



Water Quality Plan 2014

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Environmental Health Administration
Healthy People • Healthy Communities • Healthy Islands

Message from Director Linda Rosen M.D., M.P.H.



The Administration challenged the Department of Health (DOH) and other State agencies to envision and pursue “A New Day in Hawaii.” A vital part of this New Day includes ensuring the quality of our environment. In 2011, DOH enacted a strategic plan to align our foundational principles of sustainability. DOH takes seriously its responsibility of working with the people of Hawaii to protect and improve public health and the

environment. Our work, has led to a revitalization of essential public health and environmental protection programs. We will continue to work with public and private partners in ensuring the State’s water quality and pursuing our vision – Healthy People. Healthy Communities. Healthy Islands.

Message from Deputy Director Gary Gill



The Environmental Health Administration helps to ensure that the air we breathe, the ocean and streams we enjoy, the water we drink, and the food we eat are clean and safe. Our mission includes reducing, recycling, and safely processing the waste created by our modern society.

Our work to protect Hawaii’s environmental health helps to define what it means to live in this island state renowned for its natural beauty.

This Department has been delegated the authority from the U.S. Environmental Protection Agency to implement a number of federal environmental statutes, including the Safe Drinking Water Act and Clean Water Act. Together with our federal partners, we ensure that surface and ground water in Hawaii meets state and national standards. Our professional staff also focuses on issues that are unique to our islands.

In this Water Quality Plan, we summarize the work we do and help point the way forward to finding even better ways to protect and improve Hawaii’s public health and the environment.

Acknowledgements

The 2014 State of Hawaii, Department of Health, Draft Water Quality Plan was prepared by the Environmental Health Administration's Safe Drinking Water Branch, with assistance from the Clean Water Branch, Wastewater Branch, Environmental Planning Office, State Laboratories Division, Solid and Hazardous Waste Branch, Hazard Evaluation and Emergency Response Office, Environmental Resources Office, Compliance Assistance Office, Environmental Information Manager, and the Office of Environmental Quality Control. The following are also recognized for their valuable contribution to this Plan:

Department of Land and Natural Resources

DLNR, Commission on Water Resource Management

Hawaii State Department of Agriculture

County of Hawaii, County of Kauai, County of Maui and City and County of Honolulu

Office of Hawaiian Affairs

Department of Business, Economic Development & Tourism, Office of Planning

Department of Hawaiian Home Lands

United States Environmental Protection Agency

United States Geological Survey

United States Army Corps of Engineers

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Executive Summary

The Water Quality Plan is an integral component of the State of Hawaii Water Plan, which establishes a framework for comprehensive water resources planning to address water quantity and quality issues in Hawaii.

Hawaii Water Plan consists of the:

- Water Resource Protection Plan, prepared by the Commission on Water Resource Management (CWRM);
- Water Quality Plan, prepared by the Hawaii Department of Health (DOH);
- State Water Projects Plan, prepared by the Hawaii Department of Land and Natural Resources (DLNR);
- Agricultural and Water Use and Development Plans, prepared by the Hawaii Department of Agriculture (HDOA); and the
- County Water Use and Development Plans, prepared by each County.



The purpose of the Water Quality Plan is to ensure the protection of human health and sensitive ecological systems by outlining a path forward to protect, restore, and enhance the quality of waters in the State. It is intended to be a "living" plan that can be adjusted and adapted to provide information on water resources, and reflect the evolving regulations, standards, and management policies that affect water quality in Hawaii. DOH's Water Programs—the Clean Water Branch, Safe Drinking Water Branch, and Wastewater Branch—are responsible for protecting the State's surface and ground water quality, and their ongoing work provides the core of the Plan.

The Water Quality Plan describes DOH's water protection goals, which include:

- Develop scientifically-based Water Quality Standards that meet federal requirements and protect State waters;
- Develop Total Maximum Daily Loads that improve water quality and serve an integral role in watershed-based planning;
- Educate the public and increase the amount of resources devoted to the control of nonpoint source water pollution;
- Regulate point source discharges through permitting and enforcement;
- Assess the susceptibility of public drinking water sources and protect them from contamination;
- Coordinate ground water protection activities across different jurisdictions and geographic areas to achieve comprehensive, resource-based ground water protection;
- Protect existing and potential sources of drinking water through the regulation of wastewater disposal through injection wells;
- Increase water reuse statewide; and
- Upgrade and eliminate cesspools.

The Plan also identifies priority action items to help the Programs reach these goals.

The **Clean Water Branch** is working to:

- Amend current Water Quality Standards to clarify the overall framework of waterbody types, classes, protected uses, and evaluative criteria;
- Engage in new water quality monitoring initiatives to supply data for: 1) developing water quality monitoring methodologies and policies; 2) prioritizing watersheds; and (3) strategies to address identified pollutant sources;
- Collaborate with the Counties and State agencies to prioritize impaired watersheds for restoration efforts and support stakeholder stewardship of watershed resources; and
- Obtain federal approval of the Coastal Nonpoint Pollution Control Program Management Plan.

The **Safe Drinking Water Branch** is focusing on:

- Assessing all existing and proposed drinking water sources in the State;
- Re-developing and implementing the Wellhead Protection-Financial Assistance Program;
- Completing the updated Comprehensive State Groundwater Protection Program Strategy/Plan; and
- Reducing the number of unpermitted underground injection well facilities.

The **Wastewater Branch** plans to:

- Complete revisions to DOH's Guidelines for the Treatment and Reuse of Recycled Water; and
- Propose administrative rules prohibiting the construction of new cesspools, and requiring that existing cesspools be upgraded or connect to existing wastewater collection system infrastructure upon the sale of a property.

The Plan also describes ongoing activities under the Drinking Water and Clean Water State Revolving Funds. The Drinking Water State Revolving Fund provides low interest loans to State and County agencies to construct drinking water infrastructure projects, like treatment plants, new drinking water sources, and to replace aging water lines. The Clean Water State Revolving Fund provides low interest loans to point source and nonpoint source water pollution control projects, including for the construction of publicly-owned wastewater treatment works. The Funds are a vital source of support for building, maintaining, and improving public water infrastructure in Hawaii.

In addition to the ongoing Water Program activities, the Plan also discusses the work of many other Branches and Offices within DOH that do not focus solely on water issues, but nonetheless make valuable contributions to protecting State water quality, including:

- The State Laboratories Division, which analyzes drinking and surface water samples for the Clean Water Branch and Safe Drinking Water Branch;
- The Solid and Hazardous Waste Branch, which regulates Underground Storage Tanks and landfills to protect ground water;
- The Hazard Evaluation and Emergency Response Office, which responds to releases of toxic substances into water, and addresses human health concerns associated with potential contaminant exposures through drinking water supplies or local fish consumption. The Office has partnered with Clean Water Branch on studies to monitor for pesticides and other chemicals in the State's waters;
- The Environmental Resources Office, which manages water-related grants and helps to administer the Drinking Water and Clean Water State Revolving Funds, which support water infrastructure projects;
- The Environmental Planning Office, which assists with strategic planning, including development of the Water Quality Plan, and provides analysis and mapping of water-related data through its environmental Geographic Information Systems program;
- The Compliance Assistance Office, which provides assistance to small businesses to ensure that their operations are consistent with environmental regulations, including those under state and federal water laws;
- The Environmental Information Manager, who develops information systems and oversees the organization and distribution of DOH's environmental data, including water permitting, monitoring, and enforcement data; and

- The Office of Environmental Quality Control, which oversees the review and analysis of land use documents that have the potential to affect water quality.

DOH recognizes that protecting water quality requires coordination and cooperation amongst many different agencies and organizations and the Plan seeks to address some of these coordination challenges, as well as challenges related to program funding and adapting to a changing climate. The Plan also details DOH's ongoing efforts and future plans to share information between programs within the Department, as well as its work to make data available to other agencies and the public.



Table of Contents

| | |
|---|-----------|
| Message from Director Linda Rosen M.D., M.P.H. | 2 |
| Message from Deputy Director Gary Gill | 2 |
| Acknowledgements | 3 |
| Executive Summary | 3 |
| Table of Contents..... | 8 |
| Acronyms | 10 |
| SECTION I: Background..... | 11 |

| | |
|--|----|
| 1. State Water Code..... | 12 |
| 2. Hawaii Water Plan | 12 |
| 3. Statewide Framework for the Hawaii Water Plan | 14 |
| 4. Strategic Plans..... | 15 |

SECTION II: Water Programs..... 20

| | |
|--|----|
| 1. Purpose | 21 |
| 2. Surface Water Quality..... | 22 |
| 3. Ground Water Quality | 42 |
| 4. Wastewater Branch | 58 |
| 5. State Revolving Funds..... | 63 |
| 6. Compliance and Enforcement | 65 |
| 7. Challenges and New Initiatives..... | 67 |

SECTION III: Water Quality Support..... 70

| | |
|--|----|
| 1. Water Quality Supporting Activities | 71 |
| 2. State Laboratories Division | 71 |
| 3. Solid and Hazardous Waste Branch | 74 |
| 4. Hazard Evaluation and Emergency Response Office | 79 |
| 5. Environmental Resources Office..... | 83 |
| 6. Environmental Planning Office | 85 |
| 7. Compliance Assistance Office | 87 |
| 8. Environmental Information Manager | 88 |
| 9. Office of Environmental Quality Control | 93 |

SECTION IV: Relevant Statutes and Rules..... 95

| | |
|---------------------------|----|
| 1. Federal Statutes | 96 |
|---------------------------|----|

| | | |
|---|---|------------|
| 2. | State Statutes..... | 98 |
| 3. | Hawaii Administrative Rules | 98 |
| 4. | Traditional and Customary Rights..... | 99 |
| SECTION V: Information Sources | | 100 |
| 1. | General..... | 101 |
| 2. | Water Branches | 101 |
| 3. | Supporting Division, Branches and Offices | 103 |
| 4. | Others | 104 |
| SECTION VI: Organization Charts..... | | 106 |
| SECTION VII: Water Quality Maps..... | | 110 |

Acronyms

| | | | |
|--------------|---|-------------|---|
| BMP..... | Best Management Practice | LUST | Leaking Underground Storage Tank |
| CAO | DOH Compliance Assistance Office | MCL..... | Maximum Contaminant Level |
| CCH..... | City and County of Honolulu | MRDL | Maximum Residual Disinfectant Level |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) | MS4..... | Municipal Separate Storm Sewer System NPDES Permit |
| CNPCP | Coastal Nonpoint Pollution Control Program | NOAA | National Oceanic and Atmospheric Association |
| CWA | Federal Clean Water Act | NPDES | National Pollutant Discharge Elimination System |
| CWSRF | Clean Water State Revolving Fund (loans) | OEQC..... | Office of Environmental Quality Control |
| CWB..... | DOH Clean Water Branch | PCA..... | Potential Contaminating Activities |
| CWRM | State of Hawaii Department of Land and Natural Resources, Commission on Water Resource Management | PRC..... | Polluted Runoff Control |
| DLNR..... | State of Hawaii Department of Land and Natural Resources | QA/QC..... | Quality Assurance/Quality Control |
| DOA | State of Hawaii Department of Agriculture | RCRA | Federal Resource Conservation and Recovery Act |
| DOH..... | State of Hawaii Department of Health | SDWA..... | Federal Safe Drinking Water Act |
| DOT | State of Hawaii Department of Transportation | SDWB | DOH Safe Drinking Water Branch |
| DWSRF..... | Drinking Water State Revolving Fund | SHWB | DOH Solid and Hazardous Waste Branch |
| EHA..... | State of Hawaii, Department of Health, Environmental Health Administration | SLD | DOH State Laboratories Division |
| EHASB..... | DOH State Laboratories Division's Environmental Health Analytical Services Branch | SRF | State Revolving Fund |
| EMD..... | DOH Environmental Management Division | SWP..... | Source Water Protection |
| EPA | U.S. Environmental Protection Agency | SWAP | Source Water Assessment and Protection (SWAP Program) |
| EPO..... | DOH Environmental Planning Office | TMDL..... | Total Maximum Daily Load |
| GWP | Ground Water Protection | TRI | Toxic Release Inventory |
| ERO..... | DOH Environmental Resources Office | UIC | Underground Injection Control |
| H.A.R. | Hawaii Administrative Rules | UH | University of Hawaii |
| HEER | DOH Hazard Evaluation and Emergency Response (HEER Office) | UST..... | Underground Storage Tank |
| HEPA..... | Hawaii Environmental Policy Act | WBP | Watershed Based Plans |
| H.R.S. | Hawaii Revised Statutes | WQP | Water Quality Plan |
| IWS..... | Individual Wastewater System | WQS | Water Quality Standards |
| | | WWB..... | DOH Wastewater Branch |

