

CHAPTER 11

WATER QUALITY MONITORING AND WASTE LOAD ALLOCATIONS

In compliance with the Oahu MS4 NPDES Permit requirements, HDOT Highways will implement a comprehensive program that will continue past annual monitoring efforts conducted by United States Geological Survey (USGS) under a HDOT Highways contract, and establish additional water quality monitoring stations to better assess HDOT Highways Oahu MS4's relative contribution to nutrient loads and other water quality waste loads.

The primary purpose of the monitoring by the USGS is to help HDOT Highways assess the characteristics of highway runoff and evaluate the potential impacts of the runoff to stream water quality. Future monitoring stations will primarily assist in the implementation of Waste Load Allocations (WLA) assigned to HDOT Highways for Ala Wai Canal, Kawa Stream, and Waimanalo Stream.

11.1 Annual Monitoring Plan

As required by the Oahu MS4 NPDES Permit, HDOT Highways shall submit an annual monitoring plan to HDOH by June 1st of each year of the Oahu MS4 NPDES Permit for review and approval. The annual monitoring plan is implemented over the coming State fiscal year. The scope of this annual monitoring plan includes the following items:

1. Written narrative of the proposed monitoring plan's objectives and description of activities;
2. Written documentation of the following:
 - a. Type, frequency, and location of where data is gathered to determine levels of pollution in non-storm water discharges to the Oahu MS4,
 - b. Characteristics (timing, duration, intensity, total rainfall) of the storm event(s),
 - c. Parameters for measured pollutant loads, and
 - d. Range of discharge volumes to be monitored, as well as the timing, frequency, and duration at which they are identified;
3. Written documentation of the analytical methods;
4. Written documentation of the Quality Assurance/Quality Control procedures; and
5. Estimated budget to be implemented over the coming fiscal year.

HDOT Highways storm water monitoring program was originally established in the Halawa Stream watershed as part of the Interstate Route H-3 project. The program is conducted by USGS under a contract with the HDOT. Since 1983, USGS performed water quality monitoring in the watershed with primary emphasis on North Halawa Stream. The monitoring program focused mostly on suspended sediments, collecting data before, during, and after the construction. Because the Interstate Route H-3 dominates land uses in much of the watershed, the monitoring provides an opportunity to collect information and isolate typical highway pollutant contributions that affect water quality. In addition, North Halawa Stream is an important tributary to the Pearl Harbor Estuary, and collecting information about the watershed may result in improving and preventing further degradation of the estuary's water quality, an important State goal. Furthermore, lower portions of the watershed contain a variety

of land uses that include light industrial, residential, and commercial activities. The watershed is therefore fairly representative of other watersheds on Oahu, particularly on the southern part of the island, which are typically undeveloped in their upper reaches and urbanized in their lower reaches. For instance, the Halawa Stream watershed monitoring program complements the City's storm water monitoring program, which focuses on the Ala Wai Canal watershed. Both the Halawa Stream and Ala Wai Canal watersheds contain highly urbanized areas of a wide variety of land uses, are located in the relatively arid southern part of Oahu, and discharge into important inland water bodies prior to entering open coastal waters.

The USEPA prepared the report, *Revisions to Total Maximum Daily Loads (TMDL) for the Ala Wai Canal – Island of Oahu, Hawaii – Total Nitrogen Total Phosphorus* (June 2002), hereinafter referred to as the Ala Wai Canal TMDL Report. This document assigned quantitative reductions of total nitrogen and total phosphorus discharges to HDOT Highways and other potential nutrient sources within the watershed. The USGS was contracted to install and operate a storm water monitoring station in a storm drain that conveys runoff from the H-1 Freeway to Manoa Stream in order to characterize HDOT Highways' storm water discharges into the Ala Wai Canal watershed. Monitoring was initiated at this station in fiscal year 2005-2006 and will be continued during fiscal year 2006-2007.

The current annual monitoring plan for Halawa and Manoa Streams for fiscal year 2006-2007 is provided in the Appendix M.1.

11.2 Waste Load Allocations

In conjunction with USEPA, HDOH developed the waste load reduction goals based on the TMDLs established for Ala Wai Canal, Kawa Stream, and Waimanalo Stream (see Figure 4-1), and included the WLAs assigned to HDOT Highways in the Oahu MS4 NPDES Permit. The permit stipulated that HDOT Highways work jointly with the City and propose an implementation and monitoring plan for these three water bodies. In response, HDOT Highways prepared implementation and monitoring plans for each of the above watersheds (see Appendices M.2, M.3 and M.4).

11.2.1 Implementation Plan

The WLA Implementation Plans identifies specific HDOT Highways activities targeted to reduce total nitrogen and total phosphorus discharges in the Ala Wai Canal, Kawa Stream, and Waimanalo Stream watersheds as necessary to comply with their WLAs. The plans include the following work items:

- Review of HDOH WLA/TMDL documents and specific requirements for each WLA;
- Identify HDOT Highways Oahu MS4 outfalls within the WLA watershed, using the AMS;
- Provide land use and hydrological analyses for each major Oahu MS4 outfall, using AMS;
- Watershed reconnaissance;
- Identify HDOT Highways activities within the watersheds that contribute to waste loads;
- Identify and evaluate load reduction best management practices; and
- Evaluate WLA compliance approach and strategies.

11.2.2 Monitoring Plan

The WLA Monitoring Plans specified the water quality monitoring and activity tracking necessary to demonstrate efforts to comply with the urban source WLAs assigned to HDOT Highways. The plans include the following major work items:

- Assess Oahu MS4 outfalls as identified in the implementation plan described above;
- Characterize major outfalls drainage areas;
- Evaluate HDOT Highways' waste load reduction strategies and opportunities within each WLA watershed;
- Select water quality monitoring locations;
- Develop monitoring approach (i.e., type, frequency, parameters, analytical method);
- Configure each of the monitoring stations; and
- Prepare monitoring schedule for implementation.

11.3 Other Waste Load Allocations

In addition to the WLA Implementation and Monitoring Plans for the Ala Wai Canal, Kawa Stream, and Waimanalo Stream watersheds, HDOH will identify one additional WLA per year for the life of the Oahu MS4 NPDES Permit, starting from March 2007. For each additional WLA identified, implementation and monitoring plans shall be prepared by HDOT. The scopes of these plans would be similar to what is described in Section 11.2.

11.4 Organizational Structure

As shown on Figure 11-1, the Water Quality Monitoring and Waste Load Allocation Program is overseen by the MS4 Task Force/DDU. Under the direction of the head of DDU, a Civil Engineer V, the master consultant will develop the annual monitoring plan, and the WLA Implementation and Monitoring Plans. The USGS is also involved in this program through a separate contract with HDOT Highways to conduct in-stream monitoring of Halawa Stream and an outfall monitoring at Manoa Stream.

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Highways Division Storm Water Management Program Organizational Structure - Water Quality Monitoring & Waste Load Allocation 2006-2009

