

Field Sampling and Analysis Plan for the Marina del Rey TMDLs

Introduction

The purpose of this Field Sampling and Analysis Plan is to identify the specific locations, time periods, analytical parameters, quality control measures, and other such conditions as necessary to obtain pertinent data necessary to complete the TMDLs for Marina del Rey. This plan includes stormwater, sediment, and fish tissue sampling and analyses as needed for the TMDL. This study will help fill existing data gaps regarding the quality of flows into Oxford Basin and from Oxford Basin to Basin E and other back harbor locations, and other storm drain input into Basin E. This plan is based on the results of a field trip and the several follow up conference call discussions which took place in February and March 2002. Personnel from the EPA Region 9, Regional Board, Los Angeles County Public Works and CH2MHILL (EPA's contractor) participated in the field visit as well as the conference calls. The following field sampling and analysis plan presents the joint consensus on effort, protocols, and sampling details.

Sampling

Surface water (stormwater and harbor quality) and sediment samples will be collected in support of TMDL development at Marina del Rey. Fish were previously collected from back basin locations (but are, as yet, unanalyzed). The stormwater sampling will be conducted to assist in calibration of the land use based loading model proposed for use in the TMDL. The stormwater sampling and analysis will be performed by the Los Angeles County Department of Public Works. The sediment and fish sampling and analysis will be conducted by the County of Los Angeles Department of Beaches and Harbors. In order to maintain consistency in the laboratory analytical protocols, EPA is recommending the Department of Beaches and Harbors use CRG laboratory (who performed the October 2001 Marina del Rey and Bight 98 chemical analyses) to perform the sediment and fish analysis.

Water Sampling Location

Water samples will be collected at the following locations:

- Location 1: Oxford Street Drainage Basin Flood Gate outflow (when gate is open and the pond water flows into the marina)
- Location 2: Basin E (near the center of the basin, away from Oxford Basin outlet)
- Location 3: In the manhole on Palawan.

Water Sampling Frequency

Location 1: This sample will be a grab sample. Samples will be collected 4 times during dry weather flows at an interval of two weeks (April-July 2002). If the water quality results are consistent, dry weather sampling of this location will be discontinued after the 4 samples. A similar frequency will apply for wet weather flows. The samples will provide information on the water quality of flows entering Basin E during both dry and wet weathers. This is necessary to validate contamination entering Basin E from Oxford Basin.

Location 2: Basin E. This sample would be a grab sample from a point near the center of the basin, away from Oxford Basin outlet. Samples will be collected 4 times during dry weather flows at an interval of two weeks (April-July 2002). If the water quality results are consistent, dry weather sampling of this location will be discontinued after the 4 samples. Same frequency applies for wet weather flows. This sample will provide information on characteristics of the water in Basin E.

Location 3: Test in the manhole on Palawan Way directly (only during wet weather). This sample would be a 3-sample composite with flow quantities sampled during a rain event. The first round of samples will be collected early in the storm, the second round of samples will be collected to approximate peak runoff, and the third sample will be intended to capture the return to low flows at the end of the storm. Flow will be measured with a flow meter at the time of sample collection. The compositing of the sample should be performed in a laboratory. This sample would provide information for model validation of presence/absence of contaminant in the stormwater, load, and combined EMC values. This is the best sample from this list for use in the model. This is the **wet weather only** stormwater sampling location and should be pursued if at all possible. However, the presence/absence of tidal backflow should be verified. This can be accomplished by comparing the storm drain invert elevation to the tidal elevation or through field verification.

Water Analysis

Surface water samples will be analyzed for total suspended solids (TSS), total and dissolved copper, lead, and zinc. Dissolved metals will be operationally defined as metals that pass through a 0.45 um filter, prior to sample acidification. PCB, total DDTs (including 4,4'-DDE, 4,4'-DDD and 4,4'-DDT), dieldrin, and chlordane (both alpha and beta) concentrations, and pH will be measured in raw water samples. Flow will be estimated using flow and depth meters in the stormdrains at the time of sampling.

