECTION TESTING OF POLYVINYL CHLORIDE (PVC) SEWER MAINS SHALL BE PERFORMED AFTER THE PLACEMENT OF ALL TRENCH BACKFILL. PIPE DEFLECTION SHALL BE TESTED BY PULLING BY HAND A GO/NO-GO MANDREL THROUGH THE INSTALLED SECTIONS OF SEWER MAIN.

   THE MANDREL USED SHALL HAVE A MINIMUM LENGTH EQUAL TO ITS DIAMETER. THE MANDREL SHALL BE CONSTRUCTED WITH A MINIMUM OF NINE (9) RIBS FABRICATED PARALLEL TO ITS LONGITUDINAL AXIS. BOTH THE DESIGN OF THE MANDREL AND THE FABRICATED MANDREL ITSELF SHALL BE INSPECTED AND APPROVED BY THE DISTRICT WELL IN ADVANCE OF THE DEFLECTION TEST.

   THE MANDREL DIAMETER SHALL BE 95% OF THE PIPE'S AVERAGE INSIDE DIAMETER AS DEFINED BY ASTM SPECIFICATION D3034, AND AS DETAILED IN THE FOLLOWING TABLE:

NOMINAL PIPE SIZE (inches)	AVERAGE INSIDE DIAMETER (inches)	MINIMUM MANDREL DIAMETER (inches)
6	5.893	5.598
8	7.891	7.497
10	9.864	9.371

NOTE: AVERAGE INSIDE DIAMETER = AVERAGE OUTSIDE DIAMETER – 2(1.06)T; WHERE T = MINIMUM WALL THICKNESS AS DEFINED BY ASTM SPECIFICATION D3034.

Appendix 6.1 – Sanitary Sewer Overflow Emergency Response Plan (OERP)

Overflow Emergency Response Plan (OERP)

County of San Mateo

Department of Public Works

Prepared for

Burlingame Hills Sewer Maintenance District

Crystal Springs County Sanitation District

Devonshire County Sanitation District

Edgewood Sewer Maintenance District

Emerald Lake Heights Sewer Maintenance District

Fair Oaks Sewer Maintenance District

Harbor Industrial Sewer Maintenance District

Kensington Square Sewer Maintenance District

Oak Knoll Sewer Maintenance District

Scenic Heights County Sanitation District

Updated: August 2, 2019

WATERWORKS ENGINEERS

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List of Terms

Collection System – Generic term for any system of pipes or sewer lines used to convey wastewater to a treatment facility. The county of San Mateo does not own the lower lateral part of the collection system.

Enrollee – A public entity that owns or operates a sanitary sewer system and has submitted a complete and approved application for coverage under the SSS WDR.

Lateral (also called Service Lateral) – A segment of pipe that connects a home or building to a sewer main, which may be located beneath a street or easement. The responsibility for maintaining a lateral can be solely that of the Enrollee or the private property owner; or it can be shared between the two or more parties. Local communities dictate lateral responsibility and the basis for a shared arrangement, if it applies. See Lower Lateral and Upper Lateral definitions.

Lower Lateral – That portion of a lateral usually from the property line or easement line to the sewer main. The county of San Mateo is not responsible for maintenance of this portion of the lateral and the lower lateral is owned and maintained by the property it serves.

Miles of Gravity Sewer – Amount of gravity sewer lines/pipes in an Enrollee's sanitary sewer system, expressed in miles.

Percent Reached Surface Water – Volume of sewage discharged from a sanitary sewer system or private lateral or collection system estimated to have reached surface water divided by the total volume of sewage discharged.

Percent Recovered – Volume of sewage discharged that was disposed of properly, divided by the total volume of sewage discharged.

Private Lateral – Privately owned sewer service lateral.

Private Lateral Sewage Discharge (PLSD) – Sewage discharges caused by blockages or other problems within privately owned laterals, collection systems or other private sewer assets that are tributary to the reporting Enrollee's sanitary sewer system. Reports of these events may be submitted by Enrollees on a voluntary basis except in San Diego Region 9, but are not the Enrollee's responsibility unless caused by issues in the main line or because of other Enrollee activity. Normally, this type of sewage discharge is the responsibility of the private lateral, private asset, or collection system owner. (The Districts do not maintain private laterals. Overflows from private lateral are not reported.)

Sanitary Sewer Overflow (SSO) – Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

i. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
ii. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and

iii. Wastewater backups into buildings and on private property caused by blockages or flow conditions within the publicly-owned portion of a sanitary sewer system.

Sanitary Sewer System – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a WWTP head works and which is comprised of more than one mile of pipes and sewer lines, used to collect and convey wastewater to a publicly owned treatment facility.

SSO Category 1 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system that resulted in a discharge to a drainage channel and/or surface water.

SSO Category 2 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume equal to or greater than 1,000 gallons that did not reach surface water.

SSO Category 3 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume less than 1,000 gallons that did not reach surface water.

SSO Database – Online reporting system developed, hosted, and maintained by the SWRCB for compliance with the Monitoring and Reporting Program contained in SSS WDR.

Storm Drain – For the purposes of complying with the SSS WDR, any pipe that is part of a Municipal Separate Storm Sewer System (MS4) used for collecting or conveying storm water.

Total # of SSOs per 100 miles of Sewer per Year – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the number of SSOs for which the reporting Enrollee is responsible, for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total \# of SSOs per year} = \frac{(\text{Total \# of SSOs} \times 100)}{(\text{Years}) \times (\text{Miles of Pressure Sewer} + \text{Miles of Gravity Sewer} + \text{Miles of Public Laterals})}$$

Total Volume of SSOs Reached Surface Water per 100 miles of Sewer – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting Enrollee is responsible, that reached surface water for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the threat posed by SSOs. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and vii their sanitary sewer systems. For systems smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

Total Annual Volume of SSOs Reaching Surface Waters =

$$\frac{(\text{Total volume of SSOs reaching Surface Waters } \times\ 100)}{(Years)\ \times\ (Miles\ of\ Pressure\ Sewer\ +\ Miles\ of\ Gravity\ Sewer\ +\ Miles\ of\ Public\ Laterals)}$$

Total Volume Reached Surface Water – Amount of sewage discharged from a sanitary sewer system, private lateral, or collection system estimated to have reached surface water.

Total Volume Recovered – Amount of sewage discharged that was captured and disposed of properly.

Upper Lateral – Portion of a lateral usually from the building foundation to the property line or easement line where it connects to the Lower Lateral. Enrollees may not own and maintain this portion of a Lateral since responsibility usually lies with the owner of the property that the lateral serves.

Waterway – Any body of water that is shown on the USGS topographic maps. A natural drainage channel, whether it was dry or wet at the time of the SSO, that is tributary to a waterway is considered a waterway as well.

WDID – Waste Discharge Identification number assigned as a unique identifier by the SWRCB to each Enrollee for regulatory recordkeeping and data management purposes.

1.0. Introduction

The following Overflow Emergency Response Plan (OERP) is developed by the County to provide responding procedures to Sanitary Sewer Overflows (SSOs).

The purpose of this OERP is to ensure that any SSOs that occur within the ten (10) County maintained Sewer/Sanitation Districts (Districts) are handled and reported effectively and that all requirements are met, to prevent or minimize further damage or injury to the environment and the public health.

The Wastewater Collection System (WWC) staff is required to know and follow these procedures. The following is a list of goals of this OERP:

- Respond quickly to minimize the SSO footprint.
- Eliminate the SSO cause.
- Contain the spill.
- Prevent public contact with the SSO.
- Mitigate the impact of the SSO.
- Meet the reporting requirements of the Regional Water Quality Control Board (RWQCB).

2.0. Notification Procedures

- Whenever an SSO is reported to the District office during normal business hours (Monday through Friday, 8:00 a.m. to 5:00 p.m.), the office staff (engineering and technicians division) dispatches a sewer crew (primary on-call) immediately to respond to the emergency. The incident is recorded in the Computerized Maintenance Management System (CMMS) with a Service Request Number assigned to the call.
- All SSO calls received after business hours are directed to the County Communications Center (County Control). County Control then notifies the primary on-call sewer crew staff of the location and identifies information about the caller and the incident.
- The sewer crew's goal is to arrive at the incident location with response vehicle and equipment within 60 minutes after notification, however traffic condition can cause significant delay.
- If the primary on-call crew needs additional support, secondary on-call crew from Road Maintenance Division is called.
- All SSOs are reported back to the office staff by the sewer crew. For SSOs during non-business hours, the crew reports back via the office voice mail and on the next business day. The information is then entered into CMMS by the office staff.

Attachment A – SSMP Contact Directory includes SSO responsible contact directory and **Attachment D – Overflow Response Contingency Equipment** lists the OERP equipment.

Figure 1 summarizes the SSO procedures flow chart sequence.

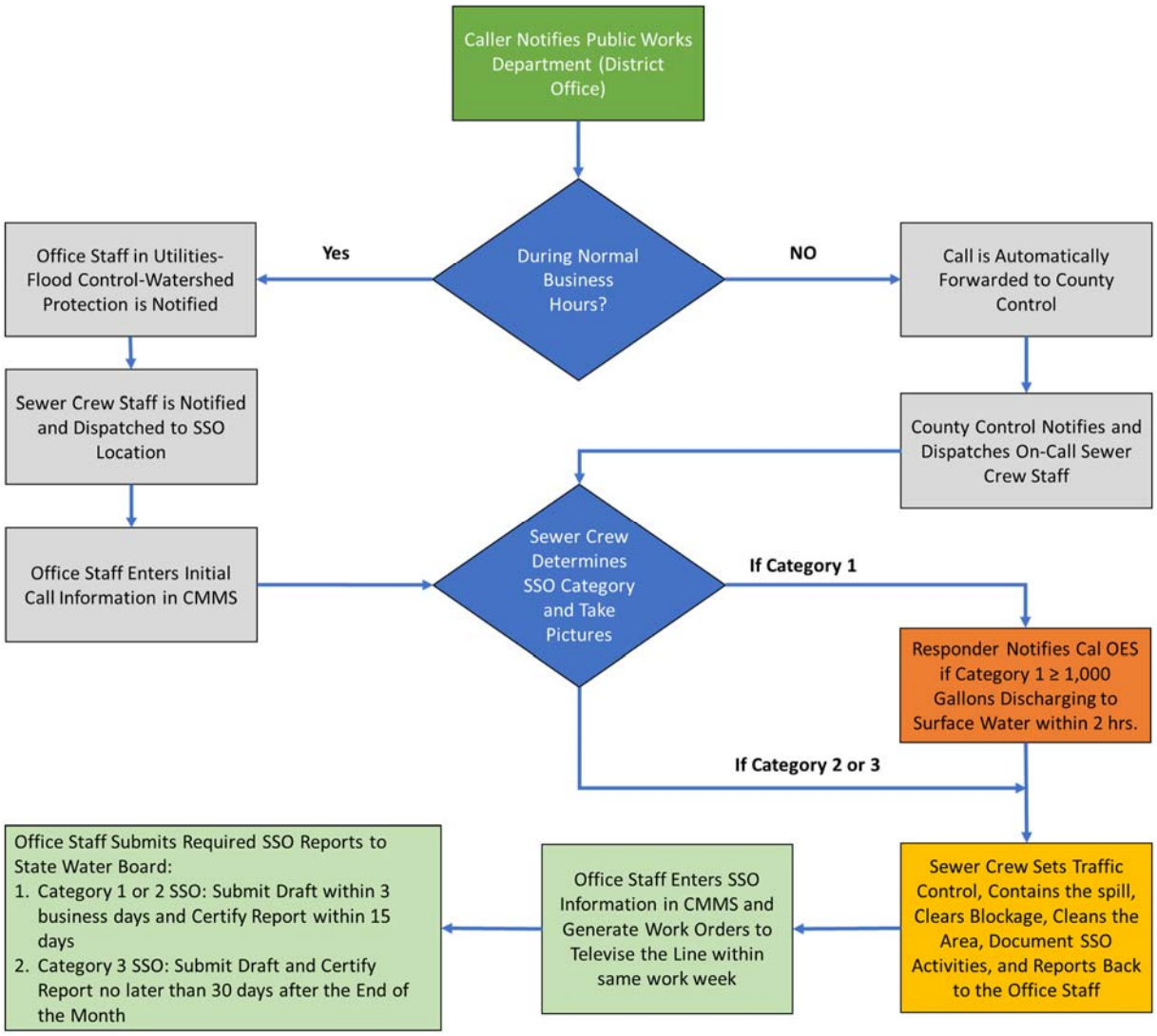


Figure 1 – SSO Procedures Flow Chart

3.0. Overflow Response Field Procedure

Refer to the following procedures when responding to an overflow:

1. Wear personal protective equipment and follow all safety regulations.
2. Perform SSO investigation and assessment:
   a) Call for additional help if needed. (Secondary On-Call **Attachment A – SSMP Contact Directory**)
   b) Identify receiving water that may be impacted by SSO.
   c) Take photos and/or videos of the incident and surrounding area.
   d) Determine the Category of the SSO. An answer "Yes" to at least one of the following questions indicates a Category 1 SSO:
      1. Did the SSO reach a drainage channel or surface waters?

2. Did the SSO discharge into a storm drain that was not fully captured and returned to the sewer system?

e) For all overflows, priority is given to containing the spill and clearing the blockage. Field staff will leave a message on the sewer voice mail. Field staff will notify California Office of Emergency Services (Cal OES), if SSO category 1 is more than 1,000 gal, within the first two hours

3. Provide adequate traffic control; and establish perimeters and control zones with cones, barricades, vehicles, or terrain for sewer crew's protection and public safety.
   a) If the County Health Officer determines that the SSO may affect the public health, a Health Officer will be dispatched to the site.
   b) The Health Officer will determine the steps required to abate a health or environmental threat. The Health officer will also decide if samples are to be collected for SSOs less than 50,000 gallons. Refer to the Water Quality Monitoring Program Plan (**Attachment F – Water Quality Monitoring Program**) for details on when and how to collect samples.
   c) Post warning signs and block contaminated areas with yellow caution tape and barricades if SSO poses a public threat or is reaching or has reached the waters of the State to protect the public, or if deemed necessary by the Health Officer.
4. Contain SSO by employing any of the following or other site-specific methods for containing the SSO:
   a) Plug nearby catch basin outlets using inflatable plugs or cover catch basin inlets and storm drains using rubber mats.
   b) Contain the SSO by letting sewage collect in a natural low area and recover sewage after relieving blockage.
   c) Use sandbags or absorbent material around the overflow to collect the sewage and prevent it from spreading.
   d) Divert the SSO by building dikes or berms to redirect flow back to the sewer system.
   e) Divert the SSO by pumping around an overflow and attempting to return it to the sewer system.
5. Relieve and correct the cause of SSO
   a) Relieve the blockage or cause of the SSO and determine the cause of the SSO (i.e., evaluate type and amount of debris, illegal activities, etc.).
   b) If unable to relieve the blockage, request immediate assistance from additional staff and appropriate equipment.
   c) If still unable to clear the blockage, request immediate assistance with the establishment of bypass pumping and CCTV support to determine the problem.
6. If the SSO is active upon arrival, field staff will document the estimated flow rate. The information can be used to calculate the estimated spill volume.
7. Refer to **Attachment E – SSO Cleanup SOP** for procedures on cleanup and disinfection.
   a) If an SSO is on private property and is caused by a blockage in the District maintained sewer system, follow the procedures described in **Section 4.0** of this Overflow Emergency Response Plan.
8. Interview Residents

a) Attempt to interview at least three (3) interviews including the reporting party if possible to obtain additional insight and/or observations regarding the spill including the time that the spill was first observed and a visual estimate of the amount of water discharged.
b) Document interview attempts in detail in the SSO report form.

9. Follow the procedures in the Water Quality Monitoring Program Plan (see **Attachment F – Water Quality Monitoring Program**) if sampling is required.

4.0. Overflows in Homes and in Businesses

San Mateo County Ordinance Code, Title 4, Sanitation and Health, Section 4.24.120:

Building laterals or pipes or piping which serve fixtures which are located below the level of the top of the nearest upstream manhole of the main sewer shall be protected from the back flow of sewage by the installation of an appropriate number of District approved overflow devices. As additional protection, a gate valve of the type approved by the district, may also be installed on the building lateral.

San Mateo County Ordinance Code, Title 4, Sanitation and Health, Section 4.24.130:

The district shall not be responsible for damages to the interior of a house or structure or for the costs of cleanup which results from a sewer stoppage where an overflow or backflow valve as required by Section 4.24.120 has not been installed and properly maintained.

The following procedure applies only for situations where an overflow on private property is caused by a mainline blockage and the property has been identified as not needing a backflow prevention device. See the above County Ordinance Codes.

Private Property Cleanup and Damage Claim: Refer to **Attachment E – SSO Cleanup SOP** for private SSO cleanup and private damage claims.

5.0. Overflow Documentation

A. Initial Documentation

Office staff enters the following SSO information in CMMS:

1. Type of problem
2. Call date and time
3. Caller name, phone number, and comments
4. Location of incident
5. District name
6. Time sewer crew staff dispatched
7. Name of sewer crew staff dispatched
8. Name of office staff received the call

During normal business hours, this information is entered into CMMS immediately after receiving the call and dispatching the sewer crew. During non-business hours the crew fills out a half SSO report form

and informs the office staff via voice mail. The information is entered into CMMS by office staff on the following business day upon receiving the report from the crew.

B. Field Documentation

The sewer crew first responder fills out an SSO Reporting Form (**Attachment B – Sanitary Sewer Overflow Reporting Form**) and reviews it with the Wastewater Collection Supervisor prior to submitting it to the office staff. The following information is recorded on the form:

1. Location of SSO
2. Time and date notified of SSO
3. Time sewer crew staff arrived at the SSO location
4. Time SSO started (based on caller/resident interview(s); if field inspection fails to give better information, the County will assume that the SSO started a minimum of 30 minutes before the first recorded observation time.)
5. Time SSO blockage cleared
6. Pipe size and material
7. SSO appearance point
8. Cause of SSO
9. Estimated total volume of SSO (see **Attachment C – Volume Estimation** , field number is finalized by office staff)
10. Estimated volume contained
11. Estimated volume recovered
12. Estimated volume returned to the sewer system
13. Estimated volume that may have reached any receiving water and name of that receiving water
14. Final SSO destination
15. Time response completed (cleanup)
16. Brief description of mitigation measures
17. Documentation of caller/resident interviews
18. Names of sewer crew members that responded to the SSO

C. Office Documentation

1. Sewer crew staff brings the SSO Reporting Form (with the field information completed) to the office and reviews the form with office staff to finalize the information recorded on the form.
2. Office staff uses the information on the SSO Reporting Form to submit data to the regulatory agencies as required. Office staff updates Cal OES of any substantial changes to initially reported data for Category 1 SSOs.
3. Office staff incorporates SSO Reporting Form information into CMMS for record keeping and trend tracking.

6.0. Post Response Activities

Conduct an SSO post incident investigation to identify necessary corrective actions. Follow-up actions may include:

1. Clean and televise the pipe to determine if defects exist.
2. Adjust preventative maintenance schedule to increase maintenance frequency or type of preventative maintenance (e.g. high frequency).
3. Replace/rehabilitate/repair sewer pipe or sections of sewer pipe if determined to be an appropriate course of action, based on the CIP program.
4. If an SSO is caused by lack of capacity during wet weather conditions, document the storm event and conduct analysis of the system to determine point source mitigation relief or upgrade needs. This is analyzed by SECAP and CIP if necessary.
5. Recommend new equipment needs for future SSO response.

7.0. Overflow Reporting

Upon consolidation of the data, such as volume and time, all SSOs information is accurately reported into the CIWQS database online by the Office Staff. The following provides instructions for general and time sensitive SSO reports. Contact information for the following agencies is listed in **Attachment A – SSMP Contact Directory.**

A. SSMP Responsible Personnel Directory

Refer to this for general SSO notification procedures.

B. State of California

- **California Office of Emergency Services (Cal OES)**
    1. The Cal OES must be notified by telephone immediately (within 2 hours of becoming aware of SSO) when a Category 1 SSO greater than or equal to 1,000 gallons occurs.
    2. Once the Cal OES is notified, an OES Control Number will be provided for record and proof of report compliance.
    3. The OES Control Number will be used to complete the "Notification Details" field of the State SSO Report in the California Integrated Water Quality System (CIWQS).
- **San Francisco Bay Regional Water Quality Control Board** (if necessary)
- **California Department of Fish and Wildlife** (if necessary)
- **California Highway Patrol** (for spills occurred on highways in the State)
- **California State Water Resources Control Board (State Water Board)**
    1. Whenever an event shown below occurs, the State Water Board must be notified by completing an electronic report on the CIWQS website, as required by the Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems Order No. 2006-0003, Amendment Order No. WQ 2008-0002-EXEC adopted by the State Water Board on February 20, 2008, and Order No. WQ 2013-0058-EXEC.

Table 1 – CIWQS Reporting Time Frame

SSO Type	Reporting Timeframe
Category 1	• **Initial Report** must be submitted as soon as possible, no later than 3 business days after becoming aware of SSO. • **Final Certified** Report must be submitted within 15 calendar days of the conclusion of SSO response and remediation.
Category 2	• **Initial Report** must be submitted as soon as possible, no later than 3 business days after becoming aware of SSO. • **Final Certified Report** must be submitted within 15 calendar days of the conclusion of SSO response and remediation.
Category 3	• Must be reported within 30 days after the month in which the SSO occurs.

2. Monthly Reports must be submitted within 30 days after the end of each calendar month, even if there are no SSOs.
3. For SSO events in which 50,000 gallons or greater are spilled to surface waters, office staff prepares an SSO Technical Report

C. San Mateo County Offices

- **County Environmental Health Services (County EHS)**

1. County EHS and other regulatory agencies are automatically notified when SSO is reported to OES. For SSOs that affects public health or for SSOs in BHSMD and CSCSD that are more than 10,000 gallons, contact the County's Environmental Health Officer at 650 372-6200. They will determine if samples need to be collected and what action to take.
    a) Always collect water samples when 50,000 gallons or greater from an overflow is not recovered from waters of the State.

2. For SSOs that will have substantial impact on surface water, call County EHS ASAP (within 2 hours of initial notification) to report the SSO.
    a) During business hours (Monday through Thursday, 7:00 a.m. to 6:00 p.m.), call County EHS front desk at (650) 372-6200. They can direct your call to either the Environmental Health Officer or to the District Inspector if the Environmental Health Officer is unavailable.
    b) After business hours and on Friday, Saturday or Sunday, call County Communications (Fire Dispatch) at (650) 363-4963. Inform them of the SSO and ask them to page the Environmental Health On-Call Inspector.
    c) Up Upon consulting County EHS, public areas affected by the SSO may be closed and sampling may be required.

D. Local Water Agencies

1. Water Districts: Contact local water agencies whenever an SSO threatens to impact the drinking water storage or supplies.

2. County Office of Emergency Services: San Mateo County Office of Emergency Services can assist agencies in notification and response coordination. In some cases, they may advise those completing financial assistance applications to support a cleanup operation.
3. Law Enforcement: Contact the local police department for incorporated areas and the Sheriff's Department for unincorporated areas of San Mateo County for assistance. In an emergency, dial 9-1-1 for assistance.

E. Neighborhoods

1. Local residents should be notified of the SSO whenever the situation endangers the health of a neighborhood or its environment.
2. If a resident asks about cleanup from private property structure damage caused by an SSO, refer to **Attachment E – SSO Cleanup SOP** for more information.
3. If the District is not responsible for cleanup of a spill, the property owner may choose to file a claim against the County. Claim forms can be obtained from the Clerk of the Board of Supervisors' office.

8.0. SSO Volume Calculations and Estimates

The following are some methods of determining the volume of SSO in gallons. **Attachment C – Volume Estimation Guidance** provides guidance for volume estimation of SSO.

