SEWAGE COLLECTION SYSTEM INSPECTION FORM
City of Oakland, CA

GENERAL INFORMATION

Inspection Dates: **April 27 – 30, 2009**

Utility Name: City of Oakland
Address: Public Works Agency Department of Infrastructure and Operations 7101 Edgewater Dr. Building 4 Oakland, CA 94621
Contact Person: Dan Clanton
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Inspectors Names	Agency/Contractor
Michelle Moustakas	EPA Region 9
Anna Yen	EPA Region 9
Michael Chee	RWQCB 2
Bill Hahn	SAIC
Dianne Stewart	SAIC

Utility personnel who accompanied inspectors

Name	Title
Loren Little	Supervisor II, Sewer Maintenance
Ron Ward	Supervising Civil Engineer
Raul Godinez	Director, Public Works Agency
Gus Amirzehni	Division Manager, Eng. Design and Right-of-Way Management Division
Bruce Saunders	Assistant Director, Infrastructure and Operations

SYSTEM OVERVIEW

Population: 400,000 Service Area (Sq. Miles): 56
Service Area Description: The City of Oakland is comprised of residential neighborhoods, commercial districts, industrial, and institutional areas

	Residential	Commercial	Industrial	Total
Number of service connections	89,652 (single family)	5,000 (includes apt. bldgs.)	2,317	96,969

Combined Sewers (% of system): 0

Name and NPDES permit number for WWTP(s) owned or operated by the collection system utility: None

Name and NPDES permit number for WWTP(s) that receive flow from the collection system utility: None

Names of upstream collection systems sending flow to the collection system utility:
Piedmont
Berkeley
Emeryville

Names of downstream collection systems receiving flow from the collection system utility:
Piedmont
Berkeley
Emeryville

Do any interagency agreements exit with upstream collection systems? Yes. There is an agreement with the City of Piedmont

Does the utility maintain the legal authority to limit flow from upstream satellite collection systems? No

System inventory (list only assets owned by utility)

Miles of gravity main	Miles of force main	Miles of Laterals	Number of maintenance access structures	Number of pump stations	Number of siphons
1,034	0.3	0	31,000	7	0

Utility responsibility for laterals (none, whole, lower): None

Size Distribution of Collection System

Diameter in inches	Gravity Sewer (miles)	Force Mains (miles)
6 inches or less	2	0.3
8 inches	850	
9 - 18 inches	100	
19 - 36 inches	45	
> 36 inches	3	

Age Distribution of Collection System

Age	Sewer Mains, miles	# of Pump Stations
0 - 25 years	250	
26 - 50 years	159	3
51 - 75 years	625	4
> 76 years		

Comments:

The City owns no part of the lateral.

None of the pump stations have backup generators on site. There is no SCADA system, and only two stations have visible alarms (Laney and Denton Place). City staff stated that all the stations have been assessed for upgrade needs by a consultant. Pump stations are visited two times per month (see comment under Pump Station section).

The inspection team visited the following pump stations:

- Hegenberger (Photos 1 - 4) – located next to San Leandro Creek. This station is not fenced. The force main from this station is attached to the adjacent bridge.
- Tidewater (Photos 5 and 6) – located in an industrial area. City staff stated that this station can no longer be routinely entered because it is a safety hazard. The wet well contained a moderate amount of grease.
- Laney (Photos 7 and 8) – located at the Laney College campus. The wet well contained a moderate amount of grease.
- Denton Place (Photos 9 - 11) – located in a residential area in the Oakland Hills. The visible alarm, which has alerted neighbors of problems in the past, is mostly obscured by vegetation. A neighbor stated that this station overflowed during a rain event in 2007 or 2008. She said there was toilet paper on the ground, and she called in to notify the City of the problem. The spill database lists a spill of 25 gallons from this pump station on 2/13/2007, due to an electrical problem.

SYSTEM FLOW CHARACTERISTICS

Collection System (flow measurement location: Data are from EBMUD ; or estimate)		
Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)	Peak Instantaneous Wet Weather Flow (MGD)
46	74	468

Wastewater Treatment Plant		
Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)	Peak Instantaneous Wet Weather Flow (MGD)
NA	NA	NA

Upstream Satellite Name	Avg. Dry Weather Flow		Peak Flow (MGD)	Flow based on meter or estimate?
	(MGD)	% of total flow		
See comment below.				

Constructed Relief Points		
Relief Point	Location	Number of Discharges/Year
	None within the City	

Comment:

Oakland does not monitor flows from the three upstream satellites, or within its collection system.

