

## 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.*

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As previously described in Element 9, the City audits and updates the SSMP on an Biennial (every 2 years) 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 last two Audits have been uploaded and Certified in June on the flowing years after evaluation of the SSMP and operational constraints.

### **Element 10 Appendix**

1. 2020 Audit
2. 2018 Audit



**CITY OF  
PETALUMA**

**DEPARTMENT  
OF PUBLIC  
WORKS &  
UTILITIES**

**Sewer System  
Management Plan  
(SSMP)**

**2020 AUDIT**

WDID 2SSO10165



**Audit Period:**

**January 1, 2018 to  
December 31, 2019**

June 26, 2020

### Certification

I hereby certify, as a Legally Responsible Official and as Deputy Director of Public Work & Utilities – Operations for the City of Petaluma that the following SSMP Audit was performed in compliance with the State Water Resources Control board Order No. 2006-0003-DWQ, Statewide General WDR for Sanitary Sewer Systems, Provision D.13(X).



Kent Carothers, P.E.



6/26/2020

Date

*LRO responsible for Amendment certification of complete SSO reports and submit No Spill Certification.*

Legally Responsible Official's for City of Petaluma

Kent Carothers, Deputy Director PW&U - Operations  
Mike Ielmorini, Assistant Operations Manager

## **Acronym Listing Used in This Audit Report**

<b>CIP</b>	<b>Capital Improvement Program</b>
<b>CTWQS</b>	<b>California Integrated Water Quality System</b>
<b>CMMS</b>	<b>Computerized Maintenance Management System</b>
<b>DS</b>	<b>Data Submitter</b>
<b>FOG</b>	<b>Fats, Oils and Grease</b>
<b>FSE</b>	<b>Food Services Establishment</b>
<b>LRO</b>	<b>Legally Responsible Official</b>
<b>MRP</b>	<b>Monitoring and Reporting Program</b>
<b>OERP</b>	<b>Overflow Emergency Response Plan</b>
<b>PS/FM</b>	<b>Pump Station/Force Main</b>
<b>RWQCB</b>	<b>Regional Water Quality Control Board</b>
<b>SSMP</b>	<b>Sewer System Management Plan</b>
<b>SSO</b>	<b>Sanitary Sewer Overflow</b>
<b>SWRCB</b>	<b>State Water Resources Control Board</b>
<b>WDID</b>	<b>Waste Discharge Identification Number <u>255010165</u></b>
<b>WDR</b>	<b>Sanitary Sewer Waste Discharge Requirements</b>
<b>WQMP</b>	<b>Water Quality Monitoring Plan</b>

## PURPOSE

This audit reviews the effectiveness of the City of Petaluma's SSMP documentation and implementation for the period of calendar years 2018 and 2019. This audit is intended to meet State Water Resources Control Board (SWRCB) 2006 waste discharge requirements (WDR), State Water Board Order No. 2006-0003-DWQ, Section D13(x) for agencies that own or operate more than one mile of sanitary sewer collection systems discharging to a publicly owned treatment plant. Consequently, this audit assesses the current state of compliance with WDR provisions including effectiveness of program implementation, identifies "deficiencies" found in the SSMP and recommends corrective actions to remedy those deficiencies.

Participant	Role	Agency
Kent Carothers	Lead Auditor	City of Petaluma
Mike Ielmorini	Assistant Auditor	City of Petaluma
Leah Walker	Ellis Creek Treatment Plant	City of Petaluma
Matt Pierce	Ellis Creek Treatment Plant	City of Petaluma
Steve Kennedy	Lead Utility Service Worker Sewer System	City of Petaluma
Stuart Crist	Utility Service Worker - Sewer System	City of Petaluma

Since the SSMP adoption in April 2008, the SSMP is required to be audited every two years, and is a critical process that promotes continuous improvement of the City's SSMP, ultimately resulting in enhanced effectiveness and efficiency of City operations. This process includes the examination of events, experiences, and data from the previous two calendar years (2018 and 2019) so that successes and challenges can be identified and correlated with strengths and weaknesses of City's SSMP. The City's SSMP Audit consists of two major components: SSMP Effectiveness and SSMP Compliance. The SSMP Effectiveness is evaluated by discussion and review of these performance indicators:

1. SSO Spill Rate and Volume Indices
2. SSO Spill Rate and Volume Trends
3. Performance Measurements (SSMP Section IX – Monitoring, Measurement, and Modifications)
4. Sewer System Improvements and Studies

SSMP Compliance is evaluated by review of SSMP elements using an Audit Checklist and Narrative. Since the City SSMP's initial adoption in August 2008, this audit is meant to help identify administrative and functional changes that are needed in the SSMP. The administrative changes tend to be dynamic and include: organizational chart details, contact information, additional collection system information, inclusion of select mapping examples, etc. The functional revisions reflect more substantive changes including: incorporation of the current status of significant studies being performed (hydraulic capacity, risk assessment, large trunk sewer evaluation), changes in the maintenance program, Capital Improvement Program (CIP) details, regulatory and SSO Response Plans, etc. The current SSMP was adopted by the City Council on April 3, 2017, as part of its mandated five-year certification.

## **REGULATORY REQUIREMENT**

Prior to calendar year 2012 the SSMP Audit was submitted on an annual basis along with the City's Annual SSO Report to the San Francisco Bay Regional Water Quality Control Board (RWQCB). The requirement for an annual SSMP Audit has now been discontinued per RWQCB's letter, dated October 3, 2012.

The City continues to produce the bi-annual SSO Reports as one of the City's obligations described in Order R2-2017-1025 as part of the settlement agreement with the Regional Water Control Board.

The City submitted the final report on December 13, 2019 for the Completion of the Supplemental Environmental Project (Petaluma River Cleanup Program) under Administrative Civil Liability Order No. R2-2017-1025. The Regional Water Quality Control Board acknowledged completion of the Supplemental Environmental Project on June 5, 2020.

## **SYSTEM OVERVIEW AND DISCUSSION**

The City owns and maintains a gravity sewer wastewater collection system serving the populations of the City of Petaluma and some parcels located within the County, encompassing nearly 15 square miles. In total there are approximately 19,000 connections serving a population of nearly 62,000 people. The wastewater collection system is comprised of 193 miles of sewer main and 4 miles of force main. The City's sewer mains range in diameter from 4 to 60 inches, with nearly 75% of these lines being 8-inches in diameter or smaller. Nearly all sewer laterals are 4-inches in diameter, while a few commercial and multiple residential properties use 6-inch laterals. In Fiscal Year 2018-2019 the system transported an average flow of approximately 4.5 million gallons of wastewater per day or a total of 1.87 billion gallons of wastewater to the Ellis Creek Water Recycling Facility (ECWRF) for treatment, disposal, and reuse.

The responsibility to own and maintain sewer laterals is the responsibility of the property owner per City Charter. There is 19,000 sewer laterals connected to public mains. The City has a Lateral Grant Program and is pro-active in advertising the program.

## **SSMP EFFECTIVENESS**

### SSO Spill Rate and Volume Indices

The City has very effectively reduced the number and volumes of sewage overflows since the implementation of the state sanitary sewer overflow database requirements. These changes have resulted from the increases in cleaning frequency and improvements to the collection system resulting from the Administrative Order and the dedication of the current City staff. However, in the past year or so there have been a number of retirements and employee resignations that are impacting the ability of the City to meet the annual cleaning schedules. In addition, recent significant increases in construction costs have required the capital improvement program to be reevaluated again and projects to be either reduced in scope, completely modified or pushed back until construction costs become more reasonable. These changes have resulted in a backlog of performance results and activities that must wait for a full complement of staff or other options to

deal with the necessary work flow. In addition, due to a less than competitive compensation program, the City has experience a high turnover rate of entry level employees once they are trained, leaving for higher paying positions in the sanitary sewer profession

One of the primary indicators of collection system performance and SSMP effectiveness is the use of an SSO Spill Rate Indices. Traditionally, the common benchmark or spill rate indices utilized by wastewater collection agencies has been the total number of mainline SSOs per 100 miles of sewer main owned and maintained. A long standing and accepted indicator of a well performing sewage collection system is achieving a total spill rate of  $\leq 3.0$  SSO's per 100 miles. The 2018-2019 CWQS SSO indices are presented in the CIWQS table as summarized below to illustrate the excellent performance of the City as compared to other collection systems throughout the state and local region. \*2018-2019 Annual performance reports are the latest on the SWRCB website

<u>2018 Sewer Main Indices</u>	<u>City</u>	<u>State*</u>	<u>Region*</u>
Total No. (SSOs/100 mi)	<b>4.07</b>	2.99	5.25
Category 1 (SSO/100 mi)	<b>0.51</b>	3.86	5.25
Category 2 (SSO/100 mi)	<b>0.00</b>	2.09	2.05
Category 3 (SSO/100 mi)	<b>3.56</b>	6.97	9.61
Volume (gal/100 mi)	<b>70.50</b>	8,674	6,205

