SEWER SYSTEM MANAGEMENT PLAN

WDID 5SSO10835

NPDES Permit CA0078051

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ABBREVIATIONS / ACRONYMS

BAT	Best Available Technology
BMP	Best Management Practice
CAL-OSHA	California Occupation, Safety and Health Administration
CCTV	Closed – Circuit Television
CIP	Capital Improvement Plan or Program
CIPP	Cast-in-Place Pipe
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CRA	California Restaurant Association
CRWA	California Rural Water Association
CSD	Community Services District
CWEA	California Water Environment Association
DPW	Department of Public Works or Director of Public Works
FOG	Fats, Oil, and Grease
FSE	Food Service Establishments
GIS	Geographical Information System
I/I	Infiltration / Inflow
MRP	Monitoring & Reporting Program-SWRCB Order No. WQ 2013-0058-EXEC
MSMC	Mount Shasta Municipal Code
MSR	Municipal Services Review
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
PC	Plumbing Code
PM	Preventative Maintenance
PMP	Preventative Maintenance Program
POTW	Publically Owned Treatment Works
PWD	Public Works Director
PWS	Public Works Supervisor
RWQCB	Regional Water Quality Control Board
SMZ	Sewer Maintenance Zone
SO&M	Sewer Operations & Maintenance
SOP	Standard Operating Procedures
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
VCP	Vitrified Clay Pipe
WDID	Waste Discharge Identification Number
WDR	Waste Discharge Requirements – SWRCB Order No. 2006-003-DWQ
WQMP	Water Quality Monitoring Plan

INTRODUCTION

On May 2, 2006 the State Water Resources Control Board (SWRCB) adopted a Statewide General Waste Discharge Requirements (WDR) and Monitoring and Reporting Program by issuing Order No. 2006-003-DWQ (http://www.waterboards.ca.gov/water_issues/programs/sso/)
The regulations in the Order were the result of growing concern about the water quality impacts of Sanitary Sewer Overflows (SSO), particularly those that cause beach closures, adverse effects to other bodies of water or pose serious health and safety or nuisance problems.

In 2008 and again in 2013 the SWRCB updated the requirements of the Monitoring and Reporting Program and adopted Order No. WQ 2013-0058-EXEC (http://www.waterboards.ca.gov/water_issues/programs/sso/)

Two major components of the WDR are:

(1) the requirements that owners and operators of publicly owned collection sewer systems, a mile long or greater, apply for coverage under the WDR; and,

(2) that the owners/operators develop and implement a system specific Sewer System Management Plan (SSMP).

In compliance with the first component, the City filed its application form with the SWRCB on September 18, 2006. As a result, the City received its Username and Password for accessing the California Integrated Water Quality System (CIWQS) database. Within that database reporting program, the City completed its "collection system questionnaire" and will file all future updates and required SSO reports. The City's Waste Discharge Identification number at CIWQS is 5SS010835.

In compliance with the second major component, this document has been prepared to meet the objectives contained in the specified Orders. The document is divided into 11 chapters, which align with the respective provisions contained in the WDR. Every section or subsection of each chapter addresses one of the key elements of the WDR requirements.

This document with other existing agency programs referenced herein constitutes the SSMP for the City. By implementing the procedures contained in this SSMP, the occurrence of SSOs should decrease or possibly be avoided throughout the City's Wastewater Collection System.

INVENTORY OF SEWER COLLECTION FACILITIES:

The Mt Shasta population as of 2015 was estimated at 3,292 in a service area (see service area map Figure 1 below) of 3.74 square miles. The City reports that there are

1777 sewer connections to the sanitary sewer collection system. These service connections are further categorized as residential 1650, commercial/Industrial 110 and institutional approximately 15. The sewer collection system contains approximately 416 manholes, 46 cleanouts and 28.2 miles of gravity piping ranging in size from six inches to thirty inches. The City does not own, maintain, repair or replace sewer laterals. The collection system is all gravity and there are no lift stations or siphons in the system.

Table No. 1 below provides approximate linear footages of each gravity collection main pipe by pipe diameter as estimated in 2010. Tables 2 and 3 provides further information on pipe materials and pipe age since original construction. It is anticipated that as the City utilizes new CCTV sewer camera equipment, more accurate footages, and pipe diameters will be verified and recorded. The City has broken the service area into three sewer maintenance zones for capacity and infiltration and inflow evaluations as discussed in Chapter 8 of the SSMP.

The City also provides extra territorial services to private systems at the Lake Siskiyou marina and campground, the Shadow Mountain Trailer Park and the Lake Siskiyou Highlands and Shasta Holiday Subdivisions.

Table 1: Gravity Collection System Inventory by Pipe Diameter 2010

Pipe Dia. (inches)	Linear Feet
6	81,574
8	14,595
10	4,730
12	26,343
15	13,209
18	3,540
24	2,320
30	1,960
Total, linear feet	148,271
Total, miles	28.1

Table 2: Gravity Collection System Inventory by Pipe Material 2010 *

Pipe Material	Percent of System	Linear Feet
VCP	60	88,963
RCP	30	44,481
PVC	10	14,827
Total	100	148,271

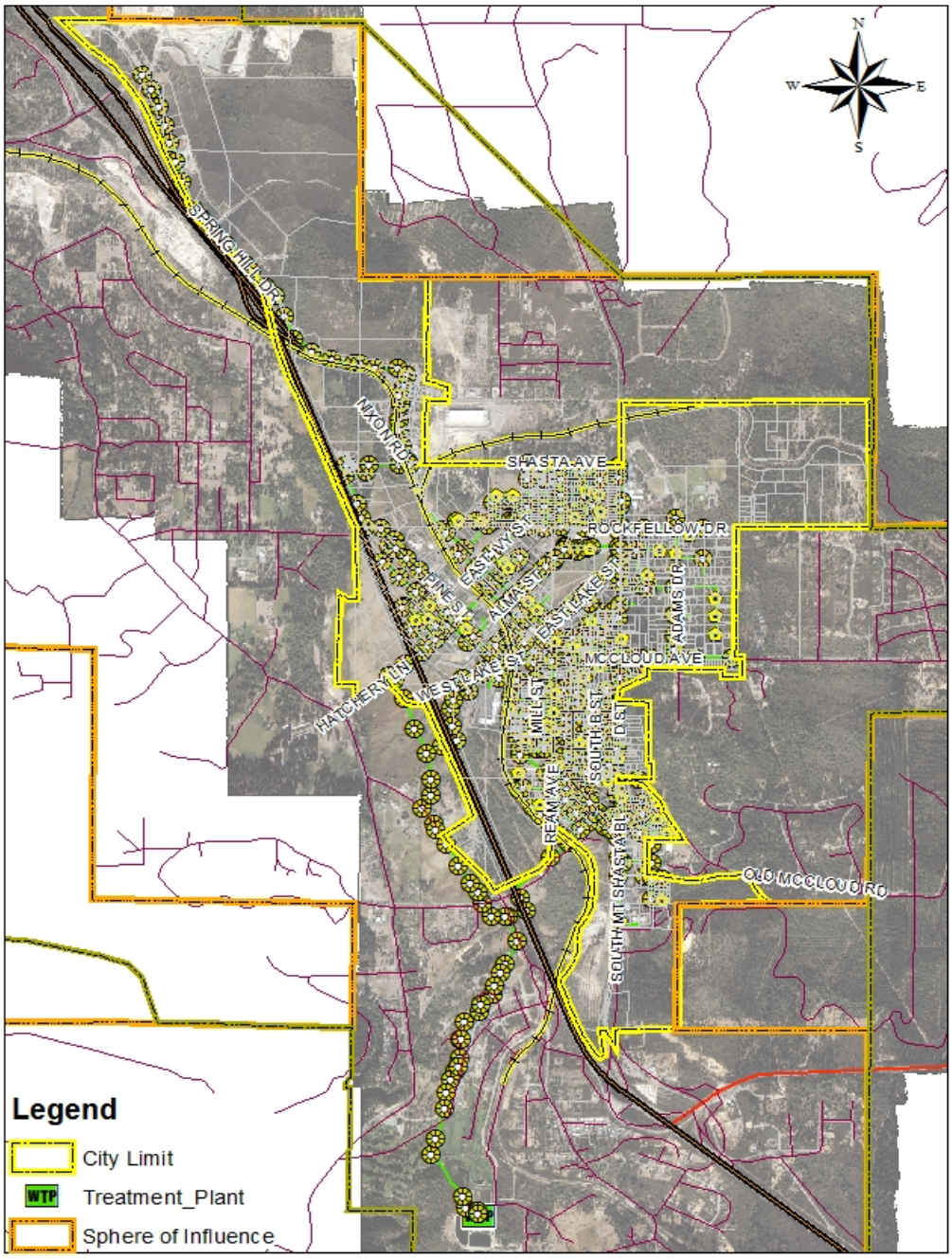
* Information from SCORE Financial and Staffing Resources Study, Musgraves Consulting Services

Table 3: Gravity Collection System Inventory by Pipe Age*

Construction Period	Percent of Total	Linear Feet
2000 current	10	14,827
1980 to 1999	26	38,551
1960 to 1979	31	45,964
1940 to 1959	17	25,206
1920 to 1939	16	23,723
1900 to 1919	0	0
Before 1900	0	0
Total	100	148,271

* information from City CIWQS Collection System Questionairre 4/15/16

Figure 1: Service Area Map (Ref: GIS System)



Service Area Map

EXECUTIVE SUMMARY

This plan document was prepared in compliance with a formal order issued by the State Water Resources Control Board (2006-0003-DWQ), which requires every owner and operator of publicly owned sewer systems of greater than one mile and discharging to a publicly owned treatment works (POTW) to develop and implement a system specific Sewer System Management Plan (SSMP) The plan sets forth goals and actions to be followed, and guidelines for various activities involved in managing, operating, maintaining, repairing, replacing and expanding the sewer system. Chapter 6 describes actions to follow when responding to a Sewer System Overflow (SSO) occurrence within the community, including reporting obligations. There are chapters that describe legal authorities for managing the system and ministerial actions required in monitoring, auditing, reporting and communicating with the public and the regulators.

There are specific requirements for accomplishing public involvement and reporting/modifying changes in the plan. These later requirements are intended to raise public awareness of the hazards associated with SSO events and to minimize the occurrence of such events. In addition, effective September 9, 2013 the Executive Officer of the SWRCB issued revised Monitoring and Reporting Program (MRP) requirements that modified SSO categories, revised SSO reporting and filing requirements, defined appearance points, required a new SSMP Change Log to identify all changes to the SSMP and required that the SSMP and all referenced documents be placed on the agency webpage along with the Council adoption document or submitted to the CIWQS reporting system and certified by the LRO.

- The initial plan was approved and certified on November 2, 2010.
- The plan is to be monitored and updated no less frequent than every five years from November 2010.
- The plan must be periodically audited for effectiveness, a report compiled and kept on file and such audits must occur no less frequent than every two years from November 2010.
- There are reporting timeframes for both emergency and routine reporting events.
- The adoption of and any significant revision to the plan must be accomplished utilizing public notification and public hearing procedures as identified in the plan and order.

A key element of the plan was the sewer system capacity evaluation utilizing a hydraulic model of the sewer system to evaluate pipe capacity and probable constraints and the development of performance measures to allow the agency to evaluate the

effectiveness of implementation of the SSMP subsequent to its formal adoption by the governing board.

References:

- State Water Resources Control Board (SWRCB) adopted a Statewide General Waste Discharge Requirements (WDR) and Monitoring and Reporting Program by issuing Order No. 2006-003-DWQ (http://www.waterboards.ca.gov/water_issues/programs/sso/)
- SWRCB updated the requirements of the Monitoring and Reporting Program and adopted Order No. WQ 2013-0058-EXEC (http://www.waterboards.ca.gov/water_issues/programs/sso/)
- Financial and Staffing Resources Study, Musgraves Consulting Services, 2016

CHAPTER 1

GOALS

(i) ***Goal:*** *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. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.*

1.1 The goals for the City of Mt. Shasta to comply with the WDR requirements are as follows:

A. Properly operate, maintain and manage the City collection system.

B. Conduct planned and scheduled maintenance and staff training programs to minimize risk to customers and the environment from SSOs.

C. Maximize SSO responses and take proper steps to contain, stop and clean the impacted areas and infrastructure.

D. Assure proper protection at any overflow site to limit access by the public, minimize environmental impacts and properly cleanup from the incident.

E. Assure proper design and construction of new and replaced collection system assets and infrastructure to limit overflows in both dry and wet weather and to assure proper capacity in the pipes to transport flows properly to the treatment plant.

F. Regularly review and audit the SSMP to assure and enhance the effectiveness of the collection system operations.

1.2 References: None

CHAPTER 2

ORGANIZATION

(ii) ***Organization:*** *The SSMP must identify:*

(a) The name of the responsible or authorized representative as described in Section J of this Order.

(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and

(c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

2.1 Management

The sewer system is managed and maintained by the Mt. Shasta Public Works Department, which consists of 9 budgeted, full time positions, including the Public Works Director, Supervisor, and two Lead positions. Two additional Wastewater Treatment Plant personnel operate the Wastewater Treatment Plant, but do not typically assist with the sewer collection system operations. In addition to the sewer collection system, the Public Works Department also operates and maintains other City infrastructure systems including the water distribution system, storm drain system, streets, facilities, buildings and grounds maintenance.

City staff is augmented by contract Building Inspector Services and City Engineering Consultant services. The Building Inspector ensures compliance with appropriate building and plumbing codes as well as assistance with FOG Program monitoring and enforcement. The contract City Engineer performs special studies, investigations and reports concerning sewer infrastructure

The distribution of the Public Works Department personnel is depicted in the organization chart presented in Section 2.3.1 of this program. These personnel maintain facility record plans and administer preventive maintenance and sewer construction programs.

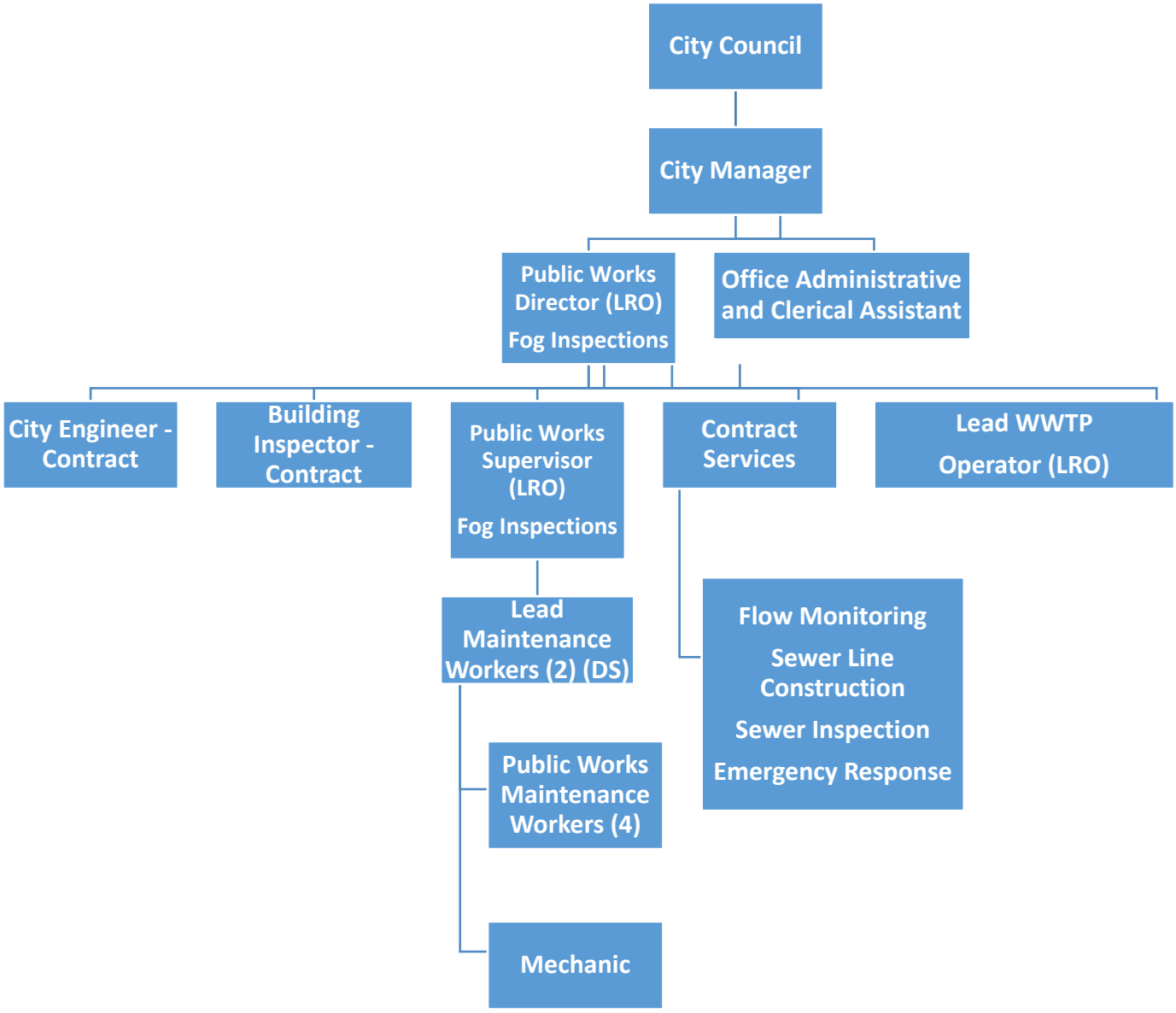
2.2 Authorized Representative

The Public Works Director is responsible for the execution of the compliance actions required under the WDRs. This includes but is not limited to signing and certification of all reports and correspondence as required under this order. The City has also designated the City Manager and the Public Works Supervisor as Legally Responsible Officials (LROs) to allow SSOs to be reported and certified in the State Reporting System CWIQS in the absence of the PWD. They have also designated the Lead Utilities Supervisor and the WWTP Operator as data submitters

2.3 Organization Chart and Responsibilities

The organization chart showing the structure and relationships of all Public Works Department administrative, management and field positions is presented in Figure 2 (below) and the description of responsibilities is presented in Sections 2.3.1 and 2.3.2

Figure 2: Organization Chart For the Public Works Maintenance Department



2.3.1 Description of Responsibilities

The description of the roles and/or responsibilities of each classification especially as related to SSOs are as follows:

- City Council – Responsible for establishing new and amending existing regulation, resolutions and policies governing the operations of the Public Works Department and approving all Public Works Department contracts and agreements. Review and adoption of the City Sewer System Management Plan.