With regard to constructed relief points, Oakland presented a list of their capacity I/I correction projects, and stated that all constructed SSOs have been removed. The last two projects were completed in FY 2006/2007.

REGULATORY BACKGROUND

Does the system operate under the provisions of an NPDES permit (either their own or under provisions of another agencies permit)? Yes
Permit holder City of Oakland Permit # CA0038512

List provision of the permit that apply (If permit holder is other than the agency being inspected)

_____

_____

Does the system operate under a state permit? Yes
Are there any spill reporting requirements? Yes
Which agency (or agencies) promulgates the spill reporting requirements?
SWRCB and RWQCB2

Outline the spill reporting requirements (summarize spill reporting requirement for each applicable statute, regulation and permit): Electronically report time, duration, volume, cause, and location within 2 hours of knowledge.

Comments:

In February 2008, SWRCB issued new SSO notification requirements in Order No. WQ 2008-0002-EXEC. On May 1, 2008, RWQCB 2 sent a letter to permitted dischargers explaining the new reporting requirements. The letter contains the following summary table showing these requirements:

Communication Type (all are required)	**Agency Being Contacted**	**Timeframe Requirements**	**Method for Contact**
1. Notification	Office of Emergency Services	As soon as possible, but not later than **2 hours** after becoming aware of the SSO.	Telephone – (800) 852-7550 (obtain a control number from OES)
	Local health department	As soon as possible, but not later than **2 hours** after becoming aware of the SSO.	Depends on local health dept.
	Regional Water Board	As soon as possible, but not later than **2 hours** after becoming aware of the SSO.	Electronic www.r2esmr.net/sso_login2.asp
2. Certification	Regional Water Board	As soon as possible, but not later than **24 hours** after becoming aware of the SSO.	Electronic www.r2esmr.net/sso_login2.asp
3. Reporting State Water Board	State Water Board (CIWQS)	Category 1 SSO: initial report within **3 business days**, final report within **15 calendar days** after response activities have been completed.	Electronic (only) to CIWQS
		Category 2 SSO: within **30 calendar days** after the end of the calendar month in which the SSO occurs.	Electronic (only) to CIWQS

The City did not have written spill reporting procedures. Mr. Little is responsible for making the reports to the State agencies.

SPILLS

Sanitary Sewer Overflows From and Caused by Utility									
Note: Spill Rate = number of SSOs/100 miles of sewer pipe/year									
Year	Mains (Miles of Mains 1,000)			Laterals (Miles of Laterals 0)			Totals (Total Miles 1,000)		
	#SSO's	Spill Rate	Gross Spill Volume	#SSO's	Spill Rate	Gross Spill Volume	Total SSO's	Total Spill Rate	Total Gross Spill Volume
2008	205	20.5	62k				205	20.5	62k
2007	271	27.1	34k				271	27.1	34k
2006	196	19.6	16k				196	19.6	16k
2005	232	23.2	25k				232	23.2	25k
Total	904		137k				904		137k

Spill Cause

Time Period	Blockage								Gravity Pipe Break		Force Main Break		Pump Station		Capacity	
	Grease		Roots		Debris		Multiple									
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2009	13	20	37	58	8	12										
2008	42	20	88	43	13	6	40	20	2	1					2	1
2007	67	25	109	40	45	17			3	1			1	>1	2	1
2006	72	37	80	41	30	15			9	5					3	1
2005	61	26	101	43	13	6	44	19	8	3					2	1
Total	255		415		109		84		22				1		9	

BUILDING BACKUPS (list only backups caused by problems in sewer mains)		
Year	Number of backups	Cost of Settled Claims
None reported		
TOTAL		

Comments:

In the table above, the City did not record a spill due to a power failure on 2/11/07 at Denton Place. SAIC added this spill to the table.

The City notes that the majority of its SSOs are due to roots. Many of these are located in the Oakland Hills. They have not found hand rodding to be very effective in dealing with roots, so they are trying application of root foaming chemicals.

The City has not certified a number of its spills, which are therefore not available for review on the CIWQS public website. The information provided by the state shows 25 spills in 2004, 89 in 2005, 161 in 2006, 211 in 2007, and 36 in 2008 (total = 522). The City provided Adobe files of spills for the years 2004 – 2008.

Although time constraints did not allow for review of all of Oakland's spills, SAIC identified several spills that appear to be at or very near locations identified in the October 1993 Compliance Plan. This leads to some concern that capacity may still be a cause of some overflows.

