City of Petaluma
Sewer System Management Plan

Prepared for:
CITY OF PETALUMA
Department of Public Works & Utilities
202 North McDowell Blvd.
Petaluma, CA 94954

April 2008

Updated 2009 & 2016
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## List of Abbreviations & Acronyms

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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>BACWA</td>
<td>Bay Area Clean Water Agencies</td>
</tr>
<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>BWF</td>
<td>Base wastewater flow</td>
</tr>
<tr>
<td>CCTV</td>
<td>Closed circuit television</td>
</tr>
<tr>
<td>CDFG</td>
<td>California Department of Fish and Game</td>
</tr>
<tr>
<td>CIP</td>
<td>Capital Improvement Plan</td>
</tr>
<tr>
<td>CIWQS</td>
<td>California Integrated Water Quality System</td>
</tr>
<tr>
<td>CM</td>
<td>Corrective Maintenance</td>
</tr>
<tr>
<td>CMMS</td>
<td>Computerized Maintenance Management System</td>
</tr>
<tr>
<td>CMOM</td>
<td>Capacity, Management, Operations and Maintenance</td>
</tr>
<tr>
<td>CPI</td>
<td>Capital Improvement Program</td>
</tr>
<tr>
<td>CWEA</td>
<td>California Water Environment Association</td>
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<tr>
<td>ECS</td>
<td>Environmental Compliance Services</td>
</tr>
<tr>
<td>EDU</td>
<td>Equivalent Dwelling Unit</td>
</tr>
<tr>
<td>ERP</td>
<td>Emergency Response Plan</td>
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<tr>
<td>FOG</td>
<td>Fats, Oils, Grease</td>
</tr>
<tr>
<td>FSE</td>
<td>Food service establishment</td>
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<tr>
<td>GIS</td>
<td>Geographical Information System</td>
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<tr>
<td>gpm</td>
<td>gallons per minute</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>GWI</td>
<td>Groundwater Infiltration</td>
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<tr>
<td>I/I</td>
<td>Inflow / Infiltration</td>
</tr>
<tr>
<td>ICOM3</td>
<td>Maintenance and Condition Assessment Database</td>
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<tr>
<td>IEC</td>
<td>Infrastructure Engineering Corporation</td>
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<tr>
<td>ISDHH</td>
<td>Imminent and substantial danger to human health</td>
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<tr>
<td>mgd</td>
<td>million gallons per day</td>
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<tr>
<td>MRP</td>
<td>Monitoring and Reporting Program</td>
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<tr>
<td>NPDES</td>
<td>National Pollution Discharge Elimination System</td>
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<tr>
<td>O&amp;M</td>
<td>Operation and Maintenance</td>
</tr>
<tr>
<td>OERP</td>
<td>Overflow Emergency Response Plan</td>
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<tr>
<td>OES</td>
<td>Office of Emergency Services</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>POSM</td>
<td>Pipeline Observation System Management</td>
</tr>
<tr>
<td>POTW</td>
<td>Publicly-Owned Treatment Works</td>
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<tr>
<td>PM</td>
<td>Preventative Program</td>
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<tr>
<td>PWU</td>
<td>Public Works &amp; Utilities</td>
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<tr>
<td>R&amp;R</td>
<td>Rehabilitation and Replacement</td>
</tr>
<tr>
<td>RDI/I</td>
<td>Rainfall-dependent infiltration and inflow</td>
</tr>
<tr>
<td>The City</td>
<td>Regional Water Quality Control Board</td>
</tr>
<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition</td>
</tr>
<tr>
<td>SHECAP</td>
<td>Sewer Hydraulic Evaluation and Capacity Assessment Plan</td>
</tr>
<tr>
<td>SMP</td>
<td>Standard Maintenance Procedure</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>SSMP</td>
<td>Sewer System Management Plan</td>
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<tr>
<td>SSO</td>
<td>Sanitary Sewer Overflow</td>
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<tr>
<td>SWRCB</td>
<td>State of California Water Resources Control Board</td>
</tr>
<tr>
<td>TM</td>
<td>Technical Memorandum</td>
</tr>
<tr>
<td>WDR</td>
<td>Waste Discharge Requirements</td>
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<tr>
<td>WPCP</td>
<td>Water Pollution Control plant</td>
</tr>
</tbody>
</table>
Introduction

City Service Area and Sewer System

The City of Petaluma (the City) is located in southern Sonoma County with the cities of Santa Rosa and Rohnert Park to the north and Novato to the south. As of 2008, The City has a population of approximately 55,930 based on estimates from the Metropolitan Transportation Commission and the Association of Bay Area Governments. The City has experienced a near zero growth in population and industry over the last 3 years. The city covers approximately 15.5 square miles with a population density of 3,950 persons per square mile. Petaluma is situated within the Petaluma River watershed, which covers an area of 146 square miles that extends southward to San Pablo Bay. A significant amount of the city is in the river's flood plain.

The City’s sewer system consists of approximately 3,664 manholes and 196 miles of pipe, ranging from 6 inches to 54 inches in diameter, and 9 pumping stations. Petaluma’s wastewater utility provides 24-hour collection, treatment, disposal and reuse of domestic, commercial and industrial wastewater generated by Petaluma, portions of unincorporated Sonoma County, and the community of Pennsgrove. The sewer system is conveyed to and treated at the City’s Ellis Creek Water Recycling Facility. The facility began treating the City’s wastewater in 2009 and treats about 5 million gallons of high quality secondary effluent each day, with a design capacity of 6.7 million gallons per day (mgd) of dry weather flow. In the winter time, the wastewater is introduced back into the Petaluma River. During the summer, the recycled water is introduced into the City’s recycled water system and used for irrigation of agricultural lands, two golf courses, and a vineyard. The City annually produces about 600 million gallons of recycled water.

Regulatory Background

This Sewer System Management Plan (SSMP) describes the City of Petaluma’s (City’s) wastewater collection system management activities. The purpose of these activities is to:

1. Maintain and improve the condition of the collection system infrastructure,
2. Control infiltration/inflow (I/I) and provide appropriate sewer capacity, and to
3. Minimize the number and impact of sanitary sewer overflows (SSOs) that occur.
The State Water Resources Control Board (SWB) has issued statewide waste discharge requirements for sanitary sewer systems which include requirements for development of an SSMP. The State Water Board requirements are outlined in Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, dated May 2, 2006 (SWB SSO WDR).

The SSMP is also required by the San Francisco Bay Regional Water Quality Control Board (RWB). Requirements are outlined in the Sewer System Management Plan Development Guide dated July 2005, by the RWQCB in cooperation with the Bay Area Clean Water Agencies (BACWA).

This SSMP includes the elements required by both the SWB and RWB. There are some differences in the requirements and in the organization of the elements between the programs. The difference in organization is outlined in Table 1, below. This SSMP is organized following the SWB SSO WDR; Table 1 identifies the corresponding sections in the RWB SSMP Development Guide.

Both SWB and RWB SSMP requirements are included and addressed in each element. Requirement language has been directly copied from the SWB SSO WDR and the RWB SSMP Development Guide. The SWB SSO WDR uses the term “Enrollee” to mean each individual municipal wastewater agency that has completed and submitted the required application for coverage under the WDR (in this case, the Enrollee is the City of Petaluma). The term “Order” is equivalent to “SWB SSO WDR”, “Regional Water Board” is equivalent to “RWB”, and “State Water Board” is equivalent to “SWB”.
<table>
<thead>
<tr>
<th>Name of Element</th>
<th>Deadline</th>
<th>Name of Element</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>Nov 2, 2007</td>
<td>Goals</td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td></td>
<td>Organization</td>
<td></td>
</tr>
<tr>
<td>Legal Authority</td>
<td>May 2, 2009</td>
<td>Overflow Emergency Response Plan</td>
<td>Aug 31, 2006</td>
</tr>
<tr>
<td>Operation and Maintenance Program</td>
<td></td>
<td>Fats, Oils, and Grease (FOG) Control Plan</td>
<td></td>
</tr>
<tr>
<td>Design and Performance Provisions</td>
<td>Aug 2, 2009</td>
<td>Legal Authority</td>
<td></td>
</tr>
<tr>
<td>FOG Control Program</td>
<td></td>
<td>Design and Construction Standards</td>
<td></td>
</tr>
<tr>
<td>System Evaluation and Capacity Assurance Plan</td>
<td></td>
<td>Capacity Management</td>
<td></td>
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<tr>
<td>SSMP Audits</td>
<td></td>
<td>SSMP Audits</td>
<td></td>
</tr>
<tr>
<td>Communications Plan</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Element 1 – Goals

SWB Requirements:

The goal of the Sewer System Management Plan (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.

RWB Requirements:

Each wastewater collection system agency shall, at a minimum, develop goals for the Sewer System Management Plan as follows:

- To properly manage, operate, and maintain all parts of the wastewater collection system
- To provide adequate capacity to convey peak flows
- To minimize the frequency of SSOs
- To mitigate the impact of SSOs

1.1 Goals

The goals for managing the City’s sanitary sewer collection system are as follows:

- To properly manage, operate, and maintain all parts of the wastewater collection system.
- To provide adequate capacity to convey peak flows
- To minimize the frequency of SSOs.
- To mitigate the impact of SSOs.