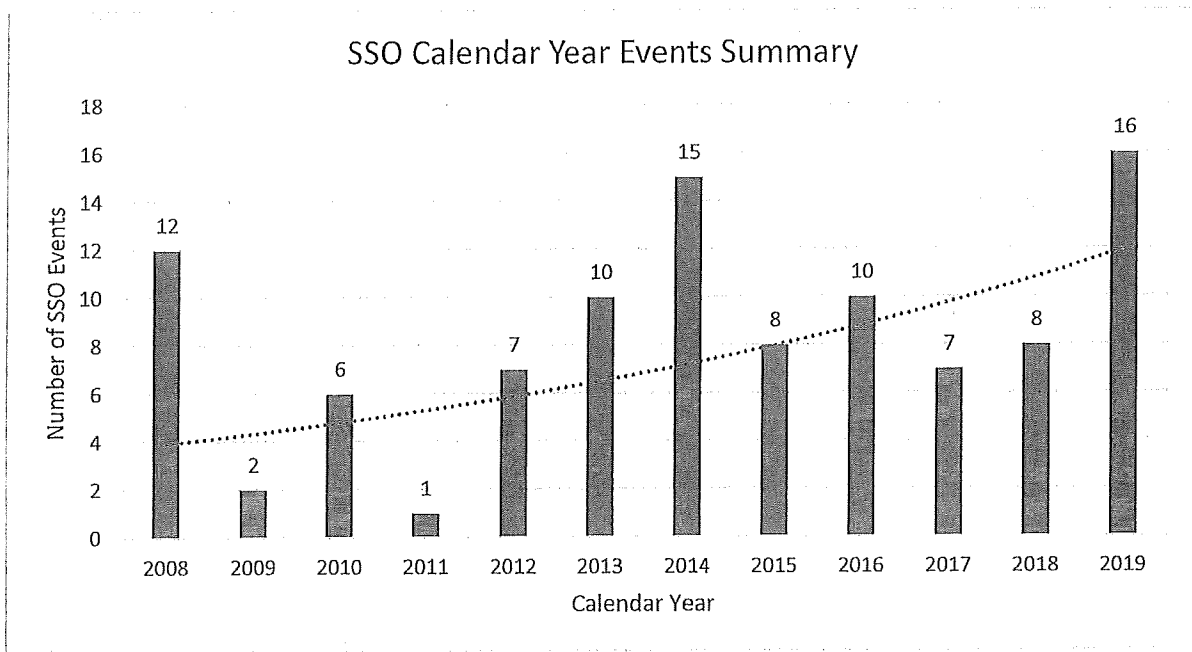
  

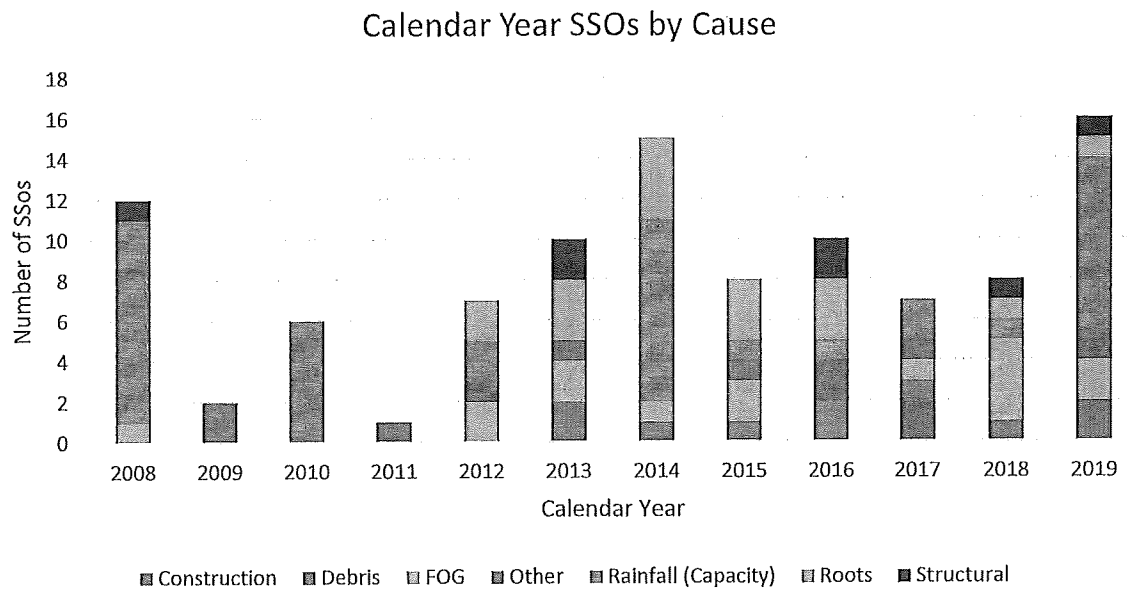
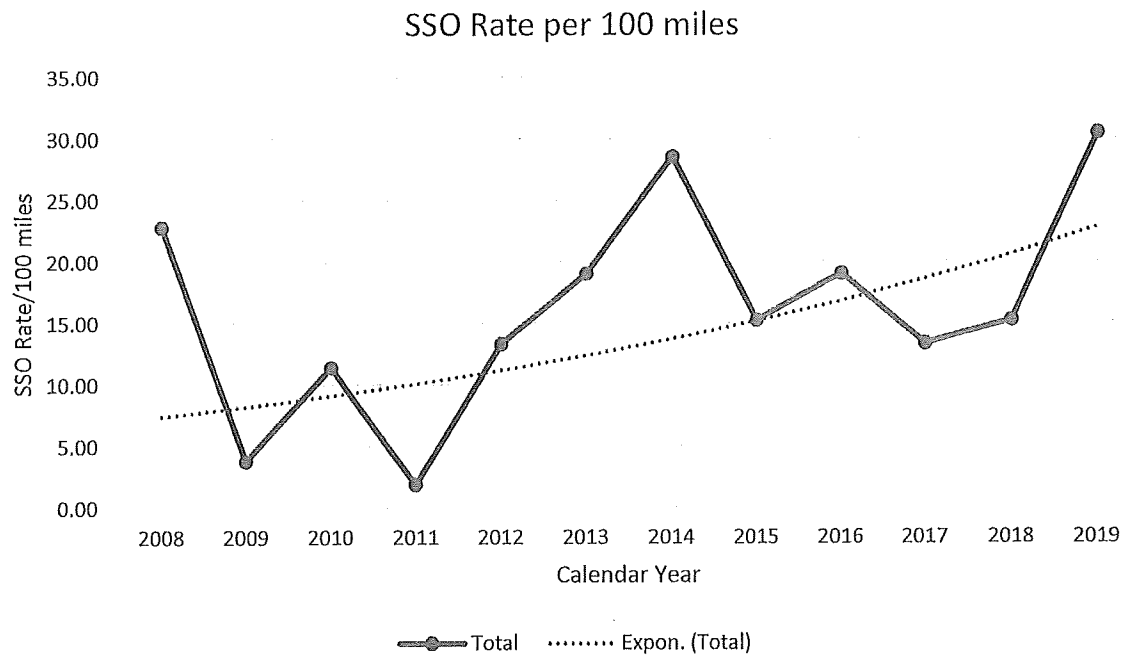
<u>2019 Sewer Main Indices</u>	<u>City</u>	<u>State*</u>	<u>Region*</u>
Total No. (SSOs/100 mi)	<b>6.11</b>	3.15	5.64
Category 1 (SSO/100 mi)	<b>4.07</b>	5.19	6.76
Category 2 (SSO/100 mi)	<b>0.00</b>	3.14	2.58
Category 3 (SSO/100 mi)	<b>2.04</b>	4.83	6.19
Volume (gal/100 mi)	<b>4,014.12</b>	23,982	43,074

The historical trending of SSO spills and volumes is also a primary indicator of collection system performance and SSMP effectiveness. By examining a multi-year performance record, a declining trend in spill occurrences and volume can reveal if the programs and measures identified in the SSMP are demonstrating success. The City has adopted the use of seven-year running averages in examining its SSO spill occurrences and volumes to smooth out anomalies that can sometimes skew results. As shown below, the data up through calendar year 2019 maintains the general downward trend (based on 2014) for both SSO occurrences and volumes for sewer main SSOs.

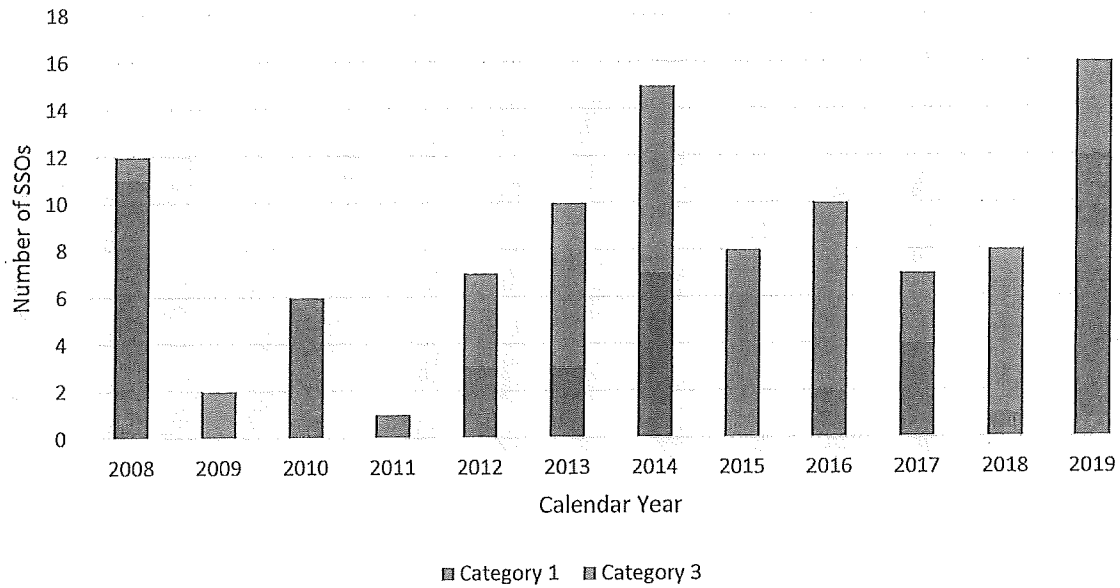


Year	SSO's	Total Volume
2013	9	228
2014	15	437,832
2015	8	189
2016	10	1,395
2017	7	8,624
2018	8	70.50
2019	16	4,014

