

CITY OF LOS ANGELES  
CALIFORNIA



ANTONIO R. VILLARAIGOSA  
MAYOR

August 14, 2007

DEPARTMENT OF  
PUBLIC WORKS  
—  
BUREAU OF SANITATION  
—  
RITA L. ROBINSON  
DIRECTOR  
—  
ENRIQUE C. ZALDIVAR  
EXECUTIVE OFFICER  
—  
VAROUJ S. ABKIAN  
TRACI J. MINAMIDE  
ASSISTANT DIRECTORS

WASTEWATER ENGINEERING SERVICES DIV.  
2714 MEDIA CENTER DRIVE  
LOS ANGELES, CA 90065  
FAX: (323) 342-6210

BOARD OF  
PUBLIC WORKS  
—  
COMMISSIONERS  
—  
CYNTHIA M. RUIZ  
PRESIDENT  
—  
PAULA A. DANIELS  
PRESIDENT PRO TEMPORE  
—  
ERNESTO CÁRDENAS  
—  
JULIE B. GUTMAN  
—  
VALERIE LYNNE SHAW

TO: DISTRIBUTION

**RE: Settlement Agreement and Final Order – Civil Action No. 01-191-RSWL and Civil Action No. 98-9039-RSWL Consolidated**

Pursuant to paragraph 44 of the Settlement Agreement and Final Order, enclosed is the annual Odor Control Measures Summary Report for Fiscal Year ending June 30 2007.

If you have any questions, please contact Adel Hagekhalil at (323) 342-6225.

Sincerely,

RITA L. ROBINSON, Director  
Bureau of Sanitation

RLR/AHH/FF:tn

Enclosure



**Distribution:**

Mr. Ken Greenberg, Chief, Clean Water Act Compliance Office (WTR-7)  
Water Division  
U.S. Environmental Protection Agency, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

Ms. Deborah J. Smith, Interim Executive Officer  
Los Angeles Regional Water Quality Control Board  
320 W. 4<sup>th</sup> Street, Suite 200  
Los Angeles, CA 90013  
Attention: Sam Unger

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

Tracy Egoscue, Executive Director  
Santa Monica Baykeeper  
P.O. Box 10096  
Marina del Rey, CA 90295

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

Robert Garcia  
Center for Law in the Public Interest  
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

**Internal Distribution:**

Cynthia Ruiz, President, City of LA Board of Public Works  
Valerie Shaw, Commissioner, City of LA Board of Public Works  
John Reamer, Bureau of Contract Administration  
Chris Smith, Bureau of Contract Administration  
Gary Lee Moore, Bureau of Engineering  
Tim Haug, Bureau of Engineering  
Wayne Lawson, Bureau of Engineering  
Rita Robinson, Bureau of Sanitation  
Enrique Zaldivar, Bureau of Sanitation  
Varouj Abkian, Bureau of Sanitation  
Traci Minamide, Bureau of Sanitation  
Barry Berggren, Bureau of Sanitation  
Tim Dafeta, Bureau of Sanitation  
Shahram Kharaghani, Bureau of Sanitation

**CERTIFICATION OF DECLARATION**

**Re: Settlement Agreement and Final Order – Civil Action No. 01-191-RSWL and Civil Action No. 98-9039-RSWL Consolidated – Odor Control Measures Summary Report for FY 2006/07, July 1, 2006 through June 30, 2007.**

I certify under penalty of law that the attached Odor Control Measures Summary Report for fiscal year 2006/07, July 1, 2006 – June 30, 2007 was prepared under my direction in a manner designed to ensure that qualified and knowledgeable personnel properly gathered and presented the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that to the best of my knowledge and belief the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information and willful submission of a materially false statement.