The implementation of these goals is further described in this SSMP.
Element 2 – Organization

SWB Requirements:

The Sewer System Management Plan (SSMP) must identify:

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

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

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

RWB Requirements:

Each wastewater collection system agency shall, at a minimum, provide information regarding organization:

- Identify agency staff responsible for implementing, managing, and updating the SSMP
- Identify chain of communication for responding to SSOs
- Identify chain of communication for reporting SSOs

2.1 Organization Chart and Contact Information

City staff responsible for implementing the SSMP are included on the Public Works & Utilities Department organization chart in Element 2 Appendix. A Public Works & Utilities Department Human Resources telephone list is included in the Element 2 Appendix. This list also includes field crew member names, titles, certification levels, and contact information.

Positions responsible for certain details of the SSMP implementation are discussed below:

- City Manager

  Under administrative direction from the City Council, the City Manager plans and manages the affairs of the City and directs the staff in all functions and operations. The City Manager represents City policy and programs with employees, community organization, and the general public. The City Manager reviews budget requests and makes recommendations to the City Council on final expenditure levels, manages all labor/management activities, and performs all related work as required.
• **City Attorney**

The City Attorney provides guidance to the City Manager and the City Council relative to the City’s statutory requirements, authority, and risk.

• **Public Works & Utilities (WRC) Department**

The Department of Public Works & Utilities is responsible for all of the City's water related functions. These functions include the City's water, wastewater utility, flood control, storm drain and related engineering services. The objective of combining all water related functions allows for a more comprehensive and coordinated approach to management of water resources by the City. The following positions included within this City department.

• **Director**

Under the general direction of the City Manager, the Director is responsible for overseeing department function and delegating authority for implementation of all aspects of the SSMP.

• **Engineering Manager – Capital Improvement Program**

Under general direction of the Director, the Engineering Manager – Capital Improvement Program plans, organizes, administers and directs the maintenance, repair, installation and upgrading of the City’s wastewater collection system infrastructure and maintains a database of these facilities. The Engineering Manager’s responsibilities include managing engineering consultant(s).

• **Environmental Services Manager – Wastewater Operations**

Under general direction of the Director, the Environmental Services Manager – Wastewater Operations plans, organizes, administers, and directs the operation and maintenance of the Ellis Creek Water Recycling Facility including the implementation of the Pretreatment and Source Control Programs.

• **Operations Manager**

Under general direction of the Director, the Operations Manager, through the Assistant Operations Managers, plans, manages, and directs wastewater collection system maintenance activities in full compliance with SSMP requirements.

• **Assistant Operations Managers Supervisors**

Under general direction of the Operations Manager, the Assistant Operations Managers direct, manage, and review activities associated with maintaining, cleaning, repairing, and inspecting the City’s wastewater collection system, pump stations, and related appurtenances.

• **Environmental Services Supervisor**

Under the general direction of the Engineering Manager – Wastewater Operations, the Environmental Services Supervisor plans, manages, and directs the operations of the City’s laboratory, the Pretreatment Program, and the Source Control Program.
• **Field Crews**
  Under general supervision of the Assistant Operations Managers, the Field Crews perform a variety of tasks related to the maintenance, cleaning, and repairing the City’s wastewater collection system, pump stations, and related appurtenances.

• **Construction Inspectors**
  Under general supervision of the Engineering Manager, the Construction Inspectors performs a variety of inspection activities relating to sewer facility construction to ensure compliance with approved plans and enforcement of City regulations relating to construction of public and private sewers, collection system pumping stations, and related appurtenances.

• **Source Control Inspector**
  Under the general supervision of the Environmental Services Supervisor, the Source Control Inspector performs inspections of fats, oils, and grease (FOG) producing facilities and recommends enforcement actions to insure compliance with City ordinances and policies.

2.2 **Responsible and Authorized Representatives**

The Director of Public Works & Utilities is the City’s authorized representative registered with the San Francisco Bay Regional Water Quality Control Board SSO Reporting Program and the California Integrated Water Quality System (CIWQS) to certify SSO reports. The Director has authorized the Engineering Manager – Capital Improvement Program and the Operations Manager to prepare and submit electronic reports.

2.3 **Chain-of-Communication for Reporting and Responding to SSOs**

In response to an SSO event, the Public Works & Utilities Department staff immediately implements the Sanitary Sewer Overflow and Backup Response Plan (Response Plan), discussed in more detail in Element 6. The Response Plan provides direction for the immediate verbal and written notification of City staff and agencies. The chain-of-communication for reporting and responding to SSOs, as described in the Response Plan, is summarized in Table 2, below.
<table>
<thead>
<tr>
<th>Step No.</th>
<th>Staff Responsible</th>
<th>Description of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PWU Department Call Taker (business hours) or Police Dispatcher (non-business hours)</td>
<td><strong>SSO Information Received:</strong> Receive service calls originating from the public, other agencies, or from sources within the City; documents caller provided information including caller contact information (if not anonymous).</td>
</tr>
<tr>
<td>2</td>
<td>PWU Department Call Taker or Police Dispatcher</td>
<td><strong>Assistant Operations Manager or On-Call Responder Paged:</strong> Call taker or dispatcher pages the Assistant Operations Manager or on-call responder.</td>
</tr>
<tr>
<td>3</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Assistant Operations Manager or On-Call Responder Responds to Page:</strong> Sewer Service On–Call Worker responder calls back and obtains information from Call Taker or Dispatcher. If no call back from Sewer Service On-call Worker responder, the Assistant Operations Manager is contacted.</td>
</tr>
<tr>
<td>4</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Initial Assessment:</strong> Responcer performs an initial incident assessment based on information provided by the caller and requests additional equipment and staff if circumstances dictate.</td>
</tr>
<tr>
<td>5</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>On-Site Assessment:</strong> Upon arriving at SSO site, the Responder conducts a preliminary assessment of SSO extent and suspected cause. Photographs of spill source and extent of spilled sewage are taken, if possible. The responder will request additional equipment and staff as circumstances dictate. Operations Manager is notified if spill meets conditions requiring the two-hour notification to regulatory agencies.</td>
</tr>
<tr>
<td>6</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Repair, Divert, Contain and Clean:</strong> If the SSO is from City maintained laterals/mains, Responder and field crew(s) (as appropriate) stop the SSO, divert the spill from sensitive areas, contain and return the spill to the system, if possible, and assign staff to post signage, as necessary, and perform necessary clean-up activities,. Responder writes up the appropriate sanitary sewer overflow report containing all relevant information regarding the incident. If SSO is not from City maintained lateral/main, property owner is notified and such steps as possible are taken to minimize environmental and health impacts. Photographs are taken of all steps implemented, if possible.</td>
</tr>
<tr>
<td>Step No.</td>
<td>Staff Responsible</td>
<td>Description of Activity</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Sampling:</strong> If the SSO reaches or is likely to reach surface waters, the responder will contact the Operations Manager concerning the discharge into surface waters. Based upon further direction from Sonoma County Environmental Health, the Operations Manager will direct the collection of receiving water samples (contact the Environmental Services Supervisor for necessary assistance).</td>
</tr>
<tr>
<td>8</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Response to Impacted Water Bodies:</strong> If creeks/channels/river is impacted, the Operations Manager is contacted for additional investigation and possible clean-up.</td>
</tr>
<tr>
<td>9</td>
<td>Assistant Operations Manager or On-Call Responder</td>
<td><strong>Additional Resources Required:</strong> If additional resources are required to contain/recover the SSO, the responder contacts the Operations Manager to request additional assistance. The Operations Manager obtains necessary resources from other local agencies and/or private service companies.</td>
</tr>
<tr>
<td>10</td>
<td>Field Crew SSO On-Call Responder</td>
<td><strong>Documentation – On-Call Responder:</strong> The responder completes the Sanitary Sewer Overflow Report, City Maintenance Report and follows the actions detailed in the “Guide to Reporting to Regulatory Authorities.”</td>
</tr>
<tr>
<td>11</td>
<td>Operations Manager</td>
<td><strong>Documentation – Operations Manager:</strong> The Operations Manager insure that appropriate SSOs are reported within two-hour to the Office of Emergency Services (OES), the Sonoma County Environmental Health Services Department and the Regional Water Board. The Operations Manager also insure that all necessary reporting has been completed per the “Guide to Reporting to Regulatory Authorities.” Including reports to the California Integrated Water Quality System (CIWQS) at <a href="http://ciqws.waterboards.ca.gov">http://ciqws.waterboards.ca.gov</a> as required by the SWB.</td>
</tr>
<tr>
<td>12</td>
<td>Director</td>
<td><strong>Documentation – Director:</strong> The Director verifies that all reporting has been completed per City policy and regulatory requirement. Necessary corrective actions are taken if reporting requirements have not been precisely followed.</td>
</tr>
</tbody>
</table>

**List of Documents in Element 2 Appendix:**

1. PWU Department Key Staff Telephone List
2. PWU Department Organizational Chart
Element 3 - Legal Authority

SWB Requirements:

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

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

RWB Requirements:

Each wastewater collection system agency shall, at a minimum, describe its legal authority, through sewer use ordinances, services agreements, or other legally binding procedures to:

- Control infiltration/inflow (I/I) from satellite wastewater collection systems and laterals
- Require proper design and construction of new and rehabilitated sewers and connections
- Require proper installation, testing, and inspection of new and rehabilitated sewers

The City’s legal authority to prevent illicit discharges into the collection system, require proper design and construction of sewers and connections, and require proper installation, testing, and inspection of sewers is provided by the City’s Ordinance Title 15 and Title 17. The specific sections applicable to the requirements of the Sewer System Management Plan (SSMP) are outlined below.