1. Rectangular Area

If the SSO is settled in a rectangular area, the formula for calculating the volume is:

Gallons Spilled (Volume) = Length (ft) × Width (ft) × Depth (ft) × 7.48 gal/ft^3

Example 1: Calculate an SSO with dimensions of 100 ft by 100 ft and one-half foot deep.

Volume of SSO = 100' × 100' × 0.5' × 7.48 = 37,400 Gallons

2. Circular Area

If the SSO is settled in a circular area, the formula for calculating the volume is:

Gallons Spilled (Volume) = Length (ft) × Width (ft) × Depth (ft) × 7.48 gal/ft^3 × 0.785

Example 2: Calculate an SSO with a circular surface area similar to Example #1.

Volume of SSO = 100' × 100' × 0.5' × 7.48 × 0.785 = 26,180 Gallons

3. Upstream Connections

If you are dealing with an ongoing SSO where the sewage is not contained by the terrain, you can estimate the volume of SSO entering the storm drain by multiplying the average sewer flow rate per household per hour and the duration of the SSO in hours, then multiply the number of connections on the receiving line.

Estimate: Average sewer flow rate per household in an hour = 10 gallons/hour

Example 3: You have a line with 6 houses connected to the sewer main and the manhole has been overflowing for 24 hours. Calculate the total amount of SSO.

Volume of SSO = 10 gallons per hour × 24 hours × 6 houses = 1,440 Gallons

Example 4: Calculate the volume of SSO for 3 hours in Example #3 using 220 gallons per day per household.

Volume of SSO = (220 gallons per day × 3 hours × 6 houses) / 24 hours = 165 Gallons

Example 5: Calculate the volume of SSO for peak hours (6am-9am and 6pm-9pm) for 1 day in Example #3 using 220 gallons per day per household.

Volume of SSO = (220 gallons per day × 6 hours × 6 houses) / 24 hours = 330 Gallons

4. Overflowing Manhole

If a manhole is overflowing, the spill volume can be estimated using one of the following references in **Attachment C – Volume Estimation Guidance**:

a) Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes
b) Table A: Estimated SSO Flow Out Of M/H with Cover in Place
c) Table B: Estimated SSO Flow Out Of M/H with Cover Removed
d) Table C: Estimated SSO Flow Out of M/H Pick Hole

5. Soil Sampling

If an SSO has reached an unpaved surface, measure the dimensions of the wetted area. Then measure the depth of the wetted area at several spots to calculate the average depth. Soil sampling can be conducted when the soil is dry to determine the moisture content of the soil. The moisture content can be used to calculate the actual SSO volume contained by the soil. Refer to the Soil Sampling for Water Content Form **Attachment G – Soil Sampling for Water Content Form** for procedures on soil sampling.

9.0. OERP Training

With a goal of minimizing spill volume and increasing data accuracy, the district regularly implements internal OERP trainings for staff and sewer crew (such as Kick Bucket Training). These trainings cover changes made to the OERP and reviews key information from previous trainings. Refer to **Training Section** of **Element 4 – O&M Program of the SSMP** for more information regarding employee training**.**

Attachment A – SSMP Contact Directory

SSMP Contact Directory

A. SSMP Responsible Personnel Phone Directory

Responsible Party (Position)	Responsible Party (Name)	Phone Number	Email Address	SSO Role
Director of Public Works	James C. Porter	650-599-1421	jporter@smcgov.org	NA
Deputy Director	Ann Stillman	650-599-1497	astillman@smcgov.org	Notifier
Principal Civil Engineer (LRO)	Mark Chow	650-599-1489	mchow@smcgov.org	Notifier
Senior Civil Engineers	Julie Young Krzysztof Lisaj	650-599-1479 650-599-1436	jxyoung@smcgov.org klisaj@smcgov.org	Notifier
Engineers and Technicians		650-363-4100 (Office Staff) 650-599-4103 (Voice Mail)[1] 650-599-1446 650-599-1434 650-599-1443 650-599-1417 650-599-1473 650-599-1438 650-599-1503 650-599-1487	sewers@smcgov.org	Notifier
Wastewater Collection Supervisor	Tom McCarthy	650-477-6237 (cell) 650-363-4765 (desk)	tmccarthy@smcgov.org	Notifier/ Responder
Sewer Maintenance Crew (Responder)[1]		650-333-3749 (Primary On-Call) 650-393-9132 (Crew No. 13) 650-393-9193 (Crew No. 14) 650-393-0512 (Crew No. 15) 650-304-4130 (Secondary On-Call)		Responder

Notes:

- During business hours, SSO calls are directed to the office staff (notifier) and during non-business hours SSO calls are directed to the county control center (notifier).
- **Notifier** dispatches the primary on-call sewer crew (responders).
- **Responders** are dispatched to the incident location with response vehicle and equipment within 60 minutes goal after notification (traffic may have significant impact). They perform the field response as outlined in **Section 4** of the Overflow Emergency Response Plan (OERP), **Appendix 6.1** of the SSMP.
- **Primary On-Call** responder can ask for help if needed using the **Secondary On-Call** crew.
- Office staff receives incident details from the responders. Responder notifies the California Office of Emergency Services (Cal OES), County Environmental Health Services, and any other regulatory agencies as needed (e.g. if Category 1 > 1,000 gallons).

[1] Crew calls the office voice mail number to report all SSOs.

B. State of California

Agency	Phone Number
California Office of Emergency Services (Cal OES) • 24-hour toll free for caller in California • Office main line OES Coastal Region Office 1300 Clay Street, Suite 408, Oakland, CA 94612	(800) 852-7550 (916) 845-8911 (510) 286-0895
San Francisco Bay Regional Water Quality Control Board • 24-hour voicemail • Fax • Office main line • Michael Chee (San Mateo County Contact) mchee@waterboards.ca.gov 1515 Clay St. Suite 1400, Oakland, CA 94612	(510) 622-5633 (510) 622-2460 (510) 622-2300 (510) 622-2333
Department of Fish and Wildlife Central Coast Region (Region 3) 7329 Silverado Trail, Napa, CA 94558	(707) 944-5500
California Highway Patrol Redwood City Office 355 Convention Way, Redwood City, CA 94063	(650) 369-6261

C. San Mateo County Offices

Department	Phone Number
County Department of Public Works – Sewer Section	(650) 363-4100
County Environmental Health Services • Greg Smith, during business hours • Fire Dispatch	(650) 363-4305 (650) 372-6200 (front desk) (650) 363-4963
County Risk Management	(650) 363-4611
County Office of Emergency Services	(650) 363-4790
County Sheriff's Office	(650) 599-1536
County Communications Center	(650) 363-4961
County Operator (24 Hours)	(650) 363-4000
Local Police or Fire Services	9-1-1

D. Local Water Agencies

Sewer District	Water Provider	Phone Number
Burlingame Hills SMD	City of Burlingame	(650) 558-7210
Crystal Springs CSD	California Water Service Company	(650) 343-7698
Devonshire CSD	California Water Service Company	(650) 343-7698
Edgewood SMD	City of Redwood City	(650) 780-7464
Emerald Lake SMD	City of Redwood City	(650) 780-7464
Fair Oaks SMD	California Water Service Company City of Redwood City City of Menlo Park	(650) 367-6800 (650) 780-7464 (650) 330-6740
Harbor Industrial SMD	Mid-Peninsula Water District	(650) 591-8941
Kensington Square SMD	City of Redwood City	(650) 780-7464
Oak Knoll SMD	City of Redwood City	(650) 780-7464
Scenic Heights CSD	City of Redwood City	(650) 780-7464

Attachment B – Sanitary Sewer Overflow Reporting Form

SSO Reporting Form

To be filled out for all SSOs

Spill Category Determination

Category 1 if the answer to at least one of the following two questions is yes:

A) Did the SSO reach a drainage channel or surface waters? YES / NO

B) Did the SSO discharge into a storm drain that was not fully captured and returned to the sewer? YES / NO

C) 999 gallons or less that enters surface waters directly or via a storm drain does not require a 2 hour call to OES

Category 2 if SSO is equal to or greater than 1,000 gallons and the answers to both questions above are "NO"

Category 3 if SSO is less than 1,000 gallons and the answers to both questions above are "NO"

Notify supervisor / office staff immediately upon determining the SSO is <u>Category 1</u>.
Cal OES: 800-852-7550, San Mateo County Environmental Health Services: 372-6200

<u>Oncall/Sewer Crew</u>

Reported location / Address / District: _____

Time and date field staff notified: _____

SSO reported to field staff by: _____

Time crew arrived: _____

<u>On Scene Assessment</u>

Photographs taken: _____

Time notified supervisor or engineer: _____

Is containment possible? Yes / No

SSO start time: _____

Time blockage cleared: _____

Estimated rate of SSO: _____ gallons per minute (initial eyeball estimation method)

SSO duration: _____ minutes (time SSO started – time SSO was stopped)

Blockage was: _____ *FEET / RODS* from MH # _____ (between MH # _____ and MH # _____)

Overflowing manhole number(s): _____ Main line size (in.): _____

SSO appearance point: MANHOLE/ CLEANOUT/ PIPE/ PUMP/ BUILDING/ OTHER _____

_____

Cause of SSO: *DEBRIS / GREASE / ROOTS / TOILET PAPER / OPERATOR ERROR /*

OTHER PAPER: _____ / PUMP FAILURE / PIPE FAILURE / STORM /

VANDALISM / OTHER: _____

SSO Reporting Form (Continued)

SSO total volume (gallons): _____

SSO volume contained (gallons): _____

SSO volume recovered (gallons): _____

SSO volume returned to system (gallons): _____

SSO volume entered state water (gallons): _____

Main line material: *VCP / PVC / HDPE / RCP / OTHER:* _____

Amount of material pulled out (example: DM, RL, GH): _____

Weather condition: *DRY / RAINING / WET / OTHER:* _____

Final destination of SSO: *STREET / GUTTER / STORM DRAIN / BUILDING / PAVED SURFACE / UNPAVED SURFACE / SURFACE WATER / OTHER:* _____

Description of terrain surrounding spill: _____

_____

Time response completed: _____

Describe the actions taken to contain, stop, and clean up the SSO:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Were health warnings posted? YES / NO

Name of impacted waters: _____

Were water quality samples taken? YES / NO

SSO Reporting Form (Continued)

Spill Start Time Field Notes

(Attempt to interview at least two (2) others in addition to caller. Document attempts in detail.)

Caller/Resident Interview 1

Caller/resident(s) name: _____

Address: _____

Phone: _____

Where did you see sewage spill from?

From: ☐ Manhole ☐ Inside Building ☐ C/O ☐ Other_____

Time and date caller/resident first observed spill: _____

Caller/resident estimate of SSO (show manhole overflowing photos to resident): _____

Caller resident comments or additional observations regarding spill start time and rate:

_____

_____

_____

_____

_____

_____

Caller/Resident Interview 2

Caller/resident(s) name: _____

Address: _____

Phone: _____

Where did you see sewage spill from?

From: ☐ Manhole ☐ Inside Building ☐ C/O ☐ Other_____

Time and date caller/resident first observed spill: _____

Caller/resident estimate of SSO (show manhole overflowing photos to resident): _____

Caller/resident comments or additional observations regarding spill start time and rate:

_____

_____

_____

_____

_____

_____

SSO Reporting Form (Continued)

Caller/Resident Interview 3

Caller/resident(s) name: _____

Address: _____

Phone: _____

Where did you see sewage spill from?

From: ☐ Manhole ☐ Inside Building ☐ C/O ☐ Other_____

Time and date caller/resident first observed spill: _____

Caller/resident estimate of SSO (show manhole overflowing photos to resident): _____

Caller/resident comments or additional observations regarding spill start time and rate:

_____

_____

_____

_____

_____

_____

Volume Estimation Method Used

Check all methods used:

☐ Eyeball Estimate Method ☐ Measured Volume Method ☐ Other (explain)

_____

_____

SSO responder(s): _____

SSO report completed by: _____ Date: _____

SSO report reviewed by: _____ Date: _____

Additional notes or comments: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SSO Reporting Form (Continued)

Sketches and Measurements of Spill

SSO Reporting Form (Continued)

FOR OFFICE USE

Latitude: _____ Certification ID: _____ Rodding WO No.: _____
Longitude: _____ SR No.: _____ CCTV WO No.:: _____
SSO Event ID: _____ Flushing WO No.: _____ Repair WO No.: _____

Time office staff was notified: ____:____ *AM / PM*

Cal OES Two-Hour Notification Details (Category 1 SSO ≥ 1,000 Gallons Only)

Name of Cal OES Person Contacted: _____

OES Control Number: _____

OES Notified Date: _____ Time: _____ *AM / PM*

County Environmental Health Two-Hour Notification Details (Category 1 SSO)

Name of Environmental Health Staff Contacted: _____

Environmental Health Notified Date: _____ Time: _____ *AM / PM*

CIWQS Database

Draft Report (Categories 1 and 2) Submitted by: _____ Date: _____

Report Finalized by: _____ Date: _____

Report Certified by: _____ Date: _____

Attachment C – Volume Estimation Guidance

SSO Volume Estimation Guide for Overflowing Sewer Manholes

Flow Estimation Pictures

Attachment D - Sample Templates for SSO Volume Estimation

TABLE 'A'

ESTIMATED SSO FLOW OUT OF M/H WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim **H** in inches	S S O FLOW **Q** in gpm	in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

Height of spout above M/H rim **H** in inches	S S O FLOW **Q** in gpm	in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

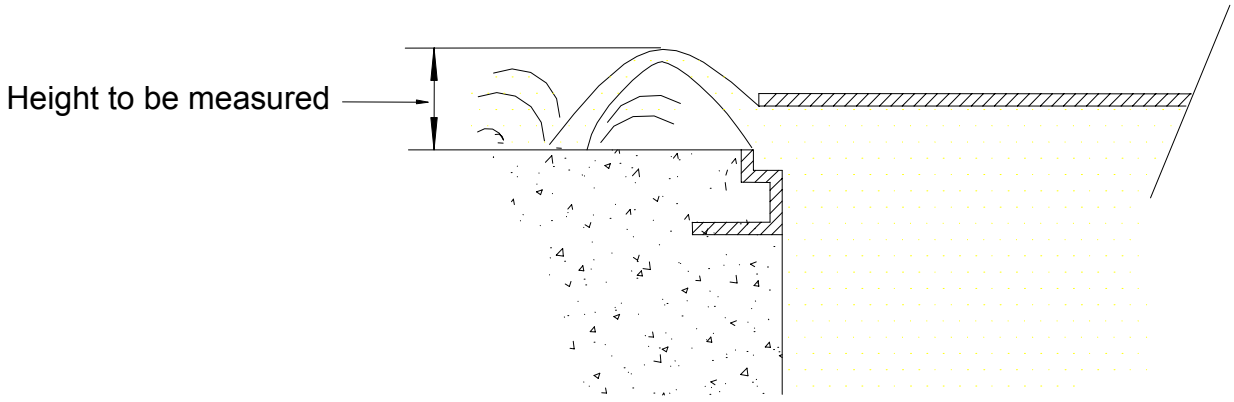
Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

The formula used to develop Table A measures the maximum height of the water coming out of the maintenance hole above the rim. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is unseated and slightly elevated on a 24" casting. The maximum height of the discharge above the rim is 5 ¼ inches. According to Table A, these conditions would yield an SSO of 185 gallons per minute.

FLOW OUT OF M/H WITH COVER IN PLACE



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

Collection System Collaborative Benchmarking Group
Best Practices for Sanitary Sewer Overflow (SSO) Prevention and Response Plan

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TABLE 'B'

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame **H** in inches	S S O FLOW **Q** in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame **H** in inches	S S O FLOW **Q** in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

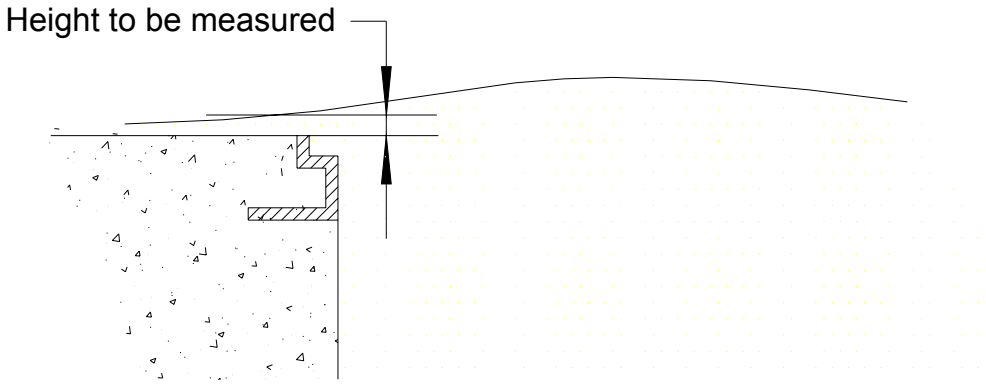
Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

The formula used to develop Table B for estimating SSO's out of maintenance holes without covers is based on discharge over curved weir -- bell mouth spillways for 2" to 12" diameter pipes. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is off and the flow coming out of a 36" frame maintenance hole at one inch (1") height will be approximately 660 gallons per minute.

FLOW OUT OF M/H WITH COVER REMOVED (TABLE "B")



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

TABLE 'C'

ESTIMATED SSO FLOW OUT OF M/H PICK HOLE

Height of spout above M/H cover **H** in inches	SSO FLOW **Q** in gpm
1/8	1.0
1/4	1.4
3/8	1.7
1/2	1.9
5/8	2.2
3/4	2.4
7/8	2.6
1	2.7
1 1/8	2.9
1 1/4	3.1
1 3/8	3.2
1 1/2	3.4
1 5/8	3.5
1 3/4	3.6
1 7/8	3.7
2	3.9
2 1/8	4.0
2 1/4	4.1
2 3/8	4.2
2 1/2	4.3
2 5/8	4.4
2 3/4	4.5
2 7/8	4.6
3	4.7
3 1/8	4.8
3 1/4	4.9
3 3/8	5.0
3 1/2	5.1
3 5/8	5.2
3 3/4	5.3
3 7/8	5.4
4	5.5
4 1/8	5.6
4 1/4	5.6
4 3/8	5.7
4 1/2	5.8
4 5/8	5.9
4 3/4	6.0
4 7/8	6.0
5	6.1

Height of spout above M/H cover **H** in inches	SSO FLOW **Q** in gpm	
5 1/8	6.2	
5 1/4	6.3	
5 3/8	6.3	
5 1/2	6.4	
5 5/8	6.5	
5 3/4	6.6	
5 7/8	6.6	
6	6.7	
6 1/8	6.8	
6 1/4	6.8	
6 3/8	6.9	
6 1/2	7.0	← Unrestrained M/H cover will start to lift
6 5/8	7.0	
6 3/4	7.1	
6 7/8	7.2	
7	7.2	
7 1/8	7.3	
7 1/4	7.4	
7 3/8	7.4	
7 1/2	7.5	
7 5/8	7.6	
7 3/4	7.6	
7 7/8	7.7	
8	7.7	
8 1/8	7.8	
8 1/4	7.9	
8 3/8	7.9	
8 1/2	8.0	
8 5/8	8.0	
8 3/4	8.1	
8 7/8	8.1	
9	8.2	
9 1/8	8.3	
9 1/4	8.3	
9 3/8	8.4	
9 1/2	8.4	
9 5/8	8.5	
9 3/4	8.5	
9 7/8	8.6	
10	8.7	

Note: This chart is based on a 7/8 inch diameter pick hole

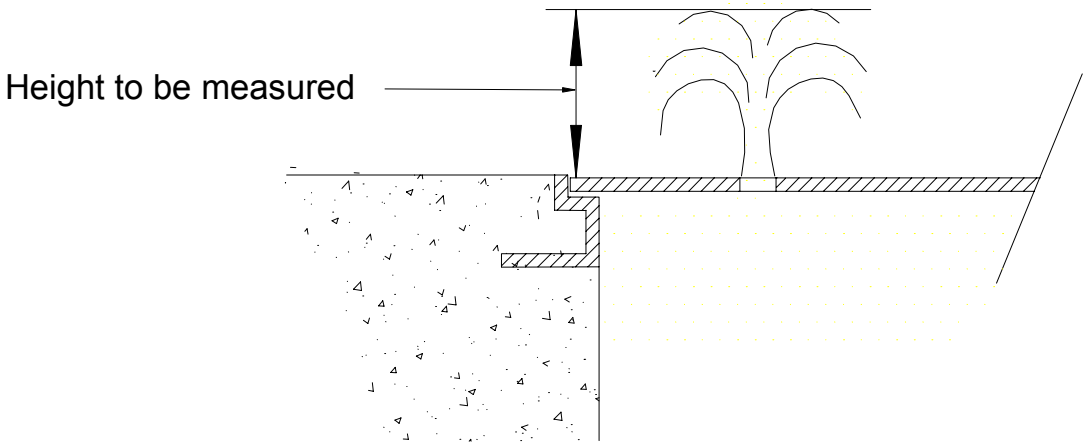
Disclaimer: This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

The formula used to develop Table C is Q=CcVA, where Q is equal to the quantity of the flow in gallons per minute, Cc is equal to the coefficient of contraction (.63), V is equal to the velocity of the overflow, and A is equal to the area of the pick hole.[2] If all units are in feet, the quantity will be calculated in cubic feet per second, which when multiplied by 448.8 will give the answer in gallons per minute. (One cubic foot per second is equal to 448.8 gallons per minute, hence this conversion method).

Example Overflow Estimation:

The maintenance hole cover is in place and the height of water coming out of the pick hole seven-eighths of an inch in diameter (7/8") is 3 inches (3"). This will produce an SSO flow of approximately 4.7 gallons per minute.

FLOW OUT OF VENT OR PICK HOLE (TABLE "C")



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

[2] Velocity for the purposes of this formula is calculated by using the formula h = v squared / 2G, where h is equal to the height of the overflow, v is equal to velocity, and G is equal to the acceleration of gravity.

Attachment D – Overflow Response Contingency Equipment

OERP Equipment List

Equipment	Quantity
Operations and Maintenance	
Flusher Truck (523N)	1
Rodder (509N)	1
Sewer Inspection Camera (Push) (Verisight and Rausch)	2
Service Truck (511N and 512 N)	2
Dump Truck (521N)	1
Combination Unit (522N and 524 N)	2
Emergency Response	
2” Portable Gas-Powered Pump	3
4” Portable Gas-Powered Pump	1
1,000-Watt Generator	1
2”, 4” Pump Suction Hose (16’-20’ long)	one 4” three 2”
2” Discharge Hose (50’ long)	22
4” Discharge Hose	400 ft
6” Plug	2
8” – 12” Plug	2
12” – 32”	1
12” – 18” Plug	2
12” – 32” Plug	1
20” – 40” Plug	1
Other	
Traffic Cones	80 approx.
Traffic Signs (Enough to conduct appropriate traffic Control, flag and lane closures.	16 Crew Working Signs

Last Update: 05/14/2019

Attachment E – SSO Cleanup SOP

SSO Cleanup Standard Operating Procedure (SOP)

Proper cleanup of a Sanitary Sewer Overflow (SSO) could require steps from one or a combination of two or more of the scenarios described below.

Spill contained above ground (Pavement i.e. Streets, Sidewalks, Driveways)

1. Protect public from the area.
2. Collect solid and liquid materials for proper disposal.
3. Wash down the impacted area with water and return all the wash water to the sewer system.

Spill onto dirt/non-pavement

1. Protect public from the area.
2. Collect solid and liquid materials for proper disposal.
3. Remove impacted, non-vegetated dirt/soil to a depth no greater than six (6) inches.
4. Replace excavated, non-vegetated dirt/soil with clean fill material, similar in nature to the removed dirt/soil.