Barry G. Berggren  
Division Manager  
Wastewater Collection Systems Division  
Bureau of Sanitation

August 10, 2007  
Date

# *Wastewater Collection System Odor Control Measures Summary Report*



***FY 2006-2007***  
***July 1, 2006 - June 30, 2007***

PREPARED BY:  
WASTEWATER COLLECTION SYSTEMS DIVISION



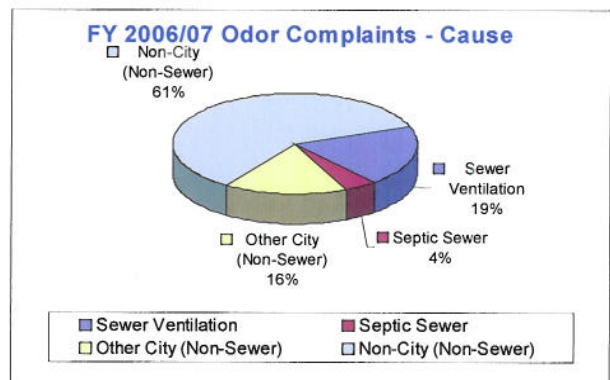
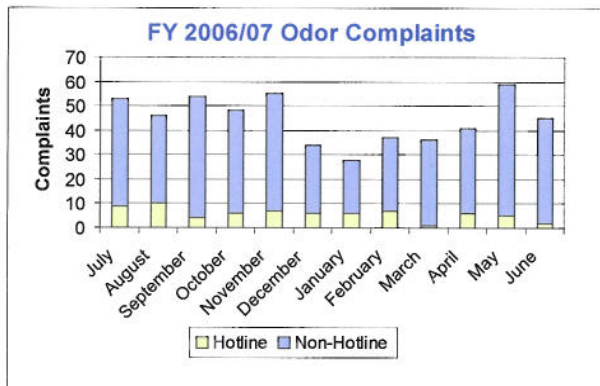
## Wastewater Collection System Odor Control Measures Summary Report FISCAL YEAR 2006-07

This report covers fiscal year 2006/07, from July 1, 2006 to June 30, 2007. 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](http://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 2006/2007, WCSD responded to 536 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 23% of the complaints received or 127 complaints. Compared to baseline conditions prior to implementing sewer odor control measures, sewer related complaints are lower by 40% city-wide.

The remaining 77% of odor complaints investigated 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 root infestation within the sewer, which causes obstruction.

This fiscal year WCSD cleaned 4,931 miles of sewers using hydroflushing, mechanical rodding or bucketing methods. Root control chemicals were applied to 489 miles of sewers at an annual cost of \$2.5M.

## **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, as needed. 9 trap maintenance holes were rehabilitated or constructed during FY 06/07.

Newly constructed relief sewers not only improve the hydraulic capacity of the system, but also improves air dynamics. By relieving the over capacity sewers, the air space above the flow line is increased, consequently reducing the air pressure in the pipe. The migration of sewer gases is minimized. The North Outfall Sewer (NOS) at Avenue 18 and Humboldt was diverted to the Northeast Interceptor Sewer (NEIS). The NOS was hydraulically relieved downstream of the diversion.

## **IV. Chemical Addition**

Chemical control technologies are used to prevent the formation and release of sulfides into the sewer headspace thereby limiting the exhaust 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. Thioguard application was started in June 2006 for odor control in the Maze South Branch.

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%.

## **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). The construction of a 10,000-cfm carbon scrubber along the La Cienega San Fernando Relief Sewer is near completion and is expected to be in service in the fall of 2007. Foul air is extracted and passed through an 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](http://www.lasewers.org)

Along with the operation of interim carbon scrubbers and the commissioning of major trunk sewers such as the East Central Interceptor Sewer (ECIS) and the Northeast Interceptor Sewer (NEIS), sewer air dynamics within the wastewater collection system have significantly changed since the last ventilation studies were conducted. As a result, the North Branch of the Maze Area Sewer System and the North Outfall System were hydraulically relieved allowing for better air dynamics and less ventilation of sewer gases from maintenance holes from these sewer systems. On the other hand, drop structures constructed as part of ECIS and NEIS may or may not contribute to sewer ventilation along these new sewers. A preliminary air ventilation study focusing on the effect of drop structure ventilation was just completed. 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.

## **VI. 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 gauge 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.

## **VII. 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.

## **VIII. 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.