



PORT OF OAKLAND

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SEWER SYSTEM MANAGEMENT PLAN 2015 UPDATE

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Port of Oakland Updated 2015 Sewer System Management Plan July 2015

Executive Summary

Background

The California State Water Resources Control Board (“SWRCB”) began addressing the issue of sewer system management across the State of California in 2006 by developing and issuing a set of Waste Discharge Requirements (“WDR”), which have evolved over the years to require stringent performance standards for the operation and maintenance of wastewater collection systems and emergency response protocols for sewer system overflows.

Municipal organizations that operate a collection system greater than one mile in pipe length and discharges to a publicly owned sewage treatment plant are subject to the WDR, Order No. 2006-0003-DWQ. Subsequent to the original adoption of the WDR, changes were made to the Monitoring and Reporting Plan element of the WDR. The last change was effective on September 9, 2013 in Order No. WQ 2013-0058-EXEC and resulted in substantial changes especially to the emergency response requirements associated with sewer system overflows.

One element of the WDR, addressed in Sections D.11 and D.14, requires enrolled agencies such as the Port of Oakland (“Port”), to prepare, regularly review, and update a Sanitary Sewer Management Plan (“SSMP”). Specifically, enrolled agencies are required to:

Describe in the SSMP the agency’s sanitary sewer collection system operations, maintenance, emergency response, inspection procedures, condition assessment, and capital rehabilitation or replacement;

Have the SSMP approved and adopted by the governing board of the agency; and

Review and have the SSMP recertified by the governing board whenever any “significant updates” are made to the document, or at least every five (5) years from the date of original adoption.

The Port’s Board of Commissioners (“Board”) approved the original SSMP for the Port’s sanitary sewer system in May 2010.

Purpose of the 2015 Port of Oakland SSMP Update

The purpose of the update is to provide revisions to the SSMP necessitated by changes in the Port's staff and reporting relationships since the adoption of the 2010 SSMP. The revisions will also conform the SSMP to changes made by the SWRCB in the MRP issued by the Executive Officer effective in September 2013.

The changes recommended in this Updated 2015 SSMP are based upon an evaluation completed by Causey Consulting who reviewed the 2010 SSMP and the Port's current compliance with the requirements of the WDR. The findings in the evaluation suggest the need for better communications and collaboration across all revenue divisions of the Port and identified the need for the other changes proposed in the Updated 2015 SSMP.

This Updated 2015 SSMP - while not providing major changes to the 2010 SSMP - does provide for the following changes and/or additions as briefly summarized here and as specifically detailed in the redline of the SSMP herein:

1. Eliminates all references to requirements of the San Francisco Regional Water Quality Control Board (RWQCB), which no longer guides the content of the SSMP.
2. Updates the Port organizational chart for sewer system operations and all contact information for important members of the staff responsible for the sewer system across all revenue divisions.
3. Adds detailed information regarding the revised Monitoring and Reporting Plan (MRP) requirements and changes effective September 9, 2013.
4. Updates the number and definitions of the categories of overflows in several places in the SSMP Update.
5. Establishes a charter Sewer System Implementation Task Force (Task Force) to enhance collaboration and consistency of sewer operations and emergency response across all revenue division of the Port. This Task Force will be responsible for all future elements of the Port sanitary sewer program and will bring the Port program into full compliance with the WDR regulations and legal requirements.
6. Updates the Operations and Maintenance Program to conform to current practices and identifies necessary changes and improvements to be developed by the Task Force.
7. Provides updated capital improvement plan program short-term estimates and projects.
8. Requires the Port to develop and present mandatory training of all sewer-related employees and leasehold tenants with sewer system responsibilities to understand and conform sewer system action(s) to the WDR requirements.
9. Adds the new and revised SWRCB definitions of overflow categories and the notification and recordkeeping requirements for each of the categories
10. Updates the overflow emergency response program to reflect regulatory changes as well as changes within the Port organization. In addition, it anticipates the expansion of the number of available legally responsible officials (LROs) to be appointed in writing by the Executive Director. The LROs will be responsible for certifying - under penalty of perjury - all Port's sewer system reports submitted to the SWRCB/RWQCB.

11. Adds SWRCB requirements for an agency-specific Water Quality Monitoring Program (WQMP) and for the preparation and submittal of a technical report for all spills greater than 50,000 gallons. The Port's WQMP will be developed as part of the 2016-17 SSMP Audit.
12. Updates the sewer system overflow performance results for the past eight years.
13. Expands the Communications Program to provide for regular updates to the Board of Port Commissions and the publication of performance results from the operations of the sewer system.
14. Deletes several appendices that are no longer applicable and replaces them with two new appendices required in the MRP – SSMP: 1) a Change Log, and 2) SSMP Audit Reports.

These changes will:

- Clarify the infrastructure managed by the Port and other adjacent entities;
- Establish uniform reporting and recordkeeping requirements for all operations and maintenance and emergency responses;
- Establish consistent overflow responsibilities and reporting;
- Enhance communications and collaboration of sewer related programs to assure effective and efficient use of Port resources and staffing.

While the changes identified in the 2015 SSMP Update are not considered significant in scope, it is appropriate for the Board and the public to understand the current status of the sanitary sewer operations based upon the new MRP requirements and upon the Port's own internal changes in response to the regulations over the past five years since original adoption. As a consequence, the Board is being asked to consider and adopt the Updated 2015 SSMP as required by the WDR every five years.

It is anticipated that the Task Force will be making significant changes to the Port sanitary sewer program over the next two years to address change regulatory requirements related to sewer system maintenance requirements and that a more comprehensive update to the SSMP will be brought to the Board as part of the 2016-17 SSMP Audit by the Task Force.

BACKGROUND

This chapter presents a summary of the Port of Oakland (Port) sanitary sewer system service area, the need for this Sewer System Management Plan (SSMP), a description of the regulatory history of the SSMP, and population estimates for the Port. General information, such as a list of abbreviations and a list of references, is also provided to assist the reader.

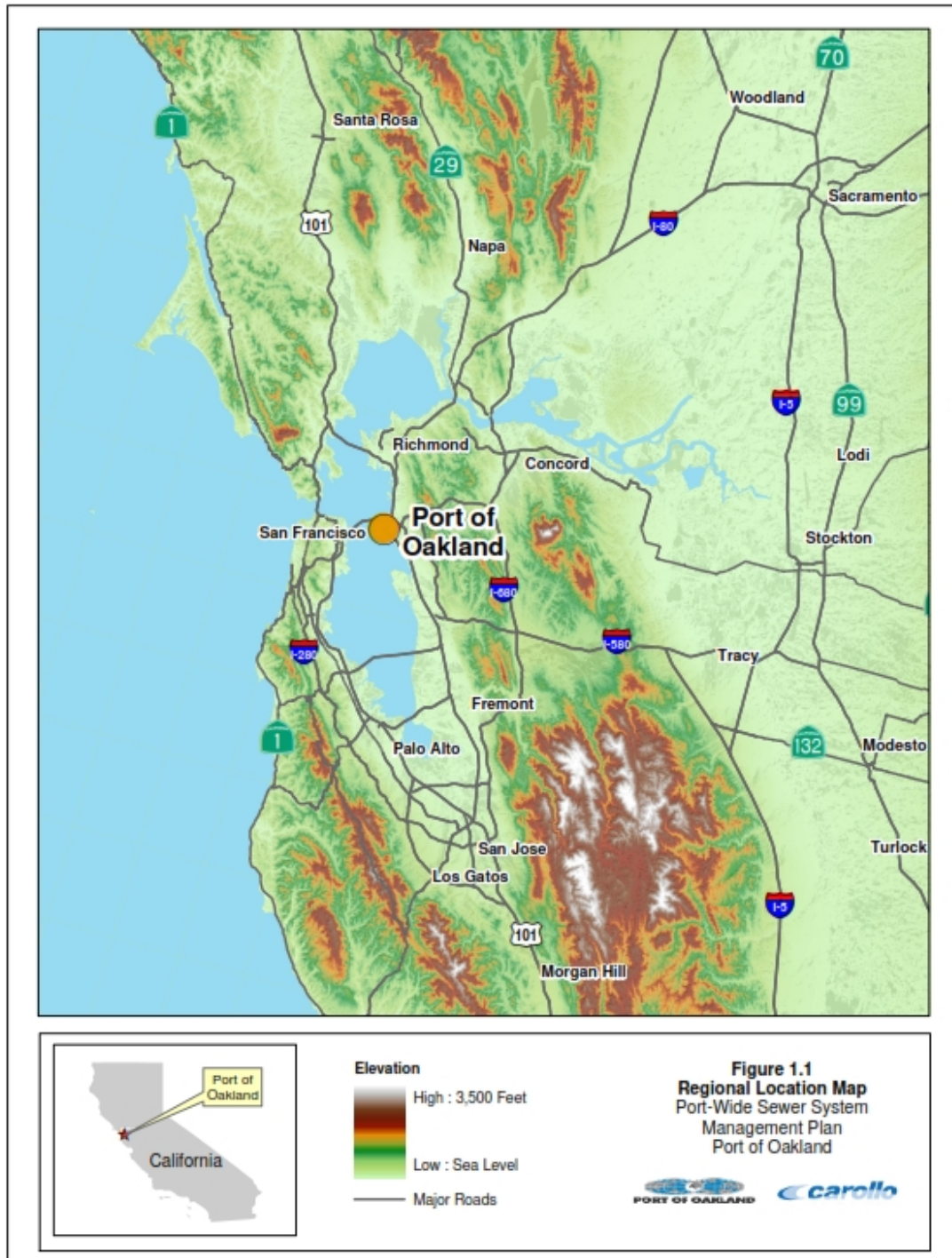
1.1 BACKGROUND

In 1927, the Charter of the City of Oakland (City) established the Port of Oakland as a fully autonomous City department. The Port is located on the eastern mainland shore of San Francisco Bay in the City, as shown on Figure 1.1. Under the City Charter, exclusive control and management of the Port is vested in the Board of Port Commissioners, which is a board consisting of seven members nominated by the Mayor of Oakland and appointed by the Oakland City Council.

The Port is broken down into three major revenue divisions: Maritime, Aviation, and Commercial/Real Estate.

- **Maritime Division.** The Maritime Division is responsible for managing, promoting, developing, and maintaining the seaport facilities on the San Francisco Bay and the Oakland Estuary, which consist of marine container terminals, intermodal rail terminals, and maritime support facilities. The Maritime Division also leases and rents facilities used in warehouse operations and container transport.
- **Aviation Division.** The Aviation Division is responsible for operating, developing, and managing all activities at the Oakland International Airport (OAK), in support of commercial passenger service, air cargo operations, and general aviation. The Aviation Division consists of two main areas: the Southfield and the Northfield.
 - Airport Southfield. The Southfield consists primarily of the Oakland International Airport main terminals, air cargo facilities, as well as other privately operated airport support facilities. The Oakland International Airport consists of two terminals and 29 boarding gates. The airport includes eight domestic airlines, two international airlines, and two major cargo airlines. Food, beverage, retail, and duty free concessions are provided primarily through HMS Host, as well as a few other concessionaires.
 - Airport Northfield. The Northfield consists primarily of fixed base operators (e.g., Landmark Aviation, Kaiser Air, etc.), providing fueling, maintenance, and charter flight services. Rental car services are also located in the Northfield.

Figure 1.1 Regional Location Map



Revision Date: April 23, 2010

Commercial Real Estate (CRE) Division. The Commercial/Real Estate Division is responsible for managing, promoting, developing, and overseeing roughly 837 acres of land along the Oakland Estuary. The centerpiece of the CRE Division is Jack London Square, which consists of several waterfront bars/restaurants, hotels, and other retail establishments. These buildings are leased out by the Port to a master developer, individual tenants, who are responsible for building and facility maintenance through their lease agreements with the Port. The CRE Division also manages properties at the Embarcadero Cove, the Brooklyn Basin, and the Airport Business Park. Port-owned land also includes several parks and open spaces for public use and benefits.

In addition to the three revenue divisions, the Port also has several administrative or support divisions (e.g., Finance, Engineering which includes Environmental Programs and Planning, etc.).

1.1.1 Notice of Intent

The Port submitted a Notice of Intent (NOI) for coverage under State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) on October 20, 2006. Appendix A contains a copy of the GWDRs for reference. Subsequent to the submission of the NOI, the Port was required to begin reporting all overflows, developing an SSMP, and developing a Plan and Schedule.

1.1.2 SSMP Plan and Schedule

On December 4, 2007, the Port's SSMP Plan and Schedule was formally approved and adopted in Resolution No. 07324 by the Board of Port Commissioners. The Plan and Schedule serves as a "road map" in the development of individual elements of the SSMP. Appendix B contains a copy of the Plan and Schedule for reference, and Appendix C contains a copy of Resolution No. 07324.

1.2 SCOPE AND AUTHORIZATION

On May 8, 2009, the Port approved a professional service agreement with Carollo Engineers, P.C. (Carollo) to prepare a Port-Wide SSMP, which included the following main tasks:

- Information gathering and records review;
- Condition assessment, system inspection, evaluation, mapping, and hydraulic modeling;
- SSMP development.

1.3 SANITARY SEWER SERVICE AREA

Figure 1.2 illustrates the Port's current sanitary sewer service area. Wastewater flows generated within the Port service area are conveyed through the Port collection system to the City of Oakland (City) sanitary sewer system or directly to sewer interceptors owned and maintained by the East Bay Municipal Utility District (EBMUD). All Port wastewater flow is treated at EBMUD's Main Wastewater Treatment Plant (MWWTP).

Sanitary sewer facilities in the Port service area can be divided into five main types, as outlined below:

- **Port Owned, Port Maintained.** These facilities are located on Port property, and are owned and maintained by Port operations staff.
- **City Owned, Port Maintained.** These facilities are located within the Port's boundaries, are located within City right-of-way, and are also owned by the City, but are maintained by Port operations staff.
- **Port Owned, Privately Maintained.** These facilities are located on Port property, but are maintained by private non-Port property managers, for example the Jack London Square area.
- **City Owned, City Maintained.** These facilities are located on Port property within City easements, and are owned and maintained by the City. Therefore, the Port is not responsible for maintaining these facilities or for responding to and reporting sanitary sewer overflows (SSOs) within these facilities.
- **Port Owned, Port Maintained, Out of Service.** These facilities are owned by the Port on existing Port property, but are currently out of service. The majority of these facilities are located at the former Oakland Army Base (OAB), and are currently being developed. Most of the sewer laterals or mains in this area are currently plugged and will be properly abandoned when the OAB redevelopment is complete.

1.4 SERVICE POPULATION ESTIMATE

Accurate population estimates for the Port are difficult due to the nature of the service area. Port staff estimated the equivalent average population served at any given time at approximately 7,140 persons. This estimate accounts for the number of airport/maritime employees, number of airport passengers, and the population served by the commercial real estate division of the Port. The number of employees and passengers used for this calculation are included in Table 1.1.

Figure 1.2 Current Sanitary Sewer Service Areas



Table 1.1 Service Population Estimate Port-Wide Sewer System Management Plan Port of Oakland			
	Number of Port Employees and Tenants	Number of Passengers	Number of Equivalent Residents^{(1),(2)}
Oakland International Airport	8,000	10,336,788	6,740
Maritime & CRE	1,000	N/A	400
Total	9,000	10,336,788	7,140
Notes:			
1. The number of equivalent residents = (2/5) * the number of employees.			
2. The number of equivalent residents = number of passengers per year / 365 x Average length of stay (1/8 of a day or 3hrs).			

1.5 REGULATORY BACKGROUND

This section briefly summarizes the history surrounding the development of the SSMP requirements.

1.5.1 National Regulatory Background

Nationally, Sanitary Sewer Overflows (SSOs) have been in the regulatory spotlight since 1995, when the United States Environmental Protection Agency (USEPA) formed the Sanitary Sewer Overflow Federal Advisory Subcommittee (SSO Subcommittee). The purpose of the SSO Subcommittee is to examine the need for national consistency in permitting and enforcement of SSOs.

From 1995 to 1999, the SSO Subcommittee met 12 times to discuss policy issues associated with SSOs. In 1999, the SSO Subcommittee supported basic principles requiring the following:

- Capacity, management, operation, and maintenance (CMOM) programs for municipal sanitary sewer collection systems;
- A prohibition on SSOs, which includes a closely circumscribed framework for raising a defense for unavoidable discharges;
- Reporting, public notification, and record-keeping requirements for municipal sanitary sewer collection systems and SSOs.

The recommendations of the SSO Subcommittee were then incorporated into the proposed “SSO Rule,” which was published in the Federal Register in January 2001. For a variety of reasons, however, the proposed SSO Rule has yet to be formally adopted by the USEPA on a national level.

1.5.2 California Regulatory Background

In 2004, the San Francisco Bay Area Regional Water Quality Control Board (RWQCB) implemented new monitoring and reporting requirements related to SSOs. Subsequently, in 2005, the RWQCB issued a letter requiring the development of an SSMP. The new requirements were in response to a growing emphasis on the reduction of overflows and applied only to agencies within its region.

On May 2, 2006, the California State Water Resources Control Board (SWRCB) adopted the GWDRs, establishing new monitoring and reporting requirements, and SSMP development requirements for all agencies that own or operate a collection system with more than one mile of pipe that discharges to a municipal sewage treatment plant. The GWDRs were subsequently amended on February 20, 2008. The provisions of this amendment are incorporated in this report.

The GWDRs prohibit any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States or that causes a “nuisance,” as defined in California Water Code Section 13050(m). There is no “affirmative defense” for unforeseen or unavoidable SSOs. Instead, the GWDRs include the concept of “enforcement discretion,” and identify seven specific factors that must be considered in an enforcement action, such as the extent to which the discharger has complied with the provisions of the GWDRs. In the event of an SSO, all feasible steps shall be taken to limit the released volume and prevent untreated water from entering storm drains, creeks, etc. SSOs must be reported through a new statewide online reporting system, the California Integrated Water Quality System (CIWQS), which is a computer system used by the SWRCB to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

In 2011 the staff of the SWRCB initiated a comprehensive review of the waste discharge requirements based upon the experience and information collected for the first five years of the program. This resulted in Order WQ 2013-0058-EXEC of the SWRCB Executive Director effective on September 9, 2013, modifying previous Monitoring and Reporting Plans by changing the categories of sanitary sewer overflows, the notification and recordkeeping requirements for SSOs, the requirements regarding the public availability of an approved SSMP, the addition of both a Water Quality Monitoring Plan and a SSO Technical Report for SSOs of greater than 50,000 gallons. The current amendment implements these updates and changes from the 2013 Executive Officer Order.