SECTION I: Background

1. State Water Code

The State Water Code, Chapter 174C, Hawaii Revised Statutes (H.R.S.), sets forth the requirements for the Hawaii Water Plan (available at: http://www.capitol.hawaii.gov/hrscurrent/Vol03_Ch0121-0200D/HRS0174C/HRS_0174C-.htm). The Water Code tasks the Department of Land and Natural Resources (DLNR) Commission on Water Resource Management, other state agencies, and the Counties with “formulat[ing] an integrated and coordinated program for the protection, conservation, and management of waters in each county . . .” H.R.S. § 174C-31(d). It asks the responsible agencies to look at, among other things, “the existing water resources of the State and the means and methods of conserving and augmenting such water resources,” “existing and contemplated needs and uses of water . . . and their effect on the environment, procreation of fish and wildlife, and water quality,” and the “quantity and quality of water needed for existing and contemplated uses.”

2. Hawaii Water Plan

The Hawaii Water Plan serves as a guide to address the problems of supply and conservation of water in Hawaii, consistent with the water resources policies expressed in the Water Code (H.R.S. § 174C-2), the Hawaii Constitution, Article VIII, Section 8 and Article XI, Sections 1, 7, and 9, and the requirements above.

The Hawaii Water Plan consists of five (5) component parts.

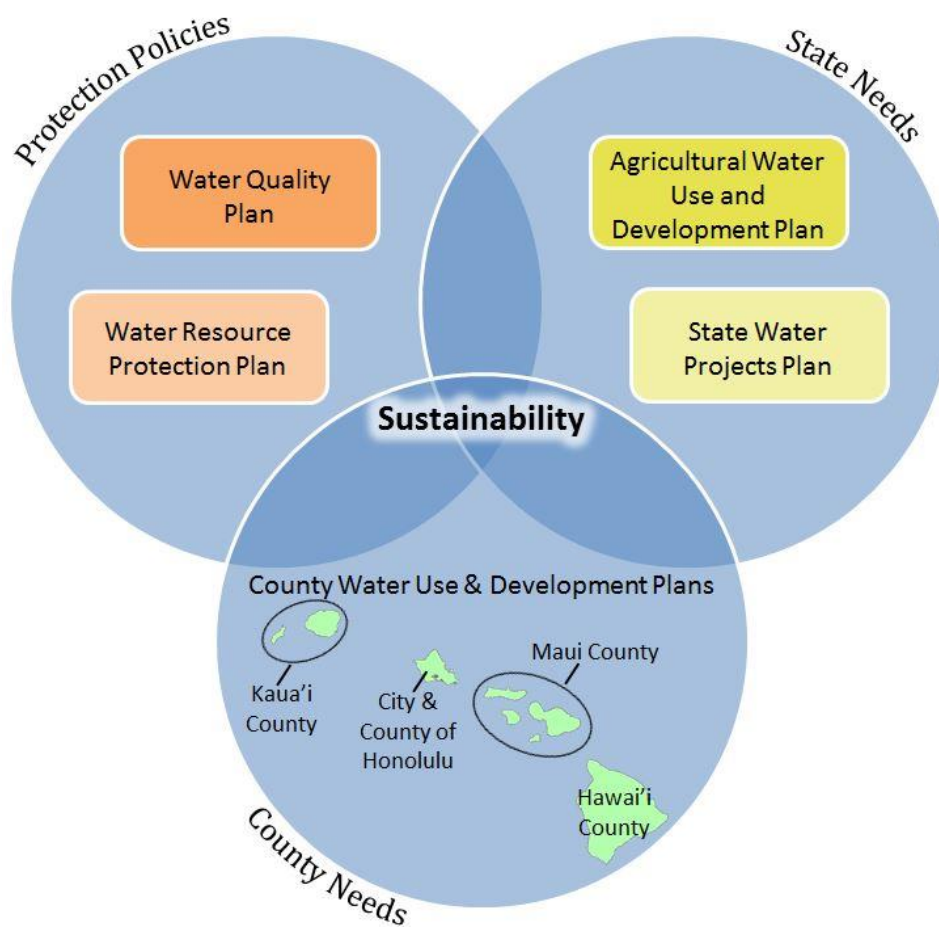
- The Water Resource Protection Plan (WRPP), prepared by DLNR, Commission on Water Resource Management, and the Water Quality Plan (WQP), prepared by DOH, provides the legal and policy framework for the Hawaii Water Plan.
- From there, the State Water Projects Plan, prepared by DLNR, and the Agricultural Water Use and Development Plan, prepared by the Department of Agriculture (DOA), set forth State water needs and development plans based on the policy framework established in the WRPP and the WQP.
- Each of Hawaii’s four (4) Counties then drafts a County Water Use and Development Plan (WUDP) that integrates all of the information in these Plans to establish the allowable water uses and allocations within that County.



In 2000, to help clarify how various components of the Hawaii Water Plan fit together, the Commission on Water Resource Management created a Statewide Framework for Updating the Hawaii Water Plan ("the Framework"). The Framework was intended to provide direction to each of the agencies charged with developing a component of the larger Hawaii Water Plan. The Figure below illustrates the relationship between various components of the Hawaii Water Plan. DOH began updating the State Water Quality Plan in early 2014. In 2013 the Commission on Water Resource Management began updating its Water Resource Protection Plan (WRPP) to incorporate emerging issues, like climate change. More information on the WRPP can be found at:

<http://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/wrpp/>

Hawaii Water Plan Components:



Source: State of Hawaii Department of Health,
Environmental Planning Office

The Department of Agriculture (DOA) is responsible for the preparation of the Agricultural Water Use and Development Plan. A copy of the 2004 Plan is available at:

<http://files.hawaii.gov/dlnr/cwrm/planning/awudp2004.pdf>

DLNR is responsible for the preparation for the State Water Projects Plan in conjunction with the Commission on Water Resource Management and other State agencies. More information on this 2003 plan is available at: <http://dlnr.hawaii.gov/cwrmp/planing/hiwaterplan/swpp/>

The Counties have developed Water Use and Development Plans that are available at: <http://dlnr.hawaii.gov/cwrmp/planing/hiwaterplan/countyplans/>



3. Statewide Framework for the Hawaii Water Plan

The Statewide Framework for Updating the Hawaii Water Plan (“the Framework”) was created to provide guidance that “address[es] current complexities associated with planning, regulation, and management of our water resources.” It seeks to:

- Achieve integration of land use and water planning efforts;
- Recommend guidelines for the Hawaii Water Plan update so that the plan and its component parts are useful;
- Better define roles and responsibilities of all state and county agencies with respect to the development and updating of Hawaii Water Plan components;

- Facilitate permitting and identify potential critical resource areas where increased monitoring or baseline data-gathering should proceed; and
- Outline an Implementation Plan for near-term and long-term actions.

The Framework's discussion of the WQP places particular emphasis on DOH's Safe Drinking Water Branch (SDWB) Source Water Assessment and Protection (SWAP) Program, discussed below in Section II:3.1.b, because of its importance in developing a comprehensive, statewide drinking water protection program.

The Framework also focuses on the importance of the WQP for developing effective linkages between inter-agency programs, including:

- Establishment of more effective inter-agency coordination and communication;
- Consolidation of agency review and permitting requirements; and
- Maximizing efficient use of agency time, staff, and program resources.

The goal is ultimately for the WQP to lay the groundwork for continual program updates and status reports, coordination of data collection and monitoring efforts, development of common databases and assurance of data consistency, establishment of a protocol for more effective data sharing, and identification of relationships between regulatory and non-regulatory program efforts among agencies. DOH's environmental programs have made significant strides towards establishing common databases, data consistency, data sharing, and coordination of data collection and monitoring efforts within the Department (see discussion of the Environmental Information Manager in SECTION III:8. below), and in the future, DOH will work towards coordinating this data collection, organization, and dissemination between and among agencies to improve water quality in Hawaii.

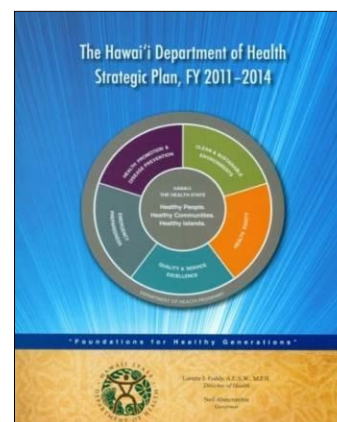
When DOH has a finished draft of the WQP, it will be presented to other government agencies, organizations, and the public to obtain their input. The Statewide Framework for Updating the Hawaii Water Plan is available at: <http://dlnr.hawaii.gov/cwrmp/planning/hiwaterplan/framework/>.

4. Strategic Plans

The WQP strives to be consistent with and obtains guidance from state and federal strategic plans.

4.1 DOH Strategic Plan

The DOH Strategic Plan, FY 2011-14 sets out the Department's goals, strategies, and initiatives (available at: <http://health.hawaii.gov/opppd/>). It focuses on building a sustainable economy, investing in people, and transforming government, and sets a goal to "create social and physical environments that promote and support good health for all." The objectives listed to achieve that goal include:



1. Enforcing state and national standards for coastal and inland water, drinking water, and wastewater systems;
2. Collaborating with stakeholders to protect the environment;
3. Supporting DOH staff capacity to protect the environment;
4. Strengthening environmental health protection policies;
5. Protecting the public from harmful substances;
6. Increasing industry knowledge of environmental protection regulations and practices through educating businesses; and
7. Continuing to enforce environmental regulations.

DOH recognizes the ongoing need to collaborate with other agencies and partners to achieve beneficial results for the State's water quality. This Water Quality Plan details DOH's ongoing work and future plans to provide a means to identify links that will allow for better coordination with other agencies.

4.2 Hawaii Department of Health Work Plan

The DOH Work Plan (<http://health.hawaii.gov/opppd/files/2013/04/Workplan.pdf>) is a companion document to the DOH Strategic Plan that describes DOH's ongoing progress in achieving established goals and reducing long term costs. It sets forth environmental objectives to improve environmental protection, consumer health, and industry's ability to protect the environment. There are several water quality-related goals and initiatives in the Work Plan, including:

- Protect island ground water from contamination and misuse;
- Foster public and private partnerships to actively clean up contaminated lands;
- Assure the purity and safety of the water we drink, the air we breathe, the land we live on, and the ocean we live in;
- Launch an app-based ocean water quality alert system; and
- Conduct informational workshops to improve education to businesses about environmental regulations and laws that may affect them.

