

**CITY OF DIXON, CALIFORNIA**

# **SEWER SYSTEM MANAGEMENT PLAN**



**REVISED: MAY 2017**

**ORIGINAL ADOPTED ON APRIL 13, 2010 PER RESOLUTION 10-056**

**BY CITY COUNCIL**

**THOM BOGUE, MAYOR  
SCOTT PEDERSON, VICE-MAYOR  
STEVEN BIRD  
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A Supporting Documentation for Element 1

B Supporting Documentation

C Supporting Documentation

Appendix A: Introduction Supporting Documents

- California State Water Resources Control Board Order No. 2006-0003
- Resolution 10-056
- California Integrated Water Quality System SSMP certification print

Appendix 1: Goals Supporting Documents

- Resolution 07-179 & City Council Report

Appendix 2: Organization Supporting Documents

- none

Appendix 3: Legal Authority Supporting Documents

- Municipal Code Section 14.01, Sewers

Appendix 4: Operation and Maintenance Supporting Documents

- Public Works Standby Policy
- Collection System Maintenance Plan
- Maintenance Scheduling Calendar
- Sewer System Map
- Capital Improvement Program Wastewater Funds 310/315 Summary
- Wastewater Collection Needs List

Appendix 5: Design and Performance Provisions Supporting Documents

- Engineering Standards and Specifications Section DS6
- Engineering Standards and Specifications Section CS17
- Engineering Standards and Specifications Standard Details 4000-4050
- Engineering Standards and Specifications Standard Details 6000-6040

Appendix 6: Overflow Emergency Response Plan Supporting Documents

- Overflow Emergency Response Plan

Appendix 7: FOG Control Program Supporting Documents

- City of Dixon FOG Control Plan
- Wastewater Discharge Permit

Appendix 8: System Evaluation and Capacity Assurance Plan Supporting DocumentsAppendix 9: Monitoring, Measurement and Program Modifications Supporting Documents

- Sanitary Sewer Overflow Historical Data

Appendix 10: SSMP Program Audits Supporting Documents

- SSMP Audit Checklist

Appendix 11: Communication Program Supporting Documents

- SSMP webpage print

**INTRODUCTION**

This Sewer System Management Plan (SSMP) has been prepared in compliance with requirements of the State Water Resource Control Board (SWRCB) pursuant to Water Quality Order No. 2006-0003 adopted on May 2, 2006. The Order requires all public agencies that operate sanitary sewer collection systems greater than one mile in length to comply with Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems. The WDR requires development and implementation of a written SSMP, and defines eleven mandatory SSMP elements. The WDR also defines associated monitoring, record keeping, reporting, and public notification requirements.

The City of Dixon's authorized representative, City Engineer/Public Works Director, completed the certification questionnaire through the California Integrated Water Quality System (CIWQS) SSO Database. The City Council approved the original SSMP on April 13, 2010 with Resolution 10-056.

This SSMP presents eleven elements in the order presented in the WDR:

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

This document is distributed as follows:

- City Engineer/Public Works Director
- Public Works Operations Manager
- Senior Civil Engineer responsible for treatment
- Collection Division Staff
- Wastewater Treatment Division Staff

The City of Dixon is located in Solano County and incorporates 6.7 square miles. The City of Dixon owns, operates, and maintains a municipal wastewater treatment facility (WWTF) and associated

collection system. The City built the Wastewater Facultative Pond treatment facility in 1951 with periodic expansions and upgrades. In Spring 2017, the City completed a \$28.5M facility upgrade to an activated sludge treatment process. The system serves a population of approximately 19,029 according to the California Department of Finance, as of January 1, 2015. The system has approximately 5,360 sewer lateral connections and includes approximately 73 miles of gravity sewer lines and two lift stations.

## **ELEMENT 1: GOALS**

This Sewer System Management Plan (SSMP) element identifies goals that the Utilities Collection Division has set for the management, operation and maintenance of the sanitary sewer system and discusses the role of the SSMP in supporting these goals. These goals provide focus for Utility Collections Division staff to continue high quality work and to implement improvements in the management of the City's wastewater collection system. This section fulfills the Goals requirement of the General Waste Discharge Requirements (WDR) – SSMP requirements.

### **1.1 Regulatory Requirement for the Goals Element**

Element 1, Goals, of WDR states the following:

**Section D.13 (i) - Goal: The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.**

### **1.2 SSMP Goals**

The City Council adopted the primary goals of the City of Dixon SSMP on October 23, 2007 by Resolution 07-179, which is included in Appendix 1 along with the corresponding City Council Report. The goals are as follows:

1. Maintain or improve the condition of the collection system infrastructure in order to provide reliable service now and into the future.
2. Cost-effectively minimize infiltration/ inflow (I/I) and provide adequate sewer capacity to accommodate design storm flows.
3. Minimize the number and impact of sanitary sewer overflows (SSOs) that occur.

Along with these primary goals, the City has identified six key areas of concern that must be addressed on an on-going basis to achieve and consistently implement the SSMP goals. The City Council adopted these areas of concern on October 23, 2007 by Resolution 07-179 and is as follows:

1. Customer service
2. Water quality and environmental protection
3. Long-term wastewater collection and treatment service
4. Long-term infrastructure investment
5. Long-term financial stability
6. Workforce planning and development

In November 2016, a 30-day review period allowed the public to provide comments on the goals and areas of concern. The City advertised the review period on the City's website and face book site. The City did not receive any public comments.

City staff will track these goals and report progress in the audit required every two years. The City will make revisions and updates to the goals as required. Any changes will be included in the required audits.

**ELEMENT 2: ORGANIZATION**

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

**2.1 Regulatory Requirements for the Organizational Element-**

Element 2, Goals, of WDR states the following:

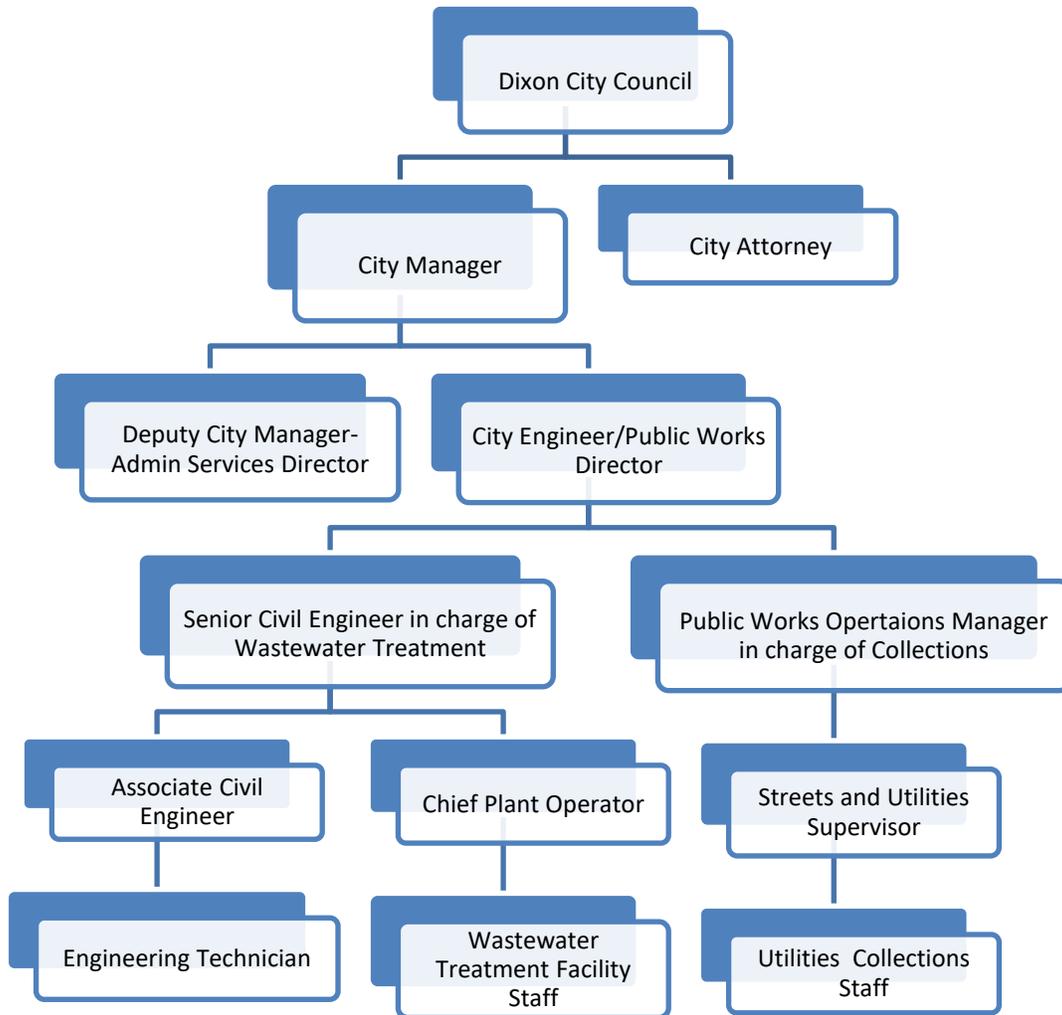
**Section D.13 (ii) - Organization: The SSMP must identify:**

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

**2.2 Organization Chart**

The portion of the City's Organization chart relates to management, operation, and the maintenance of the sanitary sewer collection system as shown below:

**ORGANIZATIONAL CHART**



A description of the roles for wastewater collection system participants is below:

City Council - Establishes policy, reviews and accepts formal plans, sets overall City direction, authorizes funds for projects/plans/programs/staff, conducts public meetings and hearings, and approves SSMP

City Manager – Responsible for the day-to-day management and operation of the City under the direction of the City Council, establishes procedures, plans strategy, leads staff, allocates resources defined in the City budget, delegates responsibility, authorizes outside contractor to perform services, and serves as overall public information officer.

