

MEMO

Date: August 6, 2009

To: Michelle Moustakas, EPA Region 9

From: Bill Hahn and Dianne Stewart, SAIC

Subject: Sewage Collection System Inspection of the City of Oakland, CA (NPDES Permit No. CA0038512; RWQCB Order No. R2-2004-0012)

On April 27, 28 and 29, 2009 EPA Region 9, RWQCB 2, and SAIC conducted an inspection of the City of Oakland's sewage collection system. The inspection was done as part of a series of inspections of the EBMUD satellite systems in conjunction with the EBMUD Stipulated Order. The main purpose of the inspection was to identify ways in which the system could reduce I/I so as not to contribute to overflows at the EBMUD wet weather facilities. The inspection also evaluated the SSO response and correction programs.

The first eight of the program areas below follow the programs or activities identified in the EBMUD document titled *Technical Memorandum Subtask 4.6 – Community O&M Activities Impacting Peak Flows*. The first paragraph under each program area states an accepted industry practice for the program. This is followed by bullets that indicate what the City is doing within this program area.

Findings

1. Sewer Inspection Program

Sewer agencies should have an inspection program that includes planned periodic inspection of all sewer system assets using closed circuit television (CCTV) to determine their current condition at least every 10 years.

- The City's current inspection capability is 50 miles per year, so the entire system can be televised every 20 years. However, the City plans to double this capacity in the future. Over the last 5 years, about 4.5 percent of pipes have been inspected annually, on average.
- Force mains are not inspected.

2. Condition-Based Sewer Rehabilitation

Sewer agencies should use condition-based sewer rehabilitation that includes use of inspection data to select sewer line segments for repair/rehabilitation/replacement to reduce infiltration.

- In the mid-1980s the City conducted an SSES, and since that time has been conducting a short-term rehabilitation and capacity correction program based on the results of this SSES. This program is due to be complete in 2014, after which

time the City will begin the second phase of the rehabilitation program in areas originally identified as not cost-effective by the study.

- The City did not indicate that it has a program to use the results of ongoing sewer inspections to develop new projects.

3. Inflow Source Identification and Elimination

Sewer agencies should have ongoing programs to identify sources of inflow (such as roof leaders) and take action to eliminate those sources.

- The City ordinance prohibits storm water discharges to the sanitary sewer. When customer complaints identify repeated overflows from a certain location, a consultant is hired to perform smoke testing in the surrounding area. The Engineering Right-of-way Division is responsible for enforcement.
- The City does not have a proactive ongoing program to detect sources of inflow.

4. Chemical Root Control Program

Sewer agencies should consider using herbicides to stop/reduce the damage to pipes, joints, and structures that is caused by root intrusion.

- Roots cause the majority of SSOs in Oakland. The City has a chemical root control program.

5. Data Management (Computerized Maintenance Management System (CMMS))

Sewer agencies should collect O&M data by individual asset and analyze that data to identify appropriate maintenance and capital improvement actions.

- The City's Sewer Maintenance department does not currently use a CMMS. However, there are plans to extend the CMMS used by other departments to Sewer Maintenance in the future. In SAIC's experience, it is very important for a system of this size to use a CMMS for scheduling and tracking maintenance and inspection, as well as an aid in developing capital improvement plans.
- Sewer maps are available on a computerized geographic information system (GIS).

6. Rehabilitation/replacement of lower laterals

Sewer agencies should rehabilitate or replace lower laterals during sewer system capital improvement projects.

- The City has no responsibility for lower laterals. However, they replace lower laterals during rehabilitation of mains.

7. Private lateral testing/inspection and rehabilitation program

Sewer agencies should have a program to require mandatory testing of the private portion of private laterals to determine their condition. The program should include requirements to repair or rehabilitate laterals that fail the inspection.

- The City does not have a private lateral inspection program.

8. Routine Flow Monitoring

Sewer agencies should conduct periodic flow monitoring to identify areas with infiltration/inflow contributions to the total flow.

- The City performed flow monitoring as part of its mid-1980s SSES.
- Currently, flow is measured by EBMUD only. The City has no flow meters in place within the collection system.
- A sewer flow capacity model is being built by a consultant, to be delivered in July 2009.

9. SSO Rates/Response/Correcting Causes

The City's NPDES permit contains requirements for controlling and containing SSOs and SSO reporting. State Water Board Order No. 2006-0003-DWQ, as amended, contains further requirements, including electronic reporting. The most recent and comprehensive SSO reporting requirements are contained in a May 1, 2008 Letter from the Regional Board.

- From 2005 to 2008, the City's spill rate (number of spills per 100 miles of pipe per year) ranged from 19.6 to 27.1. This figure includes no lower lateral spills. Based on SAIC's experience with similar systems, the City appears to experience a high rate of spills.
- Although the numbers vary from year to year, roots are the cause of over 40 percent of spills.
- A spill from the Denton Place pump station occurred on 2/11/07. This spill, due to a power failure, might have been prevented had there been a SCADA system in place to alert the City. As it is, the only notice the City would get when its pump stations are overflowing is when a resident reports the spill, or in the case of the Denton Place and Laney stations, when a resident reports the visual alarm to the City. It is SAIC's experience that systems of this size typically have a SCADA system. In addition, spills due to power failure can be prevented if backup generators are present and function when normal power is disrupted. None of the City's seven pump stations have this capability. It is SAIC's experience that systems as large as Oakland's tend to have backup power at least at their largest and most important stations.
- CCTV is used to investigate the causes of some SSOs.

- SAIC found spills that appeared to be at or very close to locations identified for correction in the 1993 Compliance Plan. This may indicate that some I/I problems have not been corrected as called for in the Plan.

10. FOG Program

EBMUD implements the FOG control program for all of its satellite agencies.

- The City does not know how many food service establishments (FSEs) are in its service area.
- Each of the satellites has adopted a FOG source control ordinance equivalent to the East Bay Municipal Utility District Wastewater Control Ordinance, Ordinance 311A-03. Apart from an oil and grease limit, the ordinance does not contain specific FOG program requirements.
- EBMUD has issued permits to about 3,000 FSEs in the service area. The FOG program focuses on grease removal device (GRD) installation and appropriate maintenance. The required GRD pumping frequency is once every three months, and this is only changed if the GRD is found to exceed the 25% rule during an inspection or if it is found to cause or contribute to a blockage or overflow in the collection system.
- EBMUD did not know how many FSEs have GRDs. GRDs are required for food handling facilities that meet any of the following criteria:
 - New construction
 - Remodels, additions, alterations or repairs valued at or greater than \$75,000
 - Has caused or contributed to a grease related collection system blockage resulting in maintenance requirements and/or a sewage spill.
- The frequency goal for FSE inspections is once during every permit period. Permits are issued for a five year period. Based on SAIC's experience, this inspection frequency is not likely to be adequate for most FSEs. Restaurant staff and even ownership turn over frequently. Business conditions also vary, leading to the potential for the grease loading to the interceptor to increase at times. These factors point to a need for more frequent inspections.
- EBMUD has a comprehensive public education program for residential grease control.
- There does not appear to be 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.