

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION**

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**RESOLUTION NO. R17-XXX**

**CITY OF LOS ANGELES  
APPROVAL OF PROPOSED SPECIAL STUDY FOR  
HYPERION TREATMENT PLANT  
TERMINAL ISLAND WATER RECLAMATION PLANT**

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter Regional Water Board), finds:

1. The Regional Water Board adopted National Pollutant Discharge Elimination System (NPDES) permits for the City of Los Angeles' Hyperion Treatment Plant on February 02, 2017, AND for the Terminal Island Water Reclamation Plant on June 11, 2015.
2. Both NPDES permits contain a requirement for the City of Los Angeles to consult annually with the Regional Water Board and the United States Environmental Protection Agency (USEPA) to determine the need for special studies. Detailed scopes of work for proposals must be presented to obtain Regional Water Board and USEPA approval and to inform the public. Special studies are intended to focus on refined questions regarding specific effects or development of monitoring techniques. Questions regarding effluent or receiving water quality, discharge impacts, ocean processes in the area of the discharge, or development of techniques for monitoring, arising out of the results of core or regional monitoring, may be pursued through these special studies.
3. On December 13, 2016, representatives from the City of Los Angeles met with Regional Water Board staff to discuss the following proposed special study for 2017: *Coliphage Detection and Quantification in Recycled and Fresh Waters*.
4. Regional Water Board staff believe that this proposed special study fulfills the special studies requirement of the NPDES permits and will further the Regional Water Board's knowledge of the health of Los Angeles Harbor, Santa Monica Bay, and the Los Angeles River. This special study also focuses on emerging issues associated with discharges from the City of Los Angeles' wastewater treatment plants; therefore, Regional Water Board staff recommend that the study be approved by the Regional Water Board.

THEREFORE, BE IT RESOLVED THAT:

1. The Regional Water Board believes that the Special Study proposed for 2017, *Coliphage Detection and Quantification in Recycled and Fresh Waters*, merits approval.
2. The Regional Water Board hereby approves the City of Los Angeles' proposal for this special study.

I, Samuel Unger, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 06, 2017.

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Samuel Unger, P.E.  
Executive Officer

**City of Los Angeles  
Los Angeles Sanitation**

**Hyperion Treatment Plant, Donald C. Tillman Water Reclamation Plant, Los Angeles/Glendale Water Reclamation Plant and Terminal Island Water Reclamation Plant**

**Special Study Proposal**

**Coliphage Detection and Quantification in Recycled and Fresh Waters**

**Introduction:**

Viruses are found in the intestinal tract of humans and other warm-blooded animals and are egested in large numbers in sewage. They are the primary causative agents associated with illnesses from contact with recreational water (EPA 2015a). Because coliphages have greater similarities to human enteric viruses in their physical structure, composition and morphology, survivability in the environment, and persistence in treatment processes compared to FIB, coliphages have been investigated for years as an alternative to FIB as indicators of fecal contamination (EPA 2015b).

The Donald C. Tillman Water Reclamation Plant (DCT) is in the second phase of a pilot study for its Advanced Water Purification Facility (AWPF), which began in February 2016. Monthly coliphage analysis is required as part of the pilot study, but as the City of Los Angeles, Environmental Monitoring Division (CLAEMD) does not perform this method in-house, it is presently being outsourced.

In 2011, the Los Angeles River (LAR) was designated for freshwater recreation with the Sepulveda Basin River Recreational Zone legally opened to non-motorized boating, fishing, bird watching, and walking. In 2013, a second area, the Elysian Valley River Recreational Zone, was legally opened for recreation. Kayaking has quickly become a popular activity for this area; four different kayak outfitters exist that provide equipment and guided tours to visitors and each season thousands of kayakers enjoy the Los Angeles River (Heal the Bay 2016). Due to a report written by Heal the Bay in July 2016 regarding the poor water quality in the recreational zone, this area has become a focus of water quality issues.

We propose to develop EPA Method 1602 in-house for the quantification of coliphage in AWPF product water (recycled) and, rather than using traditional FIB culture methods (i.e., chromogenic substrate), EMD also proposes to investigate bacterial pollution in the LAR recreation zone via coliphage detection, thereby providing the opportunity of testing two different freshwater matrices. Method 1602 has been validated by the EPA for ground water, but may be used for other water matrices.