City Attorney – Develops and approves legal documents, provides legal advice, conducts litigation, attends public meetings, and advises the City Council to ensure operations are compliant with State and Federal regulations.

Deputy City Manager-Administrative Services Director – Advises the City Engineer/Public Works Director and City Manager of available funding throughout the year.

City Engineer/Public Works Director –Is the Legally Responsible Person (LRO) and is responsible for submitting the monthly reports to CIWQS. Responsible for the development and implementation of City design and construction standards, approves development plans, signs capital improvement plans and specifications, and is responsible for developing and overseeing engineering studies such as hydraulic modeling, master planning, and CIP program development.

Public Works Operations Manager – Responsible for directing, developing, implementing, and evaluating, the existing infrastructure, oversee the operation, and maintenance of the City's utility infrastructure. Also develops and coordinates implementation of the SSMP. Issues and monitors Wastewater Discharge Permits for Food Service Establishments (FSE).

Senior Civil Engineer in charge of Wastewater Treatment – Responsible for overseeing the operation and maintenance of the Wastewater Treatment Facility, issues and monitors non-FSE Wastewater Discharge Permits, manages capital improvement projects for the design and construction of the City's utility infrastructure, maintains the City's GIS maps and database.

Engineering Technician – Ensures that new and rehabilitated assets meet City standards, provides daily reports to the Senior Civil Engineer during construction projects, and implements enforcement actions.

Streets and Utilities Maintenance Supervisor – Responsible for the maintenance activities of the sanitary sewer system, directly supervises maintenance crews, schedules regularly maintenance

activities, coordinates field operations, prepares and implements overflow emergency response plan, leads emergency response, investigates and reports SSOs, and mobilize sewer cleaning equipment and by pass pumping equipment.

Utilities Collections Maintenance Staff –Conducts preventative and corrective maintenance to the system, mobilizes and responds to notifications of stoppages and SSO's, CCTV's infrastructure, reports condition of City assets, and maintains pump stations. Assess the condition of the system utilizing the NASSCO rating system.

**CONTACT INFORMATION**

<b>POSITION</b>	<b>NAME</b>	<b>PHONE NUMBER</b>	<b>EXT</b>
Mayor	Thom Bogue	707-678-7004	1202
Vice Mayor	Scott Pederson	707-678-7004	1203
Councilmember	Devon Minnema	707-678-7004	1204
Councilmember	Ted Hickman	707-372-7007	
Councilmember	Steve Bird	707-678-7004	1201
City Attorney	Douglas White	916-468-0950	
City Manager	Jim Lindley	707-678-7004	1101
City Engineer/Public Works Director	Joe Leach	707-678-7031	5305
PW Operations Manager- Maintenance	Janet Koster	707-678-7051	4104
Sr. Civil Engineer - Treatment	Jason Riley	707-678-7031	5311
Associate Civil Engineer	Deborah Barr	707-678-7031	5306
Streets & Utilities Maintenance Supervisor	Pernell Colter	707-678-7051	4103
Chief Plant Operator	Sandy Jones	707-678-7059	6101
Engineering Technician	Jacob Smith	707-678-7031	5303
On-Call Maintenance Staff (after hours)		530-682-6263	

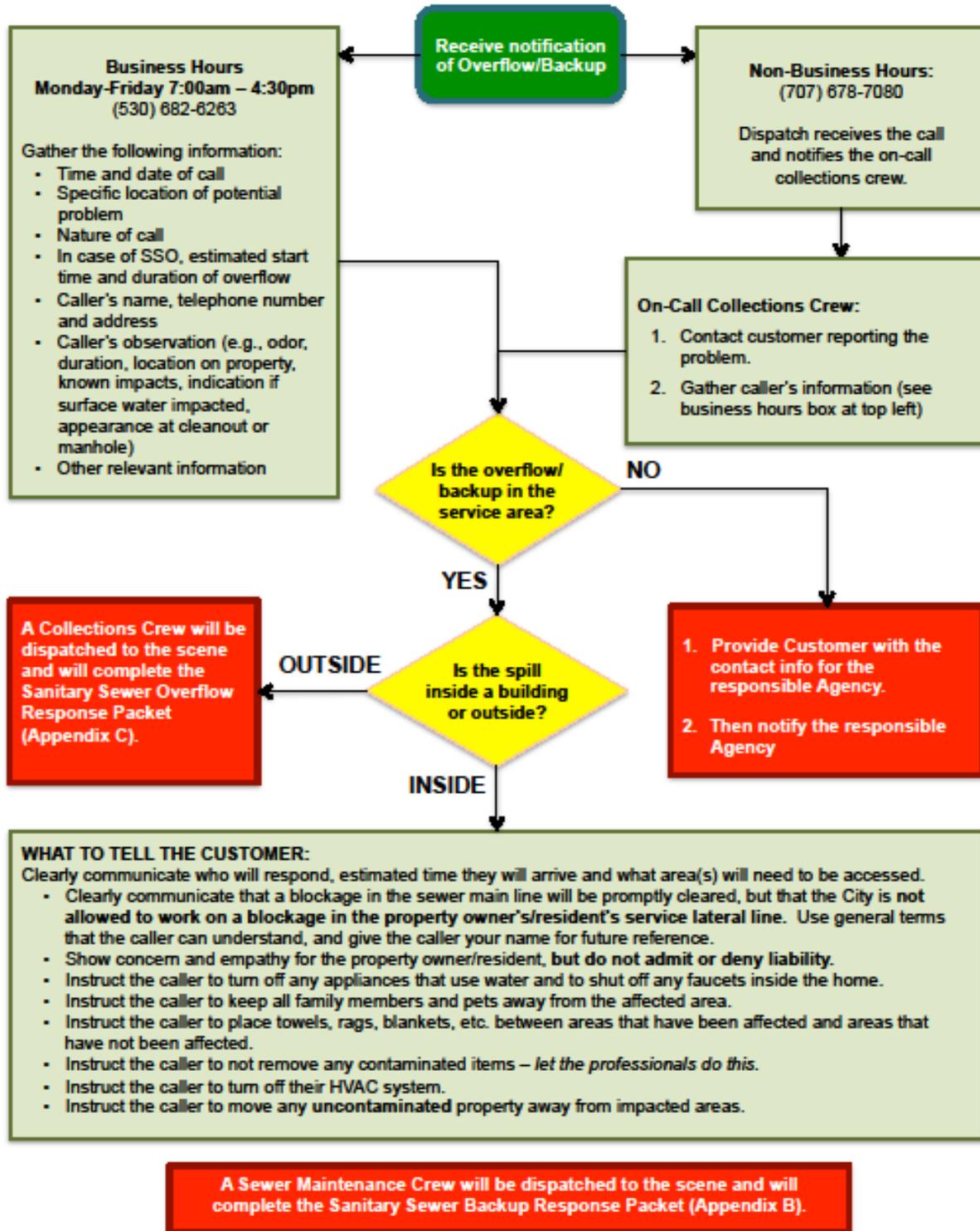
**2.3 Authorized Representative**

The City Engineer/Public Works Director, Joseph Leach, is the Legally Responsible Official (LRO) or duly authorized representative to prepare, certify and submit electronic spill reports to the RWQCB and SWRCB and to notify other government agencies.

