Distribution:

Mr. Ken Greenberg, Chief, Clean Water Act Compliance (WTR-7)
Water Division
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94104
Attention: Ms. Fatima Ty

Ms. Tracy Egoscue, Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Attention: Mr. Sam Unger

Marilyn Levin
Deputy Attorney General
300 South Spring Street, Suite 1100-N
Los Angeles, CA 90013

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, D.C 20044-7611
Re: DOJ No. 90-5-11-809/1

Tom Ford, Baykeeper
Santa Monica Baykeeper
P.O. Box 10096
Marina del Rey, CA 90295

Stephen R. English
English, Munger & Rice
1541 Wilshire Boulevard, Suite 508
Los Angeles, CA 90017

Robert Garcia
The City Project
1055 Wilshire Blvd., Suite 1660
Los Angeles, Ca. 90017-2499

Christopher Westhoff
Assistant City Attorney
Offices of the Los Angeles City Attorney, City Hall East
200 North Main Street
Los Angeles, CA 90012-4110

Odor Advisory Board Members via
Wastewater Engineering Services Division
Bureau of Sanitation

Wastewater Collection System Odor Control Measures Summary Report

FY 2007-2008
July 1, 2007 - June 30, 2008

PREPARED BY:
WASTEWATER COLLECTION SYSTEMS DIVISION

CITY OF LOS ANGELES

SANITATION

DEPARTMENT OF

PUBLIC WORKS

Wastewater Collection System Odor Control Measures Summary Report

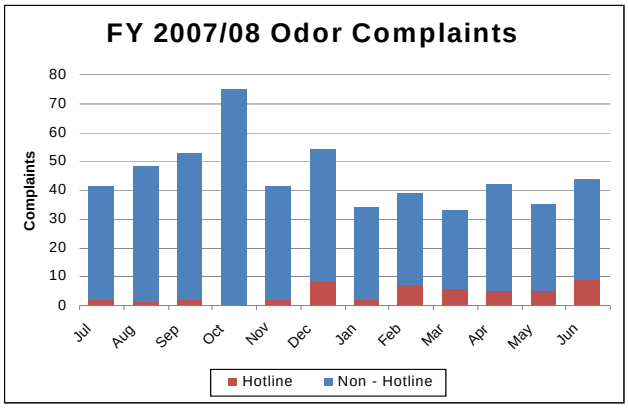
FISCAL YEAR 2007- 08

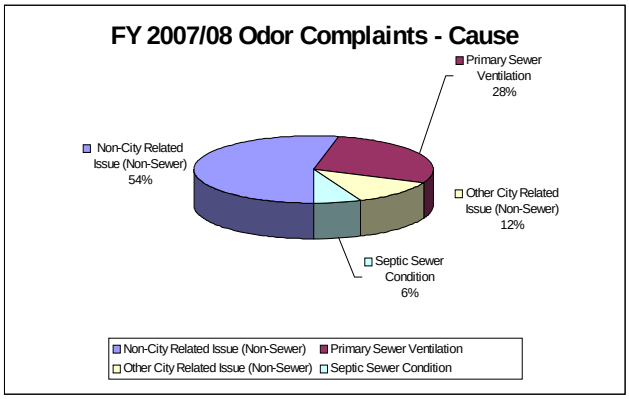
This report covers fiscal year 2007/08, from July 1, 2007 to June 30, 2008. It provides a summary data of each of the various elements of the odor control measures implemented by the Bureau of Sanitation, Wastewater Collection Systems Division. This report will be submitted to the Odor Advisory Board.

I. Odor Complaint Summary

Bureau of Sanitation Wastewater Collection Systems Division (WCSD) responds to various odor complaints from the public. However complaint investigation is primarily geared toward identifying and mitigating sewer-related odor. Other non-sewer odor issues are referred to other city departments or outside agencies for follow-up investigation and mitigation. Odor complaints are received by 24-hour odor complaint hotline at 1-866-44SEWER or on-line at www.lasewers.org or the City-Wide 3-1-1 phone number for government services or information. Non-hotline complaints are received directly from the public through contact with one of our wastewater collection system district offices; or referrals from council offices, other city departments or other agencies.