1.5.3 IMPLEMENTATION SCHEDULE

The GWDRs have established an SSMP implementation schedule based on the size of the agency. As mentioned in Section 1.4, population estimates for the Port are difficult. It is estimated that the Port currently serves a population of roughly 8,700. The Port’s implementation schedule is therefore governed by the schedule established for agencies ranging in size from 2,500 to 10,000 persons. Table 1.2 contains the implementation schedule that must be followed by the Port in the development of this SSMP.

Table 1.2 Sewer System Master Plan Implementation Schedule Port-Wide Sewer System Management Plan Port of Oakland	
Task	Required Certification Date⁽¹⁾
Plan and Schedule	02/01/08
Goals and Organization	05/01/08
Overflow Emergency Response Plan	
Legal Authority	11/01/09
O&M Plan	
FOG Plan	
Design and Performance Standards	
System Capacity Assurance Plan	05/01/10
Final SSMP and Certification	
Note: 1. Required Certification Date based on GWDR Order No. 2006-0003 for Population of 2,500 to 10,000.	

1.6 SSO DEFINITION

An SSO is defined as any overflow, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. There are four categories of SSOs as established by the MRP revisions September 9, 2013:

Category 1: Discharges of untreated or partially treated sewage of any volume resulting from the Enrollee's sanitary sewer system failure or flow condition that:

- a) Reach surface water and/or reach a drainage channel tributary to a surface water; or
- b) Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

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

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

• **Private Lateral Sewage Discharges:** Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets.

As part of the GWDRs, all agencies that own or operate sanitary systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility are required to report and certify all Category 1, Category 2 and Category 3 SSOs in the SWRCB CIWQS system pursuant to appropriate timelines established by the requirements. The reporting of Private Lateral Sewage Discharges (PLSD) is voluntary.

1.7 REPORT ORGANIZATION

This SSMP contains twelve chapters. Appendices are provided to support the information provided in the text. A brief description of the chapters is provided as follows:

Chapter 1 - Background. This chapter presents a summary of the Port's sanitary sewer system service area, the need for the SSMP, a description of the regulatory history of the SSMP, and population estimates for the Port. General information, such as a list of abbreviations and a list of references, is also provided to assist the reader.

Chapter 2 - Goals. This chapter summarizes goals established for the Port's SSMP.

Chapter 3 - Organization. This chapter identifies the responsible Port representative for the implementation of the provisions of this SSMP. It also includes an organizational chart and a chain of communication for reporting SSOs.

Chapter 4 - Legal Authority. This chapter summarizes the Port's authority, through ordinances, services agreements, or other legally binding procedures, to conform to the RWQCB requirements and the GWDRs.

Chapter 5 - Operation and Maintenance Plan. This chapter contains a description of the Port's operations and maintenance plan, including mapping, routine and preventive maintenance, rehabilitation, and training.

Chapter 6 - Design and Performance Provisions. This chapter presents a summary of the relevant design and construction standards, as well as standards for the inspection and testing of new sewers, pumps, and other appurtenances and for rehabilitation projects.

Chapter 7 - Overflow Emergency Response Plan. This chapter describes the overflow emergency response plan, which provides measures to protect the public health and the environment in the event of an overflow.

Chapter 8 - FOG Control Plan. This chapter summarizes the Port's fats, oil, and grease (FOG) control plan, which has been developed to limit the amount of FOG that enters the collection system to the extent feasible.

Chapter 9 - System Evaluation and Capacity Assurance Plan. This chapter provides an evaluation of the Port's sanitary sewer system facilities, identifies and proposes improvements for deficiencies, identifies design criteria, and provides a list of capital improvement projects (CIP) and schedule for improvements.

Chapter 10 - Monitoring, Measurement, and Program Modifications. This chapter presents a summary of the steps to be taken by the Port to evaluate the effectiveness of this SSMP, and perform updates to the document should improvements be necessary or desirable.

Chapter 11 - SSMP Program Audits. This chapter presents a summary of the procedures to be used by the Port to perform internal audits.

Chapter 12 - Communication Program and Final Certification. This chapter presents a summary of the steps to be taken by the Port to communicate with the public on the development, implementation, and performance of the SSMP. This chapter also contains the final certification of this SSMP.

1.8 ABBREVIATIONS AND DEFINITIONS

To conserve space and to improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and subsequently identified by abbreviation only.

ABAG	Association of Bay Area Governments
BMPs	Best Management Practices
Board	Board of Port Commissioners
Carollo	Carollo Engineers, P.C.
CCTV	closed-circuit television
CIP	Capital Improvement Projects
City	City of Oakland
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operation, and Maintenance
CWEA	California Water Environment Association

d/D	Flow Depth to Pipe Diameter Ratio
EBMUD	East Bay Municipal Utility District
FOG	fats, oil, and grease
FSF	Food Service Facilities
GIS	Geographic Information System
GWDRs	State General Waste Discharge Requirements Order No. 2006-0003
I/I	Infiltration and Inflow
MRP	Monitoring Reporting Program
MWWTP	Main Wastewater Treatment Plant
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination Program
O&M	Operations and Maintenance
ODBC	Open Database Connectivity
OERP	Overflow Emergency Response Plan
OES	State Office of Emergency Services
PDF	Portable Document Format
PLAP	Pooled Liability Assurance Plan
PM	Preventive Maintenance
Port	Port of Oakland
RWQCB	San Francisco Bay Area Regional Water Quality Control Board
SECAP	System Evaluation and Capacity Assurance Plan
SOP	Standard Operating Procedures
SSMP	Sewer System Management Plan
SSO Subcommittee	Sanitary Sewer Overflow Federal Advisory Subcommittee
SSOs	Sanitary Sewer Overflows
SWRCB	California State Water Resources Control Board

TM Technical Memorandum

USEPA United States Environmental Protection Agency

1.9 REFERENCE MATERIAL

The following documents were referenced in the preparation of this SSMP:

- City of Oakland, Public Works Agency Standards - Draft Sanitary Sewer Design Guidelines, November 2004.
- City of Oakland, Sanitary Sewer Management Plan, August 2008.
- EBMUD, Ordinance No. 311A-03, Adopted July 2003.
- EBMUD, Sewer System Management Plan, August 2008.
- City of Oakland Sanitary Sewer Drawings.
- City of Oakland AutoCAD and Record Drawings.

This chapter summarizes goals established for the Port of Oakland (Port) Sewer System Management Plan (SSMP).

2.1 REGULATORY REQUIREMENTS

2.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify the following with respect to the goals element of the SSMP:

“The purpose of this 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.”

2.2 SSMP OBJECTIVE

The main Port objective for the SSMP is to effectively manage, operate, and maintain its sanitary sewer system to provide the world-class infrastructure facilities and services to its airport, seaport, and commercial real estate tenants and customers. This objective conforms to Port-Wide Strategic Goal Numbers 1, 2, and 3, which are listed below as a reference:

1. Consider our customers and stakeholders first in all that we do by providing services, infrastructure, and support that help them fulfill their goals;
2. Develop and maintain relationships of trust and integrity with our community, customers, public agencies, and other stakeholders to maximize the benefits to the region; and
3. Improve the environmental conditions and stewardship at the Port.

2.3 PORT SSMP GOALS

In order to achieve the main SSMP objective (see Section 2.2), the Port is committed to the following goals relative to the sanitary sewer system:

1. Provide adequate capacity in the sanitary sewer system to convey base and peak flows and reduce infiltration and inflow (I/I) into the system;
2. Perform routine preventive maintenance (e.g. condition assessment using video camera, cleaning, etc.) on all facilities of the sewer collection system, including pump stations, triturator, other equipment, and sewer appurtenances, to reduce future risk of SSOs;
3. Minimize and reduce the frequency of SSOs to the extent possible;
4. Limit the impacts of SSOs to a minimum by utilizing safe and effective methods and proven technology;

5. Prevent public health hazards and damages to public and private properties caused by SSOs;
6. Identify collection system blockages due to fats, oil, and grease (FOG) and develop strategies to decrease backups; and
7. Develop capital improvement projects (CIP) to maintain the existing sewer infrastructure facilities, to improve system reliability, and to provide adequate capacity to accommodate future flows.

ORGANIZATION

This chapter identifies the responsible Port of Oakland (Port) representative for the implementation of this Sewer System Management Plan (SSMP). It also includes an organizational chart and a chain of communication for reporting sanitary sewer overflows (SSOs).

3.1 REGULATORY REQUIREMENTS

3.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specifies that the SSMP must identify the following:

- a) The name of the responsible or authorized representative for the implementation of the SSMP;
- b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures of the SSMP program. The SSMP must identify lines of authority through an organizational chart or similar document with a narrative explanation; and
- c) The chain of communication for reporting SSOs, from receipt of a complaint and 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 Quality Control Board, and/or State Office of Emergency Services [OES]).

3.2 AUTHORIZED REPRESENTATIVE

The Port Executive Director has designated the follow position classifications to serve as the Legally Responsible Officials (“LRO”) (i.e. authorized representatives) for the implementation and certification of all provisions set forth in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems and this SSMP:

Airport Facilities Maintenance Manager

Harbor Facilities Maintenance Manager

Commercial/Real Estate Manager

Director of Environmental Programs and Planning

Environmental Health & Safety Specialist

Water Systems Engineer

These LROs are authorized to submit and certify electronic spill reports and all other reports required in compliance with the WDR and MRP and any local regulations placed on the Port sewer system by local regulatory agencies. They are also authorized to submit all other required reports to other applicable agencies as required or directed by those agencies. The LROs are also authorized to appoint Data Submitters (Data Entry Designee) for purposes of data entry into the State CIWQS System and for contact with the California Office of Emergency Services.

3.3 ORGANIZATIONAL HIERARCHY

Figure 3.1 shows the lines of authority of Port officials and employees that will be responsible for implementing and participating in specific measures of the SSMP. In order to make the update of this document more user friendly, the lines of authority in Figure 3.1 reference job titles only. Appendix D provides the names and contact information for the individuals referenced in the organizational chart, which is subject to ongoing change as personnel changes in the years followed.

3.3.1 SSMP Roles and Responsibilities

This section summarizes the roles and responsibilities of each of the positions identified in Figure 3.1 as applicable to this SSMP.

3.3.1.1 Board of Port Commissioners

The Board of Port Commissioners (Board) is vested with exclusive control and management of the Port. The Board consists of seven members nominated by the Mayor of the City of Oakland (City) and appointed by the City Council for four-year terms. The Board is responsible for the overall approval of the SSMP, as well as the approval of funding expenditures related to the SSMP program elements, including ongoing operations and maintenance costs.

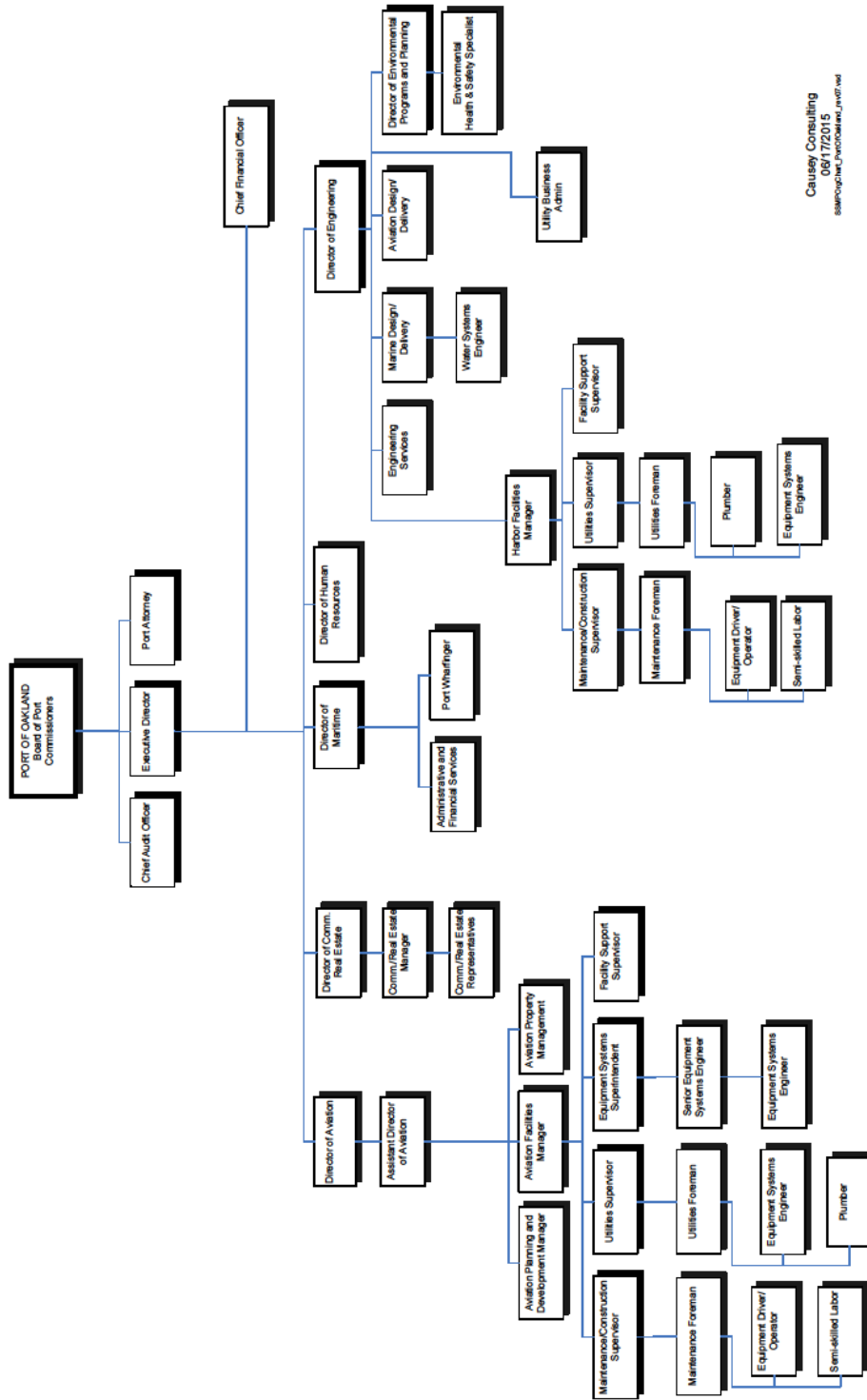
3.3.1.2 Executive Positions

The executive office oversees the overall operation and budgeting of the Port. For this reason, the roles and responsibilities of these positions as relevant to the SSMP are relatively few, as described below:

- **Executive Director.** The Executive Director is responsible for the administration and operations of the Port and is the agency official designated to appoint Legally Responsible Officials (LRO's) who are responsible for reporting and certifying Port sanitary sewer overflows to the State Water Resources Control Board (SWRCB).
- **Chief Audit Officer.** The Chief Audit Officer is responsible for all internal audits of the Port organization.

- **Port Attorney.** The Port Attorney is responsible for verifying that the Port, through service agreements, ordinances, or other legally binding provisions, has the authority to implement the programs and activities documented or recommended in this plan.
- **Chief Financial Officer.** The chief financial officer is responsible for all financial services and operations of the Port.

Figure 3.1 SSMP Organizational Chart



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3.3.1.3 Aviation Division

The Aviation Division is responsible for the operation and maintenance of the Oakland International Airport and associated facilities. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Aviation.** The Director of Aviation is responsible for the operation, management, and marketing of the Aviation Division.
- **Aviation Facilities Maintenance Manager.** The Aviation Facilities Manager is responsible for overseeing the operation and maintenance of the Aviation Division infrastructure facilities, including the sanitary sewer system. As relevant to the SSMP, the Aviation Facilities Manager oversees the budgeting process for the aviation sewer system operation and maintenance (O&M) expenditures, supervises lower level aviation facilities maintenance positions, and is responsible for ensuring that SSOs are appropriately responded to. The Aviation Facilities Maintenance Manager also serves as a Port LRO, as discussed in Section 3.2.
- **Aviation Planning and Development Manager.** The Aviation Planning and Development Manager is responsible for coordinating capital improvement expenditures related to the airport sanitary sewer system.
- **Maintenance/Construction Supervisor.** As related to the SSMP, the Maintenance/Construction Supervisor is responsible for coordinating the maintenance of the gravity sewer collection system and for coordinating the response to SSOs within the gravity collection system. He also oversees the in-house repair, replacement, or construction of sanitary sewer mains.
- **Utilities Supervisor.** Related to the SSMP, the Utilities Supervisor is responsible for the O&M of sewer lift stations in the Northfield area of the aviation sewer system. He is also responsible for responding to SSOs caused by sewer lift station failure in the Northfield area.
- **Equipment Systems Superintendent.** The Equipment Systems Superintendent is responsible for the O&M of sewer lift stations, ejectors, and triturator in the Southfield area (terminal area) of the aviation sewer system. He is also responsible for coordinating the response to SSOs that occur due to failure of these facilities.
- **Facility Support Supervisor.** The Facilities Support Supervisor is responsible for coordinating O&M and emergency response activities within the Port's computerized maintenance management system (CMMS).
- **Maintenance Foreman.** Under the direction of the Maintenance/Construction Supervisor, the Maintenance Foreman is responsible for the maintenance of the gravity sewer collection system and for responding to SSOs within the gravity collection system. He is also responsible for, under the direction of the Maintenance/Construction Supervisor, in-house repair, replacement, or construction of sanitary sewer mains.

- **Utilities Foreman.** Under the direction of the Utilities Supervisor, the Utilities Foreman is responsible for the O&M of sewer lift stations in the Northfield area of the aviation sewer system. He is also responsible for responding to SSOs caused by the failure of sewer lift stations in the Northfield area.
- **Equipment Systems Engineer/Senior Equipment Systems Engineer.** Under the direction of the Equipment Systems Superintendent, The Equipment Systems Engineer is responsible for the O&M of sewer lift stations, ejectors, and triturator in the Southfield area (terminal area) of the aviation sewer system. He is also responsible for responding to SSOs that occur due to the failure of these facilities.
- **Equipment Driver/Operator.** Under the direction of the Maintenance Foreman, the Equipment Driver/Operator is responsible for operating Port construction equipment as used for sewer repair, rehabilitation, construction, or emergency response activities.
- **Semi-Skilled Labor.** Under the direction of the Maintenance Foreman, the Semi-Skilled Laborer is responsible for completing various construction activities associated with sewer repair, rehabilitation, construction, or emergency response activities.
- **Plumber.** The Plumber is responsible for clearing sewer line blockages located within buildings or in the airport terminal.