**2.4 SSO Reporting Chain of Communication**

Sanitary system overflow (SSO) detection, notification, response, and reporting processes are described in Element 6 – Overflow Emergency Response Plan. The process is illustrated below:

Figure 6.1 Overview of Receiving a Sewage Overflow or Backup Report Procedure



The regulatory notification responsibility and requirements are included in the Sanitary Sewer Overflow and Backup Response Plan and include the following:

City of Dixon: Overflow Emergency Response Plan	<b>A-1</b> <b>Side A</b>
<b>Regulatory Notifications Packet</b> <b>Regulatory Reporting Guide</b>	

Reporting Instructions				
Deadline	See reverse side for definitions of the categories of spills of untreated or partially treated wastewater from publically owned sanitary sewer system			Spill from Private Lateral
	Category 1	Category 2	Category 3	
2 hours after awareness of SSO	If the SSO is greater than or equal to 1,000 gallons, call CalOES at (800) 852-7550	-	-	-
3 Days after awareness of SSO	Submit Draft Spill Report in the CIWQS* database	Submit Draft Spill Report in the CIWQS* database	-	-
15 Days after response conclusion	Certify Spill Report in CIWQS*. Update as needed until 120 days after SSO end time	Certify Spill Report in the CIWQS* database. Update as needed until 120 days after SSO end time	-	-
30 Days after end of calendar month in which SSO occurred	-	-	Certify Spill Report in the CIWQS* database. Update as needed until 120 days after SSO end time	-

\* In the event that the CIWQS online SSO database is not available, make notifications the State Water Resources Control Board (SWRCB) by phone or email until the CIWQS online SSO database becomes available.

Russell Norman, P.E.	(916) 323-5598 Russell.Norman@waterboards.ca.gov
Victor Lopez, Water Resources Control Engineer	(916) 323-5511 Victor.Lopez@waterboards.ca.gov

**Note:** For reporting purposes, if one SSO event results in multiple appearance points, complete one SSO report in the CIWQS SSO Online Database, and report the location of the SSO failure point, blockage or location of the flow condition that caused the SSO, in the CIWQS SSO Online Database, including all the discharge points associated with the SSO event.

**ELEMENT 3: LEGAL AUTHORITY**

This element of the SSMP discusses the City's legal authority to control discharges into its sanitary sewer system.

**3.1 Regulatory Requirements for the Legal Authority Element**

Element 3, Legal Authority, of WDR states the following:

**Section D.13 (iii) - Legal Authority:** Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

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

**3.2 Legal Authority**

City of Dixon's Municipal Code was updated on June 24, 2014 through Ordinance No. 14-009 to add Article XII which prohibits the discharge of fats, oils, and grease from food service establishments and Ordinance No. 14-010 to add Article XIII which regulates private sewer laterals to Chapter 14.01 of Title 14 to comply with all applicable state and federal laws, including the Clean Water Act and the Porter-Cologne Water Quality Control Act.

**3.2.1 Prevent Illicit Discharges**

All measures prohibiting illicit discharges are included in The Municipal Code Chapter 14.01 *Sewer Part 2 General Sewer Use Requirements*. The specific purpose of this section is to prevent the discharge of pollutant into the sewers that would obstruct or damage the collection system, interfere with the treatment process, or threaten harm to human health or the environment. Examples of discharges covered are included below. Refer to Appendix 3 for the complete Code.

**Storm water and I/I**

Section 14.01.23 *Prohibited Discharge Standards* Part B states “No user shall introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:” Paragraph 12 goes on to read, “Storm water, surface water, ground water, artesian well water, roof runoff, street drainage, yard drainage, subsurface drainage, swimming pool drainage, condensate, deionized water, noncontract cooling water, and unpolluted wastewater, unless specifically authorized by the director.”

**Industrial Waste**

Section 14.01.410 *Wastewater Discharge Permit Requirement* Part A states, “No significant industrial user shall discharge wastewater into the POTW without first obtaining a wastewater discharge permit from the Director.” This permit includes conditions as are deemed reasonably necessary by the Director to prevent pass through or interference, protect the quality of the water body or disposal fields receiving the treatment facility’s effluent, prevent excessive maintenance and operational costs, protect worker health and safety, facilitate sludge management and disposal, and protect against damage to the POTW. Section 14.01.300 *Pre-Treatment Facilities* requires all non-residential users to provide wastewater treatment as necessary to comply with the code.

**Other Discharges**

Section 14.01.23 *Prohibited Discharge Standards* lists eighteen specific prohibited discharges into the Dixon wastewater system.

**3.2.2 Proper Design and Construction**

Prior to construction within the City’s right-of-way to connect a sewer later to the public sewer system, all applicants are required to obtain an encroachment permit per Municipal Code Chapter 13.01 *Encroachments*. The Engineering Division inspects all encroachment work. All sewers and connections must be designed and constructed to current City of Dixon Engineering Standards and Specifications. Further information is located in this document under SSMP Element 5, Design and Performance.

**3.2.3 Access for Maintenance, Inspection and Repairs**

The Municipal Code Section 14.01 *Sewer Part 7 Compliance* Monitoring includes section 14.01.70 *Right of Entry: Inspection and Sampling*. This section outlines the Director’s authority to obtain right-of-entry for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties. However, current City codes do not ensure access for maintenance and repairs for existing City facilities. Typically, existing City facilities are within City right-of-way, such as streets,

properties (such as a park), or easements through private property. In these cases, the lack of City codes regarding access is not an issue because the City already has the right of access. In cases where the City facility exists on private property and the City does not have an easement, it is questionable as whether the City has the legal right of access to the facilities. In the future, as staffing allows, it is the City's intent to identify those instances where the City does not have a legal easement for its sanitary sewer facilities that exist on private property and subsequently obtain such easement. In 2017, the City will add appropriate sections to the City Code to allow for access for maintenance and/or repair of all facilities.

For new construction, Section DS6-05A of City Engineering Standards and Specifications requires the installation of all new sanitary sewers in the pavement area of the street. Under special circumstances, Section DS6-05B also allows the placement of sanitary sewer lines in a minimum fifteen foot (15') wide easement crossing one lot only, if approved in advance of improvement plan submittal by the City Engineer. Deeper lines require a wider easement to the satisfaction of the City Engineer.

#### **3.2.4 Limitation of Fats, Oil and Grease Discharge**

The Municipal Code Section 14.01 *Sewer*, Article XII Discharges of Fats, Oils, and Grease from Food Service Establishments limits the discharge of Fat, Oil, and Grease (FOG) that can be discharged from Food Service Establishments into the public sewer system by requiring a discharge permit and annual inspections of the facilities. Further information is located in this document under SSMP Element 7, Fat, Oil, and Grease (FOG) Control Program.

#### **3.2.5 Enforcement of Violations**

The Municipal Code Section 14.01 *Sewer*, Part 8 *Administrative Enforcement Remedies* gives the Director authority to serve upon the user a written notice of Violation to any non-residential user that has violated, or continues to violate, any provision of Chapter 14.01. Part 9 *Judicial Enforcement Remedies* and Part 10 *Supplemental Enforcement Action* further outlines additional measures the Director can take in the form of legal action and financial assurance.

Article XIII, Private Sewer Laterals, gives the Director authority to enforce the maintenance, repair and replacement of private sewer laterals to prevent or address spills or blockages within private sewer laterals.

However, current Municipal Code does not address collection system issues such as vandalism or other types of activities that may result in the destruction of the collection system infrastructure that ultimately may lead to sanitary sewer overflows. In 2017, the City will add appropriate language to the Municipal Code to address this issue.

In cases of accidental damage during construction work, an incident may occur either on existing City facilities within City right-of-way (such as streets, properties (such as a park) or easements through private property) or on existing City facilities in private property in which the City does not have an easement.

When accidental damage during construction work occurs on existing City facilities within City right-of-way, the damage would typically have occurred during work performed via a City Encroachment Permit, a Subdivision Improvement Agreement or a City Capital Improvement Project. In any of those cases where a contractor damages existing City facilities, the contractor must repair the damage at no cost to the City. For work via a City Encroachment Permit, the City of Dixon Encroachment Permit General Rule and Regulation #11 define the City's legal authority. The City of Dixon Encroachment Permit General Permit Rules and Regulations are included in Appendix 3. For work done via a Subdivision Improvement Agreement (SIA), legal authority exists in Section 4 of the City's standard SIA, which is included in Appendix 3. For work done via a City Capital Improvement Project, legal authority exists in Section 7-11 of the General Provisions of the City's Engineering Standards and Specifications, which is included in Appendix 3.

In cases of damage to an existing City facility during unpermitted work or work on private property in which the City does not have an easement, it is the City's intent to add appropriate language to the Municipal Code to address these cases in 2017.

# SSMP ELEMENT 4 DESIGN AND PERFORMANCE PROVISIONS

## ELEMENT 4: OPERATION AND MAINTENANCE PROGRAM

This element of the SSMP discusses the City's operation and maintenance program for the sanitary sewer system.

### **4.1 Regulatory Requirements for the Operation and Maintenance Program Element**

Element 4, Operation and Maintenance Program, of WDR states the following:

**Section D.13 (iv) – Operation and Maintenance Program:** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:

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

### **4.2 Maps**

The City of Dixon maintains a Graphical Information System (GIS) map of the City's wastewater system. The City currently maintains layers of information that include sewer manholes, sewer lines, storm drain structures, storm drain lines, city limits, parcels, streets, subdivisions, assessment districts, and zoning. The information collected using the CCTV and the Hansen

## SSMP ELEMENT 4 DESIGN AND PERFORMANCE PROVISIONS

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Information Technologies Program can be linked to the City's sewer line layer data in GIS using the Granite XP Software. The GIS layers are updated on an as-needed basis. Utility maps have been converted to 8.5" x 11" flipbooks that contain both storm drain and sanitary sewer information. These map books are at the City Engineer/Public Works Department and in field vehicles to locate and identify wastewater and storm drain structures and lines and to aid in the response to a SSO.