- City Manager – Designated as a Legally Responsible Official. The City Manager is responsible for the overall implementation of the City Councils policies and philosophies. The position provides administrative direction and management to the Public Works Department.

- Public Works Director – Designated as a Legally Responsible Official. Establishes Public Works Department policy within the scope of the City Council's policy and legal requirements, directs its execution, and evaluates work accomplished by Public Works Department. Directs the development and enactment of new regulations and directs the enforcement of Plumbing Codes involving illegal connections, upkeep of sewer house laterals and the design and construction of new and rehabilitation of existing collection sewer systems. Directs the development, monitoring and enforcement of the FOG Program.

- City Engineer (Part Time Contract Services) – Under the auspices of the Public Works Director, directs engineering activities relating to studies, design, investigations, and the preparation of reports, budget recommendations and contractual agreements with firms for technical services projects. Performs special studies, investigations and reports concerning sewer infrastructure. Reports to the Director of Public Works.

- Public Works Supervisor – Designated as a Legally Responsible Official. Responsible for the oversight of the field crew personnel and operation and maintenance activities of the entire Public Works Department, including water distribution, storm drainage, streets, facilities, buildings, grounds and the sewer collection system. Coordinates the City FOG control and pretreatment program including reviewing, permitting and inspecting industrial waste facilities and food service establishments (FSE)

- Streets Lead Maintenance Worker –Specializes in streets departments. Responsible for assigning work and has oversight for the activities of a crew of at least two field personnel. Reports to the Public Works Supervisor.

- Utilities Lead Maintenance Worker – Designated as a Data Submitter Specializes in the water distribution and sewer collection system departments. Responsible for assigning work and has oversight for the activities of a crew of at least two field personnel. Reports to the Public Works Supervisor.

- Public Works Maintenance Workers–Responsible for maintenance activities of activities of the entire Public Works Department, including water distribution, storm drainage, streets, facilities, buildings, grounds and the sewer collection system, including response to SSOs, sewer cleaning, construction and other activities as needed. Reports to Lead Maintenance Workers.

- Office Administrative and Clerical Assistants – Assist in the preparation of the Public Works Department budget, Board letters, and other correspondence, and are responsible for the sewer service charge direct assessments.

- Building Inspector (Part-time contract services) – Responsible for ensuring conformity with appropriate Building and Plumbing Codes, and assists with the monitoring and enforcement of the FOG Program.

- Lead WWTP Operator – Designated as a Legally Responsible Official.

- WWTP Operator – Designated as a Data Submitter.

- Risk Manager – Provides claims coordination and risk control for the collection system operations for all claims brought against the collection system operations.

- Service Contractors – The City contracts some collection system services such as CCTV and condition assessment, root control, repairs, and construction of new and replaced collection system assets.

2.3.2 Key Support Divisions

Other Divisions within DPW are currently and will continue to be responsible for carrying out some of the compliance actions called for by the WDRs for the Public Works Department. The key support divisions and their responsibilities are described below:

- Administrative Services Division – Administrative staff is available to assist with procuring equipment and as-needed contract services for emergency sewer repair projects, printing and mailing of public education outreach program materials, and for procuring material and supplies needed for the day to day operation and maintenance activities.

- Building and Safety Division – Responsible for issuing permits for sewer connection and for the enforcement of the Plumbing Code and the Public Health Code involving proper connection, maintenance of sewer house laterals and illegal discharges into the public sewers.

- Human Resources Division – Responsible for staffing the Public Works Department and training of personnel.

2.3.3 City Positions Responsible for Implementing Specific Measures of the SSMP

Table 4 below provides the details of the City positions responsible for the implementation of the specific Chapters and documents required to comply with the WDR and MRP. This Table provides the position title and direct contact information for each of the eleven WDR Elements, the SSMP Introduction and the appendices required by the regulations.

2.3.4 Chain of Communication for SSO Reporting

The chain of communication for reporting SSOs, from receipt of a complaint or other information to reporting to appropriate regulatory agencies, is presented in Section 2.3.5 below.

2.3.5 SSO Reporting Procedures Flow Chart

(See flow chart on the next page)

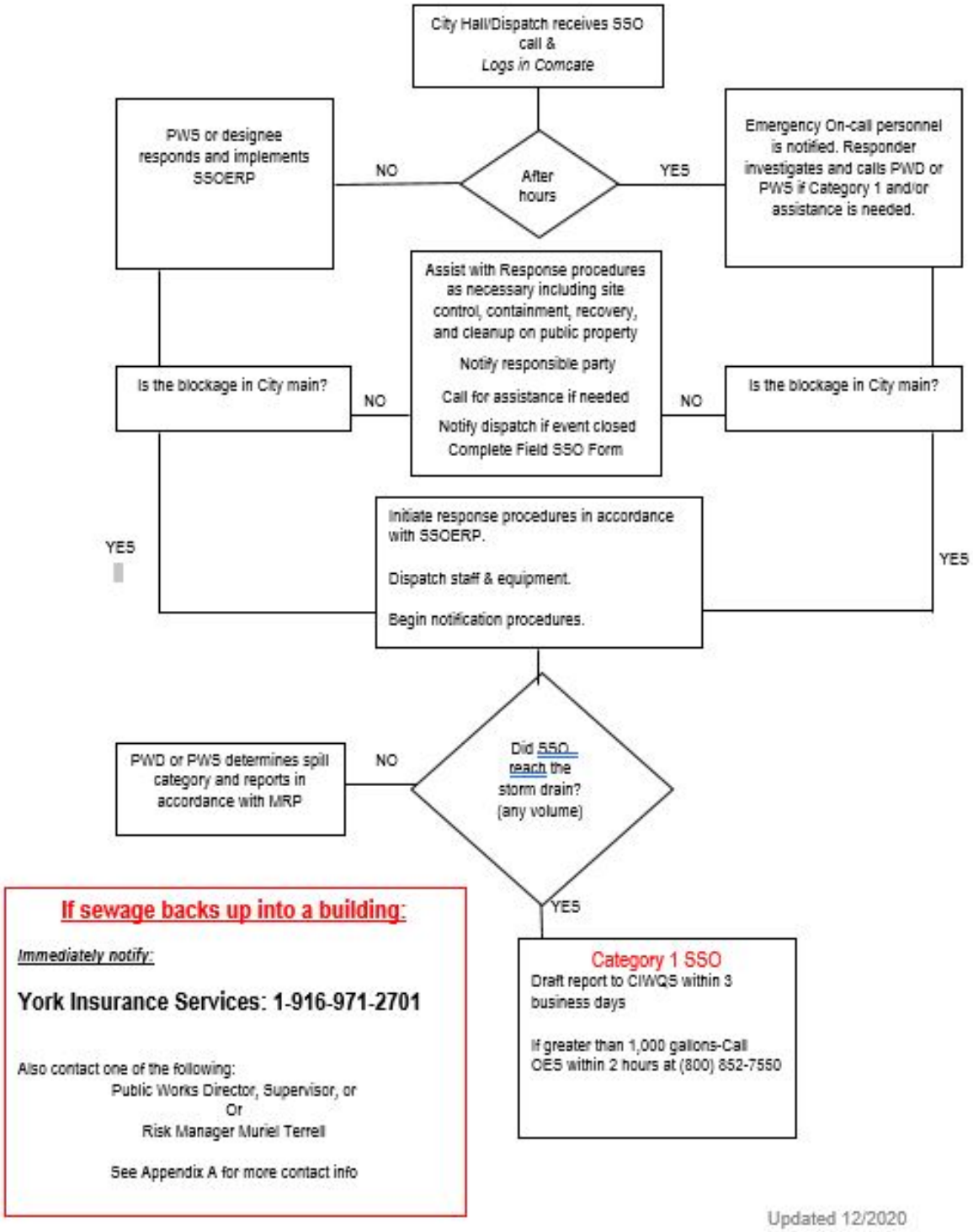


Figure 3: Notification and Reporting Procedures For SSO Events

2.3.6 City's Contact Directory For SSO Responding And Reporting

Please see Appendix A, Table A-1.

Table 4: List of Responsible City Staff for SSMP Chapters

SSMP Chapter	Responsible City Position	Phone Number	Email Address
0- Introduction	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
1- Goals	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
2- Organization	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
3- Legal Authority	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
4- O&M Program	Public Works Supervisor	530-926-7510	dtorres@mtshastaca.gov
5- Design & Performance Provisions	Pace Engineering	530-244-0202	preuter@paceengineering.us
6- Overflow Emergency Response Plan	Public Works Supervisor	530-926-7510	dtorres@mtshastaca.gov
7- FOG Control Program	PWD/Building Inspector/PWS	530-926-7526	rbryan@mtshastaca.gov
8- System Evaluation & Capacity Assurance Plan	Pace Engineering	530-244-0202	preuter@paceengineering.us
9- Monitoring, Measurement and Program Modifications	Public Works Supervisor	530-859-7530	dtorres@mtshastaca.gov
10- SSMP Program Audits	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
11- Communication	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov

Table 4 (Continued): List of Responsible City Staff for SSMP Chapters

SSMP Chapter	Responsible City Position	Phone Number	Email Address
Appendices A - H	See responsible person	See above	See above
Appendix SSMP Adoption Documents	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
Appendix SSMP Change Log	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov
Appendix SSMP Audit Reports	Director of Public Works	530-926-7526	rbryan@mtshastaca.gov

2.4 References: None

CHAPTER 3

LEGAL AUTHORITY

(iii) ***Legal Authority:*** *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 I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

(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, and

(e) Enforce any violation of its sewer ordinances.

3.1 Statutory Authority

Pursuant to the California Government Code, Sections 37100 and 54350, the City Council, as the local legislative body, may by ordinances and resolutions make and enforce all rules and regulations necessary for the administration of the City's SSMP. Such actions include, but are not limited to, the design, cleaning, repair, construction, reconstruction, rehabilitation, replacement, operation, and maintenance of wastewater collection system within the City. Consistent with the law, several ordinances have been established by the City Council to govern the Sewer Operations and Maintenance Plan (SO&M). Legal authorities for the specific areas stipulated in the WDR are discussed below and are generally found in Title 13 Utility Enterprises: Water, Wastewater And Drainage.

MSMC Section 13.04.005 entitled "Adoption of California Plumbing niform Code and Section 15.32.010 entitled "Adoption of the California Plumbing Code", adopted by reference the then current edition of the California Plumbing Code, and all future amendments or revisions thereto, to govern plumbing applications in the City.

3.1.1 Authority to prevent illicit discharges into the sanitary sewer system

MSMC Section 13.08.035 entitled "Power to Prevent Discharge into Sewer System" provides the Lead Wastewater Treatment Plant Operator or Sewer Inspector the power to stop and prevent from discharging into the sanitary sewer

system any private sewer through which substances are discharged which are liable to injure the sewer or wastewater treatment plant or obstruct the flow of the sewage.

MSMC Section 13.56.035(A) entitled “Prohibited Waste Discharges” prohibits the discharge of surface drainage, subsurface drainage, storm waters, or cooler discharges into any public sewer that is connected to the wastewater treatment facility. (This prohibition is reiterated in Section 13.56.240)

MSMC Section 13.56.270 entitled “Permit for Industrial Wastewater Discharge” prohibits any person from discharging or cause to be discharged any industrial wastewaters directly or indirectly to sewerage facilities owned by the City without first obtaining a City permit for industrial wastewater discharge.

MSMC Section 13.56.320(B) prohibits the discharge into the public sewer system of a broad range of chemicals, toxics, solid materials, and other contaminants which might have an adverse on the sewer system. The Director of Public Works is granted the authority to determine acceptability of any specific wastes to be introduced into the system by residential, industrial or commercial other than the limited business prohibition as described above.

3.1.2 Authority to require sewers and connections be properly designed and constructed

MSMC Section 13.04.100 “Water and Sewer Connection Required” requires that every building or structure with human habitation in which plumbing appliances and fixtures are installed and every premises having water piping and sewage drainage piping thereon as required per City Code shall have a connection to a public water system and a public sewer system except as provided in Chapter 13.20 and Chapter 13.21 of this Code. Section 13.04.110 requires that all connections as required in Section 13.04.100 shall be installed per the then current edition of the Plumbing Code as mandated by the State of California. Any portion of a connection that is within the public street property shall be installed to the City's standard specifications for street installation. Sections 13.56.150 and13.56.200 requires approval of plans for construction by the Director of Public Works and those installations within the City right of way shall be done under a valid encroachment permit.

For on-site sewer laterals and facilities the reviewing, permitting and approval/rejection authority is the Building Inspector under the Plumbing Code.

3.1.3 Authority to ensure access for maintenance, inspection, or repairs

MSMC Section 13.56.100 (C) requires access to all of the above facilities or to other facilities directly or indirectly connected to the City's sewerage system shall be given to authorized personnel of the City at all reasonable times including

those occasioned by emergency conditions. Any permanent or temporary obstruction to easy access to the sewerage facility to be inspected shall promptly be removed by the facility user or owner at the written or verbal request of the Director of Public Works, and shall not be replaced.
MSMC Section 13.56.250 gives the City authority to direct the correction of any improperly maintained lateral or collecting sewer and order its disconnection from the City sewer system if there is continued noncompliance. In order to more easily enforce WDR regulations, this section could be amended to specifically require property owner/occupant's to maintain their private sewer laterals or collecting sewers clear of tree root obstructions.

3.1.4 Authority limiting discharge of Fats, Oils and Greases (FOG) and other debris that may cause blockage

Except as provided in Section 13.56.330, MSMC Section 13.56.320 (C) indicates that no person shall discharge or cause to be discharged to any public sewer which directly or indirectly connects to the City's sewerage system any wastes, if in the opinion of the Director of Public Works such wastes may have an adverse or harmful effect on sewers, maintenance personnel, wastewater treatment plant personnel or equipment, treatment plant effluent quality, public or private property, or may otherwise endanger the public, the local environment or create a public nuisance. The Director of Public Works, in determining the acceptability of specific wastes, shall consider the nature of the waste and the adequacy and nature of the collection, treatment and disposal system available to accept the waste.