- On 3/23/2005, a 150 gallon spill occurred at 7900 Ney Avenue (two houses down from the "Parker and Ney" location). The cause was reported to be grease. Rainfall the day prior was 0.78 inches, and 0.18 on this date.
- On 12/30/2004, a 200 gallon spill occurred at 8065 Fontaine Street. This appears to be essentially the location identified in the October 1993 Compliance Plan as "Mountain & Fontaine." The cause was reported to be I/I.

STAFFING

Indicate Number of Staff

Engineering Design – Sanitary Sewer Design Division:
Engineering: 10
Department of Infrastructure and Maintenance:
Management and Administrative: 4
Maintenance: 50
Electricians and Mechanical Technicians: 0 (City uses contract electricians; mechanical technicians from another department are available)
Operators: 1
Engineering: 1

Number of Certified Collection System Operators/Certification Program: 0
Number of Sewer Cleaning Crews: 5
Sewer Cleaning Crew Size: 3 (some crews are 2 person, and construction crews may be 4 or 5; complaint trucks have a crew of 3)

Contractor Services	Contractor Name(s) (NA if contractors not used)	Cost ($/year)
Sewer Cleaning	NA	
Chemical Root Control	Duke's	$212,000.00
Spot Repairs	NA	
CCTV	NA	
Spill Response	NA	
Other:		

Comment

The City has recently had at least 12 vacancies in the supervisory ranks. The Operations Manager position has been vacant for two years, but is expected to be filled soon. Of the staff positions identified in this section, 3 are injured and on leave; 6 lead positions are empty; 1 supervisor position is empty.

EQUIPMENT

List Major Equipment Owned by the Utility:

Equipment	Number	Number in Service
Combination Trucks (hydroflush and vactor)	3	3
Hydroflusher		
Mechanical Rodder	3	3
CCTV Truck	3	3
Utility Truck	4	3
Portable Pumps	5	5
Portable Generator	1	1

FINANCIAL

REVENUES	
Revenue Source	Annual Revenue ($/year)
User Fees	$31 Million
Connection Fees	$1.8 Million
Grants	
Bonds	
SRF Loans	
Other	$1.2 Million
TOTAL	$34 Million

EXPENSES		
Expense	Annual Cost ($/year)	Cost / Mile of Pipe (Total Pipe Mileage: 1,000)
Maintenance	$11.7 Million	$11,700
Operations (electric, fuel, etc.)		
Salaries and Benefits	Included above	
Capital Improvements	$16.7 Million	$16,700
Debt payments	$5.3 Million	$5,300
Total	$33.7 Million	$33,700

Average Monthly Household User Fee for Sewage Collection: $22.24
Wastewater Treatment: NA
Total Wastewater Fees: $22.24

Sewer Fee Rate Basis (i.e. water consumption, flat rate, etc.): Flat Rate for residential; based on water consumption for apartments and commercial or industrial businesses.

Last Fee Increase (Date): 01/01/09

Planned Fee Increases: 01/01/10

Capital Improvement Fund: $220 Million for the last 20 years

SPILL RESPONSE, NOTIFICATION AND REPORTING

Does the Utility Have a Written Spill Response Plan? Yes
Is the Plan Carried by Maintenance/Spill Response Crews? Yes

Indicate Elements Included In the Spill Response Plan		
Element	Y/N	Comment
Identification of Responsible Staff	Y	
DISPATCH		
System for Becoming Aware of Spills	Y	
System for Receiving Public Calls	Y	
Dispatch Procedures – Normal Hours	Y	
Dispatch Procedures – After Hours	Y	
Coordination with First Responders (police, fire department)	Y	
Response Time Goal	Y	
SPILL CONTROL/MITIGATION		
Spill Response Activity Sequence	Y	
Spill Site Security	Y	
Procedures for Stopping Spills	Y	
Spill Containment	Y	
Protection of Storm Drains	Y	
Cleanup/Mitigation	Y	
DOCUMENTATION		
Spill Volume Estimation (list methods in comment field)	Y	
Determination of Spill Start Time	Y	
Spill Sampling	N	Not located in the *SSO Response Instructions* but they have procedures and train for them
Receiving Water Sampling	Y	
Photographing Spill Site	Y	
Field Notes Form	Y	
Spill Report Form	Y	
NOTIFICATION		
Notification of Affected Public (schools, recreational users, etc.)	N	Not located in the *SSO Response Instructions* but they would do this
Posting Warning Signs	Y	
Sanitation Information re: building backups	Y	
REPORTING		
Reporting Procedures	N	These procedures are not written.
Spill Report Forms	Y	
Persons Responsible for Filing Reports	Y	

Are all spills reported regardless of volume? Yes
Are Contractors Required to Follow Spill Response Procedures? Yes
Average Spill Response Time (normal work hours): 1.5 hours
Average Spill Response Time (after hours/holidays): 1.5 hours

Does the Utility CCTV Pipes Following Spill? Not always
Are Cleaning Schedules Adjusted in Response to Spills? No

Comments:

The City's SSO response plan is titled *SSO Response Instructions*. Crews have biweekly tailgate meetings to ensure that all employees are familiar with the procedures. The volume estimation photographs (from San Diego) are carried in all trucks.