### **4.3 Preventative Operations and Maintenance Program**

#### **Gravity Sewers**

The wastewater maintenance crew performs an assortment of scheduled, preventative, predictive, and breakdown maintenance on a variety of systems and equipment.

The City's preventative maintenance activities include routine inspections of "hot spots" and lift stations. The maintenance staff has identified fourteen "hot spots" throughout town. Staff inspects these locations on a monthly basis and cleans as necessary. Staff records each visit with the date, with the inspector's initials, and comments.

Staff responds to customer concerns and complaints immediately and investigates the problem location and best course of action.

The City of Dixon owns and operates a Vac-Con Truck and CCTV Truck to clean and inspect the City's 73 miles of sewer mains. The City has been cleaning and CCTV the sanitary sewer lines since July 2009 and completed all the City's lines by December 2013. City staff should complete the second round of inspections and cleaning in 2018. City staff will use the data collected using the CCTV Truck and the Granite XP Program for the following items:

1. Identify problem areas, "hot spots", defined as areas susceptible to sewer backups, blockages, or a known problem area such as grease accumulation or shallow slope.
2. Identify root intrusions into the City's sewer mains to create a sewer root maintenance plan.
3. Identify the sewer mains and manholes that need immediate repair and revise the City's capital improvement plan (CIP).
4. Rate the sewer lines using the NASSCO rating system to establish ongoing funding for major rehabilitation, upsizing, or replacement of the collection system as the system wears out, or upgrading of the system because of expansion.
5. Create a cleaning and CCTV schedule for every City sanitary sewer line at a maximum of every five years.

## SSMP ELEMENT 4 DESIGN AND PERFORMANCE PROVISIONS

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6. Notify residents of identified problems within their laterals.

### **Lift Stations**

The City's Collection Division is responsible for the daily inspections of the lift stations. Weekly inspections include visual check of the equipment, manual cycling of pumps, and checking and cleaning floats if necessary. The alarm company computer system records and stores alarms automatically. Removal of debris from lift stations are conducted every six months or when a problem begins to form. City staff inspects lift stations extensively every year. Extensive maintenance includes cleaning sumps, and removing pumps for inspection and repairs if necessary. City staff tracks and maintains lift station inspection sheets in the Collection's office. The lift stations currently have backup alarm alerts for conditions such as:

1. High Water Alarm (Mechanical Float)
2. Hi-Hi Water Level
3. Power failure Alarm

An Overflow Emergency Response Plan was prepared for both the Lincoln Street Lift Station and the Pitt School Lift Station in May 2014 and can be found in the On-Call case at all times.

### **Root Control**

The City of Dixon's Collections Division has identified invasive roots within the City's sewer system and private laterals using the CCTV truck during routine inspections. City staff removed the locations within the City's system during cleaning and noted as part of a root removal project using chemical agents and mechanical cutters. City staff documents private laterals with root problems and, for locations with significant root problems, staff sends notices along with pictures of the problem to the homeowners responsible for the laterals.

### **Odor Control**

In the event the City of Dixon receives an odor complaint, the Collection Division will respond by flushing the line and/or install manhole seals to eliminate the odor. The complaints are often in areas of low flow or end runs.

### **Non-Routine Maintenance**

The City's Collection Division responds in the event of complaints regarding manhole overflows, missing or shifted manhole lids, lift station malfunctions, sewer odor complaints, complaints of customer blockages, etc.

### **Emergency Maintenance**

## SSMP ELEMENT 4 DESIGN AND PERFORMANCE PROVISIONS

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The City has developed emergency maintenance procedures contained within the Sanitary Sewer Overflow and Backup Response Plan. Refer to Element 6 for more information.

### **4.4 Rehabilitation and Replacement Program**

The City utilizes a combination of inspection activities to assess the condition of sewer assets including:

- Routine (daily) above ground inspections of the collection system facilities, and lift stations to identify defects, damage or other identified problems,
- Reviewing videos of the system-wide CCTV inspection to determine whether repairs or rehabilitation/replacement are warranted,
- Reviewing manhole inspection forms, and
- Dye testing as requested to monitor and reduce I/I.

The City repaired several high priority locations in 2012. In 2014, the City awarded the Sewer Line and Manhole Replacement Project. The City completed the project by April 2015. The City includes a repair project in the CIP program each year.

### **4.5 Training Program**

The WWTF and Collections Division maintain a matrix for each staff member associated with Wastewater and Collections that includes certifications, license numbers, expiration dates, and continuing education unit requirements. The City of Dixon offers numerous in-house training programs and participates in the California Water Environmental Association (CWEA) and NASSCO certification programs that require ongoing continuing education to maintain certifications.

The trainings include but are not limited to:

- Qualified Applicators Pesticide Certificate
- CPR
- Class B License
- NASSCO
- First Aid and Blood Borne Pathogen Exposure
- Chlorine Safety
- Driver Safety
- Sludge Dewatering Systems
- Confined Space Entry
- Trenching Training

## SSMP ELEMENT 4 DESIGN AND PERFORMANCE PROVISIONS

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- Back Safety
- Flagging Training
- Lockout/Tag out Procedures

### **4.6 Contingency Equipment and Replacement Parts Inventory**

6" by-pass pump

4" by-pass pump

Tiger tails – hose protection

Traffic Control: barricades, cones, men working signs

Tri-pod: confined space equipment

Puck's grease control

Sample bottles for testing

Hose for Vac-con

Safety PPE: eye ware, gloves, eyewash

Extras cameras for CCTV

Sewer snake for laterals

Push camera for laterals

Spill protection for catch basins (for SSOs)

Extra cables for CCTV

Lift station filters and compressors

Inspection forms

Extra cleaning heads

Extra fuses for lift stations

Extra floats for lift stations

Plugs for line sizes in City Limits: 6", 8", 10", 12", 15", 18", 21", 27", 30", 42"

# SSMP ELEMENT 5 DESIGN AND PERFORMANCE PROVISIONS

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## **ELEMENT 5: DESIGN AND PERFORMANCE PROVISIONS**

This element of the SSMP discusses the City's design and performance provisions for the installation of the sanitary sewer system.

### **5.1 Regulatory Requirements**

Element 5, Design and Performance Provisions, of WDR states the following:

#### **Section D.13 (v) –Design and Performance Provisions:**

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

### **5.2 Standards for Installation, Rehabilitation and Repair**

#### **5.2.1 Design and construction standards**

The City maintains design and construction standards for the installation of new sanitary sewer pipeline, manhole, lateral and cleanout facilities. The City does not permit pump stations unless specifically approved by the City Engineer. Design and construction of rehabilitation projects to the City's sanitary sewer system are on a case-by-case basis and may specify use of alternative technologies not addressed in the City standards, such as pipe lining or pipe bursting.

The standards are in the City of Dixon Engineering Standards and Specifications (City Standards) document. Sanitary sewer design standards are located in Section DS6, Sanitary Sewer Design, of the City Standards and are included in Appendix 5. Sanitary sewer construction standards are located in Section CS17, Construction Specifications-Sanitary Sewer System, of the City Standards and are included in Appendix 5. Additionally, sanitary sewer standard details (Details 4000-4050 and 6000-6040) are located in Section 3 of the City Standards. The sanitary sewer standard details are also included in Appendix 5.

City staff periodically reviews, revises, and amends City Standards to reflect new theories and practice in engineering design and new construction materials and techniques. It has been the intent of the City Engineer to update City Standards every five years to keep

## SSMP ELEMENT 5 DESIGN AND PERFORMANCE PROVISIONS

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them current with industry standards, to provide the City with higher quality infrastructure construction, to extend the service life of utilities, and reduce future repair and rehabilitation costs that would become a financial burden to the existing residents of the City. The City last amended the City Standards in August 2014 by Resolution No. 14-120. The 2009 revision included a revision to the City's standard manhole detail, which now requires a cast-in-place base.

### **5.3 Standards for Inspection and Testing of New, Rehabilitated, and Repaired**

#### **Facilities**

City Standards Section CS17, Construction Specifications- Sanitary Sewer System, contains procedures and standards for inspecting and testing sanitary sewer facilities. Specifically, Section CS17.G specifies inspection requirements. Section CS17.H specifies sewer line testing requirements, including pipe cleaning and flushing, PVC deflection testing, manhole vacuum air testing, sewer line low-pressure air testing, and video inspection. Section CS17 is included in Appendix 5.

# SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

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## **ELEMENT 6: OVERFLOW EMERGENCY RESPONSE PLAN**

This element of the SSMP discusses the City's contingency plan and procedures for responding to a sanitary sewer overflow event.