3.3.1.4 Maritime Division

The Maritime Division is responsible for the operation and maintenance of the Oakland Seaport and associated facilities. They are also responsible for sewer construction projects located within commercial real estate areas of the Port. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Maritime.** The Director of Maritime is responsible for the operation, management, and marketing of the Maritime Division.
- **Administrative/Financial Services Manager.** The Administrative/Financial Services Manager is responsible for coordinating capital improvement expenditures related to the maritime sanitary sewer system.
- **Port Chief Wharfinger and Wharfingers.** The Wharfingers serve as the liaison between the harbor tenants and the Port Maritime Division and is responsible for notifying Port staff in the event of an SSO.

3.3.1.5 Commercial/Real Estate Division

The Commercial/Real Estate Division manages much of the Port's public access areas, including the Waterfront Gateway in Jack London Square. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Commercial/Real Estate.** The Director of Commercial/Real Estate is responsible for overseeing leasing in the Port and managing the Port's public access areas.

- **Commercial/Real Estate Manager.** The Commercial/Real Estate Manager is responsible for the direct communications and coordination of the tenant/lease hold responsibilities for the Port sanitary sewer system in and around the commercial real estate areas of the Port. The Commercial/Real Estate Manager also serves as a Port LRO, as discussed in Section 3.2.
- **Commercial/Real Estate Representatives.** The Commercial/Real Estate Representative serves as the liaison between commercial/real estate tenants (primarily in Jack London Square) and harbor facilities.

3.3.1.6 Engineering Division

The Engineering Division is responsible for professional engineering design, construction, dredging, and land surveying functions for the Port. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Engineering/Chief Engineer.** The Director of Engineering/Chief Engineer is responsible for overseeing the operation and management of the Engineering Division.
- **Utilities Administration Manager.** The Utilities Administration Manager manages all aspects of utility services as well as the Port's utility business, including the buying and selling of electricity, water, and gas; provides master planning on the Port's utility systems; and supports infrastructure developments.
- **Water Systems Engineer.** The Water Systems Engineer is responsible for the design of new or rehabilitated sewer facilities and for reviewing engineering submittals from outside consultants as relevant to the sewer system. The Water Systems Engineer also serves as a Port LRO, as discussed in Section 3.2.
- **Aviation/Maritime Design & Delivery and Engineering Services.** The Aviation/Maritime Design & Delivery Department and Engineering Services Department are responsible for coordinating the design and providing support services for aviation, maritime, roadwork, or other facilities projects.

3.3.1.6.1 Environmental Programs and Planning Section

The Environmental Programs and Planning Division is responsible for regulatory compliance and environmental protection. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Environmental Programs and Planning.** The Director of Environmental Programs and Planning is responsible for overseeing the operation and management of the Environmental Programs and Planning Division. The Director of Environmental Programs and Planning also serves as an Port LRO, as discussed in Section 3.2.
- **Environmental Compliance Supervisor.** The Environmental Compliance Supervisor is responsible for coordinating the cleanup and mitigation of SSOs and for reporting SSOs to

the appropriate regulatory agencies. He is also designated as an alternative LRO and normally serves as the “data entry designee” on CIWQS.

- **Environmental Health and Safety Specialist.** The **Environmental Health and Safety Specialist** performs the duties of the Environmental Compliance Supervisor in the event that he is unavailable. This position reports to the Environmental Compliance Supervisor. The **Environmental Health and Safety Specialist** also serves as an LRO, as discussed in Section 3.2.

3.3.1.6.2 Harbor Facilities Section

- **Harbor Facilities Maintenance Manager.** The Harbor Facilities Manager is responsible for overseeing the operation and maintenance of the Maritime Division infrastructure facilities, including the sanitary sewer system. As relevant to the SSMP, the Harbor Facilities Manager oversees the budgeting process for the maritime sewer system O&M expenditures, supervises lower level harbor facilities maintenance positions, and is responsible for ensuring that SSOs are appropriately responded to. The Harbor Facilities Maintenance Manager also serves as the Port LRO, as discussed in Section 3.2.
- **Maintenance/Construction Supervisor.** As related to the SSMP, the Maintenance/Construction Supervisor is responsible for coordinating the maintenance of the maritime gravity sewer collection system and for coordinating the response to SSOs within the gravity collection system.
- **Utilities Supervisor.** Related to the SSMP, the Utilities Supervisor is responsible for the O&M of sewer lift stations in the maritime sewer system. He is also responsible for responding to SSOs caused by a failure of a maritime sewer lift station.
- **Facilities Support Supervisor.** The Facilities Support Supervisor is responsible for coordinating O&M and emergency response activities within the Port’s CMMS.
- **Maintenance Foreman.** Under the direction of the Maintenance/Construction Supervisor, the Maintenance Foreman is responsible for the maintenance of the maritime gravity sewer collection system and for responding to SSOs within the gravity collection system.
- **Utilities Foreman.** Under the direction of the Utilities Supervisor, the Utilities Foreman is responsible for the O&M of maritime sewer lift stations. He is also responsible for responding to SSOs caused by a failure of a maritime sewer lift station.
- **Equipment Driver/Operator.** Under the direction of the Maintenance Foreman, the Equipment Driver/Operator is responsible for operating Port construction equipment as used for sewer repair, rehabilitation, construction, or emergency response activities.
- **Semi-Skilled Labor.** Under the direction of the Maintenance Foreman, the Semi-Skilled Laborer is responsible for completing various construction activities associated with sewer repair, rehabilitation, construction, or emergency response activities.

- **Plumber.** The Plumber is responsible for clearing sewer line blockages located within maritime buildings.

3.3.1.7 Human Resources Division

The Human Resources Division is responsible for the administrative functions of the Port, including human resources, management information services, training, organizational development, and workers' compensation. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Director of Human Resources.** The Director of Human Resources oversees the Human Resources Division.

3.3.1.8 Financial Services Division

The Financial Services Division is responsible for providing centralized accounting services, financial planning, purchasing, risk management, information technology to all divisions of the Port. The roles and responsibilities of specific positions as relevant to the SSMP are described below:

- **Chief Financial Officer.** The CFO oversees the Financial Services Division.

3.4 CHAIN OF COMMUNICATION FOR REPORTING SSOs

The Port's Overflow Emergency Response Plan (OERP) contains the procedures that should be utilized by Port staff to notify primary response crews and the appropriate regulatory agencies. This section contains a brief summary of the chain of communication for reporting SSOs. For more information related to the Port OERP, refer to Chapter 7 of this report.

The chain of communication varies depending on the location and severity of the SSO and Figure 3.2 presents a flow chart showing how individuals are notified.

Figure 3.2 SSO Reporting Requirements Flow Chart
(Page 1 of 3)

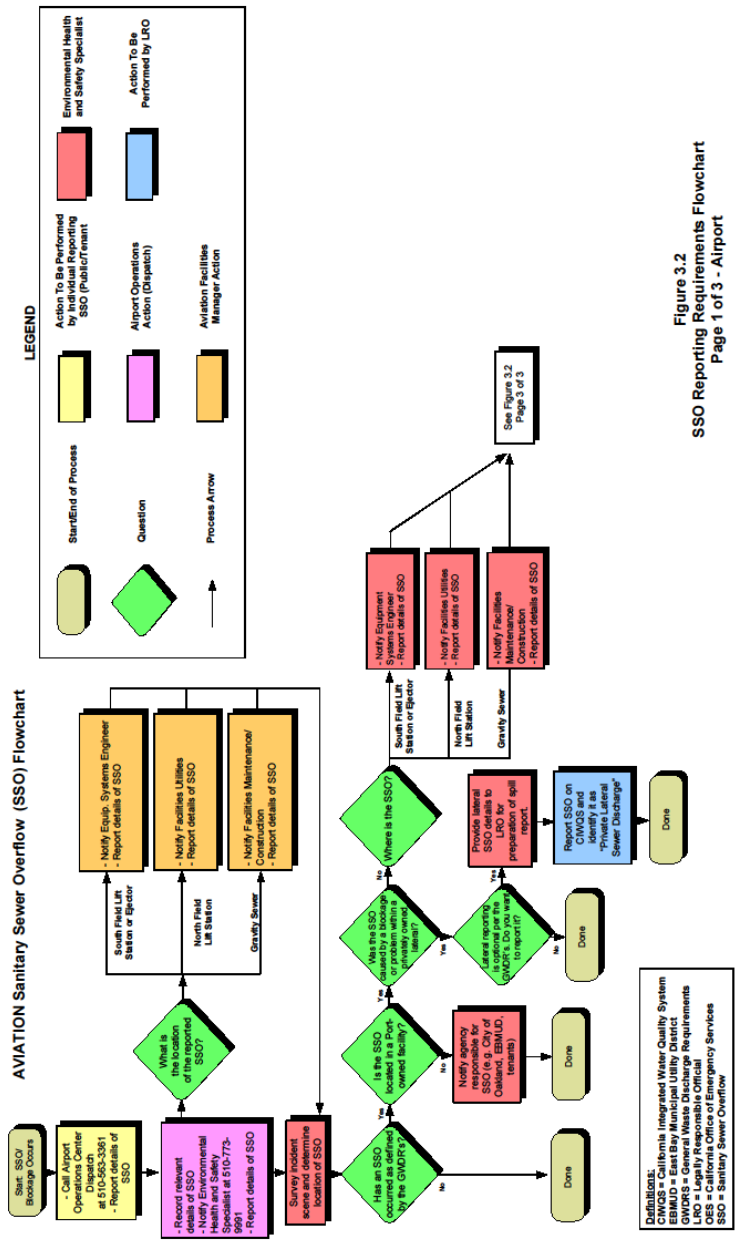


Figure 3.2
SSO Reporting Requirements Flowchart
Page 1 of 3 - Airport

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Figure 3.2 (Page 2 of 3)

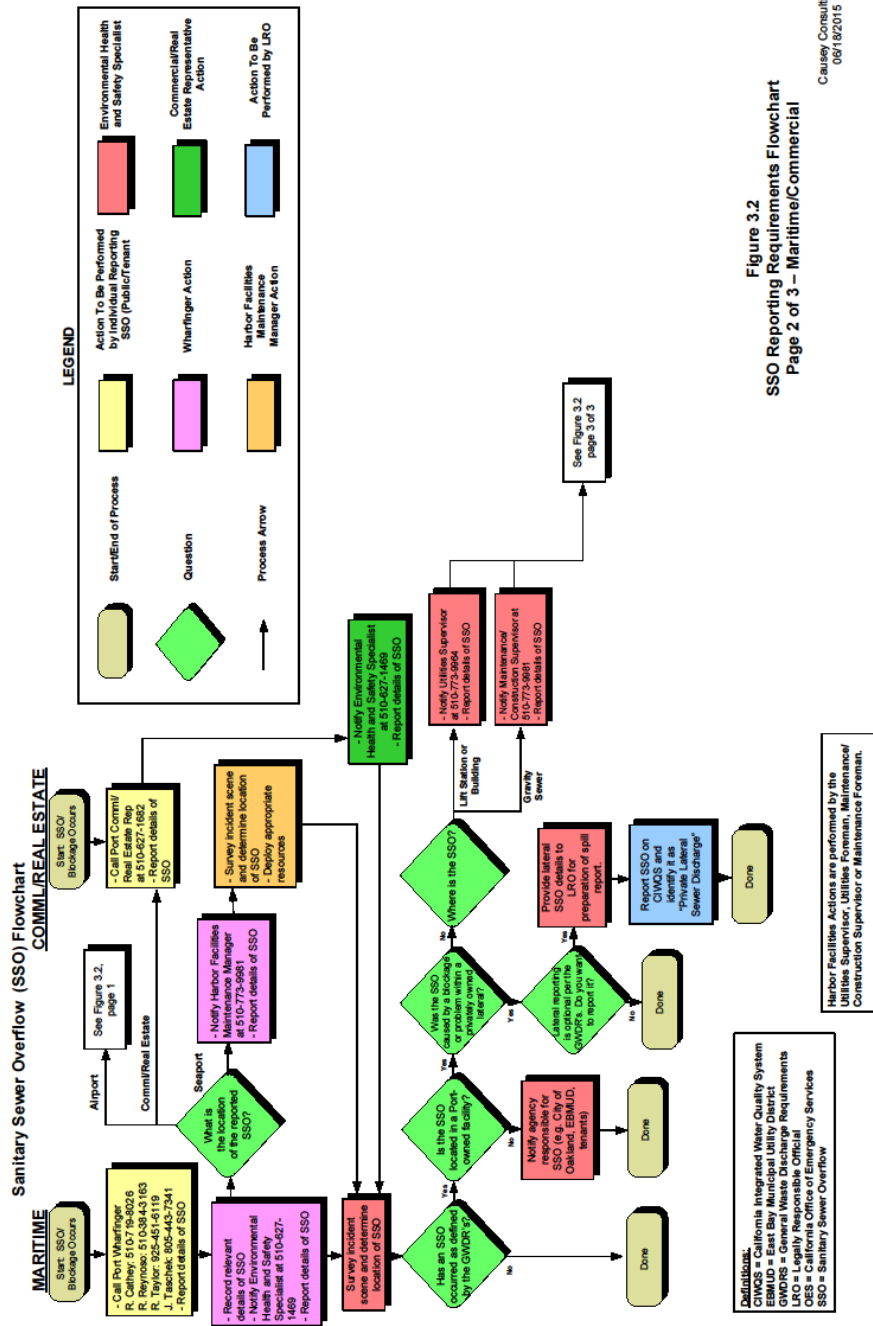


Figure 3.2
SSO Reporting Requirements Flowchart
Page 2 of 3 – Maritime/Commercial

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Figure 3.2 (Page 3 of 3)

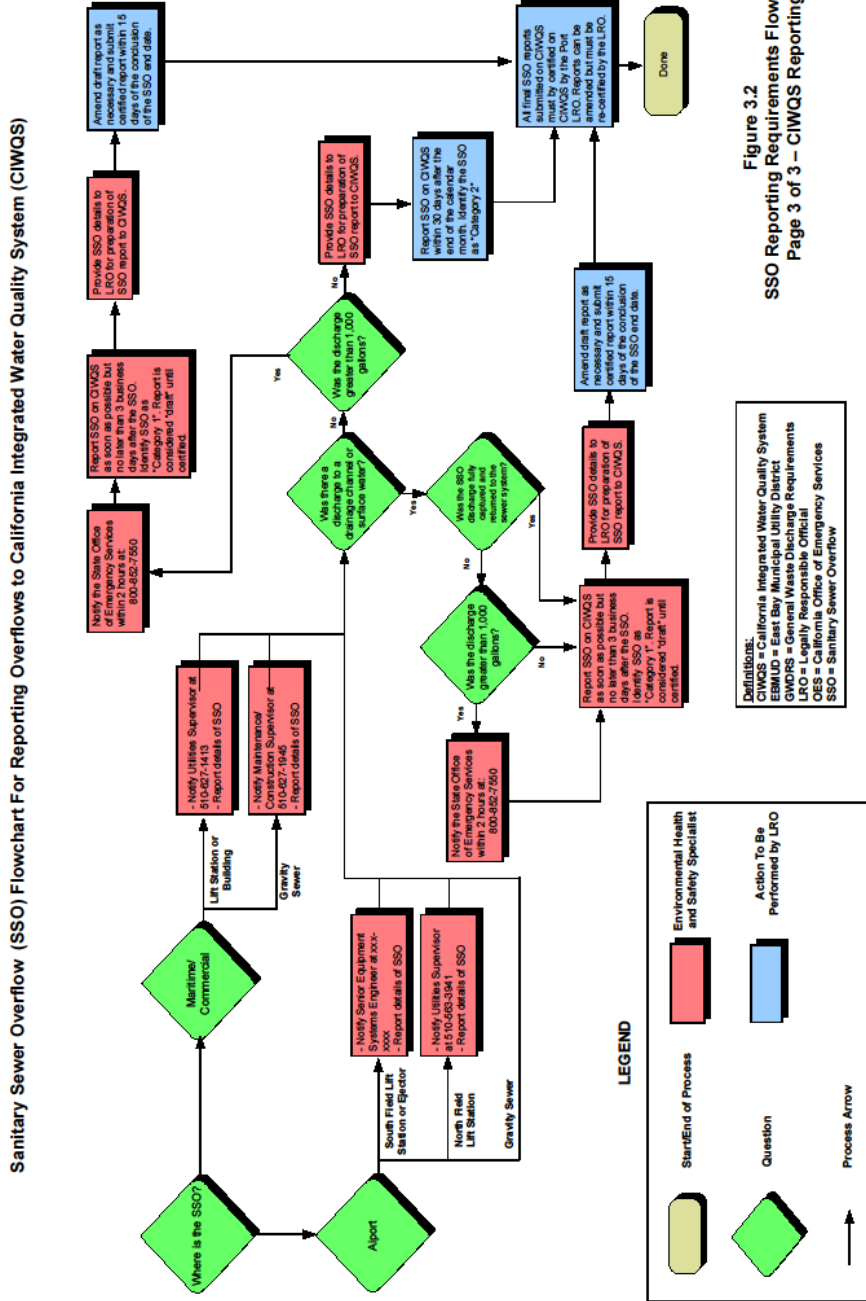


Figure 3.2
SSO Reporting Requirements Flowchart
Page 3 of 3 – CIWQS Reporting

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05/24/2015

Table 3.1 Regulatory Agency Notification Port of Oakland SSMP			
Agency	Contact Information	Action	Criteria Requires LRO certification
State Office of Emergency Services	Phone: 800-852-7550	Within 2 hours of becoming aware of SSO obtain notification control number	Discharge > 1000 gallons to Waters or where probably will reach Waters
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Draft report - 3 days Certify w/in 15 days	Categories 1 and 2 SSOs
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Submit certified report w/in 30 calendar days after end of month in which SSO occurred	Category 3 SSO
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Submit certified Technical Report	SSO equal/greater than 50,000 gallons
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Water Quality Sampling	Initiated within 48 hours after initial OES notification
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	"No Spill Certification"	Within 30 days following end of month when no spills occur
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Annual Collection System Questionnaire	LRO Certified Every 12 months
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Private Sewer Lateral Discharges (PLSD) - Final SSO Report in CIWQS within 30 days after end of month	Reporting is voluntary

LEGAL AUTHORITY

This chapter summarizes the Port of Oakland's (Port's) authority, through ordinances, services agreements, or other legally binding procedures, to conform to the RWQCB requirements and the GWDRs.

4.1 REGULATORY REQUIREMENTS

4.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify the following with respect to Legal Authority:

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

4.2 PORT SEWER USE ORDINANCES

Prior to developing the SSMP, the Board of Port Commissioners, which has been vested exclusive control and management of the Port through the Charter of the City of Oakland (City), had not developed or enacted ordinances related to the sanitary sewer system.