3.1 Prevent Illicit Discharges

The City has specific legal mechanisms to prevent illicit discharges, including fats, oils, greases, and infiltration/inflow into the wastewater collection system as follows:

15.48.020 General discharge prohibitions.

A. No user shall contribute or cause to be contributed any pollutant or wastewater which will pass through the city’s facilities or cause or contribute to interference with the operation of performance of the city’s facilities. Any violation of the terms of this part, local limits or a wastewater discharge permit is prohibited and shall constitute interference. This prohibition includes any type of pollutants or wastewater as set forth in the prohibition sections of this part. These general prohibitions apply to all users of the city’s facilities whether or not the user is subject to national pretreatment standards or any other national, state, or local pretreatment standards or requirements.

B. A user shall not introduce into the POTW any of the pollutant(s) which cause:

1. A violation of the POTW’s NPDES permit or a deterioration of water quality in the receiving stream; or a violation of the POTW’s general water reuse permit;
2. Pass through or interference;
3. Restrict sludge disposal options or cause a violation of sludge disposal regulations;
4. Endanger the health and safety of the POTW collection systems employees, POTW employees or the general public.

C. Affirmative Defenses. A user shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in 40 CFR 403.5(b)(4) if the user can demonstrate that both of the conditions below from 40 CFR 403.5(a)(2) are met:
1. User did not know or have reason to know that its discharge, alone or in conjunction with a discharge or discharges from other sources, would cause pass through or interference.
2. Directly prior to and during the pass through or interference, the user was in compliance with the existing limits for each pollutant in its discharge, or if there were no such existing limits, the user’s discharge directly prior to and during the violation did not change substantially in nature or constituents from the user’s prior discharge activity when the city was regularly in compliance with its NPDES permit requirements, and with other applicable requirements for POTW operations including sewage sludge use and disposal. (Ord. 2282 NCS §3 (part), 2007.)

15.48.030 Specific discharge prohibitions.

In addition, a user shall not introduce any of the following pollutants into the POTW:

A. High Temperature. Heat in amounts which may inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds forty degrees centigrade (one hundred four degrees Fahrenheit) unless the approval authority, upon request of the POTW, approves alternate temperature limits.

B. Pollutants which cause corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0 or higher than 10.5, or having a pH which will cause damage to the collection system or interfere with POTW treatment processes.

C. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than one hundred forty degrees Fahrenheit or sixty degrees centigrade using the test methods specified in 40 CFR 261.21. Any liquids, solids or gases which by reason of their nature or quantity are or may be sufficient either alone or by interaction with other substances to cause a fire or explosion or endanger public safety or interfere with the operation of the POTW. At no time shall two successive readings on an explosion hazard meter, at the point of discharge into the sanitary sewer (or at any point in the system), be more than five percent or any single reading over ten percent of the lower explosive limit (L.E.L.) of the meter, or have a closed-cup flash point of less than one hundred forty degrees Fahrenheit or sixty degrees centigrade using the test methods specified in 40 CFR 261.21. Prohibited materials include but are not limited to gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides and sulfides and any other substances which the city, the state and EPA has identified as a fire hazard or a hazard to the system.

D. Obstruction of Flow. Solids or viscous pollutants in amounts which will cause obstruction to the flow in a community sewer or in the POTW resulting in interference. Items such as but not limited to grease, garbage with particles greater than one-half inch (one and twenty-seven hundredths centimeters) in any dimension, animal guts or tissues, paunch manure, bones, hair, hides, fleshing, entrails, whole blood, feathers, ashes, cinders, wax, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastics, tar, asphalt residues, residues from refining or processing of fuel or lubrication oil, mud or glass grinding or polishing wastes.

E. Toxic Pollutants. Any wastewater containing toxic pollutants in sufficient quantity, either singly or in interaction with other pollutants, that would pass through or cause interference with the wastewater treatment process, or constitute a hazard to human, animal or plant life, including
aquatic organisms, or create any hazards in the waters receiving the wastewater treatment plant effluent. A toxic pollutant shall include but not be limited to any pollutant identified pursuant to Section 307(a) of the Act and the California Toxics Rule. Compounds specifically prohibited include any polychlorinated biphenyl (PCB), any pesticide (including any insecticides, herbicides, or fungicides) such as but not limited to chlordane, heptachlor, heptachlor epoxide, aldrin, dieldrin, dichlorodiphenyltrichloro ethane (DDT), dichloro-diphenyldichloro ethene (DDE), and rothane (DPD).

F. Noxious or Malodorous Substances. Any harmful or offensive gases or solids which either singly or by interaction with other wastes are sufficient to violate or have the potential to cause violations of air quality standards at the POTW or in community sewers, create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for maintenance and repair. Any volatile organic pollutant in such concentration that it has the potential to cause the headspace gases to exceed a three hundred hexane equivalent level over equilibrated wastewater or exceed toxicity discharge screening levels based on fume toxicity.

G. Disposal/Reclamation. Any substance which may cause the POTW’s effluent or any other product of the POTW, such as residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance discharged to the POTW cause a violation of the criteria, guidelines or regulations developed under Section 405 of the Act; any criteria, guidelines or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act, or state or local criteria applicable to the sludge disposal.

H. POTW Violation. Any pollutant including oxygen demanding pollutants (BOD, etc.) causing the POTW to violate or continue to violate its NPDES permit. This includes but is not limited to slug discharges, oxygen demanding pollutants (BOD or COD), suspended solids, pH, heavy metals, oil and greases or toxic organic compounds; released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

I. Detrimental Environmental Impact. Any substance which may have a harmful environmental impact or create a nuisance in the waters of the state or a condition which violates the rules and regulations of any public agency having regulatory jurisdiction over the city, including but not limited to any statute or any rule, regulation, or requirement of any public agency or state or federal regulatory body.

J. Discoloration. Any wastewater creating discoloration or any other condition in the quality of the POTW effluent such that receiving water quality requirements established by law cannot be met.

K. Hazard or Public Nuisance. Any waste which, as determined by the city, may have an adverse or harmful effect on sewer, maintenance personnel, wastewater treatment plant personnel or equipment, treatment plant effluent quality, public or private property or may otherwise endanger the public, the local environment or create a public nuisance. The city shall, in determining the acceptability of specific wastes, consider the nature of the waste and the adequacy of the collection, treatment and disposal system available to accept the waste.

L. Excessive Flow. Total quantities of flow or instantaneous peaks which due to volume or manner of delivery require a disproportionate share of the city’s treatment plant capacity. This also includes flows which, alone or in combination with others, cause excessive treatment costs and/or treatment plant process upsets.

M. Radioactive Wastes. No user shall, and it shall be unlawful to, discharge, cause to be discharged, or permit to be discharged, any radioactive waste into the sanitary sewer, except:

1. Users authorized to use radioactive materials by the State Department of Health or other governmental agency empowered to regulate the use of radioactive materials may discharge, cause to be discharged, permit to be discharged such wastes; provided, that such wastes are discharged in strict conformance with the current State of California Code of Regulations Title 17 and federal regulations and recommendations for safe disposal of such wastes as they now exist or may hereafter be amended.
2. The user so acting does so in compliance with all applicable rules and regulations of all other regulatory agencies having jurisdiction over such discharges.

N. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

O. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

P. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Q. Any sewage not amenable to treatment as this term is defined herein with the use of the facilities and treatment processes employed by the city at the time of the discharge.

(Ord. 2282 NCS §3 (part), 2007.)

15.48.060 Prohibition of storm drainage and ground water.

Stormwater, ground water, rain water, street drainage, subsurface drainage or yard drainage shall not be discharged through direct or indirect connections to the sanitary sewer. The city may approve the discharge of such water only when no reasonable alternative method of disposal is available. If a permit is granted for the discharge of such water into the sanitary sewer, the user shall pay the applicable user charges and fees and meet such other conditions as required by the city. (Ord. 2282 NCS §3 (part), 2007.)

15.48.070 Prohibition on unpolluted water.

Unpolluted water including but not limited to cooling water, process water or blow-down from cooling towers or evaporative coolers shall not be discharged through direct or indirect connection to a city sewer unless a permit is issued. The city may approve the discharge of such water only when no reasonable alternative is available.

If a permit is granted for the discharge of such water into a community sewer, the user shall pay the applicable charges and fees and shall meet such other conditions as required by the city. (Ord. 2282 NCS §3 (part), 2007.)

15.48.090 Limitations on point of discharge.

No user shall discharge any substance directly into a manhole, clean out or other opening in a sanitary sewer other than through an approved building sewer, unless upon written application by the user and payment of the applicable user charges and fees, the city issues a permit for such direct discharges. No person shall discharge any holding tank wastes, or wastes from barrels, storage tanks or any other such containers not directly connected to the city sewer unless the user has obtained a special discharge permit. Unless otherwise allowed by the city, under the terms and conditions of the special discharge permit, a separate permit must be secured for each separate discharge. The user may be required to sample, analyze and report to the city the characteristics of the waste, prior to the issuance of the permit. The permit may stipulate the specific location of the discharge, the time of day the discharge is to occur, limits of the volume discharged and the constituents and characteristics of the waste. The user shall pay all applicable charges and fees and shall meet such other conditions as required by the city. (Ord. 2282 NCS §3 (part), 2007.)