Spill Entering/Entered Storm Drain Collection System

1. Protect public from the area.
2. Install mechanism (sand bags, plugs, etc.) to prevent SSO from further entering storm drains or surface waters.
3. Collect solid and liquid materials for proper disposal.
4. Determine how far downstream the SSO has reached.
5. Once determined go to the next downstream manhole and plug pipes at the determined downstream location.
6. Collect all material contained within the impacted storm drain collection system.
7. Wash down the impacted area.
8. Conduct cleanup of impacted storm drain in compliance with the storm water NPDES permit. NPDES permit allows only rainwater to be discharged into the storm drain system.
9. Once overflow has ceased and cleanup is complete, remove all plugs or other devices such as dams used to contain the flow.
10. For water used during cleanup that cannot be returned to the sewer system, direct runoff to dechlorination tablets or mats containing tablets (Vita-D-Chlor or similar) to neutralize chlorine in the runoff prior to entering the storm drain system or surface water.
    a. Use a minimum of two dechlorination tablets per mat and have at least two mats readily available for SSO response. One mat shall be placed in the flow path, and a second mat shall be put in the flow path when tablets in the first mat are approximately one-half of their original size.

Spill Entering/Entered Waterway

1. Protect public from the area.
2. Make every effort to stop the flow from entering the waterway.
3. Place warning signs around the impacted area.
4. Collect waste water, if possible, and return to sewer system.
5. See Section 7.C of the OERP.

Note: Sampling collection will be done by the County's Environmental Health Division when it is determined that sampling is required.

Private Property Damage Claims

1. If there is property damage (ruined carpet/padding, hardwood floors, etc.) caused by a mainline blockage, the sewer crew staff shall do the following:
    a) Verify that the damage is associated with the current incident.
    b) Take pictures of the damaged property.
    c) Notify office staff of the situation.
    d) The property owner/resident is responsible to obtain cleaning services.
    e) The property owner/resident can contact the County Manager's office at (650) 363-4123 for a claim form.

Note: County staff should not pre-judge the cause of a spill or admit liability prior to an investigation of the incident. Actions until this point should be abatement, alleviation, and reduction of the emergency.

Updated: 08/02/2019

Attachment F – Water Quality Monitoring Program

County of San Mateo
Water Quality Monitoring Program Plan
April 2014

Water Quality Monitoring – Key Elements

- **Trigger for Sampling.** Water quality sampling must be performed for sanitary sewer overflows (SSOs) that are 50,000 gallons or greater and reach surface water and for spills less than 50,000 gallons as further defined herein.
- **Safety and Access.** Water quality sampling should only be performed if it is safe to do so and access to the surface water is not restricted. Unsafe conditions include, but are not limited to, heavy rains, steep hillsides, and fog/visibility issues. When sampling is not possible, details of the situation will be recorded in the certified Category 1 SSO Report and the SSO Technical Report submitted to the CIWQS Online SSO Database.
- **When to Sample.** Sampling must be performed (when and if it is safe to do so) within 48 hours of the County of San Mateo (County) becoming aware of an SSO that resulted in 50,000 gallons or greater being spilled to a surface water. Water quality sampling should not interfere with stopping the SSO. In addition, sampling must also be performed (when and if it is safe to do so) when:
    1. required by the County Health Officer, regardless of spill volume to surface water;
    2. spill enters a surface water(s) that have an existing beneficial use for aquatic life as described in the San Francisco Bay Basin Water Quality Control Plan (Basin Plan). Relevant excerpts from the Basin Plan are included in **Appendix A**, and should be used as a reference when deciding if sampling should be completed for spills less than 50,000 gallons. A more detailed explanation of this particular situation is discussed below (see When to Sample for Aquatic Life).
- **Where to Sample.** Sampling should account for spill travel time in surface water (see Sample Collection Procedure below).
- **Required Water Quality Analyses.** At a minimum, analyze for ammonia and appropriate bacterial indicators per the RWQCB Basin Plan (see Sampling Parameters below).
- **Optional Follow-Up Monitoring.** It may be appropriate to conduct additional monitoring by sampling and/or visual inspection, depending on the original monitoring results. For example, if an impact from the SSO is observed, follow-up monitoring could be conducted until the water body has reverted to the estimated baseline condition (as determined by County).

Water Quality Sampling - Protocol

SSO Sample Collection Kit Inventory:

- Cooler
- Ice Packs (stored in freezer)
- 9 sample bottles labeled A (250-mL; for ammonia analyses)
- 9 sample bottles labeled B (120-mL; for bacteria indicator analyses)
- 9 sample bottles labeled C (120-mL; for pH, temperature, and dissolved oxygen analyses)
- 9 secondary containers (250-mL; for transfer of sample to A-labeled sample bottles)
- Safety gloves
- Safety glasses

- Sodium thiosulfate tablets (to be used when collecting bacteria samples)
- Paper towels
- Quart bags
- Gallon bags
- Thermometer
- San Mateo County Health Lab Environmental Test Request Form(s) (**Appendix B**)
- Caltest Analytical Lab Chain-of-Custody Form(s) (**Appendix B**). Another form(s) specific to the analytical lab used to conduct any required filed tests may be substituted for the form(s) in Appendix B at the discretion of the County but shall generally match the content of those provided in Appendix B.
- Pen/Pencil

Sampling Parameters:

- Ammonia
- Enterococcus
- Total Coliform
- Fecal Coliform
- Dissolved Oxygen
- pH
- Temperature

Sampling Locations (further details on location provided in subsequent sections):

- "Upstream" of SSO*
- Immediate vicinity where SSO enters water body ("source")
- "Downstream" of SSO*

When to Sample for Aquatic Life:

- County will perform (when and if it is safe to do so) water quality sampling for spills of less than 50,000 gallons to surface water(s) that have an existing beneficial use for aquatic life as described in the San Francisco Bay Basin Water Quality Control Plan (Basin Plan).
- **Appendix A**, which contains selected excerpts from the Basin Plan, shall be used to determine if an overflow has reached a surface water that has an existing beneficial use for aquatic life.
- After finding where the current spill is located on the map figures, the accompanying tables can be used to determine if the particular surface water has been defined to have an existing beneficial use for aquatic life. If it does, proceed with the sampling procedure as shown below.

Sample Collection Procedure:

1) Determine the point that the SSO entered waterway and photograph this location (include a reference point in the photo).

2) If sampling is performed after the SSO has stopped, estimate SSO travel time. This may be done by observing or dropping floatable debris in the surface water and timing how long it takes to travel over a measured distance (e.g., 100 feet). Include sections in the surface water where there are bends, bottlenecks, or other characteristics that may slow down the flow. If the first measurement is uncertain,

* The terms "upstream" and "downstream" may depend on the tidal cycle if the water body is tidally-influenced. Check the tide chart(s) and table at the following link: < http://tidesandcurrents.noaa.gov/tide_predictions.html?gid=235 >.

this time estimate may be performed three to five times, and the values averaged to determine the estimated travel time. The velocity in the upper portion of the water body can then be calculated by dividing the measured distance by the average time.

3) Determine the "source" location for water quality sampling by accounting for SSO travel time.

- If the SSO is occurring, the "source" location is the point where the SSO is entering the waterway.
- If the SSO has stopped, calculate the approximate downstream distance from the original SSO location by multiplying the time since the SSO occurred by the estimated velocity. This is the approximate downstream distance from the SSO discharge point to the "source" sampling location.

Due to possible tidal action in the surface water and other factors, another method may need to be used to determine the "source" location of the SSO.

4) Put on the safety gloves and safety glasses.

5) **Upstream Sample Collection:** Collect the upstream samples first. Move approximately one hundred feet (100') upstream of Source location. Label three each of the sample bottles marked "Upstream A", "Upstream B", and "Upstream C" with the date and time.

a. Take a photo of the sample location, including a reference point in the photo.

b. Ensure the sampling location is well away from the bank at a point where water is visibly flowing. Take care to avoid sampling debris or scum layer from the surface.

c. Starting with collection of the ammonia sample, remove the lid from one of the unused and clean 250-mL secondary containers. Fill this container against the direction of water flow while following the instructions of Step 5b. *Never dip the "Upstream A" sample bottle into the water.* After carefully opening an unused "Upstream A" ammonia sample bottle containing sulfuric acid, slowly transfer the sample from the secondary container to the sample bottle. *Due to potential contact with sulfuric acid, a highly corrosive compound, safety glasses and gloves must be worn when sampling for ammonia.* Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Upstream A" samples. Place each sample in the cooler after collection.

d. Moving on to collection of the bacteria sample, remove the lid from an unused "Upstream B" bacteria sample bottle and confirm that a sodium thiosulfate preservative tablet is inside. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled to the 100-mL fill line. Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Upstream B" samples. Place each sample in the cooler after collection.

e. Moving on to the last set of samples, remove the lid from an unused "Upstream C" sample bottle. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled to the 100-mL fill line. Use the thermometer to measure the temperature of the "Upstream C" sample three times and record the results. Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Upstream C" samples. Place each sample in the cooler after collection.

Source Sample Collection: Collect the "source" samples next. Move approximately ten feet (10') downstream of the Source location. Label three each of the sample bottles marked "Source A", "Source B", and "Source C" with the date and time.

a. Take a photo of the sample location, including a reference point in the photo.

b. Ensure the sampling location is well away from the bank at a point where water is visibly flowing. Take care to avoid sampling debris or scum layer from the surface.

c. Starting with collection of the ammonia sample, remove the lid from one of the unused and clean 250-mL secondary containers. Fill this container against the direction of water flow while following the instructions of Step 5b. *Never dip the "Source A" sample bottle into the water.* After carefully opening an unused "Source A" ammonia sample bottle containing sulfuric acid, slowly transfer the sample from the secondary container to the sample bottle. *Due to potential contact with sulfuric acid, a highly corrosive compound, safety glasses and gloves must be worn when sampling for ammonia.* Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Source A" samples. Place each sample in the cooler after collection.

d. Moving on to collection of the bacteria sample, remove the lid from an unused "Source B" bacteria sample bottle and confirm that a sodium thiosulfate preservative tablet is inside. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled to the 100-mL fill line. Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Source B" samples. Place each sample in the cooler after collection.

e. Moving on to the last set of samples, remove the lid from an unused "Source C" sample bottle. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled

to the 100-mL fill line. Use the thermometer to measure the temperature of the "Source C" sample three times and record the results. Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Source C" samples. Place each sample in the cooler after collection.

Downstream Sample Collection: Lastly, collect the downstream sample. Move one hundred feet (100') downstream of the source location. Label three each of the sample bottles marked "Downstream A", "Downstream B", and "Downstream C" with the date and time.

a. Take a photo of the sample location, including a reference point in the photo.

b. Ensure the sampling location is well away from the bank at a point where water is visibly flowing. Take care to avoid sampling debris or scum layer from the surface.

c. Starting with collection of the ammonia sample, remove the lid from one of the unused and clean 250-mL secondary containers. Fill this container against the direction of water flow while following the instructions of Step 5b. *Never dip the "Downstream A" sample bottle into the water.* After carefully opening an unused "Downstream A" ammonia sample bottle containing sulfuric acid, slowly transfer the sample from the secondary container to the sample bottle. *Due to potential contact with sulfuric acid, a highly corrosive compound, safety glasses and gloves must be worn when sampling for ammonia.* Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Downstream A" samples. Place each sample in the cooler after collection.

d. Moving on to collection of the bacteria sample, remove the lid from an unused "Downstream B" bacteria sample bottle and confirm that a sodium thiosulfate preservative tablet is inside. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled to the 100-mL fill line. Secure the lid of the sample bottle, making sure that no leaking occurs. After drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Downstream B" samples. Place each sample in the cooler after collection.

e. Moving on to the last set of samples, remove the lid from an unused "Downstream C" sample bottle. Fill the bottle against the direction of water flow while following the instructions of Step 5b. Pour off excess sample volume so that the bottle is filled to the 100-mL fill line. Use the thermometer to measure the temperature of the "Upstream C" sample three times and record the results. Secure the lid of the sample bottle, making sure that no leaking occurs. After

drying the outside of the bottle with a paper towel, immediately place it inside a quart bag. Place this quart bag along with two ice packs into a gallon bag. Don't place the ice packs inside of the quart bag that holds the sample bottle. Repeat this process two more times for a total of three "Upstream C" samples. Place each sample in the cooler after collection.

6) Complete a San Mateo County Health Lab Environmental Test Request Form per sample (found in **Appendix B**).

7) Complete the Caltest Analytical Lab Chain of Custody (COC) form for all of the ammonia samples (found in **Appendix B**).

8) Transport the cooler containing the samples & the completed San Mateo County Health Lab Environmental Test Request Form to the San Mateo County Public Health Laboratory as soon as possible after first sample collection. The lab is located at 225 W. 37th Avenue, Room 113. The parameter with the shortest holding time is bacteria at 6 hours (from sample collection to beginning of analysis), but sample analysis should begin as soon as possible after sample collection. Keep in mind that the County Lab needs about 30 minutes to set up the tests, as samples will not be analyzed if the holding time has been exceeded.

9) Call Caltest (707-258-4000) to arrange for a pickup of the ammonia samples. Ammonia samples have a regulatory holding time of 28 days. Maintain these samples at less than or equal to 6°C (on ice or refrigerated) from time of collection until receipt by the analytical laboratory.

10) Restock the SSO Sample Collection Kit with the items listed on page 1 and 2.

11) After the analyses have been performed (see "Water Quality Analyses Protocols" below) and the results have been reviewed and finalized, check if either of the following conditions are satisfied:

- Both the ammonia and bacteria levels downstream are approximately equal to or less than the upstream levels.
- The concentration of un-ionized ammonia is below 0.4 mg/L as N and enterococcus, fecal coliform, and total coliform levels are below their respective limits from the below table.

Excerpt of Tables 3-1 and 3-2 of the June 2013 Basin Plan

Beneficial Use	Fecal Coliform (MPN/100mL)	Total Coliform (MPN/100mL)	Enterococcus Bacteria (MPN/100mL)		E. coli (MPN/100mL)
			Estuarine and Marine	Fresh Water	Fresh Water
Water Contact Recreation	90th percentile < 400	no sample > 10,000	no sample > 104	Max at 89	Max at 298
Shellfish Harvesting	90th percentile < 43	90th percentile < 230	--	--	--
Non-contact Water Recreation	90th percentile < 4,000	--	--	--	--

As soon as one of the above conditions is satisfied, monitoring for this SSO may stop. If neither are satisfied, repeat the Sample Collection Procedure steps until either or both of the conditions are satisfied or other information is available to suggest the SSO is no longer causing a potentially adverse effect on the waterbody.

Warnings for Sample Collection:

- **Avoid Contamination.** Be careful. Make every effort not to touch the sample contents, because the sample containers may contain hazardous chemicals and the sample results may be easily affected by human contamination.
- **Deliver Sample to Lab.** All samples need to be delivered to the laboratory expeditiously due to the limited holding time required for maintaining sample integrity.

Water Quality Analyses – Protocols

Laboratory Analyses:
The San Mateo County Public Health Laboratory is accredited by the Environmental Laboratory Accreditation Program (ELAP). The methods will be performed according to the laboratory's Standard Operating Procedures (SOPs) and specific methods used for laboratory analyses are expected to be as follows:

Parameter	Method
Enterococcus	Enterolert
Total Coliform, Fecal, & E. Coli	Colilert
pH	pH

Maintenance and Calibration of Monitoring Instruments and Devices:
All laboratory monitoring instruments and devices used for water quality analyses are maintained and calibrated according to the SOPs to ensure their continued accuracy. The SSO Sample Collection Kit is checked by the field crew staff at least quarterly to verify its contents, and the field crew staff replace chemical preservatives in the sample bottles at that time.

Reporting Requirements
The County Associate Engineer (or responsible individual reporting the SSO through CIWQS) is responsible for submitting water quality monitoring information with the certified Category 1 SSO report in the CIWQS Online SSO Database, which must be submitted within 15 calendar days of the SSO end date.

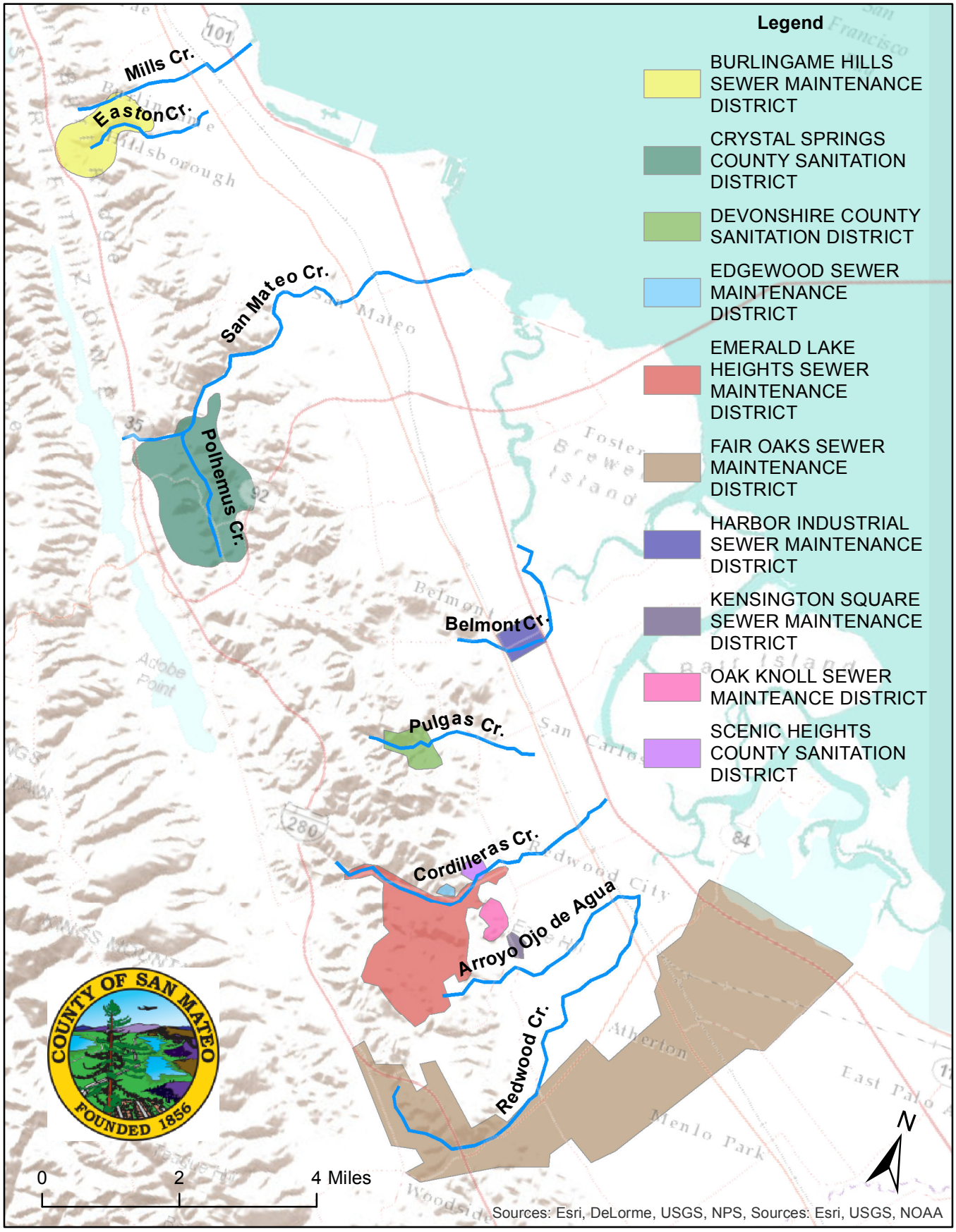
The County Associate Engineer (or responsible individual reporting the SSO through CIWQS) is responsible for submitting information related to the Technical Report in the CIWQS Online SSO Database, which must be done within 45 calendar days of the SSO end date. The SSO Technical Report must include the following water quality monitoring information:

- Description of all water quality sampling activities conducted
- Analytical results and evaluation of the results
- Detailed location map showing all water quality sampling points

Appendix A

Figure A-1

Surface Waters: Beneficial Uses for Aquatic Life



Basin Plan Excerpts

CHAPTER 2: BENEFICIAL USES

State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the state. Aquatic ecosystems and underground aquifers provide many different benefits to the people of the state. The beneficial uses described in detail in this chapter define the resources, services, and qualities of these aquatic systems that are the ultimate goals of protecting and achieving high water quality. The Water Board is charged with protecting all these uses from pollution and nuisance that may occur as a result of waste discharges in the region. Beneficial uses of waters of the State presented here serve as a basis for establishing water quality objectives and discharge prohibitions to attain these goals.

Beneficial use designations for any given water body do not rule out the possibility that other beneficial uses exist or have the potential to exist. Existing beneficial uses that have not been formally designated in this Basin Plan are protected whether or not they are identified. While the tables in this Chapter list a large, representative portion of the water bodies in our region, it is not practical to list each and every water body.

2.1 DEFINITIONS OF BENEFICIAL USES

The following definitions (in italic) for beneficial uses are applicable throughout the entire state. A brief description of the most important water quality requirements for each beneficial use follows each definition (in alphabetical order by abbreviation).

2.1.1 AGRICULTURAL SUPPLY (AGR)

Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

The criteria discussed under municipal and domestic water supply (MUN) also effectively protect farmstead uses. To establish water quality criteria for livestock water supply, the Water Board must consider the relationship of water to the total diet, including water freely drunk, moisture content of feed, and interactions between irrigation water quality and feed quality. The University of California Cooperative Extension has developed threshold and limiting concentrations for livestock and irrigation water. Continued irrigation often leads to one or more of four types of hazards related to water quality and the nature of soils and crops. These hazards are (1) soluble salt accumulations, (2) chemical changes in the soil, (3) toxicity to crops, and (4) potential disease transmission to humans through reclaimed water use. Irrigation water classification systems, arable soil classification systems, and public health criteria related to reuse of wastewater have been developed with consideration given to these hazards.

2.1.2 AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS)

Areas designated by the State Water Board.

These include marine life refuges, ecological reserves, and designated areas where the preservation and enhancement of natural resources requires special protection. In these areas,

alteration of natural water quality is undesirable. The areas that have been designated as ASBS in this Region are Bird Rock, Point Reyes Headland Reserve and Extension, Double Point, Duxbury Reef Reserve and Extension, Farallon Islands, and James V. Fitzgerald Marine Reserve, depicted in Figure 2-1. The California Ocean Plan prohibits waste discharges into, and requires wastes to be discharged at a sufficient distance from, these areas to assure maintenance of natural water quality conditions. These areas have been designated as a subset of State Water Quality Protection Areas as per the Public Resources Code.

2.1.3 COLD FRESHWATER HABITAT (COLD)

Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold freshwater habitats generally support trout and may support anadromous salmon and steelhead fisheries as well. Cold water habitats are commonly well-oxygenated. Life within these waters is relatively intolerant to environmental stresses. Often, soft waters feed cold water habitats. These waters render fish more susceptible to toxic metals, such as copper, because of their lower buffering capacity.

2.1.4 COMMERCIAL AND SPORT FISHING (COMM)

Uses of water for commercial or recreational collection of fish, shellfish, or other organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

To maintain fishing, the aquatic life habitats where fish reproduce and seek their food must be protected. Habitat protection is under descriptions of other beneficial uses.

2.1.5 ESTUARINE HABITAT (EST)

Uses of water that support estuarine ecosystems, including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds), and the propagation, sustenance, and migration of estuarine organisms.

Estuarine habitat provides an essential and unique habitat that serves to acclimate anadromous fishes (e.g., salmon, striped bass) migrating into fresh or marine water conditions. The protection of estuarine habitat is contingent upon (1) the maintenance of adequate Delta outflow to provide mixing and salinity control; and (2) provisions to protect wildlife habitat associated with marshlands and the Bay periphery (i.e., prevention of fill activities). Estuarine habitat is generally associated with moderate seasonal fluctuations in dissolved oxygen, pH, and temperature and with a wide range in turbidity.