This study supports the Los Angeles Sanitation effort to recover and reuse effluent from all four plants: Hyperion Treatment Plant (HTP), Terminal Island Water Reclamation Plant (TIWRP), DCT, and Los Angeles Glendale Water Reclamation Plant. The AWPFs, which perform additional treatment of tertiary effluent from the existing water reclamation plants, will be expanded at TIWRP by 2017, at DCT from 2016 to 2021; there are wastewater recycling plans at HTP from 2019 to 2027. Although this study supports all four plants, only product water from

DCT AWTF (along with LA River Recreation Zone) will be tested; HTP influent may be used as a control.

We have recently purchased all necessary equipment and supplies to perform this analysis. This method will be developed by following EPA Method 1602 protocols using AWPf recycled and LA River fresh waters.

### **Objectives:**

- 1) To develop an in-house method to detect and quantify coliphage in order to ensure deliverance of good quality recycled water and increase water quality information with respect to the LA River Recreation Zone.
- 2) To evaluate and finalize the laboratory process for possible peer adaptation.

### **Benefits:**

There are several significant benefits to this study:

- 1) To increase knowledge of water quality conditions that can help inform municipal programs and efforts to improve water quality in the Los Angeles River recreational zones.
- 2) To support protection of beneficial uses of the LA River recreational zones by having a readily available in-house method that targets coliphage, an organism closely related to human enteric viruses, the primary causative agents associated with illnesses from contact with recreational water.
- 3) To develop the capability to conduct EPA Method 1602 for the detection and quantification of coliphage, in-house rather than outsourcing, creating time- and cost-savings.
- 4) To detect coliphage using two different water sources - a) DCT AWPf effluent (for water re-use) and b) LA River recreation zone (for public recreation).
- 5) To support the City's dedication to increase recycling of wastewater and reduce reliance on outside water sources, thereby reducing its impact on state resources and increasing local water reliability.
- 6) To support the City's commitment to deliver a safe and reliable water supply and assured recreational water quality to the public, using an indicator that is more closely associated with enteric viruses, which are considered the chief cause of illnesses in regard to contact with recreational waters.
- 7) Los Angeles County Sanitation Districts, Orange County Sanitation District and Orange County Public Health Laboratories, Heal the Bay, and other non-governmental organizations will most likely benefit from the information garnered from this study.

### **Approach:**

First quarter; calibrate equipment, prepare reagents, media, etc., and prepare and maintain stock cultures.

Second quarter; conduct quality control procedures as stated in EPA Method 1602 to demonstrate acceptable performance.

Third quarter; conduct analysis of target matrices and sample comparisons with the contract laboratory.

Fourth quarter; compile/assess data and write final report for submission to the Los Angeles Regional Water Quality Control Board (Regional Board).

**Project Duration:**

This special study will begin in May or June of 2017, after Regional Board approval, and is expected to be completed in one year.

**Deliverables:**

Three quarterly progress reports and a final report of the findings will be submitted to the Regional Board.

1<sup>st</sup> Quarter: August 2017

2<sup>nd</sup> Quarter: November 2017

3<sup>rd</sup> Quarter: February 2018

4<sup>th</sup> Quarter: May 2018

**Collaborators:**

The Microbiology Unit of EMD's Biology Section will be leading the project in collaboration with Eurofins Eaton Analytical Laboratory (contract lab).

**References:**

Environmental Protection Agency. 2015a. *Status of EPA's Ambient Water Quality Criteria for Coliphage*. Office of Science and Technology, Office of Water pp. 1-28.

Environmental Protection Agency. 2015b. *Review of Coliphages as Possible Indicators of Fecal Contamination For Ambient Water Quality*. 2015. 820-R-15-098. Office of Science and Technology, Health and Ecological Criteria Division pp. 1-109 + appendices.

EPA. See Environmental Protection Agency.

Heal the Bay. 2016. *Assessing Microbial Water Quality of the Los Angeles River Recreation Zones* pp. 1-19 + appendices.