Section 13.56.320(D) gives the Director of Public Works the authority to issue detailed directions for meeting the limits on waste discharges into the sewer system. To better enforce WDR regulations, the City will work to develop a more comprehensive amendment to this Title to govern FOG including specifically provisions to require the installation of detention facilities, including grease interceptors, at any facility that generates FOG in the amount that could damage or increase the maintenance costs of the sewer collection system. Amendments may also be considered to require such facilities to enact maintenance and record keeping as deemed necessary, to ascertain whether such facilities are maintained and operated in accordance with the provisions of the local codes, other applicable regulations and permit conditions.

3.1.5 Authority to enforce any violation of sewer ordinances

MSMC Section 13.04.310 provides the penalties for any violation of the Utility Enterprises Title. MSMC Section 1.02.010 "Violations" describes the penalties and enforcement tools relative to violations of all City Codes. However, there is no well-defined local official empowerment to provide written notice with punitive action authority (e.g. nuisance abatement) to garner cooperation without legal action filing. Such a process can result in more timely actions to correct

violations and recover the cost of correction, rather than a more lengthy legal process that could leave the violation in place and risk of regulatory non-compliance penalties.

3.1.6 Authority to Fund the operations and maintenance of the sewer system

MSMC Section 13.04.030 entitled “User Charges” and Section 13.04.115 entitled “Connection Fees” authorize sewer service charges and sewer connection fees, respectively to fund regular Operation and Maintenance activities on the City’s sanitary sewer system and to pay for the acquisition, construction, reconstruction, maintenance and operation, and repayment of debt service obligations for the construction of sewerage facilities. Clearly a portion of the sewer service charges could be used for Capital Improvement Projects (CIP) to finance sewer rehabilitation within the City’s system.

The Codes, standard plans, specifications and other materials cited in this chapter are filed in the Office of the City Clerk and the Office of the Director of Public Works.

Table 5 provides a summary list of the legal authorities referenced above.

3.2 References

- MSMC; Title 13: Utilities Enterprises – Water, Wastewater and Drainage
- MSMC; Title 15: Buildings and Construction

Table 5: Summary of Collection System Legal Authorities

Requirement	Legal Authority Reference
Prevent illicit discharges into the wastewater collection system	13.08.035 13.56.035(A) 13.56.240 13.56.270 13.56.320(B)
Limit the discharge of fats, oils, and grease and other debris that may cause blockages	
Require that sewers and connections be properly designed and constructed	13.04.100 13.04.110 13.20 and 13.21 13.56.150 13.56.200
Require proper installation, testing, and inspection of new and rehabilitated sewers	13.56.320(C) and (D) 13.56.330
Clearly define City responsibility and policies related to private sewer laterals	Uniform Plumbing Code 15.32.010
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by the City	13.56.100(C) 13.56.250
Control infiltration and inflow (I/I) from private service laterals	13.56.035(A)
Requirements to install grease removal devices (such as traps or interceptors), design standards for the grease removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements	13.04.110
Authority to inspect grease producing facilities	13.56.100(C)
Enforce any violation of its sewer ordinances	13.04.310 1.02.010

CHAPTER 4

OPERATION AND MAINTENANCE PROGRAM

(iv) ***Operation and Maintenance Program:*** *The SSMP must 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 a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;

(d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

(e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

4.1 Preventive Maintenance Program

The Preventive Maintenance Program (PMP) consists of regular visual inspections of the sewer system manholes and pipelines, pipe cleaning, repairs as needs indicate, and related activities. This informal approach is structured and carried out to detect and correct potential problems as identified or reported.

The sewer system is managed by the Mt. Shasta Public Works Department. The collection system consists of 28.2 miles of gravity sewer line, 416 manholes 42 clean outs and no pump stations or force mains. The Public Works staff is responsible for the operations and maintenance of streets, storm drains, parks, snow removal, parks, fleet and equipment maintenance, building and grounds and the City for extraterritorial sewer collection systems. The City funds approximately 1.27 FTEs for the annual operations and maintenance of the City collection system described below.

The primary goal of the City's sewer maintenance program has been and remains the protection of public health, safety and the environment. As a matter of State and Federal regulations, SSO's are prohibited, and moreover, are inconsistent with the City's goal of providing the highest level of sewer service to the public. The City places high priority on capacity assurance, repair and replacement, and proper operation and maintenance of its sewerage system. While the City desires to completely eliminate sanitary sewer overflows, it is also understood that manmade systems do fail. Regardless of the level of scrutiny and control provided, overflows will, on occasion, occur.

The SO&M services are provided from a central maintenance service yard within the City, which is located at 1536 S. Mt. Shasta Blvd. From this location, maintenance activities are resourced and managed for responses to an SSO or other emergency situations. The central office and each maintenance crew vehicle is radio equipped and crew leaders, supervisors and managers have mobile phones for timely communications. Other equipment resources include: light construction equipment, pumps, generators, trucks and trailer mounted equipment and supplies and various types of safety equipment. A complete inventory of the SO&M equipment and key replacement part inventories are presented in Appendix 'D'.

The following is a summary of key preventive maintenance activities and where applicable, frequencies for these services have been included:

4.1.1 SO&M Mapping System

The City maintains record drawings of the sewer facilities following their construction. Data on those plans, such as location, alignment, pipe material, size, etc. are stored in the drawing file system at City Hall, and is transferred to and maintained as features and attributes on the City GIS system files. Such transfer is accomplished when GIS updates are made. The files can also contain last date cleaned or repaired, flow direction, and other layers of information to reflect related information such as the storm drain system, trunk sewer lines, video inspection data, etc. as used by the DPW and other governmental agencies. Information generated from the GIS system is printed on map sheets stored in the City Hall and at the Public Works Director's office located at 305 N. Mt. Shasta Blvd. Atlases and maps of both sanitary sewer and storm sewers are also kept in the flusher truck, camera truck, and Public Works utility vehicles. This information is referenced by field crew personnel for work scheduling and for responding to emergencies. Periodically the maps are updated to reflect

changes in the system and copies are available to other agencies having a need for such information.

Periodic updates of the GIS files and maps may be scheduled by the DPW when it is necessary to reflect changes for maintenance uses and further evaluation of the sewer system.

4.1.2 Pump Station, Sewer Line and Manhole Inspection

Currently there are no pump station facilities in the city system. So, on an as indicated need basis, sewer lines can be mirrored to assess a potential problem. The inspection of manhole interiors and lid area, are performed as overall work scheduling allows. This activity is to identify any structural defects, sewage flow condition, and presence of vermin or rodents, deleterious industrial waste, odors and any signs of unusual settlement around the manholes and along sewer alignments. These activities are supplemented by CCTV inspections described below. All condition assessments are recorded and filed in the DPW for future reference.

4.1.3 Drop Manholes, Gas Trap Manholes and Siphons

Currently there are no Gas Trap Manholes or Siphons in the city sewer system. However, Drop Manholes are inspected, cleared of stoppages and flow restrictions on variable frequencies based on prior inspection records.

4.1.4 Sewer Line Cleaning

Sewer lines are typically cleaned by hydro jet or mechanical root cutting (rodding). The frequency of cleaning and inspection is based on inspection records and/or call-outs on reported complaints. Sewer lines known to accumulate FOG, garbage grinds or other grit or have root intrusions are labeled maintenance “Hot Spots” (See Appendix ‘H’) and are put on a bi-annual cleaning schedule. Pipe segments prone to root growth are cleared using a chain flail type root cutter. Chemical root control methods, such as the use of herbicides, can be used to control roots. However, the City does not use these methods. Those sewer lines prone to accumulate FOG are typically cleaned by chain flail or high pressure jetting. Caustics, surfactants, enzymes, or microbes can also be used. Some Hot Spots are labeled as septic due to inadequate slope or low spots which cause septic conditions. Collection System Hot Spots are cleaned or cleared and, at the same time, inspected with CCTV equipment to ensure the blockage is removed. The remainder of the City mainline sewer system is cleaned by hydro jetting once every three years (approximately 53,000 feet per year) and periodically inspected by CCTV. Table 7 provides historical performance results for hot spot and regular line cleaning for previous years.

Table 7: Historical General Line Cleaning Performance

	2016	2017	2018	2019	2020
Flushing, ft	23457	38652	33365	28687	2

4.1.5 CCTV

Sewer lines can be inspected using CCTV equipment. The equipment consists of a camera that can be placed on a transporter or a skid type mounting system and can be configured for varying pipe diameters. The transporter has a drive system that allows the unit to travel at varying speeds in forward and reverse gears to move the camera up and down the pipe over longer distances. The skid system allows the camera to simply be manually "pushed" into a pipe (typically smaller in diameter) commonly referred to as the "push-cam". This setup is typically used for shorter distances, in laterals, or where access by the longer transporter unit is restricted. Video images are transmitted from the camera to the control panel and DVD burner. All of the equipment is mounted in a mobile van unit. All DVDs are stored for future reference in the DPW offices. The camera equipment is used to inspect and assess condition of the interior of pipe. The City will eventually inspect all line segments in the collection system. As of 2016, 27% of the system has been inspected. The camera equipment is used often times in conjunction with regular maintenance, grease removal, and root cutting to ensure adequacy of the maintenance efforts. Occasionally before and after conditions are documented with video. Whenever an SSO occurs, the line(s) in and around the SSO are inspected to determine cause of the blockage and to identify the remedy. Each time an inspection is performed, a DVD recording of the inspection is made and a pipe video report is completed. All reports and DVDs are kept in the Public Works Director's office. Eventually, all videos and reports can be included in the GIS database. Table 8 provides the historical CCTV results for the past five years.

Table 8: Historical CCTV Results

	2016	2017	2018	2019	2020
CCTV, ft	3424	23053	14495	11183	12777

4.1.6 Flow Monitoring Samples

Selected sewer maintenance zones (SMZ's) are monitored periodically to obtain representative wastewater flow rate samples to assess possible operational changes in sewer system usage within the community. Such sampling is done on

a frequency recommended by the City Engineer and usually performed by a qualified contractor that provides such services. These sampling activities are more completely described in Chapter 8 and are used to evaluate capacity of sewer lines.

4.1.7 Vermin and Rodent Control

At this time, the City does not have any issues with vermin and rodent control. If issues arise, manholes found to be infested by insects could be chemically treated and those infested by rodents could be baited.

4.1.8 Work Scheduling and Documentation

All maintenance work is scheduled utilizing an Excel Spreadsheet format and tracked manually. Field crew activities are recorded in various paper forms such as service requests, cleaning reports, sewer maintenance daily reports, manhole adjustments, overflow report forms etc. and are stored in file cabinets in the DPW. The City anticipates evaluating an online data base for storing and retrieval of reports for research and reporting within the next five (5) years. This database would also provide work order scheduling for the operations and maintenance of the collection system.

4.2 Rehabilitation and Replacement Plan

Sewer facilities assessment and rehabilitation are an integral part of the City's SO&M program. A summary of recent years capital improvement activities, a plan to identify and prioritize system deficiencies (condition assessment), and the programming of short-term and long-term rehabilitation projects and related funding development for those capital improvement projects are discussed below.

4.2.1 Recent Years CIP Activities

In prior years the construction of sewers was accomplished using benefit assessment district methods or installation as part of an associated and benefiting development and infrastructure funding loan programs. In the past ten years, the City has implemented several of the sewer interceptor projects, have traditionally completed annual inflow and infiltration repairs and completed the construction of a Flusher Storage Building. Current and completed projects are identified in the City of Mt. Shasta Five Year Capital Improvement Program, which is updated annually.

4.2.2 Identification and Prioritization of System Deficiencies

The City utilizes the 1992 Master Sewer Plan, as well as regular maintenance activities to identify and prioritize system deficiencies. The City has included the update to the Sewer Master Plan in the capital improvement plan.

4.2.3 Short and Long Term Rehabilitation Action Plans

As previously described, the CCTV inspection and evaluation activity will be a key basis in the scheduling of any rehabilitation project. Those segments of the sewers that are inspected, evaluated and determined to be deficient will be scheduled for corrective action as funding is made available to perform the work. A list of current and future replacement capital projects is maintained and updated as presented in Appendix 'C'.

As deteriorated lines are discovered during future preventive maintenance inspections, those pipe segments are either immediately repaired by force account, use of emergency service contractors or added to the list of future CIP if timing is not deemed critical.

Funding for ongoing operations and maintenance and capital rehabilitation is funded from the sewer enterprise fund and with grants and loans and will need to be kept current as part of the City's annual budget planning process.

4.3 Equipment Maintenance and Replacement Policy

The City has a comprehensive equipment maintenance program. Equipment is regularly checked, adjusted, repaired or replaced as necessary. Major fixed assets are replaced when they meet or exceed the City's established fixed assets replacement criteria based on the equipment age, mileage, hours of use, repair history, safety, etc. Replacement of or additions to the major assets are accomplished through the annual budget planning process of the City. The list of equipment is included in Appendix "D".

4.4 Training for Field Operations Personnel and Contractors

The SO&M personnel and the Public Works staff attend structured collection system training classes or seminars given by other agencies including California Occupational, Safety and Health Administration (CALOSHA), California Water Environment Association (CWEA), California Rural Water Association (CRWA),County Sanitation Districts' (CSD), etc. This is to keep them informed of the latest information in the industry on how to safely and efficiently carry out their tasks. The City also utilizes informal training approaches, such as tailgate meetings and monthly safety meetings. New employees are trained on the SWRCB regulations, the City SSMP, OERP and WQMP prior to being allowed to work in the collection system. In addition, they are assigned to a crew of long tenured employees that mentor these new employees in the City operating policies and procedures. The City annually conducts refresher training for all collection system employees and others that are expected to participate in emergency response on the regulations, the SSMP, OERP and WQMP. In addition collections employees also participate in hands on field exercises in volume estimation and start time evaluations to assure consistency and completeness in reporting these important emergency response results. All training is documented including the subject of the training, trainer, attendees, dates and description of the training event. All

training documents are maintained in the employees' personnel file and in the Public Works files.

Additionally, only those companies with well-trained and experienced staff are considered for emergency SSO mitigation or sewer construction and rehabilitation work. Service contractors and construction contractors are required to have emergency response plans at least as comprehensive as the City OERP and emergency response procedures are discussed during preconstruction meetings and in frequent construction meetings.

4.5 References

- 1992 City of Mt Shasta Master Sewer Plan, Pace Civil, Inc.
- 2010 Sewer System Capacity Evaluation, Pace Civil, Inc.
- Municipal Services Review Report, Siskiyou County Local Agency Formation Commission, March 2011
- City of Mt Shasta Five Year Capital Improvement Program FY 2014/15 to 2018/19

CHAPTER 5

DESIGN AND PERFORMANCE PROVISIONS

(v) ***Design and Performance Provisions:***

(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; and

(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 Design and Construction Standards and Specifications

The City has Standard Plans and Specifications for the construction of sanitary sewers and appurtenances to ensure that sewer lines and connections are properly designed and constructed. The specifications by reference incorporate the Standard Plans and Specifications for Public Works Construction, Special Provisions, and Standard Drawings. In addition, the City utilizes other publications.

To further assure that sewer facilities are properly designed and constructed, City requires that plans are designed and stamped by licensed engineers. The plans are submitted to the DPW for thorough review and professional engineering precepts and practices are used in an iterative plan development / review process to ensure that the sewer will function properly over time. Permits for construction of any public sewer infrastructure are issued once the functional design and adequate capacity of the public sewer system has been analyzed.

5.1.1 Procedures and Standards for Inspection and Testing

The City provides inspection for the installation of new and rehabilitation of deteriorated public sewer facilities. City inspectors (staff or contract) are required to be well trained in pipeline construction, and to attend training classes and educational seminars to maintain familiarity with advancements in the industry. The inspectors are also provided with adequate materials to perform their jobs, including the Standard Specification for Public Works Construction, the Standard Plans and the Public Works Inspectors Manual, etc. The City also requires the preparation and submittal of “Record Drawings” of completed projects prior to final approval and acceptance of the project as public infrastructure. In addition, the City requires all newly constructed or rehabilitated sewer lines to be CCTV inspected, logged and then reviewed by City personnel prior to acceptance of the project. Prior to the one-year warranty acceptance,

the City may require an additional CCTV inspection and mandrel test to assure no major changes have occurred to the pipes during the first year of service.