2.1.6 FRESHWATER REPLENISHMENT (FRESH)

Uses of water for natural or artificial maintenance of surface water quantity or quality.

Fresh water inputs are important for maintaining salinity balance, flow, and/or water quantity for such surface water bodies as marshes, wetlands, and lakes.

2.1.7 GROUNDWATER RECHARGE (GWR)

Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting saltwater intrusion into freshwater aquifers.

The requirements for groundwater recharge operations generally reflect the future use to be made of the water stored underground. In some cases, recharge operations may be conducted to prevent seawater intrusion. In these cases, the quality of recharged waters may not directly affect quality at the wellfield being protected. Recharge operations are often limited by excessive suspended sediment or turbidity that can clog the surface of recharge pits, basins, or wells.

Under the state Antidegradation Policy, the quality of some of the waters of the state is higher than established by adopted policies. It is the intent of this policy to maintain that existing higher water quality to the maximum extent possible.

Requirements for groundwater recharge, therefore, shall impose the Best Available Technology (BAT) or Best Management Practices (BMPs) for control of the discharge as necessary to assure the highest quality consistent with maximum benefit to the people of the state. Additionally, it must be recognized that groundwater recharge occurs naturally in many areas from streams and reservoirs. This recharge may have little impact on the quality of groundwaters under normal circumstances, but it may act to transport pollutants from the recharging water body to the groundwater. Therefore, groundwater recharge must be considered when requirements are established.

2.1.8 INDUSTRIAL SERVICE SUPPLY (IND)

Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.

Most industrial service supplies have essentially no water quality limitations except for gross constraints, such as freedom from unusual debris.

2.1.9 MARINE HABITAT (MAR)

Uses of water that support marine ecosystems, including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

In many cases, the protection of marine habitat will be accomplished by measures that protect wildlife habitat generally, but more stringent criteria may be necessary for waterfowl marshes and other habitats, such as those for shellfish and marine fishes. Some marine habitats, such as important intertidal zones and kelp beds, may require special protection.

2.1.10 FISH MIGRATION (MIGR)

Uses of water that support habitats necessary for migration, acclimatization between fresh water and salt water, and protection of aquatic organisms that are temporary inhabitants of waters within the region.

The water quality provisions acceptable to cold water fish generally protect anadromous fish as well. However, particular attention must be paid to maintaining zones of passage. Any barrier to migration or free movement of migratory fish is harmful. Natural tidal movement in estuaries and unimpeded river flows are necessary to sustain migratory fish and their offspring. A water quality barrier, whether thermal, physical, or chemical, can destroy the integrity of the migration route and lead to the rapid decline of dependent fisheries.

Water quality may vary through a zone of passage as a result of natural or human- induced activities. Fresh water entering estuaries may float on the surface of the denser salt water or hug one shore as a result of density differences related to water temperature, salinity, or suspended matter.

2.1.11 MUNICIPAL AND DOMESTIC SUPPLY (MUN)

Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.

The principal issues involving municipal water supply quality are (1) protection of public health; (2) aesthetic acceptability of the water; and (3) the economic impacts associated with treatment- or quality-related damages.

The health aspects broadly relate to: direct disease transmission, such as the possibility of contracting typhoid fever or cholera from contaminated water; toxic effects, such as links between nitrate and methemoglobinemia (blue babies); and increased susceptibility to disease, such as links between halogenated organic compounds and cancer.

Aesthetic acceptance varies widely depending on the nature of the supply source to which people have become accustomed. However, the parameters of general concern are excessive hardness, unpleasant odor or taste, turbidity, and color. In each case, treatment can improve acceptability although its cost may not be economically justified when alternative water supply sources of suitable quality are available.

Published water quality objectives give limits for known health-related constituents and most properties affecting public acceptance. These objectives for drinking water include the U.S. Environmental Protection Agency Drinking Water Standards and the California State Department of Health Services criteria.

2.1.12 NAVIGATION (NAV)

Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Navigation is a designated use where water is used for shipping, travel, or other transportation by private, military, or commercial vessels.

2.1.13 INDUSTRIAL PROCESS SUPPLY (PROC)

Uses of water for industrial activities that depend primarily on water quality.

Water quality requirements differ widely for the many industrial processes in use today. So many specific industrial processes exist with differing water quality requirements that no meaningful criteria can be established generally for quality of raw water supplies. Fortunately, this is not a serious shortcoming, since current water treatment technology can create desired product waters tailored for specific uses.

2.1.14 PRESERVATION OF RARE AND ENDANGERED SPECIES (RARE)

Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.

The water quality criteria to be achieved that would encourage development and protection of rare and endangered species should be the same as those for protection of fish and wildlife habitats generally. However, where rare or endangered species exist, special control requirements may be necessary to assure attainment and maintenance of particular quality criteria, which may vary slightly with the environmental needs of each particular species. Criteria for species using areas of special biological significance should likewise be derived from the general criteria for the habitat types involved, with special management diligence given where required.

2.1.15 WATER CONTACT RECREATION (REC1)

Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and uses of natural hot springs.

Water contact implies a risk of waterborne disease transmission and involves human health; accordingly, criteria required to protect this use are more stringent than those for more casual water-oriented recreation.

Excessive algal growth has reduced the value of shoreline recreation areas in some cases, particularly for swimming. Where algal growths exist in nuisance proportions, particularly bluegreen algae, all recreational water uses, including fishing, tend to suffer.

One criterion to protect the aesthetic quality of waters used for recreation from excessive algal growth is based on chlorophyll a.

Public access to drinking water reservoirs is limited or prohibited by reservoir owner/operators for purposes of protecting drinking water quality and public health. In some cases, access to reservoir tributaries is also prohibited. For these water bodies, REC-1 is designated as E*, for the purpose of protecting water quality. No right to public access is intended by this designation.

2.1.16 NONCONTACT WATER RECREATION (REC2)

Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where water ingestion is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Water quality considerations relevant to noncontact water recreation, such as hiking, camping, or boating, and those activities related to tide pool or other nature studies require protection of habitats and aesthetic features. In some cases, preservation of a natural wilderness condition is justified, particularly when nature study is a major dedicated use.

One criterion to protect the aesthetic quality of waters used for recreation from excessive algal growth is based on chlorophyll a.

2.1.17 SHELLFISH HARVESTING (SHELL)

Uses of water that support habitats suitable for the collection of crustaceans and filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sport purposes.

Shellfish harvesting areas require protection and management to preserve the resource and protect public health. The potential for disease transmission and direct poisoning of humans is of considerable concern in shellfish regulation. The bacteriological criteria for the open ocean, bays, and estuarine waters where shellfish cultivation and harvesting occur should conform with the standards described in the National Shellfish Sanitation Program, Manual of Operation.

Toxic metals can accumulate in shellfish. Mercury and cadmium are two metals known to have caused extremely disabling effects in humans who consumed shellfish that concentrated these elements from industrial waste discharges. Other elements, radioactive isotopes, and certain toxins produced by particular plankton species also concentrate in shellfish tissue. Documented cases of paralytic shellfish poisoning are not uncommon in California.

2.1.18 FISH SPAWNING (SPWN)

Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Dissolved oxygen levels in spawning areas should ideally approach saturation levels. Free movement of water is essential to maintain well-oxygenated conditions around eggs deposited in sediments. Water temperature, size distribution and organic content of sediments, water depth, and current velocity are also important determinants of spawning area adequacy.

2.1.19 WARM FRESHWATER HABITAT (WARM)

Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

The warm freshwater habitats supporting bass, bluegill, perch, and other fish are generally lakes and reservoirs, although some minor streams will serve this purpose where stream flow is sufficient to sustain the fishery. The habitat is also important to a variety of nonfish species, such as frogs, crayfish, and insects, which provide food for fish and small mammals. This habitat is less sensitive to environmental changes, but more diverse than the cold freshwater habitat, and natural fluctuations in temperature, dissolved oxygen, pH, and turbidity are usually greater.

2.1.20 WILDLIFE HABITAT (WILD)

Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

The two most important types of wildlife habitat are riparian and wetland habitats. These habitats can be threatened by development, erosion, and sedimentation, as well as by poor water quality.

The water quality requirements of wildlife pertain to the water directly ingested, the aquatic habitat itself, and the effect of water quality on the production of food materials. Waterfowl habitat is particularly sensitive to changes in water quality. Dissolved oxygen, pH, alkalinity, salinity, turbidity, settleable matter, oil, toxicants, and specific disease organisms are water quality characteristics particularly important to waterfowl habitat. Dissolved oxygen is needed in waterfowl habitats to suppress development of botulism organisms; botulism has killed millions of waterfowl. It is particularly important to maintain adequate circulation and aerobic conditions in shallow fringe areas of ponds or reservoirs where botulism has caused problems.

2.2 EXISTING AND POTENTIAL BENEFICIAL USES

2.2.1 SURFACE WATERS

Surface waters in the Region consist of non-tidal wetlands, rivers, streams, and lakes (collectively described as inland surface waters), estuarine wetlands known as baylands, estuarine waters, and coastal waters. In this Region, estuarine waters consist of the Bay system including intertidal, tidal, and subtidal habitats from the Golden Gate to the Region's boundary near Pittsburg and the lower portions of streams that are affected by tidal hydrology, such as the Napa and Petaluma rivers in the north and Coyote and San Francisquito creeks in the south.

Inland surface waters support or could support most of the beneficial uses described above. The specific beneficial uses for inland streams include municipal and domestic supply (MUN), agricultural supply (AGR), commercial and sport fishing (COMM), freshwater replenishment (FRESH), industrial process supply (PRO), groundwater recharge (GWR), preservation of rare and endangered species (RARE), water contact recreation (REC1), noncontact water recreation (REC2), wildlife habitat (WILD), cold freshwater habitat (COLD), warm freshwater habitat (WARM), fish migration (MIGR), and fish spawning (SPWN).

The San Francisco Bay Estuary supports estuarine habitat (EST), industrial service supply (IND), and navigation (NAV) in addition to COMM, RARE, REC1, REC2, WILD, MIGR, and SPWN.

Coastal waters' beneficial uses include water contact recreation (REC1); noncontact water recreation (REC2); industrial service supply (IND); navigation (NAV); marine habitat (MAR); shellfish harvesting (SHELL); commercial and sport fishing (COMM); wildlife habitat (WILD), fish migration (MIGR), fish spawning (SPWN), and preservation of rare and endangered species (RARE). In addition, the California coastline within the Region is endowed with exceptional scenic beauty.

Legend for Figures 2-3 to 2-9b

Watershed boundaries


Basin boundary

Watershed boundary

Hydrologic features

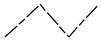

Streams / creeks listed in Table 2-1


Other streams / tributaries

Bay or ocean


Lake, reservoir or other water body

Other features


County boundary


Major road or highway

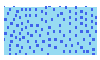
Urban area

Wetlands


Marshlands

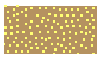

Salt pond


Tidal flats


Storage or treatment basin


Undeveloped fill

Sand dune


Other baylands

All maps are in Universal Transverse Mercator projection (Zone 10), North American Datum 1983.

Map sources:

Basin boundaries: California Interagency Watershed Map of 1999 (CalWater 2.2.1).

Watershed boundaries: California Interagency Watershed Map of 1999 (CalWater 2.2.1); Contra Costa County Watershed Atlas; Creek and Watershed Map of Oakland and Berkeley (Oakland Museum of California); Creek and Watershed Map of Milpitas and North San Jose (Oakland Museum of California); Creek and Watershed Map of Palo Alto and Vicinity (Oakland Museum of California); Creek and Watershed Map of Fremont and Vicinity (Oakland Museum of California); Creek and Watershed Map of the Pleasanton and Dublin Area (Oakland Museum of California).

Hydrologic features: National Hydrologic Dataset (1:24000 scale) for hydrologic unit numbers 18050001 (Suisun), 18050002 (San Pablo), 18050003 (Santa Clara), 18050004 (South Bay), 18050005 (Marin Coastal) and 18050006 (San Mateo Coastal).

Wetlands: San Francisco Estuary Institute EcoAtlas (v. 1.50b4).

County boundaries: California Spatial Information Library.

Major roads and highways: GDT 2004.

Urban areas: Association of Bay Area Governments Land Use / Land Cover dataset, 1996, land use category 1 (urban areas).

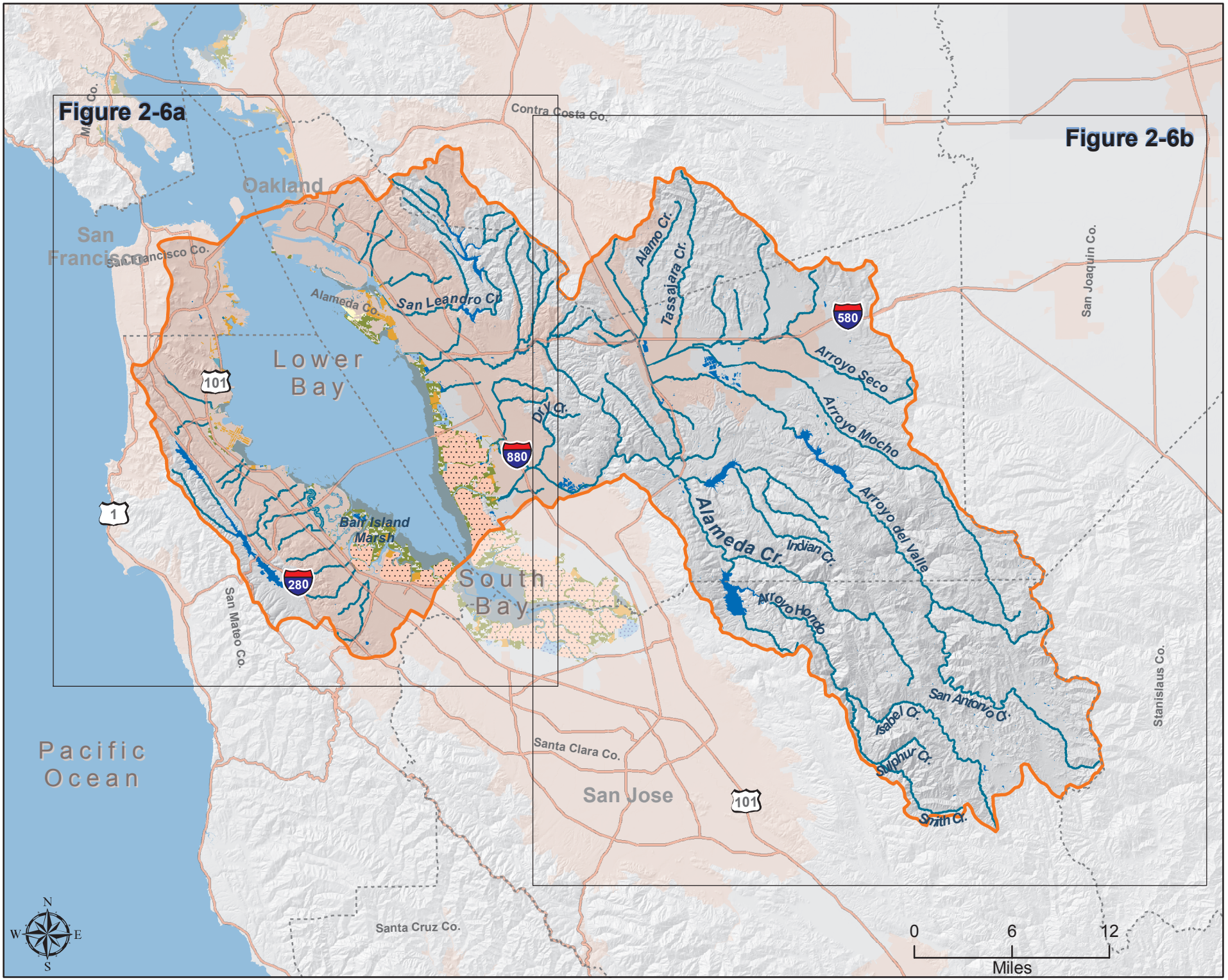


Figure 2-6 South Bay Basin

Figure 2-6a South Bay Basin

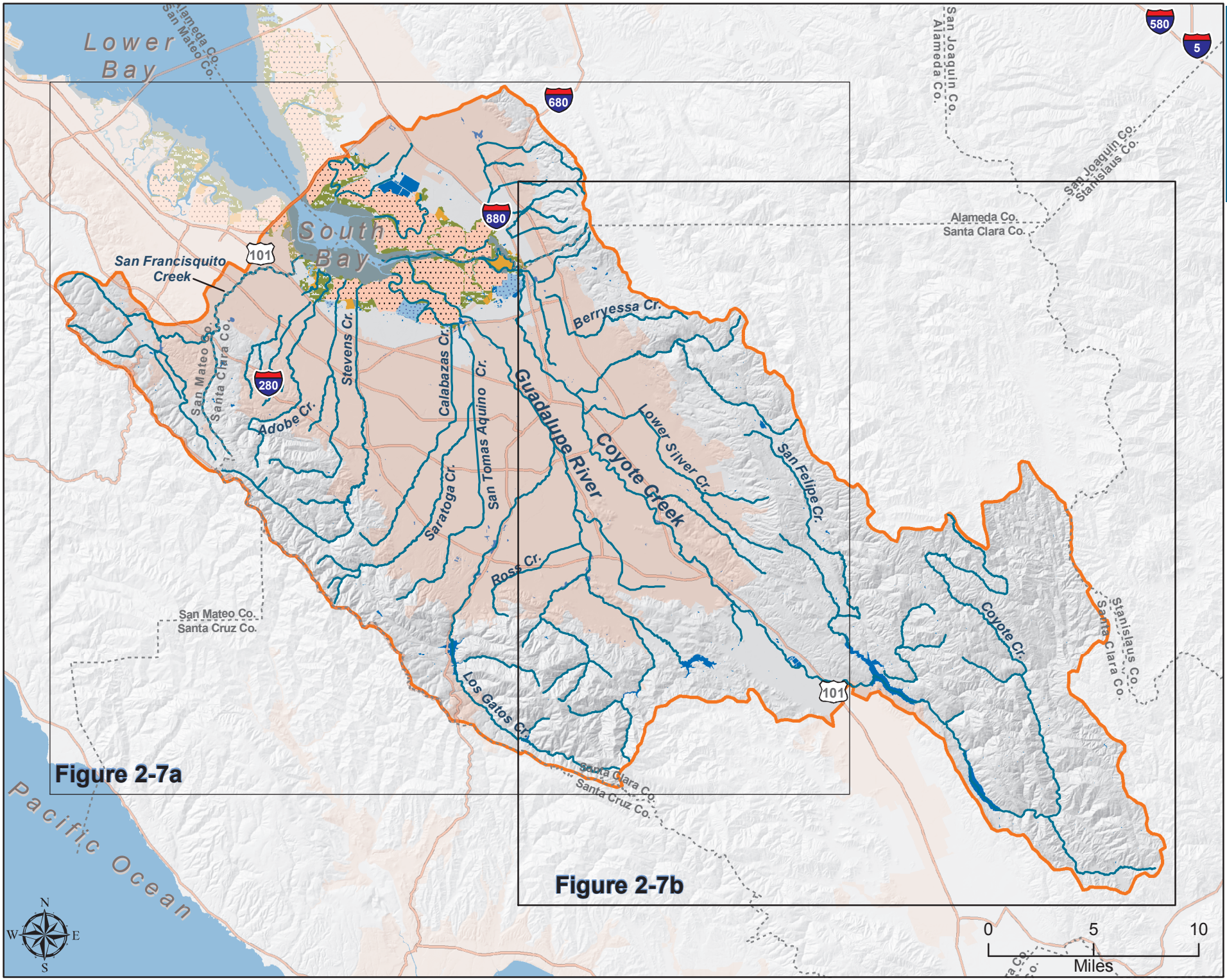


Figure 2-7 Santa Clara Basin

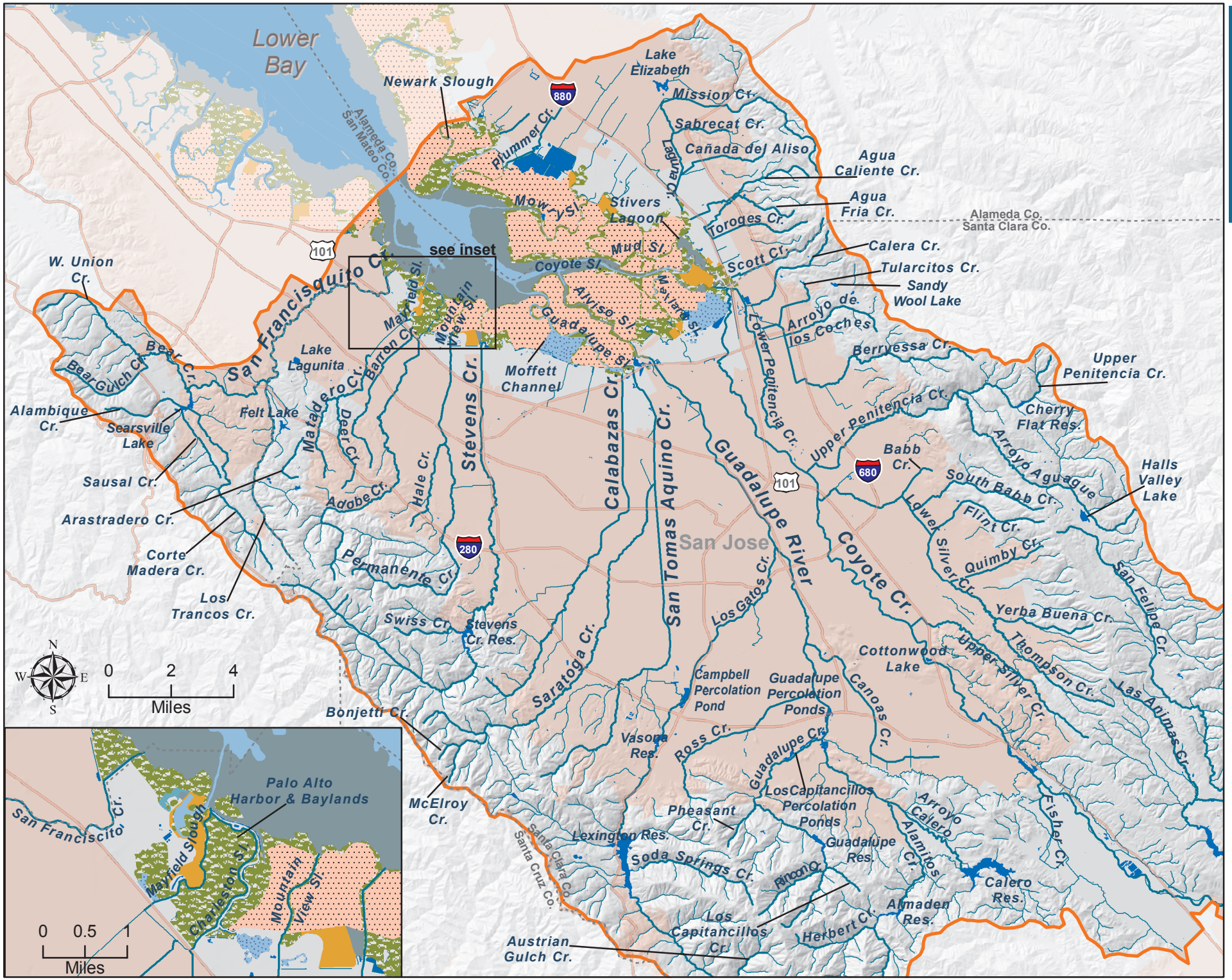


Figure 2-7a

Santa Clara Basin

SOUTH BAY BASIN

	Human Consumptive Uses						Aquatic Life Uses									Wildlife Use	Recreational Uses		
COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN FRANCISCO COUNTY																			
San Francisco Bay Lower					E		E	E		E		E	E	E		E	E	E	E
Mission Creek (San Francisco)							E			E						E	E	E	E
Central Basin							E			E						E	E	E	E
Islais Creek, tidal							E			E						E	E	E	E
India Basin							E			E						E	E	E	E
South Basin							E			E						E	E	E	E
Yosemite Creek							E			E						E	E	E	
SAN MATEO COUNTY																			
Brisbane Lagoon										E						E	E	E	
Guadalupe Canyon Creek															E	E	E	E	
Colma Creek															E	E	E	E	
San Bruno Creek															E	E	E	E	
Mills Creek															E	E	E	E	
Easton Creek															E	E	E	E	
Burlingame Lagoon										E						E	E	E	
Anza Lagoon										E						E	E	E	
Sanchez Creek															E	E	E	E	
Cherry Canyon Creek															E	E	E	E	
San Mateo Creek			E						E			E	E	E	E	E	E	E	
Polhemus Creek									E						E	E	E	E	
Lower Crystal Springs Reservoir		E							E				E	E	E	E	E*	E	
Upper Crystal Springs Reservoir		E							E				E	E	E	E	E*	E	
San Andreas Creek			E						E						E	E	E	E	
San Andreas Reservoir		E							E				E	E	E	E	E*	E	
Marina Lagoon										E						E	E	E	
Seal Slough										E			E			E	E	E	
Leslie Creek															E	E	E	E	
Borel Creek															E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SOUTH BAY BASIN

