



CITY OF LATHROP
Sewer System Management Plan

Draft
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List of Abbreviations and Acronyms

ADWF	Average Dry Weather Flow
CCSCSMP	Central Core Sewer Collection System Master Plan
City	City of Lathrop
CIP	Capital Improvement Project
CWEA	Clean Water Environment Association
FOG	Fats, Oils, and Grease
Gpd	Gallons per day
GWDR	General Waste Discharge Requirements
I/I	Inflow and Infiltration
LMC	Lathrop Municipal Code
LMFD	Lathrop Manteca Fire Department
MBR	Membrane Bio-Reactor
MRP	Monitoring and Reporting Program
O&M	Operations & Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
PDF	Peak Daily Flow
PDWF	Peak Dry Weather Flow
POTW	Publicly Owned Treatment Works
PWD	Public Works Department
PWWF	Peak Wet Weather Flow
RWQCB	Regional Water Quality Control Board, Central Valley Region 5
SORP	Sanitary Sewer Overflow Response Plan
SSMP	Sewer System Management Plan
SSO	Sewer System Overflow
SWRCB	State Water Resources Control Board
VWNA	Veolia Water North America
WDRs	Waste Discharge Requirements
WGF	Waster Generation Factor
WRP-1	Water Recycling Plant No. 1

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INTRODUCTION

This introductory section provides background information on the purpose and organization of this Sewer System Management Plan (SSMP) and provides a brief overview of the City's service area and sewer system.

SSMP Requirement Background

This SSMP has been prepared in compliance with the requirements contained in State Water Resources Control Board (SWRCB) General Order No. 2006-0003-DWQ. This order was adopted at its meeting on May 2, 2006 to require all public wastewater collection system agencies in California with greater than one mile of sewers to be regulated under General Waste Discharge Requirements (GWDR). The SWRCB action also mandates the development of an SSMP and the reporting of SSOs using an electronic reporting system.

This SSMP was also prepared to meet requirements presented in Waste Discharge Requirements (WDRs) Order No. R5-2006-0094 for the City of Lathrop Water Recycling Plant San Joaquin County. This report serves to meet the requirement to submit a Final SSMP by 31 August 2009, and replaces the Interim Sewer System Management Plan that was submitted by the City to the RWQCB in December 2006.

Document Organization

This SSMP was modeled after the City of Los Altos SSMP which was posted on the Clean Water Environment Association (CWEA) website on their SSMP resource database. The SSMP includes eleven elements, as listed below. Each of these elements forms a section of this document.

1. Goals
2. Organization
3. Legal Authority
4. Operation and Maintenance Provisions
5. Design and Performance Provisions
6. Overflow Emergency Response Plan
7. Fats, Oils and Grease Control Program
8. System Evaluation and Capacity Assurance Plan
9. Monitoring, Measurement, and Program Modifications
10. SSMP Program Audits

11. Communication Plan

Each element section is organized into sub-sections, as follows:

Description of the regulatory requirements for that element

Identification of associated appendix and list of supporting information included in the appendix.

Discussion of the element. The discussion may be split into multiple sub-sections depending on length and complexity.

Supporting information for each element is included in an appendix associated with that section, as applicable. In general, information expected to require relatively frequent updates (such as names and phone numbers of staff) are included in appendices, as well as other supporting information, such as forms or schedules.

City Service Area and Sewer System

The City of Lathrop (City) is located seventy (70) miles due east of San Francisco in San Joaquin County. It is located at the interchange of three major freeways: Interstate 5 (I-5), Interstate 205 (I-205), and State Route 120 (SR-120). The City of Lathrop is located nearby or adjacent to unincorporated areas of San Joaquin County and the City of Stockton towards the north, the City of Manteca towards the east, the City of Tracy towards the south, and the San Joaquin –Sacramento River Delta towards the west. The City has an area of 22 square miles of level terrain, and a population of 17,429 (2008 - CA Dept. of Finance).

The City's wastewater is conveyed by three separate collection systems consisting of approximately 61 miles of sewer pipe to three publicly owned wastewater treatment plants (POTWs) that are operated under three separate permits administered by the Regional Water Quality Control Board;

1. WRP-1 Crossroads, for the Crossroads Commerce Center (CCC) service area;
2. WRP-1 MBR Expansion, for the Mossdale and River Islands service areas;
3. Manteca Water Quality Control Facility, for the residential, commercial, and industrial service area located east of I-5 that are not part of the CCC

The WRP-1 MBR Expansion produces tertiary treated recycled water that is stored in recycled water storage ponds and distributed to designated land application areas. The WRP-1 Crossroads plant produces secondary treated effluent that is also stored in ponds and used to irrigate designated land application areas.

ELEMENT 1: GOALS

The summarized requirements for the Goals element of the SSMP are as follows:

1.1 Regulatory Requirements for Goals Element

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 in order to reduce and prevent Sanitary Sewer Overflows (SSOs), as well as mitigate any SSOs that do occur.

1.2 Element 1 Appendix

None

1.3 Goals Discussion

In support of this SSMP, the City has developed the following goals to properly manage, operate and maintain its sewer system:

1. To properly manage, operate and maintain all portions of the City's sewer system
2. Minimize the frequency and magnitude of SSOs.
3. Prevent public health hazards.
4. To meet all applicable regulatory notification, monitoring and reporting requirements.
5. Protect the City's investment in its collection systems by performing preventative maintenance and extending their useful life.
6. Prevent damage to public and private property that could result from SSOs.
7. Use funds available for sewer operations in the most efficient manner.
8. Convey wastewater to treatment facilities with a minimum of infiltration, inflow and exfiltration.
9. Provide adequate capacity to convey peak wastewater flows.
10. Perform all operations in a safe manner to avoid personal injury and property damage.

This SSMP will contribute to the proper management of the collection system and assist the City in minimizing the frequency and impacts of SSOs by providing guidance for appropriate maintenance, capacity management, and emergency response.

ELEMENT 2: ORGANIZATION

This section of the SSMP identifies City staff who are responsible for implementing this SSMP, responding to SSO events, and meeting the SSO reporting requirements. This section also includes the designation of the Authorized Representative to meet SWRCB requirements for completing and certifying spill reports.

2.1 Regulatory Requirements for Organization Element

The collection system agency's SSMP must identify:

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

2.2 Element 2 Appendix A

Supporting information for Element 2 is included in Appendix A. This appendix includes the following documents:

1. Figure A-1 Organization Chart of Wastewater Utility Staff
2. Description of General Responsibilities for Wastewater Utility Staff
3. Figure A-2 – SSO Reporting Chain of Communication
4. Table A-1 Names and Telephone Numbers of Staff Responsible for SSMP

2.3 Organization Discussion

This section discusses the organization and roles of sewer staff, the authorized representative to the SWRCB, and key staff responsible for implementing and maintaining the SSMP.

Department Organization

The organization chart for the management, operation, and maintenance of the City's wastewater collection system is shown on Appendix A, Figure A-1. The names and phone numbers of staff filling these positions are included in Appendix A, Table A-1.