3.2 Require Proper Design, Construction, Testing, and Inspection

The City has specific legal mechanisms to require proper design, construction, testing, and inspection of new and rehabilitated sewers and connections as follows:
15.40.010 Size of sanitary sewer lines.
Sanitary sewer lines and lines proposed for construction by individuals or groups shall be of the size necessary to handle sewage from the entire area contributory to the line when that area is developed to ultimate population density, as determined by the city. (Ord. 2282 NCS §3 (part), 2007.)

15.40.060 Applicant to pay cost of construction of sewer laterals.
All sewer laterals shall be constructed at the sole cost of the applicant. All sewer laterals are owned by the property owner to the sewer main and through the city right-of-way including the connection at the main. All sewer laterals shall be maintained by the property owner to prevent inflow and infiltration. (Ord. 2282 NCS §3 (part), 2007.)

17.04.010 Adoption of Uniform Codes.
Pursuant to Section 50022.2 of the California Government Code, the following codes are adopted by reference, including the amendments listed in this chapter, which are made pursuant to the findings of fact set forth in the adopting ordinance:
A. Part 1—2007 California Administrative Code;
B. Part 2—2007 California Building Code based on the 2006 International Building Code, including Appendix Chapters 1 (Administration), J (Grading) amended by deleting J103.2 Exception 1, H (Signs) and I (Patio Covers) except as amended in Section 17.04.020;
D. Part 4—2007 California Mechanical Code based on the 2006 Uniform Mechanical Code including Appendix Chapter 1 (Administration) and Appendix Chapter A (Code Standard 6-2);
E. Part 5—2007 California Plumbing Code based on the 2006 Uniform Plumbing Code including Appendix Chapter 1 (Administration);
F. Part 6—2007 California Energy Code;
G. Part 8—2007 California Historical Building Code;
J. 2006 Edition, 1997 Uniform Housing Code; and

3.4 Access
The City has the necessary legal authority to gain access to portions of the wastewater collection system requiring maintenance, inspection or repair as follows:

15.60.050 Inspection and sampling.
A. The city or designee may carry out all inspection, surveillance and monitoring procedures necessary to determine, independent of information supplied by the industrial users, compliance or noncompliance with applicable pretreatment standards, state regulations, and local regulations by industrial users. Persons or occupants of premises where wastewater is created or discharged shall allow the city or the city’s designee(s) ready access at all times to all parts of the premises where pollutants are stored, used, treated or disposed of for the purpose of inspection, sampling, records examination, records copying or in the performance of any of their duties. No person shall interfere with, delay, resist or refuse entrance to an authorized designee attempting to inspect any wastewater generation, conveyance or treatment facility connected directly or indirectly to the city’s sewerage system.
Where the user has security measures in force which would require proper identification and clearance before entry into its premises, the user shall make necessary arrangements with its
security guards, so that upon presentation of suitable identification, personnel from the city will be permitted to enter without delay for the purpose of performing their specific responsibilities.

B. The city and approval authority shall have the right to set up on the user's property such devices as are necessary to conduct sampling or metering operations and has the right to require installation of permanent monitoring equipment.

C. The city and approval authority shall have the right to evaluate each permitted industrial user for the need of a slug control plan. The plan, if required, shall contain, at a minimum, the elements specified in 40 CFR 403.8(j)(2)(v).

(Ord. 2282 NCS §3 (part), 2007.)

15.68.030 Emergency correction.

In the event clean-up, repairs, construction, or other public work is performed on any premises pursuant to any provision of law relating to the emergency pursuant to any other provision of law authorizing public work on private property in order to correct, eliminate or abate a condition upon such premises which threatens to cause, causes, or has caused a violation of any provisions of these regulations, or any permit issued pursuant to these regulations, or of any other requirement of law, the user responsible for the occurrence or condition giving rise to such work, the occupant and the owner of the premises shall be liable jointly and severally to the city for such public expenditures including overhead costs. (Ord. 2282 NCS §3 (part), 2007.)

3.4 Enforcement

The City possesses the necessary legal authority to enforce violations of its sewer ordinance. Specific mechanisms are detailed in the City Code of Petaluma, some examples are as follows:

15.68.010 Harmful contributions.

The city may suspend the wastewater treatment service and/or a wastewater discharge permit when such suspension is necessary, in the opinion of the city, in order to stop an actual or threatened discharge which presents or may present, alone or in contribution with other discharges, an imminent or substantial endangerment to the health or welfare of persons, to the environment, causes interference, or causes the city to violate any condition of its NPDES permit, or the general water reuse permit, sludge disposal regulations or air quality standards. The city may deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the POTW by industrial users where such contributions do not meet applicable pretreatment standards and requirements or where such contributions would cause the POTW to violate its NPDES permit in accordance with 40 CFR 403.8(j)(1)(i), or the general water reuse permit, sludge disposal regulations or air quality standards.

Any person notified of a suspension of the wastewater treatment service and/or the wastewater discharge permit shall immediately stop or eliminate the contribution. In the event of a failure of the person to comply voluntarily with the suspension order, the city shall take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize the threat of interference or damage to the community sewers or POTW or the endangerment to any individuals. The city shall reinstate the wastewater discharge permit and/or the wastewater treatment service upon proof of the elimination of the noncompliant discharge. A detailed written statement submitted by the user describing the causes of the harmful contribution and the measures taken to prevent any future occurrence shall be submitted to the city within five days of the date of occurrence. (Ord. 2282 NCS §3 (part), 2007.)

15.68.020 Remedies for noncompliance.

A. Issuance of Cease and Desist. When the city finds that a discharge of wastewater has taken place or is likely to take place in violation of these regulations, or the provisions of a wastewater
discharge permit, the city may issue an order to cease and desist such discharge, or practice, or
operation likely to cause such discharge and direct those persons not complying with such
prohibitions, limits, requirements, or provisions to:
  1. Comply forthwith.
  2. Comply in accordance with a time schedule set forth by the city; or
  3. Take appropriate remedial or preventive action.

B. Seek Injunctive Relief. Whenever a user has violated or continues to violate the provisions of this
part or permit or order issued hereunder, the city through counsel may petition the court for the
issuance of a preliminary or permanent injunction or both (as may be appropriate) which
restrains or compels the activities on the part of the industrial user.

C. Consent Order. The city is hereby empowered to enter into consent orders, assurances of
voluntary compliance, or other similar documents establishing an agreement with the user
responsible for the noncompliance. Such orders will include specific action to be taken by the user
to correct the noncompliance within a time period also specified by the order. Consent orders
shall have the same force and effect as administrative orders issued pursuant to subsection (D) of
this section, Compliance Order.

D. Compliance Order. When the city finds that a discharge of wastewater is taking place, has been
taking place or threatens to take place, in violation of prohibitions or limitations prescribed in
this part, effluent limitations or pretreatment standards, or the provisions of a wastewater
discharge permit, the city may, at the city's discretion, issue a compliance order requiring the
user to submit for approval, with such modification as the city deems necessary, a detailed time
schedule of specific actions which the user shall take in order to prevent or correct a violation of
these regulations, or of any permit issued pursuant to these regulations, and to take such action in
accordance with such schedule.
Nothing provided in this section shall limit or prohibit the city from pursuing any other remedy,
legal or equitable, otherwise available to the city, or from seeking sanctions in any administrative,
criminal or civil action related to such discharge or potential discharge.

E. Administrative Fines/Civil Penalties.
  1. When the city finds that a user has violated, or continues to violate, any provision of Chapters
     15.44 through 15.76, a sewer use permit or order issued hereunder, or any other pretreatment
     standard or requirement, the city may proceed with issuing a civil administrative complaint
     setting forth the violations and the administrative penalty to be imposed, which shall be in an
     amount not less than that set forth in the enforcement response plan. The city shall proceed in
     a manner consistent with the procedures set forth in Government Code Section 54740.5.

  2. The administrative complaint shall be served by personal delivery or certified mail upon the
     user and shall inform the user that a hearing shall be conducted within sixty days unless
     waived by user or an alternative date is set by stipulation. If after a hearing a person is
     dissatisfied with the decision of the hearing officer they may appeal to the city council by filing
     a written request for an appeal within thirty days of the notice of the hearing officer's
     decision.

  3. Civil penalties may be imposed by the city pursuant to this administrative complaint process
     as follows:
   a. In an amount which shall not exceed two thousand dollars (two thousand dollars for each
day for failing or refusing to furnish technical or monitoring reports).
   b. In an amount which shall not exceed three thousand dollars (three thousand dollars for
each day for failing or refusing to timely comply with any compliance schedule
established by the city.
   c. In an amount which shall not exceed five thousand dollars per violation for each day for
   discharges in violation of any waste discharge limitation, permit condition, or
requirement issued, reissued or adopted by the city.
d. In an amount which shall not exceed ten dollars per gallon for discharges in violation of any suspension, cease and desist order or orders or prohibitions issued, reissued or adopted by the city.

e. The amount of any civil penalties imposed under this administrative complaint procedure which remain delinquent for a period of sixty days shall constitute a lien against the real property of the discharger consistent with the terms of Government Code Sections 54740.5 and 54740.6.

4. In fixing the amount of the civil administrative penalty pursuant to this section, the city shall take into account all relevant circumstances including but not limited to the extent of harm caused by the violation, the economic benefit derived through any noncompliance, the nature and persistence of the violation, the length of time over which the violation occurs and corrective action, if any, attempted or taken by the discharger.

