Sewer System Management Plan
For
City of Roseville

WDID SSO10935

Revised 20 FEB 22

CITY OF ROSEVILLE CALIFORNIA
Environmental Utilities

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SSMP CHANGE LOG

Monitoring and Reporting Program (MRP) Order No. WQ 2013-0058-EXEC E.(3):
All records documenting changes to the SSMP since its last certification shall be attached to the SSMP. These records should show when a subsection(s) was changed or updated and who authorized the change.

City of Roseville-SSMP Change Log			
Date	Section	Comments	Approval
12/11/13	A complete update of SSMP, both intranet version, and city website version		Chris Bracco
1/9/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	Council resolution for SSMP adoption	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\Roseville SSMP Audit FY13 - FINAL.pdf	Final SSMP Audit- Waterworks Engineering	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	SSMP Resolution 2014	Chris Bracco
3/24/15	Appendix B\APPENDIX B-1_Contact List.doc	Updated Rich Plecker as Utility Director	Chris Bracco
3/24/15	Appendix B\APPENDIX B-2_Contact List.doc	Updated Dave Rawe as claims administrator	Chris Bracco
4/30/15	Master_Roseville_SSMP.doc	Added Goal re: design and construction standards	Chris Bracco
9/8/16	Appendix B\APPENDIX B-1_Contact List.doc	Updated City Council/PUC members per 14/15 Audit Rec.	Chris Bracco
10/31/16	Appendix B\APPENDIX B-2_Contact List.doc	Updated RWQCB Contact Information	Chris Bracco
10/31/16	Appendix C\Appendix C-7 Contract and Operations Agreement SASD_SRCSD.pdf	Contract with SASD & Sac Regional	Chris Bracco
10/31/16	Appendix G\Appendix G-4 FOG Inspection Form.pdf	Addition of FOG Inspection Form	Chris Bracco
9/22/16	Appendix I\Appendix I-4 - Key Performance Indicators Benchmarking.xlsx	Addition of Key Performance Indicator Sheet	Chris Bracco
10/31/16	Appendix J\Appendix J-1_Rsvl WWC SSMP Audit Procedure.doc	SSMP Audit procedures	Chris Bracco

9/25/19	Appendix B\APPENDIX B-1_Contact List.doc	Updated council and PUC	Chris Bracco
9/25/19	Appendix B\APPENDIX B-2_Contact List.doc	Update contact information	Chris Bracco
9/25/19	Appendix C\APPENDIX C-3 Sanitary Sewer Design.doc	Update Link	Chris Bracco
9/25/19	Appendix D\Appendix D-5 CWEA Certification.docx		Chris Bracco
9/25/19	Appendix F\Appendix F-1\4_SSO Field Report.pdf	Updated SSO overflow charts in field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\2_SSO Emergency Response Procedures.pdf	Added updated field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\1_SSO Flowchart.pdf		Chris Bracco
9/25/19	Appendix I\APPENDIX I-4 Key Performance Indicators Benchmarking.pdf		Chris Bracco
9/25/19	SSMP Audit_ Update Data\SSMP Audit Update FY 15_18\Roseville_SSMP_Audit_FY15-18 - FINAL-stamped.pdf		Chris Bracco
10/14/19	Completed Update of SSMP both intranet and City Website version		Chris Bracco
5/13/20	Appendix B\APPENDIX B-1_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix B\APPENDIX B-2_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix F\Appendix F-1\3_SSO Notification Guide .doc	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix I\Appendix I-4 Key Performance Indicators Benchmarking.pdf	KPI sheet with updated numbers	Chris Bracco
2/05/22	Update and re-write the entire SSMP	SSMP was re-formatted and subsequent changes to operation and maintenance have been included.	Daniel Pruden

City Council Resolution

RESOLUTION NO. 14-05

RECERTIFICATION OF THE CITY OF ROSEVILLE
SEWER SYSTEM MANAGEMENT PLAN

WHEREAS, in May 2006 the State Water Resources Control Board issued a state-wide General Waste Discharge Requirement (WDR) Order requiring all public entitles that own or operate sanitary sewer systems greater than one mile in length that collect or convey wastewater to prepare a certified Sewer System Management Plan (SSMP); and

WHEREAS, on January 21, 2009, the City Council certified the City's SSMP; and

WHEREAS, provisions in the WDR require recertification of the SSMP every five years or if significant changes to the SSMP have been made; and

WHEREAS, the City Council has reviewed the revised Sewer System Management Plan;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that it hereby recertifies the City of Roseville Sewer System Management Plan.

PASSED AND ADOPTED by the Council of the City of Roseville this 8th day of January, 2014, by the following vote on roll call:

AYES COUNCILMEMBERS: Roccucci, Herman, Garcia, Rohan

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: Gore

Susan Rohan
MAYOR

ATTEST:

Sonia Orozco
City Clerk

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LIST OF ACRONYMS

BMP	Best Management Practice
CASA	California Association of Sanitation Agencies
CCTV	Closed-Circuit Television
CFR	Code of Federal Regulations
CDFW	California Department of Fish and Wildlife
CIP	Capital Improvement Plan or Capital Improvement Project
City	City of Roseville
CIWQS	California Integrated Water Quality System
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
CBT	Computer Based Training
CWEA	California Water Environment Association
CVCWA	Central Valley Clean Water Association
EDU	Equivalent Dwelling Unit
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
EUD	Environmental Utilities Department
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
GIS	Geographical Information System
GPS	Global Positioning System
GRD	Grease Removal Device
GWDR	General Waste Discharge Requirements or Waste Discharge Requirements (WDR)
I/I	Inflow / Infiltration
ICS	Incident Command System
IERP	Integrated Emergency Response Plan
IWD	Industrial Waste Division
LRO	Legally Responsible Official
MGD	million gallons per day
MRP	Monitoring and Reporting Program
MSDS	Material Safety Data Sheets
NASSCO	National Association of Sewer System Companies
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
Order	SWRCB Order No. 2006-0003-DWQ adopted May 2, 2006
PACP	Pipeline Assessment and Certification Program
PdM	Predictive Maintenance
PM	Preventative Maintenance
PMP	Preventative Maintenance Program
POTWs	Publicly Owned Treatment Works
R&R	Rehabilitation and Replacement
RWQCB	Regional Water Quality Control Board
SPW	Safety Plus Web
SIUs	Significant Industrial Users

SOP	Standard Operating Procedure
SPWA	South Placer Wastewater Authority
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
USA	Underground Service Alert
WDP	Waste Discharge Permit
WW	Wastewater
WWC	Wastewater Collection
WWTP	Wastewater Treatment Plant

LIST OF TERMS

Authorized Representative – The person designated, for a municipality, state, federal, or other public agency, as either a principal executive officer or ranking elected official or a duly authorized representative of that person.

Blockage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. The blockage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or complete pipeline collapse. If not caught in time, the blockage may cause an overflow.

California Association of Sanitation Agencies (CASA) - CASA is a non-profit, statewide trade association representing public agencies that provide wastewater collection, treatment, disposal, and/or water reclamation services to about 90 percent of the sewered population in California.
Website: http://www.casaweb.org/

California Water Environment Association (CWEA) – CWEA is an association of 8,000-plus professionals in the wastewater industry. CWEA is committed to keeping California's water clean. CWEA trains and certifies wastewater professionals, disseminates technical information, and promotes sound policies to benefit society by protecting and enhancing the water environment. CWEA offers services at the state level and locally through 17 local geographical sections. In addition, through their on-line bookstore, CWEA offers technical references for sewer system operation and maintenance.
Website: http://www.cwea.org/ .

Central Valley Clean Water Association (CVCWA) – CVCWA is an association comprised of over 50 wastewater treatment and collection system agencies. CVCWA's mission is to effectively represent the interests of public wastewater agencies in the Central Valley in regulatory matters and to support the exchange of information so members can best meet their business challenges.
Website: http://www.cvcwa.org/ .

Central Valley Regional Water Quality Control Board – Also known as Regional Water Board or RWQCB. The mission of this state regulatory agency is to: preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. Website: http://www.waterboards.ca.gov/centralvalley/ .

Dynamic Model – Computer hydraulic model simulation which solves the complete dynamic flow routing equations (St. Venant's equations) for accurate simulation of backwater, looped connections, surcharging, and pressure flow in a collection system.

Enrollee – The legal public entity that owns a sanitary sewer system, as defined by the GWDR, which has submitted a complete and approved application for coverage under the GWDR. This is also called a sewer system agency or wastewater collection system agency.

Fats, Oils and Grease (FOG) - Fats, oils, and grease that are discharged into the sanitary sewer collection system by Food Service Establishments (FSE), homes, apartments, and other sources. FOG is a major cause of blockages leading to increased maintenance and sometimes SSOs.

FOG Control Program – To be implemented at the Enrollee's discretion. May include public education program; plan and schedule for the disposal of FOG; legal authority to prohibit FOG related discharges; requirement to install grease removal devices; authority to inspect grease producing facilities; identification of sanitary sewer system sections subject to FOG blockages and the establishment of a cleaning schedule for each section; development and implementation of source control measures for all sources of FOG.

Geographical Information System (GIS) – A database linked with mapping, which includes various layers of information used by government officials. Examples of information found on a GIS can include a sewer map; sewer features such as pipe location, diameter, material, condition, last date cleaned or repaired. The GIS also typically contains base information such as streets and parcels.

Governing Board – This is the governing board of the sewer entity developing the SSMP. Examples would be the Board of Directors, the City Council, or the County Board of Supervisors.

GWDR – General Waste Discharge Requirements – A GWDR is an authorization to discharge waste with certain conditions, which can be issued on an individual basis or to a group of dischargers. The Statewide General WDR for Sanitary Sewer Systems was adopted by the SWCRB and will be implemented by the Regional Water Boards and SWRCB.

Infiltration – The seepage of groundwater into a sewer system, including service connections. Seepage frequently occurs through defective or cracked pipes, pipe joints, connections or manhole walls and joints.

Inflow – Water discharged into a sewer system and service connections from such sources as, but not limited to, roof leaders, cellars, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, around manhole covers or through holes in the covers, cross connections from storm and combined sewer system, catch basins, storm waters, surface runoff, street wash waters or drainage. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak into the sewer itself.

Lateral – The portion of sewer that connects a home or business with the main line in the street. Sometimes sewer system agencies own or maintain a portion of the lateral.

Upper Lateral: Portion of lateral from building to property line (or easement line), usually privately owned and maintained.

Lower Lateral: Portion of lateral from property line (or easement line) to sewer mainline in the street or easement. This portion of the lateral is sometimes privately owned and maintained and sometimes publicly owned and maintained.

Monitoring and Reporting Program - The Monitoring and Reporting Program established in the WDR that establishes monitoring, record keeping, reporting and public notification requirements for the GWDR.

Overflow Emergency Response Plan – Identifies measures to protect public health and the environment. A plan must include the following: notification procedure, appropriate response plan, regulatory notification procedures, employee training plan, procedures to address emergency operations, a program that ensures all reasonable steps are taken to contain and prevent discharges.

Private Lateral: That portion of the Lateral that is owned and maintained by the private property owner that it serves. Based on an individual agency's ordinance, this may just be the Upper Lateral or can include the Lower Lateral.

Preventative Maintenance (PM) – Regularly scheduled servicing of machinery, infrastructure or other equipment using appropriate tools, tests, and lubricants. This type of maintenance can prolong the useful life of equipment, infrastructure, and machinery and increase its efficiency by detecting and correcting problems before they cause a breakdown of the equipment, or failure of the infrastructure.

R-Value – Is the amount of rainfall that reaches the collection system via infiltration and inflow. This value is typically expressed as a percentage of total rainfall volume that reaches the collection system.

Regional Water Board – Is a short name for any of the nine regional boards including the San Francisco Bay Area Regional Water Quality Control Board and the Central Valley Regional Water Quality Control Board.

Rehabilitation and Replacement Plan (also referred to as a Capital Improvement Plan) – Identifies and prioritizes system deficiencies and implements short-term and long-term rehabilitation actions to address each deficiency.

Sanitary Sewer Overflow (SSO) – The Statewide GWDR defines an SSO as any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system, including overflows or releases that reach waters of the United States, overflows or releases that *do not* reach water of the United States, and backups into buildings and/or private property caused by conditions within the publicly owned portion of the sewer system.

Sanitary Sewer Overflow Categories

Category 1 – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to surface water
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin.

Category 2 – Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3- All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition

Private Lateral Sewage Discharges – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the CIWQS Online SSO Database.

Sanitary Sewer Systems – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant head works used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities are part of the sanitary sewer system and discharges into these temporary storage facilities are not to be considered SSOs.

Satellite Collection System – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

Sewer System Management Plan-SSMP – A series of written site-specific programs that address how a collection system owner/operator conducts their daily business as is outlined in the WDR. Each SSMP is unique for an individual discharger. The plan includes provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Also, must contain a spill response plan. Certification is offered by technically qualified and experienced persons and provides a useful cost-effective means for ensuring that SSMPs are developed and implemented appropriately.

Stakeholder - A person or organization that has a vested interest in the development and outcome of the SWRCB Order No. 2006-0003 Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

State Water Resources Control Board: Also called the State Board. This is the State agency that developed and passed the GWDR for collection systems and the agency that maintains the SSO reporting web site.

Static Model – A computer hydraulic model that uses the Manning's Equation to determine hydraulic capacity of the gravity pipelines and either the Manning's or Hazen-Williams Equations to determine the hydraulic capacity of the pressure pipeline system. The capacity is compared to the peak hydraulic flow in the system to determine potential deficiencies. The static model assumes the peak hydraulic flow occurs at all locations within the collection system at the same time.

Stoppage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. A stoppage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or full collapse of the pipeline. If not caught in time, a stoppage may cause an overflow. This is also called a blockage.

System Evaluation and Capacity Assurance Plan – A required component of an agency's SSMP and is an important part of any agency's overall Capital Improvement Plan that provides 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.

Wastewater Collection System: See Sanitary Sewer System.

EXECUTIVE SUMMARY

The City of Roseville (City) is a Council-Manager form of government in which responsibilities are vested in the City Council and City Manager. In this form of government, the City Council's role is that of a legislative policy-making body which determines not only local laws that regulate community life, but also determines public policy and gives direction to the City Manager. The City Manager administers the affairs of the city government in a business-like prudent manner.

The City's Public Utilities Commission studies and advises the City Council on all utility issues related to city-owned utilities (electric, water, sewer, and solid waste).

The City's Wastewater Utility is one of five utilities operated in the Environmental Utilities Department (EUD). The Wastewater Utility is responsible for operation and maintenance of all wastewater facilities owned by the City including the Publicly Owned Treatment Works (POTWs), the wastewater collection system, the water quality lab and the recycled water utility.

The City's Wastewater Collection (WWC) Division is a division of Environmental Utilities Department (EUD). The WWC Division is responsible for management, operation, maintenance, and capacity assurance of the City's sanitary sewer collection system, including inspecting, cleaning, repairing, and monitoring the gravity sewer lines, force mains, and lift station.

The City initiated a Sewer System Management Plan (SSMP) assessment in 2005 to evaluate how well the Wastewater Collection (WWC) Division would comply with the anticipated State Water Resources Control Board (SWRCB) Statewide General Waste Discharge Requirements (WDR) order No. 2006-0003 for Sanitary Sewer Systems. That SSMP assessment indicated that the City was positioned fairly well to comply with the SWRCB's SSMP requirements.
In March of 2007, the WWC division along with consultant assistance, began writing the SSMP and reviewing all remaining policies, procedures, and programs to comply with the SWRCB's WDR. The plan described how the City would address each element of the SSMP contained in the SWRCB's WDR to eliminate preventable Sanitary Sewer Overflows (SSOs). The WWC staff completed the development of the SSMP, which the City Council approved on 21 JAN 09.

The city continues to monitor, measure, and modify the existing SSMP as changes and program improvements are identified. The city has developed a Key Performance Indicator worksheet, which is used to monitor and measure the effectiveness of the various elements of the SSMP. Roseville's SSMP has been audited five times since being certified by the SWRCB.

SERVICE AREA AND RELEVANT STATISTICS

Figure-1 illustrates the boundary of Roseville's geographical service area. Statistics provided in this SSMP are from August 2021 and are gathered from the City's Economic Development website, https://www.roseville.ca.us/government/departments/economic_development/demographics.

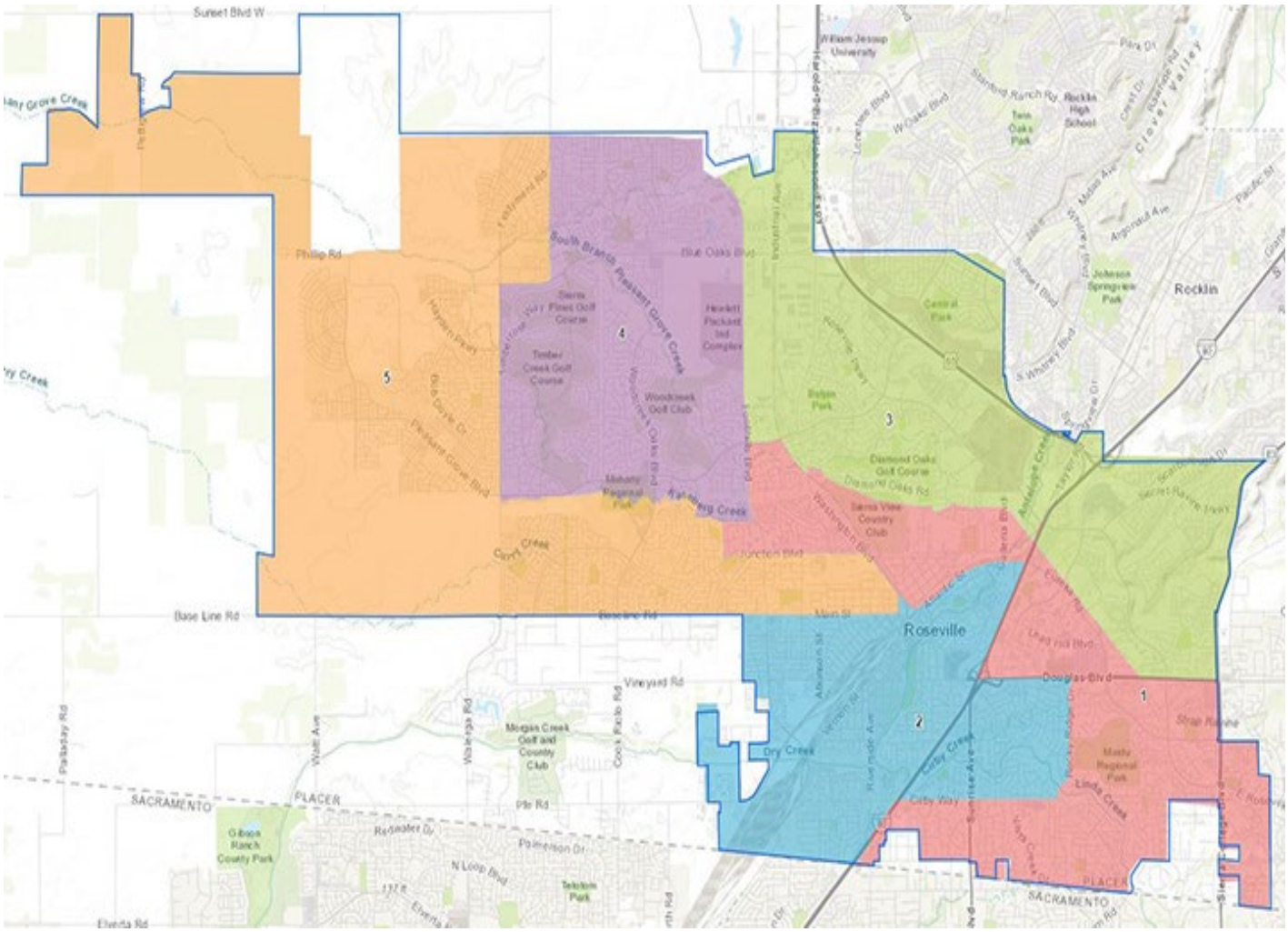

Figure 1 Roseville Service Area

The City service area is approximately 44.20 square miles, has approximately 48,734 residential, 1,932 commercial and 600 industrial sewer connections and 2 Regional Wastewater Treatment Plants.