As detailed below, DOH's environmental programs have made strides towards achieving several of these goals and are mapping out a way to continue to improve water quality and foster better communication with the public and other agencies.

4.3 Environmental Protection Agency Strategic Plan

The U.S. Environmental Protection Agency (EPA), has ten Regional offices around the country, and Hawaii is located within EPA's Region 9 (which also includes California, Nevada, Arizona, Guam, American Samoa, and the Northern Mariana Islands).

EPA develops a Strategic Plan every five years that sets a course for agency environmental policies. DOH strives to keep its goals consistent with the goals in EPA's Strategic Plan.

The *Fiscal Year 2014-2018 EPA Strategic Plan*, dated April 10, 2014, is available at <http://www2.epa.gov/planandbudget/strategicplan>.



The Objectives and Strategic Measures that pertain to Hawaii are detailed on pages 79-80 of the EPA Strategic Plan and include:

Goal 2: Protecting America's Waters.

Protect and restore waters to ensure that drinking water is safe and sustainably managed, and that aquatic ecosystems sustain fish, plants, wildlife, and other biota, as well as economic, recreational, and subsistence activities.

Objective 2.1: Protect Human Health.

Achieve and maintain standards and guidelines protective of human health in drinking water supplies, fish, shellfish, and recreational waters, and protect and sustainably manage drinking water resources.

Strategic Measures:

- Water Safe to Drink
 - By 2018, 92 percent of community water systems will provide drinking water that meets all applicable health-based drinking water standards through approaches including effective treatment and source water protection.
- Water Safe for Swimming
 - By 2018, maintain the percentage of days of the beach season that coastal and Great Lakes beaches monitored by state beach safety programs are open and safe for swimming at 95 percent.

Objective 2.2: Protect and Restore Watersheds and Aquatic Ecosystems.

Protect, restore, and sustain the quality of rivers, lakes, streams, and wetlands on a watershed basis, and sustainably manage and protect coastal and ocean resources and ecosystems.

Strategic Measures:

- Improve Water Quality on a Watershed Basis
 - By 2018, attain Water Quality Standards for all pollutants and impairments in more than 4,430 water bodies identified in 2002 as not attaining standards (cumulative).
 - By 2018, improve water quality conditions in 575 impaired watersheds nationwide using the watershed approach (cumulative).
 - Through 2018, ensure that the condition of the nation's rivers and streams, lakes, wetlands, and coastal water does not degrade (i.e., there is no statistically significant increase in the percent rated "poor" and no statistically significant decrease rated "good.")
- Improve Coastal and Ocean Waters
 - By 2018, improve regional coastal aquatic ecosystem health, as measured on the "good/fair/poor" scale of the National Coastal Condition Report.
 - By 2018, working with partners, protect or restore an additional (i.e., measuring from 2012 forward) 600,000 acres of habitat within the study areas for the 28 estuaries that are part of the National Estuary Program.
- Increase Wetlands
 - By 2018, working with partners, achieve a net increase of wetlands nationwide, with additional focus on coastal wetlands, and biological and functional measures and assessment of wetland condition.



Trail near the base of Mount Kaala, Oahu

SECTION II: Water Programs

1. Purpose

The Hawaii Water Code tasks the Department of Health with creating the Water Quality Plan (WQP), which is a crucial part of “an integrated and coordinated program for the protection, conservation, and management of waters in each county . . .” H.R.S. § 174C-31(d). The Hawaii Water Plan is intended to promote and implement “[t]he proper conservation and development of the waters of the State,” “[t]he control of waters of the State for public purposes,” “[t]he attainment of adequate water quality,” and “[t]he implementation of the water resources policies expressed in the Hawaii Water Code.” H.R.S. § 174C-31(g). As a part of the Hawaii Water Plan, “the [D]epartment of [H]ealth shall formulate a state water quality plan for all existing and potential sources of drinking water.” H.R.S. § 174C-68. The Department of Health (DOH) is required to “consult with and carefully evaluate the recommendations of concerned federal, state, and local agencies, particularly county water supply agencies” as it drafts the Water Quality Plan, and it is required to periodically review and revise the Plan. H.R.S. § 174C-68(c).

The purpose of the Water Quality Plan is to provide information on DOH’s ongoing water quality work across many of its different programs, as well as lay out the direction it is taking in the future by setting goals and priority action items. It also examines and discusses potential solutions for



the water quality challenges that DOH faces, including improving intra- and inter-agency coordination, dealing with funding issues, and adapting to climate change. DOH hopes that this Plan’s discussion of its ongoing and future work will improve opportunities for inter-agency coordination by identifying where various programs intersect and where resources can be more efficiently allocated, as recommended in the Statewide Framework for Updating the Water Quality Plan. The following Section describes DOH Water Programs’ ongoing work and future plans to protect and improve the State’s water quality, and Section III discusses how other DOH Divisions, Branches, and Offices play a role in protecting water quality and supporting the Water Programs.

2. Surface Water Quality

DOH's Clean Water Branch, Safe Drinking Water Branch, and Wastewater Branch ("Water Programs") all play integral roles in protecting surface water quality in Hawaii. While surface water provides only 5% of the State's drinking water supply, ground water and surface water quality are inextricably linked. The section below describes DOH's surface water quality work and sets forth its plans for the future.

2.1 Clean Water Branch

DOH's Clean Water Branch (CWB) implements the Surface Water Quality Management Program. The program's core functions are to:

- Protect, restore, maintain, and improve water quality;
- Conduct monitoring and assessment;
- Establish pollution reduction targets;
- Establish and update Water Quality Standards;
- Issue discharge permits and enforce those permits; and
- Implement programs to prevent or reduce nonpoint source pollution.

The Clean Water Branch works in partnership with the U.S. Environmental Protection Agency (EPA) to administer the Surface Water Quality Program, and the EPA has specifically delegated authority to the State of Hawaii to implement the National Pollutant Discharge Elimination System (NPDES) Program. Most of this work is federally-funded and must meet federal Clean Water Act requirements. Program efforts focus on a watershed-based approach to water quality management.



a. Water Quality Standards

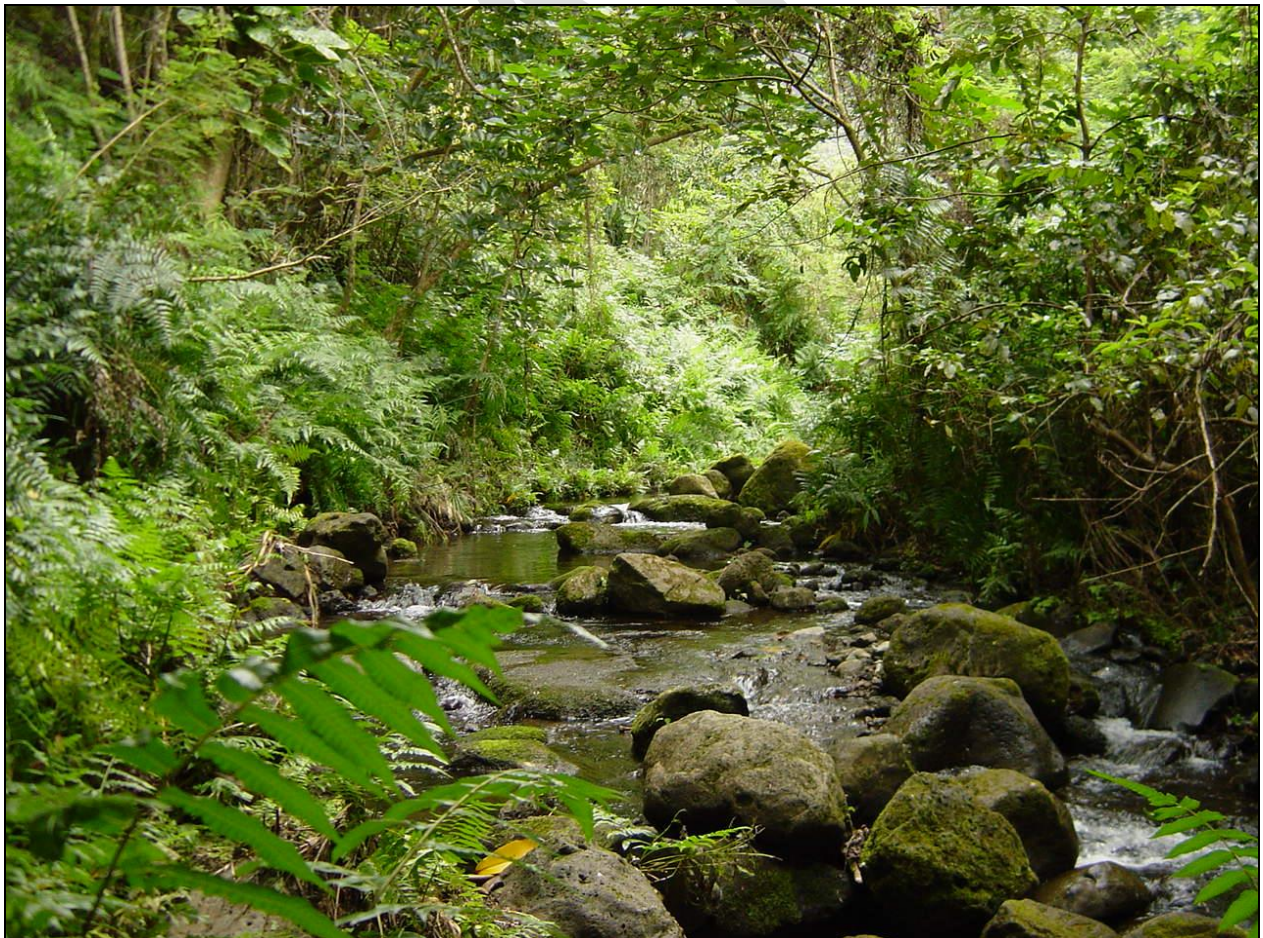
Federal law requires the state to complete a Water Quality Standards (WQS) review process and make necessary revisions every three (3) years.

➤ Program Goals

The goal of the WQS Program is to develop scientifically-based WQS that: (a) meet federal requirements, (b) specify the uses to be protected in State waters, and (c) provide appropriate criteria and methods for evaluating the attainment of these protected uses.

To implement these program goals, DOH adopted the following measures through amendments to H.A.R. Chs. 11-54 and 11-55 in December 2013:

- Updated the anti-degradation policy to prevent water quality degradation from thermal discharges;
- Adopted a new statistical testing procedure developed by the EPA, the test of significant toxicity (TST), for evaluating the combined impact of all pollutants on organisms under the whole effluent toxicity (WET) test; and
- Re-adopted the National Pollutant Discharge Elimination System General Permits.



➤ **Recommended Actions**

In 2014, Clean Water Branch will propose additional amendments to H.A.R. Chapters 11-54 and 11-55 to clarify the overall framework of waterbody types, waterbody classes, protected uses, and evaluative criteria to improve the linkage between specific uses and specific criteria, and to improve the basis for specific, use-based assessment methodologies. Clean Water Branch will also propose provisions that address non-compliance with H.A.R. Chapter 11-54, incorporate EPA's 2012 Recreational Water Quality Criteria, and allow intake credits to adjust effluent limits in National Pollutant Discharge Elimination System (NPDES) permits for intake water pollutant concentrations.