5. Procedures set forth in California Government Code Sections 54725 through 54740.6 shall control with regard to the city’s enforcement through this civil administrative penalty process, whether or not the procedures are specifically set forth in this part. To the extent that the procedures set forth in Government Code Sections 54725 through 54740.6 are inconsistent with other enforcement procedures of the city generally found in Chapters 1.10 through 1.15 of the city code, the procedures set forth in Government Code Sections 54725 through 54740.6 shall apply to the extent the city is proceeding with civil administrative penalties pursuant to this section or seeks civil penalties pursuant to Section 54740 of the California Government Code as set forth in subsection (F) of this section.

6. Issuance of an administrative complaint seeking penalties shall not be a bar against, or a prerequisite for, taking any other action against the user.

F. Civil Penalties. Any person who without regard to intent or negligence violates any provisions of these regulations, or of any provisions of any permit issued pursuant to these regulations, or whose discharges cause interference, pass through, contamination, nuisance, pollution, or who violates any order, termination of service prohibition, effluent limitation, national standard of performance or national pretreatment or toxicity standard or requirement, shall be civilly liable to the city in a sum not to exceed twenty-five thousand dollars for each day in which the violation occurs for as long as the violation continues. In addition to the above described civil penalties, the city may recover actual costs and damages incurred and reasonable attorney’s fees, court costs, and other expenses associated with the enforcement activities, including sampling and monitoring expenses. The city may petition the superior court to impose, assess and collect such sums pursuant to this chapter and California Government Code Section 54740, et seq. In determining amount of liability, the court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration, any economic benefit gained through the industrial user’s violation, corrective actions by the industrial user, the compliance history of the user, and any other factor as justice requires.

G. Criminal Penalties. Any person who intentionally or negligently violates any provision of this part, or of any permit issued pursuant to these provisions, or who discharges wastewater which causes interference, pass through, pollution or who violates any order, prohibition, effluent limitation, national standard of performance, pretreatment or toxicity standard shall be liable, upon conviction thereof, of a misdemeanor, with a maximum fine of one thousand dollars or imprisonment for not more than six months in the county jail or both, for each violation. Each person shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this part (Chapters 15.44 through 15.75) is committed or permitted by such person.
(Ord. 2282 NCS §3 (part), 2007.)
Element 4 - Operations and Maintenance Program

**SWB Requirements:**

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

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

**RWB Requirements:**

**Collection System Map:** Each wastewater collection system agency shall maintain up-to-date maps of its wastewater collection system facilities.

**Resources and Budget:** Each wastewater collection system agency shall allocate adequate resources for the operation, maintenance, and repair of its collection system.

**Prioritized Preventive Maintenance:** Each wastewater collection system agency shall prioritize its preventive maintenance activities.

**Scheduled Inspections and Condition Assessment:** Each wastewater collection system agency shall identify and prioritize structural deficiencies and implement a program of prioritized short-term and long-term actions to address them.

**Contingency Equipment and Replacement Inventories:** Each wastewater collection system agency shall provide contingency equipment to handle emergencies, and spare/replacement parts intended to minimize equipment/facility downtime.

**Training:** Each wastewater collection system agency shall provide training on a regular basis for its staff in collection system operations, maintenance, and monitoring.

**Outreach to Plumbers and Building Contractors:** Implement an outreach program to educate commercial entities involved in sewer construction or maintenance about the proper practices
for preventing blockages in private laterals. This requirement can be met by participating in a region-wide outreach program.

4.1 Collection System Map

The City maintains comprehensive computerized maps of its collection system and continues to improve and refine the map using geographic positioning system (GPS) field instruments to directly enter locations and conditions observed by field crews. The geographic information system (GIS) employed by the City allows for location and description of collection system facilities. These descriptions include, but are not limited to, facility age, condition, maintenance history, inspection history, cleaning history and identified problems. Examples of the collection system map, showing streets and parcels, manhole locations, pipe locations and sizes, and pump station locations, are included in the Element 4 Appendix.

4.2 Preventive Maintenance Program

Prioritized Preventive Maintenance

The City has a computerized schedule for cleaning and maintaining sewer lines and related facilities. This schedule includes pipe segments that are more susceptible to root intrusion, grease, and other debris, otherwise known as “hot spots.” These segments, approximately 260 total pipe segments, are scheduled for cleaning on a 3, 4, 6, or 12 month cleaning cycle depending upon the nature and severity of the problem. A sample list of “hot spots” is included in the Element 4 Appendix. The remainder of the collection system is cleaned on a 3 year cycle with the workload balanced by the computerized scheduling system.

The City maintains records in POSM and work orders of all sewer cleaning activities that include the purpose of cleaning (routine or unplanned), assessment of pipe condition prior to and after cleaning, cleaning methods employed, cause of stoppage (if appropriate), nature of material cleaned from pipe (roots, debris, grease, etc.), further action required (work order or capital improvement), and time needed to clean pipe segment. This information is used to refine the preventive maintenance schedule and to plan future capital improvement expenditures.

Corrective Maintenance/Point Repairs

System defects, as identified, are documented and prioritized in the City’s computerized maintenance management system (CMMS). Based on project size and complexity, City staff and/or private contractors are issued work orders to repair/replace the identified deficiency. Where short sections of pipe have been identified as defective, City crews, using recently purchased equipment, inserts pipe liners into the affected pipe segments; rehabilitating the pipe to near new conditions.

Root Control

The City has both a focused and cyclic root treatment program that covers approximately one-third of the system per year. Roots encroach upon the interior of sewer mains through structural cracks faulty pipe joints and defective laterals. If roots are observed to be an issue during routine cleaning, in response to complaints, or through observations from CCTV inspections, root cutting is performed with chain flail attachments on the jetters or with mechanical cutters.
Lateral Replacement

The City has an established lateral replacement program designed to assist homeowners on a 50/50 match basis (to a maximum of $2,000) in replacing defective laterals. The City allocates $50,000 each year to fund this program. The lateral replacement program informational piece and the replacement program application are included in the Element 4 Appendix.

4.3 Condition Assessment

Scheduled Inspections and Pipeline Condition Assessment:

The city has a strong proactive approach toward inspecting and evaluating the condition of the collection system and its supporting facilities. Routine annual inspections are conducted on all sewer lift stations to identify safety hazards and to assess general equipment and facility conditions. The City has an ongoing closed-circuit television (CCTV) inspection program to assess collection system conditions. The CCTV inspection cycle for the entire system is 6 years. The city maintains an electronic database of CCTV inspections and can revisit conditions within a given pipe segment if circumstances require.

The City of Petaluma uses information from the CCTV inspections to establish the criticality of sewer segments to prioritize and schedule problem areas for replacement or repair based on criteria set by the City’s engineering and maintenance staff. The complete history of maintenance operations and performance is housed in the work order data warehouse. Keeping the history current requires only that current Routine Maintenance activities findings and performance be uploaded to the program via the field GPS units.

Manhole Inspections

Inspections conducted for manholes involve a visual assessment of the overall manhole condition and observed deficiencies that could result in I&I. As part of the focused and cyclic cleaning programs, City maintenance staff visually-inspect manholes for corrosion, debris or damage around the base, cracks or holes, and condition of manhole steps.

Detailed investigations of manhole condition follows at a time when a connecting line segment is defined as a rehab project, and corrections needed to the manhole structure are then included as part of the project work.

Pump Station Inspections and Assessment

Pump stations are inspected on a weekly basis. Weekly inspections include visual check of the equipment, manual cycling of pumps, checking and cleaning floats, recording hour meter readings, and cleaning off debris.

Pump stations are inspected every year including thorough inspection and maintenance of pumps. Wetwells are dewatered and cleaned on a three year cycle.

4.4 Resources and Budget

The City’s budget is made available to the public both as a “Recommended Budget” submitted by the City Manager, and in its final form once approved by City Council. The current fiscal year’s budgets can be found on the City’s Finance Department website along with detailed information describing the review process (http://www.cityofpetaluma.net/finance/index.html).
A copy of the Wastewater Systems budget can be found in **Element 4 Appendix**.

### 4.5 Training

Employees of the Public Works & Utilities Department, which includes the storm drains maintenance, street cleaning, wastewater collection, and wastewater treatment sections, are continually acquiring, renewing and increasing their California Water Environment Association (CWEA) Operation and Maintenance of Wastewater Collection Systems certifications. The Public Works & Utilities Human Resources list, see **Element 2 Appendix**, includes certification levels for these staff.

An example CWEA Collection System Maintenance Candidate Handbook (**Element 4 Appendix**) describes the requirements of the certification. CWEA certificate holders must obtain a basic level of competency, as described by the following CWEA Certification of Competency Standard.

**The CWEA Certification of Competency Standard**

The basic standard of CWEA certification is that certificate holders have, and continue to perform at, a level of basic competence that enables them to perform the Essential Duties of the job safely, effectively, without close supervision, and without further training.

The standard is determined by the following factors:

- Meeting minimum experience and education requirements
- Passing the appropriate written examination.
- Demonstrating continuing competence through education, training, and/or re-testing.
- Continuing to perform the Essential Duties at, or above, the minimal level of competency described by the basic standard of CWEA certification (see above paragraph).