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN MATEO COUNTY, continued																			
O'Neill Slough										E						E	E	E	
Foster City Lagoon										E						E	E	E	
Belmont Slough										E			E	E		E	E	E	
Belmont Creek															E	E	E	E	
Laurel Creek (San Mateo)															E	E	E	E	
Bay Slough (San Mateo)										E			E			E	E	E	
Steinberger Slough										E			E			E	E	E	
Corkscrew Slough										E			E			E	E	E	
Smith Slough (San Mateo)										E			E			E	E	E	
Pulgas Creek															E	E	E	E	
Cordilleras Creek															E	E	E	E	
Redwood Slough										E			E			E	E	E	E
Redwood Creek (San Mateo)															E	E	E	E	
Arroyo Ojo de Agua															E	E	E	E	
Westpoint Slough										E			E			E	E	E	
Atherton Creek															E	E	E	E	
Ravenswood Slough										E			E			E	E	E	
ALAMEDA COUNTY																			
Oakland Inner Harbor										E						E	E	E	E
Merritt Channel							E			E						E	E	E	
Lake Merritt							E	E		E				E	E	E	E	E	
Glen Echo Creek															E	E	E	E	
Sausal Creek (Alameda)									E				E	E	E	E	E	E	
Peralta Creek															E	E	E	E	
Lion Creek									E						E	E	E	E	
Arroyo Viejo									E						E	E	E	E	
Rifle Range Creek															E	E	E	E	
San Leandro Bay							E			E		E	E			E	E	E	E
Lower San Leandro Creek			E						E			E	E	E	E	E	E	E	
Lake Chabot (Alameda)		E					E		E					E	E	E	E*	E	
Grass Valley Creek			E						E						E	E	E	E	
Upper San Leandro Creek			E						E			P		P	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

SANTA CLARA BASIN

COUNTY Waterbody	Human Consumptive Uses						Aquatic Life Uses								Wildlife Use	Recreational Uses		
	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
San Francisco Bay South					E		E	E		E		E	E	E		E	E	E	E
ALAMEDA & SANTA CLARA COUNTIES																			
Newark Slough										E			E			E	E	E	
Plummer Creek (Zone 5 Line F-1)										E			E			E	E	E	
Mowry Slough										E			E			E	E	E	
Coyote Slough										E			E			E	E	E	
Mud Slough										E			E			E	E	E	
Laguna Creek (Arroyo la Laguna, or Zone 6 Line E)															E	E	E	E	
Mission Creek (Zone 6 Line L)															E	E	E	E	
Lake Elizabeth									E					E	E	E	E*	E	
Sabrecat Creek (Zone 6 Line K)															E	E	E	E	
Canada del Aliso (Zone 6 Line J)															E	E	E	E	
Agua Caliente Creek (Alameda) (Zone 6 Line F)															E	E	E	E	
Agua Fria Creek (Zone 6 Line D)															E	E	E	E	
Stivers Lagoon (Fremont Lagoon)			E												E	E	E	E	
Mallard (Artesian) Slough										E			E			E	E	E	
Scott Creek (Zone 6 Line A)															E	E	E	E	
Toroges Creek (Zone 6 Line C)													E		E	E	E	E	
SAN MATEO AND SANTA CLARA COUNTIES																			
San Francisquito Creek									E			E	E	E	E	E	E	E	
Lake Lagunita													E		E	E	E	E	
Los Trancos Creek									E			E	E	E	E	E	E	E	
Felt Lake	E													E	E	E	E	E	
Bear Creek (San Mateo)									E			E	E	E	E	E	E	E	
Bear Gulch Creek (San Mateo)		E							E			E	E	E	E	E	E	E	
West Union Creek									E			E	E	E	E	E	E	E	
Searsville Lake	E								E					E	E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
SAN MATEO AND SANTA CLARA COUNTIES, continued																			
Alambique Creek									E						E	E	E	E	
Sausal Creek (San Mateo)									E						E	E	E	E	
SANTA CLARA COUNTY ONLY																			
Palo Alto Harbor & Baylands										E		E	E			E	E	E	
Mayfield Slough										E		E	E			E	E	E	
Matadero Creek									E			E	E	E	E	E	E	E	
Deer Creek (Santa Clara)									E				E		E	E	E	E	
Arastradero Creek									E				E		E	E	E	E	
Charleston Slough										E		E	E			E	E	E	
Barron Creek															E	E	E	E	
Adobe Creek (Santa Clara)									E						E	E	E	E	
Mountain View Slough										E			E			E	E	E	
Permanente Creek				E					E				E	E	E	E	E	E	
Hale Creek									E						E	E	E	E	
Stevens Creek			E	E					E			E	E	E	E	E	E	E	
Stevens Creek Reservoir		E		E			E		E			E		E	E	E	E	E	
Swiss Creek			E						E						E	E	E	E	
Guadalupe Slough										E			E			E	E	E	
Moffett Channel										E						E	E	E	
Calabazas Creek	E			E					E						E	E	E	E	
San Tomas Aquino Creek									E				E		E	E	E	E	
Saratoga Creek	E		E	E					E						E	E	E	E	
Bonjetti Creek									E						E	E	E	E	
McElroy Creek									E						E	E	E	E	
Alviso Slough										E		E	E			E	E	E	
Guadalupe River				E					E			E	E	E	E	E	E	E	
Los Gatos Creek		E	E	E					E			P	E	P	E	E	E	P	
Campbell Percolation Pond				E			E		E					E	E	E	E	E	
Vasona Reservoir		E		E			E		E					E	E	E	E	E	
Lexington Reservoir		E		E			E		E					E	E	E	E	E	
Soda Springs Creek			E						E						E	E	E	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

Figure 2-11 General Locations of Wetland Areas

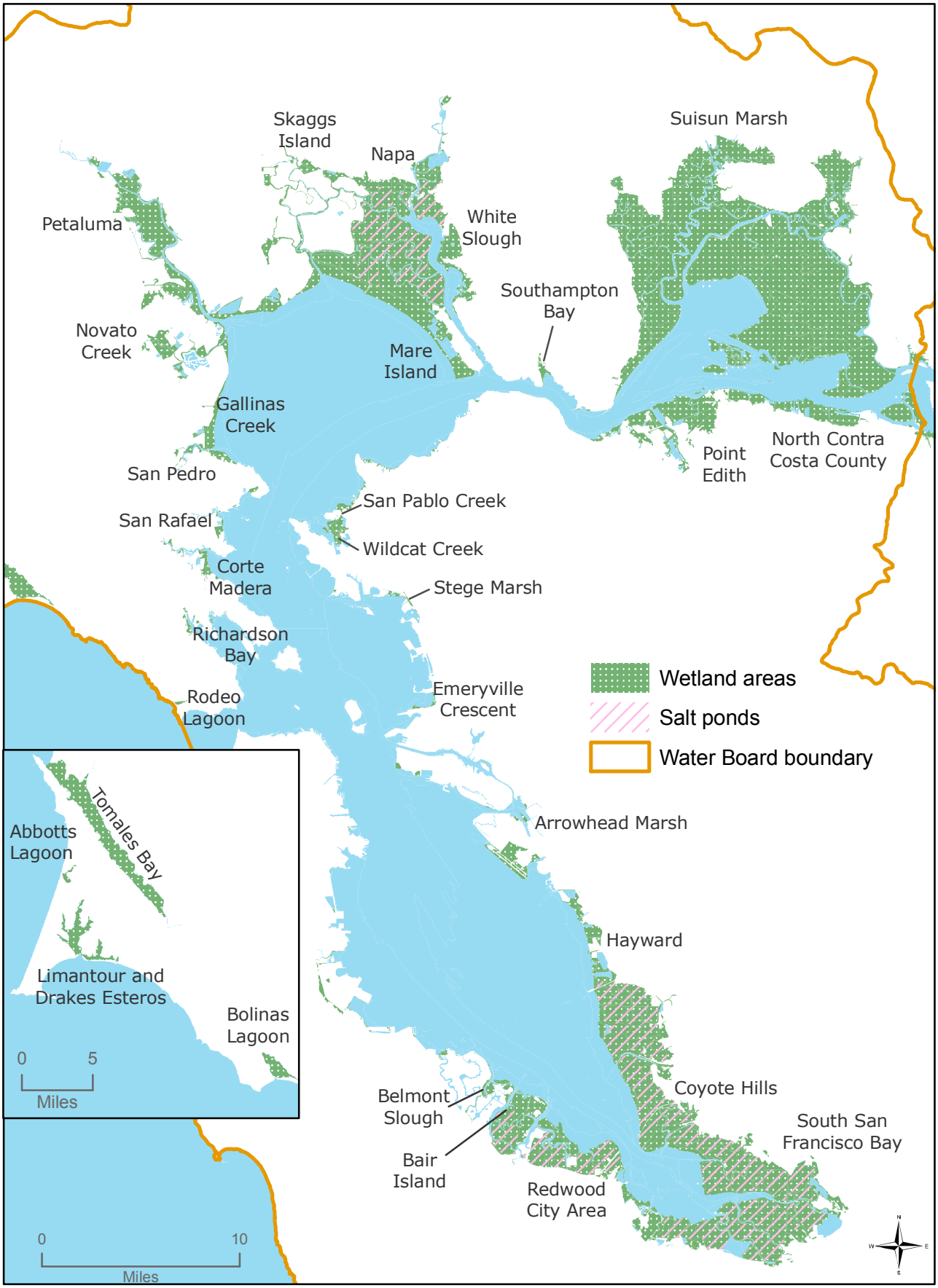


Table 2-3: Examples of Existing and Potential Beneficial Uses of Selected Wetlands

	TYPE OF WETLAND				
BENEFICIAL USE	**MARINE**	**ESTUARINE**	**RIVERINE**	**LACUSTRINE**	**PALUSTRINE**
AGR		○	○	○	○
COLD			○	○	○
COMM	○	○			
EST		○			
FRESH			○	○	○
GWR	○	○	○	○	○
IND		○	●	●	
MAR	○				
MIGR	○	○	○	○	
NAV	○	○	○	○	○
PROC					
REC-1	○	○	○	○	○
REC-2	○	○	○	○	○
SHELL	○	○	○		
SPWN	○	○	○	○	○
WARM			○	○	○
WILD	○	○	○	○	○
RARE	○	○	○	○	○

NOTE:
○ Existing beneficial use
● Potential beneficial use

Table 2-4 Beneficial Uses of Wetland Areas[a]

Basin/Marsh Area	*Wetland Types*			*Beneficial Uses*								
	Fresh	Brackish	Salt	EST	MAR	MIGR	COMM	RARE	REC1	REC2	SPWN	WILD
Alameda County												
Arrowhead			●	●				●	●	●	●	●
Coyote Hills			●	●				●	●	●	●	●
Emeryville Crescent			●	●				●	●	●	●	●
Hayward (e.g., Cogswell, Hayward Area Recreation District, Oro Loma, & Triangle marshes)			●	●					●	●	●	●
Hayward Marsh		●		●				●		●	●	●
Contra Costa County												
North Contra Costa		●	●	●				●	●	●	●	●
Point Edith		●		●				●		●	●	●
San Pablo Creek			●	●				●	●	●	●	●
Wildcat Creek				●				●	●	●	●	●
Marin County												
Abbotts Lagoon			●		●				●	●		●
Bolinas Lagoon			●		●				●	●		●
Corte Madera			●	●				●	●	●	●	●
Drakes Estero			●						●	●	●	●
Gallinas Creek		●	●	●				●	●	●	●	●
Limantour Estero			●		●				●	●		●
Corte Madera Ecological Reserve			●	●					●	●		●
Novato Creek		●	●	●		●		●	●	●	●	
Richardson Bay			●	●				●	●	●	●	●
Rodeo Lagoon			●		●				●	●		●
San Pedro		●	●	●			●	●		●	●	●
San Rafael Creek		●	●	●				●	●	●		●
Tomales Bay			●		●	●			●	●	●	●
Napa County												
Mare Island			●	●						●		●
Napa		●		●		●	●	●	●	●	●	
San Pablo Bay			●	●		●	●	●	●	●	●	●
San Mateo County												
Bair Island			●	●				●	●	●		●
Belmont Slough			●	●				●	●	●	●	●
Pescadero	●		●		●	●		●	●	●	●	●
Princeton		●	●						●	●		●
Redwood City Area				●				●	●	●		●
Santa Clara County												
South San Francisco Bay			●	●		●	●	●	●	●	●	●
Solano County												
Southhampton Bay			●	●				●	●	●	●	●
Suisun	●	●		●		●		●	●	●	●	●
White Slough			●	●		●		●	●	●	●	●
Sonoma County												
Petaluma		●		●		●	●	●	●	●	●	●

NOTE:

a. General locations of wetlands areas are depicted in Figure 2-11.

Appendix B

LAB USE ONLY:	County of San Mateo Public Health Laboratory 225 West 37th Avenue, Room #113 San Mateo, CA 94403 (650) 573-2500 Dr. Shantelle Lucas, Ph. D., HCLD(ABB) CLIA #: 05D0857622 ELAP #: 1591	DATE/TIME RECEIVED/TEMP./INITIALS:

ENVIRONMENTAL TEST REQUEST FORM

COLLECTED BY: _____ **DATE COLLECTED**:_____

CONTACT NUMBER (24-hr):_____ **TIME COLLECTED**:_____

SYSTEM ID #:_____ **SAMPLE#** (MATCH WITH SAMPLE BOTTLE):_____

SYSTEM NAME:_____

SAMPLE SITE/ADDRESS:_____

COMMENTS:_____

SEND REPORT TO: **BILL TO (NAME OF ORGANIZATION):**

EMAIL:_____ _____

FAX:_____ _____

TEST CHOICE (METHOD):

- □ COILERT-18 MPN TEST (SM9223B)
- □ COLILERT-18 PRESENCE/ABSENCE (SM9223B)
- □ DRINKING/SOURCE WATER MPN (SM9223B)
- □ MEMBRANE FILTER TEST (SM9222B)
- □ ENTEROLERT MPN (SM9230D)
- □ COLILERT-18 FECAL COLIFORMS (IDEXX)
- □ MULTIPLE TUBE FERMENTATION (SM9221)
- □ HETEROTROPHIC PLATE COUNT (SM9215B)

PANEL TEST CHOICE:

- □ AB411 (EH ONLY)
- □ AB1876 (EH ONLY)
- □ PHYSICAL PROPERTIES:
  - □ COLOR □ TURBIDITY □ ODOR

SAMPLE TYPE:

- □ DRINKING WATER
  - □ CHLORINATED _____ mg/L
  - □ RAW
  - □ SOURCE
- □ WASTEWATER
  - □ WWTP
  - □ SECONDARY EFFLUENT
  - □ OTHER_____
- □ RECREATIONAL WATER
  - □ FRESH
  - □ SALT
- □ SURFACE WATER
  - □ FRESH
  - □ SALT
  - □ OTHER_____
- □ IN-HOUSE DI WATER
  - □ START
  - □ INTERMEDIATE
  - □ END

RESERVED FOR LABORATORY USE:
START:
DATE:_____TIME:_____
INITIALS:_____

READ: DATE:_____
TIME:_____ INITIALS:_____
TIME (EF):_____INITIALS:_____

MFT
M-ENDO:
- □ <1 ABSENT
- □ GROWTH OBSERVED

P/A
PRE-WARM: DATE_____
START/END TIME:_____
PRE-WARM SAMPLE TEMP.:_____
WATER BATH TEMP.:_____
COLIFORMS: ABSENT / PRESENT
TOTAL COLIFORM: ABSENT / PRESENT
E. COLI: ABSENT / PRESENT

	LARGE WELLS/SMALL WELLS	MPN
TC		
EC		
EF		

Caltest
ANALYTICAL LABORATORY

1885 N. KELLY ROAD • NAPA, CA 94558 • (707) 258-4000 • Fax (707) 226-1001 • www.caltestlab.com

SAMPLE CHAIN OF CUSTODY

PAGE _____ OF _____

LAB ORDER #:

PROJECT # / PROJECT NAME

P.O. #

CLIENT:

REPORT TO:

ANALYSES REQUESTED

ADDRESS: CITY: STATE: ZIP:

TURN-AROUND TIME
☐ STANDARD
☐ RUSH

BILLING ADDRESS:

DUE DATE:_____

PHONE #: FAX PHONE: SAMPLER (PRINT & SIGN NAME):

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP. or GRAB	REMARKS

By submittal of sample(s), client agrees to abide by the Terms and Conditions set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY

FOR LAB USE ONLY

Samples: WC_____ MICRO_____ BIO_____AA_____ SV_____VOA_____ **TEMP:**_____ **SEALED: Y___ / N___** **INTACT: Y___ / N___**

BD: BIO_____ WC_____ AA_____

CC: AA _____ SV _____ VOA _____

SIL: HP_____ PT_____ QT_____VOA _____

W/HNO_3 _____ H_2SO_4 _____ NaOH _____

PIL: HNO_3 _____ H_2SO_4 _____ NaOH _____ HCL _____

COMMENTS

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; FP = Free Product

CONTAINER TYPES: AL = Amber Liter; AHL = 500 ml Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R _____ PR _____ M _____ F_____

REV. 11/03

PINK - CLIENT COPY AS RECEIPT

YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT

WHITE - LABORATORY

Attachment G – Soil Sampling for Water Content Form

Soil Sampling for Water Content Form

(To determine SSO volume in unpaved areas)

Location of SSO: _____

Date of SSO: _____ Sampling Date: _____

1. Put a rectangular or circular form near the area of the spill. Make sure the area is dry.
2. Write the dimensions of the form. For example, the diameter if circular, the length and width if rectangular.
3. Pour 1 gallon of water into the form and let it soak for at least 15 minutes
4. Pull the form out and measure the dimensions of the wetted area. It should be larger than the original form.
5. Dig into the soil until dry soil is reached and measure the depth at of the wetted soil at 3 locations.

Form Dimensions:

Circular Form	**OR**	Rectangular Form
Diameter = _____		Length = _____ Width = _____

Dimensions of wetted sample after pulling the form out:

Circular Area	**OR**	Rectangular Area
Diameter = _____		Length = _____ Width = _____

Area of wetted soil sample = _____

Depths of wetted sample:

Depth #1 = _____ Depth #2 (**middle**) = _____ Depth #3 = _____

Average depth of wetted soil samples = _____ ft

Volume of wetted soil sample = _____ft^3

6. Convert ft^3 to gallons = _____ft^3 X 7.48 gallons = _____ gallons
7. Determine the water content in the soil by dividing 1 gallon by the volume of the wetted sample. Water content = _____
8. Multiply the water content by the initial volume calculated on the date of the SSO. The result will be the actual spill volume.

Appendix 7.1 – FOG Control Program Notice

COUNTY OF SAN MATEO

Department of Public Works

BOARD OF SUPERVISORS
DAVE PINE
CAROLE GROOM
DON HORSLEY
WARREN SLOCUM
ADRIENNE J. TISSIER

JAMES C. PORTER
DIRECTOR

555 COUNTY CENTER, 5TH FLOOR • REDWOOD CITY • CALIFORNIA 94063-1665 • PHONE (650) 363-4100 • FAX (650) 361-8220

December 27, 2013

Food Service Establishment
Address
City, State 940xx

Re: Fats, Oils and Grease (FOG) Control Program for County of San Mateo Sewer Maintenance Districts

Dear Business Owner:

San Mateo County Ordinance Code Title 4, "Sanitation and Health", Section 4.28 stipulates that it is unlawful to discharge, cause to be discharged, or permit to be discharged any wastewater contributing to conditions inhibiting or preventing the effective maintenance or operation of the sewerage facilities, including sewage containing fats, oils and grease. In addition, the San Francisco Bay Regional Water Quality Control Board requires that all public agencies operating sanitary sewer systems develop and maintain a Sewer System Management Plan (SSMP), of which a Fats, Oils and Grease (FOG) Control Program is a critical element.

The purpose of this letter is to inform you that the Fair Oaks Sewer Maintenance District (District), which provides sewer service to your facility, will be implementing the FOG Control Program in 2014 for food service establishments. The goal of this program is to reduce the amount of fats, oils and grease discharged to the sanitary sewer system that can accumulate in pipes and become obstructions in the sewer system. This in turn will help prevent blockages that may lead to sanitary sewer overflows, which can pollute surface or ground water, threaten public health, or impair the recreational use of surface waters. Enclosed for your information are a flyer (No Grease Down the Drain) for FOG Best Management Practices (BMPs) and a brochure on ways to help keep your sewer system operating properly.

The wastewater discharged by your facility flows through the sewer system maintained by the District and to the wastewater treatment plant operated by the South Bayside System Authority (SBSA). Starting in January 2014, your facility is scheduled to be visited by SBSA staff representing the District. You will be provided with a poster-size flyer to post in your facility. The BMPs outline the recommended practices for an effective FOG Control Program. The ongoing FOG Control Program will be based upon periodic inspection of grease removal devices and use of BMPs.

If you have any questions regarding this program, please contact us at (650) 363-4100.

Very truly yours,

Mark Chow, P.E.
Principal Civil Engineer
Utilities-Flood Control-Watershed Protection

MC:JY:KL:
G:\users\utility\sewers\FOG\Intro Letter to FSEs SMC.doc

Encl.: No Grease Down the Drain Flyer
Flush Green Brochure

Appendix 7.2 – SVCW FOG GRD Inspection (FOG GRD SOP)

SOP #29 – Restaurant Grease Trap or Interceptor Inspection

Reviewed By _____ Date _____ Version 040505

Purpose

This SOP provides instructions for performing restaurant grease trap or grease interceptor inspections.

Background/reference

First, a grease trap refers to an inside appliance at a food establishment, while a grease interceptor is a large, usually concrete, structure installed in-ground outside the food establishment near the kitchen. In terms of effectiveness, a grease interceptor is far superior to a grease trap in removing grease. Moreover, since a grease trap is locate inside the kitchen, inspections can only be affected during non-peak hours since opening the trap will cause strong odors to emanate into the food establishment.

Food establishments such as restaurant routinely discharge warm grease bearing liquid from their kitchen operations, which flows fairly well while warm, but which congeals into a floating solid upon cooling. Grease not only congeals but also agglomerates on sewer pipes and can cause blockages if the grease is not removed before it turns solid.

Grease removal may be achieved by either an interceptor or traps which are designed to remove grease before it gets to the sewer system. Both appliances have chambers (wide spots) installed in the drain leading from the kitchen. They have baffles that slow the greasy water, which allows separation of the grease from water by floatation. The last chamber is plumbed to allow the more grease-free wastewater to flow to the sanitary sewer. Figure 1 illustrates a typical configuration for standpipe baffles. A properly maintained trap or interceptor can effectively remove grease and thus prevent sewer overflow incidents.