Water Quality Standards Maps

The recently-updated Water Quality Standards maps (provided via the following link and in SECTION VII: below) are a geographic representation of Hawaii's Water Quality Standards, as set forth in H.A.R. Chapter 11-54, and are intended for reference only. They do not substitute for the governing language in the Water Quality Standards. As mentioned above, Clean Water Branch is proposing amendments to H.A.R. Chapter 11-54 to further clarify the classification of State waters by listing waterbodies by name in the rules.

The Draft Water Quality Standards Maps are available at:

<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/>

➤ **Current Program Status**

In addition to the amendments to the Hawaii Administrative Rules that Clean Water Branch will propose in 2014, the Branch is also considering future revisions to the Water Quality Standards to take into account aquatic changes due to climate change, hydrological shifts, and more extensive water quality data collected over time.



b. Monitoring Program

The Clean Water Branch Monitoring Program consists of beach monitoring and other monitoring initiatives and partnerships.

➤ **Program Goals**

The Monitoring Program's goal is to maintain coastal waters for the health and safety of people, plants, and animals by:

- Monitoring surface waters of the State;
- Developing and implementing monitoring tools and methodologies;
- Protecting Hawaii's aquatic and marine resources;
- Protecting Hawaii's Water Recreational Community; and
- Developing data for Total Maximum Daily Load, Impaired Waters Report, and Water Quality Standards revision.

Beach Monitoring

Beach Monitoring is the mainstay of the Monitoring Program. Under the this Program, beaches are divided into three (3) tiers.

Tier 1 beaches are Hawaii's most important, heavily used, and threatened beaches and therefore are monitored approximately one (1) to two (2) times a week. Tier 1 represents Hawaii's core beaches and will be monitored continually until they are re-classified as Tier 2 beaches. Tier 2 beaches are moderately used beaches that are monitored at most once a week. Beaches not impaired or threatened and having consistently low indicator bacteria counts are classed as Tier 3. Tier 3 beaches are pristine, somewhat remote, difficult to access, have no houses nearby, and very little anthropogenic influence. Due to a 50% reduction in staff in 2010, the Monitoring Program focuses its efforts on monitoring Tier 1 beaches on Oahu until more staff can be rehired.

In addition to routine beach monitoring, the Monitoring Program also conducts water quality monitoring at Heeia, Oahu, and other select coastal sites to support the Clean Water Branch Polluted Runoff Control Program.



New Monitoring Initiatives and Partnerships

While Beach Monitoring continues to serve as the foundation of the Monitoring Program, emerging challenges have required the Program to pursue new monitoring methodologies. Due to submarine ground water paths, many of the pollutant discharges reaching our streams and ocean contain harmful synthetic chemicals.

These emerging challenges, coupled with continued improvements in water quality monitoring and analysis technologies, have led to the following Program initiatives and partnerships:

- 2006-2009: Partnership with U.S. Geological Survey (USGS) to conduct “Wastewater and Nutrient Source Tracking: A Reconnaissance Mapping Approach for Beach and Watershed Monitoring” (<http://hi.water.usgs.gov/studies/beachmonitoring/>);
- 2009: Wastewater and Nutrient Source Tracking in 2006-2009 led to publication of the Scientific Investigations Report 2009-5253, “A Multitracer Approach to Detecting Wastewater Plumes from Municipal Injection Wells in Nearshore Marine Waters at Kihei and Lahaina, Maui, Hawaii” (<http://pubs.usgs.gov/sir/2009/5253/>);
- 2012: Pharmaceutical monitoring at Kauai beaches and Lahaina, Maui seeps;
- 2013-2014:
 - Partnership with Stanford University to conduct microbial source tracking at Nawiliwili Bay, Mahaulepu, and Hanalei Bay, Kauai. Surface and subsurface microbial source tracking is also being done at Lahaina, Maui (Lahaina seeps);
 - Partnership with DOH Hazard Evaluation and Emergency Response (HEER) Office, Hawaii DOA, and USGS, to conduct the Statewide Pesticide Sampling Pilot Project (<http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/pesticides>). Some of the findings from the project included:
 - Surface water samples collected from 24 sites statewide were analyzed for a total of 136 different pesticides or breakdown products.
 - Atrazine, a restricted use pesticide, was the most commonly found pesticide in the study with 80% of the sites tested resulting in detection of atrazine.
 - One pesticide, Dieldrin, a termite treatment that has been banned from sale in Hawaii since 1980, exceeded state and federal water regulatory limits. The exceedances were found at three urban locations on Oahu.
 - Five other pesticide compounds (Fipronil, Atrazine, Cyfluthrin, Fipronil Sulfone, and Metolachlor) were detected at levels exceeding the most conservative EPA aquatic life benchmark.
 - All other pesticides detected were lower than the most stringent aquatic or human health guideline value.
 - Stream bed sediment was tested at 7 sites resulting in detection of glyphosate (trademarked as Roundup) in all samples.

In addition, the Monitoring Program is ready to launch the following new initiatives and partnerships in 2014:

- Partnership with USGS to conduct surveys of endocrine active compounds in smallmouth bass and biological effects in Hawaii, Kauai, and Oahu, to determine existence of chemical contaminants including herbicides, pharmaceutical, and biogenic hormones:
 - Hawaii – Honolii River, and Waiakea, Alia, and Waipio Streams
 - Kauai – Hanakapiai, Hanalei, Wailua, and Hanamaulu Streams
 - Oahu – Wahiawa Reservoir, Ala Wai Ditch, Kahana Iki Stream, Kawainui Marsh and Canal, and Anahulu River
- Partnership with USGS to deploy five Semipermeable Membrane Devices (SPMDs) in West Maui to determine existence of pollutant sources and relative pollutant levels at different locations. SPMDs serve as a “virtual fish” or “fat bags” mimicking the fats (lipids) in animals that naturally attract hydrophobic contaminants found in the water at low concentrations, but that build up in the lipids to higher, more harmful concentrations.
- Ocean Awareness Outreach – In October 2014, Clean Water Branch will provide public education about stream and ocean safety relating to prevention and treatment of Vibriosis (contracted in salt water), Leptospirosis (contracted in fresh water), Streptococcus, and Methicillin-resistant Staphylococcus aureus (MRSA) infection, and information about brown water, box jellyfish, shark bites, drowning, and high surf.

The purpose of these new monitoring initiatives and partnerships is to collect monitoring data that has gone through the rigors of dependable Quality Assurance/Quality Control (QA/QC) processes to help shape policy and management decisions regarding development of new water quality monitoring methodologies and policies; prioritization of watersheds to target resources; and strategies to address identified pollutant sources.

U.S. Environmental Protection Agency National Assessment Studies

In partnership with the Environmental Protection Agency (EPA), the Clean Water Branch conducted chemical, bacteriological, and biological monitoring in bays and estuaries for EPA National Coastal Condition Assessment studies:

- National Coastal Condition Assessments in Hawaii:
 - 2014 National Coastal Condition Assessment (currently in planning and preparation stages) → Island of Oahu (50 sites)
 - 2013 National Coastal Condition Assessment → Island of Maui (50 sites)
 - 2012 National Coastal Condition Assessment → Island of Hawaii (50 sites)
 - 2011 National Coastal Condition Assessment → Island of Kauai (50 sites)
 - 2010 National Coastal Condition Assessment → State of Hawaii (50 sites)
- National Coastal Condition Report IV (NCCR IV) (2012):
<http://water.epa.gov/type/oceb/assessmonitor/nccr/index.cfm>

Also, in partnership with the EPA and Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR), the Clean Water Branch conducted monitoring to develop the following national lakes, rivers, and streams assessment studies:

- 2013-2014 National Rivers and Stream Assessment – Island of Kauai (50 rivers and streams) (<http://water.epa.gov/type/rs/monitoring/riverssurvey/>)
- 2012 National Lakes Assessment – Island of Oahu (2 lakes) (http://water.epa.gov/type/lakes/lakessurvey_index.cfm)

➤ **Current Program Status**

Clean Water Branch monitored 183 beaches in 2012 and 138 beaches in 2013. With the recent hiring of new monitoring staff, the Monitoring Program envisions being able to slowly return to beach monitoring numbers close to those it had prior to the reduction-in-force in 2010.

Clean Water Branch monitoring continues to support the Polluted Runoff Control Program with monitoring efforts at Waiulaula, Pelekane, and Heeia Kea. As new staff are hired, monitoring efforts will increase to support the Polluted Runoff Control Program.



In addition to the beach coastal monitoring and new initiatives outlined above, over the next year, the Monitoring Program will continue to partner with public and private entities to develop West Maui

regional monitoring, especially in relation to Honokahua Bay and assess the results of and resources available for continued citizen monitoring in Hanalei, Kauai.

For water quality data on bacteria levels at beaches, see:

<http://emdweb.doh.hawaii.gov/CleanWaterBranch/WaterQualityData/default.aspx>.

For water chemistry data on coastal stations,

see: <http://emdweb.doh.hawaii.gov/CleanWaterBranch/WaterQualityData/Chemistry.aspx>.

c. Total Maximum Daily Load

Federal law requires the State to identify and prepare a list of waters every two (2) years that do not or are not expected to meet Water Quality Standards after applying existing required controls (e.g., minimum wastewater treatment technology). For each listed waterbody/pollutant combination, the State must (a) establish the waterbody's loading capacity (the maximum loading rate at which WQS are met, or "Total Maximum Daily Load"), and (b) allocate this loading capacity among contributing point and nonpoint sources. After these Total Maximum Daily Loads (TMDLs) are approved by the EPA, the State implements pollutant load reductions through National Pollutant Discharge Elimination System (NPDES) permits and by funding watershed implementation projects that are designed to reduce nonpoint source pollution.

The Clean Water Branch continues to establish Total Maximum Daily Loads for each listed waterbody/pollutant combination. Progress on establishing Total Maximum Daily Loads is included in the State of Hawaii Integrated Reports, which are typically produced every two (2) years. Reports can be found at: <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/integrated-report-and-total-maximum-daily-loads/>.

The 2012 Integrated Report identifies waters where DOH's analysis of available data revealed non-attainment of State Water Quality Standards, which results in Clean Water Branch placing them on an "impaired" Waters list. There are 225 marine waters and 88 stream segments listed as impaired in the 2012 Integrated Report. Turbidity was the most common impairment in the State's marine waters—the 2012 Integrated Report identified 150 different areas where turbidity levels exceeded Water Quality Standards. The Clean Water Branch believes this is due to polluted runoff, and is continuing to focus its Polluted Runoff Control Program (see Section d below) on selected watersheds to work toward making measurable improvements.

➤ Program Goals

The goals of the Total Maximum Daily Load Program are as follows:

- Quantitatively assess watershed-scale water quality problems, contributing sources, and pollutant load reductions;
- Provide an analytical basis for planning and implementing pollution controls; and
- Provide assistance with identifying restoration projects that will improve water quality and protect public and environmental health.

➤ Recommended Actions

To achieve the Program's goals, the Clean Water Branch plans to:

- Incorporate Clean Water Branch program elements (beach and surface water monitoring, polluted runoff control, National Pollutant Discharge Elimination System permits, etc.) into the Total Maximum Daily Load process to develop effective, implementable Total Maximum Daily Loads ; and
- Collaborate with the Counties and other State agencies to prioritize watersheds for restoration efforts and support stakeholder stewardship of watershed resources through coordinated efforts.