In addition, the Public Works & Utilities Department is dedicated to providing a properly trained, safe, and professional work force to operate and maintain the City’s sanitary sewer collection system. The Safety and Training Program offers, at minimum, monthly sessions covering topics such as:

- Tractor/Loading and Backhoe
- Confined Spaces
- Forklift Operator
- Shoring
- First aid/CPR
- Fire Extinguisher
- Work Zone/Traffic Control

### 4.6 Contingency Equipment and Replacement Inventories

The City of Petaluma has the following equipment available for emergency operations and collection system maintenance:
• 3 portable generators (100 to 150 KW)
• 6 by-pass pumps (1 10”, 1 6”, 1 4”, 3 2”)
• 1 rodder trailer
• 3 combination cleaning trucks
• 1 closed circuit television truck
• 1 portable closed circuit television truck
• 4 emergency response trucks

The majority of the city’s lift stations incorporate a two pump design to provide for seamless operation in the event of a pump failure. All of the lift stations are part of a SCADA network with remote alarm capability. For the stations without a second pump in the station, collection system design allows the system to surcharge to a given level and then go to gravity until repairs can be made.

The City’s inventory of replacement parts is tracked monthly on the City’s CMMS to ensure effective maintenance of the sewer system. The City stocks an assortment of materials including pipes, couplings, main line plugs and submersible pumps.

4.7 Outreach to Plumbers and Building Contractors

The City is a member of the Bay Area Clean Water Agencies (BACWA), an association of Bay area governmental agencies that own and operate collections systems and publicly owned treatment works.

BACWA has developed a brochure directed toward plumbers and building contractors to provide information on how to prevent blockages in private laterals, which can contribute to SSOs. Blockages can be caused by improper construction and maintenance of laterals. When a lateral blockage occurs, plumbers may end up pushing debris from the lateral into the mainline sewer where it may cause blockages and/or overflows from the City’s system.

The City is customizing the BACWA brochure with information specific to the service area. The brochure will be mailed to local businesses based on business license information and will also be distributed by the Building Department to individuals seeking a plumbing permit. A copy of the brochure will be included in the Element 4 Appendix when it is complete.

List of Documents in Element 4 Appendix:

1. Example Maps of Petaluma Collection System
2. Collection System Hot Spot List
3. Sewer Lateral Replacement Grant Program Brochure
4. Sewer Lateral Replacement Grant Program Application
5. Wastewater Systems Budget, FY 2010
6. CWEA Collection System Maintenance Candidate Handbook
7. Plumber Outreach Brochure (future)
Element 5 – Design and Construction Standards

**SWB Requirements:**

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.

**RWB Requirements:**

Each wastewater collection system agency shall identify procedures and standards for inspecting and testing the installation of new sewers, pump stations, and other appurtenances; and for rehabilitation and repair projects.

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### 5.1 Standards for Installation, Rehabilitation, and Repair

The City’s Engineering Standards (Standards) are available to contractors on the City Standards portion of the City’s website (http://www.cityofpetaluma.net/pubworks/eng-city-standards.html). Conformance to the Standards is required, and the criteria are considered a minimum. Those Standards pertinent to wastewater collection systems are included in the Element 5 Appendix.

### 5.2 Standards for Inspection and Testing of New Facilities

Sanitary sewer force mains require pressure testing for tightness after the completion of backfilling but prior to the request for final inspection. Sewer gravity lines are tested for water tightness, obstructions, and vertical deflection. Hydrostatic or air pressure methods, depending on the specific project, can be used to ensure test requirements are satisfied. Cases with geotechnical considerations require an internal television inspection to detect defects.

**List of Documents in Element 5 Appendix (see separate tab):**

1. Collection System Engineering Standards
Element 6 – Overflow Emergency Response Plan

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

a. Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;

b. A program to ensure an appropriate response to all overflows;

c. Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;

d. Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the 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 and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

RWB Requirements:
Each wastewater collection system agency shall develop an overflow emergency response plan with the following elements:

- Notification – Provide SSO notification procedures.
- Response – Develop and implement a plan to respond to SSOs.
- Reporting – Develop procedures to report and notify SSOs per SSO Monitoring and Reporting Program.
- Impact Mitigation – Develop steps to contain wastewater, to prevent overflows from reaching surface waters, and to minimize or correct any adverse impact from SSOs.
6.1 Existing Documentation

SSO emergency response protocol is documented in the City’s Sanitary Sewer Overflow and Backup Response Plan (Response Plan), prepared by Risk Management Solutions in 2006. The Response Plan was subsequently revised by City staff and Oakley Water Strategies to incorporate regulatory changes. A copy of the Plan is included in the Element 6 Appendix.

The document is organized in sections that correspond to purpose and activity to insure that responding personnel have the information readily at hand in an organized and convenient form, as follows:

- Response Plan Binder
- Field Guide
- Regulatory Notification Packet
- Sewer Backup Packet
- Sanitary Sewer Overflow Packet
- Miscellaneous
  - Public Posting
  - Door Hangers
  - Sewer Spill Reference Guide

The Response Plan’s purpose is to provide guidance to personnel for responding to SSOs and backups to maximize protection of public health and the environment. The City’s policy is to respond promptly to SSOs following notification and to report wastewater overflows in compliance with regulatory requirements.

6.2 Notification

The Response Plan Binder includes a section entitled, Receiving a Sewage Overflow/Backup Report. This describes the City’s procedure for receiving service calls. During business hours, calls are routed through the main line at the Public Works & Utilities Department. The details of the call are logged into a database and the On-Call Person is contacted via pager and/or cell phone. If the service call is received during non-business hours, the call is routed to Police Dispatch who will notify the On-Call Person via pager and/or cell phone. If at any time the Sewer On-Call Person cannot be reached, then the Assistant Operations Manager will be contacted via cell phone. If additional assistance is required, the On-Call Person will contact the needed collection system staff through the Main Office (business hours) or via the Assistant Operations Manager (non-business hours). The Response Plan sections entitled, Sanitary Sewer Overflow Packet and Regulatory Notification Packet, include instructions for notifying regulatory agencies as required by the SWB. The Sanitary Overflow Packet also describes the chain-of-communication for reporting and responding to SSOs, and includes internal notification procedures.

6.3 Response

The Sewer Backup Packet and the Sanitary Sewer Overflow Packet provide detailed instructions on responding to indoor sewer backups and outdoor SSOs, respectively. These two sections make up the majority of the contents of the Response Plan.
The Sanitary Sewer Overflow Packet includes the following information:

- Procedures for initial evaluation of the spill, placement of warning signs, and the dispatch of the appropriate crew and equipment;
- Instructions on containing and diverting the SSO from sensitive areas, clearing blockages, cleaning up the area, and documenting the event; and
- Information for obtaining emergency vendor and employee contact information if additional support is necessary.

The Response Plan states that every effort must be made to prevent the discharge of wastewater to surface waters. If the SSO does reach surface water, the Sanitary Sewer Overflow Packet provides detailed instructions for collecting samples. In addition, it contains a number of subsections with instructions on quantification, documentation and reporting of the SSO.

6.4 Reporting

The On-Call Person is responsible for completing the Sanitary Sewer Overflow Report. This report provides internal documentation of the specifics of the SSO, and includes details that are necessary to fulfill regulatory reporting requirements.

Officials receiving immediate notification of the SSO vary depending on the size of the spill and whether or not the spill reaches, or is likely to reach, surface waters, as indicated in Table 4.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Circumstances for Immediate Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Operations Manager</td>
<td>All SSOs</td>
</tr>
<tr>
<td>Environmental Services Supervisor</td>
<td>If the SSO is likely to reach surface waters.</td>
</tr>
<tr>
<td>Source Control Inspector</td>
<td>If Sewer Utilities Specialist is unavailable</td>
</tr>
<tr>
<td>Operations Manager</td>
<td>If the SSO is impacting a creek/channel</td>
</tr>
</tbody>
</table>

6.5 Response Plan Training

Immediately following the adoption of the Response Plan, collection system staff received 3 hours of interactive training covering in detail the facets of the document. A certificate of completion for each staff member attending the training is on file. Refresher training is periodically held and weekly tailgate trainings on plan components ensure staff response readiness.

List of Documents in Element 6 Appendix:

1. Response Plan
Element 7 – Fats, Oils and Grease Control Program

**RWQCB Requirements:**

Each wastewater collection system agency shall evaluate its service area to determine whether a FOG control program is needed. If so, a FOG control program shall be developed as part of the SSMP. If an agency determines that a FOG program is not needed, the agency must provide justification for why it is not needed.

**SWRCB Requirements:**

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

a. An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;

b. A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;

c. The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;

d. Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;

e. Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;

f. An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and

g. Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.
Identification and Sewer Cleaning

To identify and manage FOG sources, the City inspects all restaurants that generate FOG in the City no less often than annually. If the restaurants are improperly maintaining their FOG control devices, they are subject to enforcement actions including escalating fines.

Areas of the collection system subject to grease stoppages ("hotspots") have been identified and are cleaned on a defined frequency. A list of "hotspots" is included in the Element 4 Appendix.

Commercial Source Control

The City has developed a restaurant and food service facilities program to reduce the amount of FOG improperly discharged from these sites. Food service facilities must have a floor sink or other floor mat, container, and equipment cleaning area, which is connected to an approved grease interceptor prior to discharge into the sanitary sewer system. Regular maintenance and cleaning of the grease interceptor is required, and maintenance records can be requested at anytime for review. The food service facility operator must properly contain and dispose of FOG in approved tallow bins. Licensed grease haulers must be used to dispose of FOG in a legal disposal facility. Records of disposal must be maintained and may be requested for review.