In fiscal year 2007/2008, WCSD responded to 539 odor complaints. Graphs depicting complaints received by hotline and non-hotline sources and cause of complaints are presented as follows:





Sewer related complaints are caused by sewer ventilation where foul air is released from maintenance holes or other sewer structures or facilities and by sewers that have become septic due to debris build-up causing a surcharged or hydraulically loaded system. Sewer related odors account for 34% of the complaints received or 185 complaints. Although this represents an increase from the 127 complaints received in FY 2006/07, it is 13 percent lower than the complaints received in the baseline year (FY 2003/04) prior to implementing sewer odor control measures. We suspect that the increase in odor complaints is due to increased gas pressure in the North Outfall Relief Sewer (NORS) causing it to migrate into the North Outfall Sewer (NOS). To mitigate, the City is planning to take the following actions:

- Isolate and seal the NORS head space at selected diversion structures to prevent the movement of gas from the NORS into upstream reaches,

- Evaluate and adopt as appropriate other maintenance hole designs with proven track record and replace the trap maintenance holes accordingly, and

- Study the feasibility of installing an air jumper between the NORS and the North Central Outfall Sewer (NCOS).

We expect that sewer odor and odor complaints will continue to decline as a result of these actions and implementation of short-, mid-, and long-term measures recommended in the upcoming Air Treatment Facilities (ATF) Review Study report.

The remaining 66% of odor complaints investigated in FY 2007/08 were non-sewer related. They include odors from standing water, dirty alley, stormwater catch basin sources, owner plumbing trouble, etc. All sewer related odor complaints were properly investigated and addressed, while non-sewer related odors were referred to the appropriate City department or other government agencies. An annual report detailing responses to these complaints will be provided to the Odor Advisory Board as required by Collection System Settlement Agreement.

II. Sewer Maintenance Activities

Routine sewer maintenance is necessary to allow the wastewater to flow freely and unimpeded in the sewer pipe. When debris settles and collects in the pipe, conditions for hydrogen sulfide generation become favorable. Sewer blockage and/or debris accumulation reduces wastewater velocity, increases detention time, and promotes solids deposition. Maintenance also involves sealing sewer maintenance holes or other access structures to prevent the release of foul odors. Additionally, WCSD conducts a chemical root control treatment application to control/prevent root infestation within the sewer. Root infestation causes obstruction, which can create a blockage.

This fiscal year WCSD cleaned 5,480 miles of sewers using hydroflushing, mechanical rodding or bucketing methods. Root control chemicals were applied to 435 miles of sewers at an annual cost of $2.2M.

III. Sewer Construction and Trap Maintenance Hole Repair

Sewer construction and repair plays an important role in odor control. Trap maintenance holes are physical sewer structures, which control the migration of sewer gases, typically from large diameter sewers to smaller diameter sewers (6-inches to 15-inches). Trap maintenance holes mimic p-traps used in residential plumbing. A water seal is created and isolates the sewer gases from the source. Occasionally, trap maintenance holes need rehabilitation and/or require new construction or minor repair, as needed. Eight (8) trap maintenance holes were rehabilitated or constructed during FY 07/08. Twelve (12) trap maintenance with minor defects were repaired.

IV. Chemical Addition

Chemical control technologies are used to prevent the formation and release of sulfides into the sewer headspace thereby the concentration of hydrogen sulfide into the atmosphere through vented structures, such as maintenance holes. WCSD uses caustic (sodium hydroxide) shock dosing to control sulfide generation and Thioguard magnesium hydroxide to provide vapor phase odor control. Chemical applications are applied for odor control along the North Outfall Sewer (NOS) and MAZE Sewer System and in the Valley areas to the La Cienega San Fernando Relief Sewer (LCSFVRS).