➤ **Current Program Status**

On September 20, 2013, EPA approved the Clean Water Branch's 2012 Integrated Report. This report provides a single, integrated submittal for fulfilling federal requirements under Sections 303(d) and 305(b) of the Clean Water Act. With this approval, the 2012 303(d) List of Impaired Waters is now in effect.

As of October 2013, 48 Total Maximum Daily Loads have been developed. Existing Total Maximum Daily Loads are being implemented through National Pollutant Discharge Elimination System permits and Watershed Based Plans, and planning for future Total Maximum Daily Loads is ongoing.

The draft 2014 Integrated Report has been provided to EPA for review and approval, and can be found at: http://health.hawaii.gov/cwb/files/2013/05/2014_Draft-Integrated-Report_public-comment.pdf

In June 2014, Clean Water Branch and the other DOH Water Programs met with EPA Region 9 staff members to establish cross-program initiatives to develop a new Standardized Water Quality Assessment Methodology, Total Maximum Daily Load-Watershed Based Plan (TMDL-WBP) Hybrid Plans, and Regional Monitoring Plans. A draft of the Standardized Assessment Methodology is targeted for public comment review in December 2014.

d. Polluted Runoff Control Program



The Polluted Runoff Control Program's mission is to protect and restore the quality of Hawaii's waters by preventing environmental degradation due to nonpoint source pollution. Unlike pollution from industrial and wastewater treatment facilities, nonpoint source pollution comes from many different sources. Nonpoint source pollution develops when rainfall moving over and through the ground

picks up natural and manmade pollutants that are eventually deposited in streams, wetlands, coastal waters, and underground sources of drinking water.

Examples of such pollutants are:

- Excess fertilizers and pesticides from fields and gardens;
- Oil, grease, and toxic chemicals from urban and industrial areas;
- Sediment from construction sites, crop and forest lands, and eroding stream banks; and
- Bacteria and nutrients from livestock, pet wastes, faulty septic systems, and cesspools.

➤ **Program Goals**

The Polluted Runoff Control Program is designed to:

- Prevent environmental degradation due to nonpoint source pollution;
- Increase the amount of resources devoted to the control of polluted runoff and focus on collaborative efforts to more effectively utilize limited resources; and
- Provide outreach and education to the community in partnership with other agencies.

➤ **Recommended Actions**

To achieve the program goals and to implement an integrated watershed approach, the State must increase the amount of funding devoted to the control of polluted runoff through best management practices and emphasize

Maui Monitoring Implementation and Ungulate Fencing Installation Polluted Runoff Control Implementation Project

This project is being conducted by the University of Hawaii (UH) and the Hawaii Association of Watershed Partnerships (HAWP) at Hana Forest Reserve and Honolua Watershed, Maui. The project commenced in April 2010 and was completed in June 2014.

Hawaii Association of Watershed Partnerships drafted a comprehensive monitoring plan that is available for other nonpoint source pollutant control projects throughout the State. In addition, the Partnerships' East Maui and West Maui Mountain Watershed Partnerships installed fencing and conducted feral ungulate removal in the fenced areas. The removal of feral ungulates (wild pigs (*Sus scrofa*)) will lead to a reduction of erosion in the area. Furthermore, the development of local monitoring guidelines customized for the State's climate and watersheds will assist cooperators across the State with developing monitoring plans. Approximately ten miles of fencing has been erected in the Honolua and Hana upper forest areas, which will keep non-native and destructive animals out of high priority areas.



Ungulate fencing site just outside of the Honolua Bay Watershed

Projects such as these allow the Polluted Runoff Control Program to continue to protect water quality and source waters.

collaborative agency efforts to utilize the limited resources that are currently devoted to it. The State's Coastal Nonpoint Pollution Control Program Management Plan identifies management measures that must be implemented by relevant government agencies and the public to control polluted runoff. The plan remains under conditional approval from U.S. National Oceanic and Atmospheric Association (NOAA) and EPA, and one of the priorities of the Polluted Runoff Control Program, along with the Office of Planning's Coastal Zone Management Program, is to continue to work with the EPA and NOAA to gain full Coastal Nonpoint Pollution Control Program Management Plan approval.

The Coastal Nonpoint Pollution Control Program Management Plan can be found at:

<http://planning.hawaii.gov/czm/initiatives/coastal-nonpoint-pollution-control-program/hawaii-cnpcp-management-plan-1996/>

➤ ***Current Program Status***

The Polluted Runoff Control Program administers grant money it receives from the EPA through Section 319(h) of the Federal Clean Water Act. The program issues grants via an annual Request for Proposals with a dollar-for-quarter match for projects focused on implementation of best management practices arising from effective watershed-based plans. These plans detail polluted runoff issues in a particular watershed, how the issues can be addressed and by whom, and how the installation of best management practices or activities can be evaluated to determine success. More information about the Polluted Runoff Control Program's grants and effective watershed-based plans can be found at the Program's website: <http://hawaii.gov/doh/pollutedrunoffcontrol>



Specific activities considered for funding may include: implementation of measures to minimize excessive nutrients, sediment and other pollutants delivered to surface and/or coastal waters, restoration of native vegetation in critical watershed areas such as stream banks/riparian corridors, ungulate control and invasive species removal, support for a Watershed Coordinator, water quality monitoring and evaluation efforts, educational efforts, and refinement of watershed-based plans to include nonpoint source pollution elements. The program targets its efforts in specific watersheds where effective watershed-based plans exist.

These activities are consistent with *Hawaii's Implementation Plan for Polluted Runoff Control (July 2000)*, which is a culmination of the planning that the State of Hawaii has done in past years for polluted runoff control and, at the same time it sets forth a plan for activities that State and County agencies, federal agencies, and Hawaii's citizens can undertake to control polluted runoff.

Hawaii's Implementation Plan for Polluted Runoff Control (July 2000) can be found at:

<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/prc-hawaiis-implementation-plan/>

The Implementation Plan is currently being updated, and a revised version is expected to be completed by the end of 2014. As the Polluted Runoff Control Program updates its Implementation Plan, the Program expects to include information from other agency's planning efforts, like DLNR's Rain Follows the Forest, with the goal of eliminating redundancies and supplementing scarce resources when the common mission is to improve water quality in the State's watersheds. The DLNR Rain Follows the Forest Plan is available at: <http://dlnr.hawaii.gov/rain/files/2014/02/The-Rain-Follows-the-Forest.pdf>

The Clean Water Branch Polluted Runoff Control Program also provides outreach and education to the community through school visits and participation in community fairs. The program has partnered with Honolulu Theatre for Youth to share a "clean water message" with their audiences. The Program continues to work closely with the City and County of Honolulu (CCH), DLNR, Hawaii Department of Transportation (DOT), and other agencies on various Earth Month activities to encourage the public to do their part to keep the water clean.

More information on the Polluted Runoff Control Program's activities can be found in its End of Fiscal Year Reports, available at: <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/>.

e. National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System, administered by the Clean Water Branch, helps to prevent environmental degradation from point source pollution. Pollution from traditional point sources such as industrial wastewater treatment plants, refineries, electricity generating stations, as well as stormwater discharges from municipalities, military installations, and other industrial complexes, are strictly regulated through National Pollutant Discharge Elimination System permits and enforcement. Traditional National Pollutant Discharge Elimination System permits regulate the discharge of pollutants such as temperature, solids, toxics, nutrients, pesticides, and bacteria/pathogens.



More information on National Pollutant Discharge Elimination System individual and general permits is available at: <http://eha-cloud.doh.hawaii.gov/epermit/View/default.aspx>.

Addressing Stormwater in Hawaii

Municipal Separate Storm Sewer System (MS4) Initiative



Stormwater in urbanized areas is regulated through Municipal Separate Storm Sewer System (MS4) permits under the National Pollutant Discharge Elimination System Program. Stormwater is generated when precipitation from rain flows over land or impervious surfaces and does not percolate into the ground. Stormwater accumulates debris, chemicals, and other pollutants, and often enters our streams and ocean untreated.

Currently, the City and County of Honolulu (<http://cleanwaterhonolulu.com/storm/about/about.html>) and the County of Maui (Kahului and Wailuku) are the only counties in the State of Hawaii that have Municipal Separate Storm Sewer System permits. However, since stormwater affects the entire State, the Clean Water Branch is planning to implement a statewide initiative to encourage counties without these permits to implement stormwater controls. The aim of the statewide initiative would be to provide counties with financial and technical assistance to implement best management practices (BMPs) and monitoring.

Credit: City and County of Honolulu

f. Indicators

An environmental indicator provides a way to measure or keep track of a particular condition in the environment. The indicators listed in the sections that follow provide a way for DOH to track data and use it to determine changes over time.

Brown Water Advisories

The Clean Water Branch issues brown water advisories, which are general media releases anticipating or responding to heavy stormwater runoff events. Brown water advisories usually are not accompanied by shoreline postings.

Table: Number of Brown Water Advisories by Island in Calendar Years 2011-2014

| Island | 2011 | 2012 | 2013 | 2014 |
|--------------|-----------|----------|-----------|-----------|
| Hawaii | 2 | 0 | 0 | 0 |
| Kauai | 5 | 5 | 6 | 5 |
| Maui | 5 | 0 | 0 | 13 |
| Oahu | 5 | 1 | 9 | 2 |
| TOTAL | 17 | 6 | 15 | 20 |

Source: Department of Health, Clean Water Branch
Information current as of May 23, 2014

Number of Coastal Waters Assessed in Hawaii

The number of coastal waters assessed in the tables below is based on data provided in the Clean Water Branch's Integrated Report. Data for Calendar Years 2010-2012 is from the 2012 Integrated Report, and data for Calendar Years 2012-2014 is from the draft 2014 Integrated Report (pending EPA approval).

Table: Number of Coastal Waters* Assessed by Island in Calendar Years 2010-2012**

| Island | Number of Coastal Waters | Number of Impaired Coastal Waters | Percentage of Known Impaired Coastal Waters by Island |
|--------------|--------------------------|-----------------------------------|---|
| Hawai'i | 83 | 43 | 52% |
| Kaua'i | 64 | 23 | 36% |
| Lāna'i | 12 | 7 | 58% |
| Maui | 84 | 76 | 90% |
| Moloka'i | 32 | 3 | 9% |
| O`ahu | 114 | 73 | 64% |
| TOTAL | 389 | 225 | 58% |

Source: Department of Health, Clean Water Branch

* Coastal Waters" means beaches, bays, harbors, and coastal estuaries.

** Assessed, as it is used in the chart above, means tested for any of the following: enterococci (a pathogen which negatively affects recreation), nitrogen, nitrates, phosphorus, turbidity, and/or other (including trash).

Table: Number of Coastal Waters* Assessed by Island in Calendar Years 2012-2014*****

| Island | Number of Coastal Waters | Number of Impaired Coastal Waters | Percentage of Known Impaired Coastal Waters by Island |
|--------------|--------------------------|-----------------------------------|---|
| Hawai'i | 83 | 62 | 75% |
| Kaua'i | 64 | 41 | 64% |
| Lāna'i | 12 | 7 | 58% |
| Maui | 84 | 77 | 92% |
| Moloka'i | 32 | 3 | 9% |
| O'ahu | 114 | 74 | 65% |
| TOTAL | 389 | 264 | 68% |

Source: Department of Health, Clean Water Branch

* Coastal Waters" means beaches, bays, harbors, and coastal estuaries.