When checking the depth of the grease layer, refer to the standard guidance from the member agency when assessing if the interceptor or trap needs servicing. If, for example, the member agency requires that an interceptor be cleaned when the grease layer in the first chamber is over 12 inches thick, then use that as the benchmark for requiring servicing.

Safety Notes

Wear leather gloves when removing interceptor baffle covers.

Equipment

A manhole opening device or large screwdriver to remove the baffle cover.
A pipe or Plexiglas tube to measure the grease layer depth.
Camera (optional for visual recording aid)

Procedures

- Open the interceptor/trap at an appropriate time of day (non-peak hours)

- Observe the grease layer. Does it overflow the standpipes? A properly functioning interceptor/trap holds the heaviest grease layer on the inlet side of the baffle wall. There may be a thin layer of grease in the discharge side, but no grease should be on top of the baffle wall or on top of or in the standpipes or discharge pipe.

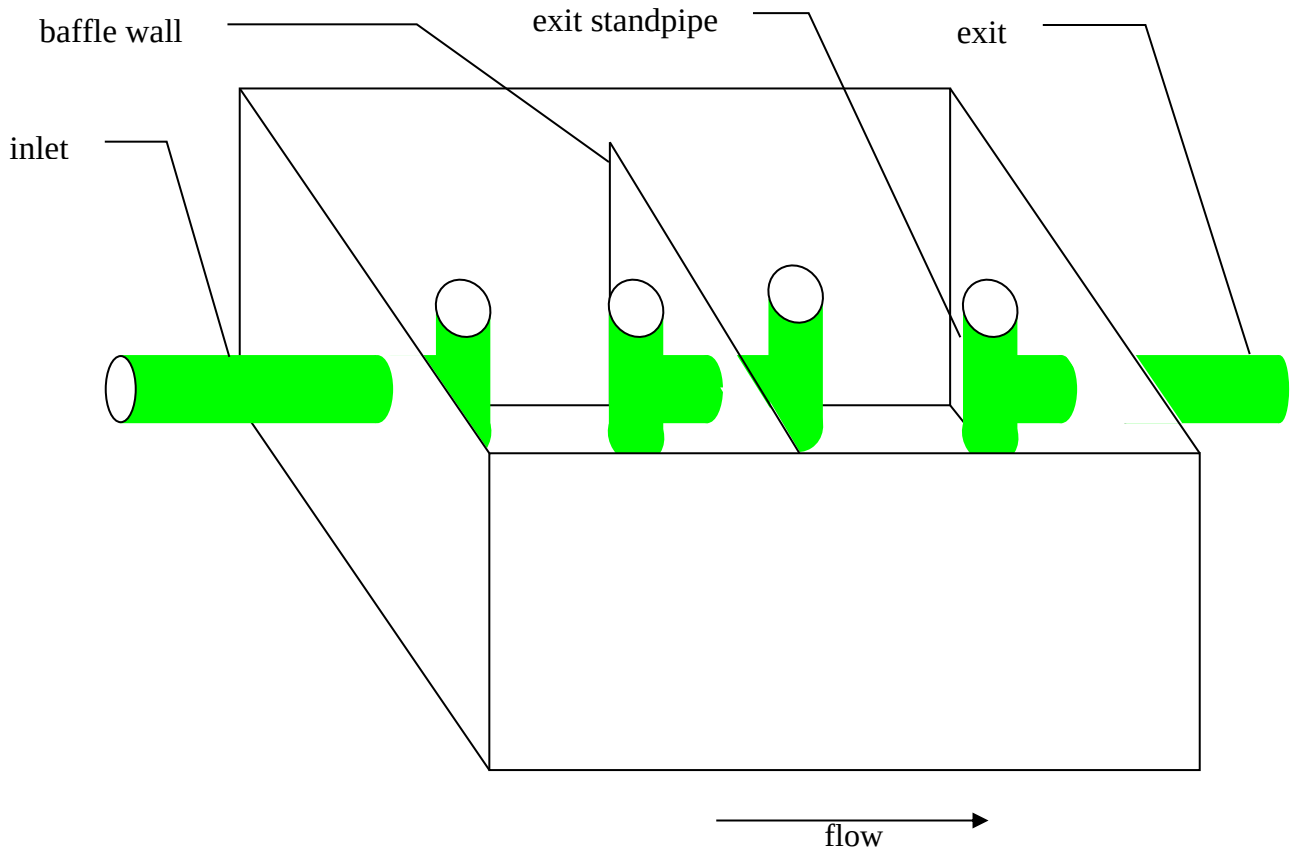
- Measure the thickness of the grease layer in each chamber with a piece of pipe. Push the pipe slowly into the grease feeling the resistance. When the pipe suddenly has no more resistance due to its breaking out of the underside of the layer, note the depth of the pipe pushed in. This will be considered the depth of the grease layer. If the grease is of a liquid nature such as one might see at a delicatessen, use a one-quarter inch inside diameter Plexiglas tube to measure the depth by inserting the tube through the grease layer and capping the top end with your thumb. Once lifted out of the interceptor, the depth of grease can be easily determined.

- If the depth is significant as defined by the member agency, contact the restaurant manager and call his/her attention to the grease level. Recognize that some new managers have never seen a grease trap or interceptor and have no idea of its function. Educate such people regarding the need for properly maintaining these grease removal devices on a routine basis.

- Close the trap or interceptor.

- Fill out the inspection form. (see form attached) and file it and give a copy to the appropriate food establishment representative. Provide a completed copy of the inspection form to the member agency representative.

Figure 1. Typical grease trap or interceptor layout diagram



Grease Trap and Interceptor Inspection Form

Food Facility Name?	
Address?	
Parent Company?	
Contact Person?	
Contact Title?	
Contact Telephone?	
Facility Description?	full restaurant____ fast food____ deli____ take out____ hamburgers_____ ethnic food_____ bakery____ other_____
Trap/interceptor/location?[1]	Trap____ interceptor____ location
Size of trap/interceptor[2,3] (or weight capacity)?	
How is size determined?	
Grease cake thickness?[4]	1st chamber_____ 2nd chamber_____ if any
Method thickness determined	
Properly operated?[5,6,7,8]	Yes____ No____ Comment
Maintenance receipts?[9]	Yes____ No____
Frequency of maintenance receipts?[9]	_____times per_____ occasional_____ none yet_____ last time pumped/cleaned_____
Visual Observations?	
All parts present?	Yes____ No____
Is follow up needed?	Yes____ No____

Notes:

1. General description of the location.
2. Record approximate dimensions if they can be estimated with reasonable accuracy.
3. Record pound capacity if stamped on top.
4. Record the grease cake thickness and how it was determined.
5. If it looks like it may be too close to the dishwasher check the temperature of inlet water.
6. Approximately how far is dishwasher from the grease trap/interceptor?
7. Note whether there is a single flotation chamber or two.
8. Any visual evidence of grease in the exit pipe.
9. If there are receipts, note this and note frequency of receipts.

Appendix 8.1 – CIPs Schedule

CIPs Schedule

	Evaluations		CIPs	Cause	Max Cost	Anticipated Date	Status	Report	CIP reports	I/I	CCTV Update	Schedule for Update/Review
BHSMD	2009	FM and hydraulic modeling capacity	Canyon Rd	1		2015	Completed (2017)	B&C technical Memo 2. Hydraulic Model Development 2011	B&C technical Memo 3. SECAP 2011 and B&C Memo 4. CIP development, 2011	Complete smoke testing 2010, 27 location dye tasting 2011, B&C technical Memo No.1 SECAP field inspection	Complete System (2012), Partial (2019)	
			Adeline Drive	1								
	2011	CIP Development and Master Plan Update	Adeline Dr	1	1,196,140	2019		B&C technical Memo 4. CIP Development (Task 5) 2011	B&C technical Memo 4. CIP Development (Task 5) 2012			
			Canyon Rd	1	1,401,100	2019						
			Hillside/Adelina	2	2,261,550	2021						
			Upper Canyon Rd	2	2,131,080	2025						
			Fey Dr	2	2,018,430	2029						
			Tiara Ct	3	1,515,740	2033						
			Alturas Dr	3	1,209,240	2037						
			Lower Canyon Rd	3	1,048,940	2041						
CSCSD	1999	Master plan	N Polhemus Rd	1	582,100		Completed (2003)				Complete System (2011)	
			Randall Rd	2	73,200	2014	Completed (2014)					
			Timberlane Wy	2	238,900	2014	Completed (2014)					
			Parrot Drive	3	180,000	2014	Completed (2014)					
			Lexington Ave	3	127,000	2014	Completed (2014)					
			Enchanted Wy	3	35,900	2014	Completed (2014)					
			Rainbow Drive	3	325,600	2014	Completed (2014)					
			S Ascension Dr	3	279,700	2014	Completed (2014)					
			S Polhemun Rd	3	4,000	2014	Completed (2014)					
	2009	FM and hydraulic modeling capacity	Polhemus trunk	1		2014	Completed (2014)	RMC FM and Hydraulic report 2010	Not planned, outside of boundries			
	2011	Sewer RRR Plan	Urgent Point Repairs	3	130,000	2018			Sewer RRR Plan, Kimley-Horn/WWE, 2011			
			Parrot Dr/Randall Rd	3	450,000	2019						
			Billy Goat Hill	3	615,000	2020						
			Roxbury Ln/Polhemus Rd	3	80,000	2021						
			Bel Aire to Rainbow	3	150,000	2022						
			Ticonderoga Dr	3	210,000	2023						
			Lexington Ave/Yorktown East	3	300,000	2024						
			Ascension to Polhemus	3	255,000	2025						
			Lexington/Yorktown West	3	300,000	2026						
			Lexington and PG&E	3	315,000	2027						
DCSD	1999	Master plan	Winding Wy	2	148,700	2025					Partial CCTV (2017)	
			Windsor Dr	2	68,100	2019						
			Devonshire Blvd	3	98,300	2025						
			Dolton Ave	3	95,700	2025						
			Chesham Ave	3	62,100	2019						

CIPs Schedule

	Evaluations		CIPs	Cause	Max Cost	Anticipated Date	Status	Report	CIP reports	I/I	CCTV Update	Schedule for Update/Review
ESMD	NA	NA									NA	
ELHSMD	1999	Master plan	Cordilleras Rd	1	181,800	2015					Zone 1 (2012), Partial (2017)	
			Edgewood Rd	1	45,100	2015						
FOSMD	2000	Master plan	Bay Rd #4	1	1,005,700	2015					Partial CCTV (2016)	
			Oakside/Barron Ave	1	661,800	2015						
			Selby Ln #3	1	864,400	2015						
			Berkshire Ave	1	609,200	2015						
			Selby Ln #2	1	209,500	2015						
			Bay Rd #2	1	337,900	2015						
			Selby Ln #1	1	325,000	2015						
			Nimitz Ave	1	218,000	2015						
			Bay Rd #1	1	369,900	2015						
			12th Ave	1	133,800	2015						
			Woodside Rd	1	128,400	2015						
			Santiago Ave	1	150,400	2015						
			El Camino Real #2	1	180,500	2015						
			Milton St/Hull Ave	1	219,400	2015						
			Eleanor Dr	3	240,500	2017	Completed (2017)					
			Melanie Ln	3	161,300	2017	Completed (2017)					
			Middlefield Rd	3	137,500	2021						
			Polhemus Ave	3	367,200	2024						
			Page St	3	114,120	2022						
			Stockbrige Ave	3	248,040	2023						
			6th Ave	3	146,470	2022						
			Bay Rd #3	3	223,020	2022						
			El Camino Real #1	3	191,100	2023						
			Hillside Drive	3	149,040	2024						
			Glenwood Ave	3	138,960	2025						
	2015	Master plan	Hoover St	1	274,000	2026		RMC FOSMD MP 2015		RMC FOSMD MP 2015		
			Edison Wy to Bay Rd	1	1,270,000	2026						
			Woodside Rd to Squoia Ave	1	1,891,000	2020						
			Himmel Ave	1	626,000	2020						
KSSMD	1999	Master plan	Upton Street	3	55,400	2025					Partial CCTV (2017)	
HISMD	1999	Master plan	Elmer St	3	136,600	2019					Partial CCTV (2017)	
OKSMD	1999	Master plan	Don Ct	3	43,000	2030					Partial CCTV (2017)	
			Moloney Ct	3	29,800	2030						
SHCSD	1999	Master plan	Scenic Dr	3	33,700	2019					Partial CCTV (2017)	

Cause	1	Hydraulic Deficiencies
	2	Excessive maintenance requirements. Improve to avoid DWF SSOs due to blockage
	3	Structural defiencies requiring corrective action

Appendix 9.1 – Key Performance Indicators (KPI)

KPI Benchmarking

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 19/20	KPI Data FY 20/21	KPI Data FY 21/22	KPI Data FY 22/23	KPI Data FY 23/24	Audit Frequency	Responsible Party
System Information			Total System Length	Miles							Annually	
			Population	People							Annually	
			Sewer: < 6 inches	Miles							Annually	
			Sewer: 8 inches	Miles							Annually	
			Sewer: 9 inches - 18 inches	Miles							Annually	
			Sewer: 19 inches - 36 inches	Miles							Annually	
			Sewer: > 36 inches	Miles							Annually	
			Sewer: Unknown diameter	Miles							Annually	
			WWC Staff	Number							Annually	
			Certified Operators	Number							Annually	
Financial Information			Total annual division budget	$							Annually	
			Total annual O&M budget	$							Annually	
			O&M budget of annual	%							Annually	
			Annual capital budget for sewer rehab	$							Annually	
			Sewer monthly rate for residents	$							Annually	
Organization	D.ii.c	Chain of Communication	Average response to customer inquiry	Minute							Quarterly	
			Total customer service calls	Number							Quarterly	
			Total customer service calls resolved	Number							Quarterly	
			% of time spent on scheduled work	%							Quarterly	
			% of time spent on unscheduled work	%							Quarterly	
O&M		PM Activities	Sewer main flushed per year (basin cleaning program)	Miles							Quarterly	
			Sewer main flushed rodded per year (high frequency cleaning program)	Miles							Quarterly	
	D.iv.c	R&R Plan	Manholes rehabilitated	Number							Quarterly	
			Sewer main CCTV inspected per year	Miles							Quarterly	
			Total miles rehabed or replaced per year (main)	Miles							Annually	
	D.iv.d	Training	# Hours of training	Hours							Annually	
Design	D.v.a&b	Construction	Miles of sewer main rehabilitated	Miles							Annually	
			Number of spot repairs	Number							Annually	
OERP	D.vi.a	Notification	Average response time to SSO	Minutes							Quarterly	
	D.vi.b	SSO Response	Average SSO duration (main)	Minutes							Quarterly	
FOG	D.vii.e	FOG Inspections	FSE FOG inspections per year	Number							Quarterly	
	D.vii.f	Hot Spots	Number of SSO's caused by hot spots	Number							Quarterly	
MMM	D.ix.e	SSO Trends	Total number of SSO's mains	Number							Quarterly	
			Total volume SSO's mains	Gallons							Quarterly	
			% of total SSO volume recovered	%							Quarterly	
			Repeats SSO's within two years	Number							Quarterly	
			Number of SSO's: 1,000 gallons or more	Number							Quarterly	
			Number of SSO's: between 100 and 999 gallons	Number							Quarterly	
			Number of SSO's: less than 100 gallons	Number							Quarterly	

Appendix 9.2 – SSMP Change Log

SSMP Change Log

SSMP Element		Changes (June, 2019)
1. Goals	(a) Develop commitment goals	No changes
2. Organization	(a) Identify Legally Responsible Official (LRO)	Legal responsible officals added
	(b) SSMP responsibility and organization chart	Updated, new SSMP responsible table
	(c) Chain of communication for reporting SSOs	Updated
3. Legal Authority	(a) Prevent illicit discharges	Links added
	(b) Properly designed and constructed sewers	Links added
	(c) Ensure access to laterals owned/maintained by City	Links added
	(d) Limit the discharge of FOG and other debris	Links added
	(e) Enforce any violation of City ordinances	Links added
4. Operations and Maintenance Program	(a) Collection system maps	10 districts map added
	(b) Preventive O&M activities	Updated
	(c) Rehabilitation and Replacement (R&R) plan	Updated
	(d) Training	Updated
	(e) Equipment and critical replacement parts	Updated
5. Design and Performance Provisions	(a) Sanitary sewer design and construction specifications	Links added
	(b) Procedures and standards for inspecting and testing new and R&R projects	Links added
6. Overflow Emergency Response Plan ("OERP")	(a) Proper notification procedures	Updated, chart Updated, directory Updated
	(b) Program for appropriate SSO response	Updated, equipment Updated
	(c) Procedure for prompt notification to regulatory agencies	Updated
	(d) Procedures for appropriate staff and contractor training	Updated
	(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Updated, Updated soil sampling
	(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	Updated, New environmental form is added
7. Fats, Oils, and Grease (FOG) Control Program	(a) Public education plan	Updated, brocures and Links added
	(b) FOG disposal plan	No changes
	(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Updated, Links added
	(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Updated
	(e) Authority to inspect and enforce FOG ordinance	Updated
	(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Updated
	(g) FOG Control Program Measures	Included in KPI
8. System Evaluation and Capacity Assurance Plan ("SECAP")	(a) Evaluate hydraulic deficiencies	Links added, Updated
	(b) Establish design criteria	Updated
	(c) Establish short- and long-term CIP	Updated
	(d) Develop schedule of completion dates for CIP	Updated
9. Monitoring, Measurement and Program Modifications	(a) Maintain metrics to prioritize SSMP activities	KPI tracking
	(b) Measure effectiveness of SSMP elements	KPI tracking
	(c) Assess preventative maintenance program	KPI tracking
	(d) Update elements based on evaluations	Change log added
	(e) Identify and illustrate SSO trends	KPI tracking
10. SSMP Program Audits	(a) Conduct periodic audits	No changes
11. Communications Program	(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Public education updated

Appendix 10.1 – Internal Audit Form

Internal SSMP Audit Form

	YES	NO
ELEMENT I – GOALS		
1. Are the goals stated in the SSMP still appropriate and accurate?		
ELEMENT II – ORGANIZATION		
2. Are the telephone numbers for office and field staff current?		
3. Are the telephone numbers for sanitary sewer overflows (SSOs) responders current?		
4. Is the organization chart current?		
5. Are the position descriptions accurately portraying staff responsibilities?		
6. Is the chain of communication for reporting and responding to SSOs accurate and up-to-date?		
ELEMENT III – OVERFLOW EMERGENCY RESPONSE PLAN		
7. Does the Overflow Emergency Response Plan establish procedures for the emergency response, notification, and reporting of SSOs?		
8. Are sewer crew members appropriately trained on the procedures of the Overflow Emergency Response Plan?		
ELEMENT IV – FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM		
9. Have the Districts identified sections of the collection system subject to FOG blockages and established a cleaning schedule to minimize these blockages?		
10. Have the Districts developed a brochure to educate the public on FOG and its effects on the wastewater collection system?		
11. Do the Districts have sufficient legal authority to limit discharges of FOG?		
ELEMENT V – LEGAL AUTHORITY		
Does the SSMP contain excerpts from the current Ordinance Code documenting the Districts' legal authority to:		
12. Prevent illicit discharges?		
13. Require proper design and construction of sewers and connections?		
14. Control inflow and infiltration?		
15. Limit discharges of fats, oil and grease?		
16. Enforce any violation of its sewer ordinances?		
ELEMENT VI – MEASURES AND ACTIVITIES		
a. Collection System Maps		

	YES	NO
17. Does the SSMP reference the current process and procedures for maintaining the wastewater collection system maps?		
18. Are the wastewater collection system maps complete, current, and sufficiently detailed?		
b. Resources and Budget		
19. Are sufficient funds allocated for the effective operation, maintenance and repair of the wastewater collection system?		
c. Prioritized Preventive Maintenance		
20. Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?		
21. Based upon information in the Annual SSO Report, are the preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?		
d. Scheduled Inspections and Condition Assessments		
22. Is there an ongoing condition assessment whenever a sewer main experiences an overflow or backup?		
e. Contingency Equipment and Replacement Inventories		
23. Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management?		
24. Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?		
f. Training		
25. Is there on-going safety training?		
26. Does the SSMP document proposed training expectations and programs?		
g. Outreach to Plumbers and Building Contractors		
27. Does the SSMP contain information for plumbers and contractors on proper practices to prevent SSOs?		
ELEMENT VII – DESIGN AND CONSTRUCTION STANDARDS		
28. Does the SSMP contain information about current design and construction standards for the installation of new sanitary sewer systems and rehabilitation and repair of existing sanitary sewer systems?		
29. Does the SSMP document information about current procedures and standards for inspecting and testing the installation of new sewers and the rehabilitation and repair of existing sewer lines?		
ELEMENT VIII – CAPACITY MANAGEMENT		

	YES	NO
30. Do the sewer master plans evaluate hydraulic deficiencies in the systems, establish sufficient design criteria and recommend capacity enhancement and improvement projects?		
31. Does the SSMP specify schedule of approximate completion dates for projects identified in the master plans?		
ELEMENT IX – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS		
32. Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?		
33. Are the Districts able to sufficiently evaluate the effectiveness of SSMP elements based on relevant information?		
ELEMENT X – SSMP AUDITS		
34. Will the SSMP Audit be filed in the internal filing system by May 2nd /August 2nd of the year following the end of the second calendar year being audited?		
ELEMENT XI – COMMUNICATIONS PROGRAM		
35. Has the agency effectively communicated with the public and other agencies about the development, implementation and performance of the SSMP?		
36. Has the agency provided the public the opportunity for input as the program is developed and implemented?		

If **NO** is answered for any question, the updates/changes needed and the timeline to complete those changes will be described in the audit report.

Appendix 11.1 – Public Awareness Program Materials

In the kitchen

Clogged sink drains can ruin your home, too! Keep all sinks in your home clog-free by following these simple steps:

- Fruit and vegetable stickers belong in the trash, not the drain.
- Always place cooled fats, oils and grease into a covered, disposable container and throw it into your solid waste cart. Never pour fats, oils or grease down sink drains or toilets.
- Soak up remaining oils and grease with an absorbent material such as paper towels and throw into your food waste/organics cart.

- Before you wash dishes, place food scraps into your food waste/organics cart.

Recycle up to 15 gallons of Cooking Oil (Turkey Fryer Grease) at Shoreway Environmental Center Recycling, 333 Shoreway Road in San Carlos, 650-802-8355, Monday-Saturday 8:30am-4:00pm. Do not pour down the sink drain, stormdrain or sewer.

San Mateo County may accept your Household Hazardous Waste by appointment only

Common household products become "Hazardous Waste" when poured down a drain or flushed down a toilet because they harm our environment and wreak havoc on the District's sewer system. Never dump medications, paint, paint thinner, or cleaning products that have a CAUTION-WARNING-DANGER-POISON label. Instead, visit the San Mateo Countywide Water Pollution Prevention Program website at www.flowstobay.org and click "Community" then select "Too Toxic To Trash" for the location of your nearest recycler and drop-off site!
For more information call (650) 363-4718

County of San Mateo
Sewer Maintenance Districts
555 County Center, 5th Fl.
Redwood City, CA 94063
www.smcgov.org/sewers

ALL DRAINS IN YOUR HOME FLOW INTO THE SAME SEWER PIPE!

Clogged pipes can cause expensive and messy sewer backups and overflows in your home and in your neighborhood. If you notice a serious problem in or near your home, or on a street, call the County of San Mateo at 650-363-4100.

AVOID SEWER BACKUPS AND OVERFLOWS BY KEEPING TRASH OUT OF YOUR TOILET

Tampons, maxi pads & their applicators/ wrappers

Kitty litter

Syringes

Paper towels and shop towels

Cotton swabs & makeup pads

Diapers

CLOG

Did you know?