5.2 References

- City of Mt Shasta Standard Plans and Specifications
- Standard Plans and Specifications for Public Works Construction, Special Provisions, and Standard Drawings
- Public Works Inspectors Manual

CHAPTER 6

SANITARY SEWER OVERFLOW EMERGENCY RESPONSE PLAN

(vi) ***Overflow Emergency Response Plan:*** *Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:*

(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 an 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 WDRs 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 SSO Emergency Response Plan and are appropriately trained;

(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

(e) 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.

6.1 Action Items for prevention and response to SSO's:

(1) Conduct planned and scheduled maintenance and training programs to minimize risk and the occurrence of SSO in support of the SSMP goals.

(2) When an SSO occurs, respond to the reported site in a timely manner and under-take feasible remedial actions to contain overflow impacts, including

stopping the flow from reaching the storm drain or waters of the United States, if possible; photograph the incident and,

(3) Stop the overflow as soon as possible and limit public access to the overflow area to prevent public contact with any wastewater contamination; and,

(4) Completely recover the overflow if possible, return it to the sewer system and clean up the contaminated area; and,

(5) Conduct water quality monitoring for SSOs equal to or greater than 50.000 gallons.

(6) Gather and compile all pertinent information regarding the overflow event, investigate as necessary to determine probable cause, document findings, report to the appropriate regulatory agencies as required, and file and certify the completed report per recordkeeping requirements in the MRP.

6.1.1 Field Response, Report Protocol and Forms

Appendix E contains the City of Mt. Shasta SSO Emergency Response Plan (SSOERP) and describes the procedures and reporting activity to be accomplished during an actual overflow event in the physical setting in which it occurs. Appendix E-3 provides a sample of the Field SSO Form to be completed for each overflow event. Corrective actions and reporting guides are described and an investigation and reporting format are included for reference use. The City has also developed a Water Quality Monitoring Plan which is described in the SSOERP.

6.1.2 Procedure to ensure staff and contractors are aware and appropriately trained to follow Emergency Response Plan

The SSOERP is available to key personnel who are responsible for managing or responding to SSOs. Copies of the City's instruction manuals are available to field crews and engineers at the office who manage or have the role of preparing SSO reports to regulatory agencies. The experience of any contractors' emergency response team plays a very important part during the selection of the City's as needed emergency contractors.

Training of City personnel in the goals and procedures of this SSOERP is accomplished in annual and refresher emergency response classroom training and field exercises. A checklist used by staff to check off and record information regarding the various procedures completed during a spill response is utilized during the training process. The checklist is included in Appendix E-5. Secondly, on-the-job training is administered to subordinate staff, by experienced supervisors and lead workers, during and following actual overflow events to further reinforce the annual training and to analyze event specific issues.

6.1.3 Procedures to address emergency operations response activities.

The SO&M field personnel and those of any emergency contractors' who are retained for SSO responses are required to be well trained in City emergency procedures, traffic and crowd control. The City's vehicles are well equipped with traffic and crowd control tools, including barricades, orange traffic control cones, yellow tape, flashing lights, reflective uniforms, appropriate signs, sewage containment materials and equipment, etc.

Policies and procedures are upgraded as appropriate to prevent recurrence of accidental spills due to procedural errors by City's staff and contractors. As part of their training, all involved employees must thoroughly familiarize themselves with these emergency procedures. City's personnel administering contract sewer repair, rehabilitation and replacement projects must rigidly enforce contract provisions. Especially important is enforcing contractors' approved Emergency Spill Response Plan requirements intended to prevent and limit the impact of accidental spills.

An approved Overflow Action Plan, which is activated if an overflow from a contract activity enters a storm drain, should be incorporated into the contract documents of all sewer repair, rehabilitation, or replacement contracts involving sewage bypass operations. When successful execution of an Overflow Action Plan requires pre-deployment of containment or pumping equipment, City's personnel administering the contract must ensure the necessary pre-deployment measures are taken.

6.1.4 Program to eliminate or minimize discharge of SSO into waters of the United States

The SO&M personnel and emergency contractors' crews are required to be properly trained on methods and procedures to prevent or limit the amount of SSO into Waters of the United States and how to mitigate such impacts. Some effective methods include the use of sand bag barriers to contain SSOs, placement of absorbent socks to intercept SSO discharge before entering storm drain inlets or waterways, and the use of vacuum equipment to suck up contained spills and dump effluent back into the collection system at other safe locations. The SO&M crews have as one of their major goals the reduction of response time for SSO. Reducing response time could significantly limit the amount of SSO that reaches the Waters of the United States.

6.1.5 SSO Flow estimation tables and photographs

Figures E-3.1-E-3.5 in Appendix E-3 are used for estimating SSO volumes with the manhole cover in place, with the cover removed, and flow out of the

pickhole. Pictures of various volumes of water flowing from a manhole are provided for easy reference. Flow calculation worksheets are also provided and required for proper documentation of defensible flow calculations. All calculations should be initialed, signed by the preparer and approved by the Supervisor.

6.2 References

Sanitary Sewer Overflow Emergency Response Plan Appendix E.

CHAPTER 7

FOG CONTROL PROGRAM

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

(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 establishment of a cleaning maintenance schedule for each section; and

(f) 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.

7.1 Public education and outreach program

The City notifies users of its sewer system about the FOG source control programs in a variety of ways. Information on proper disposal of FOG and other SSO prevention measures, including installation of grease traps, backwater valves, sewer lateral

maintenance, etc. is disseminated through publication of brochures, articles in newsletters, individual notices to property owners, and with business license renewal notices. These notifications provide descriptions of grease control efforts that can be undertaken by homeowners and businesses alike. Additionally, the DPW utilizes personal contacts with home and business owners, by its field crews and the code enforcement inspectors, as conditions warrant. These methods are usually effective in relaying information to the community on proper disposal of FOG and other SSO prevention methods.

Other effective ways to communicate with the public are being considered, such as use of the City's home web page, information at public counters at the City and both radio and local cable television announcements. Another helpful tool is the exchange of outreach information between sewering agencies, and use of bilingual posters, developed by the California Restaurant Association (CRA) and CSD, for direct distribution to Food Service Establishments (FSE) as a Best Management Practice (BMP) tool for training and reminding those who work with FOG producing products. The CSD has also developed a training program available to agency personnel on methods to control grease discharges in order to prevent SSO. For FOG Training available to local cities contact (562) 699-7411 x 2907.

FOG in the local sewer system can be a prime contributor to an SSO. Related health and safety issues can also result from the discharge of pharmaceuticals and pesticides into the wastewater collection system. Although not usually a causative factor in sewer overflows, these chemicals have the potential to be toxic and to have disruptive environmental and biological effects. Discharges of such chemical compounds, into the sewers, should be part of the community education and outreach program. *No drugs or household pesticides down the drain* is a compatible health and safety advisory.

7.2 Disposal methods for FOG generated within the system service area

Solidified FOG found in the public sewer system during regular scheduled cleaning operations or clearing of a blockage are trapped, collected and along with the solid debris (FOG, roots, grit, etc.) removed from the system and placed in a dumpster to be taken to permitted FOG disposal facilities such as a land fill. FOG in liquid form is flushed down by hydro jetting to designated treatment facilities for disposal.

7.3 Legal authority to prohibit discharges to the system and control measures to prevent SSOs and blockages caused by FOG.

Legal authority to prohibit illicit discharges (i.e. FOG, etc.) to the sewer system is discussed in Chapter 3. Requiring grease interceptors at food service establishments (FSE) locations to prevent the discharge of grease to the public sewer system and educating the public on proper disposal methods for FOG are also discussed in this chapter. Discharges from industrial classification facilities are usually controlled under the terms of an industrial wastewater discharge permit, which is issued and monitored

by the City. The City Plumbing Code provides the authority for the requirement to install grease limiting devices and for the sizing and placement of any required devices.

7.4 Requirements for design, installation, maintenance, BMPs, record keeping and reporting of grease removal devices.

The City Building Official is authorized to monitor and enforce the terms of the Plumbing Code and the Public Health Code. This includes domestic waste disposal from residential and commercial facilities. The MSMC prohibits the discharge of "any water, sewage or liquid waste containing oil, grease, tar, or other ingredients in solution which may clog, obstruct or fill the and/or prevent the unobstructed use of the facility."

The DPW is charged with reviewing, permitting and inspecting industrial waste facilities that discharge into the City's wastewater collection system. Pretreatment devices are required for industrial waste generating facilities, including restaurants and other FSEs. Grease removal devices are required to be designed per Chapter 10 of the Plumbing Code (PC), approved, installed and operated in a manner to control discharges of FOG into the wastewater collection system. This is to ensure that the facilities do not create nuisances, menaces to the public peace, health or safety hazards, or adverse impacts on the public sewerage system, soil, underground and/or surface waters. If there is a FOG related problem associated with an industrial waste permit, City will take enforcement action against the permittee pursuant to the MSMC.

When during inspection of the wastewater collection system, SO&M personnel determine that a FOG related problem exists and is traceable to a domestic sewage source of such character that is not suitable under the MSMC, pretreatment could be required or the discharge required to be eliminated. Domestic waste containing FOG can lead to SSOs, such would be classed a public nuisance, and California Health and Safety Code Division 5, Part 3, Chapter 6, Article 2 can be used to impose appropriate domestic sewage discharge requirements.

The effectiveness of any grease removal device is dependent upon routine maintenance and monitoring/inspection for conformance with its intended purpose. Regular inspection and maintenance activity logging with quarterly reporting to the City are required. In addition, the FSEs must follow best management practices (BMP) in the operation of their FOG facilities.

7.5 Authority to inspect grease producing facilities, enforcement authorities, and evidence of adequate staffing to inspect and enforce the FOG control ordinance.

The City has legal authority to inspect and enforce the local FOG ordinances in MSMC Section 13.56.100(C). City has staff to conduct inspections of the few pre-treatment facilities at the permitted FSE connected to the city sewer system. The funding mechanism now in place allows for increases in permit and other services charges if necessary to retain additional staff or consultant services.

7.6 Cleaning schedule for identified FOG prone sewer segments

Experience has shown that FOG contributes to about 50% of the total SSO events that occur in a community sewer system. The remaining 50% is usually attributable to root intrusion into the system and other structural causes. FOG prone sections, otherwise identified as "hot spots," in the wastewater collection system, are identified during routine maintenance operations and investigation of stoppages resulting in a SSO event. These “hot spots” (See Appendix ‘H’) are typically cleaned within 3 days of identification by hydro jetting and rodding or cutting if roots are encountered. Those portions of the system that have persistent FOG problems are inspected and cleaned more frequently, at least twice per year, depending on the magnitude of the problem. Segments of the collection system with persistent FOG problems are referred to the DPW for additional evaluation and corrective actions.

7.7 Source control measures developed and implemented for “hot spots”

Each “hot spot” cause and condition is not the same. For each identified problem location the means of effective maintenance is noted on the respective “hot spots” list (See Appendix ‘H’) for review and regular follow-up action by the sewer maintenance crews. The activities can be amended as conditions may require.

7.8 Some BMP’s for Fats, Oils and Grease Control

Example BMP’s for local application are on the following pages.

7.9 References

- Best Management Practices for Fats, Oils and Grease

Best Management Practices (BMP) for Fats, Oils, and Grease

Residual fats, oils and grease (FOG) are by-products that food preparation and food service establishments and automotive service facilities and machine shops must constantly manage. Typically, FOG enters a facility's plumbing from wash sinks and floor drains during daily operations. Sanitary sewer systems are not designed or equipped to handle accumulating FOG on the interior of sewer collection system pipes due to unmanaged – unmaintained discharges. Keeping FOG materials out of the plumbing system, by reasonable methods, is an important factor. The following are suggestions for proper FOG management:

Bulk or Dry Clean-Up

- Practice bulk and dry materials clean-up before using wet methods that use water.
- Remove bulk or other solid food and grease laden substances into a suitable container before rinsing or washing the initial containers or surfaces that will drain into the plumbing system.
- Keep drain screens in place and fully serviceable to avoid clogging drains or accumulating FOG or grit on the interiors of pipes.
- Do not pour grease, fats, or oils down the drain nor place food scraps in the drain.
- Use food grade paper to soak up oils and grease and dispose of appropriately.
- Use paper towels to wipe down surfaces and work areas. Cloth towels require washing and thereby introducing FOG back into the drains.
- Success of bulk or dry clean-up is dependent upon the behavior of individuals and their access to tools and materials for use in removing bulk and dry materials before washing.

Spill Prevention

- Preventing spills reduces the amount of waste that will require clean-up.
- A dry surface work place is safer for everyone in avoiding slips, trips and falls.
- Capture bulk or dryer materials and place them into an appropriate container.
- Empty containers before they are full to avoid spills.
- Cover any FOG container before transporting to the rendering storage container.
- Provide employees with proper tools to transport materials without spilling.

Maintenance

- Whatever method(s) are being used to collect, filter and store FOG, ensure that equipment is regularly maintained.

- Employees should be aware of and trained to perform correct and scheduled cleaning procedures.

- A daily and weekly maintenance schedule is highly recommended.

- Contract with a responsible service company to regularly and thoroughly clean larger components and spaces requiring specialized equipment and skills (e.g. large hood filters, hot tanks, floor drain pipes, specialty tools).

- Smaller and less complex elements can be cleaned by hand by the user (e.g. small hood filters, counter/bench tops, sinks, storage areas, daily tools).

- Skim/filter fryer grease daily and test the oil to determine when change is necessary. Build-up of carbon deposits on the bottom of the fryer acts as an insulator that forces the fryer to heat longer, thus causing the oil to break down sooner. Daily maintenance extends the life of both the fryer and the oil.

- Avoid discharging fryer oil into a drain or grease trap, but dispose into a rendering container for transport to a rendering company.

- Cleaning intervals depend upon the type of product being prepared and the typical deposition of materials experienced. The larger the volume produced and deposits incurred, the more frequent the cleaning. This may warrant setting up a system of high use, high deposition work to be done in certain equipment that is cleaned more frequently than others to confine maintenance efforts.

Grease Traps and Interceptors

- For grease traps and interceptors to be effective, the units must be properly sized, constructed and installed in a location to provide an adequate retention time for settling and accumulation of the FOG.

- For information on properly locating, constructing and sizing grease traps and interceptors, contact the local governmental agency and examine EPA guidance documents and UPC criteria.

- Ensure all grease-bearing drains discharge to the grease trap/interceptor.

- No toilet or shower waste should be plumbed to the trap/interceptor.

Oil and Grease Collection/Recycling and Food Donations

- FOG consists of commodities that if handled properly can be treated as a valuable resource.

- Some rendering companies will offer services free-of-charge and other will give a rebate on the materials collected. Contact local rendering representative for specific information and details.

- Use only covered rendering barrels and make sure all drain screens are installed.

- Use a 3-compartment sink for ware washing. Begin with a hot pre-wash, then a scouring detergent wash, then a hot rinse. Each step should be trapped to capture non-emulsified FOG.

- Donations can reduce disposal costs. Ensure that edible food is not washed or flushed down the drain. Edible food waste may be donated to a local food bank. Inedible food waste can be collected by a garbage feeder that will use discards for feeding livestock.

CHAPTER 8

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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

(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; and

(c) Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.

(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 System Evaluation

To assess adequacy of the existing sewer system, a hydraulic evaluation of key mains in the wastewater collection system was performed, based upon the existing General Plan Land Use Element. The resulting 2010 Sewer System Capacity Evaluation Study and recommended improvements are contained in Appendix ‘C’.

8.2 Design Criteria

MSMC Section 13.04.100 empowers the City with legal responsibility for ensuring sound, logical and functional design of the City's public sewer infrastructure. The MSMC defines terms, establishes fees, sets out provisions for enforcement and maintenance, and provides the basis of design standards for sewers. For specifics on design and performance provisions, refer to Chapter 5.

8.3 Adequate Capacity

City engineering division is responsible to ensure the public sewer infrastructure is adequately sized, correctly designed and easily accessed for maintenance. The DPW legal authority to perform these important tasks is set forth as summarized in Chapter 3.