The WWC Division provides service to approximately 146,875 sewer customers. The wastewater collection and conveyance system consist of 871 miles sewer pipe ranging from 4"to 84" in diameter, 12,538 manholes, and 17 neighborhood lift stations that convey an average dry weather flow of approximately 18.5 MGD. Sanitary sewerage is conveyed from the City's East boundaries

to the Dry Creek Wastewater Treatment Plant and from its North and West boundaries to the Pleasant Grove Wastewater treatment plant.

WWC Division statistical records indicate that prior to the creation of this SSMP it has had a moderate Sanitary Sewer Overflow (SSO) rate in comparison to other communities in California of similar size and complexity. In the years prior to adoption of the SSMP, the WWC Division had experienced approximately 168 SSOs releasing approximately 15,203 gallons of sewage from the sanitary sewer collection and conveyance system. Since adoption of the SSMP in 2007, the city has experienced a combined 431 SSOs releasing approximately 15,435 gallons of sewage from the sanitary sewer system. Of that total, 11,219 gallons or 82%, have been captured and returned to the sanitary sewer system. The majority of these SSO have occurred from blockages in service laterals. Since the adoption of the SSMP, the average volume spilled per SSO has been less than 36 gallons/event. All SSOs have been mitigated in a timely manner and have not negatively affected public health or the environment.

The purpose of this SSMP is to describe the activities the WWC Division uses to manage the City's' wastewater collection system to further eliminate preventable SSOs, minimize those SSOs that do occur and protect both public health and the environment.

0 SSMP Overview

The City of Roseville is required to comply with the State Water Resources Control Board Order No. 2006-0003-DWQ adopted May 2, 2006, entitled Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

The purpose of the Order is to prevent Sanitary Sewer Overflows (SSO) or sewer spills by establishing a statewide Monitoring and Reporting Program (MRP) and requiring each local or regional sewer agency to create and implement their own Sewer System Management Plan (SSMP) based on the mandatory requirements of the Order. The MRP requires each local or regional sewer agency to appoint a legally responsible official and establish a monitoring and reporting organization to monitor and report all SSOs in accordance with the requirements of the MRP and to have the LRO certify the SSO report using the California Integrated Water Quality System (CIWQS) website in the timeframe required by the Order.

The City of Roseville developed a Sewer System Management Plan specific to the wastewater collection system operated and maintained by wastewater collection personnel in the City of Roseville. This SSMP documents the activities the city will utilize to manage, operate, and maintain its wastewater collection system. The city shall take all steps feasible to eliminate SSOs, but in the event an SSO does occur, will take all steps necessary to contain and mitigate the negative impacts of an SSO.

The city's SSMP is organized comparable to paragraph D. 13 of the general order. The SSMP includes eleven elements, and each of these elements forms a corresponding chapter in the SSMP. The eleven elements are listed below.

1. Goals- *The goal is to prevent and/or reduce SSOs and mitigate the effect of any SSOs that do occur. The goal requires a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer collection system.*
2. Organization- *The SSMP must identify the Legally Responsible Official or authorized representative as described in the Order. It must list and identify the organization positions responsible for operating and maintaining the sanitary sewer collection system including names and telephone numbers for management, administrative and maintenance positions, and the chain of communication for reporting SSOs*
3. Legal Authority- *Each enrollee must demonstrate through ordinances, agreements, or other legally binding procedures that they possess the legal authority to meet the requirements of the general order.*
4. Operation and Maintenance Program- *The SSMP must include those items that are appropriate and applicable to the enrollee's system, including an up to date mapping system, ability to describe the O&M activities performed on the system, have a plan to develop a rehabilitation and replacement plan, and to provide training on a regular basis for collection system personnel.*

5. Design and Performance Provisions- *The SSMP must demonstrate that the sewer agency has and appropriately uses design and construction standards and specifications for the installation of new sewer systems, rehabilitation and repair of existing sewer systems and has procedures and standards for inspecting and testing the installation of new sewers, pumps, etc. and for rehabilitation and repair projects.*
6. 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.*
7. Fog Control Program- *Each Enrollee shall evaluate its sewer system and determine if a Fats, Oils and Grease control program is needed. The FOG control plan, if needed, must meet all the requirements of the Order.*
8. System Evaluation and Capacity Assurance Plan- *The Enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design for storm or wet weather events*
9. Monitoring, Measurement and Program Modifications- *The enrollee shall maintain relevant information to establish and prioritize SSMP activities, monitor the implementation and measure the effectiveness of the SSMP activities, and provide assessment of the performance and/or modification of the SSMP activities as required by the Order.*
10. SSMP Program Audits - *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*
11. 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 program shall also include a communication plan with tributary and satellite systems to the enrollee's sanitary sewer system*

1 Goals

D.13. (i) 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 Roseville's Goals

The City's WWC Division has established eight goals to guide the implementation, and success of Roseville's SSMP. These goals are designed to facilitate and target the management, operation, and maintenance of the sanitary sewer collection system in a manner that will sustain the infrastructure, protect public health and the environment, and achieve compliance with State Water Resources Control Board's General Waste Discharge Requirement (GWDR) for Sanitary Sewer Systems. These goals include:

1. Properly manage, operate, and maintain all portions of the City's wastewater collection system.
2. Provide adequate capacity to convey peak wastewater flows.
3. No repeat overflows from the same location.
4. Maintain a rate of SSO/100 miles of pipe, that is lower than the state and regional average.
5. Maintain a recovery rate for SSO/100 miles of pipe, that is higher than the state and regional average.
6. Mitigate the impacts that are associated with all SSOs that may occur.
7. Comply with all applicable regulatory notification and reporting requirements.
8. Maintain high design and construction standards for new and rehabilitated infrastructure.

1.2 Element Objectives

The WWC Division provides a safe, effective, and efficient wastewater collection and conveyance system through preventative maintenance, engineering, and customer services. The Division also provides twenty-four-hour emergency services to respond to system failures, minimize sanitary sewer overflows, comply with regulatory mandates, and ensure public health and safety.

The City allocates adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures.

In addition, the City has stringent design and construction standards for new or rehabilitated infrastructure, with an inspection program that ensures city standards are adhered to.

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SSMP ELEMENT 2

2 Organization

D.13. (ii) The SSMP must identify the Legally Responsible Official or authorized representative as described in the Order. It must list and identify the organization positions responsible for operating and maintaining the sanitary sewer collection system including names and telephone numbers for management, administrative and maintenance positions, and the chain of communication for reporting SSOs.

2.1 Legally Responsible Official (LRO)

The City of Roseville has identified the Wastewater Collection Superintendent, and the Wastewater Process Engineer as the LRO or authorized representatives for the wastewater collection division. Historically, the Wastewater Collection Superintendent is responsible for the certification of SSO reports involving Roseville's wastewater collection system.

2.2 SSMP Responsibility Chart

The City of Roseville is a Council-Manager form of government in which responsibilities are vested in the City Council and City Manager. In this form of government, the City Council's role is that of a legislative policy-making body, which determines local laws that regulate community life and determines public policy and gives direction to the City Manager. The City Manager administers the affairs of the city government in a business-like and prudent manner. In addition, the position descriptions for SSMP responsibility are included in the following chart:

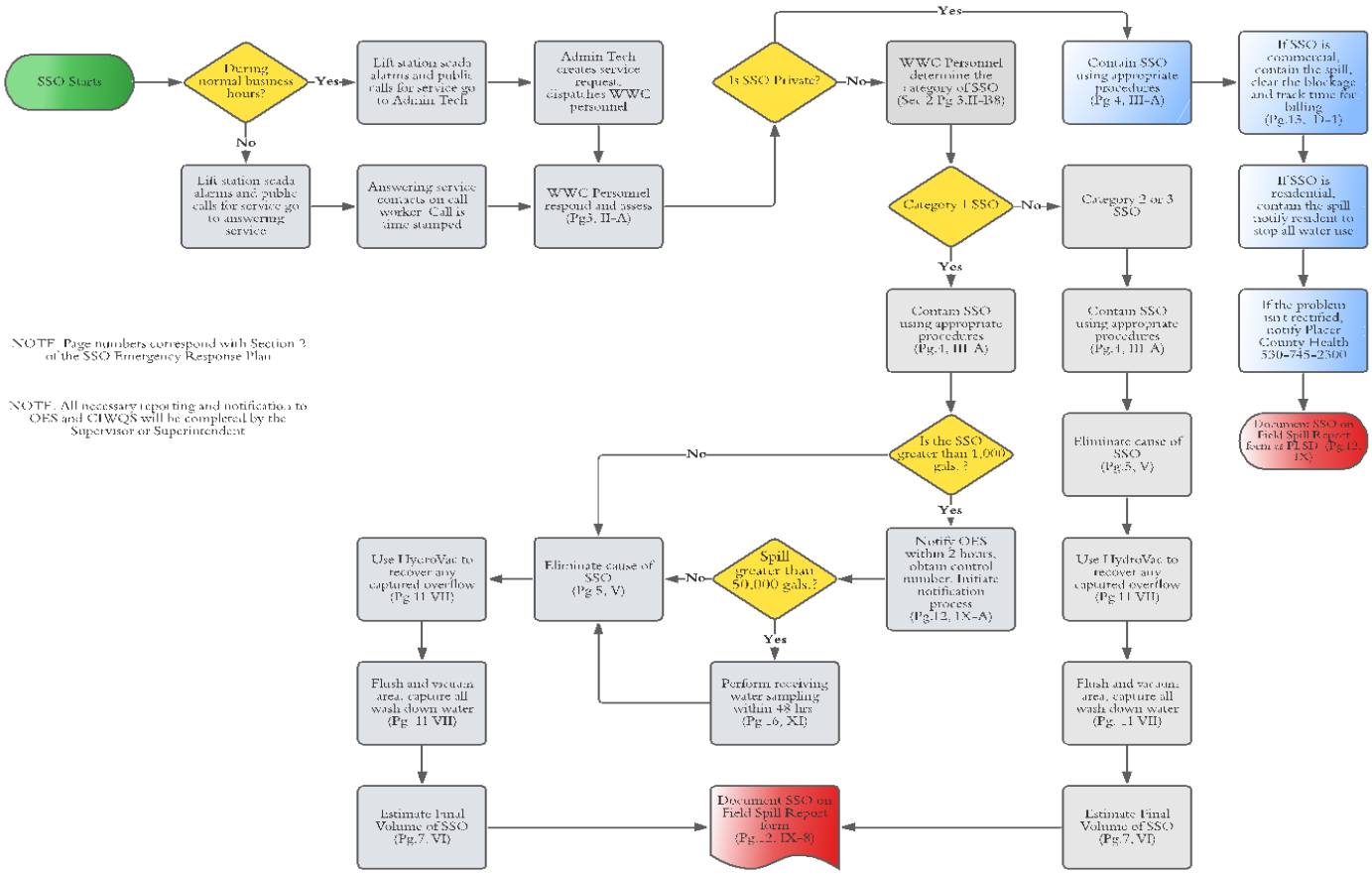
SSMP Element		Responsible Position
I.	Goals	Responsibility for the divisions goals resides with the WWC Superintendent. However, goals for the wastewater collection division are developed through collaboration between the WWC Superintendent, the WWC Supervisor and field crews.
II.	Organization	The Environmental Utilities (EU) Director recommends any updates to the City Manager for organizational structure within the Wastewater Collection Division
III.	Legal Authority	The City Manager, City Attorney and Roseville City Council ultimately uphold city ordinances within the Roseville Municipal Code.
IV.	Operations & Maintenance	The Wastewater Collection Superintendent has overall responsibility for the operation and maintenance of the collection system. The Asst. EU Director oversees, recommends,

		and administers the O&M budget. EU Engineering provides support through the GIS Division for up-to-date mapping of the system
V.	Design and Construction Standards	The Development Services Division and EU Engineering collaborate to identify and maintain the design and construction standards. Development Services Division manages the inspection of all new development, CIP and infill projects to ensure all standards are met. All projects receive EU Director approval related to Utility work.
VI.	Overflow Emergency Response Plan	The Wastewater Collection Superintendent and Supervisors maintain the SSO emergency response plan. The plan is implemented as an annual training, where revisions to the plan may be made based on field crew feedback.
VII.	FOG Control Program	The Wastewater Collection Superintendent and Supervisor identify hot spots from Food Service Establishments (FSE) and maintain an effective cleaning PM schedule to eliminate SSOs. The FOG Control Program including permitting of FSEs, inspection of facilities and monitoring pump out records is administered by the Wastewater Collection Superintendent.
VIII.	System Evaluation and Capacity Assurance Plan	EU Engineering Principal Engineer administers the SECAP program to ensure the hydraulic model is up to date, and to assure capacity for current and future development
IX.	Monitoring, Measurement and Program Modifications	The Wastewater Collection Superintendent with assistance from the Wastewater Collection Supervisors monitors the implementation and assesses the success of the overall SSMP elements. The superintendent tracks Key Performance Indicators and adjusts programs as needed.
X.	SSMP Audits	The Asst EU Director is responsible for SSMP program audits, with assistance from the Wastewater Collection Superintendent and Principal Engineer for Wastewater Division
XI.	Communication Plan	The EU Public Information Officer communicates with the EU Director, City Manager, City Council, nearby agencies, and the public on the City's SSMP monitoring and modifications

2.3 Chain of Communication Reporting Chart

Office hours for the WWC Division are Monday through Friday from 0630 to 1600, except for holidays. Either the Administration Technician or service call worker receives all service calls during regular business hours. If received in the office, a service request is created with the caller information, the problem, and contact information. This information is transferred to the service call worker, in which they respond, access the problem, and provide a solution. An answering service, contracted by WWC Division, receives all after-hours calls to gather information and dispatch to the on-call service worker via an assigned mobile phone. The on-call service worker is available 24 hours per day and is furnished with a service van and equipment to facilitate a timely response. A response time goal is 20 minutes during business hours and 40 minutes for after-hour service calls. The van is equipped with containment devices to manage lower lateral blockages and spills, and to prevent SSOs from entering a storm drain inlet or channel. Should the situation require additional resources, the on-call worker would contact crew members from the call-out sheet for assistance. ***Table 2-1***, included in the division's SSOERP, summarizes the chain of communication when receiving calls for service.

Table 2-1 SSO Chain of Communication



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SSMP ELEMENT 3

3 Legal Authority

D.13(iii) 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(1) prevent illicit discharges into its sanitary sewer system, (2)require that all sewers and connections are properly designed and constructed, (3)to ensure proper access to portions of the lateral owned by the agency,(4) to limit the discharge of FOG, and(5) to enforce any violation of its sewer ordinances.

The Roseville Municipal Code (RMC), https://qcode.us/codes/roseville/. provides specific legal authority for the WWC division to operate and manage the wastewater collection system. The City's current legal authority is established through existing codes, regulations, ordinances, and permitting procedures that allows the City to require and enforce various measures for ensuring the proper and efficient operation, management, and maintenance of the City's wastewater collection system. Table 3-1 indicates the code section for the legal authority required.

Table 3-1 RMC Codes for Legal Authority

Legal Authority	RMC Number	Description
Ability to prevent illicit discharges into the wastewater system	14.20.040	Definition of illicit discharge
	14.26.010	Purpose and policy of industrial wastewater
Ability to require all sewers and connections are properly designed and constructed	14.12.040	Building and sewer connection requirements
	14.14.030	FOG discharge permit required
	14.14.070	Prohibitions for FSE construction
Ensure proper access to portions of the lateral owned by the city	Charter Article X Sec 10.01	General powers respecting utilities
	14.14.290	Right of entry
Ability to limit the discharge of FOG	14.12.050	Use of public sewers
	14.14.010	Purpose
	14.14.030	FOG discharge permit required
	14.14.040	Fog discharge limitation
	14.14.070	Prohibitions
	14.14.120	Interceptor maintenance requirements
Ability to enforce all sewer ordinances	14.12.060	Sewer use- enforcement authority
	14.14.330	FOG – determination of non-compliance
	14.14.350	FOG- Permit suspension or revocation
	14.14.360	FOG- penalties and violations

3.1 Industrial Pretreatment Program

In addition to the RMC, the City of Roseville Industrial Waste Division (IWD) oversees and administers the Pretreatment Program Enforcement Response Plan (ERP). This plan outlines operational procedures intended to ensure that the Significant Industrial Users (SIUs), and the small Commercial/Industrial dischargers to the sanitary sewer system are appropriately permitted and monitored. To assure compliance by these dischargers, the IWD implements enforcement procedures specified by the U.S. Environmental Protection Agency (EPA) in accordance with 40CFR 403.5 (f) (5). The ERP specifies criteria by which IWD personnel determine the enforcement action most appropriate to the nature of the violation. The Pretreatment Enforcement Response Plan is attached to the SSMP as Appendix 3-1.

3.2 Design and Construction Standards

The City of Roseville's design and construction standards regulate and guide the design and preparation of plans and construction of the City of Roseville's sanitary sewer systems and related public improvements, and set guidelines for all private works, which involve related improvements. Design and construction standards are located at

https://www.roseville.ca.us/cms/One.aspx?portalId+7964922&pageId=8754129

3.3 Sewer Access Authority

The RMC section 10.01 states the City shall possess all powers granted to cities by state law to construct, condemn, purchase, acquire, add to, maintain, and operate, either within or outside its corporate limits, including, but not by way of limitation, public utilities for supplying water, light, heat, power, gas, transportation, sewage and refuse collections, treatment and disposal services, or any of them, to the municipality and the inhabitants thereof; Each city-owned utility shall be financially self-sufficient, and shall fully compensate the city general fund for all goods, services, real property and rights to use or operate on or in city-owned real property.

3.4 Fats Oils and Grease

The City of Roseville limits the discharge of Fats, Oils and Grease from Food Service Establishments through Section 14.14 of the RMC. Section 14.14 was adopted to facilitate the maximum beneficial use of the city's sewer services and facilities while preventing blockages of the sewer lines resulting from discharges of fats, oils, and grease (FOG) into the public sewer, and to specify appropriate FOG discharge requirements for food service establishments (FSEs). Section 14.14 establishes conditions for permitting, inspection, pumping and recordkeeping, and right of entry for inspection.

3.5 Regulation of Sewer Use-Enforcement

Sections 14.12.060 and 14.14.360 (FOG Ordinance) of the RMC prescribes the enforcement actions available to the city when violations of the code are discovered. Violation of the RMC may be charged as either an infraction or misdemeanor upon discretion of the City Attorney.