** Assessed, as it is used in the chart above, means tested for any of the following: enterococci (a pathogen which negatively affects recreation), nitrogen, nitrates, phosphorus, turbidity, and/or other (including trash).

*** Data pending EPA approval.

g. Number of Shoreline Postings as a result of Wastewater or Other Water Pollution

Wastewater or chemical spills and other pollutant releases restrict the public's enjoyment and use of the shoreline and negatively affect aquatic life. The table below shows the number of times shoreline waters were posted with warning signs (explaining that they were unsafe because of water pollution) by the Counties, military, private parties, or DOH. For any wastewater spill, shoreline warnings are posted first, followed by water sampling. The Clean Water Branch reviews bacteria data prior to allowing removal of warning signs.

Table: Days Per Year of Shoreline (Water Quality) Postings (2006-2013)

| Calendar Year | Total | Days of Shoreline Postings Caused by Wastewater Spill Events |
|--------------------------|-------|--|
| 2006 | 529 | 368 |
| 2007 | 151 | 151 |
| 2008 | 159 | 159 |
| State Fiscal Year | | |
| 2009 | 310 | 310 |
| 2010 | 403 | 403 |
| 2011 | 529 | 529 |
| 2012 | 729 | 15 |
| 2013 | 145 | 136 |

- These numbers do not reflect warning sign postings on streams, lakes, and other inland waters, such as the Ala Wai Canal.
- Other agencies may also post other shoreline warning signs.
- These numbers do not include "brown water advisories," which are general media releases anticipating or responding to heavy stormwater runoff events and are not necessarily accompanied by actual shoreline postings.

2.2 Safe Drinking Water Branch

While surface water provides only five percent (5%) of the State's drinking water supply, the Safe Drinking Water Branch's (SDWB's) primary function related to surface water is to ensure that it meets State and Federal health-related drinking water standards, including the Surface Water Treatment Rule, which sets forth treatment requirements for surface water systems to address the presence of micro-organisms such as *Giardia Lamblia* and *Cryptosporidium*, treatment technique requirements, and Maximum Residual Disinfectant Level (MRDL) requirements.

Source Water Assessments are conducted on surface water intakes to drinking water systems. The assessments delineate the areas where potential contaminating activities may impact the water source. The delineated area includes a buffer zone around the water body, plus the watershed area for that water body. In Hawaii, we have two (2) main types of surface water sources, streams and ditches, that provide drinking water to several water systems, which can have long watershed areas. Many of the ditches were built by sugar companies to transport irrigation water, such as the Waiahole Ditch on Oahu, the East Maui Irrigation Ditch on Maui, and formerly, the Hamakua Ditch on Hawaii Island.



South Kohala Watershed, Hawaii Island



Waiahole Ditch Intake, Oahu

Unlike ground water sources, contamination impacts on surface water sources can have a very quick impact on the quality of the drinking water. Impacts can occur anywhere from a matter of minutes to several hours after a contamination incident, depending on how far away the incident occurred and how fast the water is moving in the stream or ditch. Of particular concern is runoff from flood conditions, ditch maintenance activities, and possible eradication efforts in the watershed.

While the primary responsibility of the Safe Drinking Water Branch is to ensure that public water systems meet State and Federal health-related standards for drinking water, monitoring and assessment data from the Safe Drinking Water Branch may also be useful to other surface water quality programs, such as the Clean Water Branch's Total Maximum Daily Load and Polluted Runoff Control Programs, in Section c and d above, respectively.

2.3 Wastewater Branch

The Wastewater Branch seeks to ensure that the use and disposal of wastewater and wastewater sludge does not contaminate or pollute any valuable water resource, does not give rise to public nuisance, and does not become a hazard or potential hazard to the public health, safety, and welfare.

It seeks to advance water reuse and wastewater sludge reuse consistent with public health and safety and environmental quality. The Wastewater Branch acknowledges that when properly treated and used, all recycled water and wastewater sludge are valuable resources with environmental and economic benefits and can be used to conserve the State's precious resources. The most highly treated recycled water and exceptional quality wastewater sludge can be used for a wide variety of applications with the appropriate restrictions and when best management practices are implemented.



a. Water Reuse

Water reuse (the reuse of water treated to a level appropriate for irrigation and other purposes) has remained in the range of 19.64 to 24.6 million gallons per day (MGD) statewide between 2006 and 2013.

Table: Wastewater Reuse

| Calendar Year | Total Wastewater Treated (MGD)* | Recycled Water Reused (MGD) | Percentage Reused |
|---------------|---------------------------------|-----------------------------|-------------------|
| 2006 | 150 | 24.60 | 16.40% |
| 2007 | 150 | 24.40 | 16.27% |
| 2008 | 150 | 23.91 | 15.94% |
| 2009 | 150 | 23.91 | 15.94% |
| 2010 | 145 | 22.98 | 15.85% |
| 2011 | 141 | 19.64 | 13.93% |
| 2012 | 141 | 21.14 | 14.99% |
| 2013 | 133 | 21.12 | 15.86% |

Source: Department of Health, Wastewater Branch



The combination of growing population and limited potable water resources is reducing the availability and quality of our drinking water supplies. In addition, we continue to experience problems as a result

of the disposal of wastewater. Wastewater management practices that protect, conserve, and fully utilize water resources are vital to Hawaii. Increasing the safe use of recycled water can greatly assist in meeting the State's water requirements, enhance the environment, and benefit public health by preserving resources upon which public health protection is based. Water reuse can help alleviate future water supply uncertainties in Hawaii related to the changing climate by reducing the amount of drinking water that is used for things like industrial processes and landscape irrigation, preserving drinking water for human consumption. DOH has long been an advocate for water reuse as long as it does not compromise public health and our valuable water resources and promoting the use of recycled water is one of the Department's high priority goals.

Water reuse has moderately increased in Hawaii over the past several years. There are now 39 wastewater treatment facilities that produce recycled water. Of these 39 facilities, 11 are R-1 facilities, which produce the highest quality recycled water, while the remaining facilities produce R-2 and R-3 water.

The Wastewater Branch is currently in the process of revising the Guidelines for the Treatment and Use of Recycled Water to keep pace with the new technical developments in the field of water reuse with the hopes to expand its uses without creating problems with ground water contamination. A study is being conducted by the USGS and Honolulu Board of Water Supply to assess the effect of irrigation with recycled water on ground water quality in North-Central Oahu. The study will include sampling of the irrigation water and ground water near and downgradient of the area of water reuse. In order to assess potential impacts on ground water quality, the study utilizes a comprehensive approach to evaluate a wide variety of emerging contaminants and potential tracers, including endocrine disrupting chemicals, pharmaceuticals, and trace elements. The study is tentatively scheduled to begin in July 2014.

The Safe Drinking Water Branch and the University of Hawaii are conducting a study to analyze wastewater for pharmaceuticals and personal care products through Hawaii soils. The study is to identify pharmaceuticals and personal care products in wastewater as well as potential leachability of pharmaceuticals and personal care products through soils. This will assist the Wastewater Branch with guidelines for recycled wastewater use.

➤ **Current Program Status**

The Wastewater Branch is currently exploring the possibility of retaining the services of a consultant to assist with completing the revisions to its Guidelines for the Treatment and Use of Recycled Water.

➤ **Recommended Actions**

The Wastewater Branch's goal is to expand the use of recycled water and complete the revisions to the Guidelines for the Treatment and Use of Recycled Water by December 31, 2014.

b. Wastewater Treatment Plant Operation & Maintenance Compliance

The Wastewater Branch also performs annual operation and maintenance inspections of wastewater treatment plants to ensure compliance with H.A.R. Chapter 11-62, Wastewater Systems. Many of the

wastewater treatment plants use injection wells for effluent disposal. In 2012, 93% of the plants inspected were in compliance with H.A.R. Chapter 11-62 effluent requirements. The inspections are performed to ensure that plants are being properly operated and maintained to prevent ground water and surface water contamination.

Table: Wastewater Treatment Plant Operations & Compliance

| Calendar Year | Total Number of Plants | Number of Plants Inspected | Number of Plants Rated Unsatisfactory | Percentage in Compliance |
|---------------|------------------------|----------------------------|---------------------------------------|--------------------------|
| 2006 | 180 | 93 | 14 | 92% |
| 2007 | 180 | 102 | 33 | 82% |
| 2008 | 180 | 34 | 15 | 92% |
| 2009 | 180 | 119 | 38 | 79% |
| 2010 | 180 | 114 | 13 | 93% |
| 2011 | 180 | 62 | 17 | 91% |
| 2012 | 190 | 58 | 13 | 93% |

Source: Department of Health, Wastewater Branch



3. Ground Water Quality

DOH's Safe Drinking Water, Wastewater, and Solid and Hazardous Waste Branches play an integral role in protecting the State's ground water quality through a variety of programs. Ground water supplies the vast majority of the State's drinking water.

3.1 Safe Drinking Water Branch

The primary function of the Safe Drinking Water Branch (SDWB) is to ensure public water systems meet State and Federal health-related standards for drinking water. These standards include: 75 Maximum Contaminant Levels (MCLs), ten (10) treatment technique requirements, and three (3) Maximum Residual Disinfectant Level (MRDL) requirements.

The Safe Drinking Water Branch:

- Regulates the 130+ Public Water Systems in the state;
- Operates the Underground Injection Control (UIC) Program;
- Conducts the Source Water Assessment and Protection (SWAP) Program;
- Drives the Comprehensive State Groundwater Protection Program Strategy/Plan;
- Updates the Groundwater Contamination Viewer (see <http://eha-cloud.doh.hawaii.gov>); and
- Provides guidance for Rainwater Catchment Systems.

a. Underground Injection Control Program

The goal of the Underground Injection Control (UIC) Program is to protect existing and potential sources of drinking water from contamination by injection well wastewater disposal. The Program issues and administers permits for injection well facilities and limits the areas where certain types of injection well wastewater disposal can be sited.

In 2014, there are 927 Underground Injection Control permitted facilities with 6,106 injection wells in Hawaii. The majority of injection wells in Hawaii fall under one of the following three (3) types: drainage, domestic wastewater, or industrial wastewater injection wells. There are also aquaculture and geothermal injection wells in Hawaii, but they are less common.

Drainage injection wells primarily dispose rainfall runoff water and can sometimes include runoff from landscape irrigation. Almost two-thirds of the Underground Injection Control permitted facilities in the State are drainage injection well facilities.

Domestic wastewater may be either treated or untreated before being discharged into the domestic wastewater injection wells. Injection wells that receive untreated wastewater are commonly referred to as cesspools. Because of the federal government's mandate to ban large capacity cesspools, the majority of permitted domestic wastewater injection wells receive wastewater that has undergone some level of treatment.

Industrial wastewater injection wells dispose wastewaters from electric power generation, product manufacturing, food and water processing, carwashes, and laundries. Cooling water for electric power generation produces the largest volume of injected industrial wastewater.

The activities involving the use of injection wells have the potential to cause ground water pollution and cannot be underestimated. The DOH Underground Injection Control Program has realized that injection well activity requires monitoring and control, which is accomplished through the issuance of Underground Injection Control permits. All operators of injection well(s) must obtain one of these permit before operating. They stipulate discharge standards, operating conditions, and water quality testing and reporting requirements, to achieve the goal of preventing or minimizing ground water pollution.