Description of General Responsibilities

Description of general responsibilities for City staff responsible for management, administrative and maintenance positions responsible for implementing specific measures in the SSMP program are provided in Appendix A.

The Public Works Department Operations and Maintenance Division have lead responsibility for the operation and maintenance of the collection system. The O&M field crews have the primary responsibility to respond, clean up and document SSOs and spills from the collection system, including lift and pump stations. PWD administrative staff have primary responsibility to log all documentation of any overflows and spills and provide any necessary agency notifications. Contract operators (VWNA) at WRP-1 wastewater treatment plant are responsible for monitoring quality and quantity of water generated and received at the plant.

Authorized Representative

The City’s authorized representative in all wastewater collection system matters is the Public Works Director or his designee. The Public Works Director or his designee is authorized to certify electronic spill reports submitted to the RWQCB.

Responsibility for SSMP Implementation

The Public Works Director or his designee is responsible for implementing and maintaining all elements of this SSMP.

2.4 SSO Reporting Chain of Communication

The reporting chain of communication for reporting SSOs is shown in Appendix A, Figure A-2. Officials receiving immediate notification of the SSO vary depending on the size of the spill and whether or not the spill contains hazardous materials, affects surface waters, or has the potential to impact human health. Table 2-1 lists these officials, and the circumstances under which they are notified immediately.

Table 2-1 Officials Receiving Immediate Notification of SSO

Contact	Circumstance for Immediate Notification
Public Works Maintenance Supervisor	All spills
Public Works Superintendent Operations and Maintenance	All Spills
Public Works Director	Major spills, or those affecting surface water or human health
Lathrop Manteca Fire Department	Spills involving hazardous materials
San Joaquin County Department of Environmental Health	Spills that may impact human health
State Office of Emergency Services	Major spills (greater than 1,000 gallons), or those affecting surface water or human health.
Regional Water Quality Control Board	Major spills (greater than 1,000 gallons), or those affecting surface water or human health. (within 24 hours)

ELEMENT 3: LEGAL AUTHORITY

The requirements for the Legal Authority element of the SSMP (Element 3) are summarized below:

3.1 Regulatory Requirements for Legal Authority Element

The collection system agency must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

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

3.2 Element 3 Appendix B

Supporting information for Element 3 is included in Appendix B. This appendix includes the following documents:

1. Lathrop Municipal Code (LMC) Chapter 13.16 - SEWER SERVICE SYSTEM
2. LMC Chapter 13.26 - SEWER USE AND INDUSTRIAL WASTEWATER REGULATIONS
3. Enforcement Response Plan (DRAFT) – Enforcement of Sewer Use Ordinance #05-254.
4. FOG Enforcement Response Plan (DRAFT) – Enforcement of Sewer Use Ordinance #05-0254.
5. Resolution No. 05-1975; Resolution of the City Council of the City of Lathrop Adopting an Industrial Pretreatment Program Interjurisdictional Agreement with the City of Manteca.
6. Interjurisdictional Agreement Between the City of Manteca and The City of Lathrop.

3.3 Municipal Code

The legal authority required for the SSMP by the SWRCB is contained within the City's municipal code. Two chapters of the municipal code are dedicated to the sewer system, all included in Title 13, Public Services:

1. Lathrop Municipal Code (LMC) Chapter 13.16 - SEWER SERVICE SYSTEM
2. LMC Chapter 13.26 - SEWER USE AND INDUSTRIAL WASTEWATER REGULATIONS

Chapters 13.16 and 13.26 as listed above pertain to the legal authority required for fulfillment of SSMP requirements. These chapters are included in full in Appendix B. Portions of these chapters are discussed in the following sub-sections as they pertain to prevention of illicit discharges, proper design and construction of sewer and connections, maintenance access, and enforcement measures.

The City plans to update the Municipal Code to clarify and enhance the City's legal authority and plans to implement the changes in 2009. For the planned changes refer to Appendix B. All discussion in the following sub-sections on the City's legal authority as required by the SSMP are based on the City's existing Municipal Code as of fall 2008.

Prevention of Illicit Discharges

LMC Chapters 13.16 and 13.26 prohibit illicit discharges to the sewer system. LMC Section 13.16.050 describes the prohibition of discharging storm water to the sewer system. Section 13.16.070 specifically demonstrates the City's legal authority for preventing illicit discharges of substances containing chemicals and unauthorized debris which may interfere with the operation of the sewer system.

Proper Design and Construction of Sewers and Connections

LMC Sections 13.16.100 and 13.16.110 requires approval of plans and specifications for sewerage construction prior to construction. If a facility will convey industrial wastewater, a permit for industrial wastewater discharge must also be obtained. In accordance with Section 13.16.110, the City requires all new design and construction of sewers and connections to meet the City of Lathrop Public Works Department Design and Construction Standards.

Lateral Maintenance Access

LMC Section 13.16.150 states the property owner is responsible for maintenance, inspection or repairs of the lateral on private property (from the building to the cleanout located at the public right of way or easement line). Laterals maintained by the City exist within the public right of way, or are located within a public utility easement. LMC Section 13.16.280 requires access to all facilities directly or indirectly connected to the City sewer system to be given to authorized personnel of the City at all reasonable times, including during emergencies.

Limit Discharge of FOG and Other Debris

LMC Section 13.16.070, Prohibited waste discharges, prohibits the discharge of any water or waste containing floatable or dispersed grease (defined as an oil, fat, grease, or other ether soluble matter) in excess of 50 mg/L. The section also specifically includes other types of debris.

The City is in the process of reviewing and adopting a draft FOG program that was prepared by VVNA for the City's Industrial Pretreatment Program.

Enforcement Measures

LMC 13.16 and 13.26 provide penalties for violation of any of the provisions of its chapter.

The City is in the process of reviewing and adopting a draft Enforcement Response Plans prepared by Veolia Water-West for the City’s Industrial Pretreatment Program.

3.4 Agreements with Other Agencies

City of Manteca Interjurisdictional Sewer Agreement

The City of Lathrop has an agreement with the City of Manteca that allows Lathrop to utilize up to 14.7% of the wastewater treatment capacity of the Manteca Water Quality Control Facility (WQCF). In accordance with a request from the Regional Water Quality Control Board (RWQCB), the City of Lathrop has adopted an interjurisdictional agreement and adopted an industrial pretreatment program, sewer ordinance, and local limits that are at least as stringent as the City of Manteca’s. The interjurisdictional agreement designates Manteca as the agent of Lathrop for the purpose of implementation and enforcement of Lathrop’s sewer ordinance against industrial dischargers to the WQCF system located in Lathrop. Manteca issues permits to all industrial dischargers to the WQCF system, and conducts inspections, sampling and analysis and other duties required by Federal and State law or NPDES permit.

ELEMENT 4: OPERATIONS AND MAINTENANCE PROGRAM

This section of the SSMP discusses the City’s operations, maintenance and other related measures and activities. This section fulfills the Operation and Maintenance Program SSMP requirement for the SWRCB (Element 4).