### **6.1 Regulatory Requirements**

Element 6, Overflow Emergency Response Plan, of WDR states the following:

**Section D.13 (vi) –Overflow Emergency Response Plan: Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:**

- (a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;**
- (b) A program to ensure an appropriate response to all overflows;**
- (c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;**
- (d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the 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.**

### **Overflow and Emergency Response Plan Discussion**

The City currently has an Overflow Emergency Response Plan (OERP) to address both Sanitary Sewer Overflows (SSOs) and Backups. David Patzer, Risk Management Solutions, prepared the OERP in May 2014 and is included in Appendix 6.

# SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

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## **6.2 Sanitary Sewer Overflow (SSO) Detection and Notification**

The processes that are employed to notify the City of the occurrence of an SSO include observation by the public, receipt of an alarm, or observation by City staff or other public employees during the normal course of their work.

### **6.2.1 Public Observation**

Public observation is the most common way that the City receives notification of blockages and spills. Contact numbers and information for reporting sewer spills and backups are in the phone book and on the City's website: <http://ci.dixon.ca.us>. **The City's telephone number for reporting sewer problems is (707) 678-7080.**

#### *Normal Work Hours:*

Monday-Thursday 7:00 AM-4:30 PM; Friday 7:00 AM-3:30 PM:

City staff receives the call, takes the information from the caller, and communicates it to the field crew.

#### *After Hours*

Dispatch receives the call, takes the information from the caller, pages the on-call crew, and communicates the necessary information to the on-call crew.

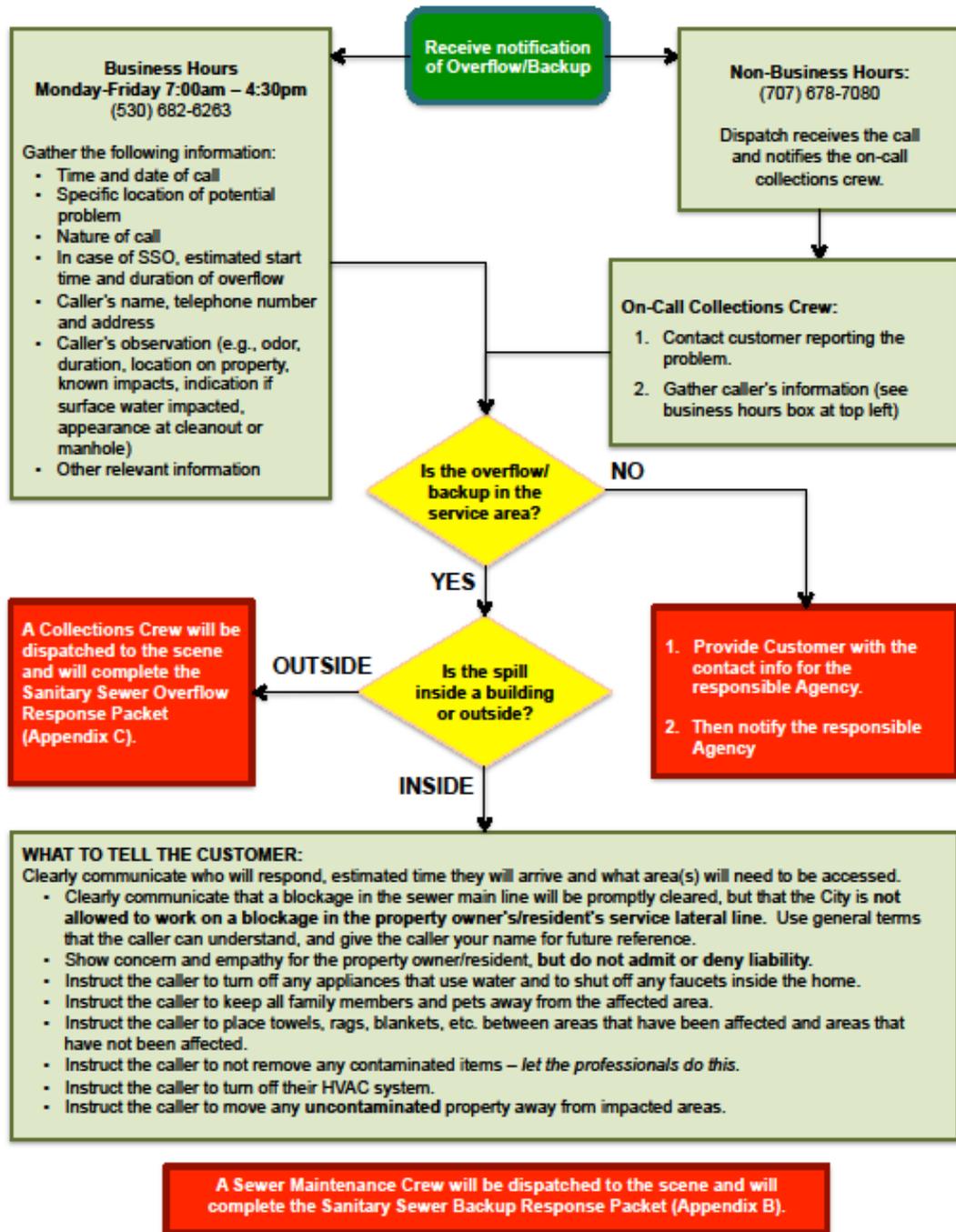
The individual receiving the call will collect the following information:

- Time and date of call
- Specific location of potential overflow or incident
- Nature of call
- In case of SSO, estimated start time of overflow and how long it has been occurring
- Caller's name, telephone number, and address
- Caller's observations (e.g., odor, duration, location on property, known impacts, indication if
- surface water impacted, appearance at cleanout or manhole)
- Other relevant information

The following (Figure 6.1) is an overview of receiving a sewage overflow or backup report (see next page):

# SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

Figure 6.1 Overview of Receiving a Sewage Overflow or Backup Report Procedure



## **SSMP ELEMENT 6    OVERFLOW EMERGENCY RESPONSE PLAN**

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### **6.2.2    City Staff Observation**

City staff conducts periodic inspections of its sewer system facilities as part of their routine activities. Any problems noted with the sewer system facilities are reported to appropriate City staff that, in turn, responds to emergencies. City staff issues work orders to correct non-emergency conditions.

### **6.2.3    Contractor Observation**

The following are the procedures in the event that a contractor causes or witnesses a Sanitary Sewer Overflow. If the contractor causes or witnesses an SSO, they will:

1. Immediately notify the City by calling (707) 678-7080
2. Protect storm drains
3. Protect the public
4. Provide Information to City Staff such as start time, appearance point(s), suspected cause, weather conditions, etc.
5. Direct ALL media and public relations requests to the City Engineer/Public Works Director.

Appendix D includes a handout for Contractors with a flowchart of the above procedures.

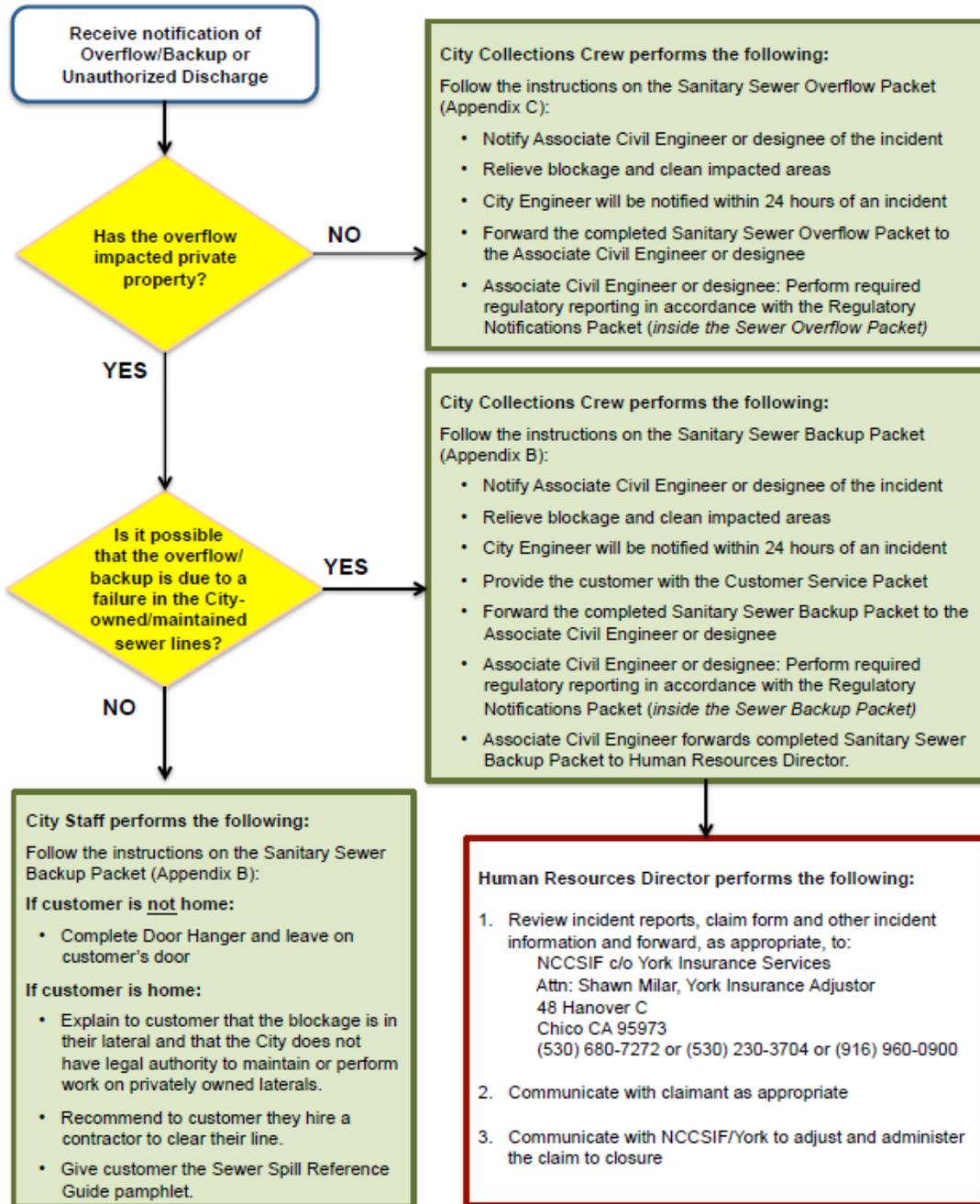
## **6.3    Sanitary Sewer Overflow (SSO) Response Procedures**