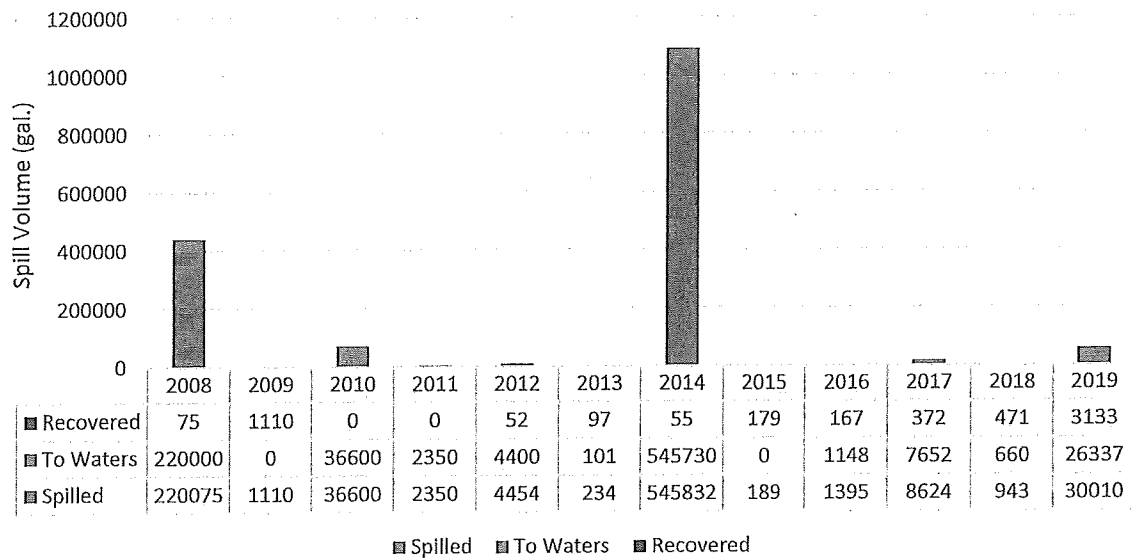




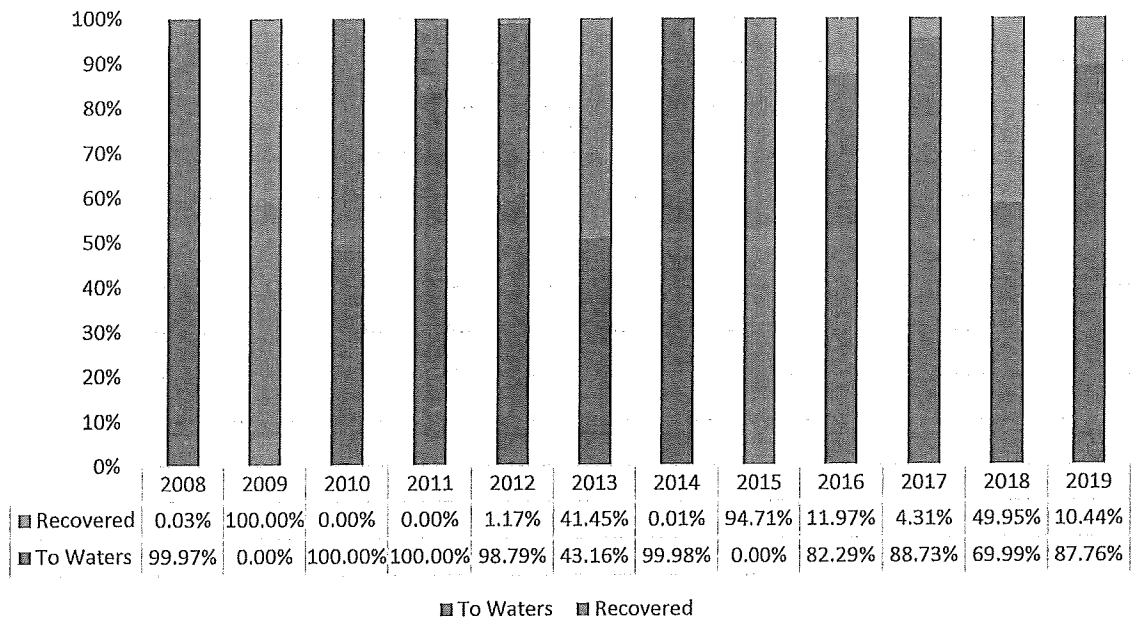
### SSOs by Category by Calendar Year



### SSO Spill Volumes by Calendar Year



### Spill Volume Percentages



## Performance Measurements

Section IX of the SSMP addresses the process of monitoring, measurement, and program modifications to ensure that the SSMP continues to be relevant and effective. The criteria for monitoring and measurement for each SSMP Element is described in Table IX-1. All SSMP revisions are documented in Appendix E.2 – SSMP Development and Revision History in the SSMP. The most recent updates to the SSMP, just prior to the last adoption and recertification by the City Council on April 3, 2017 include: general administrative updates, Fiscal Year 2018 - 2019 Action Items of the City Strategic Plan, updated SSO and Backup Response Plan (including the Water Quality Monitoring Plan and Overflow Emergency Response Plan), and a discussion of budget and resource allocation for Operations and Maintenance.

All SSMP elements and their measurements are discussed below.

### Section I - Mission, Goals, and Objectives

- a) Goals remain consistent with the SSMP
  - 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 SSO's
  - To mitigate the impact of SSO's

### Section II – Organization

- a) Staffing Levels
  - Are current with funded positions.
  - An inspector from Public Works continues part time for coordination with the administration of Lateral Grant program during CIP projects and to assist with SSO's in downtown areas with businesses

### Section III – Legal Authority

- a) City Ordinance
  - The City Ordinance provides the legal authority for the proper operations of the City. It is regularly going through a process of review with updates are being made as needed.

## Section IV - Operation and Maintenance Program

### a) Collection System Mapping

- Main line and manhole structure locations and asset information is maintained continuously and is considered up to date and accurate.
- Main and lateral connection locations are systematically being confirmed with POSM TV inspections. Condition NACCP ratings are being added for the sewer mains as CCTV'd.
- Electronic (GIS) mapping information has been made available to field staff through implementation of field integration software/hardware (Lucity/Samsung tablets). This allows access to the most current mapping and asset information.
- Field staff has ability to provide redline markups and notations showing needed mapping changes in facility locations, dimension changes, or other notations using Lucity. GIS mapping edits are performed by the asset manager and are typically accomplished on a weekly basis.
- Storm Drain maps are also in GIS, allowing field staff to anticipate flow direction and interception points for SSO entering the storm system.

### b) Preventive Maintenance

- Nearly all mainline cleaning is based on a 36 month frequency (Lucity cleaning), while higher frequencies are specified for special lines. The use of longer frequencies (36 and 48 month are being used for newly rehabilitated HDPE lines and major trunk lines).
- Cleaning production goals for mains have been established.  
In 2018, 222,552 linear feet of sewer was cleaned representing 22% of the system. In 2019, 263,472 linear feet was cleaned representing 25% of the system. These measures are close to the 36 month target with the amount of rehabilitated mains being constructed. The 36 month frequency remains the goal for the SSMP.
- As discussed in the initial section of SSMP Effectiveness, the City's 2018-2019 SSO Spill Rate for mains and laterals is lower than state and regional averages.
- Historical data of SSO occurrences and volumes from 2013 to 2019 indicates a general downward trend.
- Pump station maintenance has been performed according to frequency in the SSMP. All level floats and emergency generators are tested monthly. Wet wells are pumped down and inspected monthly.

c) Rehabilitation and Replacement

- The City's FY 2018-2019 CIP construction budget (not including ECWRF) was \$6.6 million.
- There are three significant projects in various stages of progress. PIPS force - main replacement, Annual sewer main replacement, and the Payran Sewer Lift upgrade project
- Within 2018-19 the City has rehabilitated or installed an average of nearly 1.1 miles of pipeline/year, or 0.5% of the system annually.
- Increased outreach and funding for the sewer lateral grant program
- In 2018, the City performed approximately 78,962 lf of condition assessment compared to an annual goal of 165,928 lf/yr. In 2019, crews performed 95,197 lf of condition assessment. An effort is currently underway to achieve a goal of 225,000 lf/year to catch up to achieve the SSMP goal of a 6 year inspection cycle.

d) Staff Training

- Staff is provided safety and equipment training through a combination of online and live training and is documented by My Safety Officer training services.
- The following is training that occurred during 2018-2019

Date	Course & Staff Members
5/29/18	Internal SSO training. Sewer Crew
2/20/19	2/20/19 CIWQS training Mill Valley. Kent Carothers, Mike Ielmorini and Stephen Kennedy.
4/17/19	EPA Webcast Kent Carothers and Stephen Kennedy
6/25/19	EPA CREAT Resiliency Planning and Adaption in Sacramento, Kent Carothers, Mike Ielmorini, and Joe McIntyre.
8/30/2019	DKF Solutions Group- Fremont Ca- "OERP Requirements & SSO Volume Estimation Methods" – Kent Carothers, Mike Ielmorini, and Stephen Kennedy.
10/17/19	2019 Sewer and Stormwater Summit, Kent Carothers, Stuart Crist and Stephen Kennedy.

e) Maintenance and Contingency Equipment

- In addition to keeping adequate number of newer model maintenance equipment available for use for routine maintenance, contingency equipment such as emergency bypass pumps and generators are in standby and ready for use in emergencies
- A Vehicle Replacement Plan is maintained to ensure that an adequate reserve fund is maintained for the scheduled replacement of the City fleet.
- Emergency pipeline repairs are performed by a City staff or under contract by emergency minor construction agreements. During 2018-2019 there have been two emergency contracts for pipeline lining. For catastrophic events where very significant damage occurs, an on-call understanding with a large construction contractor has been initiated for immediate response.