Cleaning wipes, baby wipes and facial wipes are one of the biggest causes (or contributors) to sewer back-ups in the County of San Mateo Sewer Districts. That's right- even if the package says "flushable" or "disposable", they should NEVER be flushed. They belong in the trash.

Dental Floss

Plastics and food wrappers

Condoms and their wrappers

Hair

Prescription and OTC medications

Unused prescription drugs and over the counter medicines should be dropped off in confidential containers at Police Departments. www.smchealth.org

Flush ONLY toilet paper. Put trash in the trash can.

For more information please visit our website at www.smcgov.org/sewers or call us at 650-363-4100.

WHEN IT COMES TO GARBAGE, IT BELONGS IN THE TRASH.

Your drains are not trash cans. The water from your home or business (toilet, shower, kitchen, etc.) eventually ends up into one of the most beautiful parts of our community, the San Francisco Bay.

Throwing anything other than toilet paper down the drains can cause sanitary sewer overflows (SSOs) and will severely impact your plumbing system, the sewer system, and the processes at the treatment plant.

PROPERLY DISPOSING OF YOUR WASTE WILL HELP PROTECT PUBLIC HEALTH AND THE ENVIRONMENT.

www.smcgov.org/sewers

Burlingame Hills Sewer Maintenance District
Crystal Springs County Sanitation District
Devonshire County Sanitation District
Edgewood Sewer Maintenance District
Emerald Lake Heights Sewer Maintenance District
Fair Oaks Sewer Maintenance District
Harbor Industrial Sewer Maintenance District
Kensington Square Sewer Maintenance District
Oak Knoll Sewer Maintenance District
Scenic Heights County Sanitation District

Department of Public Works
555 County Center, 5th Fl
Redwood City, CA 94063
(650) 363-4100

For more information about Stormwater Pollution Prevention visit the **San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)** ***www.flowstobay.org***

RETHINK WHAT YOU FLUSH...

FLUSH GREEN AND $AVE GREEN

PROTECTING OUR WATER QUALITY STARTS WITH EACH OF US, SO PLEASE… FLUSH ONLY TOILET PAPER IN THE TOILET

Protecting our water quality starts with each of us, so please…

FLUSH ONLY TOILET PAPER IN THE TOILET

the DIRTY DOZEN

all these items belong in the trash, not the toilet

Baby Wipes

Tampons, Applicators, & Pads

Paper Towels

Cleaning Wipes

Maxi Pads & their Wrappers

Condoms & their Wrappers

Cigarette Butts & Cigarette Wrappings

Hair

Q-tips & Make-up Pads

Prescription & OTC Medications

Kitty Litter

Cellophane Wrapping & Plastic Bags

Remember the toilet is not a trash can!

WHERE TO DISPOSE OF HAZARDOUS WASTE

For household hazardous (HHW) disposal options contact:

San Mateo County HHW
at **(650) 372-6200**
Make an appointment on-line,
http://events.smhealth.org/events
or visit ***www.smhealth.org/hhw***

ACCEPTED MATERIALS

- Oil-based paints, varnishes and stains
- Paint thinner
- Household cleaners
- Aerosol spray cans
- Furniture and metal polishes
- Pesticides and garden chemicals
- Pool and spa chemicals
- Photographic chemicals
- Art and hobby supplies
- Automotive Products
- Batteries (home & car)
- Hobby supplies
- Fuels
- Propane tanks from barbecues
- Mercury Containing Items (fluorescent light bulbs, old thermometers, etc.)

NOT ACCEPTED MATERIALS

- Ammunition
- Asbestos
- Biological materials
- Business-generated materials
- Electronics
- Explosives
- Radioactive materials
- Compressed gas cylinders

*No need for an appointment if you take the following to local Drop-Offs:

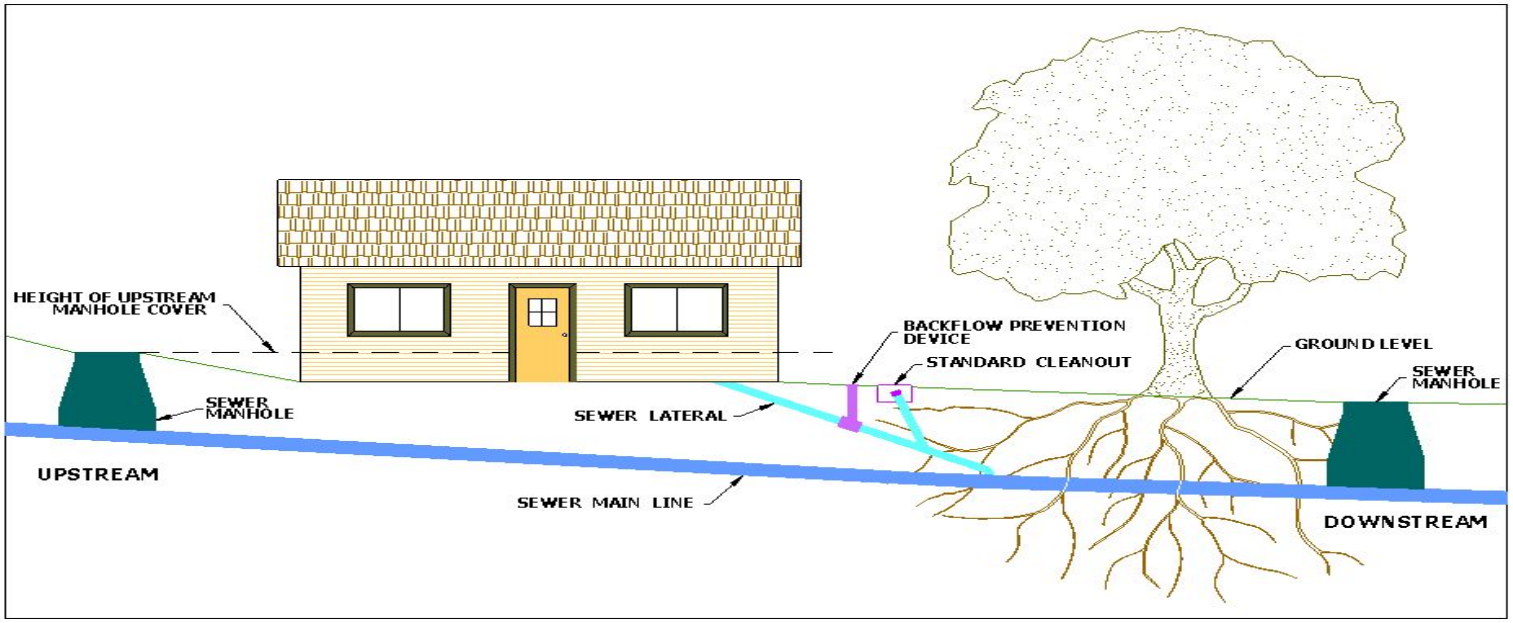
- household batteries
- old medications
- latex paint
- fluorescent light bulbs
- auto batteries
- used oil
- oil filters
- antifreeze

To dispose or recycle other unwanted household products and unwanted pharmaceuticals visit the following:

www.recycleworks.org
www.earth911.com

To prevent pollution of our waterways visit ***www.baywise.org*** or ***www.flowstobay.org***

SAN MATEO COUNTY SEWER INFORMATION GUIDE



The diagram to the left depicts a typical sewer configuration. The sewer lateral carries sewage from the house to the mainline. If a blockage occurs due to root intrusion for instance, sewage will begin to backup until it reaches the lowest outlet. In this case, sewage will backup into the house before overflowing from the next upstream manhole. A back-flow prevention device installed on the lateral will prevent the backup from entering the house.

What is a sanitary sewer?

A sanitary sewer is a system of pipes normally located in the street or an easement that are solely designed to transport sewage to the treatment plant. The County of San Mateo Public Works Department maintains the sanitary sewer pipes, also called sewer mains, within the 10 sewer districts that are operated by the County.

What is a sewer lateral?

The sewer line that carries wastewater from the sanitary fixtures and floor drains inside your home or business to the District's sewer main is called a sewer lateral. The property owner is responsible for maintaining the sewer lateral from the property structure to and into the District's sewer main. Occasionally the sewer lateral becomes blocked and the sewage cannot flow to the sewer main. This is what is commonly called a back up.

What causes sewer backups?

Some of the most common causes of sewer back-ups are:

- Buildup of grease, debris or foreign objects in the sewer lateral or District sewer main.
- Partial or complete blockage caused by tree root intrusion into sewer pipes.
- Sewer line collapse caused by old and deteriorated sewer pipes.
- Excess water entering the sewer system either from illegal pipe connections or inflow of rainwater during wet weather seasons.

How can backups be prevented?

The best way to protect against backups is through regular cleaning and maintenance of sewer pipes. Here are a few tips that will help:

- Roots: Don't plant trees or large shrubs near sewer lines. Roots grow toward breaks and cracks in search of a water source. If roots get inside the pipe, they form root balls that clog the line. Products are available which chemically treat the roots to reduce the problem.
- Grease: Dispose of grease and fats with your trash – don't put them down the drain! Grease collects and hardens inside the pipes and forms a plug.
- Illegal plumbing connections: Don't connect backyard drains, sump pumps and other drainage systems to the sanitary sewer. It's illegal and debris and silt will clog your line. Consult a plumber to undo any illegal connections.

Do I need a backflow prevention device?

If the elevation of the shower drain, bathtub drain or toilet, for instance, is lower than the elevation of the next upstream manhole cover of the public sewer, then you need a sewer backflow prevention device. A backflow prevention device can be installed on your sewer lateral to reduce the likelihood of sewage entering your home or

business through low-lying plumbing fixtures when there's a blockage in the lateral or public main.

What You Need to Know About Backflow.

The County of San Mateo is committed to minimizing sewer backups through regular maintenance, mainline replacement and public education. Sewer lines can become blocked due to buildup of debris in them. When this occurs, sewage is stopped by the blockage and flows backwards toward the first possible outlet. Most of the time that is a manhole. However, sometimes that outlet point is a fixture in a home or business. It is possible to protect your property from sewage backups with a plumbing fixture called a backflow prevention device. The Uniform Plumbing Code requires installation of a backflow prevention device to protect plumbing fixtures that are below the elevation of the nearest upstream manhole. You can view the County Ordinance Code at *www.ordlink.com/codes/sanmateo/index.htm* for more information on backflow prevention device requirements.

What if my sewer backs up?

Call the Public Works Department as soon as you begin to experience a backup and County crews will respond. When a sewage backup occurs, Public Works crews will first check the District's sewer main to verify that the pipe is open and sewage is flowing. If the sewer main is found to be clear, and the property has a standard property line cleanout, crews will provide courtesy service to clear the blockage between the property line cleanout and the sewer main. If the blockage is found to be between the house or business and the property line cleanout, it is the responsibility of the property owner to call a licensed plumber or drain cleaning service to correct the problem. Public Works staff is on duty 24-hours a day, seven days a week. If you see or suspect a sewer overflow, call the Public Works Department at 650-363-4100 during working hours. During non-working hours, your call will automatically be forwarded to after hours support and a maintenance crew will be dispatched to your address.

Sanitary sewer systems are designed to handle three types of waste products:

- waste water
- human body waste
- toilet paper

Keep your sanitary sewer working properly!

DO: Collect grease in a container and dispose of it in the garbage.

DO: Place food scraps in the garbage for disposal with solid waste.

DO: Place a wastebasket in the bathroom to dispose of solid waste. (Disposable diapers and personal hygiene products do not belong in the sewer system.)

DON'T: Pour grease, fats, and oils from cooking down the drain.

DON'T: Use the sewer to dispose of food scraps.

DON'T: Use the toilet as a wastebasket for garbage or chemicals. These items can kill "good" bacteria used for sewage treatment, cost much more to treat, and can enter the Bay.

DON'T: Plant trees with shallow, spreading root systems near your sewer lateral. Tree roots seek water sources, such as from cracked sewer lines. Once the roots have penetrated the line through cracks, the roots can create a dense mat and trap materials.

Follow these simple DOs and DON'Ts.
You can help prevent sewer backups and avoid expensive plumbing and cleanup bills.

Para información en Español, llame Benjamin Vázquez o America Sanchez al teléfono (650) 363-4100.

USERS\UTILITY\SEWERS\Sewer Awareness\Lateral Brochure\Overflow Awareness 3.doc

Burlingame Hills Sewer Maintenance District

Crystal Springs County Sanitation District

Devonshire County Sanitation District

Edgewood Sewer Maintenance District

Emerald Lake Heights Sewer Maintenance District

Fair Oaks Sewer Maintenance District

Harbor Industrial Sewer Maintenance District

Kensington Square Sewer Maintenance District

Oak Knoll Sewer Maintenance District

Scenic Heights Sewer Maintenance District

County of San Mateo
Department of Public Works
555 County Center, 5th Floor
Redwood City, CA 94063-1665
(650) 363-4100
www.co.sanmateo.ca.us

Be Sewer Savvy:

Notes, tips & tricks to help keep your sewer pipes in tip-top shape.

- ✔ Protect your home
- ✔ Protect your business
- ✔ Avoid costly repairs

And prevent water pollution, too!

COUNTY OF SAN MATEO
FOUNDED 1856

Be Sewer Savvy!

As homeowners, renters, or business owners and employees in San Mateo County, we all depend on a well functioning sewer system. Invisible to most of us, this complex array of underground pipes carries away raw sewage to its destination at the sewage treatment plant, keeping our communities healthy and free of odor, and protecting the environment.

But the sewer system is also vulnerable to damage that impairs its ability to work properly. The consequence: sewer pipe backups and overflows that can put humans and animals at risk of disease, damage private property, and harm the environment. Cleanups and repairs are usually costly and can lead to increased sewer service rates for everybody.

Sewer pipes are designed to carry only three types of waste: wastewater, human body wastes, and toilet paper. If it ain't one of these, it doesn't belong in the sewer!

This booklet offers best practices to prevent some of the most common causes of sewer overflows, and help you keep your sewer pipes in tip-top shape.

As a property owner, you own–and are responsible for maintaining–the sewer lateral (pipe) that connects your house to the sanitary sewer mains in the street or on the easement. See schematic at right.

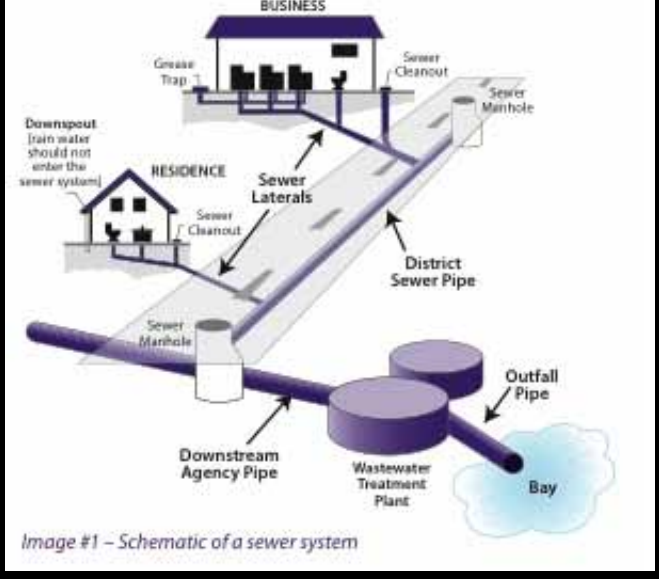


Image #1 – Schematic of a sewer system

The wastewater goes through the pipes in your house or business, then flows into a sewer lateral and drains into the district sewer pipes (typically located in the street or an easement). It travels from the district sewer pipes to the pipes maintained by the city or town located between the district and the treatment plant. Eventually, the wastewater flows into a wastewater treatment plant to have harmful chemicals removed before being discharged into the Bay.

Sewer Pipe Hazard #1: Tree Roots

What's the problem?

Tree roots can be very aggressive in their search for moisture, especially during dry weather. Often sewer pipes are the nearest source of water. Tree roots are attracted by water vapor that escapes from the pipes to the cold soil surrounding them, especially near small cracks and loose joints. Once the roots have pried their way into the sewer system, they can fill pipes completely with hair-like root masses. Tissue paper, grease and other debris in the sewage get caught in the roots, eventually leading to a complete obstruction or even breakage of the sewer pipe. Severe cases of root damage require costly replacements.

Sewer Savvy Practices

- Be aware of the location of the sewer pipe laterals on your property. Before planting any trees or hedges near the sewer pipes, consult with an arborist or a local gardening center about suitable choices based on the plants' expected root growth.
- Choose piping materials that are more resistant to roots entering the pipe, such as concrete or polyvinylchloride (PVC) pipe. PVC also has the advantage of fewer joints, reducing the risk of root intrusion.
- Schedule regular inspections and cleanings of your sewer pipes. Professional plumbing companies can video your sewer lateral to determine the condition and if any repairs are needed.
- Tools commonly used to remove tree roots from sanitary sewer pipes include augers, root saws and high-pressure flushers. Contact a local plumbing company for more information.

SEWERprising fact:

As a general rule, tree roots will extend up to 2.5 times the height of the tree, some species even 5 to 7 times.

Sewer Pipe Hazard #2: Fats, Oils and Grease (FOG)

What's the problem?

Fats, Oil and Grease are not just a problem for your arteries and your waistline: they're bad for sewers, too!

Fats, Oils and Grease come from:

- Meats
- Lard
- Cooking oil
- Shortening
- Butter and margarine
- Food scraps
- Baked goods
- Sauces and gravy
- Dairy products

Fats, oil and grease can get into the plumbing system. Over time, they can build up inside the pipes, even blocking the pipes entirely. This build-up can lead to sewer overflows, which create health hazards, damage your home, and threaten the environment.

Doing this....

can lead to this!

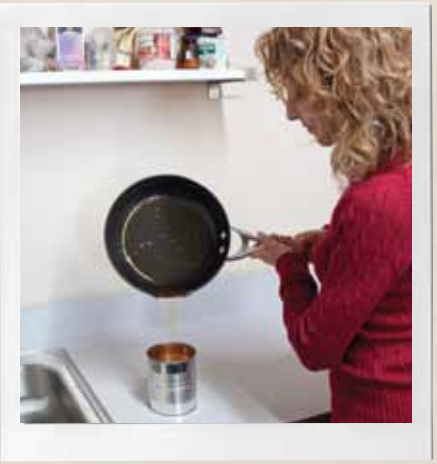
First Signs of a Sewer Pipe Problem

Are you noticing gurgling noises from toilet bowls and wet areas forming around floor drains after you've completed the laundry? These first signs may indicate that your sewer pipes are obstructed or otherwise impaired and need your attention.

Be Sewer Savvy and Stop the FOG!

The answer to the Fats, Oils and Grease (FOG) problem is to keep it out of the drains:

1. Never pour Fats, Oils or Grease down your sink or tub drains or into toilets.
2. Scrape grease and food scraps from trays, plates, pots, pans, utensils, grills and cooking surfaces into a container and put it in the garbage. Or, if your area has a curbside compost collection program, you can wipe the grease with napkins or paper towels, then put the towels and grease into your compost cart. Do not put containers of FOG into your compost cart.
3. Do not put grease down garbage disposals. Put baskets/strainers in sink drains to catch food scraps and other solids, and empty the drain baskets/strainers into the garbage.
4. Tell your family, friends, and neighbors about not putting Fats, Oils and Grease in the drains.
5. Call your local Sewer District if you have any questions.



Pour grease into a can and when full, toss the jar into the trash.

Let bacon grease and other fats harden.

Wipe the grease off with paper towels and discard the towels in the trash or food scrap bin.

For Commercial Property Owners

Restaurants, large commercial buildings such as apartment complexes, and other commercial properties must have grease traps or interceptors that keep grease out of the sewer system. For a grease trap or interceptor to work correctly, it should be properly designed, installed and maintained.

Need help?

There are many companies in the Bay Area that will come and service your traps and interceptors and recycle the oil for bio-fuel. Check with your local recycling program.

See www.recycleworks.org/recycled_oil.html for more details.

Sewer Pipe Hazard #3: Water Inflow & Infiltration*

*That's just a fancy way of saying rain and groundwater can leak or seep into the sewer system.

What's the problem?

Our sanitary sewer systems are designed to transport wastewater to the treatment facility. Separate from the sewer pipes, storm drains are meant to capture rainwater, which doesn't need treatment. However, rainwater can enter the sewage system through illegally connected downspouts, damaged or uncapped lateral cleanouts and defective manholes. This is called "inflow." In addition, groundwater can seep into the sewer system through cracks, joints and voids in the pipes, known as "infiltration."

Although sanitary sewer systems are designed to accommodate some excess water, too much of it can overwhelm the systems, especially when it is raining. This can cause sewage overflows that back up into homes and businesses without backflow prevention devices, and spill into roads, creeks and onto beaches. Cleanup costs as well as increased operational costs from pumping and treating the additional water can lead to higher sewer service charges. Excess water also deteriorates the sewer system, potentially causing pipe collapses and sinkholes in your neighborhood.

inflow: water entering sewer pipes through cracks and loose connections

sewer overflow due to infiltration

If you see an overflowing sewer manhole cover like this, please notify us immediately!

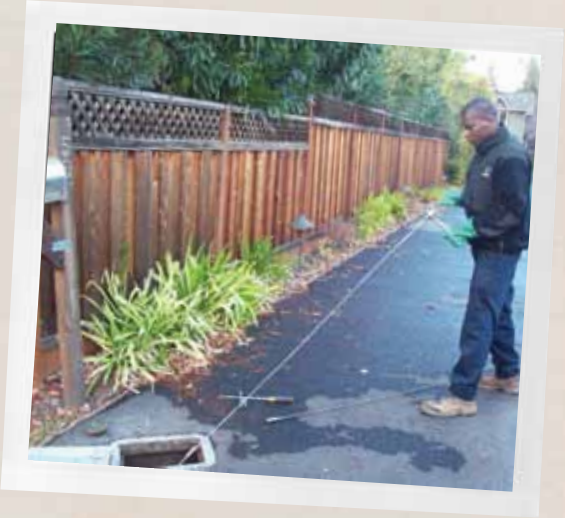
CALL 650-363-4100

SEWERprising fact:

Plumbing companies use remotely controlled camera "tractors" to film sewer pipes from the inside. The footage reveals defects such as cracks, root intrusions and leaky joints.

Sewer Savvy Practices: Preventing Inflow & Infiltration

- Check your gutters and drains to ensure they are not connected to the sanitary sewer system. If they are, contact a plumber to disconnect the gutter and/or drain from the sanitary sewer system.
- Keep your lateral cleanout caps tightly closed and replace any missing caps.
- Avoid planting trees and shrubs over sewer pipes, as roots can damage the pipes.
- Schedule regular inspections and cleanings of your sewer pipes. Professional plumbing companies can use various methods including video and dye testing to determine the condition of your sewer lateral and if any repairs are needed.
- Replace any broken, leaky or problem sections of your sewer lateral (pipe).



A qualified contractor can use various methods to inspect and clean your sewer pipes.

Sewer vs. Storm Drains: Do You Know the Difference?

The **Sanitary Sewer System** is designed to collect wastewater from plumbing systems inside buildings, such as toilets, showers, sinks, washing machines and floor drains. Pipes transport the wastewater to a treatment plant for processing, before releasing the treated water into San Francisco Bay or the ocean.

The **Storm Drain System** is designed to collect rainwater from the street, driveways, building roofs and foundation drains to prevent flooding in urban areas. Anything that flows or is discharged into the storm drain system goes directly into local creeks or San Francisco Bay without any treatment.

Inside this edition...

Be Sewer Savvy:

Notes, tips & tricks to help you avoid costly repairs.

(And, prevent water pollution, too!)

REPORT SEWER OVERFLOWS!
CALL 650-363-4100
Please notify us immediately!