4.1 Regulatory Requirements for Operations and Maintenance Program

The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee’s system:

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

4.2 Element 4 Appendix C

Supporting information for Element 4 is included in Appendix C. This appendix includes the following documents:

Element 4: Operations and Maintenance Program

1. Figure C-1; Map of East (Historic) Lathrop Sewer Service Area
2. Figure C-2; Map of West Lathrop Sewer Service Area
3. Figure C-3; Map of East (Historic) Lathrop Sewer Collection System
4. Figure C-4; Map of West Lathrop Sewer Collection System
5. Sewer Flushing Report Form
6. Daily Lift Station Inspections Report Form
7. Pump Inspection Report Form
8. 12-Inch Force Main to Manteca Inspection Report
9. Air/Vacuum Release Valve Report
10. Table C-1; Summary of Wastewater Lift and Pump Stations

4.3 Collection System Map Discussion

The City has been working with a consultant to develop a GIS database and maps of its wastewater collection system. The majority of the existing wastewater collection system has been mapped and data collection for asset management is underway. Maps of the wastewater service areas and collection systems are shown in Appendix C. The East (Historic) Lathrop Sewer Service is shown in Figure C-1, and the West Lathrop Sewer Service Area is shown in Figure C-2. The existing and proposed layout for the collection system is shown in Figure C-3 for Historic Lathrop, and Figure C-5 for Mossdale Landing, River Islands, and CLSP which comprise the West Lathrop area. These figures illustrate locations of lift stations, pump stations, sewer manholes, and sewer lines. Routine updates of the GIS database and wastewater collection system maps are required.

4.4 O&M Activities

To ensure proper operation of the collection system, the PWD field crews and contract treatment operators perform routine preventative operation and maintenance activities including inspections at the frequency described in Table 4-1.

Element 4: Operations and Maintenance Program

TABLE 4-1
CITY OF LATHROP
INTERIM SEWER SYSTEM MANAGEMENT PLAN
ROUTINE INSPECTION OF KEY COLLECTION SYSTEM COMPONENTS

System Components	Inspection Routine	Lead Responsibility
Inspect lift stations for general operation	Once per day	Field crews
Inspect and flush sewer and manholes	Once per year	Field crews
Detailed inspection of lift stations	Twice per year	Field crews
Inspect Air/Vacuum release valves (ARVs) condition	Every three months	Field crews
Inspect Crossroads Plant lift station for general operation	Once per day	WRP-1 operators
Detailed inspection of Crossroads Plant lift station	Once per year	WRP-1 operators
Inspect 8 and 12 inch diameter force mains to WRP-1	Once per week	Field crews
Inspect 12-inch force main to Manteca WQCF	Once per week	Field crews

Sewer Cleaning and Manhole Inspection

Sewer lines are cleaned and flushed on an annual basis. With the flushing of each sewer line every year, each upstream and downstream manhole is inspected. For each upstream and downstream manhole inspected and flushed, the following information is recorded: date, operator names, line location, line size, line material, line length, number of runs to clear line, condition of line, description of any damage to line, description of any material in line, location of manhole, depth to invert(s), grout condition, lid condition, manhole material, drop manhole (Y/N), number of services in manhole, evidence of flooding due to backup, description of material in manhole. All observations are recorded on the “Sewer Flushing Report” form contained in Appendix C.

Lift Station Inspection

On a daily basis, crews inspect lift stations for visual alarms, audible alarms (where applicable), and general troubleshooting. Pump run times are recorded to determine if pumps are operating properly. All observations are noted on the “Daily Lift Station Inspections Report” form contained in Appendix C.

Twice per year, all lift station pumps are lifted from the wet well and inspected. The condition of each of the following components is noted: oil level, oil condition, wear rings, case, volute, pull cable, cord seal, noise, vibration, level sensor, floats, panel, warning lights, and amperage draw. All observations are recorded on the “Pump Inspection Report” form contained in Appendix C.

Air/Vacuum Release Valves (ARVs) Condition

Every three months, ARVs on force mains are inspected. The following items are inspected on the ARVs:

1. Two inch ball valve is exercised and checked
2. ARV manhole is checked for evidence of overflows
3. Air release is inspected
4. Vacuum break is inspected

All observations are recorded on the “Air/Vacuum Release Valve Report” form contained in Appendix C.

12-inch Force Main to WQCF

Once per week, the 12 inch force main alignment to the Manteca WQCF is driven and inspected. The manholes are opened and the force main is inspected. All observations are noted on the “12 Inch Force Main to Manteca Inspection Report” form contained in Appendix C.

Pipeline Inspection

The PWD does not currently own equipment for performing closed circuit television (CCTV) inspections. CCTV inspections are accomplished as needed by an outside contractor. The PWD goal is to incorporate a procedure for conducting CCTV inspections on 20 percent of the collection system each year, resulting in a complete inspection over a five-year period. Priority will be given to those lines that have had historical problems or have recently backed up. Results of the CCTV inspections would be used to determine low, medium, and high areas of concern within the collection system, increase cleaning efforts and develop CIP’s to correct the areas of concern where practical.

Investigation of Customer Complaints

The City responds to customer complaints about sewer service. Complaints are generally related to sewer stoppages, overflows, or odors. Response is performed by the collection system staff during work hours and the standby worker during after hours. Response includes assessing the complaint and resolving the problem. The majority of the complaints are related to stoppages. During work hours, a cleaning crew is diverted to remove stoppages. Most of the stoppages occur in laterals. Although crews respond to all stoppage complaints, they are not responsible for clearing stoppages in laterals located on private property or outside of the public right-of-way. The City’s initial response time goal is 30 minutes. During non-work hours, the City has staff on standby to address complaints.

4.5 Rehabilitation and Replacement Plan

The City has three methods of scheduling and funding rehabilitation and replacement of existing equipment within the collection system:

1. Routine maintenance is budgeted annually and is planned by the field crews as scheduled and/or needed; and
2. Scheduling and funding for capital replacement equipment is also through the departmental budget - scheduled and emergency repairs are funded under this item when the costs of the equipment can be deemed an investment in the system, usually over \$1,000; and
3. Capital improvement program (CIP) can be used for equipment replacement and new construction - this method of scheduling and budgeting is used for very large replacement projects or when expansion or oversizing of the facility is needed.

Equipment replacement reflects inspection reports recorded during routine maintenance, input from PWD staff, and results of consultant/contractor evaluations of the collection system. The PWD has several goals to improve the current rehabilitation and replacement plan. These goals include:

1. Develop a list which projects the time frame for replacement needs of equipment and parts. The list will be vital for developing a schedule for implementing short and long-term needs and coordinating funding for those needs. Check time frame estimates annually with equipment operation logs for run time and inspection reports.
2. Develop a formal method for using available operation and maintenance data such as inspection reports, historical SSOs, and field observations to rank the condition of parts of the collection system. Use the results of the ranking for scheduling rehabilitation activities.
3. Develop Asset Management program and Computerized Maintenance Management System technologies tied to the City's GIS database that will help manage utility information and improve wastewater planning and services.

4.6 Training

PWD field crews are trained on a regular basis on use of the sewer cleaning equipment, methods for flushing the sewer system, work safety, permitting requirements and emergency response procedures¹. General tailgate safety meetings are held each Thursday for operators. Updates regarding the sewer system are generally announced at these meetings.