In order to strengthen the Port's ability to regulate the type of wastewater discharged into the Port sewer system and to require that sewers and connections be properly designed and constructed, a Port specific sewer use ordinance (Port Ordinance 4113) was developed and adopted by the Board. This ordinance, which is included in Appendix E for reference, will help the Port to comply with the GWDRs and the requirements of the RWQCB. Because the Port discharges into both the City and East Bay Municipal Utility District (EBMUD) sewer systems, an effort was made to provide consistency with the Port's, the City's, and EBMUD's sewer use ordinances.

The Port sewer use ordinance is not meant to supersede the existing EBMUD or City ordinances. Rather, it is meant to provide an additional measure of legal authority to the Port in the implementation of specific measures outlined in this report. This section summarizes the provisions of the ordinances as applicable to the GWDRs.

4.2.1 Illicit Discharges

Section 5 of Port Ordinance 4113 (Appendix E) provides limitations of the types of substances that may be discharged into the Port's sewer system. This generally includes wastewater discharges that result in contamination, pollution, or a nuisance.

4.2.2 Design and Construction Requirements

Port Ordinance 4113 (Appendix E) establishes the authority of the Port to develop and enforce standards for design, construction, inspection, and testing of new or rehabilitated sanitary sewers within the Port's jurisdiction. Pursuant to the proposed ordinance, a formal set of Port specific design standards have been developed as part of the SSMP development process. Chapter 6 describes the design standards in greater detail.

4.2.3 Maintenance, Inspection, and Repair Access

Section 6 of Port Ordinance 4113 (Appendix E) grants the authority of Port staff, under the direction of the Executive Director or his designated representative, to secure access to any buildings, structures, or premises under Port jurisdiction to inspect, repair, or maintain sanitary sewer facilities.

4.2.4 Limitations on Fats, Oils, and Grease and Other Debris

Section 5, Part F of Port Ordinance 4113 prohibits the discharge of any substance with a constituent concentration that exceeds the numerical limits established in the EBMUD Wastewater Control Ordinance or the City Municipal Code, whichever is more stringent. As noted in Section 4.3.4 and Section 4.4.4, both the City and EBMUD have established a numerical limit of 100 mg/L for FOG.

4.2.5 Policies for Enforcing Violations

The Charter of the Port of Oakland specifically limits the Port's ability to prescribe fines, forfeitures, and penalties for violations of Port ordinances to a maximum fine of five hundred dollars (\$500) and/or a maximum imprisonment of six months. Pursuant to this requirement, any person who violates the provisions of Port Ordinance 4113 is subject to a fine not exceeding five hundred dollars (\$500), or by imprisonment in the prison of the City of Oakland for not more than six (6) months, or both. Each day the violation occurs constitutes a separate violation.

4.3 CITY OF OAKLAND SEWER USE ORDINANCES

Chapter 13 of the City's Municipal Code provides legal authority for the City sewer system. A copy of Chapter 13 of the City's municipal code is included in Appendix F for reference¹. Because the Port maintains connections to the City sewer system, it is important that the Port sewer use ordinances are generally consistent with the City ordinances. For this reason, the applicable sections of the City Municipal Code are summarized briefly in this section.

4.3.1 Illicit Discharges

The following sections of the City Municipal Code (Appendix F) contain provisions to limit or prohibit the discharge of illicit substances into the sanitary sewer system:

- 13.08.130 - Use of public sanitary sewers
- 13.08.140 - Prohibited use of public sanitary sewers and any private sanitary sewer or building sewer discharging, directly or indirectly, into said public sanitary sewers
- 13.08.150 - Prohibited uses generally--Wastewater
- 13.08.160 - Additional prohibited uses--Waters and wastes
- 13.08.170 Additional prohibited uses--Excessive volume
- 13.08.180 Additional prohibited uses--Radioactive wastes

4.3.2 Design and Construction Requirements

Section 13.02.030 of the City Municipal Code grants the authority to the City's engineer to develop and enforce standards for the design and construction of the sewer system. It also stipulates that these standards may be updated from time to time at the discretion of the City's engineer.

4.3.3 Maintenance, Inspection, and Repair Access

Section 13.08.220 and Section 13.08.230 of the City Municipal Code grants the right of entry to City personnel for "dangerous or insanitary conditions" or for rehabilitation or replacement of sewers as part of the City's infiltration and inflow (I/I) corrective program.

4.3.4 Limitations on Fats, Oils, and Grease and Other Debris

Part D of Section 13.08.160 of the City Municipal Code limits the discharge of "any water or waste, which contains excessive amounts of grease, oil, or fats..."

In addition, Part D of Section 13.08.170 limits the discharge of "oils and greases of animal, vegetable, or mineral origin floating, dispersed, or emulsified in excess of 100 milligrams per liter (mg/L) or in any amount as to adversely affect any part of the sewer system."

¹ Full text available at <http://www.municode.com/resources/gateway.asp?pid=16308&sid=5>

4.4 EBMUD SEWER USE ORDINANCES

EBMUD Ordinance No. 311A-03, known as the “Wastewater Control Ordinance” provides specific limitations on the use of the EBMUD sewer system, which consists primarily of large diameter interceptor sewers, and the so-called “community sewers” (Sewers owned and operated by public agencies within the EBMUD boundary which are connected to an EBMUD interceptor). Appendix G contains a full copy of the ordinance.

4.4.1 Illicit Discharges

Title II of EBMUD Ordinance No. 311A-03 (Appendix G) regulates the type of discharges allowed in community sewers, and includes general discharge prohibitions and specific discharge prohibitions.

4.4.2 Design and Construction Requirements

EBMUD owns and operates primarily large diameter interceptor sewers. No direct connections between private laterals and the interceptor system are allowed. Because of this, design and construction requirements are only required for the interceptor system and to the connection points of the community sewer systems to the EMBUD interceptors.

Title I, Section 4 of EBMUD Ordinance No. 311A-03 specifies, in part, the following:

“[EBMUD] will not permit direct connections of or accept direct contributions of wastewater from sewers other than community sewers...The connecting of community sewers will be performed by the public agency at its expense in accordance with [EBMUD] requirements and subject to approval and inspection by [EBMUD].”

4.4.3 Maintenance, Inspection, and Repair Access

Title V, Section 2.I specifies, in part, the following:

“The Director [of EBMUD] may require any non-residential discharger to construct, at his own expense, a sampling facility or inspection manhole together with necessary related measuring and sampling equipment... The sampling facility or inspection manhole shall be constructed on the [lateral] of the discharger and within the public right of way at a location approved by the District and the public agency owning the community sewer; provided that the Director may permit the installation of such facilities on the premises of the discharger at a location which will permit District access to the facility at all times...”

4.4.4 Limitations on Fats, Oils, and Grease and Other Debris

Title II, Section 2.b, Section 3, and Section 5 of EBMUD Ordinance No. 311A-03 provide limitations on the discharge of FOG to the community sewer systems. General discharge prohibitions that may, under certain circumstances, be applied to FOG are established in Title II, Section 2.b of EBMUD Ordinance No. 311A-03. More specific discharge limits for FOG are established in the EBMUD pretreatment program per Title II, Section 5 of EBMUD Ordinance No. 311A-03. In

addition, an allowable discharge limit for FOG of 100 mg/L has been set in Title II, Section 3 of EBMUD Ordinance No. 311A-03.

OPERATION AND MAINTENANCE PROGRAM

This chapter contains a description of the Port of Oakland's (Port's) operations and maintenance program, including mapping, routine and preventive maintenance, rehabilitation, and training.

5.1 REGULATORY REQUIREMENTS

5.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify that the Port's Sewer System Management Plan (SSMP) must include the following elements as appropriate to the system:

- a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;
- b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The preventive maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;
- c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at a risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should have 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 parts.

5.2 COLLECTION SYSTEM MAP

As part of the development of the Port-wide SSMP, a comprehensive Port-wide map was created, which identifies the Port's sanitary sewer collection system facilities, including gravity mains,

manholes, force mains, lift stations, sewer ejectors, grease traps/interceptors, and the triturator. The map is provided in an AutoCAD format accompanied by an Open Database Connectivity (ODBC)-compliant database, which contains important physical characteristics of the collection system (e.g., pipe size, length, material, slope, manhole rim/invert, etc.). The collection system map should be updated regularly or whenever changes to the collection system are made. The mapping includes a “revision date” indicating the date on which the map was most recently modified.

Figure 5.1 provides an overview of the collection system map, indicating pipeline diameters and alignments. A DVD containing detailed plat maps of the Port’s collection system in an electronic format is also provided in Appendix H of this report. It is anticipated that the Port will develop a standard procedure and process for updating sewer system maps on a routine basis as part of the 2016 SSMP Audit process.

5.2.1 Collection System Description

The Port’s sanitary sewer collection system consists of approximately 39 miles of active gravity sewers pipelines ranging in size from 3-inches to 36-inches in diameter, approximately four miles of active force mains ranging in size from 2-inches to 16-inches in diameter, 25 sewer lift stations, two (2) sewer ejectors, a triturator, several grease traps/interceptors, and several oil/water separators. The pipeline mileage contained herein is an estimate only and needs to be verified through field measurements. The implementation task force will undertake the field verification as a first priority effort upon approval of this 2015 SSMP.

The collection system is divided into three main subsystems: Aviation, Maritime, and Commercial/Real Estate. This section provides a brief overview of these three subsystems and Table 5.1 provides a summary of the sanitary sewer facilities in each subsystem.

Figure 5.1 Sanitary Sewer Collection System Map (Page 2 of 5)

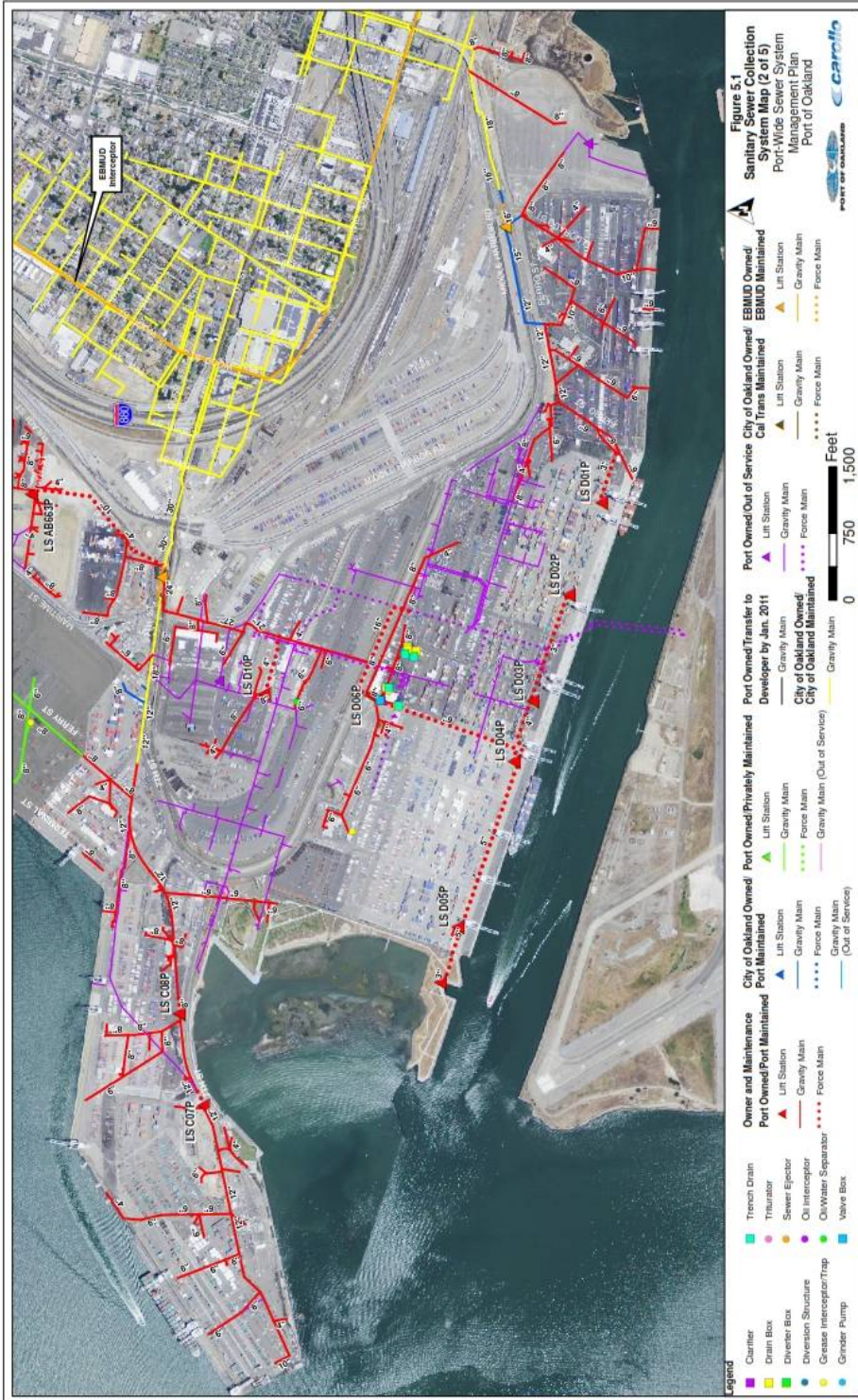


Figure 5.1 Sanitary Sewer Collection System Map (Page 3 of 5)

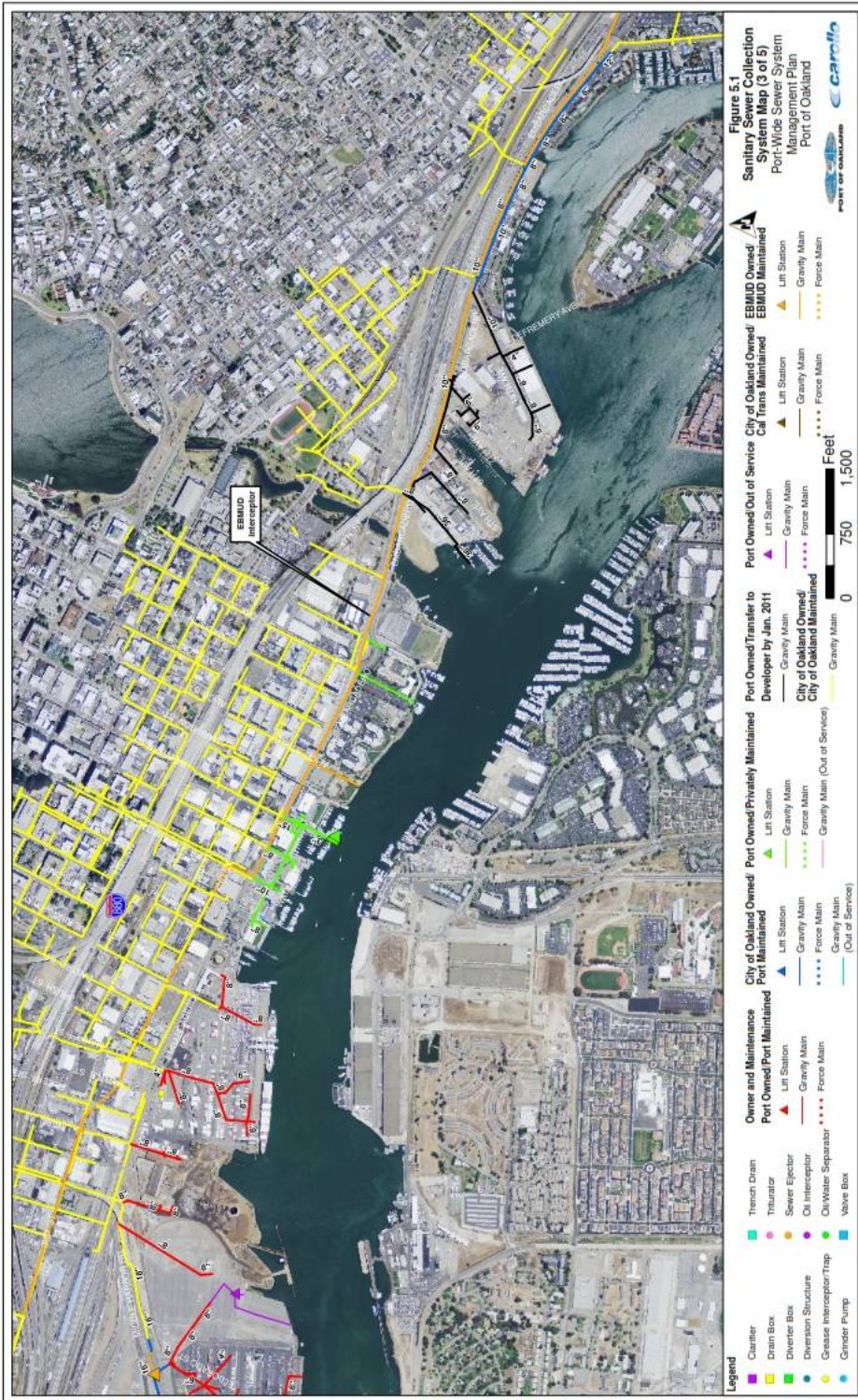


Figure 5.1 Sanitary Sewer Collection System Map (Page 4 of 5)