Most spills are originally reported by citizens. Their calls come into a call center. A ticket is developed and sent to the Public Works Supervisor. The four complaint crews are located around the City, and the one closest to the reported spill initially goes to investigate it. Outside normal business hours, calls are automatically routed to Fire Alarm, which calls out the standby supervisor. This supervisor will call out staff to respond. If an overflow is found, the crew calls Mr. Little, and he makes the notification to the State.

The time that the dispatch occurs is used as the beginning time of the SSO.

The City does not always televise the pipe after an SSO, but does so in spills involving cave-ins or depressions in the street. They also televise 6 months after foaming for roots to evaluate effectiveness.

SEWER CLEANING AND MAINTENANCE

Does the Utility Have Detailed Sewer System Maps? Yes
Are Maps on GIS Database? Yes
Are Maps Available to Maintenance Crews? Yes
Does the Utility Have a Written Maintenance Management System? Yes
Does the Utility Have a Computerized Maintenance Management System? Yes, but not yet operable for sewers

ANNUAL SEWER CLEANING – Include hydroflushing, mechanical and hand rodding		
Pipe Cleaning – Preventative Maintenance		Pipe Cleaning – Hot Spots
(miles/year)	% of system/year	(miles/year)
200	20	65

System Cleaning Frequency (years to clean entire system): 8

Hot Spots subject to more frequent cleaning: 364 locations; 64.8 miles of pipe
Types of problems subject to hot spot cleaning? FOG, Roots

HOT SPOT CLEANING SCHEDULE			
Cleaning Frequency	Number of Locations	Pipe length excluding repeats (miles)	Pipe length including repeats (miles)
3 Month	364	16.2	64.8
6/year			
4/year			
2/year			
1/year			

Chemical Root Treatments
Length of pipe subject to chemical root treatments (miles/year): 30
Chemical treatment frequency: 3 years
Root treatment chemicals used: Diquat Dibromide

Spot Repairs
Spot repairs completed annually: 220 (#/year); _____ (miles/year)
Spot repair budget ($/year): This figure was not available
Spot repair expenditures last year: This figure was not available

Odors
Annual number of complaints: 14 in 2008
Odor hot spot locations: None are recurring
Odor treatment facilities: 0

Easement Pipe Cleaning
Total length of easement pipes (miles): 100
Annual easement pipe cleaning (miles/year): 20
Do maintenance workers have access to all easements? Yes

Comments

Information provided by City staff indicates that the City may be over-reporting the annual mileage of pipe cleaning. Documents on which the crew record the actual pipe cleaned indicate that they count the number of cleaning passes through a pipe and multiply this by the length of the pipe. This method is in contrast to the usual way this statistic is calculated, where the length of the pipe is counted only once regardless of how many times on a given visit that the crew may clean the same pipe. Therefore, figures for pipe cleaning in this section may over-estimate the actual amount of pipe cleaned and the percentage of the system that is cleaned annually. To find out how much pipe was actually cleaned, the City would need to go back through all of the crews' logs and tally the actual mileage. City staff also indicated that when their combination trucks are called for spill response, this may decrease the amount of routine pipe cleaning that they are able to accomplish. The 2 trucks dedicated to hotspot cleaning may also be called out to respond to SSOs.

The City is currently using paper records for SSOs and sewer cleaning. A City-wide computerized maintenance management system is being developed, but is not yet operable for sewer maintenance.

The "hotspot" list is comprised of sites where repeat spills have occurred. Locations with repeated spills due to roots may be added to the root foaming list instead. In some cases a location with repeat spills may be forwarded to the Design and Construction Division so that a permanent fix can be applied.