### **6.3.1    Sewer Overflow/Backup Response Summary**

The City will respond to SSO's as soon as feasible following notification of an overflow/backup or unauthorized discharge. The following (Figure 7.1) is an overview of the response activities.

# SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

Figure 7.1 Overview of SSO/Backup Response



# SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

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## **6.3.2 First Responder Priorities**

The first responder's priorities are:

- To follow safe work practices.
- To respond promptly with the appropriate and necessary equipment.
- To contain the spill wherever feasible.
- To restore the flow as soon as practicable.
- To minimize public access to and/or contact with the spilled sewage.
- To promptly notify the Public Works Operations Manager in event of major SSO.
- To return the spilled sewage to the sewer system.
- To restore the area to its original condition (or as close as possible).
- To photograph and document affected and unaffected areas from a spill.

## **6.3.3 Safety**

The first responder is responsible for following safety procedures at all times. Special safety precautions are necessary when performing sewer work. There may be times when City personnel responding to a sewer system event are not familiar with potential safety hazards peculiar to sewer work. In such cases, it is appropriate to take the time to discuss safety issues, consider the order of work, and check safety equipment before starting the job. This includes use of gas monitoring detectors for air quality in manholes and traffic controls at the site.

## **6.3.4 Initial Response**

The first responder must respond to the reporting party/problem site and visually check for potential sewer stoppages or overflows.

The first responder will:

- Note arrival time at the site of the overflow/backup.
- Verify the existence of a public sewer system spill or backup.
- Determine if the overflow or blockage is from a public or private sewer.
- Identify and assess the affected area and extent of spill.
- Contact caller if time permits.
- If the spill is large or in a sensitive area, document conditions upon arrival with photographs.
- Decide whether to proceed with clearing the blockage to restore the flow or to initiate containment measures. The guidance for this decision is:
  - Small spills (i.e., spills that are easily contained) – proceed with clearing the blockage.
  - Moderate or large spill where containment is anticipated to be simple – proceed with the containment measures.

## SSMP ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

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- Moderate or large spills where containment may be difficult – proceed with clearing the blockage; however, whenever deemed necessary, call for additional assistance and implement containment measures.
- Take steps to contain the SSO. For detailed procedures refer to Appendix B: Sanitary Sewer Backup Procedures, and Appendix C: Sanitary Sewer Overflow Packet.

### **6.2.6 Containment and prevention program**

The City's OERP does a "pretty good job" of identifying the steps that should be taken for emergency response, per the ECO:LOGIC audit. The City will conduct periodic exercises to ensure that all aspects of the OERP, including training and emergency equipment, are functional at all times.

The City will update the OERP as necessary based on the results of the biennial audit discussed in Section 10.

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

This element of the SSMP discusses the City’s Fats, Oils and Grease (FOG) control measures, including discussion of the City Code related FOG, discussion of the City’s Wastewater Discharge Permit and identification of problem areas, focused cleaning and source control.

**7.1 Regulatory Requirements**

Element 7, Fats, Oil and Grease Control Program, of WDR states the following:

**Section D.13 (vii) –FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

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

### **7.2 Public Education and Outreach Program**

The City of Dixon has developed a FOG program. The program includes public education and outreach during the Wastewater Discharge Permit process, the inspection process, and through the public notification during the CCTV process.

### **7.3 FOG Source Control**

The City of Dixon's Wastewater Discharge Permit is required for all food stores, eating places, and food preparers that bake or cook on the premises. This permit formally outlines the City's requirements of pretreatment systems maintenance procedures and maintenance records, and proper handling of pretreatment system waste. The City's Community Development Department, Building Division, provides guidance in determining the proper pretreatment system to comply with the Uniform Building Code (UBC). The Wastewater Discharge Permit requires each establishment to self-monitor, sample, measure flow, document results, and notify the City in the event of a violation to prevent illegal discharge of FOG into the sanitary sewer system.

### **7.4 Disposal of FOG**

FOG discharge to the sanitary sewer system is prohibited. Users are required to properly dispose of pretreatment waste and cooking grease. The City's WWTF does not currently accept trucked or hauled waste. The Wastewater Discharge Permit contains the following policies to ensure proper disposal of waste:

- Facilities with a grease interceptor shall keep receipts of pumping company names and service dates.
- Facilities with grease traps that utilize service companies shall keep records of company names and service dates.
- Facilities with grease traps that services in-house must keep record of service dates only, and describe and demonstrate pretreatment waste handling procedure.
- Facilities with fryers shall keep cooking grease (yellow grease) storage containers on-site and receipts of rendering company service dates. (There may be other venues for handling the grease, such as transfer to another restaurant or release to a private party for personal use, such as making biodiesel fuel. At a minimum, the facility must be able to show storage containers and explain yellow grease handling procedure. The inspector may require a facility without a fryer to off-haul used cooking grease if poor work practices are identified (e.g. FOG liquid in trash or accumulated in the sewer system).

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

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### **7.5      Legal Authority for FOG Program**

The Municipal Code Section 14.01 Sewer, Part 2 *General Sewer Use Requirements*, section 14.01.23 *Prohibited Discharge Standards, Specific Prohibition* item 17 states, “No user shall introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater; Fats, oils, or greases of animal or vegetable origin in concentrations greater than 100 milligrams per liter (100 mg/l), except as specifically authorized by the Director in the Wastewater Discharge Permit.”

For further detail of the City’s Legal Authority refer to Element 3, Legal Authority.

### **7.6      Requirements to install Grease Trap Removal Devices**

The Municipal Code Section 14.01 Sewer, Part 2 *General Sewer Use Requirements*, section 14.3.2.C: Grease, oil, and sand interceptors shall be provided when, in the opinion of the Director, they are necessary to comply with local limits for the proper handling of wastewater containing excessive amounts of grease and oil, or sand; except that such interceptors shall not be required for residential users. All interceptor units shall be of type and capacity approved by the Director and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the user at their expense.

### **7.7      Authority to Inspect Grease Producing Facilities**

The Municipal Code Section 14.01 Sewer, Part 8 *Administrative Enforcement Remedies* gives the Director authority to serve upon the user a written notice of Violation to any user that has violated, or continues to violate, any provision of Chapter 14.01. Part 9 *Judicial Enforcement Remedies* and Part 10 *Supplemental Enforcement Action* further outlines additional measures the Director may take in the form of legal action and financial assurance.

Attachment B of the Wastewater Discharge Permit, paragraph 10 Inspection and Monitoring states, “User shall allow a City of Dixon inspector exhibiting proper credential and identification, to enter upon the premises upon requires and without unreasonable delay, for the purpose of inspection and sampling. Reasonable times for inspection may include times that are unannounced, and may include any time during which the User’s activities may result in a process waste discharge to the sanitary sewer system.

### **7.8 Identification of Grease Problem Areas and Sewer Cleaning**

A FOG problem area contains one or more line blockage caused by the accumulation of Fat, Oil, and/or Grease in a line. The City of Dixon has identified several FOG problem areas around town. FOG problem areas are mainly in trunk line segments in commercial districts that serve concentration of food facilities and multifamily dwelling complexes. City staff hydro-flushes or inspects the identified “Hot Spot” areas of town on a monthly basis to prevent backups or service interruptions to customers.

# SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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## **ELEMENT 8: SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN**

This element of the SSMP includes several major programs and activities used to evaluate sanitary sewer system capacity. This section shall describe the methods used to identify areas of the sanitary sewer system that lack the sufficient capacity to convey an appropriate peak flow, the approach used to take the results of the capacity evaluation to produce a list of capacity improvement projects and an implementation schedule.

### **8.1 Regulatory Requirements**

Element 8, System Evaluation and Capacity Assurance Plan, of WDR states the following:

**Section D.13 (viii) –Sewer Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a) **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
- (b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
- (c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14.

### **8.2 System Evaluation and Capacity Assurance Plan (SECAP) Discussion**

#### **8.2.1 Evaluation**

## SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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The City will develop an ongoing system evaluation and capacity assurance program. This program will utilize both calculated estimates of flows via modeling of the City sanitary sewer system and actual data obtained by flow monitoring.

The program will incorporate the following components:

- Collection system condition evaluation

The City has nearly completed the collection system evaluation program in which the condition of each sewer line and manhole within the sewer collection system is inspected and assessed.

In February 2009, the City purchased a video inspection truck at a cost of approximately \$180,000. This truck is a self-contained unit that allows City Collection Division staff to visually inspect and assess the condition of a given pipe. Staff sends a television camera through a sewer line while concurrently viewing the video in the truck. Staff documents each pipeline defect using the National Association of Sewer Service Companies (NASSCO) standard rating and ranking system. Prior to video inspecting a given line, Collection staff cleans each line by hydro flushing to ensure no blockages exist within a line.

As part of the collection system evaluation program, Collection staff also visually inspects and assess the condition of all manholes, since the aforementioned video camera must be inserted into a sewer line through a manhole. Staff inspects and documents each manhole's cover, frame, barrel, shelf and channels. Collection staff also documents any evidence of infiltration seen during an inspection.

- Hydraulic modeling

The purpose of the hydraulic model is to reproduce existing sanitary sewer flow conditions in a computer-based model. In 2017, the City will seek the services of a consultant to develop the Sewer System Master Plan and corresponding hydraulic model.

It is anticipated that the consultant will develop each sewer-shed area and collect/input the data required to build the model. Such data includes flow line elevation, diameter, material and Manning's n-value for each pipe segment of the 70+ miles of pipe in the City's sanitary sewer system, and the invert and rim elevation of each manhole or sewer structure. In 2015, the City completed the

## SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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establishment of a benchmark system to tie to the City Standard 1988 North American Vertical Datum (NAVD88). The model will tie the pipe flow line elevations to the NAVD88 datum. The City will also incorporate an existing sewer manhole numbering system into the model.

After inputting the physical data into the computer model, sewer flow data will be input for the existing and General Plan build out conditions. Sewer flow data will utilize existing land use and zoning. The model will then be calibrated to reproduce existing flow conditions currently experienced in the field. In order to do so, data of existing flow conditions at key points within the system will need to be determined. This data is typically obtained by a piece of equipment known as a flow meter, which will monitor flow of a given sewer line. The City has purchased multiple flow meters. City crews will then be able to gather the necessary flow data to calibrate the model. City crews should collect flow-monitoring data in periods of highest groundwater, so that infiltration and inflow can be accurately measured. These high groundwater periods are typically in the months of February through April.

After calibration of the model, the City will use the model runs to evaluate the hydraulic capacity of the system and identify areas that may have hydraulic deficiencies.

- Infiltration and inflow analysis

The City conducted an Infiltration and inflow (I/I) analysis in 1998 and prepared a work plan. This work plan is included in Appendix 8. As part of the work plan, the City of Dixon performed several activities, which led to I/I reduction. Those activities include:

- Repairing manholes, lateral cleanouts, mains and trunk lines
- Replacing approximately 3,400 feet of sewer main
- Elimination of a seven acre storm drain retention basin thought to be a source of infiltration
- Development of design and construction standards
- Implementation of a groundwater monitoring program
- Construction of a new trunk main, and removal from service of an older leaking trunk main

- Sanitary sewer overflow (SSO) tracking

## **SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN**

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As part of SSMP Element 9, Monitoring, Measurement and Program Modifications, the City tracks SSO's and the causes of each, including capacity related overflows. Data related to the capacity related SSO's will be useful in identifying hydraulic deficiencies in the collection system.

- **Collection system capacity assurance plan**

Upon completion of the modeling task of the SECAP, the City will be able to verify available capacity for any new connections to the City sewer system. In the interim, the City will continue to require sewer analyses from projects that significantly increase sewer flows, at the discretion of the City Engineer/Public Works Director.

### **8.2.2 Design Criteria**

Sanitary sewer design criteria currently exists within the City's Engineering Standards and Specifications (Standards) document, the latest version of which was adopted by the City Council in November of 2009. Section 6, Sanitary Sewer Design, of the City's Standards, contains design criteria to ensure that all new connections to the existing system have adequate capacity. Section 6 is included in Appendix 5 (Design and Performance).

### **8.3 Recommended Capacity Projects**

The City will not wait until completion of the entire collection system evaluation to develop new projects to address identified hydraulic deficiencies. As each individual sewer shed area evaluation and modeling is completed, the City will begin the analysis process and subsequently develop projects.

The projects may include pipe size replacement of undersized sewer pipes, filtration/inflow reduction programs, and/or peak flow storage facilities at the treatment facility. City staff will integrate larger projects into the existing Capital Improvement Program (CIP). The CIP will include funding sources and proposed implementation schedules for all projects.

The Wastewater section of the City's proposed Fiscal Year 2017/18 CIP is included in Appendix 8. The proposed CIP currently includes SECAP related projects as follows:

## SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

Project Number	Description
107	East-West Sewer Connector
109	27" Sewer Trunk Line Rehabilitation Program
119	Rehabilitation of Sewer Mains & Manholes
126	N. Lincoln Street Lift Station

Additionally, the City will re-bid an “on-call” maintenance contract to provide emergency response for sewer repairs and to complete minor sewer system repairs. The City has had such a contract in place in the recent past. Smaller maintenance-type projects, such as pipeline and manhole repairs, will be done via use of this “on-call” contractor.

### **8.4 Schedule**

The following is the proposed schedule of completion dates for tasks associated with this element of the SSMP:

#### 1. Evaluation

- Hydraulic modeling:
  - Base-mapping/ shed area creation/ data input January 2018
  - Benchmark system completion & data input July 2018
  - Flow monitoring July 2018
  - Model calibration January 2019
  
- Infiltration/ inflow analysis
  - Past analysis complete (Sept. '98)
  - Future analysis update January 2019
  
- Collection system evaluation
  - Clean and video inspection of sewer lines ongoing
  - Visual inspection of sewer manholes ongoing
  
- Sanitary Sewer Overflow tracking yearly
  
- Collection system capacity assurance plan January 2019

#### 2. Design Criteria

complete (Nov. '09)

## SSMP ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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### 3. Capacity Enhancement Measures

- Capital Improvement Program update annually\*  
(new projects not currently included in the existing CIP)

\*note- as evaluation of individual sewer shed areas is complete, larger projects will be incorporated into the CIP on a yearly basis. Completion of the entire collection system evaluation and CIP project incorporation is expected by January 2019.

The schedule shall be reviewed and updated as necessary, consistent with Element 10 of the SSMP, Program Audits.

**ELEMENT 9: MONITORING, MEASUREMENTS, AND PROGRAM MODIFICATIONS**

This section of the SSMP outlines the process that the City will follow to evaluate the effectiveness of the SSMP and to identify updates that may be needed for a more effective program.

**9.1 Regulatory Requirements**

Element 9, Monitoring, Measurement and Program Modifications, of WDR states the following:

**Section D.13 (ix) –Monitoring, Measurement, and Program Modifications: The Enrollee shall:**

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

**9.2 Monitoring, Measurement and Program Modifications Discussion**

The City will maintain information that can be used in the SSMP performance monitoring through CIWQS database administered by the State Regional Water Quality Control Boards to track information under the statewide general SSO order. All CIWQS information is available through the Public Reports portal at:

[http://www.waterboards.ca.gov/water\\_issues/programs/ciwqs/publicreports.shtml](http://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.shtml)

The City of Dixon also utilizes various tracking systems to help measure and monitor activities and performance measures. These tracking systems include:

- Microsoft Excel for tracking maintenance activities
- Microsoft Outlook for scheduling maintenance activities
- Microsoft Maps for mapping locations of spills

While these tools are helpful for providing basic functionality, a more integrated software system will more than likely be required to sufficiently manage the City's SSMP programs. The City is in the process of evaluating a computer maintenance management system software to meet the City's needs. It is the City's expectation that the system may include the following:

- A formalized and integrated tracking system for all collection system operational and performance related parameters or benchmarks.
- A tracking system that is computer based and is readily adaptable for sanitary sewer system management.
- Development of new programs with clear goals, measures and anticipated outcomes that can be measured and compared.
- Identification of a system administrator or individual tasked with ensuring the tracking system is up to date and complete.
- Development of clear QA/ QC procedures to ensure that information is as accurate as possible.
- Assurances that all individuals working within the tracking system are trained on how to use the system properly.
- Development of reports on a regular basis from the tracking system and clear understandings of how these reports should be used to effectively manage the sanitary sewer system.
- Development of policies to ensure that fiscal decisions are based upon information and data that is contained within these reports.
- To the extent feasible, integrate the tracking system with a mapping or geographic information system.