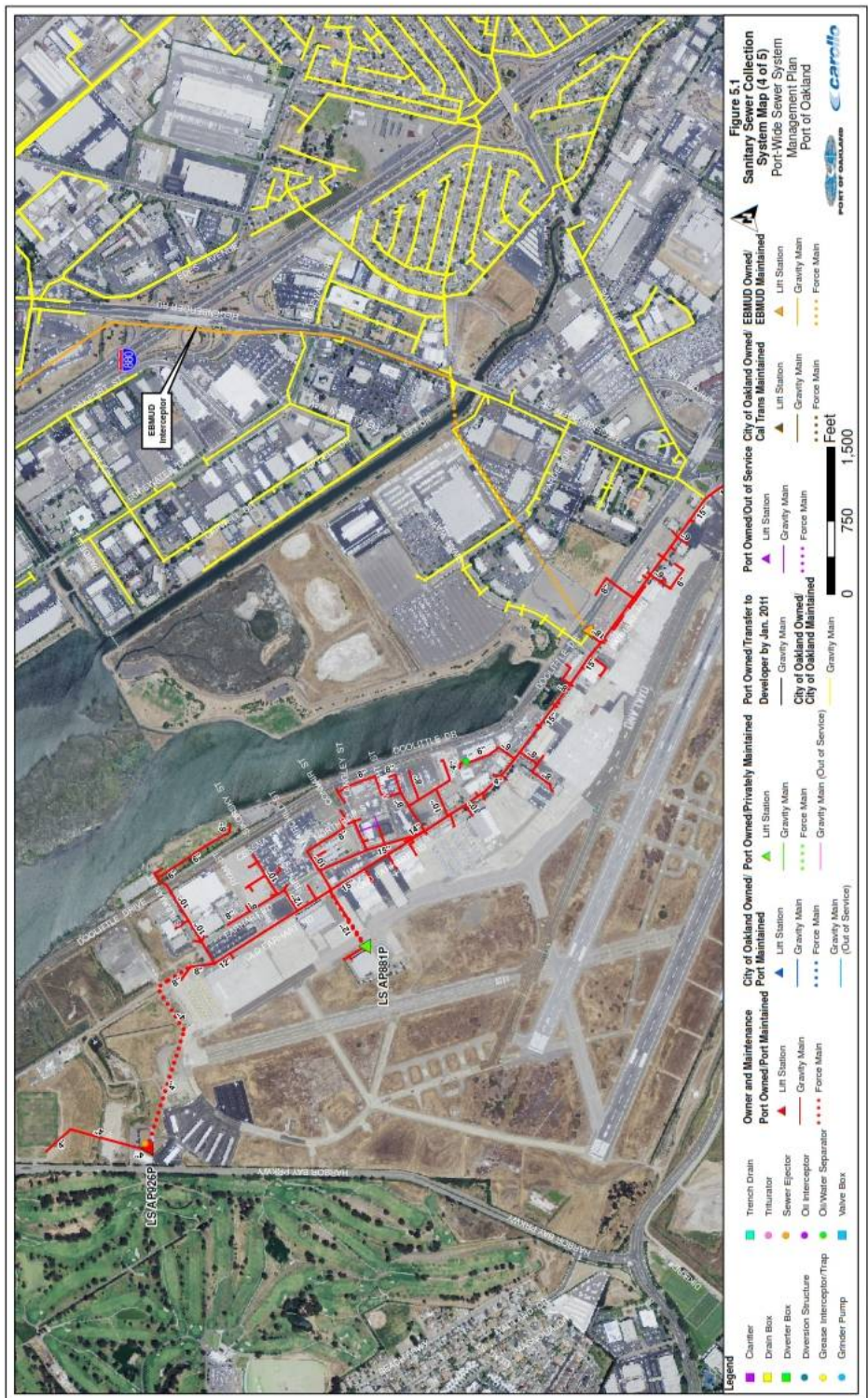


Figure 5.1 Sanitary Sewer Collection System Map (Page 5 of 5)

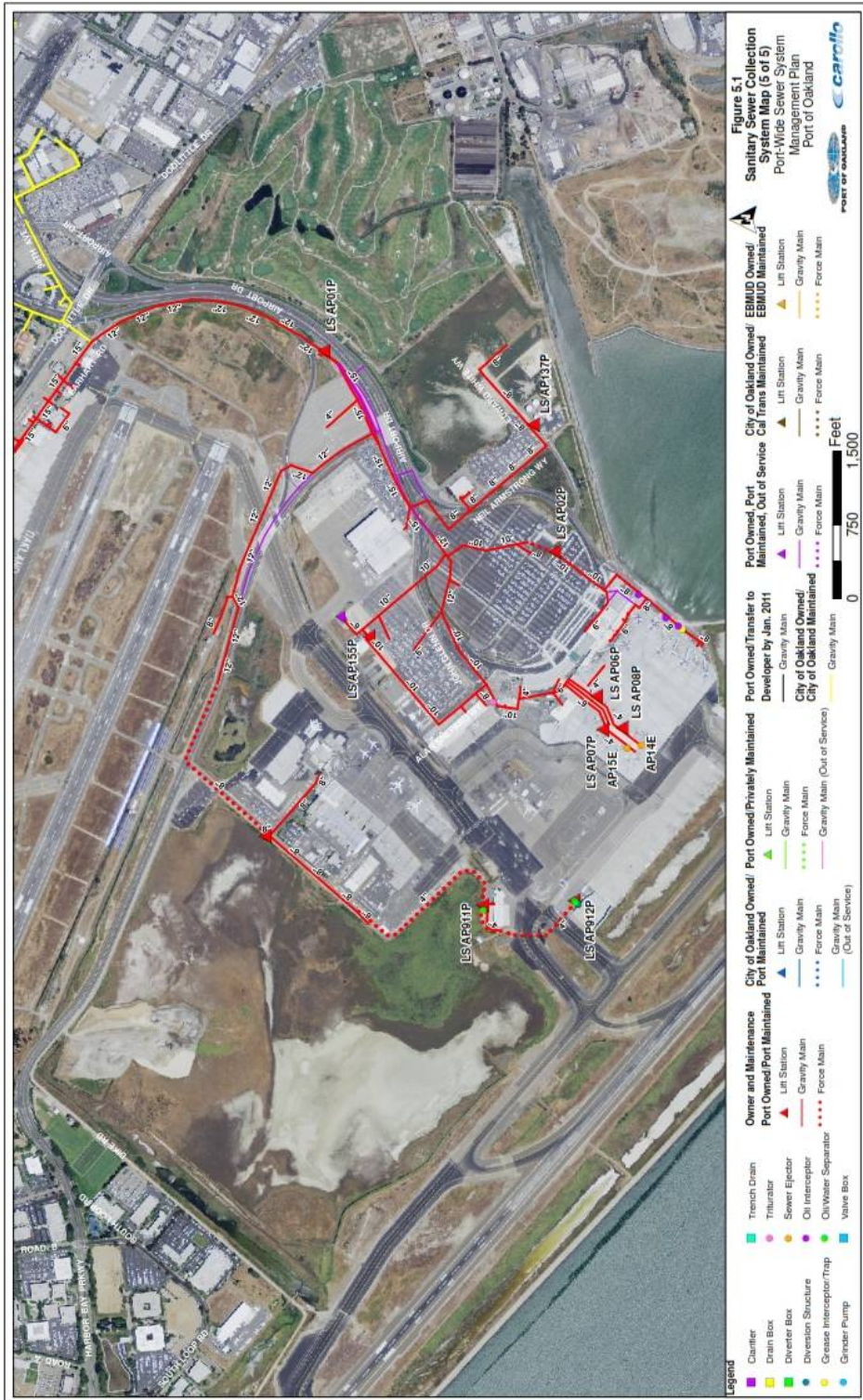


Table 5.1 Sanitary Sewer Collection System Summary Port-Wide Sewer System Management Plan Port of Oakland				
	Collection System			Total
	Aviation	Maritime	Commercial/ Real Estate	
<u>Gravity Mains⁽¹⁾</u>				
Length (mi.)	13.0	22.1	3.9	39.0
Pipe Diameter Range (in.)	3" – 18"	4" – 30"	3" – 36"	3" – 36"
<u>Force Mains⁽¹⁾</u>				
Length (mi.)	1.7	2.4	0.1	4.1
Pipe Diameter Range (in.)	4" – 12"	3" – 16"	2" – 3"	2" – 16"
No. of Lift Stations	10	14	0	25
No. of Sewer Ejectors	2	0	0	2
Note: 1) Lengths presented do not include abandoned sewers.				

5.2.1.1 Aviation Collection System

The Aviation sewer collection system serves the Oakland International Airport and associated facilities. Sewage from the airport terminal and other facilities located in the Southfield area of the system is ultimately routed north and west through a 12-inch and 15-inch diameter gravity main into an East Bay Municipal Utility District (EBMUD) pump station G located near Doolittle Drive and Swan Way. Sewage from the Northfield area, which primarily serves general aviation, rental car facilities, and office buildings, is ultimately routed through a 15-inch diameter gravity main into the EBMUD pump station G.

5.2.1.2 Maritime Collection System

The Maritime sewer collection system serves the Oakland seaport and other tenants in and near the former Oakland Army Base. The majority of sewage from the Maritime collection system is conveyed through a series of gravity sewers and sewer lift stations to the EBMUD pump station K located near the intersection of 7th Street and Maritime Street. Sewage from Ports America Berth 20-24 and portion of the former OAB north of 14th Street is conveyed to City-owned, Port-maintained lift stations AB836P and AB018P, which discharge into an EBMUD sewer main. Sewage from Port Berths 60 - 63 and 67 - 68 is ultimately discharged into the City of Oakland (City) sewer collection system at several points (see Figure 5.1).

5.2.1.3 Commercial/Real Estate Collection System

The Port owns, but does not operate, a small number of 6-inch, 8-inch, and 10-inch diameter sanitary sewer pipelines in Jack London Square and areas southeast of Jack London Square along

Embarcadero. These pipes discharge either into the City collection system or directly into the EBMUD interceptor that runs parallel to Embarcadero.

5.3 PORT PREVENTIVE MAINTENANCE PLAN

This section summarizes the Port's existing preventive maintenance program. Recommendations are provided, as appropriate, in order to reduce the potential for SSOs in the Port and to better comply with the GWDRs.

5.3.1 Preventive Maintenance and Inspection Activity

Preventive maintenance activities includes some of the following:

- a) Periodic cleaning of sewer lines is essential for proper operation. Higher frequency cleaning might be necessary in those areas with a history of stoppage due to debris and fats, oils, and grease. There are many methods to clean sewer lines including flushing, rodding, or high velocity jet cleaning. Hydroflushing or other hydraulic cleaning of gravity sewers is the most commonly used method to clean sewers. Mechanical cleaning (e.g. rodding machine) might be more effective than hydraulic cleaning in certain sewer conditions. Note that mechanical cleaning can only be applied to rigid pipe material such as vitrified clay, concrete, or reinforced concrete pipe.
- b) Investigation and resolution of customer complaints.
- c) Scheduled cleaning of force mains.
- d) Closed-circuit television (CCTV) inspection of the sewers and visual inspections of manholes.

The Port currently performs sanitary sewer cleaning on an "as needed" basis (i.e., when a blockage or overflow occurs). Maintenance activities related to the gravity sewer system, therefore, are almost exclusively "corrective" in nature. While this strategy may have proven sufficient in the past, the Port will begin to take a more preventive approach with regard to sewer line cleaning. A potential sewer main cleaning rotation to achieve the desired cleaning schedule will be detailed as part of the anticipated 2016 SSMP Audit. Additionally, applicable tenants/lessees cleaning practices and plans in those areas for which they have maintenance responsibility will be included in the anticipated 2016 Audit.

Hydraulic cleaning equipment is the most frequently used piece of equipment applied for cleaning sewers less than or equal to 18-inches in diameter (WERF, 2003). The sewers are cleaned through a targeted application of high pressure water. These high pressure/velocity machines are used to open stoppages, remove grease, clean lines of debris, and wash manholes and wet wells. A variety of water tank sizes, pressure output, and nozzle configurations are available for both truck and trailer mounted equipment.

The Port does not currently own CCTV equipment and must contract this work out to a third party to verify that the cleaning was properly performed and to identify structural and condition problems in the sewers and manholes. The Port will later be able to refine the cleaning frequency and rotation based on actual system performance and staffing availability.

Sanitary sewer "hot spots," or areas which are known to require more frequent maintenance, should be targeted to receive more frequent cleaning, such as annually or bi-annually, depending on the extent of the problem. Port staff identified certain "hot spots" throughout the aviation and maritime collection systems in the 2010 SSMP. The Port has since addressed each of the "hot spots" identified in the 2010 SSMP and resolved the problems associated with each.

To the extent that additional "hot spots" are identified in the years going forward, the Port will establish a more frequent cleaning schedule for these pipelines, since they are known maintenance issues. The Port should be able to track the effectiveness of the increased cleaning frequency, and make adjustments to the accelerated cleaning schedule as deemed necessary.

5.3.2 Pump Station Maintenance Program

As opposed to gravity sewer maintenance, the Port’s existing lift station maintenance program can be described as primarily “preventive” rather than “corrective,” with the vast amount of maintenance performed on the lift stations performed on a pre-set schedule rather than “as needed” when problems or overflows occur.

Table 5.2 summarizes the Port’s existing lift station maintenance program. As shown in Table 5.2, lift stations are inspected daily to weekly, depending on division (e.g., Maritime or Aviation) and the time of year (i.e., dry weather vs. wet weather). Washdowns of the sewer wet wells are performed monthly. The Port’s existing lift station maintenance program is considered to be very “proactive” and meeting the intent of GWDRs. For this reason, no modifications to the City’s lift station maintenance program are recommended.

Table 5.2 Lift Station Preventive Maintenance Program Summary Port-Wide Sewer System Management Plan Port of Oakland			
Lift Station^{(1),(2)}	Location	Inspection Frequency	Maintenance Frequency
Aviation Lift Stations			
Port-owned, Port-maintained Lift Stations/Sewer Ejectors			
AP01P	Airport Dr.	Daily to Weekly	Monthly
AP02P	Airport Parking Lot	Daily to Weekly	Monthly
AP05P	Air Cargo Way	Daily to Weekly	Monthly
AP06P	Near Gate 6 in Terminal 1	Daily to Weekly	Monthly
AP07P	Near Gate 7 in Terminal 1	Daily to Weekly	Monthly
AP08P	Near Gate 8 in Terminal 1	Daily to Weekly	Monthly
AP14E ⁽³⁾	Near Gate 14 in Terminal 1	Daily to Weekly	Monthly
AP15E ⁽³⁾	Near Gate 15 in Terminal 1	Daily to Weekly	Monthly
AP137P	Lift Station at Tank Farm	Daily to Weekly	Monthly
AP155P	Near Building M-155	Daily to Weekly	Monthly
AP911P	Near Building M-911	Daily to Weekly	Monthly
AP912P	Near Remote Aircraft Parking Area	Daily to Weekly	Monthly
Privately-maintained Lift Stations			
AP881P	Near Building L-881 (Chevron Hangar 10)	Privately Maintained (by Chevron)	Privately Maintained (by Chevron)

**Table 5.2 Lift Station Preventive Maintenance Program Summary
Port-Wide Sewer System Management Plan
Port of Oakland**

Lift Station^{(1),(2)}	Location	Inspection Frequency	Maintenance Frequency
AP926P	College of Alameda Aviation School	Privately Maintained (by Peralta College District)	Privately Maintained (by Peralta College District)
FedEx	Air Cargo Way	Privately Maintained (by FedEx)	Privately Maintained (by FedEx)
Tank Farm	Edward White Way	Privately Maintained (by Swissport)	Privately Maintained (by Swissport)
Maritime Lift Stations			
Port-owned			
D01P	Berth 59 Near Blockhouse	Privately Maintained (by SSAT)	Privately Maintained (by SSAT)
D02P	Berth 58 Near Blockhouse	“	“
D03P	Berth 57 Near Blockhouse	“	“
D04P	Berth 56 Near Restroom	“	“
D05P	Berth 55 Near Crane Dept. Facility	“	“
D06P	Berth 57 Near Maintenance Bldg.	Weekly (dry weather) Daily (wet weather)	Monthly
C07P	7 th Street (at west end)	Weekly (dry weather) Daily (wet weather)	Monthly
C08P	7 th Street (middle of street)	Weekly (dry weather) Daily (wet weather)	Monthly
D10P	Near Building D512	Weekly (dry weather) Daily (wet weather)	Monthly
B31P	Back of B319 Water Side	Privately Maintained (by Ports America)	Privately Maintained (by Ports America)

Table 5.2 Lift Station Preventive Maintenance Program Summary Port-Wide Sewer System Management Plan Port of Oakland			
Lift Station^{(1),(2)}	Location	Inspection Frequency	Maintenance Frequency
Former Oakland Army Base (OAB)			
Port-owned, Port-maintained			
AB663P	10th St & Midway St	Weekly (dry weather) Daily (wet weather)	Monthly
Warehouse	Between Bldgs. 805 and 806	TBD	TBD
City-owned, Port-maintained			
AB836P	Tobruk St n/o 17th St	Weekly (dry weather) Daily (wet weather)	Monthly
AB018P	Burma Rd at Army Base Building 18	Weekly (dry weather) Daily (wet weather)	Monthly
AB148P	Burma Rd at Army Base Building 148	Weekly (dry weather) Daily (wet weather)	Monthly
<u>Notes:</u>			
1. Names have not been established for lift stations located in the Aviation system. Lift station names have been assigned based on the applicable building number or gate number, if available.			
2. Names have not been established for lift stations located in the Oakland Army Base. Lift station names have been assigned based on the Army Base building number.			
3. AP14E and AP15E are sewer ejectors.			
4. The OAB is currently being redeveloped and the sewer collection system is being constructed. Several lift stations will be either demolished and/or rebuilt.			

5.3.3 CMMS Tracking System

The Port utilizes a computerized maintenance management system (CMMS) software application to schedule routine preventive maintenance, track emergency spill responses, repair activities, and to generate work orders. The software package currently utilized by the Port is Oracle eAM.

In the CMMS software, Maritime lift stations and other sewer facilities are assigned a unique equipment number, and different maintenance activities are assigned a unique work order number. Through this software package, the Port is capable of tracking Maritime lift station and gravity sewer maintenance trends isolating and summarizing work by equipment number and/or by work order number. The ability to study maintenance trends using the CMMS software will prove to be very useful to the Port in measuring the effectiveness of the various SSMP elements and performing program audits in the future.

Currently, there is only one equipment number assigned to all sewer pipelines in the Port's CMMS program. This limits the Port's ability to track maintenance trends in specific pipeline reaches. To

mitigate this issue and as part of the comprehensive mapping of the Port's collection system, unique IDs were created for each unique pipeline. The Port has now integrated the unique pipe IDs from the collection system maps into the Oracle eAM software, giving the Port the ability to track maintenance activities in specific pipe reaches. In addition to managing the assets on the eAM, the Port also recently launched the Geographical Information System (GIS), also known as PortView. PortView is still in its developmental phase and the Port is in the process of expanding its capability to include utility data in all Port areas.

5.4 PORT REHABILITATION AND REPLACEMENT PLAN

As part of the development of the original 2010 SSMP, CCTV inspections of selected Port sewers, as well as a wet weather flow-monitoring program were performed to identify areas with structural deficiencies (e.g., cracks in pipelines, etc.), areas with excessive amounts of infiltration and inflow (I/I), and other condition problems associated with gravity sewers (e.g., adverse slope conditions, "bellies," etc.). Based on the results of work performed as part of this project, specific sewers have been targeted for rehabilitation or replacement: These pipelines are identified in Chapter 9, as well as the Port's System Evaluation and Capacity Assurance Plan (SECAP), which is included in Appendix M. The Port established a capital improvement plan (CIP) in 2010 for the rehabilitation and replacement of the identified sewers and sewer facilities in need of such work and updates the CIP periodically.