3.6 Inter-Agency and Satellite Agreements

The City of Roseville operates two Regional Wastewater Treatment Facilities where sewer from satellite systems flow into City wastewater mains. As such, the Environmental Utilities Department maintains the following agreements to address regional and satellite systems.

3.6.1 Joint Exercise of Powers Agreement South Placer Wastewater Authority

The purpose for this agreement is to provide for planning, acquisition, financing, ownership, construction, and operation of Regional Wastewater Facilities. The participants in the SPWA create a public entity which is separate from the City, the District, and the County. The SPWA services the areas the City of Roseville, Placer County and South Placer Municipal Utility District. The agreement is attached to the SSMP as Appendix 3-2.

3.6.2 South Placer Wastewater Facilities Operation and Use Agreement

The agreement known as the Joint Powers Agreement, supersedes all other previous agreements. The new agreement indicates the City of Roseville shall operate and maintain Regional Wastewater Facilities for the mutual benefit of and provide wastewater treatment services to the areas depicted on Exhibit A, areas which are within the jurisdictional boundaries of the City, District and County, so long as the District and County pay the City their proportionate shares. This agreement is attached to the SSMP as Appendix 3-3

3.6.3 Contract and Operating Agreement between SRCSD and SASD

This agreement between the City of Roseville, Sacramento Area Sewer District and Sacramento Regional County Sanitation District defines points where flows enter and exit each other's area of service and points of demarcation for City and County assets. In addition the agreement is to meet regulatory requirements and provide a basis for SASD, SRCSD and the City of Roseville to work together to provide service to users, establish operation and maintenance responsibilities and outline rates and fees. This agreement is attached to the SSMP as Appendix 3-4

3.7 Appendix 3- Legal Authority Documents

3-1 Pretreatment Program Enforcement Response Plan – TOC

3-2 Joint Exercise of Powers Agreement for the South Placer Wastewater Authority

3-3 Agreement Regarding the Operation and Use of the South Placer Regional WW Facilities

3-4 Wastewater Service Agreement by Contract & Operating Agreement Between SASD, SRCSD and City of Roseville.

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4 Operation and Maintenance

D.13.(iv) The SSMP must include those elements listed below that are appropriate and applicable to the enrollee's system. This chapter describes the city's activities regarding mapping systems of the sanitary sewer system, operation and preventative maintenance activities, rehabilitation and replacement program, training program, and equipment and critical part inventories.

The Operation and Maintenance (O&M) Program is essential to fulfill the city's duty to serve the residents and businesses of the City of Roseville. It is also the most significant part of the city's effort to eliminate the occurrence of SSOs and stay compliant with the general order.
The city's O&M program is comprised of these elements:

1. Collection System Mapping
2. Preventive Maintenance
3. Rehabilitation and Replacement
4. Staff Training and Certification
5. Equipment And Replacement Parts Inventories, Including Critical Replacement Parts

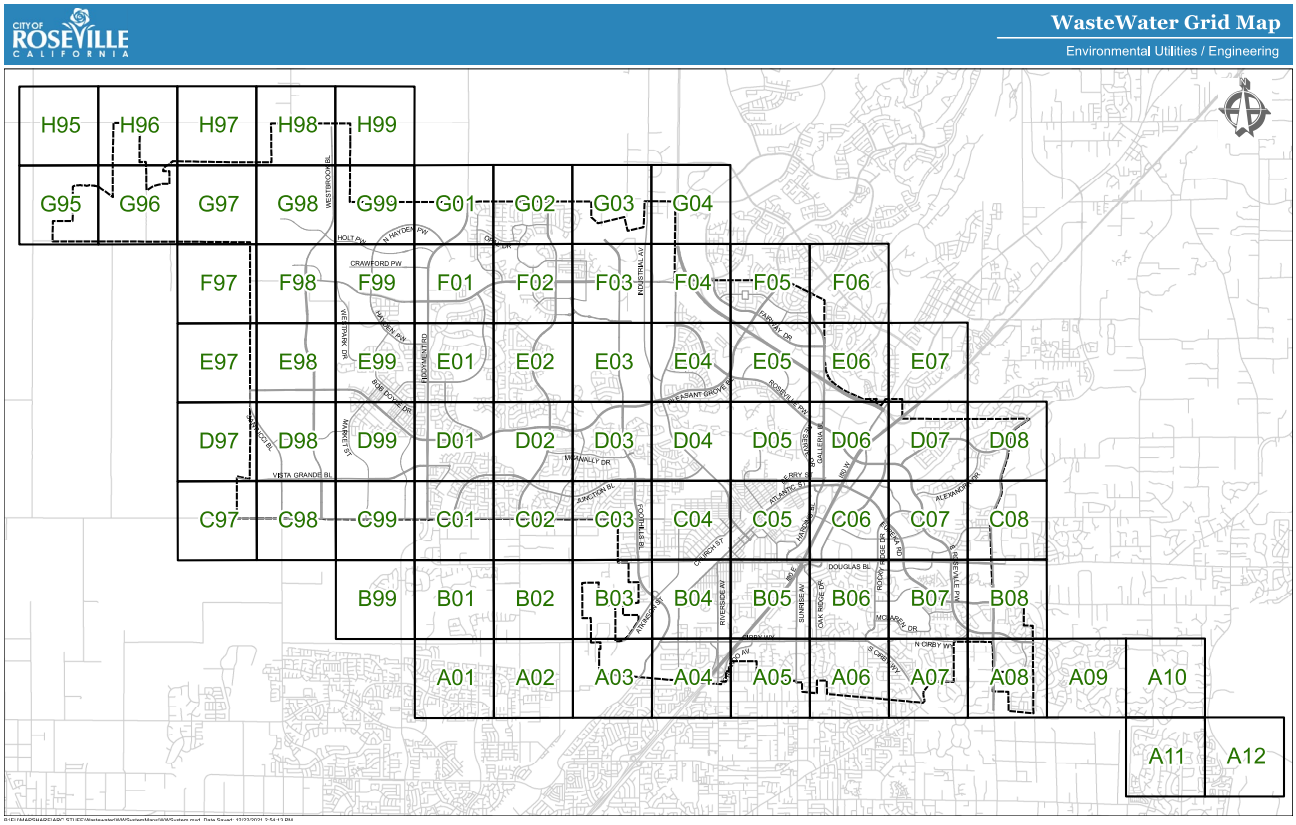
4.1 Collection System Maps and Information

The WWC Division maintains an up-to-date electronic map of the wastewater collection system as required by Section D.13(iv)(a) of the Order. The City uses ESRI GIS software to map all utility-related data. The GIS map platform, referred to as Roseville GeoViewer, shows all gravity main segments with the direction of flow, manhole information, pumping facilities, pressure pipes, and valves. In addition, the GeoViewer allows users to turn on/off different layers and base maps to display the information they need. Additional map layers available in GeoViewer include:

- Hot Spot Locations
- CIPP Lined Mainline Segments
- Food Service Establishments and Grease Removal Devices
- Waterways
- Roadways
- City Boundaries
- Stormwater System

Table 4-1 shows the GIS map system, and how it incorporates each of the sewer shed basins within the City of Roseville's jurisdictional boundaries.

Table 4-1 Wastewater Grid Map



4.1.1 Map Update Policy

This policy aims to provide uniformity in identifying, verifying, documenting, and tracking the changes to the sewer mapping system. In addition, this document will describe the process in which the mapping system shall be updated.

A significant effort is placed upon maintaining a very complete, accurate, and up-to-date wastewater collection map which is an essential component for the proper operation and maintenance of a wastewater collection system. Maps are updated as new sub-divisions are accepted or when field crews repair, rehabilitate or replace components of the system that require updating the maps. A mapping update policy has been developed to address procedures that ensure mapping updates or revisions are correct and completed in GIS.

CCTV crews identify discrepancies between existing system maps and real time field data. The operator shall note the discrepancies and submit changes to the WWC Supervisor when differences are identified.

Construction and Maintenance crews identify any new infrastructure added to the system. Information required for CMMS Map Change will be directed to the WWC Supervisor. The information required for Mains, Laterals, and SMH's are:

- Mains - Grid map area, the distance between SMH's and pipe size, pipe material
- Laterals –Grid map area, C/O location, length, depth, pipe size, material, and depth.

- SMH – Grid map area, depth, barrel diameter, access cover size and material, number of and pipe size of inlets and outlets, barrel lining/coating, drops Y/N.

The Supervisor will create a work order in Maximo listing the Classification as "Map Change." Then select "Log" and "Add Row" to add a description of the asset that needs to be added/changed. In the Log section of the work order, the Supervisor will list all the details gathered from the field and attach a map if required. Do not change the status of the work order in Maximo CMMS.

The GIS group automatically receives all map change requests. Once all map changes are updated, the Supervisor will receive an email informing them of the completed work order, at which time the GIS group closes the work order.

4.2 Operation and Maintenance

The WWC Division's O&M program focuses on eliminating sewer backups and overflows, increasing the lifespan of the infrastructure, and bringing uninterrupted service to the residents of Roseville. WWC division provides service to 146,875 customers. Within the 43.05 square miles of Roseville, the City inspects and maintains 17 lift stations, approximately 578 miles of sewer mains ranging from 6- to 84- inch diameter, and 293 miles of lower laterals. **Table 4-2** below represents a few performance indicators the WWC division tracks and measures their performance against.

Table 4-2. Operation and Maintenance Activities

	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Total Miles of Pipe Cleaned	283.12	226.1	235.9	296.14	
Total Miles of Pipe CCTV Inspected	100.24	149.64	117.11	66.45	
Number of SSOs Caused by Hot Spots	0	0	0	0	
Miles of Pipe Rehabilitated or Replaced	1.49	.5	.54	3.4	
Total Number of SSOs Main and Lateral	25	31	32	51	

4.2.1 Preventative Maintenance Program

The WWC Division of the Environmental Utilities Department is responsible for the City's sewer system and implements preventative and corrective maintenance approaches to operate and maintain the system efficiently. The division's PM program involves cleaning sewers on a recurring schedule, including regular CCTV inspection to determine the efficiency of those PM activities. The GIS system divides the city into grids, enabling targeted PM scheduling for an individual grid based on history, CCTV inspection, and infrastructure's age. The WWC division schedules cleaning as often as every three months or up to ten years, with the age and condition of the pipe being key factors. The scheduled maintenance projects that are identified in Maximo are attached as ***Appendix 4-1.***

Corrective maintenance projects and work orders are a concerted effort utilizing the PM and CCTV inspection programs. Information gathered during routine cleaning, repair work and inspection, generates the development of repair and replacement work orders. The following paragraphs describe the City's current operation and maintenance procedures for maintaining the wastewater collection system.

4.2.1.1 PM Cleaning Program

The WWC Division is equipped with three combination sewer cleaners to keep the sewer system operating efficiently and minimize line stoppages and calls for service. Sewer cleaning using hydraulic or mechanical methods performed on a routine basis helps remove accumulated debris in the pipe such as sand, silt, grease, roots, and rocks. Scheduled maintenance projects have been developed for each map grid based on historical data and field crew input.

4.2.1.2 Hot Spot Cleaning

In addition to scheduled maintenance, the WWC division aggressively cleans identified problem areas, known as hot spots. This list of hot spots has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainline segments tend to have more frequent backups due to sluggish flows, poor grade, and sags, The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews. Currently, the WWC division has 276 segments identified as Hot Spots.

4.2.1.3 Electroscan Inspection

To identify and quantify locations of I&I entering the sewer system, the WWC division invested in Electroscan Technology, adding the equipment to a newer CCTV inspection truck. Using Electroscan, a probe is pulled through the mainline, and electricity is measured and used to identify any defect where the pipe may leak. This enables crews to pinpoint CCTV inspection of the pipe section before scheduling repair work to correct the deficiency. Electroscan has also proved valuable as a QA/QC tool for accepting Cured-In Place-Pipe rehabilitation projects. The city performed pre-post Electroscan inspections on sewer mains rehabilitated with CIPP technology. This pilot study proved the effectiveness of the Electroscan Technology in locating defects CCTV inspection didn't identify.

4.2.1.4 CCTV Inspection Program

The WWC Division operates three CCTV vans to inspect the wastewater collection system. CCTV operators utilize NASSCO's PACP coding format when inspecting sewer mains and laterals. All observations are coded and captured in the Granite Net Software system and are archived in a database for access. CCTV inspection crews also perform continual condition assessment inspections on existing infrastructure. For example, CCTV crews inspect mainline segments and lower laterals, looking for deficiencies to minimize problems within the collection system. In addition, sewer inspections identify unwanted connections and sources of I&I into the wastewater system. Finally, CCTV crews inspect new subdivisions or commercial projects before being accepted into the city and the time of warranty acceptance. These inspections are crucial to receiving infrastructure installed to City design and construction standards. **Table 4-3** includes a sample CCTV report from GraniteNet inspection software.

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Table 4-3 CCTV Inspection Report

GraniteNet
ASSET INSPECTION / DECISION SUPPORT SOFTWARE

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Main Inspections and Map

Mainline ID:	City:	Address:	Project name:
SND-C05-389/SMH-C05-163	**ROSEVILLE**	**JEFFERSON ST.**	**Maintenance**
Upstream node:	Downstream node:	Start date/time:	End date/time:
SND-C05-389	**SMH-C05-163**	**9/22/2020 7:34 AM**	**9/22/2020 7:55 AM**
Pipe shape:	Pipe material:	Pipe height:	Pipe width:
Circular	**Clay**	**6.0 in.**	
Asset length:	Surveyed distance:	Reason:	Work order no.:
60.4 ft.	**72.9 ft.**	**Problem**	**1072619**
Operator:	Weather:	Status:	
E05488	**Dry**	**Completed**	
Comments:			

Observations

Distance	Dir.	Length	From/To	Code	Modifier/Severity	Rating
0.0 ft.	U	18.0 ft.	/	Sag	Medium	10
4.1 ft.	U		11 / 1	Broken	Soil Visible - Large	75
4.1 ft.	U		/	Vermin	Cockroach	
19.9 ft.	U		12 /	Broken	Hole	5
26.5 ft.	U		12 / 5	Root-in-Joint	Light	5
40.0 ft.	U		11 /	Lateral	Capped	
46.6 ft.	U		6 / 12	Joint Offset	Small	5
47.1 ft.	U	25.8 ft.	/	Sag	Light	5
50.8 ft.	U		7 / 1	Joint Offset	Small	5
58.1 ft.	U		12 /	Lateral Connection Problem	Connection Protruding	25
66.9 ft.	U		11 / 1	Crack	Multiple - Wider	15
68.6 ft.	U		2 /	Lateral	Capped	0
70.6 ft.	U		11 /	Lateral	Capped	0
72.8 ft.	U		12 /	Cleanout		5
72.9 ft.	U		/	End of Pipe		5

4.2.1.5 Root Control Program

The WWC Division has an effective chemical root control program, using Vaporooter products to limit or eliminate root growth in the City-owned portion of the lower lateral. In addition, the WWC division has two qualified applicators licenses (QAL) that allow the division to chemically treat laterals for a more effective root control program rather than contracting out for this service. This program has dramatically reduced the division's exposure to back injuries resulting from loading and unloading a gas-powered eel from the truck each time. It also lessens the element of crush injuries and trip and fall hazards from eel rods across the ground. In addition, chemical root control has successfully reduced the maintenance time per lateral, which is evident in the reduction of lower lateral backups and overflows.

4.2.1.6 Lift Station Inspection and Maintenance

The city currently has 17 neighborhood lift stations throughout its service area. All 17 stations are equipped with a duplex or triplex pumping system, with the lead/lag pump cycled based on pumping hours. Power outages happen very infrequently. However, all new lift stations and four of the currently active seventeen lift stations are equipped with a 4-hour emergency overflow storage basin. WWC crews inspect the stations monthly, cycle pumps through a pull-down sequence, test floats for operation, and record the condition and any deficiencies at the station. In addition, all Lift Stations are equipped with a SCADA system, which the WWTP operators monitor 24 hours per day. Besides inspections, City crews perform wet-well cleaning and de-ragging of pumps every six months to eliminate pump failures and potential odor complaints.

4.2.2 Corrective Maintenance Program

WWC construction crews perform all repair work to the existing infrastructure. Work orders and projects are developed from information found during maintenance activities, inspections based on calls for service and condition assessment inspection findings. The Corrective Maintenance programs are defined below.

4.2.3 Infrastructure Repair

The WWC Division performs routine, emergency, and complex repairs, and replacements to its existing infrastructure. This work includes sewer main installation and repair, sewer manhole installation, and lateral repair and replacements. As a result, city crews have undertaken large projects, installing new mainline segments that have eliminated hot spots, replaced aging infrastructure, and upsized mains to provide additional system capacity. In addition, the WWC Construction crew has performed contractor caliber work at the City's Regional Wastewater Treatment Plant at significant cost savings for the city.

4.2.3.1 Infill Projects

Depending on their schedule and workload, the WWC division construction crew holds the first choice for any proposed connection to existing infrastructure. If city crews are busy, contractors will be allowed to perform the work under the direction of a city inspector. However, if city crews complete the work, the contractor will schedule the work through the WWC Supervisor. City crews will complete the work on a time and material basis for the contractor.

4.2.3.2 CIPP Lateral Lining

The vast majority of the city's SSOs have occurred in the lower lateral, caused by breaks in the VCP and root intrusion. As a result, the city invested in the trenchless technology Cured in Place Pipe (CIPP), purchasing an LMK lateral lining trailer. Lateral lining through an existing cleanout makes it possible to repair and reinstate the pipe integrity without disturbing landscape, sidewalks, roadways and with minimal disruption of service to the resident. CIPP essentially creates a pipe within a pipe and eliminates further root intrusion and sewer overflows. During condition assessment, lower laterals are CCTV inspected, and work orders are created for those identified as viable for CIPP lining. These work orders are then prioritized based on history and the number of calls for service.

4.2.3.3 Cleanout Installation Program

The WWC Division invests many resources in preventing backups that potentially become SSOs. Since the City owns the lower portion of the lateral, access to the lateral through a cleanout is imperative in assessing its condition. The WWC division has identified the homes and businesses throughout the city with no cleanouts and created projects to install one at every service location. One installed, the lower lateral is inspected and if necessary, additional work orders for maintenance or repair are created. Currently, the city installs over 100 cleanouts per year on this project.

4.3 Rehabilitation and Replacement

The City began its condition assessment of the collection system in 2006. At that time, the collection system was divided into 24 groups based on the age of the sewer main installation. The first group of pipes and manholes were inspected and included in the Rehabilitation and Replacement plan developed shortly after. To date, City crews have completed inspections in 14 of those 24 groups, which has led to the development of numerous CIPP and replacement projects.

Over the past fifteen years, experience has shown that identifying and prioritizing areas and sewer segments for assessment and rehabilitation is complex. It requires the availability of tremendous amounts of data, expertise in applying PACP coding, and professional judgment. During this time, the WWC Division has significantly advanced its knowledge of the collection system and its sewer assessment and rehabilitation approach. The City has recognized that CCTV inspection is the best method for identifying and prioritizing problematic areas. As such, the City continuously inspects pipelines and utilizes NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the City evaluates the risk of failure and assigns a priority ranking to each asset.

Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure

This detail-oriented condition assessment approach enables the division to plan and design CIP projects to rehabilitate sewer infrastructure in a planned and organized manner. The supervisor will review the maintenance history of the main, any SSO history and determine if the segment should be rehabilitated or continue established preventative maintenance. The main will be added an asset group already created in Maximo CMMS if conditions warrant rehabilitation. Based on current condition, history of calls, and field crew observations, the assets
are then prioritized for rehabilitation.
Once the asset group is established, the WWC Superintendent will meet with EU Engineering to review the data and create a CIP project for the upcoming fiscal year, based on priorities and estimated cost. This process ensures the projects will be completed timely, reducing the potential occurrence of an SSO.
In addition to condition assessment, the WWC division schedules with Public Works to inspect wastewater infrastructure ahead of residential and arterial street paving projects. This process enables the WWC division to perform necessary system improvements before completing the overlay project. The City maintains a 5-year list of planned R&R CIP projects

4.4 Training and Certification

One challenge when defining a training program is an influx of new employees. Entry-level employees with no training are a potential safety liability in the wastewater field. Training for new hires is predominantly on-the-job training, with classroom and online training finishing the remaining required training. As soon as available, new employees are scheduled for Confined Space Entry, Traffic Control &Flagging, and Excavation and Trench Shoring training, the division's most significant safety liabilities.

4.4.1 New Hires

On their first day, a new employee will be issued a task booklet, which defines the necessary skills and training for their position. The new hire and Supervisor will go through the book, discuss how the employee will receive training, and receive sign-off on the tasks. The booklet covers all areas involving the wastewater collection system and is an aid in developing qualified, knowledgeable, and capable employees. When the employee becomes proficient in a task, the SR Utility Maintenance Worker or the crew leader signs and dates the book, verifying they have observed the employee satisfactorily complete the task. The training defined in the task booklet is provided through various methods, mainly on-the-job training, and begins the first day on the job. Finally, at the end of the probationary period, new hires are put through a series of activities to demonstrate their proficiency in all skills learned.

4.4.2 Training and Tracking

Safety training constitutes a significant portion of the training received each year and tracking individual completion of training can be insurmountable. The WWC Division utilizes a computer-based software program, Safety Plus Web (SPW), to monitor and track each employee's level of completion. Supervisors can query individual employee training records, or the entire division, to see which courses need completion. In addition, SPW provides Competency-Based Training (CBT), requiring the employee to take and pass a test at the end of the presentation, demonstrating their understanding of the training material. In addition, Standard Operating Procedures (SOPs) have been developed for all equipment and procedures within the division to train new employees and provide a refresher for veteran employees. These SOPs are reviewed annually during a safety meeting and revised should there be a process change. Therefore, SOP development and training is an ongoing process.

The WWC division holds weekly safety meetings where supervisors or subject matter experts present safety topics specific to the wastewater collection field. These meetings are interactive with the crews and presenters and are great learning opportunities. In addition, the training course is added to SPW, so employees can fulfill the training online if they are absent. Finally, as new training requirements are developed, they are implemented into SPW to ensure all employees receive the required training throughout the year. **Table 4-4** lists the required training specific for the WWC division.

Table 4-4 Wastewater Collection Required Training

Training Title	Frequency	Delivery
Asbestos Cement Pipe Training Initial and Refresher	Initial- 1X Refresher-Annual	Outside Trainer
Back Safety	Annual	CBT or Tailgate
Backhoe Operator Certification	Refresher-3 Yrs.	CBT, Classroom, Hands-On
Bloodborne Pathogens Training	Annual	CBT, Classroom
Confined Space Entry-Permit Required	Annual	Outside Trainer CBT, Classroom, Hands-On
Crystalline Silica Standard	Annual	CBT, Classroom
Defensive Driving	Annual	CBT, Classroom
Dry Creek Emergency Action Plan	Annual	CBT, Classroom
Excavation, Trenching and Shoring	Initial Refresher- Annual	Outside Trainer-Initial, CBT, Classroom
Fall Protection Plan Initial and Refresher	Initial-1X Refresher-3 Yrs.	CBT, Classroom
Fire Extinguisher Training	Initial -1X Refresher- Annual	CBT, Classroom
First Aid, AED and CPR Training	Initial Renewal -Annual	Outside Trainer, Classroom

Gas Detector Training	Annual	Outside Trainer, CBT, Classroom
Hazard Communication	Initial Annual Refresher	CBT, Classroom
Hearing Conservation	Annual	CBT, Classroom
Heat Illness Prevention	Annual	CBT, Classroom
Injury and Illness Prevention Plan	Annual	CBT, Classroom
Lock Out Tag Out	Initial	CBT, Classroom
Personal Protective Equipment	Initial	CBT, Classroom
Respiratory Protection Plan	Annual	CBT, Classroom
Sanitary Sewer Overflow Emergency Response (SSOERP)	Annual	CBT, Classroom
Sewer System Management Plan	Annual	CBT, Classroom
Traffic Control and Flagging	1X Refresher- 3 Yrs.	Outside Trainer
Underground Utility Locating	Annual	CBT, Classroom, Outside Trainer
Violence in the Workplace	Annual	CBT, Classroom

4.4.3 Certification

The CWEA Technical Certification Program provides certification in various wastewater disciplines to promote the knowledge and skills of wastewater professionals. The City requires employees to take and pass the Collection System Operator Grade I test to be eligible for promotion to the Journey Level. The test for the required CWEA certification ensures that employees who hold this certification possess the knowledge, skills, and abilities to perform the collection system operator duties skillfully. In addition, to renew the certificate, the employee must complete 12 hours of continuing education training every two years.
Information on CWEA certification can be found at http://www.cwea.org/

4.5 Equipment and Critical Spare Parts Inventory

The WWC division owns an assortment of maintenance equipment and vehicles equipped both for routine maintenance and emergency response. This equipment is maintained by the Vehicle Maintenance Division of Central Services. **Table 4-5** lists the maintenance equipment the WWC division currently owns.

Table 4-5 WWC Equipment List

Qty	Equipment	Purpose
3	Mainline and Lateral CCTV Inspection Vans	Inspection
3	Combination Hydro-Jetters	PM, Emergency Response
1	Chain Flail Cutter 8"-20" diameter cleaning	PM, Emergency Response
1	LMK Lateral Lining Trailer	Repair
2	3 Axle Dump Truck	Emergency Response, Repair
2	Caterpillar 430 Backhoe Loader	Emergency Response, Repair
1	John Deere 210 Skip Loader	PM, Emergency Response, Repair

1	Caterpillar 304 Excavator	Emergency Response, Repair
6	Ford F-550 Crew Truck w/ Service Body; Fully equipped	Emergency Response, PM, Repair
1	6-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
1	4-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
165′	6-inch suction hose, cam lock fittings	Emergency Response, Repair
400′	6-inch discharge hose, cam lock fittings	Emergency Response, Repair
40′	4-inch suction hose, cam lock fittings	Emergency Response, Repair
3	6′-10″ pass through air plug, cam lock fitting	Emergency Response, Repair
3	10″-16″ pass through air plug, cam lock fitting	Emergency Response, Repair
3	15″-21″ pas through air plug, cam lock fitting	Emergency Response, Repair
2	10″ pass through plug, threaded end	Emergency Response, Repair
1	10′ x 9′ aluminum shore box	Emergency Response, Repair
2	10′ x 4′ aluminum shore box	Emergency Response, Repair
2	End Shores 24″ to 42″	Emergency Response, Repair
5	22″-36″ Speed Shore 5′ length	Emergency Response, Repair
4	28″-45″ Speed Shore 7′ length	Emergency Response, Repair
6	22″-36″ Speed Shore 7′ length	Emergency Response, Repair
6	48″ x 96″ Fin-form Plywood	Emergency Response, Repair

4.6 Critical Spare Parts

Wastewater Collection is a division of the Environmental Utilities Department, which encompasses Regional Wastewater Treatment Plants, Mechanical Maintenance, Water Distribution, Technical Services Engineering, and Solid Waste Division. The WWC Division operates, inspects, and maintains the lift stations within the boundaries of the City of Roseville, however, all electrical and mechanical maintenance tasks are performed by the PM Technicians from Mechanical Maintenance Division. The Materials Technician maintains the WWC Division's inventory list and re-order levels at Dry Creek WWTP. The list of critical spare parts is in **Table 4-6**.

Table 4-6 WWC Critical Spare Parts

EU Name	PLC Model	Pumps	Fuses	Level Control	Comm Connection	HMI	Heater/Overloads
WC06	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	Fiber PA-200	Optimate OP-620	Installed/Warehouse
WC07	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC08	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC09	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC11	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse

WC13	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC14	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A
WC15	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A
WC16	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC17	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC19	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC22	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC23	Modicon M340	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	Proxim Radio to PG. Future Fiber PA-220r	SE Maguells HMISTU855	Installed/Warehouse
WC24	Koyo D2-250	2 + 1-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC25	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC26	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC28	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse

4.7 Appendix 4- Operation and Maintenance Program Documents

Appendix 4 includes the following documents:

4-1 Maximo PM Scheduled Maintenance

4-2 Tech Memo O&M Program SSMP Audit- Rehabilitation and Replacement Plan

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5 Design and Performance Provisions

D.13.(v) 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 Sanitary Sewer Design Standards

The purpose of the City Design Standards is to provide direction in the application of improvements that are to be dedicated to the public and accepted by the City for maintenance or operation and to provide for joint development of those facilities to be used by and for the protection of the public. This includes certain private works and improvements to be installed within existing City rights-of-way and easements. Whereas these Standards intend to govern all new construction, City staff shall interpret and apply the Standards in a manner that achieves their intent while encouraging and enabling the redevelopment of infill and vacant parcels, especially within the City's Redevelopment Project Area. These Standards shall apply to, regulate, and guide the preparation of traffic impact studies and the design and preparation of plans for construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees, and related improvements. The City's sewer Design Standards are located on the City's website at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Development Services/Engineering/Design and Construction Standards/2020 DS Sections/DS - SECTION 9 - Jan.2020.pdf.

5.2 Sanitary Sewer Construction Standards

The purpose of the City Construction Standards is to provide minimum standards to be applied to improvements which are to be dedicated to the public and accepted by the city for maintenance or operation and certain private works, as well as improvements to be installed within existing rights-of-way and easements. This is necessary to provide for coordinated development of required facilities to be used by and for the protection of the public. These Construction Standards shall apply to, regulate, and guide construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees and related improvements. The City's sewer Construction Standards are located on the City's website at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Development Services/Engineering/Design and Construction Standards/2020 CS Sections/CS - SECTION 91 - Jan.2020.pdf

All improvements within the City rights-of-way shall be installed in accordance with the approved improvement plans and specifications, the City of Roseville Design Standards, the City of Roseville Construction Standards, and the State of California Department of Transportation Standard Specifications.

5.3 Sewer System Construction and Performance Testing

Section 91-12 of the City's Sanitary Sewer Construction standards defines the criteria for testing of installed sewer improvements. Sewer mains, services, manholes and appurtenances shall be tested by the following procedures.

5.3.1 Testing Of Installed Improvements

A. Sewer Mains and Services – Public and private sewer mains and services shall be air-tested per ASTM C828 by the Contractor and the Environmental Utilities Department shall provide closed circuit TV inspection, after installation of the joint trench utility crossings and subgrade elevations have been met. Additionally, pipeline segments beneath road bases to be lime- treated shall be tested before and after the lime treatment process.
B. Air Pressure Test – Sewer mains and laterals shall be pressure tested in accordance with the National Clay Pipe Institute recommended guidelines with the following amendment:

1. The minimum test time shall be 60 seconds. The section of a sewer being tested must be pressurized to 3.5 psi, and during the test time must hold 2.5 psi or greater, or the section has failed.
2. For mains installed in an area where the water table is higher than the pipe, the test pressure shall be increased 0.5 PSI per foot of water over the pipe.
3. The test gauge shall be liquid-filled, capable of testing up to 15 PSI, and graduated to 1/10 PSI.

C. TV Inspection – TV inspection of sewer mains and services shall be performed by the Environmental Utilities Department, Wastewater Division. Costs for said inspection shall be borne by the Contractor. Preliminary inspections may be performed by outside contractors but shall not be accepted by the Environmental Utilities Department as an official record.

1. The sewer system shall be completely cleaned by an approved method prior to TV inspection. The sewer system shall be rejected if any of the following conditions exist:
    a. For main lines 12 inches and smaller - standing water or sags greater than 1⁄2 inch in depth at acceptance or greater than 1 inch at warranty.
    b. For main lines exceeding 12 inches - standing water or sags greater than 3⁄4 of an inch in depth at acceptance and greater than 1 1⁄2 inches at warranty.
    c. Standing water in services.
    d. Offset joints.
    e. Joint separations greater than 1⁄2 inch wide.
    f. Damaged pipe.

D. Inspection Criteria for Coated Ductile Iron Pipe – All ductile iron sewer will have the following additional inspection requirements:

1. The condition of the barrel section of pipe as well as 360◦ at each joint shall be recorded to a DVD or portable drive. Once completed, and the inspection demonstrates the pipe meets the City's construction standards, the contractor may proceed with the backfill of the trench. The Contractor shall provide the DVD and a map of the section inspected, to the Wastewater Collection Division for review prior to the City's acceptance inspection.
2. Upon finding any deficiency in the pipe which does not meet the design and construction standards of the City of Roseville, it is strongly encouraged that the contractor makes the necessary corrections at that time. If deficiencies aren't corrected City forces at time of acceptance CCTV will identify these deficiencies and require the contractor to dig and replace the pipe sections; there will be no exceptions.
3. The observation data on the DVD provided to the City shall include the following:
    a. City wide job number.
    b. Encroachment permit number.
    c. Project name.
    d. Location (street name)
    e. Manhole numbers (based on approved plan set or city asset numbers if applicable).
    f. Direction of inspection (upstream or downstream).
    g. Date of inspection.
4. The speed of travel shall be slow enough to inspect each pipe joint, wye connection, coating integrity, and potential sags. Camera speed should travel at a rate of no more than 30 feet per minute. The camera speed shall be steady and slow enough to record features and defects.

E. Manholes – Sewer manholes shall pass a vacuum test consisting of the following criteria and procedures:

1. The test shall be performed after assembly of the manhole and installation of the pipe entering or exiting the manhole, but prior to backfilling. The Contractor shall perform the test and supply all test equipment. The Development Services Inspector shall witness the test results.
2. Lift holes shall be filled with non-shrink grout prior to testing.
3. Pipe entering and exiting the manhole shall be plugged. The plug shall be places on the flex joint outside of the manhole base. Securely brace the plugs to prevent them from being drawn into the manhole. Unused channels shall be permanently plugged with a plastic or clay stopper.
4. A vacuum of 10 inches of mercury shall be drawn to start the test. The amount of time required for the vacuum to drop to 9 inches shall be measured. The manhole will pass the test if the amount of elapsed time is greater than 60 seconds for a 48-inch manhole, 75 seconds for a 60-inch manhole, 90 seconds for a 72-inch manhole and 120 seconds for an 84-inch manhole. A liquid-filled vacuum gauge shall be used for testing. All detectable leaks shall be repaired with non- shrink grout while the vacuum is drawn. No mortar shall be applied to the inside of the manhole until the vacuum test has passed.
5. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until elapsed times are satisfactory.

6. After passing the vacuum test, all joints shall then be mortared, inside and out. Outside mortared joints shall be allowed to dry 24 hours or as approved by the Development Services Inspector before backfilling.
7. If damage to the manhole is evident any time during the construction, the Development Services Inspector may require repairs to be made on the manhole which will require a new vacuum test prior to acceptance.
8. Topside Improvements – When all water, recycled water and sewer infrastructures have passed air, vacuum, pressure, and continuity test as well as CCTV inspection the Development Services Inspector will email a notification to internal departments indicating that the project is ready for road bases and top side improvements only. This does not constitute approval for use of the infrastructure.
9. Tying Into the City System – A tie-in procedure shall be submitted and approved by the Environmental Utilities Department prior to the proposed work. The contractor shall allow for up to 7 days for review of the procedures by the Environmental Utilities Department. The sewer system shall be tied into the City system within 10 working days upon completing and passing all the testing procedures. Tie-ins shall be conducted as specified in Section 91- 2 of the Construction Standards.

5.3.2 Punchlist Process

After the sewer manholes have been raised and finished to grade, the sewer system shall have a final ball and flush in the presence of the Development Services Inspector. The system shall then have a final TV inspection to ensure the entire sewer system is intact for warranty. Final ball and flush can be done by city forces on a time and material basis at the request of the contractor. When all improvements are complete, the contractor shall provide a written request for a punch list inspection of the improvements. With the assistance and presence of the Contractor, the wastewater facilities punch list shall be generated by the Development Services Inspector and Wastewater Collection Division.

5.3.3 Repairing Installed Improvements

Sewer mains, services, manholes and appurtenances shall be repaired per these Construction Standards and by the following procedures.

A. Repairing Vitrified Clay Pipe

1. Damaged pipe shall be exposed and replaced in-kind by "bridging" the new pipe into place. Coupling devices shall not be used.
2. Sagging or misaligned pipe shall be exposed and corrected in place if possible. If the pipe is defective, then a new pipe shall be bridged in place.
3. After the correction has been completed, the excavation shall be backfilled and compacted to grade as specified. The repairs shall then be retested per section 91-12 of these Construction Standards.

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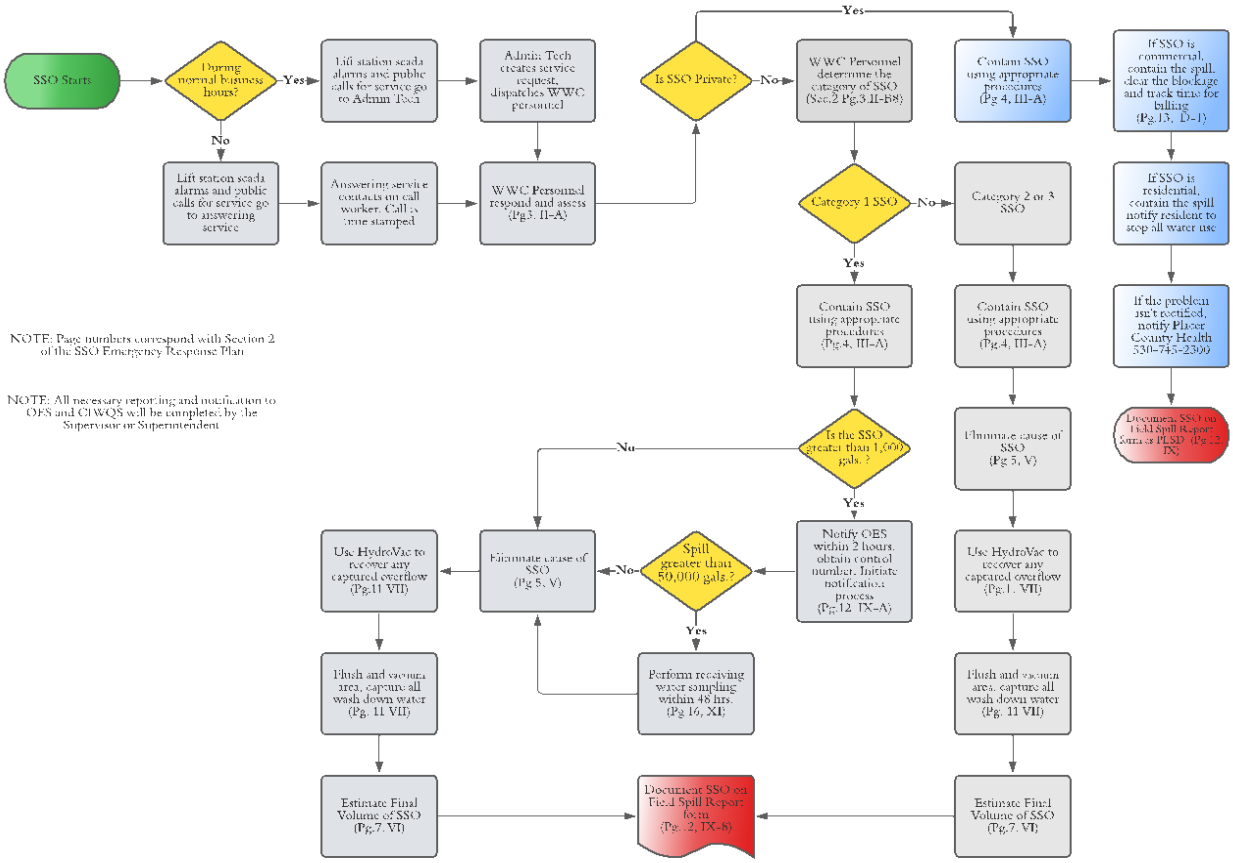
6 Overflow Emergency Response

D.13. (viii) The enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. The plan must include (a) proper notification procedures so primary responders and regulatory agencies are informed in a timely manner, (b) a program that ensures an appropriate response to all overflows, (c)procedures to ensure prompt notification to regulatory agencies or other potentially affected entities of all SSOs that potentially affect waters of the State. All SSOs shall be reported in accordance with the MRP and WDR requirements, (d)procedures to ensure appropriate staff and contractor training on the ERP,(e)procedures to address emergency operations, such as traffic and crowd control,(f) a program to ensure all reasonable steps were taken to contain and prevent discharge of sewer to waters of the United States, and to minimize and correct any adverse impact on the environment from the SSO.