HELPFUL PHONE NUMBERS & WEBSITES

Sewer Districts.....650-363-4100
Burlingame Hills Sewer Maintenance District
Crystal Springs County Sanitation District
Devonshire County Sanitation District
Edgewood Sewer Maintenance District
Emerald Lake Heights Sewer Maintenance District
Fair Oaks Sewer Maintenance District
Harbor Industrial Sewer Maintenance District
Kensington Square Sewer Maintenance District
Oak Knoll Sewer Maintenance District
Scenic Heights Sewer Maintenance District

Building and Planning—County Code Compliance Enforcement 650-363-4825

Environmental Health—Toxics and Hazardous Waste..... 650-372-6200

Sheriffs Office—Non Emergencies, Report Illegal Dumping..... .650-363-4911

Sewer Smart ..... www.sewersmart.org

California Association of Nurseries and Garden Centers..... www.cangc.org

County of San Mateo
Sewer Maintenance Districts
555 County Center, 5th Fl.
Redwood City, CA 94063
www.co.sanmateo.ca.us/sewers

IMPORTANT INFORMATION ABOUT YOUR SEWER SERVICES.

Your help is needed to protect the Bay, and prevent costly repairs to the sewer system.

Please read and keep this handy guide for future reference.

Understanding Your Sewer System and What You Pay For

Para obtener una copia de este folleto en Español, favor de llamar al (650) 599-1443

What Is a Sanitation/Sewer District?

A sanitation/sewer district is a Special District formed for a specific area to provide sewer service to the properties within the district boundary. Each sanitation/sewer district has its own budget with money collected from the district and spent within the district. While the Board of Supervisors serves as the Governing Board for the sanitation/sewer districts operated by the County of San Mateo, the districts are separate legal entities from the County of San Mateo.

What Is Sewer Services?

Sewer service includes sewer system operation and maintenance, emergency response, construction of new sewer pipes or replacement of sewer pipes within the districts, and complying with regulatory requirements. The districts are also responsible for paying its share for sewage treatment and disposal, construction projects that carry sewage from the districts to the wastewater treatment plant and construction projects at the treatment plants. The wastewater generated from properties with the district is carried in the district sewer pipes to the sewer pipes maintained by the downstream agency, and travels to the wastewater treatment plant.

This information is being provided to inform you of the importance of a reliable sewage system. Proper maintenance of the sewer system helps protect the environment, minimizes the chances of sewer backups or service disruptions, and minimizes overall sewer system costs.

COUNTY MAINTAINED DISTRICTS:

Burlingame Hills Sewer Maintenance District

Crystal Springs County Sanitation District

Devonshire County Sanitation District

Edgewood Sewer Maintenance District

Emerald Lake Heights Sewer Maintenance District

Fair Oaks Sewer Maintenance District

Harbor Industrial Sewer Maintenance District

Kensington Square Sewer Maintenance District

Oak Knoll Sewer Maintenance District

Scenic Heights County Sanitation District

For more information, contact the Public Works Department at (650) 363-4100, between 8 a.m. and 5 p.m. Monday through Friday, or go to *www.co.sanmateo.ca.us/sewers*

What Is the District's Role?

The County of San Mateo manages 10 sewer districts that include approximately 150 miles of sewer pipes. Shown below in parenthesis is the approximate number of miles of sewer pipes maintained per district.

1) Burlingame Hills Sewer Maintenance District – (7.2 miles)
2) Crystal Springs County Sanitation District – (18.9 miles)
3) Devonshire County Sanitation District – (4.5 miles)
4) Edgewood Sewer Maintenance District – (0.3 miles)
5) Emerald Lake Heights Sewer Maintenance District – (29.0 miles)
6) Fair Oaks Sewer Maintenance District – (81.3 miles)
7) Harbor Industrial Sewer Maintenance District – (1.3 miles)
8) Kensington Square Sewer Maintenance District – (0.8 miles)
9) Oak Knoll Sewer Maintenance District – (1.5 miles)
10) Scenic Heights County Sanitation District – (2.5 miles)

The district contracts with the neighboring cities or towns (also called downstream agencies) for the use of their pipes to transport sewage to the wastewater treatment plants. The County does not own, operate, and maintain sewer laterals or wastewater treatment plants.

To see a map of the 10 districts, go to *www.co.sanmateo.ca.us/sewers*

Why Is This Important to Me?

- You pay for sewer service
- Sewage systems protect public health and the environment (bay, beach, and aquatic life)
- Your habits can affect the environment and how much you pay for sewer service
- Sewer service charge rates have been driven upwards by a variety of factors, including more stringent state and federal water quality requirements and aging sewer systems.

What Happens After You Wash the Dishes, Take a Shower, or Flush the Toilet?

The wastewater goes through the pipes in your house or business, then flows into a sewer lateral and drains into the district sewer pipes (typically located in the street or an easement). It travels from the district sewer pipes to the pipes maintained by the city or town located between the district and the treatment plant. Eventually, the wastewater flows into a wastewater treatment plant to be cleaned before being discharged into the Bay. *See Image #1.*

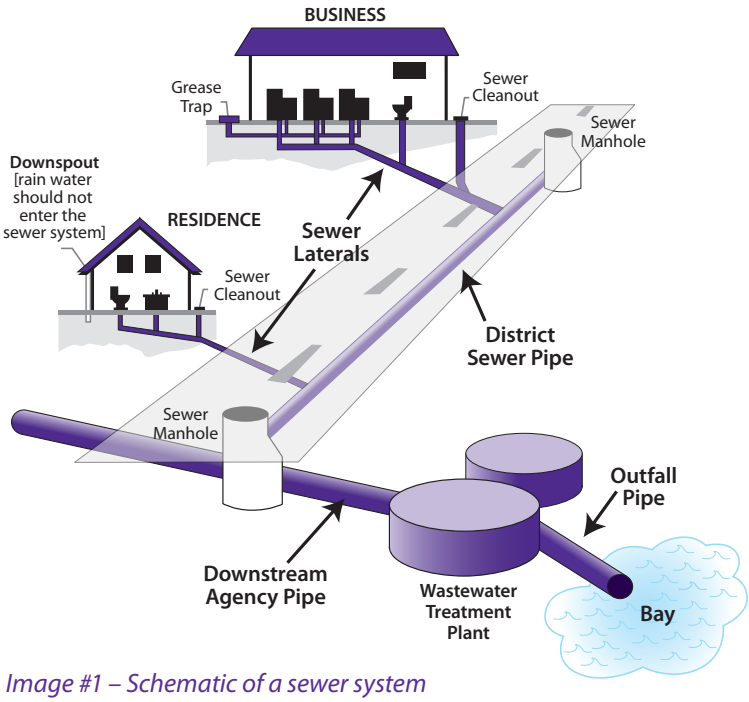


Image #1 – Schematic of a sewer system

Why Does the System Work This Way?

Raw sewage is carried to the treatment plant in sewer pipes to prevent contact with humans or animals. Raw sewage contains harmful bacteria and viruses (fecal coliform, e-coli, etc.) that can cause diseases such as, hepatitis, giardiasis, and gastroenteritis. The purpose of keeping raw sewage in the sewer pipes and adequately treating it is to protect public health and the environment.

What Is a Wastewater Treatment Plant?

A wastewater treatment plant is a facility that receives sewage from the surrounding communities and uses a series of treatment stages to clean the water so that it can be safely released into the Bay. A typical wastewater treatment plant treats millions of gallons of wastewater per day. The plant operates 24 hours a day and 365 days per year. On average, a drop of wastewater will spend about 15 hours traveling through the plant while undergoing treatment.

To learn more about the treatment process, check out the following websites. These websites contain interactive graphics and brief descriptions of stages the wastewater goes through during the treatment process.

http://www.wef.org/apps/gowithflow/theflow.htm
(from Water Environment Federation)

http://www.cityofsanmateo.org/dept/wwtp/howitworks.html
(from City of San Mateo)

http://www.ebmud.com/wastewater/online_tour/
(from East Bay Municipal Utility District)

What Happens Next?

Sewage from all districts flows through the downstream agency's pipes to the wastewater treatment plant. All districts have agreements with the downstream agencies to pay for the use of their pipes and treatment. These costs are based on flow rates from the districts or per connection based on usage type. The table below summarizes the corresponding downstream agency and treatment facility for all districts:

DISTRICT	DOWNSTREAM AGENCY	TREATMENT PLANT OWNER
Burlingame Hills Sewer Maintenance District	City of Burlingame	City of Burlingame
Crystal Springs County Sanitation District	Town of Hillsborough and City of San Mateo	City of San Mateo
Devonshire County Sanitation District Harbor Industrial Sewer Maintenance District Scenic Heights County Sanitation District	City of San Carlos	South Bayside System Authority (located in Redwood Shores)
Edgewood Sewer Maintenance District Fair Oaks Sewer Maintenance District Kensington Square Sewer Maintenance District Oak Knoll Sewer Maintenance District	City of Redwood City	
Emerald Lake Heights Sewer Maintenance District (Zone 1 and 2)	City of San Carlos and City of Redwood City	

What Are Some of the Risks As the Sewage Travels Along Its Way?

As the sewage travels from your home or business to the treatment plant, sanitary sewer overflows can occur, *see Image #2*. In an overflow, raw sewage leaves the sewer pipe and flows on the ground surface. If not captured, sewer overflows can flow into storm water systems, which collect storm water from streets and roof gutters that flow directly to the Bay without any treatment. Sewer overflows can cause health hazards, damage to private property, pollution to the environment, and violate the Federal Clean Water Act.

Image #2 – Wastewater flowing out of a sewer manhole cover

Why Should You Care About Sewer Overflows?

Sewer overflows are messy and costly to cleanup. They are a source of pollution to surface water (creeks, lakes, bay, etc.) that can threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters. In addition, the district may have to pay fines if raw sewage is released to the environment and these costs will be passed along to you.

What Causes Sewer Overflows?

FATS, OILS, AND GREASE

Fats, oils, and grease aren't just bad for your arteries; they are also bad for your sewer pipes. One of the causes of sewer overflows is a sewer pipe blocked by grease. Fats, oils and grease get into the sewer pipes when washed into the plumbing system from kitchen sinks as well as from poorly maintained grease traps in restaurants and other businesses. Fats, oils and grease stick to the insides of sewer laterals and sewer pipes. Over time, fats, oils and grease can build up and block the entire pipe. *See Image #3, #4.*

Fats, oils, and grease are commonly found in:

- Meat fats
- Lard
- Cooking oil
- Food scraps
- Butter and margarine
- Shortening
- Baking goods
- Sauces
- Dairy products

Image #3 – Grease inside of sewer pipe

Image #4 – Grease stuck to the inside of sewer pipe

ROOTS

Tree roots can cause sewer overflows. Hair-like roots can get inside the sewer pipes through small cracks or openings in the pipes in search of water. Once inside a sewer pipe, roots have an ideal environment in which to grow, and can fill and block the pipe. *See Image #5, #6*.

Roots damage sewer pipes in the same way that they can lift and break sidewalks. They can separate and crack sewer pipes. This damage to sewer pipes is difficult to detect and expensive to repair.

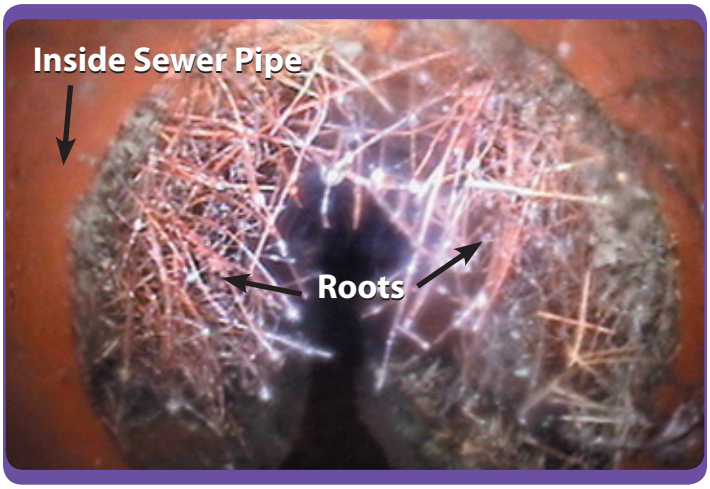


Image #5 – Roots partially blocking sewer pipe

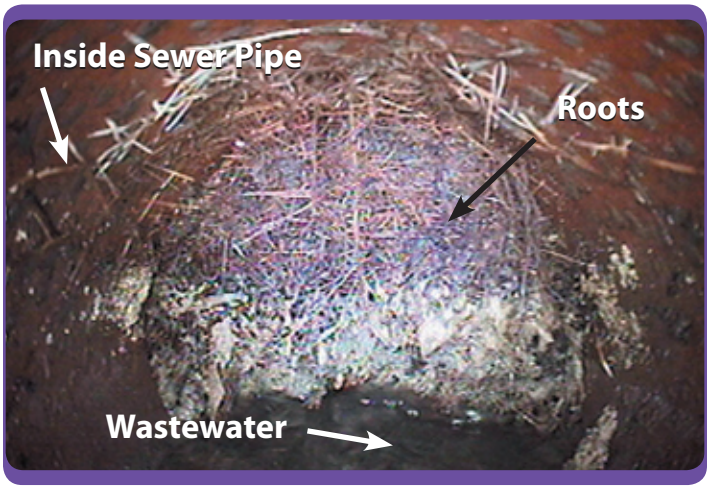


Image #6 – Roots blocking the entire sewer pipe

INFLOW

The sewer system is designed to carry sewage, not storm water. Inflow occurs when storm water or rainwater enters the sewer pipes through illegal plumbing connections and defects. Illegal plumbing connections can be roof downspouts, sump pumps, and outdoor floor drains connected to the sewer lateral. Defects include missing or broken cleanout caps and broken cleanouts. When there is too much water in sewer pipes, sewer overflows can occur.

Inflow also overloads the treatment plant with extra water to treat, resulting in higher treatment costs, which, in turn, results in higher sewer service charge rates.

DETERIORATING PIPES

The average age of the district sewer pipes is over 60 years. These aging sewer pipes have cracks and openings that allow groundwater to enter the sewer system, also called infiltration. *See Image #7.* Similar to inflow, infiltration also contributes excess water to the sewer pipes and can cause sewer overflows.

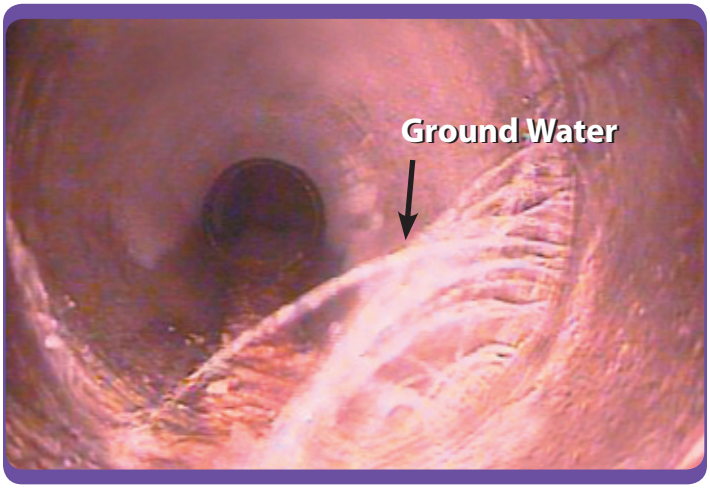


Image #7 – Groundwater entering a sewer pipe through cracks

Sewer pipe defects such as broken and collapsed pipes can block the sewage from flowing and cause sewer overflows. *See Image #8*.

Image #8 – Broken pipe

FOREIGN OBJECTS

Sewer systems are designed to handle three types of wastes: wastewater, human body waste, and toilet paper. Sewer Overflows can be caused by foreign objects such as facial tissue, baby wipes, paper towels, feminine products, rags, diapers, wood, toys, plastic objects, gravel, grass cuttings, and other items that do not belong in the sewer pipes. *See Image #9*.

Image #9 – Debris removed from a sewer pipe

What Can I Do to Help Prevent Overflows?

Here is a list of Do's and Don'ts to keep the sewer pipes working properly.

DO:

- Collect grease in a container; let it solidify and dispose of it in the garbage. Used cooking oil can be recycled. For more information, visit the County RecycleWorks website at: *http://www.recycleworks.org* or call 888-442-2666.
- Place food scraps in the garbage.
- Place a wastebasket in the bathroom to dispose of trash.
- Plant trees away from sewer pipes.
- Disconnect roof downspouts, sump pumps, and outdoor floor drains from sewer laterals.
- Notify the County immediately at (650) 363-4100 if you see any Sewer Overflows. *See Image #10*.

Image #10 – Sewer overflow at sewer manhole

DON'T:

- Pour fats, oils and grease from cooking down the drain.
- Use the sewer to dispose of food scraps.
- Use the toilet as a wastebasket for trash.
- Plant trees with shallow, spreading root systems near your sewer lateral.
- Connect roof downspouts, sump pumps, and outdoor floor drains to your sewer lateral.
- Let facial tissue, baby wipes, paper towels, feminine products, rags, diapers, wood, toys, plastic objects, gravel, grass cuttings, and other items go down the drain. These materials can cause sewer overflows and damage treatment plant's machinery, causing breakdowns or loss of treatment efficiency.

What Is the District Doing to Prevent Sewer Overflows?

The County performs routine preventative maintenance on the sewer pipes to keep the raw sewage flowing and protect the environment. The district work includes:

- Cleaning pipes
- Removing roots
- Responding to emergencies (overflows and backups)
- Repairing and rebuilding the sewer system
- Providing customer service
- Evaluating pipeline condition
- Maintaining records

The district provides staff 24-hours a day, seven days a week to respond to Sewer Overflows. If you see or suspect an overflow, call (650) 363-4100 to report it.

What Else Is the District Required to Do?

The State Water Resources Control Board (State Water Board) and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has mandated that agencies operating and maintaining sewer pipes prepare a Sewer System Management Plan. The Plan must describe what the agencies are doing to effectively manage their sewer systems. To see the elements of the Plan, go to *www.co.sanmateo.ca.us/sewers*

The State Water Board and Regional Water Board also require agencies to report and keep track of all sewer overflows.

The district is working to comply with all the new requirements of the State. Non-compliance may result in fines and lawsuits against the district. Recent lawsuits brought by environmental groups against the City of Richmond and West County Wastewater District resulted in over $1 Million in legal fees. The Regional Water Board imposed a $516,000 fine to the City of South San Francisco in 2006, for sewer overflows and a $626,000 administrative civil liability to the City and County of San Francisco in an impending order. Your district seeks to avoid such penalties.

What Are the Downstream Agencies Doing to Maintain the System?

The downstream agencies own separate sewer systems that carry sewage from their communities to the treatment plant. They are also performing work to maintain, repair, and replace their sewer pipes to comply with the State Water Board and Regional Water Board mandates.

How Do the Activities of the Downstream Agencies and Treatment Plants Impact My Sewer Bill?

The district's agreements with the downstream agencies require that the district pay for the use of their facilities to transport and treat the district's sewage. These costs include operations and maintenance, and capital improvements on the sewer systems and wastewater treatment plants.

Other Ways You Can Help Protect the Environment

DON'T DUMP YOUR MEDICINES DOWN THE DRAIN!

Treatment plants are designed to remove biological waste, not pharmaceuticals.

Rather than dumping unwanted drugs down the toilet or sink, drop them off at any of the locations shown on *Image #11*. You can also leave them in their original containers and tightly seal the safety caps. Then place them in the garbage.

Image #11 – Locations to drop-off medications

DON'T DUMP TOXIC OR HAZARDOUS MATERIALS DOWN THE DRAIN!

Whatever goes down the sewer pipes end up at the treatment plant. Treatment plants are not designed to remove certain chemicals and metals. So, when toxic or hazardous materials are dumped or rinsed down household drains, they pass through the treatment plant untreated and end up in the Bay where they may threaten aquatic life.

In addition, toxic or hazardous materials can kill the living microorganisms that the treatment plant relies on to treat sewage. Toxic or hazardous materials also affect the disposal costs for the treatment plant.

Other Sewer Information

Here are some fun websites to learn more about sewers and protecting the environment for children and adults:

http://www.sandiego.gov/mwwd/kids/index.shtml
http://www.metrocouncil.org/environment/Kids/
http://www.wef.org/apps/av/aqua.html
http://www.epa.gov/kids/
http://www.sacstormwater.org/KidsPage/KidsPage.htm

How Am I Paying For Sewer Service?

You pay for sewer service through a sewer service charge. The districts levy the charges on your tax bills. It is NOT a tax, but a fee that you pay for the service just like your other utility bills. The property tax bill is a cost effective way to collect these fees. The fees collected by the district and not spent remain with the district, as each district is a separate "stand alone" district with separate budgets.

What Does Your Sewer Service Charges Go Toward?

- Sewer system operation and maintenance
- Emergency response 24 hours a day, 7 days a week
- Sewage treatment and disposal
- Construction of new sewer pipes and treatment facilities
- Compliance with new regulatory requirements
- Improved public health
- A cleaner environment
- The ability to preserve our water resources for future generations.

County of San Mateo
Department of Public Works
555 County Center, 5th Floor
Redwood City, CA 94063-1665

Plumbers & Sewer Contractors:
Your Actions Can Prevent Sanitary Sewer Overflows!

What Are Sanitary Sewer Overflows or SSOs?

SSOs discharge untreated or partially treated human and industrial waste, debris, and disease-causing organisms from the sanitary sewer onto the ground near and into homes and potentially into creeks, rivers, lakes or streams.

What Are the Impacts of SSOs?

SSOs may result in property damage, environmental damage and/or potential liability to you or your company. Allowing sewage to discharge to a gutter, storm drain or waterway may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up efforts and regulatory penalties.

How Can You Prevent SSOs?
and avoid associated penalties & fines

When clearing plugged sewer laterals:

- ☑ Whenever possible, remove root balls, grease blockages and any other debris; don't push debris from the lateral to the sewer main.
- ☑ If you can't prevent a root ball or other debris from entering the sewer main when working in our service area, **please call us** at (650) 363-4100, so we can work with you (free of charge) to remove the root ball from the sewer main to prevent blockages further downstream.
- ☑ Use plenty of water to flush lines.
- ☑ Take all appropriate action and be cautious when opening manholes. Hazardous sewer gases from manholes are odorless, undetectable and can be deadly. Please note that discharge into a publicly owned manhole requires a permit. Please contact us at (650) 363-4100, for an application.

When constructing sewer laterals:

- ☑ Contact us at (650) 363-4100 for permits and appropriate construction details and specifications.
- ☑ Check your work area. Gravel, backfill material and test plugs can become lodged in the sewer line and cause blockages. Make sure no debris is left in the sewer line before you backfill.
- ☑ Avoid offset joints – offset joints make sewer lines vulnerable to root intrusion & grease accumulation, cause debris hang-ups and make lines harder to clean. Properly bed your joints and don't hammer tap.

Who Do I Call to Avoid an SSO?

Help us help you…

If you require our free assistance to help clear root balls, grease blockages and other debris from a main sewer line to prevent an SSO, please call us at:

(650) 363-4100

County Maintained Districts

Burlingame Hills Sewer Maintenance District
Crystal Springs County Sanitation District
Devonshire County Sanitation District
Edgewood Sewer Maintenance District
Emerald Lake Heights Sewer Maintenance District
Fair Oaks Sewer Maintenance District
Harbor Industrial Sewer Maintenance District
Kensington Square Sewer Maintenance District
Oak Knoll Sewer Maintenance District
Scenic Heights County Sanitation District

(District service area map can be viewed by accessing the County website at: www.co.sanmateo.ca.us/sewers)

Office Location:

County of San Mateo
Department of Public Works
555 County Center, 5th Floor
Redwood City, CA 94063
Tel: (650) 363-4100
Fax: (650) 361-8220

Bay Area Clean Water Agencies
A Joint Powers Public Agency

BAPPG

COUNTY OF SAN MATEO FOUNDED 1856