In mid-2012, the Underground Injection Control program started receiving on-line Underground Injection Control (UIC) permit applications via the Environmental Health Administration (EHA)'s e-permitting portal at <http://eha-cloud.doh.hawaii.gov>. However, hard copy submittals are still being accepted. Based on the Underground Injection Control Program's experience, the majority of permit applicants still prefer to submit hard copy applications. To encourage online submittals, the Program will begin removing the option for downloading hard copy applications in federal fiscal year 2015. Because priority has been given to reducing the application backlog and integrating the e-Permitting system to process applications faster, the Underground Injection Control database still requires some maintenance and updates.

Hawaii Administrative Rules (H.A.R.) Chapter 11-23, entitled "Underground Injection Control," provide conditions governing the location, construction, and operation of injection wells so that injected fluids do not migrate and pollute underground sources of drinking water. H.A.R. Section 11-23-4 gives the criteria for classifying aquifers into those that are designated as underground sources of drinking water and those that are not.

The boundary between exempted aquifers and underground sources of drinking water is generally referred to as the "Underground Injection Control Line." Restrictions on injection wells differ, depending on whether the area is inland (*mauka*) or seaward (*makai*) of the Line. The UIC Line is shown on the Underground Injection Control (UIC) Maps available online at <http://health.hawaii.gov/sdwb/underground-injection-control-program/>.

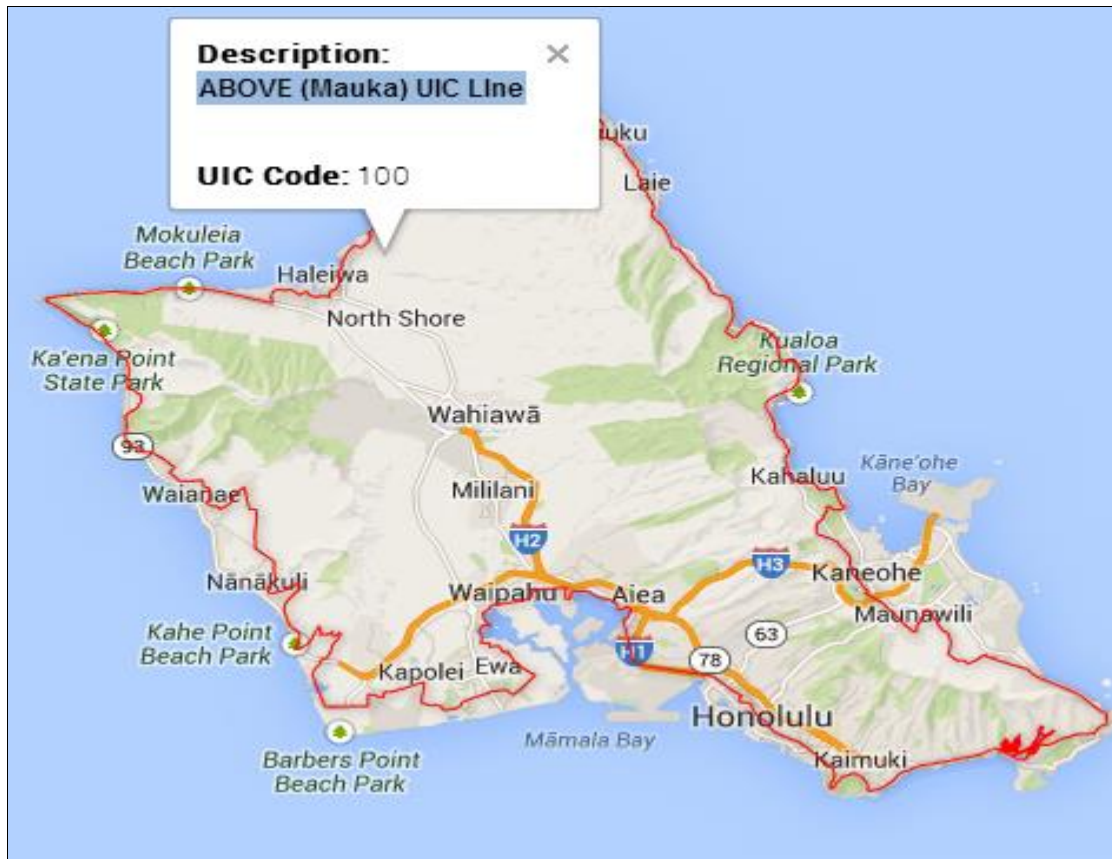
The online Underground Injection Control maps show the areas inland and seaward of the Underground Injection Control Line on all major islands. These maps are meant for general informational purposes only. The DOH holds the official Underground Injection Control maps, which contain detailed information about the Line. The Codes used on the Underground Injection Control maps represent the following:

Code1 – BELOW (makai) UIC LINE

- Underlying aquifer not considered drinking water source
- Wider variety of injection wells allowed
- Injection wells need Underground Injection Control (UIC) Permit or Permit Exemption
- Permit limitations are imposed

Code100 – ABOVE (mauka) UIC LINE

- Underlying aquifer considered drinking water source
- Limited types of injection wells allowed
- Injection wells need Underground Injection Control (UIC) Permit or Permit Exemption
- Permit limitations are imposed and requirements are more stringent



➤ **Program Goals**

The Underground Injection Control Program has set goals to:

- Reduce the number of unpermitted underground injection well facilities; and
- Assure the proper abandonment of Underground Injection Control wells to prevent them from becoming conduits for groundwater contamination.

Percentage of Underground Injection Control Wells in Compliance with a Permit

The overall percentage of underground injection well facilities in compliance with State and Federal regulations (those with a current permit) for State fiscal year 2013 has increased to 58%, up from 57% in 2012. Most of the non-compliant injection well facilities use drainage injection wells for rainfall runoff disposal. Domestic-related and industrial-related wastewater disposal injection wells had a higher compliance percentage at 72%. The Program processes permit renewals for domestic and industrial-related injection before permit renewals for drainage injection because the former pose a higher risk of causing ground water contamination.

Table: Underground Injection Control Well Compliance (2004-2013)

| Calendar Year | Total UIC Permits | Total Expired Permits | Percent of Total with Current Permits | Percent of Current Domestic Wastewater & Industrial UIC Permits |
|--------------------------|-------------------|-----------------------|---------------------------------------|---|
| 2004 | 677 | 298 | 56% | 77% |
| 2005 | 679 | 345 | 49% | 57% |
| 2006 | 714 | 358 | 50% | 56% |
| 2007 | 768 | 364 | 53% | 60% |
| 2008 | 796 | 379 | 52% | 60% |
| State Fiscal Year | | | | |
| 2009 | 818 | 374 | 54% | 63% |
| 2010 | 857 | 385 | 55% | 67% |
| 2011 | 879 | 394 | 55% | 67% |
| 2012 | 911 | 393 | 57% | 71% |
| 2013 | 926 | 389 | 58% | 72% |

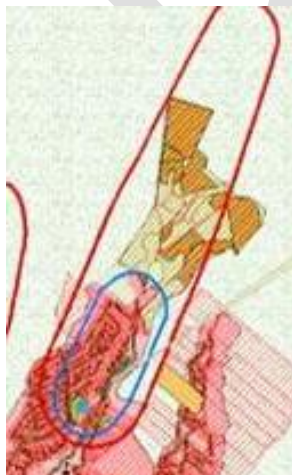
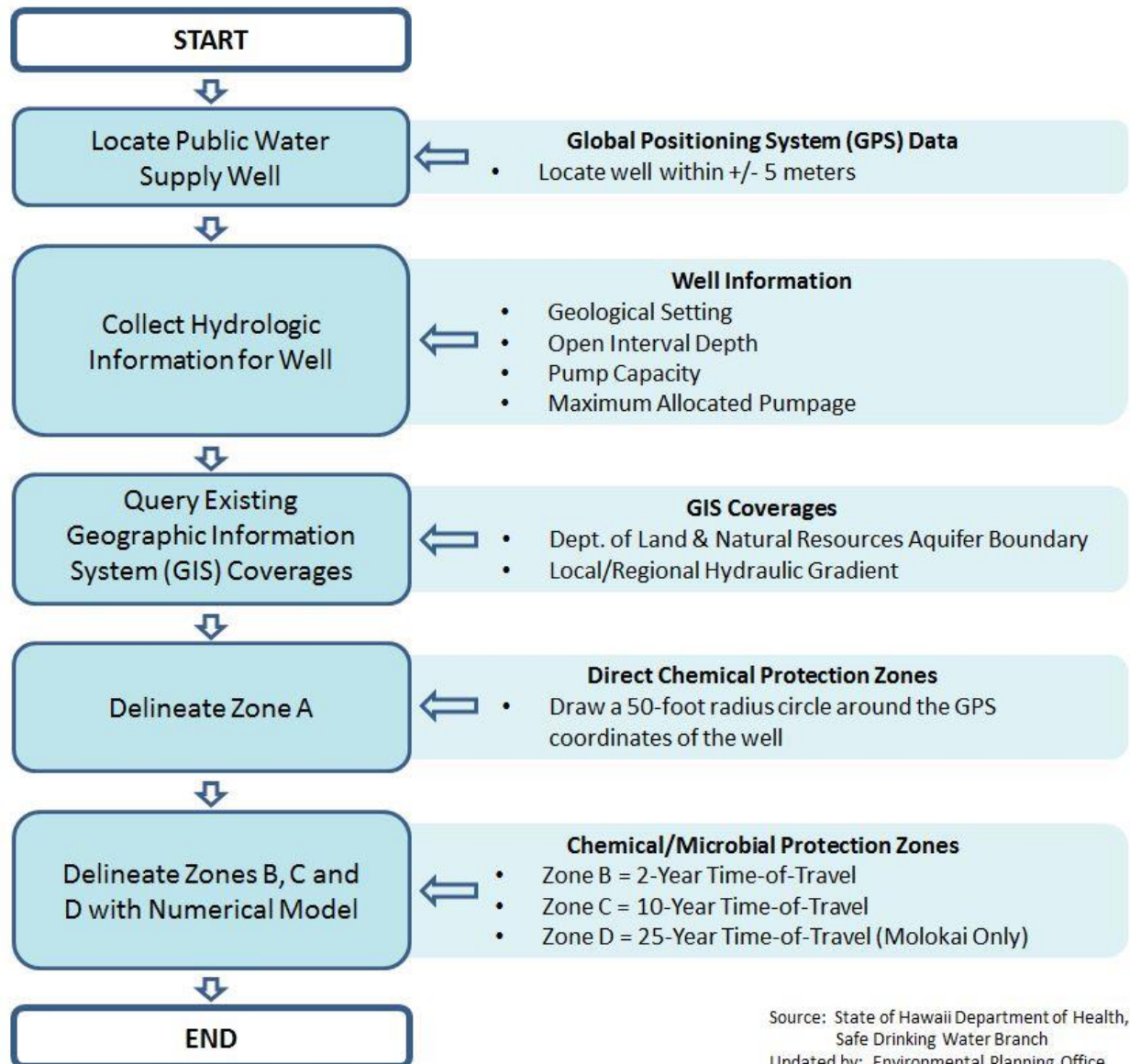
Source: Department of Health, Safe Drinking Water Branch

b. Source Water Assessment and Protection Program

The 1986 reauthorization of the Federal Safe Drinking Water Act (SDWA) mandated that each state develop a Wellhead Protection Program (WHPP), to protect ground water resources which supply drinking water to public water supply systems from contamination. In 1995, the EPA approved the Wellhead Protection Program that DOH developed, however, due to a lack of dedicated resources, the Program's implementation was delayed.