6.1 Notification Procedures

The WWC division maintains an Overflow Emergency Response Plan that covers the wastewater system and Lift Station response and procedures. **Table 6-1** summarizes the response procedures.

Table 6-1 SSOERP Flowchart



The WWC division strives to operate, manage, and maintain all parts of the sanitary sewer system to prevent SSOs and mitigate the impacts quickly and efficiently should an SSO occur. The On-Call emergency vehicle contains a three-ring binder that includes the division's SSO emergency response manual, the response plan, chain of communication, and notification procedures. In addition, the truck is equipped with the necessary tools and equipment to control and contain overflows and clear lower lateral blockages. The truck is outfitted with pneumatic plugs, rubber berms, and dry sweep, all of which are effective means of containment. **Table 6-2** summarizes the division's notification procedures.

Table 6-2 Notification Guide

If SSO	And Affects	Notify
Discharges 1,000 gallons or greater to surface water or spilled in a location where it will probably be discharged to a surface water, shall, as soon as possible, but no later than two (2) hours after becoming aware of the discharge		• WWC Supervisor- Shane Rodgers Office -916-746-1894 Cell -916-223-7711 • WWC Supervisor – Kevin Ryan Office – 916-746-1895 Cell- 916-223-7537 • WWC Superintendent – Dan Pruden Office – 916-746-1891 Cell- 916-580-5600 **<u>The individuals above are responsible for notifying:</u>** • OES 1-800-852-7550 **Obtain control number, complete field spill report form** **<u>Additional Numbers for Reference</u>** • **Placer County Environmental Health** 1-530-745-2300 Main Line 1-530-745-2306 After Hours Supervisor • **California Department of Fish and Wildlife** 916-445-0045 Option #2
	Sacramento River Enters structure, requires cleanup	• **Sacramento River Water Treatment Plant** 916-808-4961 916-264-5011 • **City of Roseville- Risk Management** 916-774-5420 or 916-774-5202 After hours- Dave Rawe 209-613-9448 If no answer, authority is for cleanup only from Restoration Companies listed in SSOERP

6.2 Emergency Response Procedures

City of Roseville Wastewater Collection has developed the following procedures for responding to Sanitary Sewer Overflows (SSOs). The purpose of these procedures is to ensure that all SSO responses are conducted efficiently and effectively, meeting all regulatory requirements of the general order.

6.2.1 Goals of SSOERP

The purpose of this SSOERP is to ensure that the City of Roseville Wastewater Collection personnel follow established guidelines in cleaning up and decontaminating SSO's which have occurred within the City's collection system service area. The goals with respect to responding to SSO's are:

- ***A.*** *Respond quickly to minimize the extent of the SSO;*
- ***B.*** *Eliminate the cause of the SSO;*
- ***C.*** *Contain the spilled wastewater to the extent feasible.*
- ***D.*** *Eliminate public contact with the SSO;*
- ***E.*** *Mitigate the impact of the SSO; and*
- ***F.*** *Meet the RWQCB Monitoring and Reporting requirements*

6.2.2 Investigate and Assess Problem (WWC Personnel)

Assessment starts with the phone call from the customer. Advise customer to stop all use of water in the home or business. Obtain as much information from customer as possible. Relevant information includes:

- Description of problem
- Specific location (e.g. manhole in street, front or back of property, cleanout box)
- Time the possible SSO was noticed
- Any other observations from the caller (e.g. odor, duration of spill, currently spilling)
    - If you believe an active spill is occurring, mobilize a hydro-vac prior to arriving to access the call.

The City staff person that arrives first to the scene, is considered the ***First Responder***. Upon responding, city staff member performs a quick assessment of the overflow to determine the extent of the overflow.

The ***First Responder*** is responsible for the following:

- Requesting additional wastewater crews or other personnel as needed
- Notification of Superintendent/Supervisor in the event of Category 1 or 2 SSOs

- All field documentation including pictures of the SSO and final field spill report.
- Protection of the health and safety of the public by preventing contact with the SSO

The first responder shall:

A. Locate SSO by address, cross street and point of overflow (i.e. manhole, cleanout, pump station, broken pipe). Note time call was received, as well as time of arrival. See Appendix A for documenting start time of SSO.

B. Determine the current magnitude of the SSO

1. Flooded Structure? - *See Appendix B*
2. Storm water inlet or drainage way
3. Potential for public exposure
4. Related problems
    i. Is overflow related to a street collapse?
    ii. Is overflow related to construction work?
    iii. Is overflow causing a traffic hazard such as displaced manhole cover or street flooding?
5. Provide initial estimate of overflow rate using pictures and tables (see tab 6 for spill estimation)
6. If SSO is a category 1 or 2 spill, notify WWC Supervisor or Superintendent as soon as possible, then refer to Sec. II and start containment
7. If SSO is category 3 spill, refer to Sec II, and start containment
8. Spill categories are defined below:
    *i. Category 1 – spill is defined as **any amount** of wastewater resulting from a failure or flow condition that **reaches surface water** or a drainage tributary to surface water.*
    *ii. Category 2 –defined as discharges of wastewater of 1,000 gallons or greater, resulting from a failure or flow condition that **do not reach** surface water or a drainage channel or storm system unless the entire SSO discharged has been fully captured and disposed of properly*
    iii. Category 3 – spill is defined as all other discharges of wastewater resulting from a failure or flow condition in the enrollee's system.

NOTE: Superintendent or his designee will handle all notification to regulatory agencies regarding the reportable SSO.

C. *If SSO reaches surface water or drainage channel tributary to surface water, and is 50,000 gallons or greater, sample receiving water to obtain baseline data. Refer to Appendix C for sampling information.*

6.2.3 Contain SSO (WWC Personnel)

The overflow must be contained. Containment becomes more difficult if the overflow reaches the storm drain system or drainage way, since the overflow can rapidly contaminate receiving waters, such as creeks, streams, rivers, and other water bodies. During dry weather, the storm drain system can be used to store the overflow, if it can be plugged downstream of the overflow point.

A. Options for containing overflow

1. Containment berm at catch basin or drain inlet
2. Rubber mats and sandbags at catch basin or drain inlet
3. Sandbags in gutter
4. Dig trench in ground
5. Dry sweep
6. Vactor

B. Overflow in building

1. If necessary, evacuate affected people
2. Advise customer to keep family members and pets out of contaminated areas, and not to track contamination throughout non-affected areas.
3. Notify Risk Management at 774-5420 or 774-5202 during business hours. After hours, of if no answer, contact Dave Rawe at 209-613-9448.
4. If adjuster or Risk Management can't be reached, contact one of the approved restoration companies starting with:
    i. Restoration Management Co. 800-400-5058
    ii. Serv-Pro 916-632-2250
5. ***If Restoration Company arrives before the adjuster, authorize only emergency cleaning services only. Hand resident our camera and request them take pictures of affected area. Do not enter house***.

6. If property owner declines cleaning services, request they sign and date the Declination of Clean Up Services Form.

C. Overflow into storm drain/drainage ditch

1. Trace overflow in storm drainage system to downstream end point.
2. Plug all affected storm drain outfalls or block the creek and channels to contain spill.
3. Turn off storm water pump station if available
4. Hydro mains and vacuum all water from storm drain basin and system.

D.If SSO is a Category 1 spill, post warning signs around containment area and follow directions from RWQCB Staff (Region 5) or Fish and Wildlife Staff.

E. Example equipment for containing overflows.

1. Overflow onto ground or into building structure.
   i. Containment berm
   ii. Sand bags
   iii. Plastic sheets
   iv. Dry sweep
   v. Vactor
2. Overflow into a storm drain/drainage way
   i. Pneumatic plugs
   ii. Bypass pump
   iii. Vactor
   iv. Sandbags
3. Overflow at lift station
   i. Vactor
   ii. Bypass pump
   iii. Emergency generator
4. Warning signs to post around contaminated area.
5. Begin preliminary notifications – Refer to SSO notification guide

6.2.4 Traffic Control (WWC Personnel)

Traffic control may be needed immediately to protect the health and safety of the public and/or maintenance staff. Typically, immediate traffic control is needed if

there is a street collapse or significant depression in the pavement that is related to the sewer, if the manhole cover is ajar, or if the overflow causes flooding of the street. Traffic control may be needed to prevent wastewater from being further dispersed and to protect the maintenance crew while containing the overflow and removing the blockage.

A. Provide traffic control per Cal Trans Work Area Traffic Control Handbook (WATCH)

B. If necessary, use other departments (i.e. Police/Fire, Public Works) to ensure proper traffic control.

C. Control public contact with the SSO by isolating the area with barricades, signs or traffic cones.

6.2.5 Correct Cause (WWC Personnel)

The cause of the overflow may be located a considerable distance downstream of the SSO in areas with flat terrain. During large storms, overflows can be caused by excessive I&I in the collection system. I&I can greatly increase the flow in a collection system and cause overflows from pipes that are only partially blocked. I&I can also directly affect the hydraulic capacity of mainlines and lift stations. Under these conditions, it may not be possible to stop the overflow, until the flows recede.

A. Locate cause of overflow

1. Sewer main
    i. Check flow in manholes
    ii. Blockage should be between a manhole with sluggish flow or surcharging and a manhole with very little flow or is dry.
2. Sewer service
    i. Check flow in city cleanout. If cleanout is dry, and resident is still plugged, stoppage is located on private property, and is not the city's responsibility.
    ii. If no city cleanout exists, but the resident has a 4" private cleanout, run this private cleanout to clear the blockage. Once cleared, CCTV to determine the location of problem (***Refer to Appendix D, Sec 6***)
    iii. If no city or private cleanout can be located, check mains, both upstream and downstream. If the main is running clear, notify

the resident the problem is on their side, and explain city cleanout policy

iv. If service line is on a dead end run, regardless if the cleanout is clear, clean the mainline segment with Vactor.

3. Lift Station
    i. Check alarm status inside control panel for indication of problem.
    ii. If power is present, but pumps aren't operating, switch control to hand.
    iii. If pumps operate in hand, refer to Lift Station Failure Procedure (Tab 10).
    iv. If no power is present, contact Roseville Electric, determine remaining level in station, and contact Collection Personnel for assistance. Refer to Lift Station Failure Procedure (Tab 10)

B. Clear Blockage

1. Sewer Main
    i. Clear mainline blockage using Vactor from dry manhole.
    ii. Determine possible cause of blockage and note on Field Spill Report Form.
    iii. Refer to SOP WWC-002 For Vactor
2. Service Line
    i. Clear blockage using Gas powered EEL or Model C Electric Eel. Refer to SOPs WWC-007 and 020
    ii. Call additional personnel is assistance is needed.
3. If blockage cannot be cleared
    i. Increase containment and initiate bypass pumping
    ii. Perform CCTV inspection to determine potential problem
    iii. Dig and repair sewer line at blockage location

C. Lift Station

1. If no power is present :
    i. Contact Roseville Electric to verify outage and time estimation of power being restored.
    ii. Determine the wet well level and remaining downtime left at the station.

iii. If downtime exceeds the max allowable retention, contact collection system personnel, and request Vactor support.
iv. If power outage is extensive, contact additional personnel for 2nd Vactor support.
v. Continue vacuuming wet well until power is restored, and lift station is running in auto.

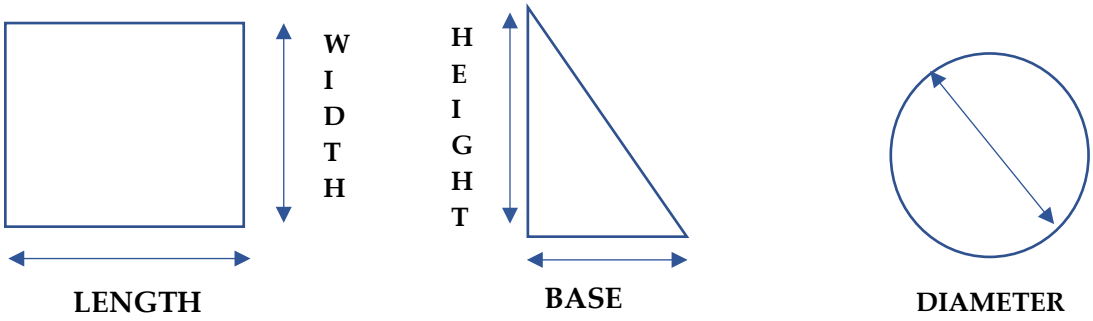
2. If power is present, but pumps aren't operating:
   i. Attempt to operate pumps in "hand" position. If pumps do operate in "hand", contact on call electrician, and continue to operate and monitor levels in the wet well.
3. If SSO is caused from force main failure, all power to lift station panel will be controlled using identified energy control procedures (ECP). Wet well levels will continue to be monitored using Vactors or by-pass pumping, until repairs can be made to force main.
4. If portable generation is needed at lift station, on call electrician needs to be present for the connection. All panels have external plugs and disconnects for portable generation connection. Each lift station location has a specific pre-made cable for generator connection.

6.2.6 Final Volume Estimate (WWC Personnel)

The final overflow volume is estimated to determine if additional reporting to regulatory agencies is required and for the City of Roseville's records when reporting to CIWQS. A minimum of five (5) pictures are required for every spill response, and locations are noted on the field spill report. Place an object in the photo for contrast. The following methods are approved for determining the gallons spilled during an overflow event.

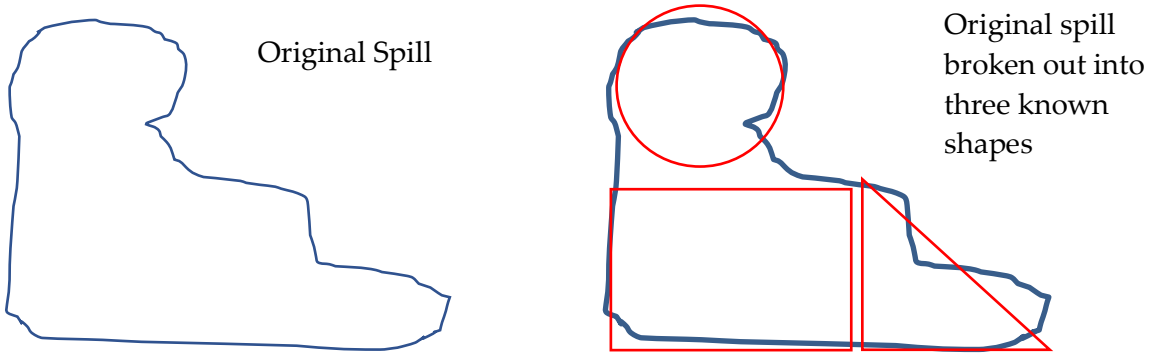
Eyeball Estimation- Estimate the overflow rate out of a clean out by estimating the time needed to fill up a known volume, such as a five-gallon bucket. Imagine the amount of water that would spill from this bucket. This method is useful on spills that occur on hard surfaces such as concrete or asphalt

Measured Volume- The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions and depth of the contained wastewater are needed. This information is used to calculate area and volume of the spills.



1. Determine the shape of the spill
2. Measure or pace off the dimensions. Measure the depth at several locations and calculate the average. Convert all dimensions to feet.
3. To calculate the area square footage, use the following:
    a. Rectangle: Length (ft.) x Width (ft.)
    b. Triangle: Height (ft.) x Base (ft.) x .5
    c. Circle: Diameter (ft.) x Diameter (ft.) x .785
    d. Multiply the area (sq. ft.) by the depth (feet), to get the volume in cubic feet. Multiply your volume by 7.48 to convert to gallons.

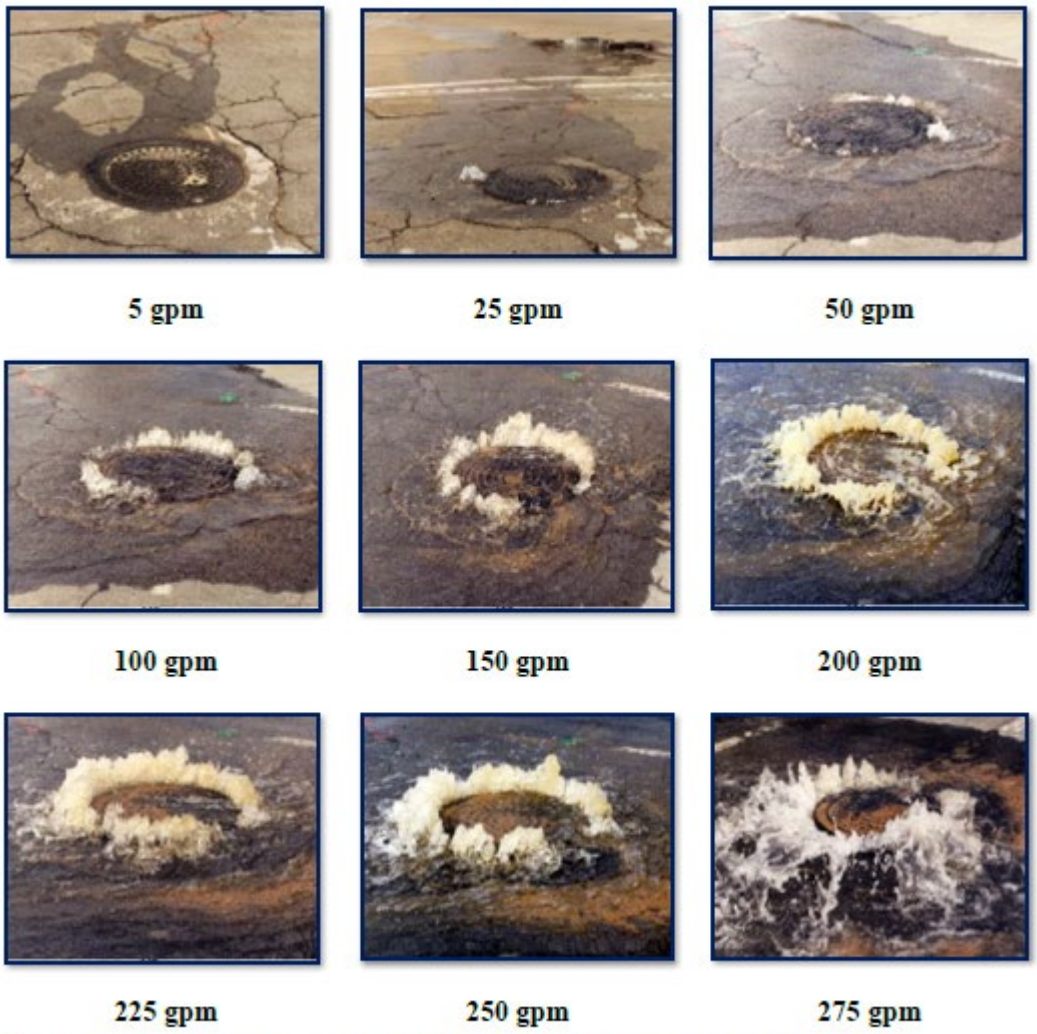
Not all SSO's will conform to the shapes above. If this occurs, break the area up as much as possible into known shapes and calculate the volume in each.