Additionally, the City requires completion of a sewer capacity study, by a registered engineer, prior to giving approval for projects that can affect the capacity of the public sewer system. A completed study will analyze the existing system capacity and will set forth mitigation requirements for the proposed project to ensure adequate capacity is available. The study will also justify the sizing of proposed lines to accommodate the peak flows from all areas tributary to the mainline sewer under consideration or pumping station, now and in the future. The approved capacity study is referenced directly by the city plan checker when design plans for the new infrastructure are submitted to assure adequate capacity. Proposals for new connections to existing sewer must also comply with the DPW policies for managing available sewer capacity (See Appendix 'F').

8.4 CIP Schedule

The scheduling of Capital projects is contained in Appendix 'C'.

8.5 References

- 2010 Sewer System Capacity Evaluation Study, MWH
- City of Mt. Shasta General Plan Land Use Element

CHAPTER 9

MONITORING, MEASUREMENT and PROGRAM MODIFICATIONS

(ix) ***Monitoring, Measurement, and Program Modifications:*** *The Enrollee shall:*

(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; and

(e) Identify and illustrate SSO trends, including: frequency, location, and volume.

9.1 Monitoring

Relevant data on work performed in implementation and execution of the SSMP program will be documented in the DPW records and used in preparing SO&M monthly summary of workload indicators. This data is used in evaluating effectiveness of the overall program.

9.2 SSMP Program Effectiveness Evaluation

Effectiveness of the program will be monitored and tracked using recorded data on key activities aimed towards minimizing sewer overflows. These include:

- total number of overflows.
- total number equal to or greater than 1000 gallons discharged or reaching the Waters of the United States.
- overflow response time.
- reduction in repeated incidents of overflow at same location.
- reduction in number of overflows caused by flows exceeding the capacity of the collection system.
- SSO rate per 100 miles compared to State and Regional SSO Rates.

9.3 Program Modifications

Based on the above monitoring and measurement evaluations, the affected SSMP elements will be updated or modified as necessary and any changes identified in the SSMP Change Log.

9.4 SSO Location Mapping and Trends

9.4.1 Location Map

Locations of SSO occurrences are plotted semi-annually on a citywide map. Causes of the respective SSO events are also recorded. These maps are used for establishing SSO patterns, identifying probable 'hot spots' and for scheduling work assignments and providing information on SSO activities.

9.4.2 Mapping of SSO Frequencies

Annual numbers of SSO are also depicted in charts and graphs (Appendix 'G'). The charts are used to identify SSO trends and as an indicator of infiltration/inflow problems that need to be corrected. The graphs are used to identify SSO trends and to evaluate overall SSMP program success especially by comparing graphs of different years and with results from other sewering agencies.

9.5 References: None

CHAPTER 10

SSMP PROGRAM AUDIT AND CERTIFICATION

(x) ***SSMP Program Audits****: 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.*

10.1 SSMP Program Audit

The City will conduct periodic internal audits and prepare an LRO certified audit report, at a minimum of every two years from the City's initial SSMP adoption date of November 22, 2010. The audit will focus on evaluating operational and cost effectiveness of the SSMP as well as the City's compliance with all elements of the SSMP. This will include:

- identification of any deficiencies in the SSMP
- steps to correct any identified deficiencies
- notes of interviews with key responding personnel and any contractors utilized
- notes of operational observations, especially of each SSO event
- notes of related equipment inspections
- findings of all reviews of related records

The most recent audit report after presentation to the City Council must be kept on file in the City Clerk's Office, the DPW Office and the field maintenance yard site. A certified copy of the Audit Report will also be appended to the SSMP in Appendix I.

10.2 SSMP Certification

The SSMP shall be certified by the Director of Public Works to be in compliance with all requirements set forth in the WDR and be presented to the City Council for review and adoption at a public hearing. Following any necessary revisions, the Final SSMP is to be adopted by the City Council, and the City's LRO must then complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form. In addition, he/she shall place a copy of the Council adoption document into Appendix J.

If all of the SSMP documentation is not publicly available on the City website, the DPW shall submit an **electronic** copy of the approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to

the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor
Sacramento, CA 95814

10.3 Plan Modification and Re-certification

The SSMP must be reviewed updated and readopted by the City Council every five years from the original adoption date by the City Council to keep it current. When significant amendments are made to any portion or portions of the SSMP, it must be resubmitted to the City Council for a re-hearing, adoption and re-certification. The re-certification shall be in accordance with the certification process described in Section 10.2 above and the LRO shall recertify this adoption in the CIWQS system. Once adopted, the revised SSMP along with all references will be placed on the City website as required by the MRP. All changes to the SSMP will be logged into the SSMP Change Log in Appendix K including the person approving the change, the date of the change and the specific section of the SSMP where the change was made.

10.4 References: None

CHAPTER 11

COMMUNICATION PROGRAM

(xi) ***Communication Program:*** *The 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

The City will provide the City Council, all stakeholders and interested parties, the general public and other agencies, with status updates on the development, revisions, implementation and performance of the SSMP, and consider comments received from them [in conformance with the WDR, Section D-13(xi)].

The City will utilize various outreach means to communicate issues surrounding the use and operation of the City's wastewater collection system such as: letters, quarterly newsletter, water bill inserts, brochures, annual reports, notices in local newspapers, the City's home web page and the "Government Access" Cable TV, Channel 15.

The City shall regularly communicate with the extraterritorial service areas and shall document these discussions through agenda and meeting minutes.

11.2 SSMP Availability

Copies of the SSMP and all references will be maintained in the offices of the DPW, the City Clerk, the SO&M service yard, and placed on the City's home web page. The document will also be made readily available to the RWQCB (Region 5) representatives upon request and to the operators of any collection system or treatment facility downstream of the City wastewater collection system.

11.3 References: None

APPENDICES

Appendix A	City Contact Directory for SSO Responding and Reporting/Contact List for Outside Agencies
Appendix B	Inventory of Sewer Collection Facilities by SMZ
Appendix C	List of Capital Replacement Projects
Appendix D	Inventory of Sewer Maintenance Equipment
Appendix E	Sanitary Sewer Overflow Emergency Response Plan
Appendix F	Policies for Managing Available Sewer Capacity
Appendix G	Summary of Maintenance Productivity- Graphs And Charts
Appendix H	Sewer “Hot Spots” List
Appendix I	SSMP Audit Reports
Appendix J	SSMP Adoption Documents
Appendix K	SSMP Change Log

Appendix A: City Contact Information

Table A-1. City Contact Directory for SSO Responding

Responsible Party	Name	Telephone	Cell Phone
City Manager	Bruce Pope	(530) 926-7510	(530) 318-3518
Risk Manager	Muriel Terrell	(530) 926-7523	
Public Works Director	Rod Bryan	(530)926-7526	(530) 859-7526
York Insurance Services (after hours and weekends)	-	1-916-971-2701	
Building Official	Dave Smith	(530) 938-4441	
Public Works Supervisor	David Torres		(530) 859-7530
On Call Person (After hours)	See Current On-Call Schedule		
Police Department	Dispatch	(530)926-7540	(530)926-7540
Fire Department	Matt Melo	(530) 926-7546	(530) 859-7546
State O.E.S.	-	1-800-852-7550	1-800-852-7550

Table A-2. Contact List for Outside Agencies

Lake Siskiyou Campgrounds (includes lift station near Box Canyon Dam)	
Jason Ledbetter	842-8259 (office)
Jason Ledbetter	760-423-2214 (cell)
SVM	842-7862
Siskiyou Lake Highlands Subdivision	
John Fryer	926-5135
Suzanne Bentley	929-3030 ext. 184
Bill Navarre	859-2648 (Cell)
Shasta Holiday Subdivision (W.A. Barr, Michelle Dr., Lake Ct. area)	
Tom Cohen	859-2346
Answering Service	926-5370
Shadow Mtn. Trailer Park	
Marlene Facey	926-5712
Debbie Harris	704-579-9194

Appendix B: Inventory of Sewer Collection Facilities by SMZ

Table B-1. Sewer Collection Facilities Inventory

Manholes	**445**
Cleanouts	**142**
Line Segments	**682**

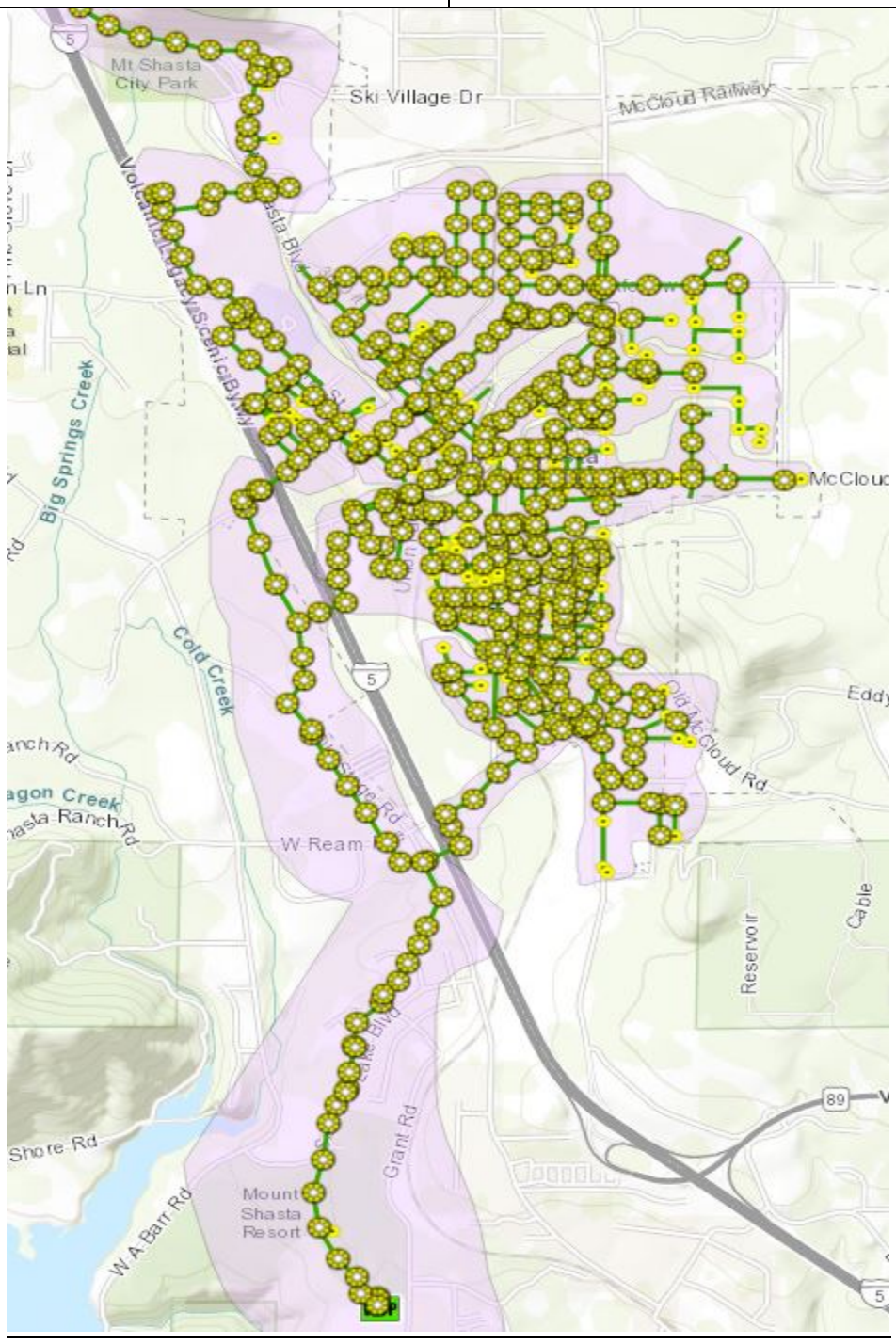


Figure B-1 Sewer Maintenance Zone Map

Appendix C: List of Capital Replacement Projects

Table C-1. Capital Replacement Projects

Project N	Project Title	Total
	I/I Repairs	$75,000
	Sewer Master Plan	$87,000
	Old McCloud Rd Sewer Repair	$65,000
	Interceptor Sewer Replacement Project	$5,000,000
	Downtown Collection System Project Planning	$3,000,000
	State-Mandated Wastewater Treatment Plant Project	$24,000,000

Appendix D: Inventory of Sewer Maintenance Equipment

1. Equipment and Materials Owned by the City

1. 2009 Vac-Con 3.5 yd Sewer Combination Cleaner
2. 1998 Sreco HV 1800 Sewer Flushing Machine
3. Mobile CCTV Cues camera equipment for line inspections.
4. SSO Response Trailer equipped with:
    - granular chlorine
    - sandbags
    - waddle
    - 2” trash pump
    - Assorted hand tools (shovels, brooms, picks, etc.)
    - Inflatable sewer pipe plugs (12”, 10”, 8”, 6”, and 4”)
    - Air Compressor
    - Generator
    - Traffic Safety Equipment including cones, barricades, signs, flagging tape
    - Personal Safety Equipment including coveralls, gloves, safety vests, rubber boots
    - Emergency Contact Numbers
    - Copy of Sanitary Sewer Overflow Response Plan
5. Utility trucks
6. Backhoe/Loader
7. Forced air blower
8. Gas Detection Meter
9. Plastic sewer pipe (12”, 10”, 8”, 6”, and 4”)
10. Assorted sewer fittings in all sizes, couplers for all types of pipe, 45’s, 90’s, T’s, sweeps, and cleanouts.

2. Equipment owned by maintenance service contractor

1. City of Dunsmuir: Flusher and Vac truck.
2. SVM plumbing: Various pieces of equipment including flushers, vac trucks, camera equipment, jetting, and rodding equipment.

Appendix E: Sanitary Sewer Overflow Emergency Response Plan

E-1 Sanitary Sewer Overflow Emergency Response Plan

E-2 Notification and Reporting Procedure Flow Diagram

E-3 Field SSO Form with Flow Estimating Worksheets And Tables

E-4 SSO Flow Estimating Pictures

E-5 SSORP Training Checklist

E-6 Sewage Spill Warning Signs

Appendix E-1: Sanitary Sewer Overflow Emergency Response Plan

INTRODUCTION

The City of Mt. Shasta provides sewer service to a population of approximately 3,500. The sewer system is managed by the Mt. Shasta Public Works Department. The total annual budget for system operation, maintenance and administration is approximately $120,000. The collection system consists of approximately 30 miles of gravity sewer line.

The primary goal of the City's sewer maintenance program has been and remains the protection of public health, safety and the environment. As a matter of State and Federal regulations, SSO's are prohibited, and moreover, are inconsistent with the City's goal of providing the highest level of sewer service to the public. The City places high priority on capacity assurance, repair and replacement, and proper operation and maintenance of its sewerage system. While the City desires to completely eliminate sanitary sewer overflows, it is also understood that manmade systems do fail. Regardless of the level of scrutiny and control provided, overflows will, on occasion, occur.

Therefore, when an SSO event does occur, this response plan encompasses measures necessary to minimize public health and environmental impacts. To accomplish this, the City operates a two-pronged response to SSO's that directs efforts to stop the overflow simultaneously with efforts to contain and then recover the wastewater discharged. Quick response to emergency situations can prevent overflows of wastewater from reaching the water of the United States.

The City is responsible for response to, and reporting of, all SSO's caused by problems within the City's sanitary sewer system. Under certain emergency circumstances, the City may also provide assistance to the CSD and sewering entities within the surrounding area during an overflow response situation.

OVERFLOW RESPONSE GOALS

1. The City's goals and actions regarding overflow response are stated in Chapter 1 of the SSMP.

NOTIFICATION, INVESTIGATION AND MOBILIZATION

1. The City's chain of communication and reporting are stated in Chapter 2 of the SSMP.

2. The following occurs upon receiving notification of an overflow:

    1. The notification is logged in Comcate, a web based work order tracking system and assigned for follow-up actions.

    2. Dispatch of Personnel to Investigate - For overflows reported during the workday, the Public Works Crew is immediately dispatched to respond; during

non-working hours, an on-call employee is dispatched. The on-call employee will call the Public Works Director, Public Works Supervisor, or Lead Maintenance Worker if they need assistance. Any available personnel are expected to respond.