¹ Note: field crews are not trained or certified on confined space entry, and a contractor is on call for all confined space entries.

4.7 Equipment and Replacement Parts

Operation and maintenance manuals for most of the pump stations and equipment are available. The operation and maintenance manuals contain manufacturer information pertaining to recommended maintenance procedures and parts lists. A small inventory of spare parts such as washers, packing, and lanyards are maintained by the PWD. Larger parts such as impellers and motors for pumps are ordered as needed. Because the pump stations are designed with one redundant pumping unit, sufficient time is typically available for ordering replacement parts and repairing the units. Information on the pumps at the existing City pump and lift stations is provided in Appendix C. The City also maintains a contract with an outside company for providing back-up sewer cleaner trucks when needed.

ELEMENT 5: DESIGN & PERFORMANCE PROVISIONS

This section of the SSMP discusses the City's design and construction standards. This section fulfills the Design and Performance Provisions SSMP requirement for the SWRCB (Element 5).

5.1 Regulatory Requirements for Design & Performance Provisions

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

5.2 Element 5 Appendix D

Supporting information for Element 5 is included in Appendix D. This appendix includes the following documents:

1. City of Lathrop Public Works Department Design and Construction Standards, Section 5 – Sewer System Standards
2. City of Lathrop Public Works Department Design and Construction Standards, Sewer Standard Details

5.3 Design & Performance Provisions Discussion

The PWD has updated its Design and Construction Standards, including sections for the sewer collection system, pump station and other appurtenances, and for the rehabilitation and repair of existing sanitary sewer systems in February, 2007. The City typically updates its standards every five years, or as needed.

The City Standards include testing and inspection procedures for sewer projects. The PWD has a full time Public Works Inspector for public works projects, and has set a goal to further develop procedures for inspection and testing of the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

ELEMENT 6: OVERFLOW EMERGENCY RESPONSE PLAN

The section of the SSMP provides an overview and summary of the City's emergency response documents and procedures for sewer overflows. This section fulfills the Overflow Emergency Response Plan requirement of the SWRCB (Element 6) SSMP requirements. Complete documentation of overflow response procedures are attached in Appendix E.

6.1 Regulatory Requirements for Overflow Emergency Response Plan Element

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

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

6.2 Element 6 Appendix E

Supporting information for Element 6 is included in Appendix E. This appendix includes the following documents:

1. Overflow Emergency Response Plan

2. List of Contacts for Overflow Emergency Response Plan
3. Procedures for Estimating the Volume of Sewer Overflows.
4. Sanitary Sewer Overflow Report Form.

6.3 Overflow Emergency Response Plan

The City's Overflow Emergency Response Plan (OERP) is organized into nine sections, as follows:

- I. Overflow Detection
- II. Initial Response
- III. Recovery and Clean-up (Mitigation)
- IV. Public Access and Warning
- V. Water Quality Sampling and Analysis
- VI. Investigation and Documentation
- VII. Regulatory Notification and Reporting
- VIII. Equipment
- IX. Training

Objectives of the City's OERP are to protect public health and the environment, satisfy regulatory agency requirements, and minimize risk of enforcement actions against the City. Additional objectives include providing appropriate customer service and protecting City personnel, the collection system and facilities, and private and public property.

Overflow Detection

This section of the plan details procedures for overflow detection obtained from the public, City employees or through the City's SCADA system. Includes procedures for the PWD receptionist or on-call employee to receive and record relevant information regarding a possible overflow from a caller.

Initial Response

This section details procedures when the maintenance crew first arrives at the site of a sewer overflow. It is the responsibility of the first personnel to arrive at the site of a sewer overflow to protect the health and safety of the public by mitigating the impact of the overflow to the maximum extent possible. Upon arrival, the crew is responsible for determining the cause of the overflow, assessing the need for additional equipment or assistance, notifying the dispatcher to contact the San Joaquin County Department of Environmental Health if private property is affected, and taking immediate steps to stop the overflow. Guidelines for completing and documenting a preliminary damage assessment are provided, and coordination with any hazardous material response is explained.

Recovery and Clean-up (Mitigation)

This section describes recovery and clean-up procedures to be performed by the sewer maintenance crew to restore the site to normal. Specific clean-up procedures are provided for paved areas, areas with bare soil or vegetation, and environmentally sensitive areas.

Public Access and Warning

This section describes procedures to set up barricades and post warning signs where public health may be at risk by contact with sewage or sewage contamination.

Water Quality Sampling and Analysis

This section describes how water quality samples shall be taken in any body of water receiving sewage to determine the extent of the contamination. Water quality sampling should be performed to:

1. Determine the extent of the area that has been impacted by sewage contamination
2. Determine when the area is safe for public contact.

Water quality samples may be taken by trained staff or an independent water quality testing laboratory under contract with the City.

Investigation and Documentation

Procedures for investigation and documentation of sanitary sewer overflows are provided in this section of the OERP. Information obtained for the SSO shall be recorded on the Internal Sanitary Sewer Overflow Report Form provided in Appendix E. All information and documentation shall be kept in a file created for each SSO event. A checklist of the information that should be included to document the sewer overflow event is provided in Appendix E.

Regulatory Notification and Reporting

Procedures for notification and reporting are provided in this section of the OERP for each of the three SSO categories established by the State Order:

1. Category 1: All discharges of sewage that equal or exceed 1,000 gallons, result in a discharge to a drainage channel and/or surface water; discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system.
2. Category 2: All other discharges of sewage resulting from a failure in the collection system.
3. Private Lateral Sewage Discharges: Sewage discharges that are caused by blockages or other problems within a privately owned lateral

The OERP lists the information that needs to be reported to the Office of Emergency Services (OES), the Central Valley Regional Water Quality Control Board, and the SSO

Element 6: Overflow Emergency Response Plan

Online Database. Procedures for notification of San Joaquin Department of Environmental Health, California Department of Fish and Game, South San Joaquin Irrigation District and local agencies and officials are also provided in the plan.

Equipment

This section of the OERP provides a list and description of equipment required to respond to a SSO such as:

- VacCon Truck
- Portable Pumps and Hoses
- Street Sweeper
- Closed Circuit Television (CCTV) Inspection Unit
- Emergency Response Truck(s)/Trailer
- Photographic Equipment
- GPS Unit

Training

This section of the OERP provides training procedures for personnel that may have a role in responding to a sewer overflow. Initial and annual refresher training in sewer overflow response will be provided to all employees to ensure they are appropriately trained. SSO Response exercises will be held to ensure that employees are up to date on the procedures, to verify the equipment is in working order, and the required materials are readily available. The training exercises should cover scenarios typically observed during sewer-related emergencies (e.g. mainline blockage, mainline failure, force main failure, pump station failure, and lateral blockage). Records shall be kept of all training that is provided in support of this plan.

ELEMENT 7: FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

This section of the SSMP discusses the City’s FOG control measures, including identification of problem areas, focused cleaning, and source control. This section fulfills the FOG Control requirement for the SWRCB (Element 7) SSMP requirements.