For budgetary purposes, the SECAP also assumes that additional sewers requiring rehabilitation or replacements not specifically identified in this project will be identified in the future. In addition, the SECAP includes costs associated with rehabilitation or replacement of Port Lift Stations to address condition issues as well as evolving regulatory requirements. A standard procedure for the periodic update and revision of the Port's CIP will be developed as part of the anticipated 2016 SSMP Audit and included in a revised SSMP.

5.5 STAFF TRAINING

Upon hiring, the Port trains collection system's staff on the proper operation and maintenance of the sewer system and on Port standard operating procedures (SOPs). Ongoing training for Port staff is provided through a combination of informal/on the job training and optional special training classes or seminars, such as those provided by the California Water Environment Association (CWEA).

To aid in compliance with the GWDRs, it is recommended that the Port begin to offer its maintenance workers with periodic "refresher courses" on Port SOPs and maintenance activities for the collection system. In addition, it is recommended that these training sessions include training with regard to the new programs or policies that will be implemented as part of the SSMP and the new GWDRs. This is particularly important with respect to the reporting requirements for SSOs in the Port. It is essential that all staff is aware of the GWDRs and know who needs to be informed should an SSO occur.

The Port staff has identified training of its sewer system staff and tenant/leaseholders responsible for operations and maintenance of Port sewer system facilities as a high priority requirement and will be presenting mandatory training for all persons involved in the operations, maintenance, emergency response and rehabilitation of the sewer infrastructure. These training sessions will be conducted within ninety (90) days of the approval of this 2015 SSMP Update and will include review of the regulatory requirements, basic review of the SSMP, detailed classroom and field training exercises on emergency response and review of past performance results for the sewer system operations. The Port will use the ninety days from SSMP Update approval to training to identify the applicable tenants and lessees who must attend the broad training program and to finalize training materials.

In the future, the newly convened Sewer System Implementation Task Force will be charged with coordinating annual SSMP and emergency response refresher training, as necessary and applicable. In addition, they will define and coordinate a new employee training program for all new employees and tenants to assure proper understanding of both operation and emergency response requirements to assure full conformance with the WDR and MRP requirements related to the Port's sanitary sewer system.

5.6 EQUIPMENT AND REPLACEMENT PART INVENTORIES

The Port maintains an inventory of spare pump parts, pipes, and other parts needed to perform emergency repair work on the sewer system. Certain construction and other equipment is also available for trench excavation and other sewer work. A list of equipment and spare parts that are currently available to the Port is included in Appendix I. According to Port staff, the inventory available has proven sufficient given the amount and extent of sewer maintenance or repair work that is performed by Port staff. This list will be updated as part of the anticipated 2016 SSMP Audit.

DESIGN AND PERFORMANCE PROVISIONS

This chapter presents a summary of the relevant design and construction standards, as well as standards for the inspection and testing of new sewers, pumps, and other appurtenances and for rehabilitation projects.

6.1 REGULATORY REQUIREMENTS

6.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify that a Sewer System Management Plan (SSMP) must include the following:

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

6.2 DESIGN AND CONSTRUCTION STANDARDS

This section summarizes the applicable elements of the Port of Oakland (Port) design standards for sanitary sewer facilities. Because the Port discharges wastewater into the City of Oakland (City) and East Bay Municipal Water District (EBMUD) sewer systems, brief descriptions of their design standards are also provided.

6.2.1 Port Design Standards

Historically, the Port has not maintained a “formal” set of design guidelines for the design of new or replacement sewer system facilities. In lieu of an official set of design guidelines, Port engineering staff carefully reviews each sewer system design to ensure compliance with accepted industry standards.

To comply with the GWDRs and the SWRCB requirements, Port specific design standards have been developed as part of the SSMP development process. A copy of the proposed draft “Sanitary Sewer Design and Construction Standards” is included in Appendix J for reference. In the development of the standards, an effort was made to provide consistency with City standards for the design of sewer facilities. However, certain Port criteria are provided which vary somewhat from the requirements of the City. In general, where differences occur, the proposed Port standard is more conservative than the City standard.

6.2.2 City of Oakland Design Standards

Design standards for sanitary sewer facilities constructed in the City are provided in the City's "Sanitary Sewer Design Guidelines"². This document has an effective date of November 2004 and is maintained by the City's Public Works Agency Engineering Design and Right-of-Way Management Division. In addition, the City's Public Works Agency Engineering Design and Right-of-Way Management Division has developed a set of standard drawings and details for sanitary sewer facilities³.

To ensure that sanitary sewers are installed, rehabilitated, or repaired properly, the City has adopted the "Standard Specifications for Public Works Construction", more commonly known as the "Greenbook". This document is republished every three years.

6.2.3 EBMUD Design Standards

EBMUD's Wastewater Design Section maintains its "Standards and Guidelines for Design and Construction of Wastewater Facilities". This document contains design, construction, testing, and inspection standards for the design of new or rehabilitation sewers. The document is meant to be used to provide standards for typical sewer design and construction work.

6.3 INSPECTION AND TESTING STANDARDS

This section summarizes the applicable elements of the Port inspection and testing standards for sanitary sewer facilities. Because the Port discharges wastewater into the City and EBMUD sewer systems, brief descriptions of their inspection and testing standards are also provided.

6.3.1 Port Inspection Standards

Historically, the Port has not maintained a "formal" set of testing and inspection guidelines for sewer system facilities. In lieu of an official set of standards, Port engineering staff has performed needed inspections and tests to ensure that sanitary sewers are properly constructed.

6.3.2 City of Oakland Inspection Standards

Standards for the inspection and testing of new or rehabilitated sewers in the City are provided in the "Greenbook". City inspectors regulate all sewer construction work to ensure compliance with the City of Oakland's municipal code, traffic safety, and the requirements specified in the "Greenbook". All sewers are tested and inspected with closed circuit television (CCTV) technology prior to acceptance by the City.

² Available at: <http://www.oaklandpw.com/Asset605.aspx>

³ Available at: <http://www.oaklandpw.com/Page707.aspx>

6.3.3 EBMUD Inspection Standards

EBMUD's "Standards and Guidelines for Design and Construction of Wastewater Facilities" contains procedures for the inspection and testing of new and rehabilitated sanitary sewer facilities. The standards are applicable to both new installations and rehabilitation of existing facilities.

OVERFLOW EMERGENCY RESPONSE PLAN

This chapter describes the Port of Oakland (Port) Overflow Emergency Response Plan (OERP), as provided in Appendix K, which provides measures to protect the public health and the environment in the event of a sanitary sewer overflow (SSO).

7.1 REGULATORY REQUIREMENTS

7.1.1 SWRCB Requirements

State General Waste Discharge Requirements Order No. 2006-0003 (GDWRs), issued by the State Water Resources Control Board (SWRCB), specifies that a Sewer System Management Plan (SSMP) must include an Overflow Emergency Response Plan that includes, at a minimum, 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 monitoring reporting program (MRP), the California Water Code, other State Law, and other applicable Regional Water Board waste discharge requirements or National Pollutant Discharge Elimination Program (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 discharge of untreated or partially treated wastewater to waters of the United States and to minimize or correct any adverse impact of 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.

In addition, State Order No. 2013-0058-EXEC, Amending Monitoring and Reporting Program (MRP) for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems specifies the following water quality monitoring and SSO technical report requirements:

7.1.2 Water Quality Monitoring Requirements:

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

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

7.1.3 SSO Technical Report:

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Board from requiring more detailed analyses if requested, shall include at a minimum, the following:

Causes and Circumstances of the SSO:

- a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. Enrollee's Response to SSO:
- a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO. (Monitoring and Reporting Program Order No. WQ 2013-0058-EXEC Page 6 of 11 Statewide Waste Discharge Requirements for

Sanitary Sewer Systems.)

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. Water Quality Monitoring:

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

7.2 OVERFLOW EMERGENCY RESPONSE PLAN

As part of the original 2010 SSMP, a Port specific OERP was developed, which is included in Appendix K for reference. The Port's OERP has been developed to meet the GWDRs and RWQCB requirements and to protect the public health and welfare. The plan shall not supersede existing standard operating procedures, unless otherwise specified by the Executive Director or his duly authorized representative.

This section summarizes the major aspects of the OERP as relevant to the specific GWDRs requirements. Response procedures vary depending upon the location of the spill (e.g., Aviation, Maritime, Commercial/Real Estate).

The Port OERP is a stand-alone document is provided in Appendix K.

FOG CONTROL PLAN

This chapter summarizes the Port of Oakland (Port) fats, oil, and grease (FOG) control program, which has been developed to limit the amount of FOG that enters the collection system to the extent feasible.

8.1 REGULATORY REQUIREMENTS

8.1.1 SWRCB Requirements

State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), issued by the State Water Resources Control Board (SWRCB), specifies that this SSMP must include an evaluation of the Port service area to determine whether a FOG control program is needed. If no FOG program is needed, justification for why it is not needed must be provided. If FOG is considered to be a problem, a FOG source control program must be prepared and implemented, including the following as appropriate:

- a) An implementation plan and schedule for a public education outreach program that promotes the 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 into 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, Best Management Practice (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 into the sanitary sewer system for each section identified in (f) above.

8.2 FOG CONTROL PLAN

The East Bay Municipal Utilities District (EBMUD) has developed a district wide FOG control program. The Port facilities are covered under this program, similar to any satellite discharger; therefore, the Port will not develop a separate program. In lieu of developing a Port specific FOG Control Plan, the report included in Appendix L summarizes the EBMUD FOG control program as relevant to the Port. The EBMUD FOG control program is primarily focused on reducing FOG discharged from food service facilities (FSFs) in the Port, since the Port has no residential customers.

The EBMUD FOG control program meets the GWDRs and RWQCB requirements and protects the public health and welfare. This section summarizes the major aspects of the EBMUD FOG control program as relevant to the specific GWDRs and RWQCB requirements.

8.2.1 Public Outreach Materials

EBMUD has developed several useful public outreach materials for controlling FOG discharges into the sanitary sewer system, focused on both FSFs as well as residential customers. The outreach materials relevant to the Port and its tenants are those pertaining to FSFs. The outreach materials are available in several languages (English, Spanish, Chinese, Korean, and Vietnamese). The FSF outreach material includes the following:

- **Program Brochure.** This document describes the EBMUD FOG control program, and explains what FOG is, the issues related to FOG, introduces the BMPs, describes grease interceptors and EBMUD's interceptor requirements.
- **List of Approved Grease Haulers.** This document is a list of grease haulers in the area that are approved by EBMUD.
- **Grease Interceptor Maintenance Brochure.** This document summarizes the maintenance requirements for facilities required by EBMUD to use a grease interceptor.
- **BMP Brochure.** This document summarizes the FOG BMPs summarized in Section 8.2.5.
- **FAQs.** A list of frequently asked questions (FAQs) is available for FSFs describing the program requirements.
- **Permit Forms.** Various permit documents are included to describe the program terms and conditions and provide documents that must be completed and signed by the discharger.
- **Grease Trap Maintenance Form.** This form is to be completed by each establishment and keeps a log of when a grease interceptor was cleaned, who cleaned it, amount of grease removed, and where the grease was disposed of. Each FSF is required to keep a copy of this log on file should an EBMUD inspector wish to review it.
- **"No Grease" Sign.** This sign should be posted near sinks and drains to remind workers not to dispose of FOG into the sanitary sewer system.

8.2.2 FOG Disposal

The EBMUD MWWTP serves as one of the main receiving facilities for waste grease in the vicinity of the Port⁴. The address and contact information for the MWWTP is listed below:

EBMUD MWWTP
2020 Wake Avenue
Oakland, CA 94607
Alameda County
Phone: 510-287-1651

Residents within the EBMUD service area may drop off small amounts of grease (15 gallons or less) themselves at the MWWTP between the hours of 7:00 AM and 7:00 PM. However, since the Port consists of non-residential users, use of the drop on site is not allowed. However, EBMUD does maintain a list of “approved haulers,” which dischargers with an EBMUD wastewater discharge permit (WDP) are required to use. Table 8.1 provides a list of the “approved haulers,” as well as contact information. Individuals should contact the hauler ahead of time to determine their specific requirements.

8.2.3 Legal Authority

Historically, the Port did not have any ordinances restricting the type, volume, and character of wastewater discharged into the Port collection system. EBMUD and the City, however, do have legally binding ordinances limiting certain discharges. As part of the SSMP, a Port specific sewer use ordinance was developed and adopted by the Board of Port Commissioners (See Chapter 4 for more detailed information). However, since the programs and activities recommended in this plan rely primarily on a utilization of the existing EBMUD FOG control program, the legal authority to implement (and continue to implement) the majority of the measures described in this FOG Control Plan is currently available through the existing EBMUD sewer use ordinances.

⁴ For a more comprehensive list of grease receiving facilities in the region, refer to <http://baywise.org>. Note that most of the receiving facilities have residency restrictions.

**Table 8.1 EBMUD Approved Grease Haulers
FOG Control Plan
Port of Oakland**

Name of Hauler	Phone Number
A-1 Septic Tank Service, Inc.	(510) 886-4455
A-1 Septic – Little River	(707) 937-0496
Able Septic Tank Service	(408) 377-9990
All Valley Environmental, Inc.	(559) 498-8378 or (559) 217-5949
Ameriguard Maintenance Services	(800) 347-7876
Blue Sky Bio-Fuels ⁽³⁾	(510) 868-9229
Burr Plumbing and Pumping	(408) 287-2877
Coast Environmental	(800) 588-7762
Darling International, Inc.	(415) 647-4890
Ernie's Plumbing	(925) 228-5242
Joe's Farmers Septic and Grease Service	(707) 546-3236
Liquid Environmental Solutions of California	(866) 694-7327
North Coast Sanitary	(707) 884-1095
Pioneer Liquid Transport	(800) 366-6808
Portosan – Santa Rosa	(707) 566-2000
R & D Grease Trap Cleaning	(707) 632-5827
Roto Rooter Plumbing	(510) 483-2324
SRC Pumping Company	(916) 363-1342
Trap Recyclers	(800) 994-7867
<p>Notes:</p> <ol style="list-style-type: none"> 1. Source: http://www.ebmud.com 2. As of February 27, 2008. 3. The Port uses Blue Sky Bio-Fuels to clean and dispose of grease collected in its grease interceptors at the Oakland International Airport. 	

8.2.4 Grease Removal Device Requirements

EBMUD requires FSFs to install grease interceptors (if not already installed) if any of the following three conditions are met:

1. The facility is newly constructed or converts from a non-food handling facility to a food handling facility;
2. The facility submits plans to perform remodels, additions, alterations, or repairs valued at \$75,000 or more.
3. The facility has caused or contributed to collection system blockages resulting in maintenance requirements or sewage spills.

Each FSF with a grease interceptor is required through their WDP and EBMUD Ordinance No. 311A-03 to clean their interceptor on a regular basis to ensure its proper operation. At a minimum, each interceptor must be cleaned once every three months and the grease must be disposed of by an EBMUD approved grease hauler (see Section 8.2.2).

The Port is becoming very proactive in requiring new FSFs in the airport to install large grease interceptors. A large grease interceptor for the new Chile's Too was recently installed. Additionally, grease interceptors will be constructed to service two new food courts and the new Silver Dragon restaurant. This approach is consistent with the EBMUD interceptor requirements and the intent of the GWDRs.

8.2.5 Best Management Practices

EBMUD has developed nine separate BMPs related to FOG. The BMPs are summarized in Table 8.2 and are developed primarily for FSFs, which are the primary discharges of FOG within the Port service area. Certain BMPs, however, do have a more universal applicability. A flyer containing the information presented in Table 8.2 is also available on the EBMUD website.

8.2.6 Inspection and Enforcement Procedures

In order to avoid redundancy and save time and cost to the Port, FOG Control Plan recommends that all FOG inspection and enforcement actions be completed by EBMUD through their existing FOG control program. A partnership with Port personnel may be required at the Airport and Maritime facilities since security clearance requirements could hinder EBMUD personnel from performing this function. Port staff could take on responsibility for inspecting facilities at the Airport or Maritime areas, or escort EBMUD staff on these inspections.

8.2.6.1 Inspection

The inspection procedures are based on a system-wide monitoring approach with increased monitoring targeted at known "hot spot" areas, as summarized below:

- **Hot spot areas.** For this group of inspections, the Port identifies the locations of grease-related SSOs or blockages to EBMUD. EBMUD then schedules targeted inspections for

dischargers upstream of the “hot spot” to identify the most likely source of the problem. Accelerated interceptor maintenance schedules or interceptor installations are then required as necessary to mitigate the issue.

- **Non-hotspot areas.** Inspection is performed routinely at all FSFs during the permit period (at least once during each permit period). EBMUD inspectors verify that required routine maintenance for grease traps and interceptors is being performed in accordance with program standards. If FSFs are not in compliance with the terms of their WDP, accelerated interceptor maintenance schedules or interceptor installations may then be required as necessary to mitigate the issue.

**Table 8.2 Best Management Practices for Fats, Oil, and Grease
FOG Control Plan
Port of Oakland**

BMP	Reason For BMP	Benefits of BMP
Train all staff on BMPs.	People are more willing to support an effort if they understand its basis.	Trained staff will be more likely to implement BMPs and work to reduce grease discharges to the sewer.
Post “No Grease” signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	Reminders help minimize grease discharge to the sewer or grease removal device.
Check grease interceptor solids depth routinely. The combined thickness of the floating grease and the bottom solids should be not more than 25 percent of the total interceptor depth.	Grease interceptor will not meet performance standards when solids and floating grease levels exceed 25 percent.	This will keep grease interceptor working at peak performance.
Collect and recycle waste cooking oil.	These actions reduce grease loading on grease removal devices and the sewer.	This will reduce the frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
“Dry wipe” pots, pans, and kitchen equipment before cleaning.	“Dry wiping” will reduce the grease loading on grease removal devices and the sewer.	This will reduce the frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
Maintain a routine grease trap cleaning schedule.	If grease traps are not routinely cleaned, they do not work properly and do not prevent grease from entering the sewer. If a grease trap is not providing adequate protection, a grease interceptor may be required.	This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
Use absorbent paper under fryer baskets.	This reduces the amount of grease during clean up.	This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
Use absorbents such as cat litter or paper towels to pick up oil and grease spills before mopping.	Decreases the amount of grease that will be put down the drain.	This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
Do not use emulsifiers or solvents other than typical dish washing detergents.	Emulsifiers and solvents will break down grease causing a problem in the sewer downstream.	Allows for proper removal of grease.
<p>Notes: 1. Source: http://www.ebmud.com</p>		

8.2.6.2 Enforcement Actions

Enforcement actions for non-compliance are defined in Title VI of EBMUD Ordinance No. 311A-03, which is based on an escalating (progressive) enforcement structure. Enforcement actions vary depending on the nature of the violation, and can consist of the following:

- Requiring discharger to submit time schedule for completion of remedial or preventive measures;
- Issuance of cease and desist orders;
- Cost recovery for damage of facilities;
- Termination of service;
- Issuance of complaints;
- Criminal penalties;
- Civil penalties.