Section V - Design & Construction Standards

a) Design Standards

- The City's Design Standards are established and adequate for the design of sewer systems. Standards are consistently being reviewed. Next update will be completed in late 2020.
- Contracts with multiple engineering consultants provide expertise in specific discipline areas while ensuring there is an overlap in engineering design services.

b) Construction Standards

- The City's Construction Standards typically refer to Standards of Specifications for Public Works Construction. Next update will be completed in late 2020.
- Following the completion of a construction project a formalized approach for reviewing design and construction related deficiencies still needs to be formulated for future CIP projects.

Section VI - Overflow Emergency Response Plan

a) Notification

- New SSO notification requirements designated by the SWRCB have been incorporated into the City's new Overflow Emergency Response Plan (OERP).
- Updated contact information and new SSO categories are also reflected in the new OERP.

b) Response

- Maintenance staff has met the goal of responding within 30 minutes from receipt of a service call during working hours, and 60 minutes from receipt of a service call during after work hours. The average response time for 2017 for all service calls is less than 30 minutes.



- Maintenance staff has received additional training in SSO volume estimation techniques. This will allow estimations of SSO volumes to be more accurate and supportable.
  - Nearly 88% of the 2018-2019 SSO volume was recovered by maintenance staff.
- c) Reporting
- The OERP has been updated to include new SSO Categories and updated reporting requirements, which is reflected in the current SSMP.
  - There were a few instances where the required Certification of SSO reporting to CIWQS was late. These were addressed and should be eliminated through some procedural changes.
- d) Impact Mitigation
- No changes required.

## Section VII - Fats, Oils, and Grease Control Program

- a) Identification and Maintenance
- Ellis Creek Water Recycling Facility (ECWRF) has identified and has been actively inspecting approximately 190 Food Service Facilities (FSE) a year within the City since 2013.
  - In 2018-2019 there was five grease related SSOs out of the 21 total mainline SSOs. Five SSO's were determined to be grease buildup from restaurants and one from residential. The source of the residential SSO has not been determined.
- b) Source Control
- Compliance with the FOG Program by FSEs has been excellent due to ECWRF inspections.
  - All FSE related developments or remodels are receiving review by ECWRF for grease trap or interceptor requirements.
- c) Facility Inspection
- ECWRF performed an average of about 210 FSE inspections annually with a compliance rate of about 75%. Facilities that are non-compliant cover a large variation in violation severity. A majority of these violations are not considered to be significant. The significant violations are actively re-inspected and fined to bring within compliance.
  - There were two active Compliance meetings held between the ECWRF, the facility owner, and the City.

d) Residential FOG Outreach

- The City is starting to utilize GIS mapping to indicate where residential FOG is occurring. This information will help direct our residential FOG investigations and outreach efforts (informational letters and brochures, grease scrapers, magnets, city web site etc.).

Section VIII - Capacity Management

a) Capacity Assessment and Evaluation

- The City is currently updating its Hydraulic Capacity Study/Model utilizing updated flow measurements and incorporating a 25% expansion of the collection system being modelled. The spine of the Hydraulic Model is expected to be completed in September 2018.
- The City performed a CIP sewer main strategic study in 2013, although some further “refinements” were needed to address scheduling with PG&E projects. It will be updated in the 2018/2019 Strategic Operations Plan to review and update the current 5-Year CIP Plan.

b) Capacity Assurance Plan

- The 2013 CIP sewer main strategic plan is used to help develop the 5- year CIP, by prioritizing CIP projects based on the level of risk/condition posed.
- Review and continuous improvement of the strategic plan is performed to obtain the most accurate results.
- To ensure that the collection system flawlessly continues to serve the communities in the City, a significant amount of resources is invested in CIP projects and studies and models.

Section IX – Monitoring, Measurement, and Program Modifications

a) Continuous Improvement of SSMP

- The monitoring and validation of SSMP elements is performed regularly with bi-annual reporting to assure that they are appropriate and meaningful.

## Section X – SSMP Program Audits

### a) Bi-annual Audit

- The bi-annual audits have been performed on a timely basis and presented to the City Management.
- A copy of the SSMP Audit is provided on the City website and uploaded in CIWQS.
- Listing of successes and challenges are made. Recommended changes are reviewed and where applicable modifications are made to the SSMP.

## Section XI – Communication Program

### a) Stakeholder Outreach

- The activity on the City's website is one method to determine potential access to the City SSMP.
- Coordination with the Sonoma County Water Agency is on-going as related to regional SSMP issues and compliance.

### Sewer System Improvements and Studies

The following summarizes the City's current and upcoming projects and studies. It illustrates the City's ongoing commitment to maintain and improve its collection system and ability to complete projects identified in the City's 5-year CIP. In FY 2018-2019 there was \$1.2 Million in projects and in FY 2019-2020 there was \$5.4 million of CIP construction projects completed. There is \$3.8 million of future projects in various stages of design and construction in FY 2020-2021.

The most notable projects and studies recently completed, or to be initiated/completed through FY2018-2019 include:

1. B Street Sewer Main Replacement (C66401941) included B St, 5<sup>th</sup> St, E St and Hinman Ln. The project addressed these specific areas where I and I was identified through the Infiltration and Inflow Reduction Program. This included a 1,100 linear feet of 27-inch trunk main down B Street. Project cost \$2,709,000.
2. 2019 Sewer Main Replacement (C66401822) project focused on the SSO hotspots and high PM backyard mains on Coronado, Cortez, McNeil, McGregor, Krensky, Reynolds and Adrienne. The pipe bursting and open trench includes close to 4000 linear feet of pipe. Total project cost was \$2,696,000

3. 2018 Sewer Main Replacement (C66401822) project addressed hillside backyard replacement and re-routing sewer networks for maintenance and easements. The project had 1600 linear feet but in hard rock and difficult areas of replacement. Total project cost was \$1,236,000.
4. Infiltration and Inflow Reduction Program – Has continued in years 2018 and 2019. This Program has identified specific areas of high I&I within the collection system. Through further investigative work (mini-basin flow monitoring, evening flow monitoring, and smoke testing), the areas of high I&I can be isolated to specific neighborhoods.
5. Update 5-Year – Upon completion of the updated and expanded Hydraulic Model and updated Strategic Plan, the City's current 5-Year CIP will be updated with the Rate study. An update to the Strategic Plan and CIP is expected in late 2020 with a Master Plan planned in June 2021.

## SSMP AUDIT CHECKLIST

Each of the eleven SSMP Elements and their associated requirement(s) is represented in the checklist below. Either a **YES** or **NO** is provided for each question. If a **YES** is indicated, then the requirement is considered to be both compliant and current. If a **NO** is indicated, then an update/change is needed and a comment is made under remarks section. Further explanation is provided and a timeline to complete those changes will be described in the "Description of Scheduled Updates/Changes to the SSMP" section following this checklist.

INTRODUCTION																			
A.	Is the current system description complete and up-to-date? Are infrastructure statistics current and complete?	X		Yes, with audit.															
<table border="1"> <thead> <tr> <th colspan="2">ELEMENT 1 -- GOALS</th> <th>YES</th> <th>NO</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>A.</td> <td>Are the goals stated in the SSMP still appropriate and accurate?</td> <td>X</td> <td><input type="checkbox"/></td> <td></td> </tr> <tr> <td colspan="5">ELEMENT 2 -- ORGANIZATION</td> </tr> </tbody> </table>					ELEMENT 1 -- GOALS		YES	NO	REMARKS	A.	Are the goals stated in the SSMP still appropriate and accurate?	X	<input type="checkbox"/>		ELEMENT 2 -- ORGANIZATION				
ELEMENT 1 -- GOALS		YES	NO	REMARKS															
A.	Are the goals stated in the SSMP still appropriate and accurate?	X	<input type="checkbox"/>																
ELEMENT 2 -- ORGANIZATION																			

A.	Is the City's Organizational Chart current?		<input checked="" type="checkbox"/>	Multiple changes have been made to upper management with personnel leaving in great numbers and new personnel has been hired. Management will need to produce and updated chart. Date to complete 9/16/2020.
B.	Is the sanitary sewer overflow responder list current?	<input checked="" type="checkbox"/>		In hard copy SSMP.
C.	Is the Organization Chart in Figure 2-1 of SSMP current	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D	Are the current position descriptions an accurate portrayal of staff responsibilities?	<input checked="" type="checkbox"/>		
E	Is the current information for key City personnel current?	<input checked="" type="checkbox"/>		Contact information for <u>key personnel</u> (Appendix A5) has been updated
F	Is the chain of communications for reporting and responding to SSO's accurate and up-to-date?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 3 – LEGAL AUTHORITY</b>				

		YES	NO	REMARKS
A.	Prevent illicit discharges?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does the SSMP contain current references to the Petaluma Municipal Code documenting the City's legal authority to:
B.	Require proper design and construction of sewers and connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D.	Limit discharges of fats, oil and grease?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	FOG related compliance meetings are held as needed with FSE owners and Ellis Creek personnel.
E	Enforce any violation of its sewer ordinances?	<input checked="" type="checkbox"/>		
F	Were any changes or modifications made in the past two years or since the last audit to City Sewer ordinances, Regulations or standards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 4 – OPERATIONS AND MAINTENANCE</b>				
<b>Collection System Mapping</b>				
A.	Does the SSMP reference the current process and procedures for maintaining the City's wastewater collection system maps?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Continued use of GIS based mapping for field application (Lucity). implemented.
B.	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The sewer system mapping is complete, current, detailed, and accurate, however, sewer lateral locations continue to be verified by GPS Ongoing.
<b>Resources and Budget/Prioritized Preventative Maintenance</b>				

C.	Does the SSMP reference the current process and procedures for maintaining the City's wastewater collection system maps?		<input checked="" type="checkbox"/>	No, will put in
D	Are the City's wastewater collection system maps complete, current and sufficiently detailed?	<input checked="" type="checkbox"/>		In Lucy
E.	Does the City allocate sufficient funds for the effective operation, maintenance and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Funding for the City's CIP is addressed and is sufficient, including the O&M funding and budget structure provided in Appendix B. 1.
<b>Prioritized Preventive Maintenance</b>				
F.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The preventive maintenance activities described is generally current, steps are being taken to up both CCTV and Cleaning by budgeting for two extra personnel.
G	Based upon information in the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	It appears that the City's SSO indices compares quite favorably with other collection systems in the state and in our region.