The City will evaluate the performance of its sanitary sewer system using the performance measures identified in Section 9.3. The City will also update the SSMP based on the results of the biennial audit discussed in Section 10.

### **9.3 Performance Measures**

It is the City's intention to use the following indicators to measure the performance of its sanitary sewer system and the effectiveness of its SSMP:

- Total number of SSO locations (for City of Dixon system);
- Cause of each SSO (roots, grease, debris, pipe failure, capacity, lift station failure and/or other)

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- Volume of spilled wastewater recovered (gallons (MG) per year (gal/yr)) compared to total volume of wastewater spilled (gal/yr);
- Volume of spilled sewage discharged to surface water (gal/yr) compared to total volume of wastewater spilled (gal/yr).

The City has historical performance data from 1998 to the present. Table 9-1 below summarizes the SSO data for 2005-2016. Appendix 9 contains further detail of the historical data, including information on general sewer callouts, response time and SSO's from private laterals.

		2005	2006	2007-13	2014	2015-16
Number of SSO's		3	1	0	1	0
SSO causes:	Roots	0	0	0	0	0
	Grease	2	0	0	1	0
	Debris	1	1	0	0	0
	Pipe Failure	0	0	0	0	0
	Lift Station Failure	0	0	0	0	0
	Vandalism	0	0	0	0	0
Volume of Spilled Sewage Contained/Recovered (gallons)		220	5	0	0	0
Portion of Spilled Sewage Contained/Recovered		100%	100%	n/a	n/a	n/a
Volume of Spilled Sewage Entering Storm Drains and/or Surface Waters (gallons)		0%	0%	n/a	n/a	n/a

**Table 9-1**

The City will continue to track data shown in Table 9-1 and Appendix 9. The tracking of such data will allow the City to identify and illustrate SSO trends, including frequency, location, and volumes.

Additional measures to improve performance include the implementation of programs as mentioned in previous Elements of the SSMP:

Future Activity and Schedule	Completion Date
<ul style="list-style-type: none"> <li>• Schedule and Document routine inspections of the City's Wastewater Discharge Permit holders.</li> </ul>	ongoing
<ul style="list-style-type: none"> <li>• Combine the City's GIS data with the Granite XP inspection data</li> </ul>	July 2017
<ul style="list-style-type: none"> <li>• Create updated Map Books in GIS with the City's Sewer and Storm infrastructure with the County's parcel layer</li> </ul>	July 2017
<ul style="list-style-type: none"> <li>• Complete the Citywide cleaning and CCTV and create a four year cycle schedule to repeat the process</li> </ul>	Completed; second rating

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	cycle in progress
<ul style="list-style-type: none"> <li>• Complete the Citywide manhole inspection</li> </ul>	July 2019
<ul style="list-style-type: none"> <li>• Complete the NASSCO rating of the City’s System</li> </ul>	Completed; second rating cycle in progress
<ul style="list-style-type: none"> <li>• Update and Implement a five year CIP</li> </ul>	annually
<ul style="list-style-type: none"> <li>• Develop a mutual assistance program with neighboring communities to facilitate access to equipment and parts on an as needed basis</li> </ul>	July 2019
<ul style="list-style-type: none"> <li>• Finalize the FOG Program</li> </ul>	program developed; implementation ongoing
<ul style="list-style-type: none"> <li>• Develop a model with the data collected to determine the capacity of the existing infrastructure, determine future facility requirements, and develop recommendations for near-term and long-term improvements.</li> </ul>	January 2019

### **9.4 Performance Monitoring and Program Changes**

City staff will periodically update the SSMP to maintain current information such as contact numbers and SSO response chain of communication. The City will annually evaluate the performance of the wastewater collection system and programs. The City will review the successes and needed improvements of the SSMP as part of the audit as described in Element 10. A comprehensive SSMP update will occur every 5 years, as required by the SWRCB.

**ELEMENT 10: SSMP PROGRAM AUDITS**

This section of the SSMP presents the process that the City will follow to audit its SSMP program.

**10.1 Regulatory Requirements**

Element 10, SSMP Program Audits, of WDR states the following:

**Section D.13 (x) –SSMP Program Audits:** As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

**10.2 SSMP Audits Discussion**

The City will complete biennial audits of its SSMP as required by the WDR. The City's Collection Division staff will complete audits and may include members from other areas of the City, outside agencies, and/or consultants. The scope of the audit will cover each of the SSMP Elements.

The audit will qualitatively review the effectiveness of implementing each SSMP Element. An audit checklist based on a similar document developed by the Bay Area Clean Water Agency was developed and is included in Appendix 10. The results of the audit, including identification of any deficiencies and steps taken (or planned to be taken) to correct them, will be included in an audit report that shall be kept on file.

The City will update its SSMP at least every five years. The City will complete the next update to this document on or before December 2021.

The City will determine the need to update its SSMP more frequently if warranted by the results of the biannual audits and/or the performance of its sanitary sewer system using information from the Monitoring and Measuring Program.

The City Council will approve any significant changes to the SSMP. The City Engineer/Public Works Director has the authority for approval of minor changes such as employee names, contact information, updated appendix documents, or limited procedural changes .

## **ELEMENT 11: COMMUNICATION PLAN**

This section of the SSMP outlines the process involved in communicating with the public on the development, implementation and performance of the SSMP.

### **11.1 Regulatory Requirements for the Communication Plan**

Element 11, Goals, of WDR states the following:

**Section D.13 (xi) –Communication Program:** The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

Note: No tributary systems to the City of Dixon sanitary sewer system exist.

### **11.2 Communication Plan**

The City maintains open communication with the public using several outlets such as:

- **City Website** – The City maintains an internet webpage with a link to a Sewer System Management Plan webpage, which contains a brief narrative on the SSMP. A print of the Sewer System Management Plan webpage is presented in Appendix 11. The webpage address is as follows:

<http://www.ci.dixon.ca.us/index.aspx?NID=190>

- **City Council Meetings** – City Council meetings are public meetings, televised on a local broadcast station, streamed live on the City's website, and recorded for future viewing. Significant changes to the SSMP would result in a council agenda action item presented at a regularly scheduled Council meeting.
- **Wastewater Committee Meetings** – The City formed a Wastewater Committee in 2007 to discuss wastewater issues and provide recommendations to the Council. The Committee provided input during the development of the original SSMP. The Committee

# SSMP ELEMENT 11 PROGRAM

# COMMUNICATION

meetings were noticed public meetings open to public attendance and input. The City Council disbanded the Committee in March 2013 by Resolution 13-038.

- **Utility Billing** – The City utilizes inserts in the utility bills, printed in both English and Spanish, to notify ratepayers of applicable information.
- **Notices in Public Spaces** – Staff posts notices at City Hall and the City Library, similar to the Notice Postings for public meetings.
- **Social Media** – The City posts notices on the City’s Face book page, as a “newsflash” on the City’s website, and through Twitter.

Opportunities for public input in the development and implementation of the SSMP have occurred numerous times since 2007 at public meetings of both the City of Dixon Wastewater Committee and City Council. On October 23, 2007, a presentation on the topic of the SSMP was given to City Council. At that same meeting, City Council passed a resolution approving the goals, organization structure and schedule of the SSMP. In conjunction with the 2016 update, the City conducted a 30-day public review period from November 9 through December 8, 2016.

Other sources of communication that the City will utilize to disseminate SSMP information are as follows:

- Utility bill insert mailers;
- The local public access cable channel, which the City currently uses as a source of public information;
- Electronic media and social media including the City’s website, Face book, and twitter accounts.

Internally, the City will communicate and coordinate within various departments for the various SSMP Elements as required and as shown in the following chart:

Element	Department
1 Goals	City Engineer/Public Works (CE/PW)
2 Organization	CE/PW, City Manager (including City Clerk)
3 Legal Authority	CE/PW, City Manager(including City Clerk)
4 Operation and Maintenance Programs	CE/PW
5 Design and Performance Provisions	CE/PW, Community Development (Building Division)
6 Overflow Emergency Response	CE/PW, City Manager (Human Resources)
7 Fog Control Program	CE/PW, Community Development (Building Division)

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# COMMUNICATION

8	System Evaluation and Capacity Assurance	CE/PW
9	Monitoring, Measurement and Modifications	CE/PW
10	Program Audits	CE/PW
11	Communication Program	CE/PW, Admin Services, City Manager (City Clerk), Public Works

Note: The City's Wastewater Treatment Division and Collections Division are part of the CE/PW Department