In addition, Ordinance No. 311A-03 provides an appeals process for a discharger who is subject to the aforementioned enforcement actions.

8.2.6.3 Grease Interceptor Maintenance and Inspection Records

As part of the EBMUD issued WDPs, each discharger with a grease trap or grease interceptor is required to keep a record of when the grease interceptor was cleaned, who cleaned it, the volume of grease disposed, and where the grease was disposed. These records should be up to date, saved on file for three years, and be made available to an EBMUD inspector upon request. An example grease interceptor maintenance sheet is included in the FOG Control Plan (Appendix L).

8.2.7 Service Area FOG Evaluation

As part of the Port-wide SSMP, a service area FOG evaluation was performed, consisting of the following four main elements:

- Discussion with Port operating staff to identify any known FOG problem areas (or “hot spots”) within the Port;
- Airport Terminal site visit;
- Closed Circuit Television (CCTV) inspection of selected sanitary sewer lines within the Port collection system.

This section summarizes the service area FOG evaluation.

8.2.7.1 Consultation of Operational Staff

The initial step in conducting a FOG service area evaluation for the Port was to seek input from Port operations staff regarding any known FOG “hot spots” or other issues related to FOG.

Examples of these issues are areas of historical FOG related overflows and sewer lines that frequently exhibit FOG buildup.

Based on information provided by Port staff, the majority of sewers that exhibited blockages were previously associated with FOG buildup were attributable to FSFs located within the Oakland International Airport.

8.2.7.2 Airport Terminal Site Visit

A site visit was conducted at the Oakland International Airport terminals to identify which FSFs operate in the airport and to verify which FSFs are served, or are planned to be served, by grease interceptors. It was discovered during the site visit that the Port is becoming very proactive in requiring new FSFs in the airport to install large grease interceptors. A large grease interceptor for the new Chile's Too was recently installed. Additionally, grease interceptors will be constructed to service two new food courts and the new Silver Dragon restaurant.

8.2.7.3 CCTV Inspection

As part of 2010 SSMP, CCTV inspections will be performed on selected sanitary sewer lines within the Port collection system. The primary purpose of these inspections is to identify pipeline or manholes with condition problems (e.g., cracked pipes, tree roots, adverse slope conditions) and to help identify areas with potential infiltration and inflow (I/I) issues. However, the inspections will also help to determine where FOG buildup is a problem in the sewers, which may be indicative of an issue with a FSF located upstream of the blockage. The Port will then be able to focus outreach on the suspected problem FSFs.

Since 2010, the Port, through a series of grease interceptors installed at the food service establishments and routine maintenance, has effectively removed the previously identified FOG problem areas.

8.2.8 Source Control Measures

Source control measures are currently implemented through the EBMUD WDP program. The WDP established strict limits on the amount of FOG that can be discharged into the sanitary sewer system, provided requirements for grease interceptors, and established enforcement actions for non-compliant dischargers.

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This chapter provides an evaluation of the Port of Oakland (Port) sanitary sewer system facilities, identifies and proposes improvements for deficiencies, identifies design criteria, and provides a list of capital improvement projects (CIP) and schedule for improvements.

9.1 REGULATORY REQUIREMENTS

9.1.1 SWRCB Requirements

State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), issued by the SWRCB, requires that the Port prepare and implement a CIP that will provide hydraulic capacity for peak dry weather flows as well as the appropriate design storm or wet weather event. The Sewer System Management Plan (SSMP) must address, at a minimum, the following:

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

9.2 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

As part of this project, a Port specific SECAP has been developed, which is included in Appendix M for reference. The purpose of the SECAP is to identify capacity deficiencies in the wastewater

collection system, develop feasible alternatives to correct these deficiencies, and plan the infrastructure that accommodate future wastewater flows. This section summarizes the major aspects of the SECAP as relevant to the specific GWDRs and RWQCB requirements.

9.2.1 Planning Criteria

Capacity analysis of the wastewater collection system was performed in accordance with the criteria established in the SECAP. This section summarizes the most important planning criteria that were used in the SECAP.

9.2.1.1 Gravity Sewers

Sewer pipe capacities are dependent on many factors, including roughness of the pipe, the maximum allowable depth of flow, minimum velocity, and slope of pipe. Relevant criteria are summarized below:

- **Manning Coefficient (n).** The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of pipe and joints, and extent of root intrusion. For sewer pipes, the Manning coefficient typically ranges between 0.011 and 0.017, with 0.013 being a representative value used for sewer system planning.
- **Flow Depth Criteria (d/D).** The primary criterion used to identify capacity deficient trunk sewers or to size new improvements is the maximum flow depth to pipe diameter ratio (d/D). The d/D value is defined as the depth (d) of flow in a pipe during peak flow conditions divided by the pipe's diameter (D).
 - **Flow Depth for Existing Sewers.** Using a conservative d/D ratio when evaluating existing sewers may lead to unnecessary replacement of existing pipelines. Therefore, a d/D ratio of 1.0 was used to evaluate the existing sewer system for peak wet weather flow (PWWF) (this is typically the maximum hourly flow in the collection system). If the flow depth was greater than the maximum allowed, then the sewer was deemed deficient and a larger sewer was proposed to provide greater flow capacity.
 - **Flow Depth for New Sewers.** When designing new sewers, it is common practice to adopt variable flow depth criteria for different pipe sizes. Design d/D ratios typically range from 0.5 to 0.92, with the lower values used for smaller pipes, which may experience flow peaks greater than design flow or may experience blockages from debris, paper or rags.

The maximum d/D ratio under the design flow condition depends on the pipe diameter as shown in Table 9.1.

Table 9.1 Maximum Allowable d/D Ratio for New Sewers Port-Wide Sewer System Management Plan Port of Oakland	
Pipe Diameter (in.)	Maximum d/D Ratio (at Design Flow)
Less than 12	≤ 0.50
12 to 18	≤ 0.67
Larger than 18	≤ 1.00

- Design Velocities and Minimum Slopes.** In order to minimize the settlement of sewage solids, gravity sewers should be designed for a minimum velocity of 2 feet per second (fps) (based on roughness coefficient of 0.013). At this velocity, the sewer flow will typically provide self-cleaning for the pipe. Table 9.2 lists the recommended minimum slopes and their corresponding maximum flows for maintaining self-cleaning velocities (equal to or greater than 2 fps) when the pipe is flowing at its maximum depth.
- Lift Stations and Force Mains.** A minimum of two (2) non-clog, submersible pumps specifically designed for conveying raw wastewater should be installed in each lift station. If two pumps are to be installed, each should be capable of independently conveying the design flow with the second pump serving as standby. If three or more pumps are to be installed, the firm capacity of the lift station, which is defined as the total pumping capacity of the lift station less the capacity of the largest pump, should be sufficient to convey the design flow.

Force main piping should be sized to provide a minimum velocity of 3 fps at the design flow rate of the lift station and no more than 8 fps. For the determination of head loss, the Hazen Williams Equation was used with a C factor of 100.

Table 9.2 Minimum Slope for New Sewer Pipes Port-Wide Sewer System Management Plan Port of Oakland				
Pipe Diameter (in.)	Minimum Slope^{(1),(2)} (ft/ft)	Calculated Flow at Maximum d/D Criterion^{(2),(3)}		
		d/D	(cfs)	(mgd)
8	0.0033	0.50	0.35	0.23
10	0.0025	0.50	0.55	0.35
12	0.0019	0.67	1.23	0.80
15	0.0014	0.67	1.92	1.24
18	0.0011	0.67	2.77	1.79
21	0.0009	1.00	4.81	3.11
24	0.0008	1.00	6.28	4.06
27	0.0007	1.00	7.95	5.14
30	0.0006	1.00	9.82	6.35
36	0.0006	1.00	16.38	10.59
42	0.0006	1.00	24.71	15.97

Notes:

1. Recommended minimum slope for design flow at maximum d/D and at minimum velocity of 2 ft/s.
2. Manning's n = 0.013
3. Calculated flow is determined using the minimum slope and the maximum allowable d/D presented in Table 9.1.

9.2.2 Flow Monitoring Program

Temporary flow monitoring was conducted to assist in the development of design flow criteria, and to correlate actual sewer system flows to the hydraulic model predicted flows. Flow monitoring data are used to calibrate the wastewater collection system hydraulic model for dry weather and wet weather flow.

The primary purpose of flow monitoring is to measure flow contributions from different areas of the collection system. The flow monitoring was conducted for a period of approximately eight weeks from December 10, 2009 through January 26, 2010 at 8 monitoring sites, at locations selected by Carollo Engineers. The meter sites were selected to best model the sewer areas and multiple sub-areas within the sewer system.

More information regarding the flow monitoring program, including the flow monitoring results, is provided in Appendix M.

9.2.3 Hydraulic Model Development and Calibration

A wastewater collection system model is a simplified representation of the real sewer system. Sewer system models can assess the conveyance capacity for a collection system. Also, sewer system models can perform “what if” scenarios to assess the impacts of additional flows or modifications to the collection system.

The Port’s hydraulic model combines information on the physical and operational characteristics of the wastewater system, and performs calculations to solve a series of mathematical equations to simulate flows in pipes. The hydraulic model was developed based on available data collected from the Port’s, City of Oakland’s (City’s), and East Bay Municipal Utility District’s (EBMUD’s) utility maps, design drawings, lift station summaries, field surveys, and appropriate assumptions.

Model calibration is a crucial component of the hydraulic modeling effort. Calibrating the model to match data collected during the flow-monitoring program ensures the most accurate results possible. The calibration process consists of calibrating to both dry and wet weather conditions. For this project, both dry and wet weather flow monitoring were conducted. Dry weather flow (DWF) calibration ensures an accurate depiction of base wastewater flow generated within the study area. The wet weather flow (WWF) calibration consists of calibrating the hydraulic model to a specific storm event to quantify the peak and volume of I/I into the sewer system. The amount of I/I is essentially the difference between the WWF and DWF components.

A detailed summary of the model calibration process, including the results of the model calibration, is included in Appendix M for reference.

9.2.4 Evaluation

Following the dry and wet weather flow calibration, a capacity analysis of the Port collection system was performed. The capacity analysis entailed identifying areas in the sewer system where flow restrictions occur or where pipe capacity is insufficient to convey design flows. Sewers that lack sufficient capacity to convey design flows could produce backwater effects in the collection system and potentially cause SSOs. The sewer system was evaluated based on planning criteria presented in Section 9.2.1 and Appendix M.

For existing conditions, the capacity analysis consisted of applying the 10-year, 24-hour design storm to the existing average day flow (ADF) to simulate the peak wet weather, or design, flow condition. This is the maximum hourly flow that is expected to occur in the collection system. Sewers with flows exceeding the maximum d/D under design flow conditions were identified and improvement projects to mitigate existing capacity deficiencies were developed. This process was then repeated for the anticipated flow conditions at year 2030.

There is a significant I/I response throughout the Port’s wastewater collection system, which leads to design flow peaking factors greater than the industry standard in most locations. In general, though, the majority of sewers in the Port are currently sized with sufficient capacity to convey existing design flows. This assumes, however, that the existing sewers are free of sediment

buildup, fats, oil, and grease (FOG) build up, large debris, and other capacity limiting materials. Excessive build up in a sewer will restrict flow, which can lead to sewer backups and SSOs in severe cases.

It is anticipated that the Port will complete a more thorough review of the SECAP in the next 1-2 years, which will lead to incorporating a revised SECAP in the anticipated 2016 or 2018 SSMP audits.

9.2.5 Capacity Enhancement Measures

The Port has planned sewer improvements required to correct existing deficiencies and to accommodate future growth in the Port. This section summarizes those projects and Table 9.3 contains specific information related to each project. Implementing the rehabilitation and replacement of all sewer lines that could potentially require upgrades through 2021 and beyond will require a significant amount of capital resources and prioritization and coordination with the Revenue Divisions. The financial planning for the implementation of this compliance program has already commenced with the recently approved budget and will continue as part of the Port's annual budgeting process.

9.2.5.1 Pipeline Capacity Improvements

No capacity improvement is necessary at this time since sewer pipelines within the Port contain sufficient capacity to accommodate existing design flows without exceeding the established capacity criteria. Future development at the Port will be subject to engineering review and evaluation to determine if capacity enhancement is necessary.

9.2.5.2 Lift Station Replacement or Rehabilitation

Visual inspection of the Port's sanitary sewer lift stations was performed on March 5 and 6, 2010 as part of the 2010 SSMP. Additionally, in 2014, comprehensive condition assessments were performed for nine (9) lift and ejector stations at the Airport. Lift station replacement or rehabilitation will be necessary to maintain proper operation of existing facilities. Most of the lift stations have sufficient firm pumping capacity to accommodate existing and future design flows and are equipped with two working pumps to demonstrate pumping redundancy. However, there are some lift stations that needs to be rehabilitated or be completely replaced. Several lift stations need to have the wet well coated to prevent corrosion and many of the lift stations need to update their alarm system. Whether or not a lift station will be replaced depend on its structural integrity or future developments. Since 2010, the Port has completed the following sewer lift station projects:

Aviation area:

- LS AP07P near Gate 7 in Terminal 1 were completely rebuilt;
- LS AP05P serving FedEx, FAA Air Traffic Control Tower, and ARFF, were completely rebuilt;
- Design of LS AP01P rehabilitation is currently underway.

Maritime area:

- LS D06P was rehabilitated with the replacement of pumping and control equipment and installation of alarm monitoring system;
- Other minor improvements including installation of new pumps at LS AB018P and AB836P; new alarm monitoring system at LS C07P, C08P, and D10P; installation of security fencing at LS C08P and LS AB663P.

Table 9.3 Capital Improvement Projects

PORT OF OAKLAND PROPOSED CAPITAL IMPROVEMENT PROGRAM (CIP) for SANITARY SEWER SYSTEM (SS)									
Project No.	Asset ID	Location	Description	5-Year CIP (\$ thousands)	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
AVIATION									
New Project		Earhart Rd	Rehabilitate/replace sewer main and lateral on Earhart Rd	\$4,000	\$400	\$3,600			
A200520004	AP01P	Airport Dr	Sewer lift station rehabilitation	\$425	\$425				
New Project	AP02P	Parking Bowl	Sewer lift station rehabilitation	\$1,100	\$200	\$900			
New Project		At the Airport	Sewer lift station SCADA	\$350	\$350				
AVIATION TOTAL				\$5,875	\$1,375	\$4,500			
MARITIME									
M1CRI 3A01		7 th St	Rehabilitate sewer main on Ferry St and 7 th St	\$50	\$50				
		In the Maritime area	Sanitary Sewer Upgrades for Compliance Program	\$8,300	\$100	\$900	\$1,000	\$4,100	\$2,200
MARITIME TOTAL				\$8,350	\$150	\$900	\$1,000	\$4,100	\$2,200
PORT TOTAL				\$14,225	\$1,525	\$5,400	\$1,000	\$4,100	\$2,200
Note:									
1. For budget planning purpose only, pending completion of condition assessments on all pipelines & lift stations. A more thorough review of the CIP for SS is anticipated to be completed by the next SSMP audit.									
2. Other sewer improvements may be embedded in other CIP projects									

9.2.5.3 Sewer Main Rehabilitation and Replacement

Closed circuit television (CCTV) inspection of selected sewers in the Aviation and Maritime collection systems were performed as part of the 2010 SSMP. Depending on the structural condition of each pipeline, slip lining or cured-in-place pipe lining could be installed, or the pipeline could be replaced. The decision to rehabilitate or replace a given pipeline should be determined during the preliminary design phase. Since 2010, the Port has completed the following sewer pipeline projects:

Aviation area:

- Approximately 900 feet of 10-inch sewer line at the Airport daily parking lot was rehabilitated with cured-in-place pipe (CIPP) technology;
- An existing 3-inch diameter drain line was replaced with a 4-inch diameter cast iron pipe in Terminal 1;
- Sewer laterals to Buildings L-812, L-820, L-606 and L-510 were replaced.

Maritime area:

- Approximately 650 feet of 30-inch sewer main in Maritime Street were rehabilitated with cured-in-place pipe (CIPP) technology.
- Approximately 2200 feet of 15-in and 18-in sewer mains on 7th Street and Ferry Street will be rehabilitated with cured-in-place pipe (CIPP) technology by the end of June 2015.

9.2.5.4 Infiltration/Inflow Reduction Program

The flow monitoring data in 2010-2011 indicated that there was a significant I/I response throughout the Port collection system. The Port through the Task Force's recommendation will consider implementation of an I/I reduction program, focused on identifying the main sources of runoff into the collection system. Disconnecting storm drain cross connections and eliminating other I/I sources will reduce peak flows into the system. Costs associated with an I/I reduction program can vary greatly and are difficult to estimate in the planning stage. Projects could range from closing open clean-outs to constructing new storm drain pipelines to disconnect storm drain inlets from the sanitary sewer.

9.2.5.5 Operations and Maintenance (Sewer Main Cleaning/CCTV)

CCTV inspection and surveys of selected sewers in the Port have revealed that there are locations in the Port where sediment, FOG, large debris, and other materials have been deposited. This is primarily a maintenance issue; however, a significant amount of sediment build up or the presence of objects (e.g. concrete material) can reduce the capacity of a sewer mains, which may clog sewers and result in SSOs. To reduce this potential the Port will determine an appropriate cleaning frequency of those pipelines which have been identified to have sediment deposits, root intrusions, or other maintenance issues. As mentioned in section 5.3.1 a sewer main cleaning and CCTV

inspection rotation cycle will be developed to achieve the desired cleaning schedule as part of the anticipated 2016 SSMP Audit.

9.2.6 Schedule

The improvement projects outlined in the SECAP are prioritized based on their urgency to mitigate existing deficiencies and to correct pipeline or lift station condition problems. As shown in Table 9.3, the Port uses a five year CIP for the budgeting, planning and prioritization of improvement projects, and updates this plan annually to adjust for any changes in priorities and completion of projects.

MONITORING, MEASUREMENT, AND PROGRAM MODIFICATION

This chapter presents a summary of the steps to be taken by the Port of Oakland (Port) to evaluate the effectiveness of the Sewer System Management Plan (SSMP) and update it should improvements be necessary or desirable.