			YES	NO	REMARKS
<b>Rehabilitation and Replacement</b>					
H.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		The City is continuing its effort to achieve an six year CCTV frequency of its sewer collection system by the year 2021.
I	Does the rehabilitation and replacement plan include a capital improvement plan that addresses proper management and protection of the infrastructure assets? Does the plan 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?	<input checked="" type="checkbox"/>			In rate study and CIP
<b>Maintenance Equipment</b>					
J	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
K.	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<b>Training and Certification</b>					
L	Is adequate training being provided to staff to maintain a knowledgeable and safe workforce?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

M	Are training records current?	<input checked="" type="checkbox"/>		
N	Does the SSMP document current training expectations and programs?		<input checked="" type="checkbox"/>	Reviewing CASA and CWEA programming
O	Are maintenance personnel properly certified by CWEA to perform their work and is this documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 5 – DESIGN AND CONSTRUCTION STANDARDS</b>				
A.	Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 6 – OVERFLOW EMERGENCY RESPONSE PLAN</b>				
A.	Is the City's SSO and Backup Response Plan, that establishes procedures for emergency response, notification, and reporting, effective and current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The new OERP (January 2016) incorporates the Water Quality Monitoring Plan (Appendix C.2) and the Pump Station Emergency Response Plans (Appendix C.1) and effective and current.

B.	Does the OERP have a program to ensure an appropriate response to all overflows?	<input checked="" type="checkbox"/>		
C.	Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSO's that potentially affect public health or reach waters of the state in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSO's.	<input checked="" type="checkbox"/>		
D.	Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?	<input checked="" type="checkbox"/>		Need to put in
E.	Are staff and contractor personnel aware of and appropriately trained on the procedures of the OERP?		<input checked="" type="checkbox"/>	Conducting pre-cons to address overflow.
F.	Does the OERP 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 SSO's, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	<input checked="" type="checkbox"/>		
G.	Considering the SSO performance data, is the OERP effective in handling SSO's in order to safeguard public health and the environment?	<input checked="" type="checkbox"/>		
H.	Is the water quality monitoring plan current and has it been trained on and practiced by staff that would be involved in an SSO of large volume?	<input checked="" type="checkbox"/>		

I.	Was sampling performed within 48 hours for all SSO's larger than 50,000 gallons and were results entered for these SSO's through the CIWQS website?	<input checked="" type="checkbox"/>		Not done and no spills greater than 50,000 gallons
J.	Has the City prepared a Technical Report for all SSO's larger than 50,000 gallons? Have all Technical Reports been filed on the CIWQS website as required?			N/A no SSO's in this period over 50,000
K.	Does the City's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	<input checked="" type="checkbox"/>		
L.	Does the City take steps needed to establish a short and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives, analysis and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	<input checked="" type="checkbox"/>		
M.	Does the City's Sanitary Sewer Overflow Emergency Response Plan (OERP) contain proper notification procedures so that primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSO's) as required by the WDR and MRP?	<input checked="" type="checkbox"/>		

		YES	NO	REMARKS
N.	Has the City staff been properly trained on the procedures of the Sanitary Sewer Overflow and Backup Response Plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
O.	Based on recent experience, does the Sanitary Sewer Overflow and Backup Response Plan provide effective guidance in handling SSOs and safeguarding public health and the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The SS overflow and backup response plan has been updated. An SOP for sampling included as well.
<b>ELEMENT 7 – FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM</b>				
A.	Does the Fats, Oils, and Grease (FOG) Control Program include efforts to educate the public on the proper handling and disposal of FOG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The City would benefit from further FOG outreach effort to educate residents of multi-family residential units. Letters are sent to neighborhoods with high grease accumulations.
B.	Does the FOG program include a plan for the disposal of FOG generated within the sanitary sewer system service area?			
C.	Does the City's FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D.	Does the City have sufficient legal authority to prohibit discharges to the system and identify measure to prevent SSO's and blockages caused by FOG?		<input checked="" type="checkbox"/>	Need to update muni code for better enforcement

E.	Are there requirements to install grease removal devices (such as traps or interceptors), best management practice (BMP's) requirements, record keeping, maintenance requirements and reporting requirements in the City's FOG Control Program?	<input checked="" type="checkbox"/>		
F.	Does the City have the authority to inspect grease producing facilities, enforcement authorities, and have sufficient staff to inspect and enforce the FOG ordinance?	<input checked="" type="checkbox"/>		
G.	Does the FOG control program identify sections of the collection system sections subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	<input checked="" type="checkbox"/>		
H	Does the FOG control program implementation of source control measures for all sources of FOG discharged to the collection system?	<input checked="" type="checkbox"/>		
I.	Are requirements for grease removal devices, best management practices (BMP), record keeping and reporting established in the City's FOG Control Program?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
J	Does the City have sufficient legal authority to implement and enforce the FOG Control Program?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
K	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 8 – SYSTEM EVALUATION &amp; CAPACITY MANAGEMENT PLAN</b>				
A.	Has the City evaluated the hydraulic deficiencies in the system, established sufficient design criteria and recommend both short and long term capacity enhancement and improvement projects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The City is currently in process of updating the last hydraulic modeling study (2009) to reflect additional flow data and completion of several CIP projects that have addressed some of the capacity issues initially identified. Appendix D.1 to be updated at that time.

B.	Does the System Evaluation and Capacity Assurance Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with condition similar to those causing overflow events, if applicable?		<input checked="" type="checkbox"/>	In progress
C.	Does the City's Capital Improvement Program (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	<input checked="" type="checkbox"/>		Although adjustments to the City's CIP occurs annually, it will require a comprehensive review and updating based on the updated Strategic Plan to be completed at the end of 2018.. Appendix D.2 to be updated at that time.
D	Does the City take steps needed to establish a short and long term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	<input checked="" type="checkbox"/>		

YES	NO	REMARKS
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ELEMENT 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Are the performance parameters shown for each of the SSMP elements adequate for monitoring the effectiveness of each SSMP element?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B.	Does the City monitor implementation and, where appropriate, measure the effectiveness of each element of the SSMP?	<input checked="" type="checkbox"/>	
C.	Does the City maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?	<input checked="" type="checkbox"/>	
D.	Does the City assess the success of the preventative maintenance program?	<input checked="" type="checkbox"/>	
E.	Does the City update program elements, as appropriate, based on monitoring or performance evaluations?	<input checked="" type="checkbox"/>	
F.	Does the City identify and illustrate SSO trends, including frequency, location and volume of SSO?	<input checked="" type="checkbox"/>	
G.	Are the methods for measuring each of the performance parameters sufficient to properly evaluate the success of each SSMP element?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
H.	Does the description of the process for modifying the SSMP continue to be valid?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENT 10 – SSMP AUDITS			
			REMARKS



A.	Was this SSMP Audit performed every two years beginning on Mar. 2, 2018 and kept on file per SWRCB 2006-0003-DWQ.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The 2018 SSMP Audit will need to be incorporated into the SSMP.
B.	Does the audit focus on evaluating the effectiveness of the SSMP? If not, what needs to be changed to increase the effectiveness of the overall collection system program?	<input checked="" type="checkbox"/>		
C.	Were the audit results shared with the City Council? And the public? Via the website?		<input checked="" type="checkbox"/>	Not to City Council, but informed through City manager. Uploaded to City Website
D.	Will the SSMP audit be completed, reviewed, and filed as an appendix to the SSMP on a biannual basis?	<input checked="" type="checkbox"/>		Yes
E.	Do any proposed changes to the SSMP require Council approval as they have a substantial change in the policies and procedures for collection system operations and maintenance?		<input checked="" type="checkbox"/>	
F.	Will this SSMP Audit be made public through the City's website?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
G.	Has the SSMP Audit in its current form provide for its thorough review and continues to promote continuous improvement?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

ELEMENT 11 – COMMUNICATION PROGRAM				
A.	Is the contact person listed for communication of the SSMP current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Does the City communicate with the public on a regular basis about the implementation and performance of the SSMP, and provide the public an opportunity for input? Feedback?		<input checked="" type="checkbox"/>	Will update with City Council and website
C.	Does the City's website contain the most current SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D.	Do the City's stakeholders have the most current SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	They all have access to the SSMP via the City's website.
E.	Does the SSMP document current outreach efforts?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**SSMP Change Log**

F.	Is the SSMP Change Log current and up to date?	<input checked="" type="checkbox"/>		Updated with this audit
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## NARRATIVE FOR RECOMMENDED UPDATES AND REVISIONS

*For each NO answer shown in the SSMP Audit Checklist, a description of the planned revision and timeline for completion is provided in the narrative. Narratives may also be provided for those items that may currently be compliant, but deserve some discussion. Reference the SSMP Audit Checklist above and the City's SSMP regarding the specific element in question.*

### Element 2 – Organization

- A. The City's organization chart is in development. Several multiple changes have been made with Director and Assistant Director positions in Public Works and Utilities. Deputy Director position at the Treatment Plant is in recruitment. The collection system management and staffing is relatively unchanged. This update for the City management will be made by **December 31, 2020**.