7.1 Regulatory Requirements for FOG Control Element

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

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

7.2 Element 7 Appendix F

Supporting information for Element 7 is included in Appendix F. This appendix includes the following documents:

1. List of food facilities in Lathrop (potential grease dischargers)

2. City of Lathrop - Industrial Pretreatment Program, Implementation Procedures.
3. Sample Facility Inspection Form and Checklist
4. “Preventing Sewer Backups” public outreach brochure.
5. Residential FOG public outreach poster.

7.3 FOG Control Discussion

The City has determined that a FOG control program is necessary per SSMP requirements. Approximately 25 food service facilities are located within City limits and discharge to City sewers. A list of food facilities in Lathrop identified as potential grease dischargers is provided in Appendix F. Operations and maintenance staff have also noted the tendency for grease buildup in specific sewer lines. This section discusses measures the City takes to control FOG.

The City’s FOG control program consists of routine sewer cleaning and maintenance as well as source control. The City has a contract with VWNA to develop and administer the City’s Industrial Pretreatment Program (IPP) which includes source control for FOG.

Implementation procedures for the FOG program are provided under IMP 16 – Fat, Oil and Grease Control provided in Appendix F. The following subsections discuss identification and cleaning of grease-prone areas, legal authority to prohibit grease discharge or require a grease removal device, facility inspection, and public outreach.

Identification and Sewer Cleaning

The core means of FOG control utilized by the City is identification of trouble spots or sewer lines that are likely prone to grease accumulation and targeted cleaning of these areas and chemical root control measures to inhibit the growth of roots where grease may accumulate.

- a. Identification of Grease Problem Areas. The City identifies potential grease problem areas by tracking locations and causes of dry weather blockages and SSOs. Additionally, debris type and severity are noted by maintenance crews during routine cleaning. Areas with several restaurants or grease-producing facilities are also considered likely potential grease problem areas.
- b. Sewer Cleaning. City sewer maintenance crews clean the entire wastewater collection system at least once per year. Additional cleaning is provided on an as-needed basis for areas with a history of stoppages or overflows on a line, as well as areas expected to be prone to grease buildup

Element 7: Fats, Oils and Grease (FOG) Control Program

- c. Root Foaming Program. The City has a cyclic root foaming program and covers approximately one-third of the system per year. Since grease tends to accumulate on roots, this program helps prevent grease-related stoppages .
- d. Blockage Investigation. The City inspects each sewer following a blockage. If the source of the grease in a lateral can be identified, the City contacts that restaurant or source of grease.

Additional information about cleaning and maintenance is included in Element 4 - Operations and Maintenance Program.

Legal Authority

The Lathrop Municipal Code (LMC) establishes legal authority to prohibit discharge of water or waste to the system containing floatable grease in excess of 50 mg/l or dispersed in excess of fifty (50) mg/l). The LMC requires grease, oil or sand interceptors to be provided when, in the opinion of the public works director they are necessary for the proper handling of liquid wastes containing grease in excessive amounts. The interceptors are to be of a type and capacity approved by the public works director, and shall be located as to be readily and easily accessible for inspection and cleaning. The grease, oil and sand interceptors are to be maintained in continuously efficient operation. (LMC 13.16.070). The sewer ordinance and other documents related to the City's FOG control program are contained in Appendix B – Element 3 Legal Authority which also includes the Enforcement Response Plan – Fat Oil & Grease Control Program that was prepared and is currently administered by VVNA as part of an overall Industrial Pretreatment Program for the City's sewer system.

Facility Inspection

Facilities are routinely inspected as part of Lathrop's FOG control program. Facilities are inspected as follow-up to user surveys to identify new and/or existing sources, permit termination and closure, industrial user monitoring, and for installation and routine monitoring inspections of maintenance of FOG interceptors and traps. Information on facility inspections during these activities is included in Appendix B – City of Lathrop IPP Implementation Procedures. A sample Facility Inspection Form and inspection checklist used during facility inspections is provided in Appendix B.

Public Outreach

The City produces a brochure entitled "Preventing Sewer Backups and Overflows." In addition to other means of reducing backups or blockages, this brochure discusses grease and the role of fats, oils, and grease in causing blockages. This brochure is displayed at City Hall and is also available from the City's website (<http://www.ci.lathrop.org>). Additionally, sewer maintenance staff provide this brochure to residents who are affected by a blockage or backup. A copy of the brochure is included in Appendix F.

The City has developed a public outreach poster targeted to residential users. In addition to discouraging discharge of FOG to the sewers, this public outreach poster directs residents

Element 7: Fats, Oils and Grease (FOG) Control Program

how to properly dispose of FOG. A copy of this public outreach poster is included in Appendix F.

ELEMENT 8: SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This section of the SSMP discusses City capacity management measures, including the most recent Master Plan and recommended capacity improvement projects. This section fulfills the System Evaluation and Capacity Assurance Plan SSMP requirement for the SWRCB (Element 8).

8.1 Regulatory Requirements for Capacity Management

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

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

8.2 Element 8 Appendix G

1. Hydraulic Model Output and Improvement Project Design Calculations

8.3 Capacity Evaluation Discussion

A trunk sewer hydraulic model for Historic Lathrop was developed to determine reaches of the existing collection system which may have hydraulic deficiencies. The following sections will describe the modeling software, methodology used to generate the model, and a discussion of the capacity evaluation.

A capacity evaluation for West Lathrop was not conducted at this time. The West Lathrop collection system was constructed after 2000 and designed for buildout conditions.

Hydraulic Model

The capacity evaluation was completed using Bentley Systems Inc. SewerCAD v5.6. SewerCAD can analyze the performance of a collection system under various flow conditions for steady-state or extended period scenarios. For the analysis of the Historic Lathrop trunk sewer, a steady-state model was developed for average dry weather flows (ADWF) and peak wet weather flows (PWWF) projected for existing conditions.

The inputs to the hydraulic model include manholes, gravity sewers, pump stations (comprised of pumps and wet wells), and force mains. The trunk model consists of 8-inch to 18-inch gravity pipes primarily along Jasper Street beginning at Stonebridge Lane, Cedar Valley Drive, Woodfield Drive, Fifth Street, J Street, Halmar Lane, and O Street. The model includes Woodfield Lift Station (WLS), J Street Pump Station (JSPS), and Easy Court Lift Station (ECLS), and their respective force mains. The model terminates at O Street Pump Station (OSPS). Figure 8-1 includes a layout of the collection system in this area.

Flow Estimates

Total daily flowmeter data for Stonebridge Lift Station (SLS) and OSPS from January 2007 to January 2009 were reviewed. Following a review of local weather records, the current average daily dry weather flows for SLS and OSPS were calculated to be 0.113 mgd and 0.721 mgd respectively.

Land use data from the CCSCSMP, an updated count of residential units in Historic Lathrop, and data collected during a windshield survey were used to establish appropriate wastewater generation factors (WGFs) based on flowmeter data. The review resulted in the adjustment of residential wastewater generation factors from previous Master Plan studies. For reference, adjustments to the residential WGFs are presented in Table 8-1.