10.1 REGULATORY REQUIREMENTS

10.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify that the City shall:

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

10.2 MONITORING, MEASUREMENT, AND PROGRAM MODIFICATION

As part of the GWDRs, the Port is required to perform periodic SSMP program audits, as outlined in Chapter 11. The monitoring, measurement, and program modification element of the SSMP is closely paired with the program audits element, in that the information collected as part of the monitoring, measurement, and program modification element (such as SSO trends, etc.) will be used by the Sewer System Implementation Task Force while performing the SSMP program audits.

10.2.1 SSMP Information Maintenance Program

In order to streamline SSMP audits (performed at least once every two years) and updates (at least once every five years), it is necessary to store and maintain relevant information related to individual SSMP elements so that they can be easily located and accessed in the future. This may prove difficult given that the Port is broken up into several divisions that operate independently of each other.

Recommendations for the maintenance of data related to the SSMP are provided below:

- **Notes Related to the SSMP.** Port staff, during the course of their day to day routine, will likely encounter elements of the SSMP that will need to be updated (e.g., personnel changes, changes in operational conditions, new equipment acquired, etc.) or areas in which the SSMP could be improved. Because formal SSMP program audits are typically performed only once every two years, important changes that need to be included in the SSMP may be lost or forgotten. To account for this, Appendix N has been provided in this document as a blank place holder. The intent of Appendix N is that when Port staff identify an important change related to the SSMP, they can place their notes or other relevant documents in the appendix for easy reference at a later date. As of the date of this 2015 SSMP revision, no changes have been noted or added to Appendix N; however, we anticipate that additional notes will be added into Appendix N as part of a larger review in 2016 and 2017.
- **Computerized Maintenance Management System.** The Port uses its computerized maintenance management system (CMMS) software package to track routine and emergency maintenance activities. When the Port performs program audits, the auditor will work with the Harbor and Aviation Facilities Support Supervisors and the Commercial/Real Estate Manager to obtain relevant data summaries of maintenance work performed during the audit period broken down between preventive and corrective actions.
- **CIP Implementation/Expenditures.** When the Port performs program audits, the audit team should work with the Aviation Planning and Development Supervisor, Aviation Facilities Maintenance Manager, Maritime Administrative and Financial Service Supervisor, Commercial/Real Estate Manager and the Harbor Facilities Maintenance Manager to obtain summaries of capital improvement projects (CIP) and other sanitary sewer facility expenditures during the audit period. Additionally, projects identified in the Port CIP shall be reviewed to determine which have been implemented as scheduled.
- **CCTV Video.** Closed circuit television (CCTV) inspections will be performed on selected Port sewers and hyperlinked back into the hydraulic model. As noted in Chapter 5, it is recommended that the Port implement an ongoing CCTV program, where every sewer is videoed at least once every five years. When new CCTV inspections are performed, the Port should make sure that the videos are included as hyperlinks into the hydraulic model so that they can be easily reviewed at a later date. The Task Force will be developing a CCTV inspection program schedule.
- **SSO Data.** The overall purpose and intent of the GWDRs is to reduce the amount and severity of SSOs. It is critical that the Port have available detailed information regarding SSOs that occur within the Port in order to establish whether or not the SSMP is effective in meeting the intent of the WDRs. The new statewide reporting requirements should help the Port to store this information, because the Port's SSO reports are now maintained on a state run database available through the SWRCB CIWQS website⁵ utilizing the Port's waste identification number WDID 2SSO11430. Appendix O also provides a table and graphs

historical information on Port SSOs since the inception of the CIWQS Recordkeeping system.

10.2.2 SSMP Implementation Monitoring

To accurately gauge the progress of the SSMP and its successes or failures in preventing SSOs, the Port should establish a key staff member, or a group of staff members, to periodically monitor the implementation and effectiveness of the SSMP elements to determine which SSMP elements are being implemented or not implemented, and their general performance to date. This information will be useful in the preparation of SSMP program audits (See Chapter 11) to establish overall trends. Notes or records of the monitoring activities should be kept on file, and can be placed in Appendix N as noted in Section 10.1.1. The Port Executive Director and/or his designee will establish a Sewer System Implementation Task Force upon the approval of the 2015 SSMP Update for the purpose of coordinating all sewer system operations and activities and to enhance collaboration among the revenue divisions of the Port.

10.2.3 Preventive Maintenance Program Evaluation

To accurately gauge the progress of the SSMP and its successes or failures of the Port preventive maintenance program, the Port should establish a key staff member, or a group of staff members, to periodically review its performance. This information will be useful in the preparation of SSMP program audits (Chapter 11). Notes or records of the monitoring activities should be kept on file, and can be placed in Appendix N as noted in Section 10.1.1. It is expected that the Task Force will be responsible for these evaluations.

10.2.4 SSMP Program Updates

Updates to the Port's SSMP programs will be performed based on the results of the two year program audits discussed in Chapter 11 of this report or whenever there are major changes to the SSMP. All program updates and modifications should be approved by one of the Port's Legally Responsible Officials (LRO), and incorporated into the SSMP report, when necessary. If there are major changes to the SSMP, it needs to be re-certified by the Board and certified on CIWQS. At a minimum, the Port shall update and re-certify the SSMP once every five (5) years. The Port should budget for the costs associated with the SSMP updates.

10.2.5 SSO Trends

In order to optimize the performance of the Port's sanitary sewer collection system, it is necessary to identify any SSO trends that may exist. Through the identification of such trends, the Port may find capacity deficiencies, areas of the system in need of increased maintenance, SSO or fats, oil, and grease (FOG) "Hot Spots." Some key performance indicators that should be considered for tracking by the Port are:

- Number of Service Calls, blockages, and SSOs over a one year period;

⁵ http://www.waterboards.ca.gov/water_issues/programs/ciwqs/

- SSO events by cause;
- SSOs by Type (e.g., Category 1 to Surface Water, Category 1 not to Surface Water, Category 2)
- Volume of SSOs and volume contained;
- SSO events by location (e.g., Airport, Harbor, Commercial/Real Estate).

More detailed information regarding SSO trends is presented in Chapter 11 of this document, and data graphs showing SSO events are shown in Appendix O.

SSMP PROGRAM AUDITS

This chapter presents a summary of the procedures to be used by the Port of Oakland (Port) to perform internal audits.

11.1 REGULATORY REQUIREMENTS

11.1.1 SWRCB Requirements

The State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs) specify the following in relation to audits of the SSMP:

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of sanitary sewer overflows (SSOs). At a minimum, these audits must occur every two years and a report must be kept on file. This audit shall focus on 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.

11.2 PORT SSMP PROGRAM AUDITS WORK PLAN

In accordance with the requirements of the GWDRs, the Port shall perform periodic performance audits on its SSMP. An SSMP Program Audits Work Plan has been developed to provide guidance to the Port and is included in this section. Future audits shall be conducted by the Sewer System Implementation Task Force (Task Force) in conjunction with the Port Auditor at a minimum of every two (2) years as required by the WDR.

11.2.1 Responsible Party for Program Audit

The Port's legally responsible officials (LROs) will oversee the performance of the SSMP program audit. They may also designate certain key Port staff that are knowledgeable in the Port's sanitary sewer collection facilities to assist in the audits. The final audit report shall be reviewed and approved by the Port's Chief Audit Officer.

11.2.2 Audit Frequency

The GWDRs and RWQCB requirements differ with respect to the frequency at which program audits are required. The GWDRs require that audits be performed, at a minimum, once every two years and that a copy of the audits be kept on file at the Port (i.e., no submission requirements). To date the Port has not conducted any audits. In the future the approved Audit Reports shall be appended to this SSMP in Appendix B.

11.2.3 Audit Procedures

The recommended program audit procedures are broken up into three major categories: data compilation/summary, operation, and engineering. The Port's Task Force will likely be responsible for coordinating the major aspects of the program audit, including relevant interviews and data collection. This section summarizes the main aspects of the proposed audit approach. As is true with the SSMP in general, the audit procedures should be updated and modified, as necessary, to improve efficiency or reflect changing operating conditions.

11.2.3.1 Data Compilation/Summary

The data compilation/summary audit focuses primarily on the following aspects, and is initiated by the Task Force:

- **Data Gathering.**
 - **SSO Reports.** The Task Force should obtain copies of all SSO reports and data since the previous program audit. Data that should be collected include SSO cause, location and receiving waters (if any portion of the spill reached a surface water), spill volume, volume of spill contained, rainfall (if infiltration and inflow (I/I) is the suspected cause) as discussed in Chapter 10 of this report.
 - **Maintenance Records.** The Task Force should compile all relevant data concerning the maintenance of the system (e.g., number of service calls, number of blockages, lift station failures/maintenance activities, miles of pipe cleaned, etc.). This information should be obtained using the Port's computerized maintenance management system (CMMS) software package. Maintenance work performed during the audit period should be broken down between preventive and corrective actions and by the need for the maintenance action (e.g., FOG blockage, electrical problem, etc.).
 - **Interviews/Miscellaneous Data Gathering.** The Task Force should seek feedback from the facilities maintenance managers and all sewer system related Port staff as to which SSMP elements work well and which could be improved upon. The Task Force should also gather relevant information necessary to audit the various elements of the SSMP to determine which items are outdated. Examples may include updated names/contact information for organization chart, recent improvement plans, maps of recently abandoned sewer lines or lines transferred from the Port to the City, etc. The Task Force should also gather copies of notes from Port staff that have been stored in Appendix N of the various SSMP report copies.
- **Data Analysis.**
 - **SSO Summary.** One of the most important aspects of the program audits is to summarize the data collected from the SSO reports in order to establish trends. A simple way to track SSO trends is to develop Microsoft Excel based tables and charts to summarize the data available in the SSO reports.

Examples of SSO statistics to track are including in Table 11.1. More sophisticated

tracking methods, such as geographic information systems (GIS) mapping, could also be utilized as desired.

- **Maintenance Activity Summary.** In order to gauge the effectiveness of the SSMP in reducing SSOs, the SSMP program audits should include a summary of maintenance activities performed during the audit period. Correlations between maintenance activities and SSO trends or blockages can then be identified. The Task Force will develop both historical and future Activity Summaries for use in evaluating effectiveness of the SSMP and the Port sewer program and should be regularly updated.
- **Develop Technical Memorandum (TM) Summarizing Utilities Management Audit.** The Task Force, upon completion of the data gathering and data analysis/summary phases, should develop a TM summarizing the results of the utilities management audit, including the following:
 - Discussion of SSO trends during the audit period compared to historical trends.
 - A summary of maintenance activities during the audit period, including any apparent correlations to SSOs (did an increase/decrease in maintenance of a sewer facility correlate to increase/decreases in SSOs?).
 - A list of changes to be made to the SSMP to reflect changes to reflect current operational conditions or to improve the effectiveness of the SSMP.

**Table 11.1 SSO Trend Tracking Table
Port-Wide SSMP**

SSO Statistic	Year									Totals
	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Total Number of SSO's	2	2	1	2	2	5	0	2	1	17
Category 1	2	1	0	0	0	0	0	1	0	4
Category 2	0	0	0	0	0	0	0	0	1	1
Category 3	0	1	1	2	2	5	0	1	0	12
Greater than 1000 gals	1	0	0	0	0	0	0	0	1	2
Less than 1000 gals	1	2	1	2	2	5	0	2	0	15
Total Volume of SSO's (gals)	10,500	900	30	70	125	470	0	366	1,175	13,186
Volume recovered	50	800	30	20	10	240	0	0	0	1,150
Volume to surface water	10,050	100	0	0	0	0	0	366	0	10,516
Percent to surface water	99	11	0	0	0	0	0	91	0	86
Number of SSO's By Cause										
Roots	0	0	0	0	0	0	0	0	0	0
Grease Deposition (FOG)	1	1	0	0	0	0	0	0	0	2
Infiltration & Inflow	0	0	0	0	0	0	0	0	0	0
Lift Station Failure	0	0	0	0	2	3	0	0	0	5
Capacity Deficiency	0	0	0	0	0	0	0	0	0	0
Vandalism	1	0	0	0	0	0	0	0	0	1
Debris	0	1	1	0	0	1	0	0	0	3
Other Structural	0	0	0	1	0	0	0	2	0	3
Contractors	0	0	0	1	0	1	0	0	1	3
Number of SSO's By Location										
Aviation	2	2	1	1	2	4	0	0	0	12
Maritime	0	0	0	1	0	1	0	2	1	5
Commercial	0	0	0	0	0	0	0	0	0	0
Number of Locations With Repeat SSO's	0	0	0	0	0	0	0	2	0	2

Notes: Source of SSO data is the public SSO database, the California Integrated Water Quality System (CIWQS) Information displayed is current as of April 2015.

11.2.3.2 Operations Audit

The operations audit focuses primarily on the following aspects, and is initiated by the Task Force:

- **Operations Interviews.** The Task Force should conduct interviews with both Aviation, Maritime and Commercial/Real Estate operations staff to determine how effective the SSMP has been in helping to respond to and mitigate the effects of SSOs. Questions that could be helpful in conducting these interviews include:
 - Is the Overflow Emergency Response Plan (OERP) being fully implemented, and is it working as envisioned?
 - Are there any procedures that should be added to the OERP?
 - Are there any procedures in the OERP that are unnecessary or need to be removed?
 - Which components of the SSMP are working well? Why?
 - Which components of the SSMP need improvement? Why?
 - Is there a need to purchase additional equipment or add staff?
 - Are there any equipment maintenance needs?
 - Is there a need for additional training to field crews on SSMP/Port operating procedures?
 - What additional resources are needed to help respond to SSOs?
 - Are there any operational changes that have occurred since the previous program audit (e.g., new equipment/spare parts, changes to cleaning/maintenance activities, new “hot spots” identified, etc.)?
- **Develop TM Summarizing Operations Audit.** The Task Force, upon completion of the operations interviews, should develop a TM summarizing the results of the operations audit, including the following:
 - Discussion of SSMP components that are working well.
 - A summary of SSMP components that need to be improved, enhanced, or removed.
 - A list of changes to be made to the SSMP to reflect changes to reflect current operational conditions or to improve the effectiveness of the SSMP.
 - A list of recommendations for additional training, equipment, staffing levels, etc.

11.2.3.3 Engineering/Capital Improvement Program (CIP) Audit

The engineering/CIP audit focuses primarily on the following aspects, and is initiated by the Water Engineer:

- **Element Review.** The Water Engineer should coordinate a meeting with all appropriate Port engineering staff and other staff related to CIP projects and expenditures in order to review specific elements of the SSMP as they pertain to the engineering division, including, but not necessarily limited to, the following:

- **System Evaluation and Capacity Assurance Plan.** It is recommended that the Port review the System Evaluation and Capacity Assurance Plan (SECAP) during the each program audit to determine whether updates or amendments are necessary. When an update or amendment to the SECAP is required, it should be prepared by a licensed engineer.
- **Capital Improvement Program.** The program audit should also include a review of the capital improvement program to determine which projects have been implemented as scheduled, which projects have not been implemented as scheduled and why, and to determine the adequacy of the budget allocation for each program or project. The audit should identify a list of all projects complied during the audit period.
- **Design, Inspection, and Construction Standards.** Port engineering staff should review their design, inspection, and construction standards during each program audit to determine if changes or modifications are needed.
- **Mapping, Etc.** The Port should also review their collection system map/hydraulic model to verify that its contents are up to date and accurate.
- **Develop TM Summarizing Engineering/CIP Audit.** The Water Engineer, upon completion of the engineering/CIP review, should develop a TM summarizing the results of the engineering audit, including the following:
 - A summary of SSMP components that need to be improved, modified, enhanced, or removed.
 - A list of changes to be made to the SSMP to reflect changes or to improve the effectiveness of the SSMP.
 - Submit the final TM to the Task Force for review and comment.

11.2.4 Program Audit Report

Following the utilities management, operations, and engineering audits, the Task Force should use the material summarized in the utilities management, operations, and engineering TMs to develop a draft SSMP program audit report.

This draft report should include supporting material, such as tables, figures, and maps that support the conclusions of the report. Information presented in the audit report may include the following:

- An evaluation of each element of the SSMP report;
- Progress made on the development of SSMP elements. Justification should be provided if progress has not been made on the development of certain elements of this SSMP;
- A description of the new SSMP program elements since the last program audit;
- The effectiveness of implementing SSMP elements;
- A description of the additions and improvements to the sanitary sewer collection system facilities since the previous program audit;

- A description of the additions and improvements to the sanitary sewer collection system facilities planned for the next year.

The draft report should then be distributed to all interested Port staff members for review and approval.

All appropriate Port staff comments will then be incorporated into a final SSMP program audit report. Copies of the program audit will be kept in Appendix B of the SSMP after approval by one or more of the Port LROs.

COMMUNICATION PROGRAM AND FINAL CERTIFICATION

This chapter presents a summary of the steps to be taken by the Port of Oakland (Port) to communicate with the public on the development, implementation, and performance of the Sewer System Management Plan (SSMP). This chapter also contains the final certification of this SSMP.

12.1 REGULATORY REQUIREMENTS

12.1.1 SWRCB Requirements

State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), issued by the State Water Resources Control Board (SWRCB), specifies the following:

- a) The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of the SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.
- b) The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

To certify the SSMP, the GWDRs specify the following:

- a) Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth (in the previous sections) and must be presented to the Enrollee's governing board for approval at a public meeting.
- b) In order to complete the certification, the Enrollee's LRO(s) must complete the certification portion in the Online Sanitary Sewer Overflow (SSO) Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:
State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812
- c) The SSMP must be updated every five years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required (as specified above) when significant updates to the SSMP are made. To complete this re-certification process, the Enrollee shall enter the data in the online SSO Database and mail the form to the State Water Board, as described above.

12.2 COMMUNICATION PLAN

In accordance with the GWDRs, the Port Board of Commissioners is required to hold a public hearing to formally approve and adopt the final SSMP.. A copy of the resolution to formally approving and adopting the SSMP will be included in Appendix C.

To provide the public with the chance to review and comment on the SSMP, an electronic copy of the SSMP should be posted on the Port's website⁶ prior to and following final approval in a portable document format (PDF). Additionally, a copy of the report should be available at the Port's main office, located at 530 Water Street in Oakland, CA 94607, for review by the public prior to and following final approval.

12.3 FINAL CERTIFICATION

The Port's Legally Responsible Official (LRO) is required to certify that all sections of this report comply with the applicable GWDR requirements. This will be accomplished by completing the certification portion in the CIWQS Online SSO Database Questionnaire and sending the appropriate signed form to the SWRCB. A copy of the SWRCB certification form will be included in Appendix R of this report.

The Port shall update and re-certify the SSMP by the Board of Commissioners when significant changes are made. At a minimum, the Port will update and re-certify this report every five years.

⁶ <http://www.portofoakland.com/>