### Element 4 – Operations and Maintenance

- C. The SSMP does not reference the process and procedures for maintaining and updating the City's wastewater collection system maps. The SOP and schedule for updating Lucity and GIS mapping will be added. This update will be made by **December 31, 2018**.
- N. The SSMP document does not document current training expectations and programs. Staff is looking at formalizing SSMP and SSO training with CASA and CWEA. This update will be made by **December 31, 2018**.

### Element 6 – Overflow Emergency Response Plan

- C. Are staff and contractor personnel aware of and appropriately training on procedures of the OERP. Collection has tailgate for new staff on OERP. Inspection and City development staff are being encouraged to include collection staff on large or high risk encroachment, development, and subdivisions contractor type contractor projects in case of a spill and OERP procedures. Collection staff will have SOP for other PW&U and building department staff by **December 31, 2018**.

### Element 7 – Fats, Oils, and Grease Control Program

- D. Collection staff is working with City Attorney office to increase private developments or private laterals to discharge causing FOG blockages. Looking to increase legal authority is anticipated by **June30, 2021**.

### Element 8 – Capacity Management

- B. The System Hydraulic Evaluation and Capacity Assurance plan for the downtown area into the

C Street Pump Station is in progress. The model is to be completed by December 31, 2020.

#### **Element 10 – SSMP Audits**

C & E. The SSMP audit was not taken to City Council. The Council was notified with the City manager. There is substantial changes in the policies and procedures for collection system maintenance and operations for City Council. The audit is uploaded on the City website. The update to eh SSMP is slated for 2021 and will go to City Council.

#### **Element 11 – Communication Program**

B. The City is improving the website to include feedback on the implementing and performance of the SSMP. The website will include the opportunity for the public to provide comment and input. This update will be made by **December 31, 2018**.





# **CITY OF PETALUMA**

## **DEPARTMENT OF PUBLIC WORKS AND UTILITIES**

### **Sewer System Management Plan (SSMP)**

### **2018 SSMP Audit**

#### **PURPOSE**

The purpose of the SSMP Audit is to evaluate the effectiveness of the City's SSMP, to ensure that all elements within the SSMP are compliant and current with the State Water Resources Control Board (SWRCB) requirements, and that the SSMP is being implemented and managed appropriately.

The SSMP Audit is a critical process that promotes continuous improvement of the City's SSMP, ultimately resulting in enhanced effectiveness and efficiency of City operations. This process includes the examination of events, experiences, and data from the previous two calendar years (2016 and 2017) so that successes and challenges can be identified and correlated with strengths and weaknesses of City's SSMP. The City's SSMP Audit consists of two major components: SSMP Effectiveness and SSMP Compliance. The SSMP Effectiveness is evaluated by discussion and review of these performance indicators:

1. SSO Spill Rate and Volume Indices
2. SSO Spill Rate and Volume Trends
3. Performance Measurements (SSMP Section IX – Monitoring, Measurement, and Modifications)
4. Sewer System Improvements and Studies

SSMP Compliance is evaluated by review of SSMP elements using an Audit Checklist and Narrative. Since the City SSMP's initial adoption in August 2008, this audit is meant to help identify administrative and functional changes that are needed in the SSMP. The administrative changes tend to be dynamic and include: organizational chart details, contact information, additional collection system information, inclusion of select mapping examples, etc. The functional revisions reflect more substantive changes including: incorporation of the current status of significant studies being performed (hydraulic capacity, risk assessment, large trunk sewer evaluation), changes in the maintenance program, Capital Improvement Program (CIP) details, regulatory and SSO Response Plans, etc. The current SSMP was adopted by the City Council on April 3, 2017, as part of its mandated five year certification.

## **REGULATORY REQUIREMENT**

Prior to calendar year 2012 the SSMP Audit was submitted on an annual basis along with the City's Annual SSO Report to the San Francisco Bay Regional Water Quality Control Board (RWQCB). The requirement for an annual SSMP Audit has now been discontinued per RWQCB's letter, dated October 3, 2012.

The City continues to produce the bi-annual SSO Reports as one of the City's obligations described in Order R2-2017-1025 as part of the settlement agreement with the Regional Water Control Board.

## **SYSTEM OVERVIEW AND DISCUSSION**

The City owns and maintains a gravity sewer wastewater collection system serving the populations of the City of Petaluma and some parcels located within the County, encompassing nearly 15 square miles. In total there are approximately 19,000 connections serving a population of nearly 62,000 people. The wastewater collection system is comprised of 193 miles of sewer main and 4 miles of forcemain. The City's sewer mains range in diameter from 4 to 60 inches, with nearly 75% of these lines being 8-inches in diameter or smaller. Nearly all sewer laterals are 4-inches in diameter, while a few commercial and multiple residential properties use 6-inch laterals. In Fiscal Year 2016-2017 the system transported an average flow of approximately 4.5 million gallons of wastewater per day or a total of 1.87 billion gallons of wastewater to the Ellis Creek Water Recycling Facility (ECWRF) for treatment, disposal, and reuse.

The responsibility to own and maintain sewer laterals is the responsibility of the property owner per City Charter. There is 19,000 sewer laterals connected to public mains. The City has a Lateral Grant Program and is pro-active in advertising the program.

## **SSMP EFFECTIVENESS**

### SSO Spill Rate and Volume Indices

One of the primary indicators of collection system performance and SSMP effectiveness is the use of an SSO Spill Rate Indices. Traditionally, the common benchmark or spill rate indices utilized by wastewater collection agencies has been the total number of mainline SSOs per 100 miles of sewer main owned and maintained. A long standing



and accepted indicator of a well performing sewage collection system is achieving a total spill rate of  $\leq 3.0$  SSOs per 100 miles. The 2015-2016 CIWQS SSO indices are presented in the CIWQS table and as summarized below to illustrate the excellent performance of the City as compared to other collection systems throughout the state and local region. \*2015-2016 Annual performance reports are the latest on the SWRCB website.

<u>2016 Sewer Main Indices</u>	<u>City</u>	<u>State*</u>	<u>Region*</u>
Total No. (SSOs/100 mi)	<b>5.07</b>	4.01	6.20
Category 1 (SSO/100 mi)	<b>1.01</b>	3.93	6.05
Category 2 (SSO/100 mi)	<b>0.00</b>	3.00	1.40
Category 3 (SSO/100 mi)	<b>4.06</b>	7.70	9.30
Volume (gal/100 mi)	<b>708</b>	25,134	16,705

<u>2017 Sewer Main Indices</u>	<u>City</u>	<u>State*</u>	<u>Region*</u>
Total No. (SSOs/100 mi)	<b>3.55</b>	4.01	6.20
Category 1 (SSO/100 mi)	<b>2.03</b>	3.93	6.05
Category 2 (SSO/100 mi)	<b>0.00</b>	3.00	1.40
Category 3 (SSO/100 mi)	<b>1.52</b>	7.70	9.30
Volume (gal/100 mi)	<b>4377</b>	25,134	16,705

### SSO Spill Rate and Volume Trends

The historical trending of SSO spills and volumes is also a primary indicator of collection system performance and SSMP effectiveness. By examining a multi-year performance record, a declining trend in spill occurrences and volume can reveal if the programs and measures identified in the SSMP are demonstrating success. The City has adopted the use of five-year running averages in examining its SSO spill occurrences and volumes to smooth out anomalies that can sometimes skew results. As shown below, the data up through calendar year 2017 maintains the general downward trend (based on 2014) for both SSO occurrences and volumes for sewer main SSOs.

Year	SSO's	Total Volume
2013	9	228
2014	15	437,832
2015	8	189
2016	10	1,395
2017	7	8,624

## Performance Measurements

Section IX of the SSMP addresses the process of monitoring, measurement, and program modifications to ensure that the SSMP continues to be relevant and effective. The criteria for monitoring and measurement for each SSMP Element is described in Table IX-1. All SSMP revisions are documented in Appendix E.2 – SSMP Development and Revision History in the SSMP. The most recent updates to the SSMP, just prior to the last adoption and recertification by the City Council on April 3, 2017 include: general administrative updates, Fiscal Year 2016-2017 Action Items of the City Strategic Plan, updated SSO and Backup Response Plan (including the Water Quality Monitoring Plan and Overflow Emergency Response Plan), and a discussion of budget and resource allocation for Operations and Maintenance.

All SSMP elements and their measurements are discussed below.

### Section I - Mission, Goals, and Objectives

- a) Goals remain consistent with the SSMP
  - 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 SSO's
  - To mitigate the impact of SSO's

### Section II – Organization

- a) Staffing Levels
  - With the loss of two maintenance employees due to retirement two new hires were made as replacements (Utility Service Workers 2's).
  - An inspector from Public Works is added part time for coordination with the administration of Lateral Grant program during CIP projects and to assist with SSO's in downtown areas with businesses.

### Section III – Legal Authority

#### a) City Ordinance

- The City Ordinance provides the legal authority for the proper operations of the City. It is regularly going through a process of review with updates are being made as needed.