The source control inspector conducts unannounced inspections of commercial FOG-producing facilities and has developed the following documents pertaining to these inspections:

- Food Service Grease Trap Inspection Form (Element 4 Appendix)
- Keep Grease from Floor Mats Out of the Drain Information Sheet (Element 4 Appendix)

Requirements to install grease removal devices are communicated to the restaurant/food related business via the building permit process. Sizing requirements of the Uniform Building Code are enforced through this process.

Residential Source Control

The City is developing a brochure suitable for distribution to residents and for web-based availability on the damaging effects of improperly disposed of FOG. The brochure will list specific steps one can take to prevent FOG from entering the sanitary sewer system. A copy of the brochure will be placed in the Element 4 Appendix when it becomes available.

Legal Authority

The legal authority to prohibit discharges to the collection system is documented in the Municipal Ordinance, Title 15. The following sections of this ordinance apply to the FOG control program:

15.48.020 General discharge prohibitions.

A. No user shall contribute or cause to be contributed any pollutant or wastewater which will pass through the city’s facilities or cause or contribute to interference with the operation of performance of the city’s facilities. Any violation of the terms of this part, local limits or a wastewater discharge permit is prohibited and shall constitute interference. This prohibition includes any type of pollutants or wastewater as set forth in the prohibition sections of this part. These general prohibitions apply to all users of the city’s facilities whether or not the user is
subject to national pretreatment standards or any other national, state, or local pretreatment standards or requirements.

B. A user shall not introduce into the POTW any of the pollutant(s) which cause:
   1. A violation of the POTW’s NPDES permit or a deterioration of water quality in the receiving stream; or a violation of the POTW’s general water reuse permit;
   2. Pass through or interference;
   3. Restrict sludge disposal options or cause a violation of sludge disposal regulations;
   4. Endanger the health and safety of the POTW collection systems employees, POTW employees or the general public.

C. Affirmative Defenses. A user shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions established in 40 CFR 403.5(b)(4) if the user can demonstrate that both of the conditions below from 40 CFR 403.5(a)(2) are met:
   1. User did not know or have reason to know that its discharge, alone or in conjunction with a discharge or discharges from other sources, would cause pass through or interference.
   2. Directly prior to and during the pass through or interference, the user was in compliance with the existing limits for each pollutant in its discharge, or if there were no such existing limits, the user’s discharge directly prior to and during the violation did not change substantially in nature or constituents from the user’s prior discharge activity when the city was regularly in compliance with its NPDES permit requirements, and with other applicable requirements for POTW operations including sewage sludge use and disposal.
   (Ord. 2282 NCS §3 (part), 2007.)

15.48.030 Specific discharge prohibitions.

In addition, a user shall not introduce any of the following pollutants into the POTW:

A. High Temperature. Heat in amounts which may inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds forty degrees centigrade (one hundred four degrees Fahrenheit) unless the approval authority, upon request of the POTW, approves alternate temperature limits.

B. Pollutants which cause corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0 or higher than 10.5, or having a pH which will cause damage to the collection system or interfere with POTW treatment processes.

C. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than one hundred forty degrees Fahrenheit or sixty degrees centigrade using the test methods specified in 40 CFR 261.21. Any liquids, solids or gases which by reason of their nature or quantity are or may be sufficient either alone or by interaction with other substances to cause a fire or explosion or endanger public safety or interfere with the operation of the POTW. At no time shall two successive readings on an explosion hazard meter, at the point of discharge into the sanitary sewer (or at any point in the system), be more than five percent or any single reading over ten percent of the lower explosive limit (L.E.L.) of the meter, or have a closed-cup flash point of less than one hundred forty degrees Fahrenheit or sixty degrees centigrade using the test methods specified in 40 CFR 261.21. Prohibited materials include but are not limited to gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides and sulfides and any other substances which the city, the state and EPA has identified as a fire hazard or a hazard to the system.

D. Obstruction of Flow. Solids or viscous pollutants in amounts which will cause obstruction to the flow in a community sewer or in the POTW resulting in interference. Items such as but not limited to grease, garbage with particles greater than one-half inch (one and twenty-seven hundredths centimeters) in any dimension, animal guts or tissues, paunch manure, bones, hair, hides, fleshing, entrails, whole blood, feathers, ashes, cinders, wax, sand, spent lime, stone or marble
dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastics, tar, asphalt residues, residues from refining or processing of fuel or lubrication oil, mud or glass grinding or polishing wastes.

E. Toxic Pollutants. Any wastewater containing toxic pollutants in sufficient quantity, either singly or in interaction with other pollutants, that would pass through or cause interference with the wastewater treatment process, or constitute a hazard to human, animal or plant life, including aquatic organisms, or create any hazards in the waters receiving the wastewater treatment plant effluent. A toxic pollutant shall include but not be limited to any pollutant identified pursuant to Section 307(a) of the Act and the California Toxics Rule. Compounds specifically prohibited include any polychlorinated biphenyl (PCB), any pesticide (including any insecticides, herbicides, or fungicides) such as but not limited to chlordane, heptachlor, heptachlor epoxide, aldrin, dieldrin, dichlorodiphenyl trichloro ethane (DDT), dichloro-diphenyldichloro ethene (DDE), and rothane (DPD).

F. Noxious or Malodorous Substances. Any harmful or offensive gases or solids which either singly or by interaction with other wastes are sufficient to violate or have the potential to cause violations of air quality standards at the POTW or in community sewers, create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for maintenance and repair. Any volatile organic pollutant in such concentration that it has the potential to cause the headspace gases to exceed a three hundred hexane equivalent level over equilibrated wastewater or exceed toxicity discharge screening levels based on fume toxicity.

G. Disposal/Reclamation. Any substance which may cause the POTW’s effluent or any other product of the POTW, such as residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance discharged to the POTW cause a violation of the criteria, guidelines or regulations developed under Section 405 of the Act; any criteria, guidelines or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act, or state or local criteria applicable to the sludge disposal.

H. POTW Violation. Any pollutant including oxygen demanding pollutants (BOD, etc.) causing the POTW to violate or continue to violate its NPDES permit. This includes but is not limited to slug discharges, oxygen demanding pollutants (BOD or COD), suspended solids, pH, heavy metals, oil and greases or toxic organic compounds; released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

I. Detrimental Environmental Impact. Any substance which may have a harmful environmental impact or create a nuisance in the waters of the state or a condition which violates the rules and regulations of any public agency having regulatory jurisdiction over the city, including but not limited to any statute or any rule, regulation, or requirement of any public agency or state or federal regulatory body.

J. Discoloration. Any wastewater creating discoloration or any other condition in the quality of the POTW effluent such that receiving water quality requirements established by law cannot be met.

K. Hazard or Public Nuisance. Any waste which, as determined by the city, may have an adverse or harmful effect on sewer, maintenance personnel, wastewater treatment plant personnel or equipment, treatment plant effluent quality, public or private property or may otherwise endanger the public, the local environment or create a public nuisance. The city shall, in determining the acceptability of specific wastes, consider the nature of the waste and the adequacy of the collection, treatment and disposal system available to accept the waste.

L. Excessive Flow. Total quantities of flow or instantaneous peaks which due to volume or manner of delivery require a disproportionate share of the city’s treatment plant capacity. This also includes flows which, alone or in combination with others, cause excessive treatment costs and/or treatment plant process upsets.

M. Radioactive Wastes. No user shall, and it shall be unlawful to, discharge, cause to be discharged, or permit to be discharged, any radioactive waste into the sanitary sewer, except:
1. Users authorized to use radioactive materials by the State Department of Health or other governmental agency empowered to regulate the use of radioactive materials may discharge, cause to be discharged, permit to be discharged such wastes; provided, that such wastes are discharged in strict conformance with the current State of California Code of Regulations Title 17 and federal regulations and recommendations for safe disposal of such wastes as they now exist or may hereafter be amended.

2. The user so acting does so in compliance with all applicable rules and regulations of all other regulatory agencies having jurisdiction over such discharges.

N. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

O. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

P. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Q. Any sewage not amenable to treatment as this term is defined herein with the use of the facilities and treatment processes employed by the city at the time of the discharge.

(Ord. 2282 NCS §3 (part), 2007.)

Element 7 Appendix

1. Food Service Grease Trap Inspection Form

2. Keep Grease from Floor Mats Out of the Drain Information Sheet

3. “Fat Free Sewer” Brochure (when available)
Element 8 – System Evaluation and Capacity Assurance Plan

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

a. Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

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

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

d. Schedule: The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.

RWB Requirements:
Capacity Assessment: Each wastewater collection system agency shall establish a process to assess the current and future capacity requirements for the collection system facilities.

System Evaluation and Capacity Assurance Plan: Each wastewater collection system agency shall prepare and implement a capital improvement plan to provide hydraulic capacity of key sewer system elements under peak flow conditions.

Introduction
The City periodically conducts flow monitoring and hydraulic modeling analysis to anticipate future growth or increased demand on the system as well as to determine if excessive I&I is impacting the capacity of the system. The nature of the demographics of the City is such that the city has not experienced growth or demand on the system that has necessitated updating the
hydraulic capacity model since the last assessment in 1995. This is supported by the lack of SSO history and lack of evidence of any surcharging to indicate that assessments are required to evaluate the sanitary sewer system based on SSO discharges caused by hydraulic deficiency. The City is currently evaluating the timing of the next capacity assessment and flow monitoring program but expect to update it in the next three years.