Calculating large volume spills is challenging because the area and depth are difficult to measure, and chances are these spills are not fully contained. Several methods are available to determine the volume.

Flow Estimation Chart- The table below (Section 5 of the SSOERP binder) presents pictures with varying flowrates of sewage overflowing from a manhole. Estimate the overflow rate by comparing the overflowing manhole with the pictures shown below.

Estimating Sewer Flow Rates from Overflowing Sewer Manholes[1]



5 gpm | 25 gpm | 50 gpm

100 gpm | 150 gpm | 200 gpm

225 gpm | 250 gpm | 275 gpm

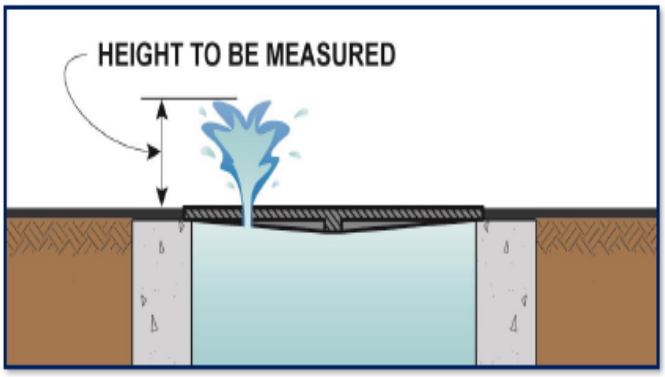
[1] Sourced from City of San Diego Metropolitan Wastewater Department "Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes" (April 1999).

Flow Rate and Duration- Overflow volume can be estimated by multiplying the overflow duration by the overflow rate. The overflow rate can be determined by pick hole or vent hole spill height (section 5, SSOERP binder), flow meter data, SCADA information and pump data from lift stations.

*T*he overflow volume can be estimated with the following formula:

Volume (gal)= estimated flow rate (gpm) x duration of overflow (minutes)

The charts below represent measurement point and flow rates based off height of water column measured



Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)	Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)
1/8	1.0	5 1/8	6.2
1/4	1.4	5 1/4	6.3
3/8	1.7	5 3/8	6.3
1/2	1.9	5 1/2	6.4
5/8	2.2	5 5/8	6.5
3/4	2.4	5 3/4	6.6
7/8	2.6	5 7/8	6.6
1	2.7	6	6.7
1 1/8	2.9	6 1/8	6.8
1 1/4	3.1	6 1/4	6.8
1 3/8	3.2	6 3/8	6.9
1 1/2	3.4	6 1/2	7.0
1 5/8	3.5	6 5/8	7.0
1 3/4	3.6	6 3/4	7.1
1 7/8	3.7	6 7/8	7.2
2	3.9	7	7.2
2 1/8	4.0	7 1/8	7.3
2 1/4	4.1	7 1/4	7.4
2 3/8	4.2	7 3/8	7.4
2 1/2	4.3	7 1/2	7.5
2 5/8	4.4	7 5/8	7.6
2 3/4	4.5	7 3/4	7.6
2 7/8	4.6	7 7/8	7.7
3	4.7	8	7.7
3 1/8	4.8	8 1/8	7.8
3 1/4	4.9	8 1/4	7.9
3 3/8	5.0	8 3/8	7.9
3 1/2	5.1	8 1/2	8.0
3 5/8	5.2	8 5/8	8.0
3 3/4	5.3	8 3/4	8.1
3 7/8	5.4	8 7/8	8.1
4	5.5	9	8.2
4 1/8	5.6	9 1/8	8.3
4 1/4	5.6	9 1/4	8.3
4 3/8	5.7	9 3/8	8.4
4 1/2	5.8	9 1/2	8.4
4 5/8	5.9	9 5/8	8.5
4 3/4	6.0	9 3/4	8.5
4 7/8	6.0	9 7/8	8.6
5	6.1	10	8.7

Unrestrained manhole cover will start to lift

Figure 3- Flow Rate Exiting MH Pick Hole

Estimated Flow EDU Chart- This method can be used for overflows from residential properties when enough information has been gathered through interviewing the resident. Be clear with your questions and explanation for the interview. Only interview residents from the household contributing to the SSO. The table below is based off our design criteria of 190 gpd. and is included on the Field Spill report. It is a quick way to estimate volume from small overflows.

Figure 4- EDU Flow Chart

Time Period	Estimated City Flow Rate Per EDU (190 gpd)				Spill	
	A	B	C	D	E	F
	Gallons Per Period	Hours Per Period	A÷B = Gallons Per Hour	C÷60 = Gallons Per Minute	Minutes Spill Was Active	D x E= Gallons Spilled Per Period
6am -Noon	75	6	12.5	.21		
Noon – 6pm	55	6	9.16	.15		
6pm - Midnight	50	6	8.33	.14		
Midnight - 6am	10	6	1.67	.03		
					Total Estimated Spill Volume	

However, if a large spill occurs with multiple homes, commercial or mixed-use involved, and there isn't sufficient information to calculate an estimate, use the City of Roseville Design Standard 9-2, Average Dry Weather Unit Flow Factors chart below. Count the units that are affecting the overflow and multiply by the flow factors on the chart below based on the land use designation

Table 1 – Average Dry Weather Unit Flow Factors

Land Use Designation	Units	Flow Factor (gpd/unit)[1,3]
Commercial	gpd per acre	850
Heavy Industrial	gpd per acre	850
Light Industrial	gpd per acre	850
Mixed Use	gpd per acre	2,300
Public/Quasi-Public	gpd per acre	660
Schools	gpd per acre	170
Residential 1 DU	gpd per DU	190
Residential 2 DU	gpd per DU	190
Residential 3 DU	gpd per DU	190
Residential Multiple DU[2]	gpd per acre Or gpd per DU	2,040 Or 130
Open Space	gpd per acre	0
Parks> 10 Acres	gpd per acre	10
Vacant	gpd per acre	0

6.2.7 Initiate Cleanup (WWC Personnel)

Disinfection of contaminated soil or drainage ways is only performed when directed by appropriate agencies such as Placer County Environmental Health and CA Dept of Fish and Wildlife

A. Flooded building or structure

1. If building or structure is flooded due to a failure in the city's collection system, contact Risk Management or Dave Rawe after hours. Risk Management will respond and assess and notify restoration companies on contract with the city.
2. Storm Drain or Drainage Way
    i. Pump out or vacuum any ponded water present
    ii. Remove debris
    iii. Wash concrete and contain all wash water and remove
    iv. Remove contaminated soil and plants
    v. High pressure clean affected storm drains and vacuum all water
    vi. Remove all containment and finish flushing and vacuuming area
3. Street, Curb or Gutter
    i. Remove debris with Vactor
    ii. Wash pavement, curb and gutter area , and vacuum all water with Vactor
    iii. If Vactor decant pump is used, utilize decant apparatus to alleviate possibility of secondary spill and provide fall protection at open manhole.

6.2.8 Receiving Water Sampling (Industrial Waste Section)

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

I. Contain protocols for water quality monitoring
II. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions)
III. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
IV. Require instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration to ensure their continued accuracy.
V. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents
    a. Ammonia
    b. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e- coli.

6.2.9 Notification Requirements (Superintendent/Supervisor)

All overflows are required by law, to be promptly reported to regulatory agencies. The Legal Responsible Official (s) or their designee will make all notifications to regulatory agencies regarding reportable SSOs. All SSOs are tracked in the City of Roseville's CMMS.

- **A.** Prompt notification to regulatory agencies will be achieved by using the SSO Notification Guide (Tab 4)
- **B.** All information regarding the spill will be documented on the SSO Field Report Form
- **C.** Documentation and Data Tracking
    1. All SSOs are tracked with a service request module in the City of Roseville's CMMS. Completed service requests, work order requests and any overtime tags are turned into Superintendent/Supervisor for QA/QC. These are all resolved in the CMMS. Service requests for after-hours call will be generated the following business day.
    2. Follow up PM work orders are generated to CCTV inspect affected lines and recommendations from CCTV crew are reviewed by Superintendent or Supervisor. Further recommendations regarding repair, replacement, or preventative maintenance schedule adjustment are made on the System Failure Analysis Form.
    3. Field report forms are turned into Supervisor or Superintendent, who enters data into the CIWQS website. A minimum of 5 pictures is required for every SSO
- **D.** Ensure that all appropriate documentation has been completed in the CMMS.
    1. Private commercial spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken for billing purposes.
    2. Private residential spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken.

6.3 Staff and Contractor Training

To train WWC Employees on the importance of the SSOERP, Supervisors created a Powerpoint Presentation as a training resource. The interactive presentation covers the written SSOERP in a classroom setting. This setting allows employees to clarify any elements within the procedure. The annual training is followed by a competency test and classroom spill simulation. In addition, WWC employees built a spill simulator in the training yard at the DCWWTP to test employees' skills in estimating spills. If desired, supervisors can create spills from either a manhole, cleanout, or both. The water is metered and creates an accurate simulation within the confines of the WWTP.

Contractors are provided with the City's wastewater collection system policies and procedures. Per the contract, they are required to train all their employees on the City's wastewater collection system policies and procedures before performing work on the City's wastewater collection and conveyance system.

6.4 Spill Mitigation and Containment

The WWC Division has written the attached SOP for spill mitigation and containment. The plan is described throughout the SSOERP and in the Table 6-1 flowchart. Whenever a Sanitary Sewer Overflow (SSO) occurs, the highest priority is to contain the overflow and minimize the exposure to the public or the environment. This procedure will address the specific processes available to contain an SSO. Containment of an SSO becomes more difficult once the overflow reaches storm drain systems or a waterway. The quicker the source and the extent of the overflow can be identified, contained, or controlled, reduces the SSO's impact exponentially. Following the Sewer System Management Plan (SSMP) goals, quick response and containment will protect public health and safety while minimizing the environment's negative impacts.

The assessed hazards that may exist when responding to an SSO are:

- Traffic control
- Bloodborne pathogens
- Slips, trips, and falls
- Atmospheric conditions
- Pneumatic plugs
- Sprains and back injuries

Upon arrival to the location, survey the scene to determine the potential overflow location and source. There are times when called for a sewer overflow, and the source is potable water or storm drainage. Once determined, the water source is the sewer, mobilize the necessary wastewater collection personnel and equipment needed for assistance. Determine the category of the overflow, discharge points, and whether the SSO can reach Water of the State. Immediate notification to the Office of Emergency Services is required, should the overflow reach waters of the state. If the spill cannot be eliminated by controlling water flow from a residential or commercial building, more than likely, this spill is either a plugged main, structural deficiency, or an inoperable lift station. The area impacted by the spill and the potential work area shall be secured to divert vehicle traffic and pedestrians away from the area by using any combination of signs, cones, delineators, barricades, arrow boards, or caution tape. Multiple techniques are identified to contain the spill depending on the circumstances, spill category, and material available. In no order, the list below is possible containment options.

Containment Situation	Options for Containment
Curb and Gutter	• Create berm with rubber berm, dry sweep, dirt, or sandbags; Utilize natural low spots or grade deviations • Use hydro-vac to control overflow

Lift Station Failure	• Use hydro-vac to contain • Backup generator • Bypass pumping
Open Space	• Dig a trench for containment • Sandbag berm • Dirt berm
Creek	• Plug all affected storm drain inlets
Storm Drain System (Dry)	• Plug all affected storm drain inlets; plug outfall if necessary • Contain using the hydro-vac • Request additional hydro-vac support if necessary
Storm Drain System (Storm Event)	• Plug all affected storm drain inlets • Emergency bypass pumping • Turn off stormwater pump station if applicable
Building	▪ Evacuate residents if needed ▪ Pop cleanout cap off; If no city cleanout, attempt to locate ▪ Pop private cleanout if available ▪ Contain outside if overflow is relieved by locating/removing cleanout cap

Containment with Hydro-Vac

Determine a location downstream of the spill appearance point where the hydro-vac unit can be set up and capture all water, including wash down water. Ensure no storm drain inlets are between the containment point you choose and the overflow point. Continue vacuuming overflow until the blockage has been cleared. Once cleared, wash remaining spill water to the vac tube to be vacuumed up.

Containment Using Berms and Mats

Utilize dirt, rubber berm, dry sweep, or other obstructing material to block drain inlets and pond the spill to a low natural area to contain and minimize the spill's effects. If possible, divert the spill to a downstream manhole that is not affected by the blockage.

Attempt containment by covering the affected storm drain inlet with rubber mats. Secure the mat in place with sandbags, dirt, or other heavy objects to keep in place.

Containment Using Pneumatic Plugs

Plugging the affected drain inlet or multiple drain inlets with a pneumatic plug can be effective. A pneumatic plug in the storm drain outfall would prevent the overflow from reaching the waterway. However, depending on the location within the City, drain inlets will vary in size, so utilizing plugs may not be the best option.

SSOERP- Appendix A- SSO Start Time Policy

Upon receiving call, note exact time that call received from answering service or administrative staff. This time will be used as a **base** for when the SSO started. Notify resident or business to stop using all water if possible.

A. Upon arrival, note if spill location point is or is not actively spilling. If not spilling from spill location point, but there is clear evidence of spill that requires a Vactor for cleanup effort, then document occurrence as a spill.
B. Initiate SSOERP to ensure that the SSO is contained, and the cause is corrected.
C. Photograph all affected areas, during the SSO, demonstrating containment and after cleanup. Use something in picture to gauge size of area features (i.e. tape measure, 5 gal bucket, etc) Email pictures to the Superintendent after completing necessary paperwork.
D. Provide detailed description of the SSO event, including exact times of arrival, SSO stop time, containment procedures, and names of collection personnel assisting you in the overflow.
E. The following questions should be asked of the resident or the individual reporting the potential SSO:
    1. Did you notice water coming from the cleanout at the property line or manhole in the street? If so, what was the approximate time?
    2. Were your drains running slowly at any time prior to you calling? If so, what was the approximate time?
    3. If there were neighbors outside, close to the area of the SSO, did they notice water spilling? If so, what was the approximate time?
    4. Be prepared to provide a brief summary of how you determined the start time, describing the steps you took while coming to your decision.
F. If the above questions do not produce an accurate account for the SSO start time, use the time the call was received by either the office personnel or the after-hours answering service, and subtract 15 minutes. Record this time as actual start time on the SSO Field Report Form.
G. If the evidence of the spill travels a farther distance than the logic of the 15 minutes, the field crew/responders shall try to recreate the spill the following day, using clean water.
H. In the event of an SSO from a sewer lift station, the start time will be determined using information gathered from the SCADA system.
I. SSO Stop time will be determined by either:
    1. The arrival time of the service worker if the overflow had stopped prior to their arrival.
    2. Clearing the blockage.
    3. Interview of resident or witnesses

SSOERP Appendix B- Flooded Structure Procedures

In the event a failure in the City's wastewater collection system causes a Sanitary Sewer Overflow in a resident's home or business, instruct them to:

1. Keep people and pets away from the affected area(s), and do not track contamination throughout non-affected areas.
2. Don't attempt to clean up the overflow. Instruct them the city has restoration companies available and will respond.
3. Turn off all central heat and air-conditioning systems and prevent flow from reaching any floor vents with towels or blankets.
4. Leave these items in the affected areas for restoration companies to cleanup.

Contact Risk Management at 774-5420 or 774-5202 during normal business hours. After hours, of if no answer, contact Dave Rawe, Risk Manager at 209-613-9448. They will assess and notify restoration companies on contract with the city to respond. If the resident refuses the offered clean-up services, ask them to sign the declination letter, refusing the service.
If the resident chooses to file a claim for damages, instruct them they must fill out a Government Claim Form.

A claim form can be obtained in the following ways:

- In person at the Roseville Civic Center, City Clerks Department and Risk Management Division, 311 Vernon St., Roseville, CA .
- By mail, by contacting the Risk Management Division at (916) 774-5202 or e-mailing the request to riskmanagement@roseville.ca.us
- Electronically by following this link: http://www.roseville.ca.us/hr/risk_management/how_to_file_a_claim.asp
- Completed forms must be returned by mail or in person to the City Clerk's office at the Roseville Civic Center.

SSOERP Appendix C- Water Quality Sampling

This water quality sampling procedure describes the process and the sampling methodology to be used in the event of a sanitary sewer overflow exceeding 50,000 gallons. The water quality sampling results will enable the division to prioritize areas of concern regarding water quality impacts. Surface water samples will be collected using a grab sample technique. Employees are required to wear new sterile powder free surgical gloves when collecting all samples.

Trigger for Sampling -Water quality sampling is required within 48 hours of initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.

Safety and Access- Water quality sampling should only be performed if it is safe to do so, and access is not restricted or unsafe. Unsafe conditions include traffic, heavy rains, slippery or steep creek banks, visibility issues, high flowing creeks and limited access due to soil conditions or poor terrain.

Where to Sample-

1. Source of SSO - Determine the entry point (source) of the SSO into the creek, and move downstream approximately 10 feet downstream.
2. Upstream Sample – Sample at a point 100 feet upstream from the source.
3. Downstream Sample – Sample at a point 100 feet downstream from the source. Determine the water velocity present in the creek or body of water during the SSO. Dropping debris in the creek, and timing how long the debris takes to travel a known distance is a good indicator of the water velocity present. Use this information to determine the next downstream sampling point. Multiply the water velocity by the spill duration to figure the furthest point downstream to sample.

Sampling Procedure-

1. Put on required PPE (safety glasses and latex gloves)
2. ***Collect Upstream Sample*** - Move approximately 100 feet upstream of the source.
    - **a.** Label the bottle accordingly and take a picture of the location you are sampling.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.
    - **c.** Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.

d. Use a thermometer to measure the temperature of the upstream sample location and record the results.

