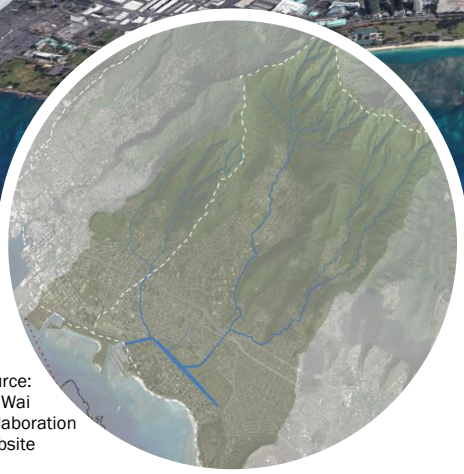
Ala Wai Watershed Management



Source: Ala Wai Collaboration Website

Nutrients, sediments, pathogens, and chemical pollutants in the highly urbanized Ala Wai Watershed flow through the Ala Wai Canal to coastal receiving waters.

State agencies and community groups are working to improve water quality and reduce flooding in feeder streams and the canal to reduce risk to people and coastal habitats.

Overview

The Ala Wai watershed encompasses Mānoa, Palolo, and Makiki drainages, including Waikïkï and surrounding areas. About half of the watershed is urban lands that include some of the most densely populated neighborhoods of Honolulu. The 2-mile long man-made Ala Wai Canal was constructed in the 1920's to drain extensive wetlands to allow development of the Waikïkï area. Nutrients, sediments, bacteria, viruses, and chemical pollutants drain into the canal, which discharges to coastal waters [1]. A Department of Health fish consumption advisory warns people to limit the quantity of fish they eat from the canal. Fish may contain unsafe concentrations of organochlorine pesticides, PCBs, and lead. [1].

Efforts to improve water quality in the streams and the Ala Wai Canal have been ongoing for decades. The Hawai'i State Department of Health established Total Maximum Daily Loads (TMDLs) for nutrients in the canal in 1996 and revised them in 2002 [2,3]. The University of Hawai`i monitors water quality [4]; the State of Hawai'i Division of Land and Natural Resources (DLNR) focuses on watershed condition and water quality management [5]. Storm water management and trash reduction are handled by Honolulu City and County [6,7]. Despite these efforts, portions of the Ala Wai watershed are still considered impaired for nutrients, turbidity, and pathogens (Kahanamoku Lagoon, Kühiö Beach, Mämala Bay, Gray's Beach, and others) [1].

A network of government, business, and community partners formed the Ala Wai Watershed Collaboration (AWWC) to further existing watershed management and develop a collaborative vision for resilience and quality of life in the watershed [8]. The AWWC proposes to advance watershed-wide ecosystem restoration efforts focused on improving water quality in feeder streams and the Ala Wai Canal itself. AWWC initiatives include development of green infrastructure, as described in the SMART Ala Wai water quality monitoring project [9], Na Wai Ekolu stream biodiversity project [10], and Iolani School's Ala Wai Watershed Project [11].

Ecological Risk Assessment

Sediment, water, and chemicals are discharged from the Ali Wai Canal into Kahanamoku Lagoon and Mämala Bay. Chemical contaminants in the Ala Wai Canal include organochlorine pesticides, polychlorinated biphenyls (PCBs), lead, and other metals [1,12]. Samples of tilapia (*Oreochromis mossambicus*) caught in the canal contained PCBs at concentrations posing risk to consumers [12]. Although tilapia is not a favorite food fish for local communities, it is eaten by wildlife and used as bait for larger marine fish. Along with sediment, nutrients, and pathogens, contaminants from Ala Wai Canal are mobilized to areas outside the canal.

In addition to concerns about water quality impairments, the Ala Wai watershed and canal are vulnerable to flooding during storms. DLNR plans to drain and dredge the canal in 2019 to reduce risks associated with flooding, based on flood mitigation plans developed by the US Army Corps of Engineers [13]. Additional data on chemical contaminants in Ala Wai sediment will become available when dredged materials are tested for ocean disposal.

References and Links:

[1] Hawaii Department of Health. 2018.Water Quality Monitoring Assessment Report. https://health.hawaii.gov/cwb/files/2018/09/Final-2018-State-of-Hawaii-Water-Quality-Monitoring-Assessment-Report.pdf

[2] US EPA. 2002. Revision to Total Maximum Daily Loads for the Ala Wai Canal- Island of Oahu, Hawaii. Report Adopted by Hawaii Department of Health. http://health.hawaii.gov/cwb/files/2013/05/Integrated_AlaWaiCanalTMDL.pdf

[3] State of Hawaii Department of Health. 1998. Ala Wai Management and Implementation Plan Volume I.

[4] Ala Wai Watershed Study. 2018. Ala Wai Monitoring Station. http://www.soest.hawaii.edu/oceanography/edecarlo/Eric_Decarlo_homepage/Ala_Wai_Watershed.html

[5] Mitsunaga & Associates Inc. 2015. Ala Wai Canal Flushing System & Ala Wai Golf Course Detention System, Final Conceptual Engineering Report. https://www.dropbox.com/s/gfen43qixm5dovf/AlaWaiCanal_Flushing-GolfCourseDetentionSystem-2015.pdf?dl=0

[6] City and County of Honolulu. 2016. Storm Water Management Program Plan. Final. City and County of Honolulu NPDES PERMIT NO. HI S000002

[7] City and County of Honolulu. 2016. Trash Reduction Plan Baseline Load Study Protocol (NPDES) Permit No. HI S000002.

[8] Ala Wai Watershed Collaboration. 2018. http://alawai.hawaiigreengrowth.org

[9] Smart Ala Wai. 2018. A student-led water quality observation and sampling network at the University of Hawaii. http://www.smart-alawai.manoa.hawaii.edu/

[10] Nā Wai ‘Ekolu. 2018. Stream outreach education activities in the Ala Wai and Honolulu Watersheds. https://www.nawaiekolu.org/watershed-resources/

[11] Iolani School’s Ala Wai Watershed Project. 2018. https://www.youtube.com/watch?v=eDmLkmaJLBM

[12] Yang, F., B. Wilcox, S. Jin, A. A. Aguirre, L. Rougee, Y. Xu and Y. Lu (2008). "Detection and quantitative analysis of polychlorinated biphenyls in tilapia from Hawaiian waters." Chemosphere 73(1): 133-137.

[13] US Army Corp of Engineers, 2017. Ala Wai Canal Flood Risk Management Study, O’ahu, Hawai’i. http://www.poh.usace.army.mil/Portals/10/docs/projectreviewplans/Ala%20Wai%20Chiefs%20Report%20-%20proposed%20draft%20v2.pdf?ver=2017-05-24-115634-137

TETRA TECH