Element 8: System Evaluation and Capacity Assurance Plan

Table 8-1. Historic Lathrop Adjusted Wastewater Generation Factors

Residential Land Use	Wastewater Generation Factor	
	Previous Master Plan Studies	Adjusted Based on Flowmeter Data^a
Low Density (R-1-6)	1,584 gpd/ac	600-700 gpd/ac
Medium Density (RM-3)	2,808 gpd/ac	1,300 gpd/ac

^a Adjusted wastewater generation factors were developed per dwelling unit for this study.

Approximate correlation of dwelling units to acres was conducted for comparison purposes.

A summary of land use information, adjusted WGFs, projected ADWF, and comparison to metered flows for Historic Lathrop is presented in Table 8-2.

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Table 8-2. Historic Lathrop Current Land Use Data and Wastewater Generation Factors

Service Area and Land Use	Dwelling Units	Area (ac)	Wastewater Generation Factor	Total Flow, ADWF (gpd)
Stonebridge Lift Station Service Area				
Residential ^a	586	76.60	170 gpd/unit	99,620
Manteca Unified School District	-	19.90	670 gpd/ac	13,333
Subtotal		96.50		112,953
Woodfield Lift Station Service Area				
Residential	748	223.80	200 gpd/unit	149,600
Subtotal		223.80		149,600
J Street Pump Station Service Area				
Residential	790	259.40	200 gpd/unit	158,000
Professional Office	-	18.40	1,000 gpd/ac	18,400
Community Commercial	-	61.70	1,000 gpd/ac	61,700
Neighborhood Commercial	-	4.30	1,000 gpd/ac	4,300
Manteca Unified School District	-	13.00	670 gpd/ac	8,710
Subtotal		356.80		251,110
Easy Court Lift Station Service Area				
Residential	237	81.30	200 gpd/unit	47,400
Neighborhood Commercial	-	11.60	1,000 gpd/ac	11,600
Highway Commercial	-	7.40	1,000 gpd/ac	7,400
Subtotal		100.30		66,400
O Street Pump Station Service Area				
Residential	670	198.70	200 gpd/unit	134,000
Neighborhood Commercial	-	4.00	1,000 gpd/ac	4,000
Manteca Unified School District	-	14.30	670 gpd/ac	9,581
Subtotal	3,031	217.00		147,581
PROJECTED DRY WEATHER FLOW TO OSPS				727,644 gpd
CURRENT AVERAGE FLOW TO OSPS (FLOWMETER DATA)				721,308 gpd
PERCENT DIFFERENCE				0.9%

^a Residential WGF for Stonebridge service area differs from the remainder of Historic Lathrop.

Residential WGF is based on record flowmeter data.

Collection system components are sized for peak hourly flows typically. Because hourly flow information was not available, typical peaking factors and I/I allowances were used to project PWWF. For reference, the peak daily flows (PDF) measured on days with rainfall during the period reviewed are presented in Table 8-3.

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Table 8-3. Historic Lathrop Peak Daily Flow Recorded Between January 2007 and January 2009

Pump Station	Date	PDF ^a (mgd)	ADWF (mgd)	Ratio of PDF/ADWF
Stonebridge Lift Station	December 31, 2007	0.18	0.11	1.6
O Street Pump Station	January 4, 2008	0.90	0.72	1.3

^a PDF = Peak Daily Flow

To determine PWWF for existing conditions within Historic Lathrop, the ADWF values listed in Table 8-2 were multiplied by a diurnal peaking factor (PF) to estimate the peak daily dry weather flow (PDWF). An allowance for inflow and infiltration (I/I) was added to the PDWF to estimate the PWWF.

Typical diurnal peaking factors for a collection system the size of Historic Lathrop range from 3.0 to 4.0. A peaking factor of 3.0 was used for this study. An I/I allowance of 300 gallons per day per acre (gpd/ac), as suggested by the CCSCSMP and City Standards, was applied as well. Table 8-4 summarizes PWWF projections by service area.

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Table 8-4. Historic Lathrop Peak Wet Weather Flow Data

Service Area and Land Use	Area (ac)	ADWF (gpd)	PDWF ^a (gpd)	I/I Contribution ^b (gpd)	PWWF (gpd)
Stonebridge Lift Station Service Area					
Residential	76.60	99,620	298,860	22,980	321,840
Manteca Unified School District	19.90	13,333	39,999	5,970	45,969
Subtotal	96.50	112,953	338,859	28,950	367,809
Woodfield Lift Station Service Area					
Residential	223.80	149,600	448,800	67,140	515,940
Subtotal	223.80	149,600	448,800	67,140	515,940
J Street Pump Station Service Area					
Residential	259.40	158,000	474,000	77,820	551,820
Professional Office	18.40	18,400	55,200	5,520	60,720
Community Commercial	61.70	61,700	185,100	18,510	203,610
Neighborhood Commercial	4.30	4,300	12,900	1,290	14,190
Manteca Unified School District	13.00	8,710	26,130	3,900	30,030
Subtotal	356.80	251,110	753,330	107,040	860,370
Easy Court Lift Station Service Area					
Residential	81.30	47,400	142,200	24,390	166,590
Neighborhood Commercial	11.60	11,600	34,800	3,480	38,280
Highway Commercial	7.40	7,400	22,200	2,220	24,420
Subtotal	100.30	66,400	199,200	30,090	229,290
O Street Pump Station Service Area					
Residential	198.70	134,000	402,000	59,610	461,610
Neighborhood Commercial	4.00	4,000	12,000	1,200	13,200
Manteca Unified School District	14.30	9,581	28,743	4,290	33,033
Subtotal	217.00	147,581	442,743	65,100	507,843
PROJECTED WET WEATHER FLOW TO OSPS					2,481,252 gpd

^a Assumes a peaking factor of 3.0

^b Assumes an I/I allowance of 300 gallons per day per acre (gpd/ac)

Capacity Evaluation Criteria

To estimate flows, the WGFs, peaking factor, and I/I allowance established in Tables 8-2 and 8-4 for existing conditions were applied to existing land uses. Currently, Historic Lathrop consists of approximately 3,031 residential units. At buildout, the area will serve approximately 3,640 residential units². Based on the City of Lathrop General Plan Map (revised January 2008), the majority of this development will occur within the JSPS

² *Water Supply Study, Final Report, City of Lathrop*, prepared by RBF Consulting, January 2009

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service area. Commercial, industrial, and public land uses (i.e. parks and schools) will remain largely unchanged within Historic Lathrop.

Modeling results were compared to design criteria for gravity sewers, force mains, and pump stations established in the Master Plan and summarized in Table 8-5. The design criteria are described below in further detail.

Table 8-5. Summary of Design Criteria

Component	Property	Parameter
Gravity Sewers	d/D ratio	0.85 maximum
Force Mains	Peak velocity	2 ft/s minimum, 10 ft/s maximum
Pump Stations	Peak inflow	Peak inflow \leq firm capacity

Gravity Sewer Criteria

The primary evaluation criterion for hydraulic deficiency in gravity sewers is the ratio of normal flow depth to pipe diameter (d/D ratio). New sewers are typically designed for d/D ratios ranging from 0.50 to 0.75, depending on diameter. Higher d/D ratios, such as 0.85, are generally accepted for existing sewers. For the purposes of this capacity evaluation, any gravity segment with a d/D ratio greater than 0.85 (85% full by depth) was deemed hydraulically deficient.