The detection limits for the stormwater should be consistent with the limits specified in the Attachment U-1 of the Los Angeles County Municipal Storm Water Permit (December 13, 2001). The detection limit for total and dissolved copper and total and dissolved lead is 0.5 ug/L. The detection limit for total and dissolved zinc is 1.0 ug/L. The detection limit for 4,4'-DDE and 4,4'-DDD is 0.05 ug/L. The detection limit for 4,4'-DDT and dieldrin is 0.01 ug/L. The detection limit for chlordanes is 0.1 ug/L. EPA recommends analyzing congeners for total PCBs

analysis in lieu of the Aroclor approach stated in the current Permit. The Aroclor analysis is not indicative of the toxicity effects present in the total PCBs.

Sediment Sampling Location

Two sediment samples will be collected from Basin E. One sample will be near the Oxford drainage outlet in Basin E (representative of the Oxford Basin input-area conditions). The second sample will be collected near the northeastern corner of Basin E (representative of back harbor conditions, in general).

Sediment Analysis

Surface sediment samples will be analyzed for total metals, PCB, DDE, dieldrin, chlordane, AVS, SEM, and TOC.

Fish Analysis

Fish tissue samples (whole fish and fillets) collected during a previous field effort will be analyzed for %lipid, PCB, DDE, dieldrin, and chlordane concentrations. Three whole fish composite samples of 5 fish each and three fillet samples of individual fish were collected during a previous, one-day field effort in October, 2001 by Aquatic Bioassay and Consulting Company (contractor to the Los Angeles County Department of Beaches and Harbors). Body burden analysis will be conducted on these samples plus a duplicate split of one of the whole fish composites.

Sampling protocols and field methods

Wet Weather Sampling:

The sampling events outlined in this protocol are intended to capture baseline flow and peak flow. Storms with predicted total rainfall exceeding 0.1 inches will be considered for sampling. Stormwater velocity will be estimated using a Marsh-McBirney FlowMate 2000 (or similar), which will be lowered into stormwater with a top-set weighting rod, as needed. This combination will be used if the distance from the street level to the stormwater is less than 8 feet. However, it is possible that the distance from street level to the stormwater will be greater than 8 feet. If the distance to water prevents the use of the FlowMate2000 and top-set weighting rod, a gurley meter and bomb weight (or comparable equipment) will be used to estimate stormwater flow. Depth will be measured and used in conjunction with the pipe diameter and stormwater velocity to estimate flow.

Sediment Sampling:

Sediments will be collected using an Ekman dredge. The co-located water column sample will be collected with a VanDorn sampler. All samples will be stored on ice and shipped immediately to the analytical laboratory.

Field and Laboratory QA/QC Procedures

The selected California certified analytical laboratories will perform QA/QC according to their standard operating procedures. All field and laboratory QA/QC procedures (e.g. instrument and method detection limits) will be reviewed and approved by EPA prior to field sampling.

Reporting Requirements

The selected laboratories will complete all water analyses within required holding times after receiving their respective samples. The Los Angeles County Public will submit the data for EPA's review as soon as they become available.

The sediment samples and in-harbor water sample are designed to improve our understanding of in-harbor sediment chemistry and the quality of inflows from Oxford Basin. The sampling and analysis contractor to the Department of Beaches & Harbors, at the authorization of the Department of Beaches and Harbors, will submit the results to EPA as soon as they are available.

Conclusions/Next Step

The level of precision of the TMDL will be impacted by our inability to obtain stormwater sample results. Based on the proposed sites, only one site provides sampling of stormwater that could be fully used for the modeling effort. Because of this limited data, future stormwater sampling will most likely be needed. This lack of stormwater data limits our ability to validate the model thus introducing uncertainty in our estimates of the amount of contamination entering Basin E from different sources. The distinction of sources such as re-suspension of historical contamination from or settlement into Oxford lagoon vs. storm water loading will be difficult to make without these sample results.