MEMO

Date: September 6, 2009
To: Michelle Moustakas, EPA Region 9
From: Bill Hahn and Dianne Stewart, SAIC

Subject: Sewage Collection System Inspection of the City of Berkeley, CA (NPDES Permit No. CA0038466; RWQCB Order No. R2-2004-0010)

On April 7 and 8, 2009 EPA Region 9, RWQCB 2, and SAIC conducted an inspection of the City of Berkeley'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.

- Between 1987 and 1999 the City inspected approximately 170 miles of gravity sewers as the basis for its I/I and Cyclic Replacement Programs. An estimated 80 to 90 miles of gravity sewers have not been inspected. The City plans to inspect 50 of the remaining miles of gravity sewers that have not been inspected over the next 10 years using CCTV. The City does not have a routine inspection program.
- Force mains have been recently inspected using CCTV.

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.

- The City completed a sewer system evaluation survey in 1986. Studies have also been completed by EBMUD, with the most recent completed in 1993. The studies identified cost effective I/I reduction projects and developed a 30-year schedule of

projects. The City is continuing to work on those projects and has completed the first 23 years of work.
- The City does not have an ongoing condition assessment program.

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.
- The City does not have a smoke testing program. However, the City evaluates videotaped inspections of private sewer laterals for indications that there are non-sanitary sewer connections. The City's Code Enforcement Inspectors look for non-sanitary sewer connections to laterals during building permit inspections. And the City's Construction Inspectors look for non-sanitary sewer connections while inspecting construction projects.

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 were the single greatest cause of SSOs in Berkeley in 2008 and 2009. Information for prior years is not available.
- The City does not have 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 has a CMMS.
- Sewer maps are available on a computerized geographic information system (GIS). However, this is not currently a part of the CMMS.

6. Rehabilitation/replacement of lower laterals

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

- The City replaces 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 has had a private lateral inspection program since October 2006.

8. Routine Flow Monitoring

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

- The City has 28 flow meters installed, and EBMUD has 14.
- The City's consultant is using Wallingford Infoworks CS to model the City's sewer system.

9. SSOs 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 2009, the City's spill rate for mains (number of spills per 100 miles of pipe per year) ranged from 4.7 to 12. The spill rate for lower laterals ranged from 34 to 42. Based on SAIC's experience with similar systems, the City appears to experience a medium high rate of spills.
- Roots were the greatest cause of spills in 2008 and 2009. Information for prior years is not available.
- Within the last year the City began investigating the causes of each SSO, to prevent recurrence. Sometimes this is done using CCTV, but not always.

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.
- The City believes that EBMUD would not have enforcement authority for FOG control on the University of California (UC) campus, which is a contributing jurisdiction to Berkeley. If this is the case, it is SAIC's opinion that an agreement should be obtained so that the City's sewers can be protected from discharges from UC.

- 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.