3. Dispatch of Staff and Equipment - When the initial investigation report indicates that a wastewater overflow has occurred from the City's sewer system, both equipment and personnel are mobilized and dispatched immediately to the overflow site. During non-workday hours, on-call staff members will call for assistance as needed or appropriate.

4. If it has been reported that sewage has backed up into a residence or building, the first responder shall immediately contact the City's insurance company, formerly Bragg & Associates, now under the name of York Insurance Services. The first responder shall also contact at least one of the following: the Public Works Director, Public Works Supervisor, or the Risk Manager.

5. Notification for Outside Support – When the initial investigation determines that additional 'Outside Support' resources will be necessary to accomplish the containment and clean-up, the Public Works Director, Public Works Supervisor, or a Lead Maintenance Worker is notified and informed of the situation and the perceived needs.

6. Notification of Sewer Agencies - When the initial investigation indicates that an overflow has occurred from another agency's sewer or may have resulted from blockage in another agency's sewer, the potentially responsible agency is immediately notified. (See Table A-2 Contact List For Outside Agencies). If the additional on-site investigation indicates that the overflow is the responsibility of the other agency, then the response efforts are turned over to that agency, with assistance from the City, if necessary and requested. Regardless of cause, once the overflow response has occurred, the primary objective is to minimize the risk to human health and to the environment (i.e Waters of the United States).

7. Notification of Management Personnel - Appropriate management personnel are notified (if they have not already been notified) and any personnel necessary for office support of the field response are mobilized.

RESPONSE

The overflow response is directed in the field by supervisors and/or managers who are trained and experienced in responding to SSO's, with additional operations, maintenance, engineering and agency support staff available as needed for public notification, protection, resource supply, expense authorization and tracking, and coordination of available support resources.

The individual steps involved in responding to a wastewater overflow event include:

(a) Corrective Action and Site Control

(b) Containment and Recovery
(c) Cleanup
(d) Sampling
(e) Notification and Reporting
(f) Post-Cleanup Activities

(a) Corrective Action and Site Control

Upon arriving at the overflow location, concurrent actions taken by the various crews are:

- Stop Overflow - The cause of the overflow is identified and necessary corrective action is taken to contain and/or stop the overflow and/or correct the condition that caused the overflow if the overflow has already stopped. If first and only on scene, this will be the first thing done.

- Typical corrective actions to stop a sewer overflow include:

    - clearing a pipe blockage with Vac-Con or Sewer Flusher,
    - removing debris from a manhole,
    - upstream flow diversion,
    - bypass of wastewater around the blockage using vacuum trucks or pumps
    - bypass and repair of a damaged force main.

  Bypass pumping is typically accomplished by the use of portable pumps and hoses to convey flow around the blocked or damaged sewer, or the damaged force main. The SO&M team has access to a designated 3" portable pump and hose (designed to bypass flows of up to 275 gallons per minute), sandbags, fittings, and tools to facilitate pumped bypass. When possible, diversions are used to redirect a portion or all of the wastewater around the affected area in the system. Maintaining accurate and complete sewerage and storm drainage system maps are essential to expeditiously accomplish wastewater diversion during an emergency response.

- Documentation- The first responder begins filling out the General Information in the *Field SSO Form* (Appendix E-3) documenting the Date, Time of Notification or Discovery, Operator Arrival Time, Location of Spill, and Estimated Gallons. A Field SSO Form shall be completed for every SSO event if raw sewage backs up onto the ground, regardless of whether it is on public or private property. Figures E-3.1 through E-3.5 of Appendix E-3 and Appendix E-4 SSO flow estimating pictures will help the responder in estimating flows. If it is determined that the spill is over 1000 gallons and has reached the storm drain system, the responder will contact OES within 2 hours and the Public Works Director, Public Works Supervisor or Lead Maintenance Worker.

- Prevent Public Access-Access to the immediate area of the overflow is restricted to minimize potential impacts to public health by redirecting pedestrian and automobile traffic away from the overflow through the use of traffic cones, plastic

tape, barricades, warning signs (see Attachment E-6) and/or local law enforcement.

Risk Basis Analysis:

The extent of the overflow and its potential impacts to the public health are assessed by City personnel. This process involves determining if any private property owners/residents may be exposed to raw sewage, making direct contact with those parties who have been or may be directly affected by the overflow, advising those individuals of the potential health hazards associated with contact with raw sewage, and identifying prudent measures to be taken by private property owners/residents, such as vacating the property/area, to prevent contact with the overflow. Higher risk SSO's will result in more appropriate response and mitigation efforts.

To assist in evaluating SSO's on a risk basis to determine appropriate and possible mitigation levels with respect to closure, cleanup, and sampling, the City will evaluate all SSO's according to the following factors as to the level of risk and exposure to the public as well as appropriate clean up measures:

1. SSO impact to the public: Heavy foot/vehicular traffic, highly public, around congregations of people, possibly during outdoor events.
2. SSO volume: Larger volume SSO's will require more extensive cleanup measures. Smaller volumes will be generally easy to clean up.
3. SSO Location/destination: Is SSO contained to small area, easy to capture? Enters storm drain or drainage feature? Confined to dirt or paved area? Enters major body of water (i.e. Cold Creek)
4. SSO ability to clean up: Does nature of containment provide easy clean up or does the SSO enter storm drain and is gone? Or does the SSO require significant cleanup efforts.
5. Other environmental factors: Is the SSO occurring during a storm event with much rainfall and dilution?

a. <u>High Risk: Immediate and Significant risk to the public or environment.</u>
   If the SSO is in a highly public area with heavy foot/vehicular traffic, City crews will take necessary steps to prevent public access (barricades & signage), remove all raw sewage and materials, clean up and disinfect the affected area prior to permitting re-entry. Consists of high volume SSO's, especially those greater than 50,000 gallons and discharge to a surface water. Eliminating the SSO will also be a top priority in the initial response. Higher risk SSO's that are difficult to capture, contain, or clean up may require upstream and downstream sampling for Coliform bacteria and ammonia.

b. <u>Medium</u> Risk: Some risk to the public or environment, considered less than significant with some mitigation efforts.
   Some capture, cleanup, and disinfection is possible. Lower impact to the public. Smaller volumes that are easier to manage. Sampling may be necessary depending on effectiveness of mitigations.

c. Low Risk: No immediate or significant risk to the Public or environment.

Little to no impacts to the public. SSO volume is low and enters storm drain with high flows which carries the diluted SSO away quickly and prevents any real cleanup or sampling efforts. No public impact, short duration. Cleanup efforts are easy and highly effective or otherwise not necessary or possible. Sampling not required.

- Determine path and Final Destination- Simultaneous efforts include determining the path and final destination of the sewage spill and potential exposure to the public. If wastewater from the overflow is ponding in a location that can be isolated, then set up barricades with warning signs to prevent public access. Traffic control is set up to prevent vehicles from entering locations where the overflow has contaminated public or private travel ways. City personnel are instructed to direct pedestrians and automobile traffic away from the spill path and final destination of the overflow. All involved persons must cooperate with local law enforcement and public works officials to ensure that public exposure to the overflow is minimized and to ensure spill site security.

- Prevent Wastewater Entry to Storm Drain System - When possible, contain and recover the overflow in the immediate vicinity of the overflow before it enters a storm drain catch basin. Measures to effect such containment include damming the overflow path with sandbags in the street gutter and recovering the impounded water with a vacuum truck, jet vactor, or pumping into a nearby sewer manhole, or using sandbags to divert the overflow back into a nearby sewer manhole.

(b) Containment and Recovery

Containment and recovery of an overflow should occur as close as possible to the site of the overflow, preferably in the street curb and gutter, to minimize the length of the storm drain system affected by the wastewater. When a storm drain system is nearby, the overflow may enter the storm drain system prior to arrival of the first responding personnel. In these cases, engineering, supervisory and/or management staff identify the most practical containment location in the storm drain system downstream of the overflow. In selecting the best containment location, staff must consider many factors, including:

- time the overflow started,
- overflow route through the storm drain system,
- time needed to install a containment dam,
- travel time for the overflow to reach the containment location,
- safe access to the containment location for personnel and equipment, and
- availability of a nearby sewer with sufficient capacity into which recovered wastewater can be returned.

Access and safety considerations generally require establishment of containment in open storm drain channels. Containment in buried storm drains pipes upstream of any open channels is preferable when possible. However, the physical difficulty of deploying personnel and materials through a manhole into a buried storm drain pipe to construct a containment dam, the dimensions of the storm drain itself, and/or the safety procedures and authorization needed to enter confined space generally preclude rapid and practical establishment of containment within a buried storm drain pipe. A containment location close to the overflow location is only possible when a containment dam can be deployed very quickly after the start of an overflow.

Once a suitable containment location is identified, the crew responsible for containment:

- deploys a sandbag containment dam or otherwise prevents the movement of the overflow and contaminated street runoff further downstream in the storm drain system, and
- deploys the vacuum trucks or portable pumps and piping necessary to return the contained wastewater, dry weather runoff, and clean up water back to the sewer system.

(c) Cleanup

After the overflow has been stopped, the following steps are taken:

- Recover Locally Impounded Wastewater - All locally impounded wastewater is recovered with a vacuum truck or jet vactor and returned to the sewer system.
- Collect Wastewater Debris - All visible debris of wastewater origin from the overflow location(s), street(s), curb and gutters, and the overflow runoff path is physically removed.
- Flush Affected Area - Overflow location(s), street(s), curb and gutters, and the runoff path are flushed with potable water, typically delivered by a vacuum truck or water truck. The flush water is also recovered and returned to the sewer system.
- Flush Storm Drain and Conduct Dye Study - Additional potable water is used to flush the overflow runoff path within the storm drain system. When appropriate, this flush water is marked with a nontoxic, visible dye. Arrival of the dye at the containment location establishes the actual travel time to the containment location. Recovery of the dye confirms completion of spilled wastewater and flush water recovery.
- Complete Cleanup - All sandbags and other containment are removed to complete the cleanup in the storm drain system. If spilled wastewater reaches natural watercourses or other areas accessible to the public, input is solicited from the responsible jurisdiction regarding additional measures which may be necessary or appropriate for a complete cleanup. Additional cleanup measures are completed as directed.

Private properties impacted by overflows or backups from problems within the City's sewer system should be cleaned up by a professional restoration company dispatched by the City. **Any SSO that results in a backup of sewage into a private residence or building requires the immediate notification of York Insurance Services**, and one of the following: the Public Works Director, Public Works Supervisor, or Risk Manager. Claims for property damage are handled by York Insurance Services.

(d) Receiving Water Sampling and Technical Report

The revisions to the State Monitoring and Reporting Requirements in 2013 requires the City to develop a Water Quality Monitoring Plan for any SSO equal to or greater than 50,000 gallons spilled to surface waters. These monitoring requirements must be implemented within 48 hours of initial notification to OES. This section of the SSOERP is intended to provide the City's compliance with that requirement. In addition for all SSOs of this size the City must file a certified Technical Report as outlined in the MRP requirements Section C5. The following provides the City's sampling and monitoring procedures for any sampling done by the City.

Bacterial test samples of SSO's should be collected by the first responder, whenever possible. If it is probable that an overflow may reach receiving waters, samples should also be taken of the receiving waters to evaluate the potential impact on the receiving water quality. Samples should be drawn from the location(s) most likely to be impacted by the overflow and also from a receiving waters location or locations that can be used to establish background water quality. Advance coordination with a certified laboratory for pre-arrangement of sampling supplies, notification protocol for urgent services, and training as may be required, will facilitate emergency sample delivery so that bacterial testing can begin immediately when needed. Delivered samples are analyzed for total coliform, fecal coliform, and any other constituents that may be appropriate based on the nature of the receiving water and the spilled wastewater. Because it takes approximately 10 days for the bacterial analyses, additional samples are collected daily to ensure enough data is collected to accurately evaluate the potential impact of receiving water unless full containment and recovery of the overflow can be confirmed.

(e) Notification and Reporting

Notification Requirements: All Category 1 SSO's greater than or equal to 1000 gallons that reach, or will likely reach, a storm drain must be reported to OES within two hours.

Reporting Requirements: The reporting requirements are outlined in Table 2 of the Monitoring and Reporting Program and vary according to location of the overflow and the amount of wastewater spilled. The City's guideline for *Notification and Reporting Procedures for SSO's,* (included as Attachment E-2), contains an outlined notification and reporting procedures for the various categories of overflows.

The following information shall be provided, if available, when reporting an overflow by telephone:

- name of person reporting,
- name of agency,

- location of overflow,
- whether the overflow has entered or will enter receiving waters (rivers, lakes, storm drains, or ocean) of the State or the United States,
- date and time overflow began and ended,
- estimated volume of overflow,
- cause of overflow,
- corrective actions taken,
- estimated time of repair, and
- agencies involved in repair and clean-up.

Written notification of the overflow, when required, must be submitted within the required time period to the Regional Water Quality Control Board (RWQCB), typically within 30-days of an overflow and within 3 days if the incident has or may have endangered public health or the environment. Written reports should be submitted to the local RWQCB for overflows occurring within their jurisdiction. To satisfy this requirement, the City may choose to submit a brief written confirmation of the reported overflow to the appropriate RWQCB within the time frame required. A follow-up, detailed written report will meet the statutory provisions of the State Water Code. This detailed report usually requires three to four weeks to complete. Copies of the detailed report is sent to those agencies which were initially noticed, unless otherwise notified.

(f) Post-Cleanup Activities

Once cleanup of an overflow is complete, the incident must be reviewed and any appropriate measures to prevent recurrence must be implemented. Follow-up CCTV inspection is performed when an overflow was caused by a blockage to verify complete removal of the material causing the blockage. If the overflow was avoidable by preventative maintenance, then maintenance activities are added or adjusted as necessary. An example is to increase the frequency of line cleaning where heavy grease build-up has caused an overflow to occur, while source control efforts are reviewed. If the overflow was caused by factors generally outside the City's control, such as vandalism, steps are still taken to minimize recurrence such as strengthening security by locking down manhole covers, increasing area surveillance, and requesting neighborhood assistance in reporting vandalism and unauthorized dumping.

Regardless of the size or type of overflow, all overflows are investigated thoroughly. Following the investigation, the information as noted on the Field SSO Form (Attachment E-3) is documented and included as part of the City's internal spill records.

EMERGENCY RESPONSE PERSONNEL AND EQUIPMENT

Personnel

The City has ***the necessary*** personnel to respond to ***almost any*** emergency, including *power failure, mechanical and electrical equipment breakdown, sewer blockage, pipe failure, and vandalism.* The urgency and seriousness of any wastewater overflow results in the full commitment of all available staff in the DPW to respond. Additional

City's personnel are utilized for specialized assistance as needed. Contractors with emergency response capabilities are also used to assist in emergencies as needed.

An emergency contact list is maintained which includes the home phone number of all employees in the DPW. All supervisors and managers in the DPW are assigned cell phones and are accessible 24-hours a day. A table of organization for the SSO responses and each supporting unit or group are included in Chapter 2 of the SSMP.

Emergency Equipment

In addition to the normal compliment of equipment utilized by the PWD for maintenance and repair of the sewerage system, specific items are maintained for use during emergency conditions. Such equipment can include:

- jet vactor and rodding machines to clear pipe blockages
- vacuum tankers to transport flow around blockages or to remove wastewater from a containment location in a street or storm drain
- submersible pumps for use as emergency pumps to bypass wastewater around a pipe blockage or a malfunctioning pumping plant
- pre-filled sand bags for use in establishing containment dams
- front loaders for emergency earth moving operations
- portable engine driven centrifugal pumps (trash pumps) to bypass wastewater around pipe blockages and remove wastewater from storm drain channel containment locations
- hoses and lightweight quick-coupling piping in various sizes for use in bypass pumping
- pipe repair clamps, inflatable sewer plugs, and other miscellaneous pipe repair parts
- water trucks and bottled chlorine solution for use in clean up operations
- portable lights, air compressors, centrifugal blowers, and other miscellaneous equipment
- Protective clothing and supplies for safe use by personnel

A current listing of emergency equipment available from the Sewerage System maintenance yards is included as Appendix D.