FATS, OILS AND GREASE (FOG) CONTROL - Completed by EBMUD FOG Program

Does the Utility have a FOG source control ordinance? EBMUD has a Wastewater Control Ordinance
Ordinance Citation: EBMUD Wastewater Control Ordinance, Ordinance 311A-03
Agency responsible for implementing the FOG control program: City of Oakland and EBMUD for respective program components

Number of Food Service Establishments (FSEs) in service area: Approximately 3,000
Number of FSEs subject to FOG ordinance: Same as FSEs

Indicate Elements Included In the Food Service Establishment FOG Source Control Program		
Element	Y/N	Comment
FSE Permits	Y	
FSE inspections	Y	
FSE enforcement	Y	
Oil & grease discharge concentration limit		EBMUD's Ordinance has an O&G limit; however, the FOG program focuses on GRD installation and appropriate maintenance
Grease removal device (GRD) requirements:		
traps		
interceptors	Y	
Automatic cleaning traps		
FSEs subject to GRD installation:		
all FSEs (new and existing)		
new FSEs	Y	
remodeled FSEs	Y	Remodels > $75,000.00
for cause at existing FSEs	Y	
GRD maintenance requirements:		
Cleaning frequency	Y	Every 3 months or more as needed
25% rule (grease and solids accumulation)	Y	EBMUD requires increased pumping frequency if >25% grease/solids
Kitchen BMP Requirements (list required BMPs below)		
		BMPs are recommended, not required (BMP

Indicate Elements Included In the Food Service Establishment FOG Source Control Program		
Element	Y/N	Comment
		information attached)
Allowance for chemical additives?		See BMPs ("Do not use emulsifiers or solvents…")
Allowance for biological additives?		Not recommended
FOG Disposal Requirements		See permit for maintenance and disposal
FOG Disposal Manifest System		See permit for documentation/manifest requirements

Number of EBMUD FOG Program staff:

Inspectors 10
Permit writers 1
Other 4

FSE Inspection frequency: Every 5 years for routine inspections, as needed for Hotspot Response
Annual number of FSE inspections: _____
Does Utility (EBMUD) use CCTV to identify FOG sources? Yes

Does sewer maintenance staff coordinate with FOG source control program staff? Yes.
Collection system agencies report hotspots to EBMUD Staff

Cleaning targeted to FOG hot spots? _____
Maintenance crew referrals to FOG program? _____
Pipe repairs at FOG hot spots? None

Describe program for public outreach and education related to residential FOG sources:

- The City of Oakland identifies targeted areas for outreach and provides addresses to EBMUD.
- EBMUD conducts outreach using the City's list via distribution of doorhangers with information in English, Chinese, and Spanish.
- EBMUD conducts outreach to businesses (FSEs), universities and residents, both throughout the year and during the holidays. EBMUD has expanded its multi-lingual targeted outreach in residential areas that have SSOs and blockages.
    - EBMUD includes outreach with permit issuances and inspections via BMPs, posters, and brochures, most in multiple languages (English, Chinese, Spanish, Korean, and Vietnamese).
    - EBMUD has general residential outreach and information on the EBMUD website. EBMUD also targets residential outreach to hotspot areas in coordination with the collection system communities, via distribution of doorhangers with information in English, Chinese, and Spanish.
    - EBMUD has a container at the entrance to its wastewater treatment plant for residents to bring used grease.
    - EBMUD has a hotline phone number and email address for customers to contact for additional information regarding FOG.
- EBMUD also partners with the nongovernmental organization Baykeeper to expand its FOG control message to residential customers. Information on FOG control is on Baykeeper's website. EBMUD and Baykeeper collaborate to expand the FOG-control

message by working with "big box" retailers that sell turkey fryers and with grocers during the holiday season. EBMUD provides information to go on the turkey fryers and pull-off tags for use at grocery stores to communicate not to put FOG down the drain and with contact information for EBMUD for additional information.

Comments:

City staff do not know how many FSEs are present within the city.

The 10 inspectors identified as FOG program staff are also responsible for pollution prevention and industrial user inspections in addition to FOG. One of these staff is a senior inspector whose primary job responsibility is FOG.

It does not appear that there is a consistent feedback mechanism between the satellite and EBMUD on such issues as enforcement actions against non-complying FSEs and feedback on follow-up to FSEs referred to EBMUD.

PIPE INSPECTION AND CONDITION ASSESSMENT

Gravity Main Inspection

Describe Pipe Inspection Methods: The City uses closed circuit television (CCTV) inspection

Miles of Pipe Inspected in the Last 10 Years and Planned Inspection Next 10 Years				
Date Range	Inspection Method	Miles of Pipe without repeats	Useable Condition Assessment	
			Miles of Pipe (without repeats)	% of System (System miles:1,034)
2003 to present	CCTV	230 miles/5 yr.	230	22
19__ to present	Other			
Present to 20__	CCTV			
Present to 20__	Other			

Describe Planned Pipe Inspection:

Current capability is 50 miles per year; the entire system can be CCTV'd every 20 years. The City plans to retire the existing 3 CCTV trucks and purchase 6 new CCTV trucks (date unknown), for a capability of 100 miles per year. Entire system would then be inspected every ten years. They also plan to upgrade to better software.