Force Main Criteria

Force mains are considered hydraulically deficient if the peak velocity exceeds 10 feet per second (ft/s). The minimum desired force main velocity is 2 ft/s.

Pump Station Criteria

Pump stations are considered hydraulically deficient if the predicted peak inflow exceeds the pump station firm capacity, defined as the pump station capacity with the largest pump out of service.

Capacity Evaluation Results

Summary results of the capacity evaluation are presented below and in Figures 8-1 and 8-2. Complete results of the capacity evaluation are presented in Appendix G.

Gravity Sewers

Under existing ADWF conditions, all trunk sewers flow with d/D less than 0.50, indicating that the collection system is free from hydraulic deficiencies under normal operating conditions. Under PWWF conditions, four segments experience d/D ratios greater than 0.85. These results are summarized in Table 8-6.

Table 8-6. Gravity Sewer Capacity Evaluation Summary for Existing Conditions

Scenario	Total Flow to OSPS (gpd)	d/D > 0.85	
		No. of Segments	Total Length
ADWF	727,200	0	0
PWWF	2,484,000	4	712

Force Mains

Under PWWF conditions, no force mains exceed a velocity of 10 ft/s. Results of the force main evaluation are presented in Table 8-7.

Table 8-7. Force Main Evaluation under Peak Wet Weather Flow

Upstream Station	Peak Flow (gpm)	Length (ft)	Diameter (in)	Velocity (ft/s)	Requires Upgrade
Stonebridge	334	1,950	6	3.77	No
Woodfield	615	175	8	3.89	No
J Street	1,213	1,294	8	7.66	No
Easy Court	205	50	6	2.32	No
O Street	1,725	14,000	12	4.89	No

Pump Stations

Woodfield Lift Station, J Street Pump Station, and O Street Pump Station were determined to have inadequate hydraulic capacity based on PWWF for existing conditions and pump station firm capacity. To minimize overall construction costs, PWWF for buildout conditions were estimated using the adjusted WGFs presented in Table 8-1. Required pump station upgrades were based on buildout PWWF. Results of the pump station evaluation are presented in Table 8-8.

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Table 8-8. Pump Station Evaluation for Buildout Conditions

Station	Peak Flow (gpm)	Firm Capacity (gpm)	Requires Upgrade
Stonebridge	334	450	No
Woodfield	615	350	Yes
J Street	1,467	450	Yes
Easy Court	205	350	No
O Street	1,979	1,864 ^a	No

^a TDH at firm capacity is 146'; TDH required for peak flow is 93' based on 400 lf of 10" pipe, 2,600 lf of 12" pipe, 11,000 lf of 16" pipe and a 20% contingency

8.4 Recommended Capacity Projects

The results of the capacity evaluation for existing conditions within Historic Lathrop serve as the basis for near-term capital improvement project recommendations. With the exception of pump station improvements, project recommendations do not address additional improvements which may be needed for buildout conditions. However, where recommendations from this study coincide with recommended projects from the CCSCSMP for build-out conditions, the CCSCSMP project was used. Project names specific to this study included an "E" for existing, to distinguish these projects from projects developed in previous documents.

This capacity evaluation used typical peaking factors to estimate peak hourly flows. A project to collect more detailed information on peak hourly flows is also recommended to further identify appropriate peaking factors and I/I allowances. The results of the study could affect the recommended capital improvements.

The following summarizes the suggested capital improvements and probable construction costs for each recommended project. The capital improvement program includes capacity improvements to collection system trunk sewers and improvements to lift stations and pump stations.

Design Criteria

Collection system capacity improvements assume that parallel sewers will be constructed in areas where additional capacity is needed based on a projected d/D ratio greater than 0.85. New sewers are designed to flow maximum 85% full under PWWF conditions. Existing sewers could be upsized as an alternative method for addressing capacity improvements.

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Pump station improvements assume that duplex pumping configurations are used (triplex for OSPS) and that the firm capacity of the pump station should be greater than or equal to the projected buildout PWWF. Buildout PWWF was calculated using the WGFs presented earlier and projected land use information³.

The CCSCSMP recommended a parallel force main from the OSPS to the McKinley Avenue Pump Station (MAPS). Because of the magnitude of this project and the anticipated timing, interim strategies were also included in the CCSCSMP. Construction of a 16-inch force main from the MAPS to the Manteca WQCF is underway currently. Based on the results of this analysis, extension of the 16-inch force main to the OSPS is not needed to serve existing conditions.

Recommended Capacity Improvements

Recommended capacity improvement projects, including probable construction costs, are presented in Table 8-9 and Figure 8-3. Model results supporting recommended capacity improvements are included in Appendix G. Alternative projects utilizing pipe bursting construction methods could also be considered to potentially decrease project costs.

³ *Water Supply Study, Final Report, City of Lathrop*, prepared by RBF Consulting, January 2009

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Table 8-9. Summary of Recommended Capacity Improvements

Project	Description	Location	Probable Construction Cost (\$)
Collection System - Historic Lathrop			
JSPS-E1	175 ft of 8-inch sewer pipe	Fifth St. beginning at Lathrop Rd.	28,000
JSPS-E2	275 ft of 8-inch sewer pipe 180' of 12-inch sewer pipe	J St. beginning at Fifth St.	97,000
JSPS-E3	91 ft of 15-inch sewer pipe	Immediately upstream of JSPS	26,000
Collection System - Lathrop Acres			
LA-E1	367 ft of 6-inch sewer pipe	Stratford Ave. between Warren Ave. and Shilling Ave.	57,000
LA-E2	1,147 ft of 8-inch sewer pipe 47 ft of 10-inch sewer pipe	Stratford Ave. from Schilling Ave. to Lathrop Rd.	244,000
Pump Stations^a			
WLS	Upgrade pumps: (2) at 10 hp, 20 ft TDH @ 615 gpm	Woodfield Lift Station	90,000
JSPS	Upgrade pumps: (2) at 75 hp, 100 ft TDH @ 1,470 gpm	J Street Pump Station	375,000

^a Pump upgrades assume pump and motor efficiencies of 60 and 85 percent, respectively. Pump upgrades correspond to recommendations from the CCSCSMP and meet buildout demands. Flow and TDH values are per pump.

8.5 CIP Schedule

Taking into account funding considerations, a five year time frame was developed for the recommended capacity improvements. A proposed CIP schedule is presented in Table 8-10. Projects have been organized to improve the most critical elements of the Historic Lathrop sewer system first to minimize the risk associated with large SSOs. The total cost of the CIP is approximately \$950,000.