TRAINING

Training of City personnel in the goals and procedures of this Sanitary Sewer Overflow Response Plan is accomplished in annual emergency response classroom training. A checklist used by staff to check off and record information regarding the various procedures completed during a spill response is utilized during the training process. The checklist is included in Appendix E-5. Secondly, on-the-job training is administered to subordinate staff, by experienced supervisors and lead workers, during and following actual overflow events to further reinforce the annual training and to analyze event specific issues.

Appendix E-2: Notification and Reporting Procedure Flow Diagram

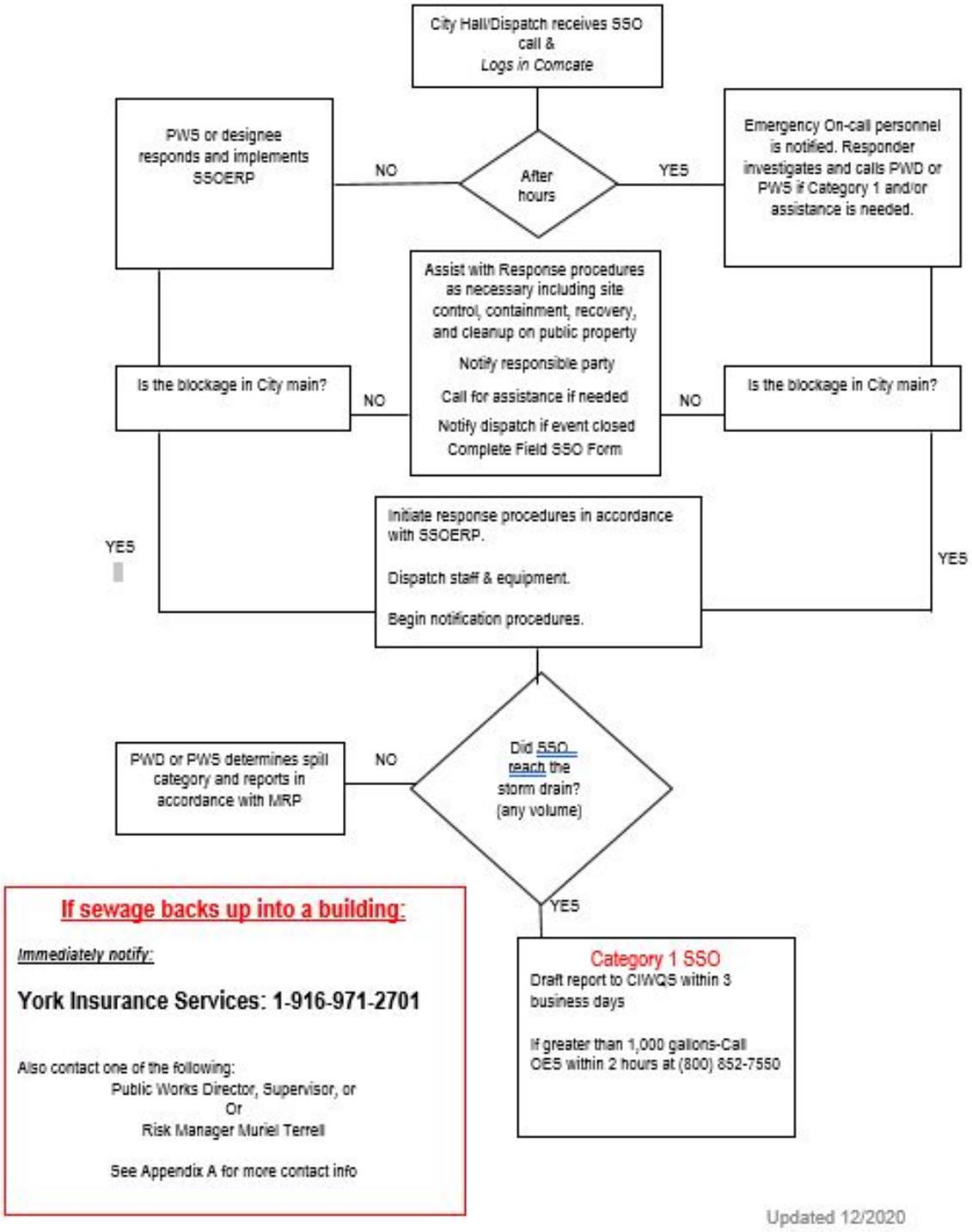


Figure E-2.1: Notification and Reporting Procedures for SSO Events

Appendix E-3: Field SSO Form with Flow Estimating Tables

City of Mt. Shasta
Field SSO Form

General Information: This form is to be filled out for all SSO's

Date:_____ GPS Coordinates:_____ Location of SSO_____

Did sewage back up into a building? YES NO
If yes: **Immediately** contact Cameron Dewey, York Risk Service Group: (530) 276-5322 or 1-800-922-5020. Then call Public Works Director, Public Works Supervisor, or Risk Manager (Muriel Terrell)

Discovery/Notification Time:_____ Operator Arrival Time:_____SSO Response Time:_____

SSO Source:_____ SSO Cause:_____

SSO Start Time:_____SSO End Time:_____

Total Estimated Gallons_____(See tables for flow estimating documents)

Estimated Gallons captured/recovered or returned to sewer system:_____

Method of Estimation (circle one and attach flow estimating worksheet and calculations):

Tables/Charts/Pictures Flow Calculation Area/Volume

Check Box for Spill Category:

☐ Category 1

- Discharge of **any** volume of sewer that reaches a storm drain or drainage channel
- If > 1000 gallons:
  - Notification within 2 hours to: OES at (800) 852-7550
  - Notification by:_____Time:_____
  - Control #:_____
- If < 1000 gallons:
  - Draft Report to CIWQS within 3 business days.
    By:_____Date_____
  - Cert. Report to CIWQS within 15 calendar days.
    By:_____Date:_____
- Greater than 50,000 gallons requires a Technical Report

☐ Category 2

- Discharge of sewer of 1000 gallons or greater that **do not** reach a storm drain
- Draft Report to CIWQS within 3 business days. By:_____Date_____
- Cert. Report to CIWQS within 15 calendar days. By:_____Date:_____

☐ Category 3

- All other discharges of sewer
- CIWQS Report within 30 days. By:_____Date:_____

☐ Private Lateral Sewage Discharge (PLSD)

- Discharge of sewage resulting from a blockage from a private lateral
- Address:_____
- Responsible Party Contact Info: Name_____Contact #_____

Figure E-3.1: Example Field SSO Form

Flow Calculation Worksheet

Date:_____/_____/_____ Manhole #_____ Pipe Diameter_____

Site Location_____

Calculate Velocity (V)

Drop a small ball or some dye in at the upstream manhole. Measure the time it takes to arrive at the downstream manhole.
Example: It took 4.5 minutes to travel 528 feet.
Convert 4.5 minutes into seconds (4.5 X 60=270 seconds)
528 feet/270 seconds= 1.95 fps

V

Velocity (V)_____fps

D^2

Calculate D^2:

(Inside Diameter:_____inches/12)^2=_____ft.

Calculate level to diameter ratio (L/D)

L/D Level_____inches/inside dia._____inches = L/D_____

Identify flow unit multiplier (K) in table (on back) using L/D:

K

L/D – K = _____ (GPM)

Profiled Flow= (V x D2 x K):

V_____ xD2_____ x K_____ = _____(GPM)

Area/Volume Estimation Worksheet

Date:_____/_____/_____ Manhole #_____ Pipe Diameter_____

Site Location_____

Surface: □Asphalt □Concrete □Dirt □Landscape □Gutter

Draw an outline of spill footprint and attach photos.

Calculations:

Figure E-3.2: Example Field SSO Form-Flow Calculating Worksheets

Figure E-3.3: SSO Flow Estimator – Manhole Cover in Place

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	

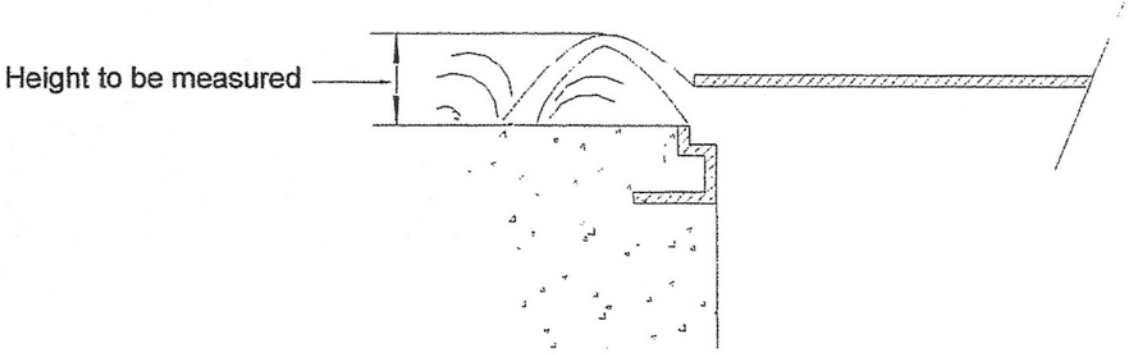
Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

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.

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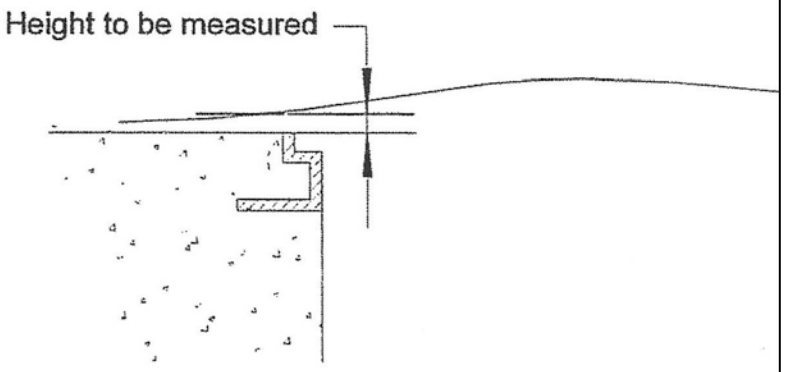
The formula used to develop Table B for estimating SSO's out of maintenance holes without covers is based on discharge over curved weir -- bell mouth spillways for 2" to 12" diameter pipes. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

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.

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.

Figure E-3.4: Example Overflow Estimation- Manhole With Cover Removed

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	Unrestrained
6 1/2	7.0	M/H cover will
6 5/8	7.0	start to lift
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.

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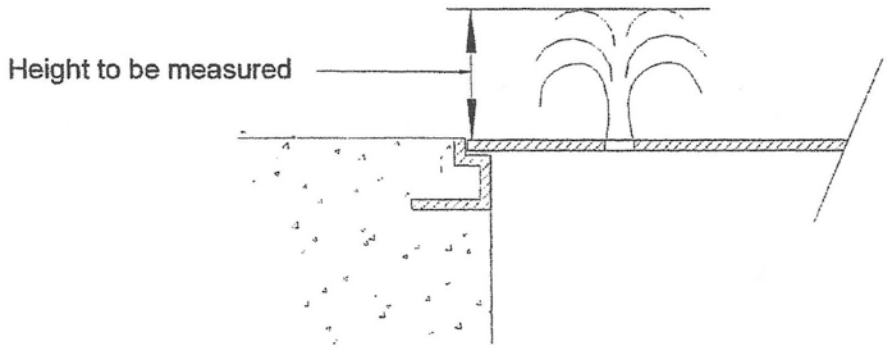
The formula used to develop Table C is Q=CcVA, where Q is equal to the quantity of the flow in gallons per minute, Cc is equal to the coefficient of contraction (.63), V is equal to the velocity of the overflow, and A is equal to the area of the pick hole.[2] If all units are in feet, the quantity will 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.

Figure E-3.5: Example Overflow Estimation- From Pick Holes

Appendix E-4: SSO Flow Estimating Pictures

Appendix E-5: SSORP Training Checklist

☐ SSORP Goals
- ☐ When an SSO occurs, prompt action is taken to identify, contain, remove the cause and then to promptly report the event to appropriate regulatory authorities and that the public is adequately and timely notified; and,
- ☐ All SSO and system deficiencies and remedial actions taken are well documented; and,
- ☐ The City's sewer system operators, employees, contractors, responders, or other agents are adequately trained and equipped to address an SSO event

☐ Corrective Action & Site Control
- ☐ Prevention of Public Access
- ☐ Prevention of Wastewater Entry to Storm Drain System
- ☐ Stop Overflow

☐ Containment & Recovery

☐ Cleanup

☐ Receiving Water Sampling

☐ Notification & Reporting

☐ Post-Cleanup Activities

Trainer:_____ Date: _____

Attendees:

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

Appendix E-6: Sewage Spill Warning Signs

Figure E-6.1: Sewage Spill Warning Sign

Appendix F: Policies for Managing Available Sewer Capacity

INTRODUCTION

The City of Mt. Shasta provides sewer service to a population of approximately 3,500. The sewer system is managed by the Mt. Shasta Public Works Department, Utilities Maintenance Division. The total annual budget for system operation, maintenance and administration is approximately $120,000. The collection system consists of approximately 30 miles of gravity sewer line.

The purpose of this document is to describe the policies and practices followed by the City in tracking and determining the remaining available capacity within its sanitary sewer system. Tracking (monitoring) is necessary because of the significant lead time required for accomplishing such improvements as sewer rehabilitation or facility expansion without overloading sewage facilities. The objective is to enable the City to:

- Become more aware of how the sewer facilities are performing in order to take steps necessary to avoid (prevent) a SSO or nuisance problem due to operations.

- Provide all local decision makers with information needed to make informed decisions about the capacity of the wastewater system and its ability to accommodate new or increased connections.

- Make commitments for new or upsized connections with confidence that there is adequate capacity to serve additional demand as well as existing customers.

- Determine when the issuance of additional building/connection permits must be curtailed until sewer facility improvements are completed so that facilities are maintained in compliance with discharge permit criteria.

- Have more lead time to plan and arrange financing for needed sewer system upgrades.

LEGAL MANDATE TO MANAGE WASTEWATER ALLOCATIONS

Local sewering entities have a crucial role in providing safe and adequate wastewater systems and high quality operational performance. These local entities face many challenges to maintain and operate their systems in compliance with Federal and State laws and regulations. Cost continues to increase to keep these increasingly complex facilities operating properly, and the ability to raise rates to keep pace with costs is also regulated and challenging.

Perhaps most challenging is the need to manage the allocation of flow for new or expanding customer discharges in conformance with local land use, water and sewage plans, and the NPDES and local permit limits. The agency responsible for issuing building/development approvals and permits must ensure adequate capacity is or will be

reasonably available without impairing water quality or threatening public health and safety.

ACTIONS TO BE TAKEN TO MANAGE AVAILABLE SEWER CAPACITY

Sewering entities are expected to manage their wastewater collection system capacities responsibly and to ensure the system functions within design capacity. In order to accomplish these expectations, it is necessary to implement a planning and engineering tool used to monitor the relationship between sewer facility capacity and population/economic growth while complying with statutes and regulations relative to discharges. The Sewer System Capacity Evaluation accomplishes this.

The Sewer System Capacity Evaluation contains information on sewage system capacity including demand created by both existing and proposed development. To ensure accuracy of such report will require the City to: monitor flows, track existing capacity utilization, evaluate the need for additional capacity, identify deficiencies, take proactive corrective steps to maintain system capacity, to undertake orderly and timely funding and planning of projects to maintain or improve the system capacity, and to periodically update the Sewer System Capacity Evaluation. These actions for a successful monitoring and reporting tool will be accomplished through the application of the following policies:

1. Develop a perpetual 5-year capital improvement program that:

    a. Includes pro-active sanitary sewer system improvements to correct and prevent system failures and overflows,

    b. Provides sewer capacity in a timely manner to accommodate system expansion, redevelopment and rehabilitation,

    c. Incorporates monitoring, inspecting and demand findings compiled during routine operation and management of the system,

    d. Maintains level of service standards that are desired and acceptable to the community and regulators,

    e. Addresses current and reasonably anticipated regulatory requirements.

2. Actively manage the sanitary sewer conveyance system through a data collection and analysis process that determines wastewater usage by development type, projects future demand, and identifies I/I deficiencies.

3. Issue development approvals based upon available capacity of the sanitary sewer system. Implement work process and data management systems improvements for sewer service management, operation, and maintenance that comply with WDR.