Summary of Condition Assessment Findings:

A sewer system evaluation study (SSES) in the mid-1980s recommended a short-term rehabilitation and capacity correction program. This program represents the City of Oakland's 25-year sanitary sewer collection system master plan. Projects were prioritized to provide the City with the greatest extent of improvement for each dollar

spent based on the degree of visibility of the problems during periods of rainfall and the resulting impacts. They were also coordinated with the schedule and budget of the other satellite collection system and the East Bay Municipal Utility District's conveyance, storage, and treatment improvement program. Funding for the program has been made available through the sewer service charge.

The capital improvement program is scheduled to be completed in year 2014. Afterwards, the City will begin the second phase of the rehabilitation program in areas identified as not cost-effective by the study.

Force Mains

Describe Force Main Inspection Methods: None
Describe Program for Inspecting Air Relief Valves: By On-Call Contractor

Private Laterals

Does the Utility Inspect Private Laterals? No
Number of Private Laterals Inspected 19__ to Present: _____
Summary of Inspection Findings:
Number of Private Laterals Planned for Inspection Present to 20__: 0

Comments

The City does not inspect the lower lateral when replacing the mains.

The City does not plan to move ahead with a program to require lateral replacement upon sale of homes (or other criteria) until they learn more about the outcome of the Stipulated Order. If a crew finds and SSO due to a lateral, they file a report and the homeowner is required to fix it.

CAPACITY ASSURANCE

List Locations and Dates of Repeats Capacity Spills: All known capacity bottlenecks have been addressed.

List Locations of Known Capacity Bottlenecks:

Dry Weather: None
Wet Weather: All known capacity bottlenecks have been addressed.

Describe I/I Assessments Completed by the Utility (dates, area covered, findings, etc.):

The purpose of the mid-1980s SSES was to identify system deficiencies and recommend capacity correction and rehabilitation programs in order to reduce the frequency of wet-weather overflow events. The study recommended a short-term system rehabilitation and capacity correction program. The City adopted the study's recommendations and now is in the 19th year of the 25-year program. In the next five years, approximately 40 miles of sewer pipes will be rehabilitated as part of this program. In addition, the City will replace and/or rehabilitate approximately 3 miles of additional pipes as part of its annual cyclic replacement program.

Flow Meters (number, locations): None are currently installed

Describe Flow Model Used by the Utility: The name of the mid-1980s model is unknown. See description on page 17. A new model is being developed as part of the regional EBMUD discharger program.

Inflow

Does the Utility Prohibit Storm Water Connections to the Sanitary Sewer (roof drains, sump pumps, etc.)? Yes

Describe Program for Enforcing Ban on Illicit Connections:

Once identified; the issue is referred to the Engineering Right-of-way Division which performs the enforcement. Division staff do a dye-test to confirm the illicit connection, then issue a notice to repair the lateral or disconnect the downspout.

Describe Program for Locating Illicit Connections (smoke testing, etc.):

When customer complaints identify repeated overflows from a certain location, a consultant is hired to perform smoke testing in the surrounding area. Locations of smoke discharges are noted on a property drawing, and a digital picture is taken.

Locations Subject to Street Flooding: None

Has the Utility Sealed Manholes in Locations Subject to Street Flooding? No

I/I Control

Describe I/I Control Projects (miles of pipe rehabilitated or replaced for I/I Control)

Recently Completed Projects: Refer to Appendix B
Planned Projects: Refer to Appendix B

Describe Capacity Control Measures (relief sewers, storage, WWTP expansion, etc.)

Recently Completed Projects: Refer to Appendix B
Planned Projects: Refer to Appendix B

Comments

The City attached a list (Appendix B) of the projects that were required in the October 1993 Compliance Plan. The list includes the planned fiscal year for the project, the type of project (rehabilitation or relief), the actual fiscal year in which it was accomplished, and the cost of the project. The earliest projects were done in FY 1987/1988. The most recently completed projects were in FY 2006/2007. These were relief projects.

The City's collection system was formerly a combined system. They have eliminated all known cross connections. There is no on-going proactive program to identify illicit connections.