Caustic shock dosing occurs in the South Los Angeles Interceptor Sewer where sulfide generation is controlled to mitigate odors occurring in the Maze.

The continuous Thioguard application to the NOS is added from the Boyle Heights Area Sewer System, which eventually flows to the NOS and Maze Sewer System and North Central Outfall Sewer (NCOS). Thioguard application for the Maze South Branch was removed and replaced with shock dosing activities on the South LA area. The application of Thioguard magnesium hydroxide continues in the valley area and corridors along La Cienega San Fernando Relief Sewer (LCSFVRS) in the Hollywood area.

The use of odor control chemicals has reduced hydrogen sulfide concentrations in the sewers by as much as 90%. The annual expenditure for chemical addition is $3.1M.

V. Air Treatment

Interim air treatment facilities using carbon adsorption technology is used along various odor hotspots in the City's collection system. There are currently thirteen (13) operating carbon scrubbers ranging in capacity from 5000 to 10,000 cubic feet per minute (cfm). Foul air is extracted and passed through activated carbon to which the constituents will adhere. The scrubber not only treats the odorous compounds in the sewer system, but also relieves the air pressure occurring in the system by creating a vacuum and hence negative pressure in the system.

Carbon media is replaced periodically before odor contaminant breakthrough occurs. In some cases monthly carbon change-out occurs due to higher contaminant loading to the carbon scrubber. Additionally, the stack emissions of the carbon scrubber are monitored for hydrogen sulfide on a weekly basis to monitor compliance with the South Coast Air Quality Management District permit requirements. The readings are posted on a quarterly basis on the City's odor website at www.lasewers.org

The air treatment facilities (ATF) at Jefferson and La Cienega and NCOS are on-going construction projects. Bureau of Sanitation requested EPA to extend the Settle Agreement construction deadline to January 2010 from May 2008 due to various circumstances. The NCOS ATF project was awarded in June 2008 and for similar reasons is expected to have construction delays. The expected construction completion schedule is October 2010.

VI. Studies

An air ventilation study focusing on the effect of drop structure ventilation was completed. The drop structures on NEIS and ECIS were studied. They include drop structures at Humboldt and San Fernando on the NEIS system and Mission and Jesse and 23rd and San Pedro drop structures on ECIS system. This information will be used in a two-year study to evaluate the air dynamics changes in the collection system and to re-evaluate odor control strategies where permanent air treatment facilities are being planned.

VII. Monitoring

Monitoring of the wastewater collection system is necessary to identify the sources and causes of odor generation. Monitoring is conducted at least semi-annually at designated monitoring points throughout the collection system to gage the seasonal variation in odor generation and to monitor the effectiveness of the chemical treatment. The monitoring indicates that the odor control applications are effective in mitigating odors. On the other hand, the monitoring also indicates where hotspot locations exist. This information will be evaluated as part of the odor master planning efforts.

VIII. Odor Master Plan

The City of Los Angeles continues to expand. Upgrading the wastewater collection system and treatment plants will continue to be an on-going process in order to handle the anticipated increase in sewage that accompanies an increasing population. This will be accompanied by a continuous and increasingly sophisticated effort to control sewer odors.

A key part of the City's effort to mitigate sewer odors is the formulation of the Wastewater Collection System Odor Control Master Plan. The master plan evaluates the current odor control program and provides recommendations for an improved odor control program. Elements of the program that will be reviewed include operations and maintenance activities, on-going monitoring activities, odor complaint history, odor complaint response procedures, construction of odor control facilities, sewer design standards, and new odor control technologies. The Odor Master Plan was completed in October 2006 and the city continues to follow through with the master planning activities.

IX. Conclusion

The City of Los Angeles, Bureau of Sanitation has branched in many new directions to address the sewer odor issues and is making big strides in its efforts to control the generation and release of the foul air from the City's wastewater collection system. The various odor measures described in this report work collectively to address sewer related odors. Implementation of

these new strategies will vastly enhance the Bureau’s odor control efforts in the collection system.