3. ***Collect Source Sample-*** Move approximately 10 feet downstream of the source location.
   a. Label the bottle accordingly and take a picture of the location you are sampling.
   b. Sample away from the bank and avoid any debris or scum layer from the surface.
   c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
   d. Use a thermometer to measure the temperature of the source sample location and record the results.
4. ***Collect Downstream Sample –*** Move approximately 100 feet downstream of the source.
   a. Label this sample "Downstream 1" and take a picture of the location you are sampling.
   b. Sample away from the bank and avoid any debris or scum layer from the surface.
   c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
   d. Use a thermometer to measure the temperature of the downstream sample 1, and record the results
5. ***Collect Downstream Final Sample*** - After using the velocity and distance to determine the furthest downstream sample point, move to that location.
   a. Label this sample "Downstream Final" and take a picture of the location you are sampling.
   b. Sample away from the bank and avoid any debris or scum layer from the surface.
   c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
   d. Use a thermometer to measure the temperature of the sample, and record the results

Required Water Quality Analyses – As detailed in section C-5 of Monitoring and Reporting Program (MRP), Order WQ- 2013-0058, a Technical Report shall be submitted in CIWQS online database with 45 calendar days. All samples will be immediately transported to the nearest certified water quality laboratory for analysis (DCWWTP or PGWWTP labs). The sample analysis, at a minimum will include the following:

1. Ammonia
2. pH
3. Electrical Conductivity

4. Bacterial indicators, such as total and fecal coliform enterococcus and e-coli, per the regional Basin Plan or as directed by SWRCB
5. Temperature

Equipment and Supplies – The following items and PPE are required for sampling:

1. Cooler with Blue Ice
2. Sterile sampling bottles
3. Powder free latex gloves
4. Safety glasses
5. Marking pen
6. Field log forms

SSOERP -Appendix D- Sewer Call For Service

When dispatched to a home experiencing sewer problem, the following procedures should be adhered to provide the resident with the best possible customer service and quickly correct the problem causing the SSO.

Residential

1. Contact the homeowner or resident upon arrival. Explain the process you will use to determine the problem. Resident should have already been instructed to stop all water use, so if water is still spilling from cleanout, check the nearest upstream manhole on the mainline for a blockage.
2. If no cleanout is visible, look in CMMS for cleanout location, look for an "S" marked in the curb, or other information that might indicate a cleanout.
3. If a city cleanout is found, clear the lateral blockage using the eel and a root cutting head, do not use a hand tape. CCTV to ensure line is clear, and all blockages have been removed. Record all time and pertinent information you have found on a work order, service request, or for after-hours calls, your overtime tag.
4. If no cleanout is found, locate the closest downstream manhole, and call for Vactor assistance, and run the main.
5. If the residence does not have a city cleanout, and the above procedures did not alleviate the blockage, we will use our equipment to run a "Viable" cleanout that belongs to the resident. This "viable" cleanout should be a factory fitting 4" cleanout, either a wye or combo wye, that we can easily get our equipment into and service the line. Once the line has been cleared, we will CCTV through this same cleanout, and determine where the blockage was located.
6. If the blockage was located below the location a city cleanout should be installed, we will schedule a cleanout installation during normal business hours.
7. If the blockage is located within the customer's service line, notify them that the problem is in their portion of the lateral, the location and severity of the problem. Advise the resident of the City's policy for cleanout installation, and let them know this is a one-time service, and the city will not clear future blockages from the homeowner's cleanout.

   Document all information in the CMMS under activity code- SPHCC, (Sewer Plug Homeowner City Cleared) on a service request.

Private Commercial

When dispatched to a commercial property experiencing an SSO, start containment of the spill immediately. Notify the manager to stop using water and to call a plumber. Make sure the manager understands City staff will be containing the spill until their plumber responds, and they will be billed for staff and equipment. If after 60 minutes, the plumber doesn't show, notify Placer County Health Department. Notify your supervisor that the health department has been called and to discuss possibly clearing the main or service.

SSOERP Appendix E- Sewer Lift Station Failure Response

The purpose of this procedure is to define strategies necessary to prevent an SSO from a lift station, in the event of a power or component failure within a lift station. The City of Roseville operates and maintains 17 neighborhood lift stations. Each station is equipped with SCADA, monitored 24 hours per day by wastewater treatment plant personnel. Each station has the maximum allowable downtime posted inside the door of each control panel. This identifies the retention time and the storage capacity in the collection system assets, before an SSO will occur. The lowest identified manhole is also identified to assist on call personnel in determining the remaining downtime. In the event of a lift station failure, the plant operator will notify the answering service that an alarm has been activated at a station, and the on-call service worker will respond and assess the alarm.

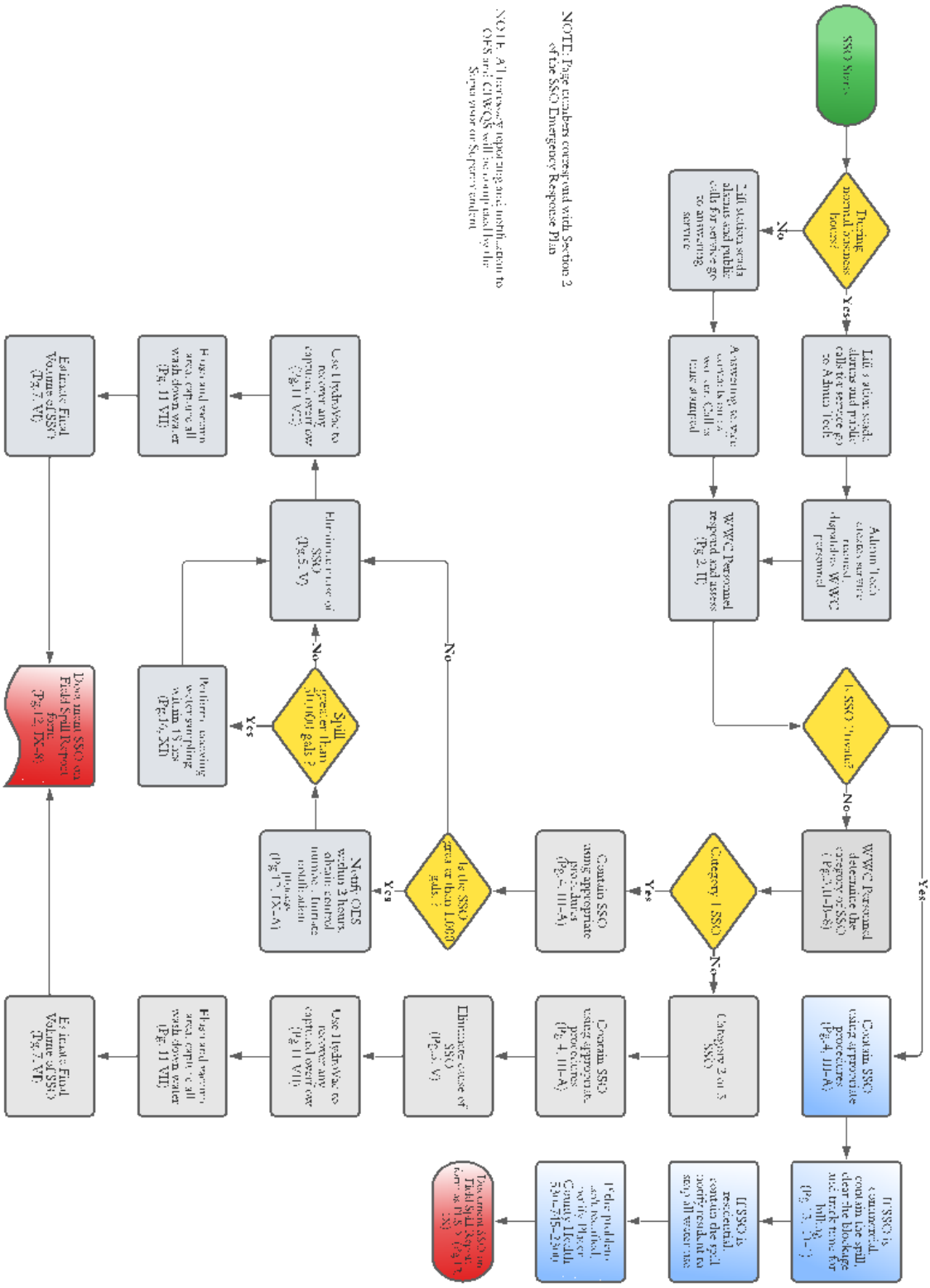
If no power is present in the panel, the service worker will:

1. Contact Roseville Electric at 774-5620, to verify they are aware of the outage.
2. Determine the level, and remaining downtime left in the station.
3. If downtime will be more than the maximum allowable retention, the on call service worker will call collection system personnel off the standby list, to get a Vactor in route. The Vactor will decant water at an identified point in the system, which won't affect the left station levels. If it appears that one Vactor won't keep up with flows, the on call service worker will call in additional personnel with Vactor to maintain levels in the station.
4. If outage appears to be a lengthy process, contact supervisor. Portable generator may be needed. In this event, an electrician will be needed.
5. Once flows are maintained, contact Supervisor to make them aware of the situation.

If Power is present in station, but pumps are not operating, the service worker will:

1. Attempt to operate the pumps in "hand" mode to eliminate the possibility of an SSO
2. If the pump operates in "hand", continue operating and monitor the levels in the wet well. Contact the On Call Electrician @916-532-0612 and continue to monitor.
3. If station will not operate in hand mode, call additional personnel in with Vactor to monitor wetwell levels. Vacuum and decant accordingly, until the problem is rectified.
4. If it appears that one Vactor won't keep up with the amount of flow into the wet well, the service worker will call in a second Vactor to maintain the levels in the station.
5. Standby and assist on call electrician, until the station is operational.

SSOERP Appendix F- SSO Chain of Communication



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7 FOG Control Program

D.13 (vii) Each enrollee shall evaluate its service area to determine whether a FOG control program is 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 FOG discharged into the sanitary sewer system. The plan shall include (a) public education outreach that promotes disposal of FOG, (b) a plan for disposal of FOG generated within the sanitary sewer system, (c) the legal authority to prohibit discharges to the system and measures to prevent SSOs and blockages from FOG, (d) requirements to install GRD, design standards, maintenance and BMP requirements, and records and reporting requirements, (e) authority to inspect grease producing facilities, enforcement authorities and sufficient staff to inspect and enforce FOG ordinance,(f) identification of sewer sections subject to FOG blockages and pm schedules for each section,(g) develop and implement source control measures for all sources of FOG for each section identified in (f) above.

This chapter describes the City of Roseville's Fats Oils and Grease program, developed as Roseville Municipal Code Section 14.14, in 2008. The ordinance's purpose is to provide the maximum beneficial use of the City's sewer services and facilities while preventing blockages of caused by discharges of FOG into the sewer, specifically from food service establishments (FSEs).
The City relies on two major components to control or eliminate the amount of FOG entering the wastewater system, 1) cleaning and inspection of the collection system on a prescribed maintenance schedule and 2) inspection, enforcement, and education for FSEs. FOG ordinance can be found at: http://qcode.us/codes/roseville/view.php?topic=14-14_14&frames=on

7.1 Public Education Outreach

WWC and Industrial Waste Division personnel developed public outreach materials and handouts that are distributed to all food service facilities managers during the facility inspection. In addition, all FSEs are required by RMC Section 14.14 to apply for a FOG Discharge Permit. The permit application includes references to RMC 14.14, which provides Frequently Asked Questions, Maintenance and Pumping Requirements, and Best Management Practices (BMPs) for the managers to follow. Finally, the City's website below offers links for available public outreach: https://roseville.ca.us/government/departments/environmental_utilities/at_your_service/sewer/sewer_business_customers

7.2 FOG Disposal Plan

Food Service Establishments and FOG generators are responsible for hiring private service providers to pump and haul FOG from their grease removal device at scheduled intervals. The requirement of the permittee is to keep all records, manifests, receipts and invoices for the cleaning

and maintenance of the device, which includes final disposal location. These records shall be provided to any City of Roseville inspector or enforcement officer upon request. Although City does not endorse or recommend services provided by any one service provider, the City will provide a list of service providers that are commonly used by businesses in the area.

7.3 Legal Authority

The WWC Division of Environmental Utilities manages the FOG control program, issuance of permits and performs inspection of all FSEs within its service area. In addition, RMC Chapter 14.14 includes all legal authority necessary to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG. All FSEs are required to provide wastewater that is acceptable to the city, before discharging to the public sewer. A summary of the legal authority is included in Table 7-1.

Table 7-1 FOG Legal Authority

RMC Chapter Number	RMC Chapter Title
14.14.010 (A)	General Provisions- Purpose
14.14.030	FOG-Waste Discharge Permit Required
14.14.040	FOG-Discharge Limitation
14.14.050	Public Sewer Overflow; Nuisance abatement
14.14.070(F)	Prohibitions
14.14.190	FOG Discharge Permit Conditions
14.14.320	Harmful Discharge
14.14.360	Violation-Penalty

7.4 GRD, Design Standards, BMPs, Recordkeeping and Reporting

7.4.1 Requirement to Install GRD

Every FSE at the time of construction, remodel or change in operation is required to install and maintain an approved and adequately sized grease removal device. In addition, at the EU Directors' discretion, may require an FSE that has caused or contributed to a grease-related blockage, install a grease removal device. Depending on the type of facility, certain FSEs may require a grease interceptor, grease trap(s), or may not require a grease removal device (GRD). If during the plan review process, an FSE enrollee does not believe that their operation needs the designated GRD, they can request a variance from the ordinance. The final determination of the variance request is at the sole discretion of the EU Director.

7.4.2 Design Standards

The City Design Standard section 9-10. (G) indicates grease removal device sizing and installation shall conform to the current edition of the California Uniform Plumbing Code. Grease interceptors shall be constructed following the design approved by the director and shall have a minimum of two compartments with fittings designed for grease retention. A 24" access manhole shall be installed over each interceptor chamber. The frame and cover shall be watertight and set to finish grade, making inspection, sampling, and grease removal activities available. In addition, the grease interceptor shall be installed at a location where it shall always be easily accessible for inspection, cleaning, and removal of accumulated grease. The minimum size of a grease interceptor for a new FSE is 1,000 gallons.

7.4.3 Best Management Practices

Every FSE shall implement BMPs in its operations to minimize the discharge of FOG to the grease control device and/or the public sewer. Detailed requirements for BMPs shall be specified in the FOG WDP and all FSEs are required, at a minimum, to comply with the permit BMPs as well as any additional BMPs established by the director. BMPs may include, but are not limited to, kitchen practices and employee training procedures that are essential in minimizing FOG discharge to the public sewer. Additional BMP practices are available on the City's website.
https://roseville.ca.us/government/departments/environmental_utilities/at_your_service/sewer/sewer_business_customers

7.4.4 Records and Reporting Requirements

The permittee shall be required to keep all manifests, receipts, and invoices of all cleaning, maintenance, grease removal of/from the grease control device, disposal carrier, and disposal site location for no less than three years. In addition, the permittee shall, upon request, make the manifests, receipts, and invoices available to the director, any inspector, or an enforcement officer. These records may include an on-site logbook of grease interceptor, grease trap or grease control device cleaning and maintenance practices, a description of BMPs being implemented, including employee training, and copies of records and manifest of waste hauling interceptor contents.

7.5 Authority to Inspect

RMC section 14.14.290 grants the Director, an inspector, or an enforcement officer access to all parts of a wastewater generating and disposal facilities for purposes of inspection and sampling during all times the FSE is open and operating. No person shall interfere, resist or refuse entrance to the Director, an inspector, or enforcement officer attempting to inspect the facility. Any violation of this chapter, or the orders, rules, regulations, and permits issued under this chapter, is unlawful and shall be an infraction or misdemeanor as determined by the city attorney

7.6 Hot Spot Identification and PM Schedule

The WWC Division's CMMS maintains all records for maintenance, inspection, and construction work orders for the collection system. Sewer mains subject to blockages from FOG or mains that require higher cleaning frequency are added to the division's Hot Spot List. These mainline segments tend to have more frequent backups due to sluggish flows, poor grades, and sags, which allow solids to settle and FOG to form. The hot spot list has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainlines are also identified in a GIS layer in the Roseville GeoViewer, so field crews can access them while performing maintenance in the field. The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews. Mainline segments get added to the Hot Spot list based on conditions noted during CCTV inspection and the current frequency of cleaning. Currently, the WWC division has scheduled maintenance projects with 276 mainline segments identified as Hot Spots.

7.7 FOG Source Control Measures

One of the more significant additions to the WWC FOG program was the requirement of a FOG Waste Discharge Permit (WDP). Ordinances in the RMC require that before discharging any wastewater from an FSE into the wastewater system, the enrollee must obtain a WDP. The WWC division performs facility inspections before the FSE can discharge. The terms and condition of the WDP are as follows.

- Grease interceptors/traps are required for food handling facilities unless the Environmental Utilities Director has issued a waiver or variance (RMC 14.14.130).
- An FSE with a waiver or variance that has caused or contributed to a grease-related Sanitary Sewer Overflow (SSO) will be required to install a grease removal device. In the event it is not practical or feasible to install a grease removal device, the FSE will be subjected to an Annual Grease Mitigation Fee
- Grease removal devices shall be designed, constructed, and installed following California Plumbing Code Title 24, Part 5 and the City of Roseville Design and Construction Standards.
- Grease removal devices shall be maintained by pumping the entire contents when grease and sludge have exceeded 25% of the capacity of the interceptor, including removal of entire contents each time the interceptor is pumped. The interceptor shall be pumped out at a minimum of 6-month intervals or more frequently, depending on grease load from FSE. The grease hauler shall be licensed with the California Department of Food and Agriculture.
- The permittee shall retain pumping and maintenance records for a minimum of 3 years. These records shall be submitted quarterly to the City of Roseville and shall be readily available to City personnel inspecting the facility. At a minimum, the following information is required for the reporting records:
    - Date of Service
    - Volume removed

- Grease Hauler Permit number
- FOG disposal destination records

Repeated failure to submit reports on time could result in revocation of the FOG discharge permit.

- The permittee shall implement Best Management Practices (BMPs) in its operation to minimize the discharge of FOG to the sewer system under RMC 14.14.060
- The permittee shall notify the City of Roseville Wastewater Collection Division at 916-746-1890 of any of the following:
  - Sale, lease, or transfer of the operation for which the permit was issued.
  - Change of facility name
  - Changes to grease removal device or remodels, additions, or alterations to FSE greater than $20,000
  - Any SSO or blockage that would contribute to an SSO

7.7.1 FOG Characterization Data Form

The WWC Division identified all the commercial and industrial FOG dischargers within their jurisdictional boundaries during the SSMP preparedness review/audit and listed them in the data collection form. The breakdown of FSEs is summarized in **Table 7-1.**

Table 7-1 FOG Characterization Data

Group	Description	Total
Bakeries	Bakery – Bread/Other	17
Catering	Catering	1
Grocery	Grocery	21
Hotels	Hotels	8
Meat Market	Meat Market	1
Restaurants	Eating – Fast Food	136
	Eating – Sit Down Dining	122
Restaurants Total		**258**
Elder Care Facilities		**12**
Schools		**27**
Hospitals		**3**
Churches		**2**
Bars		**13**
Café		**33**
Deli		**38**
Ice Cream		**15**
Juice Bars		**7**
Movie Theaters		**3**
Grand Total		**465**

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8 System Evaluation and Capacity Assurance Plan

D.13 (viii). The enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flows, as well as the appropriate design for storm or wet weather events. The plan must include (a) evaluation of those portions of the sewer system that are experiencing or contributing to SSO discharge caused by hydraulic deficiency, (b) establish appropriate design criteria to undertake the evaluation, (c) 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, inflow, and infiltration (I/I) reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and funding source, (d) 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 Capacity Evaluation Process

Two hydraulic models were developed and used by the WWC Division (Roseville Model Project and South Placer Wastewater Authority (SPWA) Wastewater Systems Evaluation Project) to identify peak flows in each collection system component (pipe and pump station). In 2007, a hydraulic model of the City's sewer collection system was developed using the H2OMap Sewer modeling platform (2007 Model Development Project), parallel with a trunk sewer model for the combined Roseville, SPMUD, and Placer County systems. However, the City's sewer model was updated in 2017 to reflect existing and future demands within the City and upgrade the modeling platform to the fully dynamic InfoWorks ICM software. In addition, for the current Systems Evaluation Update, the City's model was updated in December 2020 to reflect existing, and future projected flows from Placer County and SPMUD. The report is located at:
https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Environmental Utilities/SPWA/Systems Evaluation Report Dec2020 Final_web.pdf
While EU Engineering staff will periodically run the hydraulic model for development, the Principal Engineer and Process Engineer will review and update the system evaluation and capacity assurance plan every ten years, looking for deficiencies and opportunities for improvement.