INFRASTRUCTURE RENEWAL AND CAPITAL IMPROVEMENTS

Pipe Rehabilitation and Replacement Methods Used: Open-trench excavation; Pipe-expanding; Pipe lining; CIPP (Cured-in-place pipe); Micro-tunneling

Miles of Pipe Rehabilitated or Replaced: Last 20 Years and Planned Next 20 Years		
Date Range	Miles of Pipe	% of System (System miles: 1,034)
1987 to present	250	24
Present to 2014	45	4.3

Describe Capacity Improvement Program:
As part of the mid-1980s SSES study, the system's trunk lines were evaluated for capacity deficiencies using a computerized hydraulic model. It included calculated amounts of infiltration and inflow. Hydraulic capacity of each pipe reach in the trunk system was calculated and compared to the total design flow for that trunk system. The total design flow consisted of the 3-hour average of the future peak dry weather flow combined with 5-year design storm I/I hydrograph adjusted for any reduction in I/I due to rehabilitation.

Most of the recorded overflows have been wet-weather events. I/I was evaluated analyzing rainfall data, sanitary sewer flows, and groundwater levels. Rainfall was monitored using rain gauges, sanitary flow data were collected using flow monitors, and groundwater levels were monitored with groundwater observation wells. These parameters were analyzed simultaneously to develop a relationship between sanitary flows monitored during dry and wet weather periods. Source detection for I/I included smoke testing, rainfall simulation, physical inspection, flow isolation, and television inspection. The study presented the most cost-effective approach to reduce I/I and frequency of overflow events to not more than once every 5 years. The cost-effectiveness methodology incorporated site-specific characteristics for comparison of the cost of I/I correction by rehabilitation versus the cost of conveyance by capacity correction storage, and treatment.

Both long-term and short-term flow monitors were installed at selected sub-basins. Long-term monitors were installed to provide data year-around for analyzing the effects of rainfall on the system. Short-term monitors were installed during wet weather season for intensive flow evaluation. These monitors were electronically tied to a central computer system.

A simulation program was developed for use in the study that performed the following: Computed base wastewater flows corresponding to land use and unit flow rates, and added I/I entering the system by applying a triangular synthetic hydrograph method which included an I/I reduction factor corresponding to the rehabilitation alternatives. Then, it routed these flows through the collection system identifying undersized pipes and computing the sizes of the needed relief sewers.

State and federal grant funding were utilized for the study and the first two years of the recommended rehabilitation and capacity correction projects with some additional funding from a state revolving fund loan program. The program is currently funded by a sewer service charge fund, which is a fixed fee for single family and apartment dwellings, and water-usage based fee for commercial and industrial users.

List Major Planned Improvements:

In the next five years, approximately 9,000 feet of relief sewers are scheduled to be constructed ranging in size from 10 to 66 inches in diameter. Approximately 40 miles of sewer pipes will be rehabilitated.

Describe Master Plan:

The study's recommended short-term rehabilitation and capacity correction program represents the City of Oakland's 25-year sanitary sewer collection system master plan. Projects were prioritized to provide the City with the greatest extent of improvement for each dollar spent based on the degree of visibility of the problems during periods of rainfall and the resulting impacts. They were also coordinated with the schedule and budget of the other satellite collection system and the East Bay Municipal Utility District's conveyance, storage, and treatment improvement program. Funding for the program has been made available through the sewer service charge.

The capital improvement program is scheduled to be completed in year 2014. Afterwards, the City will begin the second phase of the rehabilitation program in areas identified as not cost-effective by the study.

PUMP STATIONS (one sheet for EACH pump station)
Note: The City opted to summarize the information requested in this form.

Pump Information

	Pump #/Name	Dry or Submersible	Capacity	Constant or Variable	In Service?
1	Laney College - 900 Fallon Street	Dry	3,880 GPM	constant	Yes
2	5195 Parkridge Drive	Dry	4.5 GPM	constant	Yes
3	201 Hegenberger Road	Dry	1,780 GPM	constant	Yes
4	Skyline Blvd	Submersible	9 GPM	constant	Yes
5	Shepherd Canyon Road	Submersible	45 GPM	constant	Yes
6	4575 Tidewater Avenue	Dry	1,230 GPM	constant	Yes
7	5610 Denton Place	Submersible	9 GPM	constant	Yes

Pump Station Information:

A. Average flow: _____
B. Holding Time: _____
C. Does station have sufficient pumping capacity with the largest pump out of service during:
Peak Dry Weather Flow: Yes_____No_____
Peak Wet Weather Flow: Yes_____No_____
D. Dry weather capacity limitations? Y/N (if yes, describe) No
E. Wet weather capacity limitations? Y/N (if yes, describe) The City has not identified any overflows due to capacity limitations in wet weather.
F. Number of failures resulting in overflows/bypass or backup, in the last five years: One, at Denton Place
G. Total quantity of overflow/bypass: The volume of this overflow was not given.
H. Is dry well protected from wet well overflow? Yes____ No_____
I. How often is pump station inspected? See comment
J. Back up power sources and type: The only backup power sources are portable generators.
K. Station Alarms: Two stations (Laney College, Denton Place) are equipped with visible alarms. The others have no alarms.
a) Is there 24 hour coverage for alarms? No
L. What equipment is available for emergency response? Paco Pump purchase order
M. Are there SCADA controls? No

Comment

The checklist filled out by the City states that stations are inspected weekly. During the inspection, a crew chief indicated that stations are inspected twice monthly.

Oakland Photo 1: Hegenberger PS

Oakland Photo 2: Hegenberger PS

Oakland Photo 3: Hegenberger PS wet well

Oakland Photo 4: Hegenberger PS force main at bridge

Oakland Photo 5: Tidewater PS wet well.

Oakland Photo 6: Tidewater PS pump controls.

Oakland Photo 7: Laney PS.

Oakland Photo 8: Laney PS wet well.

Oakland Photo 9: Denton Place PS wet well.

Oakland Photo 10: Denton Place PS.

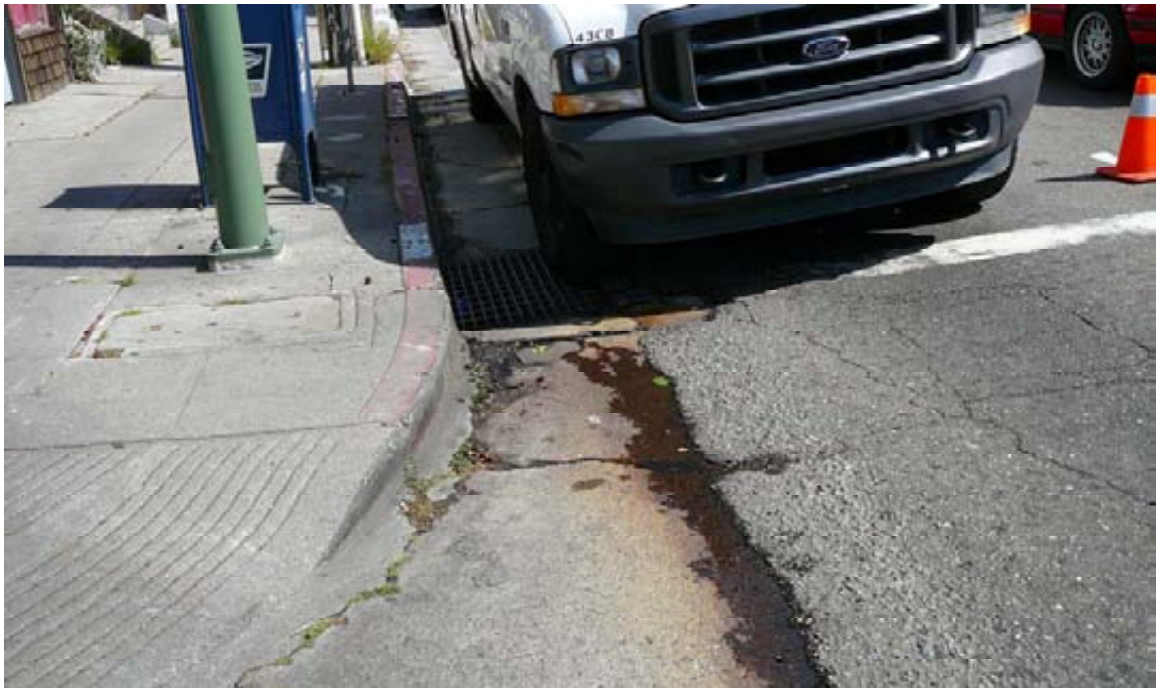
Oakland Photo 11: Denton Place PS pump controls and visible alarm.

Oakland Photo 12: 2108 Mastlands SSO site.

Oakland Photo 13: 2108 Mastlands SSO site - creek goes underground here.

Oakland Photo 14: 2108 Mastlands SSO site - storm drain inlet where spill would have gone.

Oakland Photo 15: Santa Clara and Oakland Avenue event.



Oakland Photo 16: Santa Clara and Oakland Avenue - Liquid from road enters this storm drain inlet.