Appendix G: Summary of Maintenance Productivity

Type	2016	2017	2018	2019	2020
FOG	0	0	0	0	0
Roots	1	2	2	0	2
Debris	3	2	0	1	2
Capacity	0	0	0	0	0
Pipe Failure	0	3	0	0	0

Figure G-1: Annual Sewer Overflows by Type

	2016	2017	2018	2019	2020
Total SSO	4	7	2	1	4

Figure G-2: Historical Sewer Overflows

Type	2016	2017	2018	2019	2020
Backup	10	15	18	14	20
Overflow	5	3	2	1	4
Plugged	13	6	9	6	9
Other	0	5	7	5	9

Figure G-3: Sewer Related Calls By Type

Type	2016	2017	2018	2019	2020
Category 1	3	6	1	0	2
Category 2	0	0	0	0	0
Category 3	1	1	1	1	2

Figure G-4: SSOs byCategory of SSO

Figure G-5: General Line Cleaning Performance

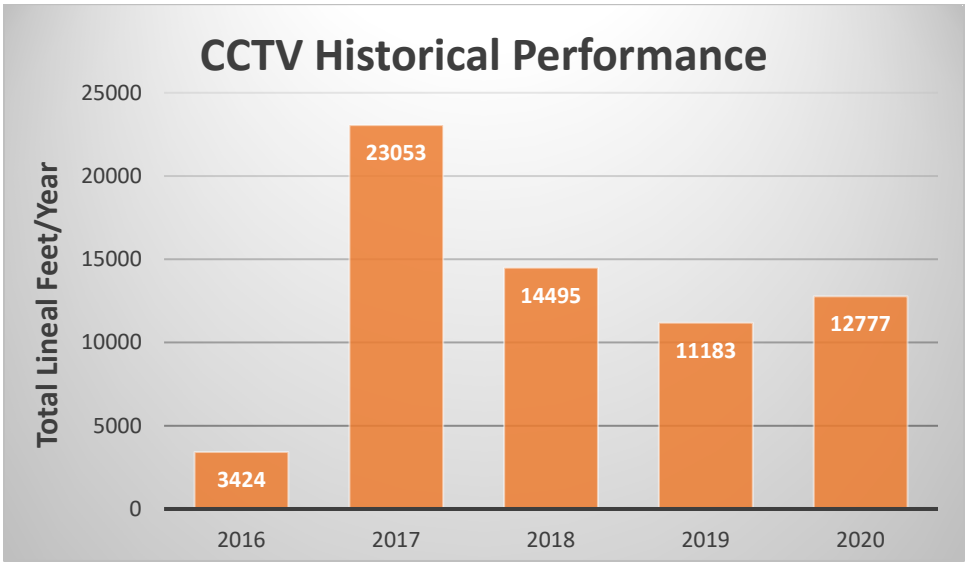


Figure G-6: CCTV Historical Performance

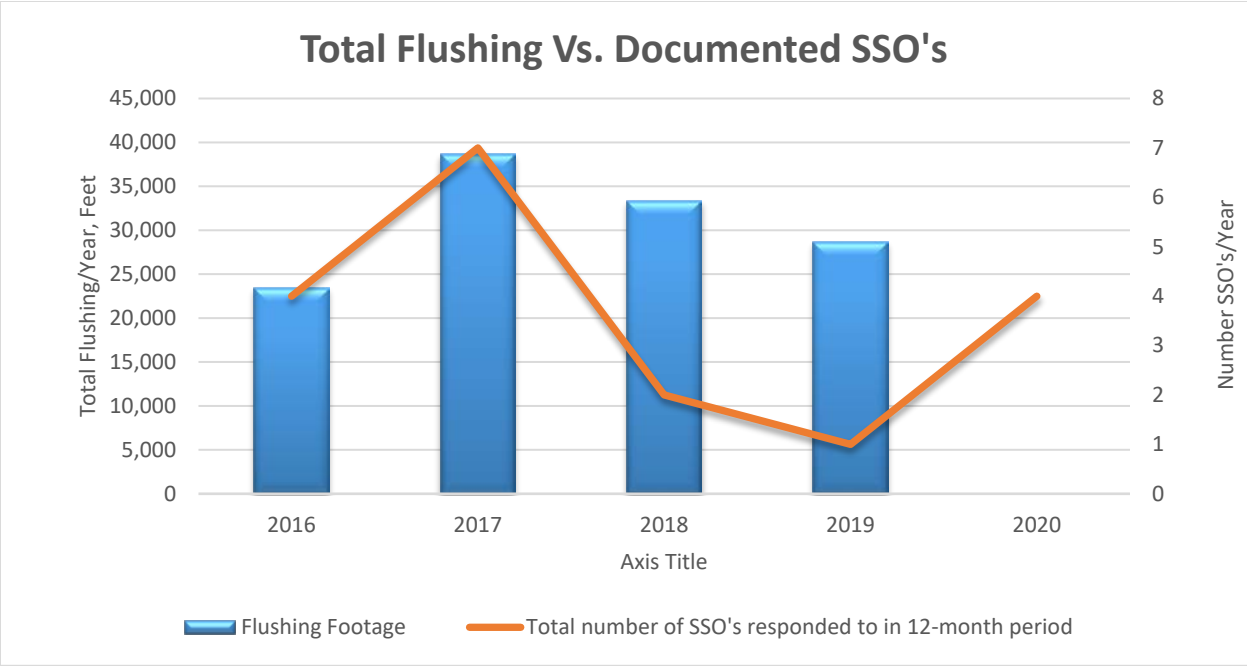


Figure G-7: Comparison of SSOs to Sewer Line Maintenance

Appendix H: Sewer "Hot Spots" List

City of Mt. Shasta Sewer - Hot Spots list

	MH	MH	Location	Footage	Cause	Fequency
1	495	496	Ream at Mini Storage	110	Septic	Quarterly
2	494	495	In Field South End of Berry	654	Septic	Quarterly
3	490	494	South End of Berry	122	Septic	Quarterly
4	487	490	Bottom of Sisson	237	Septic	Quarterly
5	483	487	Brush St	489	Septic	Quarterly
6	483	481	Bottom of High St	377	Septic	Quarterly
7	481	480	Bottom of Water in Parking lot	335	Septic	Quarterly
8	482	CO	Mill and Water	230	Grease	Yearly
9	484	CO	Berry and Forest	204	Septic	Quarterly
10	643	CO	708 Kenneth	148	Sag	Quarterly
11	641	643	Bottom of Kenneth	400	Septic	Quarterly
12	641	642	Bottom of Kenneth	330	Sag	Quarterly
13	640	641	Field st	150	Septic	Quarterly
14	634	640	Field st and Chestnut	441	Septic	Quarterly
15	632	633	E Ivy Across from Motel	470	Sag	Quarterly
16	631	632	E Jessie at Alley	460	Sag	Quarterly
17	712	713	End of Alley at Birch	233	Roots	Quarterly
18	712	711	End of Alley at Birch	64	Septic	Quarterly
19	710	711	411 E Lake	160	Septic	Quarterly
20	312	313	Old Mc Cloud at Washignton	386	Septic	Quarterly
21	311	312	204 Mc Cloud	711	Septic	Quarterly
22	309	311	Old McCloud at SMSB	253	Septic	Quarterly
23	444	445	Orem and S.A. St	100	Septic	Quarterly
24	445	446	Alley Between Wash. and N.C.	155	roots	Quarterly
25	446	447	Orem and N.B. st	140	roots	Quarterly
26	322	326	S.B. st and Sheldon	170	Roots	Quarterly
27	344	345	Gaudenzio and S.B. St	280	Roots	Quarterly
28	345	346	310 Gaudenzio	167	Roots	Quarterly
29	437	EOL	Gaudenzio and S.A st	220	Roots	Quarterly
30	436	437	Gaudenzio and S.A st	30	Roots	Quarterly
31	824	826	Backstop at Sisson Field	336	Roots	Quarterly
32	226	229	1142 SMSB in Sidewalk	317	Grease	Yearly
33	225	226	1172 SMSB in Sidewalk	273	Grease	Yearly
34	222	225	Roelofs at SMSB	203	Grease	Yearly
35	221	222	1190 SMSB	119	Grease	Yearly
36	220	221	At Roseburg Across from Roelofs Ct.	60	Grease	Yearly
37	219	220	Roseburg at end of Oak	275	Grease	Yearly
38	214	219	Roseburg at end of Oak	118	Grease	Yearly
39	616	EOL	E Lake at Alley towards Chesnut	180	Grease	Yearly
40	615	616	E. Castle at Ace Alley	560	Grease	Yearly
41	611	612	W. Castle at Alley at City Hall	350	Grease	Yearly
42						
				11017		

Appendix I: Sewer System Management Plan Audit Reports

1. November 24, 2014 SSMP Gap Analysis and Audit-Causey Consulting
2. January 4, 2021 SSMP SSOERP Plan updated to include Risk Basis Analysis, as required by CRW Lawsuit

Appendix J : Sewer System Management Plan Adoption Documents

RESOLUTION NO. CCR-10-66

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MT. SHASTA APPROVING THE SEWER SYSTEM MANAGEMENT PLAN FOR THE CITY OF MT. SHASTA DATED NOVEMBER 2010

WHEREAS, the State Water Resources Control Board adopted Order No. 2006-0003-DWQ (Order) Statewide General Waste Discharge Requirements for Sanitary Sewer Systems; and

WHEREAS, the Order required the City of Mt. Shasta to develop a Sewer System Management Plan (SSMP) that would comply with the terms of the Order; and

WHEREAS, the City of Mt. Shasta has completed a draft version of the SSMP; and

WHEREAS, at the November 8, 2010 regular City Council Meeting the City of Mt. Shasta solicited comments and feedback from the public, all interested parties, and affected stakeholders with regards to any aspect of the proposed draft SSMP; and

WHEREAS, the City Council has provided comments and revisions have been made to the November 2010 SSMP; and

WHEREAS, Council recognizes that the current November 2010 version of the SSMP and associated appendixes and attachments, as adopted on this day, will be periodically updated and modified as necessary; and

WHEREAS, the City Council of the City of Mt. Shasta will recertify the plan in five years.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Mt. Shasta hereby approves and adopts the November 2010 Sewer System Management Plan (SSMP) in its entirety and authorizes the Public Works Director to certify the Plan with the State Water Resources Control Board.

The foregoing resolution was passed and adopted this 22nd day of November, 2010 by the following vote:

AYES: Council Members Boss, Porterfield, Stearns and Mayor Murray

NOES: None

ABSENT: None

ABSTAIN: None

DATED: November 22, 2010

ATTEST:

Sandra K. Studer, Deputy City Clerk

CITY OF MT. SHASTA:

Michael Murray, Mayor

RESOLUTION NO. CCR-17-01

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MT. SHASTA, APPROVING THE UPDATED SEWER SYSTEM MANAGEMENT PLAN FOR THE CITY OF MT. SHASTA

WHEREAS, the State Water Resources Control Board adopted Order No. 2006-0003-DWQ Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems; and

WHEREAS, In 2008 and again in 2013, the SWRCB updated the requirements of the Monitoring and Reporting Program and adopted Order No. WQ 2013-0058-EXEC; and

WHEREAS, the WDR required the City of Mt. Shasta to develop a Sewer System Management Plan (SSMP) that would comply with the terms of the Order; and

WHEREAS, the City of Mt. Shasta adopted the SSMP document in 2010 by Resolution No. CCR-10-66; and

WHEREAS, a Gap Analysis and Audit was completed in 2014 to evaluate the SSMP's compliance with the revised WDR; and

WHEREAS, the SSMP has been updated as a result of the Gap Analysis and Audit; and

WHEREAS, at the January 9th regular City Council Meeting the City of Mt. Shasta solicited comments and feedback from the public, all interested parties, and affected stakeholders with regards to any aspect of the proposed draft revised SSMP; and

WHEREAS, Council recognizes that the current version of the SSMP and associated appendices and attachments, as adopted on this day, will be periodically updated and modified as necessary; and

WHEREAS, Council will recertify the plan in five years.

NOW, THEREFORE, BE IT RESOLVED That the City Council of the City of Mt. Shasta hereby approves and readopts the City of Mt. Shasta Sewer System Management Plan.

The foregoing resolution was passed and adopted this 9th day of January, 2016 by the following vote:

ROLL CALL VOTE

AYES: 5 Engstrom, Stearns, Stackpoth, Wagner, Morter

NOES: 0

ABSENT: 0

ABSTAIN: 0

DATED: January 9, 2017

ATTEST:

Kathryn M. Wilson

Kathryn Wilson, Deputy City Clerk

CITY OF MT. SHASTA:

Kathy Morter

Kathy Morter, Mayor

City Council Regular Meeting January 9, 2016

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Appendix K: Sewer System Management Plan Change Log

SSMP Change Log

Date	SSMP Element/Section	Description of Changes/Revisions Made	Change Authorized By
12/16	Front End	Added new List of Tables, Figures, revised Appendices listing; added additional acronyms	City Council
12/16	Introduction	Revised for MRP revisions; added WDID number; expanded collection system facilities inventory information; Service Area Map; added reference section throughout the SSMP.	City Council
12/16	1.1	Reworded City goals	City Council
12/16	2.1	Expanded and edited the narrative	City Council
12/16	2.2	Expanded the organization chart top include all City classifications and service contractors used in the collection system; added several classification descriptions for positions added to organization chart	City Council
12/16	2.3.3	Added table of responsibilities for SSMP Elements	City Council
12/16	2.3.4	Updated the Reporting Procedures Flow Chart	City Council
12/16	3.1	Added reference to the Uniform Plumbing Code	City Council
12/16	Table 5	Added new Table of Legal Authorities	City Council
12/16	4.1	Expanded the narrative on maintenance	City Council
12/16	Tables 6-8	Added historical performance for hot spots, normal cleaning and CCTV.	City Council
12/16	4.2	Revised the 5-year Capital Program based on current City CIP through 2018 and future.	City Council
12/16	4.4	Added new employee and annual refresher training on SSMP, OERP and WQMP and field exercises.	City Council
12/16	Chapter 6	Expanded narratives; revised Appendix E to be consistent with Chapter 6 and revised appendix listing.	City Council
12/16	7.1	Eliminated reference to CalFog as no longer available.	City Council
12/16	8.1	Added references to General Plan Land Use Element and 2010 Sewer System Capacity Evaluation Study.	City Council
12/16	9.2	Added SSO Rate per 100 miles as a tracked data.	City Council
12/16	9.4.1	Removed reference to SSO map.	City Council
12/16	9.4.2	Added many new performance graphs for SSO frequency and results in Appendix G.	City Council
12/16	10.1	Revised audit schedule to con form to original adoption date for the SSMP and requirement for placement of audits into new Appendix I.	City Council

12/16	10.2	Revised SSMP certification requirements per new MRP changes; required placement of all Council adoption documents into new Appendix J.	City Council
12/16	10.3	Revised for new MRP requirements; update Council adoption schedule from original SSMP adoption date; ad requirement for new SSMP Change Log.	City Council
12/16	11.1	Added regular communications with City Council and extraterritorial service areas.	City Council
12/16	11.2	Added requirement for placement of any Council adopted SSMP on the City website.	City Council
12/16	Table A-1	Updated contact listing	City Council
12/16	Appendix C	Revised for current and future years.	City Council
12/16	E-1	Revised SSO Report Form	City Council
12/16	E-2	Updated contact information	City Council
12/16	Appendix G Fig G-1 to G-8	Prepare and added new maintenance productivity graphs and charts	City Council
12/16	Appendices I to K	Newly added appendices	City Council
1/2021	Fig. 3	Updated contact info	PWD
1/2021	Table 6	Updated hot spot list	PWD
1/2021	Table 8	Updated CCTV footages	PWD
1/2021	Table A-2	Updated outside agency contact list	PWD
1/2021	Table B-1/Fig. B-1	Updated manhole count and smz map	PWD
1/2021	Table C-1	Updated CIP list of projects	PWD
1/2021	App. E	Updated SSERP to include “risk basis” analysis	PWD
1/2021	Fig. E-2.1	Updated contact info	PWD
1/2021	Appendix G	Updated figures	PWD
1/2021	Appendix H	Updated Hot Spot list	PWD