Element 8: System Evaluation and Capacity Assurance Plan

Table 8-10. Schedule for Historic Lathrop Capital Improvement Projects

Project Year	Project	Description	Project Cost ^a
2010	Flow Study	Flow monitoring study to identify appropriate peaking factors and I/I allowances	30,000
	JSPS	J Street Pump Station upgrade	375,000
2010 Subtotal			405,000
2012	WLS	Woodfield Lift Station upgrade	90,000
	JSPS-E1	J Street service area parallel sewer	28,000
	JSPS-E2	J Street service area parallel sewer	97,000
	JSPS-E3	J Street service area parallel sewer	26,000
2012 Subtotal			241,000
2014	LA-E1	Lathrop Acres parallel sewer	57,000
	LA-E2	Lathrop Acres parallel sewer	244,000
2014 Subtotal			301,000
TOTAL CAPITAL IMPROVEMENT PROJECT COST			947,000

^a Project cost for construction projects include 75% contingency for engineering, administration and construction management

8.6 Financial and Economic Analysis

The City maintains a 5-year CIP which is regularly updated annually and is the basis for establishing new sewer rates.

ELEMENT 9: MONITORING, MEASUREMENT, & PROGRAM MODIFICATIONS

This section of the SSMP discusses parameters the City tracks to monitor the success of the SSMP and how the City plans to keep the SSMP current. This section fulfills the Monitoring, Measurement, and Program Modifications requirement for the SWRCB (Element 9) SSMP requirements.

9.1 Regulatory Requirements for Monitoring, Measurement, & Program Modifications

The City shall:

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

9.2 Element 9 Appendix H

Supporting information for Element 9 is included in Appendix H. This appendix includes the following documents:

1. Element 9: SSMP Monitoring Tracking Sheet

9.3 Monitoring and Measurement Discussion

The City already tracks several performance measures through tracking logs and annual reports, including but not limited to number, cause and location of stoppages; number, cause, location, and volume of SSOs; stoppage response time; number and reason for customer complaints; length of pipe cleaned and type of debris found. The City plans to continue tracking all performance measures that are currently tracked.

In order to monitor the effectiveness of the SSMP, however, the City has selected certain, specific parameters that can be documented and compared on an annual basis in a simple format. These parameters were selected because they are straightforward, quantitative, and focused on results. Although the parameters may not track everything associated with SSMP implementation, changes in these parameters over time will indicate the overall success of the SSMP or, conversely, underlying problems that can then be investigated further.

Element 9: Monitoring, Measurement, & Program Modifications

Table 9-1 lists each SSMP element, the overall purpose of the SSMP element, and the specific parameters that the City plans to track that will help in evaluating the effectiveness of the SSMP. Appendix H includes a tracking sheet listing each of these parameters, which the City will fill out annually in conjunction with completing the SSMP audit (Element 10).

Table 9-1. SSMP Monitoring Parameters, by SSMP Element

SSMP Element	Summary of Element Purpose	Parameters for Tracking Effectiveness (Annual)
Goals	Establish priorities of City and provide focus for City staff	None
Organization	Document organization of City staff and chain of communication for SSO response	None
Legal Authority	Ensure the City has sufficient legal authority to properly maintain the system	None
Operations and Maintenance Provisions	Maintain up-to-date maps of the sanitary sewer system. Describe preventative operation and maintenance activities for sewer system. Develop rehabilitation and replacement plan. Provide training to staff on regular basis. Provide equipment and replacement part inventories.	Hours spent performing annual updates to Utility Maps and GIS database Length of sewer pipes Cleaned Annual cost of rehabilitation and replacement projects. Hours of training provided to staff Hours spent performing annual inventory of equipment and replacement parts
Design and Performance Provisions	Design and construction standards for sewer system improvements. Procedures and standards for inspection and testing of sewer system improvements.	None

Element 9: Monitoring, Measurement, & Program Modifications

Overflow Emergency Response Plan	Provide timely and effective response to SSO emergencies and comply with regulatory reporting requirements	Average and maximum response time Percent of total overflow volume contained or returned to sewer
Fats, Oils, & Grease Control Program	Minimize blockages and overflows due to FOG	Number of blockages due to FOG Number of overflows due to FOG Number of FOG producing facilities inspected
System Evaluation and Capacity Assurance Plan	Develop capacity management plan to include system evaluation, design criteria and capacity enhancement measures.	Cost of annual CIP projects to correct sewer system deficiencies and improve capacity
Monitoring, Measurement and Program Modifications	Maintain information needed to establish and prioritize SSMP activities. Monitor implementation of SSMP elements. Assess success of preventative maintenance program. Update SSMP elements based on monitoring and performance evaluations. Identify and illustrate SSO trends	None
SSMP Program Audits	Review progress made on development of SSMP.	None
Communication Plan	Communicate with public on a regular basis during development, implementation and performance of its SSMP.	Number of visits to City SSMP webpage.

9.4 SSMP Modifications

The SSMP needs to be updated periodically to maintain current information, and programs need to be enhanced or modified if they are determined to be less effective than needed. The City will review the successes and needed improvements of the SSMP as part of the SSMP annual audit, described in Element 10.

City staff will update critical information, such as contact numbers and the SSO response chain of communication, as needed. A comprehensive SSMP update will occur every 5 years, as required by the SWRCB. The City will schedule this SSMP update to occur in conjunction with the Sanitary Sewer Master Plan Update.

ELEMENT 10: SSMP PROGRAM AUDITS

This section of the SSMP discusses the City's SSMP auditing program. This section fulfills the SWRCB (Element 10) SSMP Audit requirements.

10.1 Regulatory Requirements for SSMP Audits

The City 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 agency's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

10.2 Element 10 Appendix I

Completed SSMP audits are stored in Appendix I.

10.3 SSMP Audits Discussion

The City will complete audits of its SSMP every two years, and will prepare a report to be kept on file. The audit will include the following:

- Review of progress made on development of SSMP elements
- Review of monitoring and measurement tracked under Element 9
- Identification of successes of implementing SSMP elements and needed improvements
- Description of system improvements during the past two years
- Description of system improvements planned for the upcoming two years, with an estimated schedule for implementation

A copy each audit will be stored in Appendix I of the SSMP.

ELEMENT 11: COMMUNICATION PROGRAM

This section of the SSMP discusses the City's communications with the public and satellite agencies. This section fulfills the Communication Program requirement for SWRCB (Element 11).

11.1 Regulatory Requirements for Communication Program

The City 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 collection system agency as the program is developed and implemented. The City shall also create a plan of communication with systems that are tributary and/or satellite to the collection system agency's sanitary sewer system.

11.2 Element 11 Appendix J

Supporting information for Element 11 is included in Appendix J. This appendix includes the following documents:

1. Copy of Public Notification Posted on City's Website.

11.3 Communication Program Discussion

The City will communicate with the public on the development, implementation and performance of its SSMP by placing notices on the City's website. Additionally, flyers will be posted at City Hall announcing the availability of the SSMP to the public, upon request. Public comments are welcomed during the development, implementation, and performance of the SSMP. Public comments will be directed to the Public Works Department's phone number at (209) 941-7430. Comments will be forwarded to the administrative staff responsible for oversight of the SSMP.

The City maintains an open line of communication with the tributary collection system for the City of Manteca because a portion of the sewer flows from the City are directed to the Manteca WQCF.