### Section IV - Operation and Maintenance

#### Program a) Collection System Mapping

- Main line and manhole structure locations and asset information is maintained continuously and is considered up to date and accurate.
- Main and lateral connection locations are systematically being confirmed with POSM TV inspections. Condition NACCP ratings are being added for the sewer mains as CCTV'd.
- Electronic (GIS) mapping information has been made available to field staff through implementation of field integration software/hardware (Lucity/Samsung tablets). This allows access to the most current mapping and asset information.
- Field staff has ability to provide redline markups and notations showing needed mapping changes in facility locations, dimension changes, or other notations using Lucity. GIS mapping edits are performed by the asset manager and are typically accomplished on a weekly basis.
- Storm Drain paper maps are provided to field crews, allowing field staff to anticipate flow direction and interception points for SSO entering the storm system.

#### b) Preventive Maintenance

- Nearly all mainline cleaning is based on a 36 month frequency (Lucity cleaning), while higher frequencies are specified for special lines. The use of longer frequencies (36 and 48 month are being used for newly rehabilitated HDPE lines and major trunk lines).
- Cleaning production goals for mains have recently been established at In 2016, 232,122 linear feet of sewer was cleaned representing 23% of the system. In 2017, 298,093 linear feet was cleaned representing 30% of the system. These measures are close to the 36 month target with the amount of rehabilitated mains being constructed. The 36 month frequency remains the goal for the SSMP.
- As discussed in the initial section of SSMP Effectiveness, the City's 2016-2017 SSO Spill Rate for mains and laterals is lower than state and regional averages.
- Historical data of SSO occurrences and volumes from 2013 to 2017 indicates a general downward trend.
- There have been pump station failures at one location (Prince Park). A gravity main was installed in July 2016 to prevent any future SSO's.

- Pump station maintenance has been performed according to frequency in the SSMP. All level floats and emergency generators are tested monthly. Wetwells are pumped down and inspected monthly.

c) Rehabilitation and Replacement

- The City's FY 2017-2018 CIP construction budget (not including ECWRF) was \$5.9 million.
- There are three significant projects in various stages of progress. Hopper Street Emergency Storage for the forcemain emergency response, Petaluma Boulevard Trunk Main, and the 2016-2017 Sewer Main Replacement Project which addressed most of the SSO hotspots.
- Within 2016-2017 the City has rehabilitated or installed an average of nearly 2 miles of pipeline/year, or 1% of the system annually.
- Increased outreach and funding for the sewer lateral grant program
- In 2016, the City performed approximately 137,144 lf of condition assessment compared to an annual goal of 165,928 lf/yr. In 2017, crews performed 59,857 lf of condition assessment. An effort is currently underway to achieve a goal of 225,000 lf/year to catch up to achieve the SSMP goal of a 6 year inspection cycle.

d) Staff Training

- Staff is provided safety and equipment training through a combination of online and live training and is documented by My Safety Officer training services.
- The following is training that occurred during 2016-2017

Date	Course & Staff Members
2016	Sewer Summit in Union City- Kent Carothers, Stephen Kennedy
9/21/2016	Lucity Sewer Training (9/21/16) – Hillsborough- Stephen Kennedy, Todd Melicker, Kent Carothers
3/23/2016	CWEA-San Francisco Bay Section Collections System Spill Mitigation Seminar – Stephen Kennedy, Logan Savage, Ray McIntyre
Spring 2016	Santa Rosa Junior College- Math Methods Semester- Stephen Kennedy, Logan Savage, Stuart Crist
Spring 2016	Sewer Nozzle/Safety Demo Training- Weco Industries- Stephen Kennedy, Logan Savage, Ray McIntyre, John Olufs, Stuart Crist
8/10/2017	DKF Solutions Group– Richmond Ca –“CIWQS Data Submitter and LRO” – Stephen Kennedy, Stuart Crist, Ken Mattos
8/30/20174	DKF Solutions Group- Fremont Ca- “OERP Requirements & SSO Volume Estimation Methods” – Logan Savage, Ken Mattos, Ray McIntyre, Tom Anderson
Fall 2017	Sewer Nozzle/Safety Demo Training- Weco Industries- Stephen Kennedy, Logan Savage, Ray McIntyre, John Olufs, Stuart Crist, Tom Anderson

e) Maintenance and Contingency Equipment

- In addition to keeping adequate number of newer model maintenance equipment available for use for routine maintenance, contingency equipment such as emergency bypass pumps and generators are in standby and ready for use in emergencies.
- A Vehicle Replacement Plan is maintained to ensure that an adequate reserve fund is maintained for the scheduled replacement of the City fleet.
- Emergency pipeline repairs are performed by a City staff or under contract by emergency minor construction agreements. During 2016-2017 there have been two emergency contracts for pipeline lining. For catastrophic events where very significant damage occurs, an on-call understanding with a large construction contractor has been initiated for immediate response.

Section V - Design & Construction Standards

a) Design Standards

- The City's Design Standards are established and adequate for the design of sewer systems. Standards are consistently being reviewed.
- Contracts with multiple engineering consultants provide expertise in specific discipline areas while ensuring there is an overlap in engineering design services.

b) Construction Standards

- The City's Construction Standards typically refer to Standards of Specifications for Public Works Construction.
- Following the completion of a construction project a formalized approach for reviewing design and construction related deficiencies still needs to be formulated for future CIP projects.

Section VI - Overflow Emergency Response Plan

a) Notification

- New SSO notification requirements designated by the SWRCB have been incorporated into the City's new Overflow Emergency Response Plan (OERP).
- Updated contact information and new SSO categories are also reflected in the new OERP.

b) Response

- Maintenance staff has met the goal of responding within 30 minutes from receipt of a service call during working hours, and 60 minutes from receipt of a service call during after work hours. The average response time for 2017 for all service calls is less than 30 minutes.

- Maintenance staff has received additional training in SSO volume estimation techniques. This will allow estimations of SSO volumes to be more accurate and supportable.
  - Nearly 90% of the 2016-2017 SSO volume was recovered by maintenance staff.
- c) Reporting
- The OERP has been updated to include new SSO Categories and updated reporting requirements, which is reflected in the current SSMP.
  - There were a few instances where the required Certification of SSO reporting to CIWQS was late. These were addressed and should be eliminated through some procedural changes.
- d) Impact Mitigation
- No changes required.

## Section VII - Fats, Oils, and Grease Control Program

- a) Identification and Maintenance
- Ellis Creek Water Recycling Facility (ECWRF) has identified and has been actively inspecting approximately 185 Food Service Facilities (FSE) a year within the City since 2013.
  - In 2016-2017 there was one grease or soap related SSOs out of the seven total mainline SSOs. There has been no determination of the source of this FOG since it was from a residential neighborhood.
- b) Source Control
- Compliance with the FOG Program by FSEs has been excellent due to ECWRF inspections.
  - All FSE related developments or remodels are receiving review by ECWRF for grease trap or interceptor requirements.
- c) Facility Inspection
- ECWRF performed an average of about 100 FSE inspections annually with a compliance rate of about 82%. Facilities that are non-compliant cover a large variation in violation severity. A majority of these violations are not considered to be significant. The significant violations are actively re-inspected and fined to bring within compliance.
  - There were a few active Compliance meetings held between the ECWRF, the facility owner, and the City.

d) Residential FOG Outreach

- The City is starting to utilize GIS mapping to indicate where residential FOG is occurring. This information will help direct our residential FOG investigations and outreach efforts (informational letters and brochures, grease scrapers, magnets, etc.).

Section VIII - Capacity Management

a) Capacity Assessment and Evaluation

- The City is currently updating its Hydraulic Capacity Study/Model utilizing updated flow measurements and incorporating a 25% expansion of the collection system being modelled. The spine of the Hydraulic Model is expected to be completed in September 2018.
- The City performed a CIP sewer main strategic study in 2013, although some further “refinements” were needed to address scheduling with PG&E projects. It will be updated in the 2018/2019 Strategic Operations Plan to review and update the current 5-Year CIP Plan.

b) Capacity Assurance Plan

- The 2013 CIP sewer main strategic plan is used to help develop the 5-year CIP, by prioritizing CIP projects based on the level of risk/condition posed.
- Review and continuous improvement of the strategic plan is performed to obtain the most accurate results.
- To ensure that the collection system flawlessly continues to serve the communities in the City, a significant amount of resources is invested in CIP projects and studies and models.



## Section IX – Monitoring, Measurement, and Program Modifications

- a) Continuous Improvement of SSMP
  - The monitoring and validation of SSMP elements is performed regularly with bi-annual reporting to assure that they are appropriate and meaningful.

## Section X – SSMP Program Audits

- a) Bi-annual Audit
  - The bi-annual audits have been performed on a timely basis and presented to the City Management.
  - A copy of the SSMP Audit is provided on the City website and uploaded in CIWQS.
  - Listing of successes and challenges are made. Recommended changes are reviewed and where applicable modifications are made to the SSMP.

## Section XI – Communication Program

- a) Stakeholder Outreach
  - The activity on the City's website is one method to determine potential access to the City SSMP.
  - Coordination with the Sonoma County Water Agency is on-going as related to regional SSMP issues and compliance.

### Sewer System Improvements and Studies

The following summarizes the City's current and upcoming projects and studies. It illustrates the City's ongoing commitment to maintain and improve its collection system and ability to complete projects identified in the City's 5-year CIP. In FY 2016-2017 and FY 2017-2018 there was \$1.3 million, and \$4.6 million, respectively, of CIP construction projects completed. There is \$3.5 million of future projects in various stages of design and construction in FY 2018-2019.