**Capacity Assessment**

The capacity assurance process is used to determine estimated peak flows associated with wet weather conditions 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.

The Sanitary Sewer Capability Study and Master Plan, February 1985 is the last comprehensive study conducted. The presence of an urban growth boundary has resulted in little or no utility expansion since the early 1990’s. While there are plans to update the Master Plan in the next few years, because of the lack of growth in population and/or collection system expansion, there remains little pressing need for a Master Plan update.

**System Evaluation and Capacity Assurance**

The capacity assurance program is based on a capacity assessment that relates short term and long term capacity requirements to a capital improvement program for providing the hydraulic capacity of key sewer system elements under peak flow conditions. The following are the program components:

- Evaluation – Evaluate portions of the collection system experiencing SSOs due to hydraulic deficiency.
- Capacity Enhancement Measures – Establish a short- and long-term capital improvement program to address identified hydraulic deficiencies.
- Plan updates – Update the plan on a regular basis as specified in the SSMP. Capital improvement requirements will be consistent with current planning objectives. Capacity assurance and modeling will be done periodically.

**Flow Projections**

Flow projections are based on historical flow rate data combined with calculated flow rates for growth areas, septic tank conversions and infill development. To estimate the sanitary flow impact of these areas, the results of actual metering and flow monitoring are used to define base sanitary flow, groundwater infiltration and RDI/I values in of the tributary sub basins. To see the effect of the development over time, the flow impacts were added into the model in three equal five-year phases until built out.

In this manner an allotment for I&I is also incorporated for new laterals and mains in the new areas. Residential infill I&I assumes that existing sewers will be used to convey wastewater flows to the treatment plants, without added I/I volumes for new work. The City currently specifies allowances of 1000 gpd/acre for pipes installed since 1975, 2500 gpd/acre for installations between 1962 and 1975, and 6000 gpd/acre for pipes installed prior to 1962. Non-residential I&I were calculated based on the City standard of 1000 gpd/acre.
Hydraulic Analysis

The hydraulic model evaluates the primary "back bone" of the system i.e. lines greater than or equal to 10" in diameter. The City’s GIS files are used to spatially define the system topology including geometry and network connectivity. Each individual structure data is maintained in the system database. The data maintained includes pipe types (gravity or pressure pipe), manhole types (split, diversion, outfall or standard manhole), pipe diameters, rim and invert elevations, pipe lengths and slopes.

Diversion manholes are also incorporated into the model. Diversion manholes split the incoming flow into two components, one that continues through the main line, and another that is diverted to an overflow line. Flow is divided according to predicted performance curves that should be calibrated as more flow data becomes available in the future.

Flow Allotments

Based on the City’s design standards, initial projected flows are “injected” into the hydraulic model. These are allocated based on the individual parcels to represent geographic regions that inject flows to particular pipes along the system. Each parcel is associated with its respective Land Use designated as one of three distinct types of Sanitary Service Areas: Residential, Commercial, or Open Space/Parkland.

Residential areas generate flows based on population. For design purposes, typically the average family unit is considered 3.5 persons that generate 90 gallons per person per day for a total of 315 gallons per parcel per day.

The Commercial areas generate flows based on volume. Typically the total commercial water consumption is summed from the latest report and proportioned to each parcel by acreage in gallons per day. The Open Space/Parkland areas are assumed to generate no sanitary flow.

These areas are assigned to specific pipes in the collection system. The sanitary flows are injected into the system throughout a 24-hour day based on flow study diurnal curves for each type of use. Diurnal curves were derived from two flow monitoring areas of the flow study, one a predominately Residential area and another predominately Commercial area. Since no flow is generated for Open Space / Parkland areas, a third diurnal curve is not needed.

Once completed, the initial flow data is adjusted to the results of the flow metering and monitoring study and the allocation of GWI, BSF & RD/I to the sub-basins. BSF &GWI values are calibrated to the metered values found during dry weather periods. Results of this analysis provide the loading parameters for present and future runs of the capacity model.

Capital Improvement Program (CIP)

The CIP process includes a system for preparing, evaluating, and reporting the CIP budgets. The City’s collection system requires a continuing number of improvements including collection system capacity upgrades, correcting structural problems, and modifications to pump stations and the treatment plants. A construction schedule for the capital projects is developed based on the project priorities and to support payment of all capital improvement program and equipment replacement expenditures. The schedule for the projects (in current dollars) is presented in the collection system master plan.
CIP Planning

The CIP includes increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The City has put into place the steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules.

The City has prepared and is implementing a Capital Improvement Program (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. The CIP includes an implementation schedule and identifies sources of funding.

Cyclic Replacement Program

A Cyclic Replacement Program is intended to provide for the long-term gradual replacement of the sewers in the City system. Such a program is needed because many of the City sewers are 50 years old and greater and the design life of a sewer pipe is generally considered to range from 50 to 100 years.

Historically, Bay Area communities such as the cities of Berkeley and Oakland and the older portions of the cities in Contra Costa County, the condition of many of the sewers has been found to be poor and rehabilitation and replacement programs have been recommended. The age and type of pipe materials in the City system are similar to many other community collection systems in the Bay. Over time the City sewers may exhibit many of the same problems of physical deterioration as have been found in these other systems. Therefore TV inspection of the sewers to determine and monitor their actual condition is being followed. A Cyclic Replacement Program involves a systematic program to televise each sewer in the City’s sanitary sewer system and identify those in need of rehabilitation or replacement. It is recommended that the City complete their inspection of every sewer in the system over the next five years to develop a baseline assessment of the condition of the system and thereafter inspect the system on an eight year cycle. The results of the inspection program would be used to identify specific rehabilitation / replacement projects to be included in future capital improvement programs and the specific method of rehabilitation or replacement that is best suited for each project.
Element 9 – Monitoring, Tracking and Reporting System

**SWB Requirements:**

The Enrollee shall:

a. Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;

b. Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;

c. Assess the success of the preventative maintenance program;

d. Update program elements, as appropriate, based on monitoring or performance evaluations; and

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

**RWB Requirements:**

Each wastewater collection system agency shall monitor the effectiveness of each SSMP element and update and modify SSMP elements to keep them current, accurate, and available for audit as appropriate.

The effectiveness of each SSMP element is measured through the use of selected performance indicators. These indicators are tracked and reported using the Annual Report of Sanitary Sewer Overflows (Annual SSO Report) and the Annual SSMP Audit Form. An Annual SSO Report template and a blank Annual SSMP Audit Form are included in the *Element 9 Appendix.*

Performance indicator data are incorporated into the Annual SSO Report. The Annual SSMP Audit Form provides documentation of the process of reviewing the SSMP to determine if an update is necessary. Both the Annual SSO Report and the Annual SSMP Audit Form are submitted to the Regional Water Board.

The Annual SSO Report template includes the following performance indicators:

- Number of dry weather SSOs
- Number of wet weather SSOs
- Total number of SSOs
- Number of SSOs <100 gallons
- Number of SSOs 100 to 999 gallons
- Number of SSOs 1,000 to 9,999 gallons
- Number of SSOs >10,000 gallons
- Total volume of SSOs
- Total volume recovered
- Total volume conveyed
- Number of SSOs caused by each of the blockage types: roots, grease, debris and other
- Blockages due to each of the following: roots, grease, debris, and other
- Number of SSOs caused by capacity limitations

Performance indicator data are compiled from information regularly collected and maintained by the City. Current and readily available sources, which are described throughout this SSMP, include SSO field report forms, CIWQS database reports, sewer system cleaning schedules, and FOG inspection reports.

The City's Utilities Manager is responsible for completing the Annual SSO Report and Annual SSMP Audit. Necessary updates to the SSMP are made based on these annual evaluations.

**List of Documents in Element 9 Appendix**

1. Annual Report of Sanitary Sewer Overflows (template)
2. Annual SSMP Audit Form
Element 10 – SSMP AUDITS

SWB Requirements:
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.

RWB Requirements:
Each wastewater collection system agency shall conduct an annual audit of their SSMP which includes any deficiencies and steps to correct them (if applicable), appropriate to the size of the system and the number of overflows, and submit a report of such audit.

As previously described in Element 9, the City audits and updates the SSMP on an annual basis. The audit process is documented in the Annual SSMP Audit Form, included in the Element 9 Appendix. The audit form provides structure for a systematic review of each SSMP element in order to ensure the SSMP contains current information, regulatory requirements are satisfied, and programs are effective. If updates or changes are required, the content and timeline to complete those change are described in the audit. The Annual SSMP Audit Form, intended as an attachment to the Annual SSO Report, is submitted to the RWB by March 15th following the end of the calendar year being audited.
Element 11 – Communication Program

The City maintains a website (http://cityofpetaluma.net/) along with Facebook and Twitter, to inform the public about City activities. The City’s website is an effective communication channel for providing alerts and news to the public. The main page of the website provides important announcements, links agendas and minutes for City Council meetings, and other key information for City residents. Various public works information are published on the City’s public works department page of the website, linked from the City services tab. The City is in the process of developing a new website.

The City plans to provide information about the SSMP and how to obtain a copy of the SSMP on the City website.

The City will also use the website to notify the public of important upcoming activities related to sewer system management and CIP projects.