8.2 Design Criteria

The WWC Division established 10-year 24-hour peak wet weather storm design criteria for the evaluation of existing collection system components and sizing of new collection system in the Roseville Model Project and the SPWA Wastewater Systems Evaluation Project. This included the development of wastewater flow generation factors based on water use records and flow monitoring data in the City of Roseville.

8.3 Capacity Enhancement Measures

The SPWA Wastewater Systems Evaluation included the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 15 inches. Several deficiencies were identified in non-regional facilities which resulted in model-predicted overflows for one or more of the scenarios. Within the regional system, seven areas have been identified that either have deficiencies or could be impacted when upstream deficiencies are relieved.

Proposed improvement projects have been developed, and verified using the hydraulic model, to alleviate surcharging. The projects are summarized in **Table 8-1**. Each proposed project was reviewed on aerial mapping to identify potential design and constructability issues. These improvement projects were developed to sequentially decrease surcharging in downstream sewers.

Table 8-1 Proposed Capacity Improvement Projects

Project	Location	Existing Sizes	Improved Sizes	Description	Estimated Capital Improvement Cost
1	PS 26	.043 mgd firm capacity	1.6 mgd PWWF at Buildout	Increased capacity of PS26 and sewers on Sierra College Blvd. directly downstream of PS26 to relieve Old Auburn Trunk Sewer	$1,606,000
	Sierra College Blvd (Area G)	500 ft of 8-inch 1,900 ft of 10-inch	500 ft of 10-inch (upsize from 8-inch) 900 ft of 12-inch (upsize from 10-inch) 1,000ft of 15-inch (upsize from 10-inch)		
2	Eureka Rd and E. Rsvl. Pkwy	800 ft of 8-inch 1,400 ft of 10-inch	2,200 ft of 15-inch (upsize from 8 or 10-inch) 1,200 ft of new 15-inch	Redirect flows from PS 26 and Sierra College Blvd. down Eureka Rd to relieve Area E	$1,831,000
3	PS 25 (pumps)	2.02 mgd firm capacity	2.6 mgd PWWF at Buildout	Increased Firm capacity of PS 25 to meet Buildout PWWF New weir structure or adjustments to existing structure at PS25	$758,000
	PS 25 diversion structure	N/A	New diversion structure and related piping		

8.4 Capital Improvement Plan Schedule

The WWC Division Condition Assessment CIP divided the collection system manholes and pipes into 24 groups. The first group of pipes and manholes was inspected starting in 2006 and was included in the Rehabilitation and Replacement plan developed shortly after. The city continuously inspects pipelines using NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the city evaluates the risk of failure and assigns a priority ranking to each asset. Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure

The goal of the CIP is to develop annual project bundles of approximately $1.5 million. Using the priority rank of the pipe segment, the CIP prioritization includes one additional factor, street repairs. To minimize disruption to newly paved streets, those streets that the City anticipates repairing in the upcoming fiscal year are highest priority.

Condition assessments will be continually performed, and the CIP will be adjusted after each evaluation as follows:

- Emergency repairs will be done immediately and not be included in the CIP.
- Priority will be given to those assets which lie in the street to be paved such that the repair is done before street repaving
- Pipe segments will continue to be rated on the 1 to 5 scale, with 5 being the highest priority and 1s being the lowest. So, a 5 from the previous year's assessment would be prioritized over a 4 from the current assessment.

8.5 Appendix 8 – System Evaluation and Capacity Assurance Documents

Appendix 8 includes the following documents:

8-1 SPWA Regional Wastewater Systems Evaluation Report

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9 Monitoring, Measurement and Program Modification

D.13. (ix) 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, (e) Identify and illustrate SSO trends, including frequency, location, and volume.

9.1 Metrics to Prioritize SSMP Activities

The WWC Division has developed Key Performance Indicators to assess their progress in maintenance, operations, and sanitary sewer collection system management. The entire KPI worksheet is attached as Appendix 9-1. The metrics were developed to identify successes and challenges in reducing SSO frequency and impacts, improving collection system reliability, and providing capacity in the system to convey peak flows. Establishing specific KPIs for each element allows the WWC Management team to determine the degree of success of each component. Measurable performance indicators, e.g., number of SSO occurrences, length of lines cleaned, spill response times, number of capital projects completed, etc., are used. Additionally, the KPI benchmarking metrics worksheet includes the following categories of metric information:

- System Information
- Financial Information
- Sewer Maintenance
- Performance Measures

The City tracks detailed information about SSOs. While the number of SSOs has fluctuated up and down over the past four years, the average volume per SSO has decreased. This metric demonstrates the City's proactive efforts to contain and control SSOs and mitigate them efficiently. In addition, the City consistently shows a significantly lower SSO rate per 100 miles of pipe versus the State and Regional averages. These measurements indicate a successful sewer management program, employee training, emergency response, and a dedication to mitigating the effects of SSOs. **Table 9-1** summarizes a few datapoints of the City's SSO data and benchmarking. **Table 9-2** is a 10-year comparison of SSO rates for the City of Roseville, State of California and Region 5.

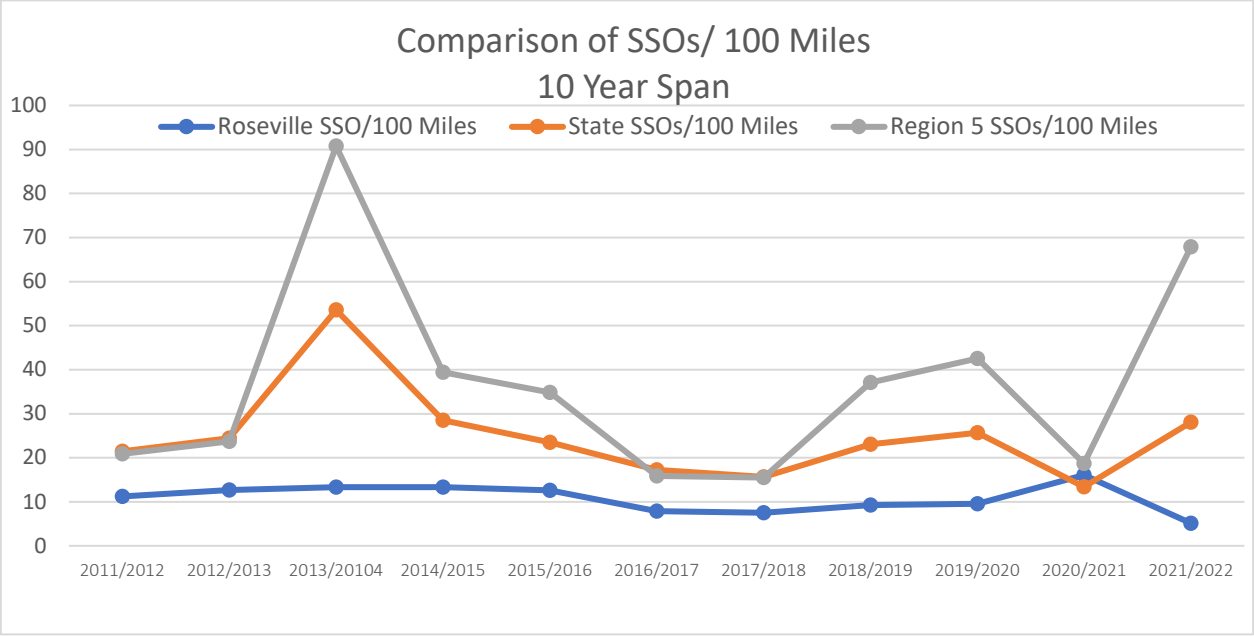
Table 9-1 Historical Summary of Sanitary Sewer Overflows

Year	*Roseville Total SSOs*	*Roseville SSOs Rate/100 Miles*	State SSOs Rate/100 Miles	Region 5 SSOs Rate/100 Miles	*Roseville Total Spill Volume, Gallons*	*Roseville Net Volume * Spill/1000 Capita*	State Net Volume* Spill/1000 Capita	Region 5 Net Volume* Spill/1000 Capita
2011/12	***35***	***11.25***	21.46	20.87	***948***	***.03***	1.89	4.53
2012/13	***42***	***12.65***	24.44	23.71	***1105***	***.05***	13.17	16.14
2013/14	***47***	***13.34***	53.55	90.77	***1136***	***.37***	12.26	12.46
2014/15	***42***	***13.34***	28.5	39.42	***1205***	***.60***	10.55	18.5
2015/16	***39***	***12.62***	23.49	34.8	***2525***	***.28***	2.61	25.54
2016/17	***23***	***7.87***	17.24	15.83	***1081***	***.65***	6.39	.43
2017/18	***25***	***7.52***	15.64	15.5	***1531***	***1.11***	3.57	1.73
2018/19	***31***	***9.23***	23.07	37.05	***869***	***.05***	3.67	1.88
2019/20	***33***	***9.55***	25.7	42.52	***580***	***.4***	2.88	.75
2020/21	***50***	***16.07***	13.39	18.7	***825***	***1.97***	.64	.64
2021/22**	***17***	***5.13***	38.06	67.93	***1570***	***.49***	.55	.25

*Net Volume = Volume Spilled minus Volume Recovered

** Through 20 FEB 22

Table 9-2, 10 Year SSO Comparison



9.2 Monitor and Measure Element Effectiveness

The WWC Division implements all elements of this SSMP and has been effective in minimizing SSOs and controlling the volume of those SSOs when they occur. The WWC Division evaluates the performance of its wastewater collection system at least annually using the developed KPIs. The City will then initiate changes to this SSMP and the related programs based on the results of the KPI evaluation. In addition, the Review of the SSMP and its elements is an assigned annual training for all WWC employees. A summary of the tracked KPIs and the relation to the SSMP elements are in Table 9-3.

Table 9-3 KPI Summarization

SSMP Element	Purpose	Performance Indicator
Goals	Sets Priorities for Division	Goals are listed in Chapter 1 of SSMP
Organization	Documentation of Chain of Command	Continually update Chain of Command Org. chart as changes occur
Legal Authority	Ensures Ordinances Are Upheld Protecting Integrity of the System	Roseville Municipal Code
Operations and Maintenance	Reduce & Eliminate SSOs through PM, CM and Emergency Response	▪ Manhole inspections performed ▪ Miles of sewer mains flushed per year ▪ Average cost of hydro cleaning ▪ Miles of sewer main and laterals CCTV per year ▪ Sewer cleanouts installed ▪ Sewer laterals rehabilitated ▪ Total miles rehabbed or replaced- mains and laterals
Design and Construction Standards	Ensures Infrastructure Is Designed, Installed and Tested Properly	▪ %Of new sewer main inspected vs. accepted ▪ % of new lateral inspected vs. accepted
Overflow Emergency Response	Provide Swift Response, Minimize Effects of an SSO, And to Meet Regulatory Requirements	▪ Average response time to SSO ▪ Average SSO duration mains and laterals
Fats, Oils and Grease	Ensure Illicit Discharges of FOG Aren't Entering the Wastewater System, Reduces FOG Blockages And Overflows	▪ Public outreach events per year ▪ Gallons of FOG curbside pickup ▪ % of FSEs with grease removal device ▪ FSE FOG inspections per year ▪ Number of SSOs & volume spilled from hot spots
System Evaluation & Capacity Assurance	Evaluate and Ensure System Capacity is Sufficient.	Hydraulic Model developed and run for new development and special projects,
Monitoring, Measurement & Program Modifications	Evaluate The Effectiveness of The SSMP and the Maintenance Activities Necessary to be Compliant	▪ Total SSOs and volume spilled (mains and laterals) ▪ % Of total volume recovered ▪ Total number of wet-weather SSOs ▪ Repeat SSOs within two years ▪ SSOs per 100 miles of pipe/year ▪ Number of Category 1 SSOs

		▪ % of SSOs caused by rags, roots, debris and FOG ▪ # of Lift station failures
Program Audits	Measures SSMP Effectiveness and Necessary Changes	Audits are performed on schedule, by an outside independent Engineering Firm
Communication Plan	Communication With the Public and Satellite Agencies on SSMP Performance	Regional partner meetings, City Website.

9.3 SSMP Performance Monitoring and Update Process

The field crews and supervisors regularly communicate regarding issues found in the field. Management uses this information to evaluate the success of the preventative maintenance program and the frequency it is performed. This strategy ensures field crews have buy-in. They continually check their effectiveness and identify potential areas for improvement in their performance. Their suggestions are essential for the City's success and meeting the SSMP goals.

9.4 SSO Trends

The KPI Benchmarking worksheet includes sixty-three data points to track preventative maintenance activities, enabling management staff to develop SSO trends. Based on these trends, Supervisors will adjust the preventative maintenance programs to address trends that aren't in alignment with the SSMP goals. The KPI worksheet is populated using data from completed work orders stored in the City's CMMS, Maximo. Assigned personnel complete data entry on a semi-annual basis minimum to keep the KPI sheet updated. Table 9-4 summarizes a few points of SSO benchmarking data for the last five years.

Table 9-4 SSO Statistics 2016-2021

Lower Lateral	**155**
Contractor Caused	1
CS Maintenance Caused Spill/Damage	2
Debris from Construction	3
Debris from Lower Lateral	2
Debris-Rags	10
Debris-Wipes/Non-Dispersables	12
Grease Deposition (FOG)	1
Non-Dispersables	2
Pipe Structural Problem/Failure	18
Pipe Structural Problem/Failure - Installation	3
Root Intrusion	101
Main	**6**
Damage by Others	1
Debris from Construction	1
Debris-Rags	1
Grease Deposition (FOG)	1
Pipe Structural Problem/Failure	2
Other Sewer System Structure	**1**
Other (Vactor Rear Door Seal Failure)	1
Grand Total	**162**

9.5 Appendix 9- Monitoring, Measurement & Modification

Appendix 9 includes the following documents:

9-1 KPI Benchmarking Metrics Sheet

9-2 SSO Historical Summary

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10 Program Audit and Annual Report

D.13. (x) 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 Audit Process Summary

The City audits and updates its SSMP on a biennial basis. Updates may occur more frequently if the Superintendent discovers modifications or regulations changes between audits. The purpose of the audit is to evaluate the effectiveness of the SSMP, primarily through evaluating system metrics and performance measures. In addition, the audit evaluates the City's compliance with the SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013.

The City has invested in the resources of a local engineering firm to perform the biennial audit for the last three audit cycles. WaterWorks Engineers administers the audit much like an RWQCB audit would be. The process starts with gathering information utilizing the Water Boards Pre-Inspection Questionnaire. This Audit Process has proven successful for the City, as significant changes have been made based on audit findings. The City will continue with this process for future audits.

10.2 SSMP Program Modifications

The WWC Division will monitor and review sewer performance metrics monthly and the status of each element of the SSMP on an annual basis. Formal SSMP audits will be performed every two years following the adoption of this SSMP. The SSMP is considered a "Living Document," therefore the Wastewater Superintendent or Process Engineer (LROs) will initiate or direct corrective actions when SSMP deficiencies are identified between audits.

The primary responsibility for proposing and initiating modifications to the SSMP will be that of the WWC Supervisors or from input from WWC field crews. Review and approval of any amendment to the SSMP, including whether it is a major or minor change, will be the responsibility of the WWC Superintendent.

10.3 Appendix 10 - SSMP Audit Documents

Appendix 10 includes the following audit forms and reports for the previous five audits.

10-1 SSMP Internal Audit FY 10-11
10-2 SSMP Audit FY 11/12-FY 12/13
10-3 SSMP Audit FY 13/14-FY 14/15
10-4 SSMP Audit FY 15/16-FY 17/18
10-5 SSMP Audit FY 18/19-FY 20/21

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11 Communication Program

D.13. (xi) 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 Purpose of the Communication Program

The purpose of the Communication Program is to describe how the City will inform, educate and engage with its stakeholders, regional partners, and the public on the development, implementation, and performance of the SSMP. Another aspect of this program is to increase public awareness of services provided by the City. Raising awareness of the significance of the sewer system and the impacts businesses and residents can make on the system is of utmost importance.

11.2 SSMP Development and Implementation

There were several opportunities for public comment during the development and implementation process at City Council meetings. In addition, the SSMP has been certified by the City Council on three occasions, 2009, 2014, and again in 2019. Since certification by the City Council, the division's SSMP has been audited on five occasions. This effort on re-writing the SSMP in its entirety will be on the City Council agenda for approval. Once approved, the document is available for download and review on the City's website at: https://www.roseville.ca.us/sewer

11.3 Public Outreach

The City's website is the central hub of communication for the businesses and residents of Roseville. The division's website offers many links to assist the public with any sewer issues, explain the importance of the City's wastewater collection system and summarize all the provided services. The division's motto is to "Call us First" with all sewer problems. Our emergency response service van is wrapped with the Call Us First motto. Since the City owns and maintains the lower lateral from the property line to the City main, calling us first to investigate a potential blockage may save residents from an unnecessary plumbing bill. Environmental Utilities in partnership with Roseville electric publishes a monthly print newsletter, Utility News, which goes out monthly to all customers who receive a printed bill. This newsletter includes information about all aspects of utilities and how customers can reduce impacts to infrastructure. Additionally, customers get an electronic version of similar stories sent to their emails, adding to the number of messaging opportunities the city provides. The WWC Division is expanding the use of the website

and social media to deliver proactive and deliberate messaging on WDR/SSMP requirements and program status to residential, commercial, industrial, and public stakeholders.

11.3.1 Live Sewer Smart

The City belongs to a multi-jurisdictional group named Live Sewer Smart. The Live Sewer Smart website contains information for residents of Roseville and the surrounding communities to educate and encourage proper ways to reduce impacts on the sewer system. For example, the website provides residents with timely information regarding wipes in the pipes, how to properly dispose of FOG, and contact information for all agencies belonging to the program, should they have questions. In addition, there are several links to videos presenting more details that affect residential and commercial sewer systems. Live Sewer Smart can be located at: https://livesewersmart.com/

11.4 Tributary/Satellite Communication

The WWC Division routinely communicates with their satellite partners and often supports them with mutual aid sharing in terms of equipment and resources. The City has three formal agreements with tributary and satellite systems in place and currently working on a mutual aide agreement with the County of Placer Wastewater Division. The listed agreements below are included as appendices in Chapter 3:

- The Joint Exercise of Powers Agreement for the SPWA – Appendix 3-2
- The agreement regarding the operation of and use of the South Placer Regional Wastewater Facilities – Appendix 3-3.
- The Contract and Operating Agreement with Sacramento Area Sewer District and Sacramento Regional County Sanitation District – Appendix 3-4