The most notable projects and studies recently completed, or to be initiated/completed through FY2016-2017 include:

1. Manhole Rehabilitations (C66501003) which were incorporated into sewer main replacement projects and also a minor contract with lining company for rehabilitation 33 manholes. The contract amounts were roughly \$74,000.
2. 2016 Sewer Main Replacement (C66401625) was also known as the East D Street Sewer Main replacement project. The project involved eliminated reverse flow in the haystack area and provide an overflow line in D Street to allow more capacity during storm events from the C Street Pump Station. Final close out cost for the contract was \$496,022 and City Crews added \$35,450 for a pipe connection not completed by the contractor for a total of \$531,472.
3. 2017 Sewer Main Replacement (C66401822) project focused on the SSO hotshots and high PM backyard mains in the LaCresta area of Petaluma. Most of these mains were 80 year old VCP and constrained on hillsides. The pipe bursting and open trench includes close to 4000 linear feet of pipe. Total project cost was \$866,000
4. Petaluma Boulevard South Sewer Trunk Main Replacement (C66401314) was a long designed project focused on replacement of old VCP trunk mains in Petaluma Blvd. It addressed the frequent SSO's in the boulevard. The project also addressed directing more flow directly to the C Street pump station and decreasing SSO frequency on First Street. Total project cost was \$2.3 million
5. Hopper Street Emergency Pumping Storage (C66501520) was designed and constructed to allow shutdown of the PIPS pump station for any emergency repairs on the 36 inch forcemain. It includes upgrades to allow access to the forcemain and re-construction of the Hopper Street ponds for storage. Final cost was \$743,000.
6. Copeland Lift Station Upgrades (C66501501) involved complete rehabilitation for the pump station located adjacent to the Petaluma River. It addressed electrical and mechanical redundancies and included SCADA upgrades for Ellis Creek to monitor during storm events. Final close out costs were \$1.62 million.

7. Infiltration and Inflow Reduction Program – The City initiated its Inflow and Infiltration Reduction Program in 2013. This Program will begin to identify and isolate specific areas of high I&I within the collection system. Through further investigative work (mini-basin flow monitoring, evening flow monitoring, and smoke testing), the areas of high I&I can be isolated to specific neighborhoods. The process of isolating the source of excessive flows occurs each rainy season and is documented for each sub-basin.
8. Update 5-Year – Upon completion of the updated and expanded Hydraulic Model and updated Strategic Plan, the City's current 5-Year CIP will be updated with the Rate study. An update to the Strategic Plan and CIP is expected in late 2018.

## SSMP AUDIT CHECKLIST

Each of the eleven SSMP Elements and their associated requirement(s) is represented in the checklist below. Either a **YES** or **NO** is provided for each question. If a **YES** is indicated, then the requirement is considered to be both compliant and current. If a **NO** is indicated, then an update/change is needed and a comment is made under remarks section. Further explanation is provided and a timeline to complete those changes will be described in the *"Description of Scheduled Updates/Changes to the SSMP"* section following this checklist.

		YES	NO	REMARKS
<b>ELEMENT 1 – MISSION, GOALS AND OBJECTIVES</b>				
A.	Are the mission, goals, and objectives stated in the SSMP still appropriate and accurate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 2 -- ORGANIZATION</b>				
A.	Is the City's Organizational Chart current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Is the chain of communication for SSO response and reporting current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Is the contact information for key City personnel current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Contact information for key personnel (Appendix A.5) has been updated.
<b>ELEMENT 3 – LEGAL AUTHORITY</b>				
Does the SSMP contain excerpts from the current City's				

		YES	NO	REMARKS
Ordinance Code documenting the City's legal authority to:				
A.	Prevent illicit discharges?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Require proper design and construction of sewers and connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D.	Limit discharges of fats, oil and grease?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	FOG related compliance meetings are held as needed with FSE owners and Ellis Creek personnel.
E.	Enforce any violation of its sewer ordinances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 4 – OPERATIONS AND MAINTENANCE</b>				
<b>Mapping</b>				
A.	Does the SSMP reference the current process and procedures for maintaining the City's wastewater collection system maps?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Transition to a GIS based mapping for field application (Lucity) has been fully implemented.
B.	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The sewer system mapping is complete, current, detailed, and accurate, however, sewer lateral locations continue to be verified by GPS
<b>Resources and Budget</b>				
C.	Does the City allocate sufficient funds for the effective operation, maintenance and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Funding for the City's CIP is addressed and is sufficient, including the O&M funding and budget structure provided in Appendix B.1.
<b>Preventive Maintenance</b>				
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The preventive maintenance activities described is generally current, but recent adjustments are being contemplated to prioritize CCTV.
E.	Based upon information in the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	It appears that the City's SSO indices compares quite favorably with other collection systems in the state and in our region.

		YES	NO	REMARKS
<b>Rehabilitation and Replacement</b>				
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The City is continuing its effort to achieve an six year CCTV frequency of its sewer collection system by the year 2020.
<b>Maintenance Equipment</b>				
G.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventory management?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
H.	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Training and Certification</b>				
I.	Is adequate training being provided to staff to maintain a knowledgeable and safe workforce?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
J.	Are maintenance personnel properly certified by CWEA to perform their work and is this documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 5 – DESIGN AND CONSTRUCTION STANDARDS</b>				
A.	Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 6 – OVERFLOW EMERGENCY RESPONSE PLAN</b>				
A.	Is the City's SSO and Backup Response Plan, that establishes procedures for emergency response, notification, and reporting, effective and current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The new OERP (January 2016) incorporates the Water Quality Monitoring Plan (Appendix C.2) and the Pump Station Emergency Response Plans (Appendix C.1) and effective and current.

		YES	NO	REMARKS
B.	Has the City staff been properly trained on the procedures of the Sanitary Sewer Overflow and Backup Response Plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Based on recent experience, does the Sanitary Sewer Overflow and Backup Response Plan provide effective guidance in handling SSOs and safeguarding public health and the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 7 – FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM</b>				
A.	Does the Fats, Oils, and Grease (FOG) Control Program include efforts to educate the public on the proper handling and disposal of FOG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The City would benefit from further FOG outreach effort to educate residents of multi-family residential units. Letters are sent to neighborhoods with high grease.
B.	Does the City's FOG Control Program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping and reporting established in the City's FOG Control Program?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D.	Does the City have sufficient legal authority to implement and enforce the FOG Control Program?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
E.	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>ELEMENT 8 –CAPACITY MANAGEMENT</b>				
A.	Has the City evaluated the hydraulic deficiencies in the system, established sufficient design criteria and recommend both short and long term capacity enhancement and improvement projects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The City is currently in process of updating the last hydraulic modeling study (2009) to reflect additional flow data and completion of several CIP projects that have addressed some of the capacity issues initially identified. Appendix D.1 to be updated at that time.

		YES	NO	REMARKS
B.	Does the City's Capital Improvement Program (CIP) establish a schedule of approximate completion dates for both short and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Although adjustments to the City's CIP occurs annually, it will require a comprehensive review and updating based on the updated Strategic Plan to be completed at the end of 2018.. Appendix D.2 to be updated at that time.

ELEMENT 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS				
A.	Are the performance parameters shown for each of the SSMP elements adequate for monitoring the effectiveness of each SSMP element?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B.	Are the methods for measuring each of the performance parameters sufficient to properly evaluate the success of each SSMP element?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Does the description of the process for modifying the SSMP continue to be valid?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
ELEMENT 10 – SSMP AUDITS				REMARKS
A.	Was this SSMP Audit performed every two years beginning on Mar. 2, 2018 and kept on file per SWRCB 2006-0003-DWQ.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The 2018 SSMP Audit will need to be incorporated into the SSMP.
B.	Will this SSMP Audit be made public through the City's website?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C.	Has the SSMP Audit in its current form provide for its thorough review and continues to promote continuous improvement?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



ELEMENT 11 – COMMUNICATION PROGRAM			
A.	Is the contact person listed for communication of the SSMP current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B.	Does the City's website contain the most current SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C.	Do the City's stakeholders have the most current SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
D.	Does the SSMP document current outreach efforts?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

They all have access to the SSMP via the City's website.

## **NARRATIVE FOR RECOMMENDED UPDATES AND REVISIONS**

*For each NO answer shown in the SSMP Audit Checklist, a description of the planned revision and timeline for completion is provided in the narrative. Narratives may also be provided for those items that may currently be compliant, but deserve some discussion. Reference the SSMP Audit Checklist above and the City's SSMP regarding the specific element in question.*

### **Element 4 – Operations and Maintenance**

- A. The CWEA Certification List (Appendix B.10) requires updating due to recent advancements made by staff in Collection System Maintenance Certifications. This update will be made by **December 31, 2018**.

### **Element 7 – Fats, Oils, and Grease Control Program**

- A. The effort to address residential FOG, especially that emanating from multi-residential units, will be initiated through targeted outreach by **December 31, 2018**.
- B. With increased assessment certain restaurants are inspected and plumbing code violations are issued for dishwasher connection leading to FOG issues in downstream mains.

### **Element 8 – Capacity Management**

- A. The backbone of the downtown Hydraulic Model was critical for completion of the Petaluma Blvd. South replacement. Current detail hydraulic modeling is being done for the B Street replacement project and the model will be expanded for other high risk areas within the system.
- B. The updated Strategic Plan and CIP 5 year plan is needed as the 2013 plan has been implemented. The update Strategic Plan will focus on risk levels posed by sewer lines in the City collection system. The full update to the Strategic Plan is expected by **December 31, 2018**.

### **Element 10 – SSMP Audits**

- A. The 2018 SSMP Audit will be incorporated into the City's SSMP after it is presented to the Senior Management and the City Manager's Office.