Subsequently, the 1996 reauthorization of the Safe Drinking Water Act (SDWA) included an amendment requiring states to develop a program to assess sources of drinking water, and encouraging states to establish protection programs. The objectives of this program were to assess the susceptibility of all drinking water sources to activities that have a significant potential to release contaminants to these water sources. Each state was required to submit a Source Water Assessment & Protection (SWAP) Program Plan that identifies and describes the methodology and procedures to follow to determine the susceptibility of a drinking water source and public water supply system. The State was required to submit this Source Water Assessment & Protection Program Plan to EPA by February 6, 1999. Upon EPA approval of the Plan in November 1999, the State was required to conduct Source Water Assessments on all of its drinking water sources. The assessment consisted of delineating the water source capture zone, inventorying potential contaminating activities within the capture zone, and determining the water source's susceptibility to contamination. The Source Water Assessment & Protection Program assessments were completed in 2006 and the Wellhead Protection-Financial Assistance Program (WHP-FAP) was developed in 2008. The Safe Drinking Water Branch considers the assessment data to be the property of the water system and this information should be requested from the water system.

Groundwater Source Delineation Flow Diagram

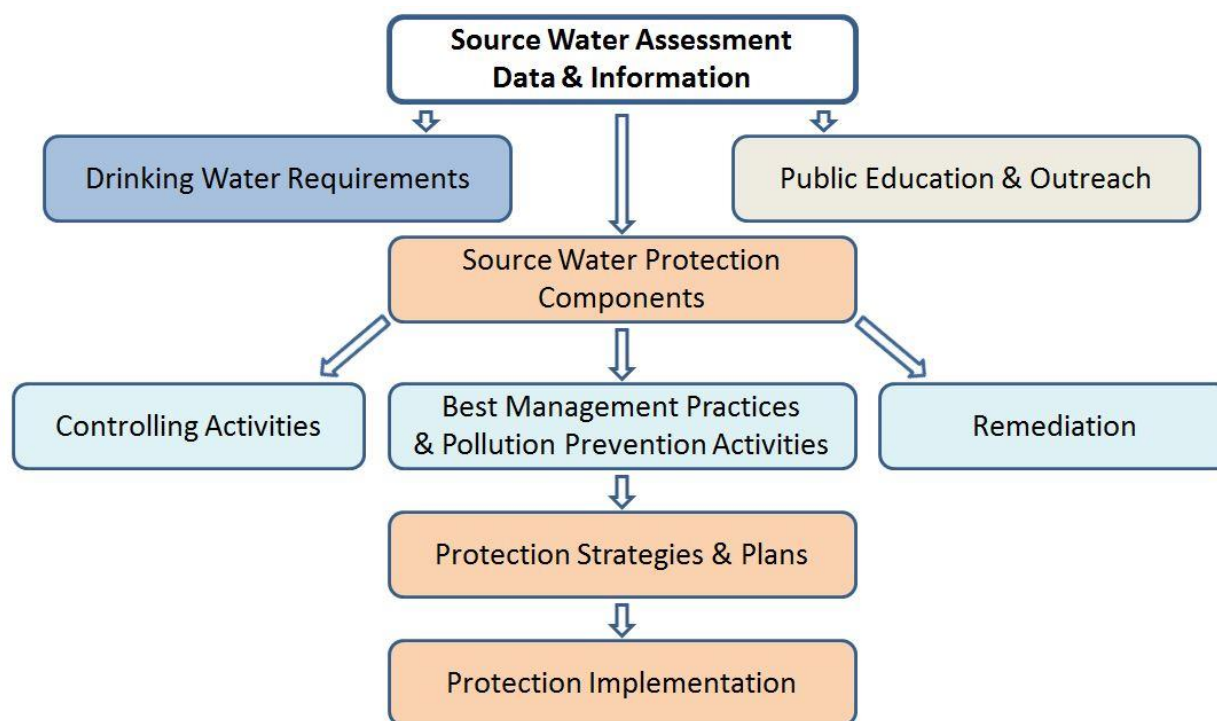


Example of a Source Water Assessment & Protection Zones

green dot = well

blue line = Zone B = 2-year Time-of-Travel

red line = Zone C = 10-year Time-of-Travel



Source: State of Hawaii Department of Health,
Safe Drinking Water Branch
Updated by: Environmental Planning Office

Source Water Assessments, depicted above, are the first step towards identifying threats to drinking water sources and taking measures to protect them. The Safe Drinking Water Branch follows the above flowchart when assessing the Potential Contaminating Activities (PCAs) at water systems. The water system prepares a generic list of Potential Contaminating Activities at their facility. A search of existing environmental data sources is done to determine whether the facility has already been entered into an environmental database. In the case of water systems, they are already entered into the Safe Drinking Water Information System (SDWIS). The Safe Drinking Water Branch then conducts a field survey to verify the location and existence of Potential Contaminating Activities and to acquire global positioning system (GPS) data to delineate capture zones and the overall assessment area. This data is used to spatially show the location of the capture zones and/or other areas of these activities. The Safe Drinking Water Branch prepares the final inventory of Potential Contaminating Activities for the water system's use and action.

The Source Water Assessment Data and Information gathered during the Potential Contaminating Activities Inventory are instrumental in ensuring that drinking water requirements are met, provide information for public education and outreach, and encourage the use of Source Water Protection. These components are important parts of the protection strategy/plan which continually evolves as newer Best Management Practices and Pollution Prevention Activities are discovered. The implementation of the protection strategy/plan is only one of the many steps that exist to protect our drinking water aquifers.

➤ **Program Goals**

The goals of the Source Water Assessment & Protection Program are:

- Assess the susceptibility of public drinking water sources to contamination;
- Protect public drinking water sources from contamination; and
- Use source water assessment information to meet drinking water requirements.

➤ **Recommended Actions**

To achieve the program goals, DOH implemented the following actions:

- Assess all existing drinking water sources;
- Assess new and proposed drinking water sources;
- Periodically review and update these assessments;
- Create and implement state and local source water protection workgroups;
- Work with public water systems to develop and implement protection strategies and plans for protecting drinking water sources;
- Work with government agencies, County water and planning departments, and stakeholder organizations to integrate protection strategies and plans;
- Develop and implement the Wellhead Protection-Financial Assistance Program (WHP-FAP);
- Work with public water systems to use assessment information as a starting point for meeting various drinking water requirements; and
- Develop and implement a drinking water monitoring program based on possible contaminants from Potential Contaminating Activities located within Source Water Assessment and Protection Capture Zones (SWAP-CZ).

➤ **Current Program Status**

- Assessments have been conducted on over 500 existing drinking water sources throughout the state. In 2006, DOH completed the *Hawaii Source Water Assessment Program Report, Volume I, Approach Used for the Hawaii Source Water Assessments*. Assessments will continue for all new and proposed drinking water sources.
- The current EPA approval has resulted in the funding of protection projects by various public water systems (including the County Water Departments for Hawaii, Kauai, and Maui, plus several privately owned public water systems). The Wellhead Protection-Financial Assistance Program (WHP-FAP) is currently being updated for EPA review and approval to allow utilization of fifteen percent (15%) of the Drinking Water State Revolving Fund (DWSRF) - Wellhead Protection (WHP) funds for protection projects beginning in Federal fiscal year 2016.
- DOH is developing the framework for a source water protection monitoring program based on potential contaminating activities located within the Source Water Assessment and Protection Capture Zones. This includes the development and acquisition of laboratory capabilities and resources.
- DOH is working with County water departments and other agencies to create water protection workgroups.

- DOH Safe Drinking Water Branch will utilize source water assessment data/information (as applicable) in meeting drinking water requirements.
- As of July 2014, a total of \$4,697,122 has been spent and another \$2,428,940 is encumbered under the Wellhead Protection-Financial Assistance Program (WHP-FAP).

For more information on the Source Water Assessment & Protection Program, please visit:

<http://health.hawaii.gov/sdwb/swap/>



c. Comprehensive State Groundwater Protection Program Strategy/Plan

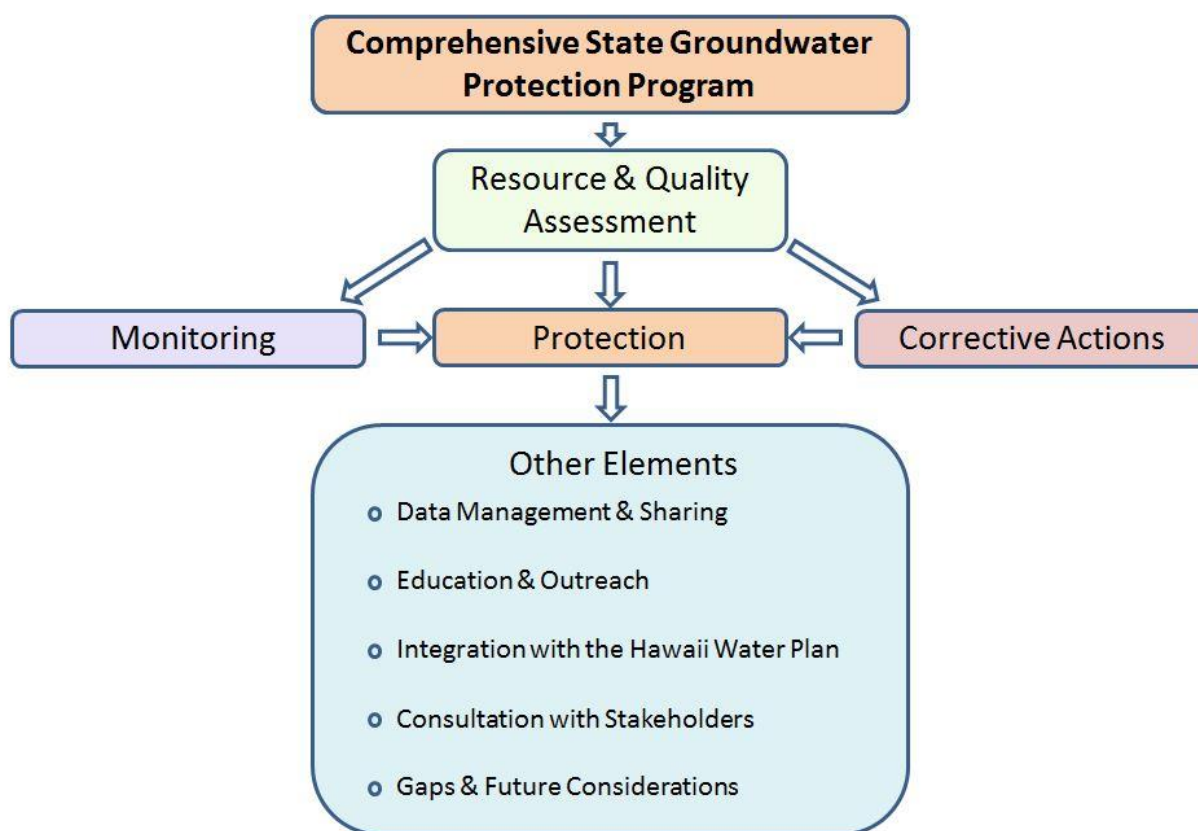
The overall goal of the Comprehensive State Groundwater Protection Program Strategy/Plan is to protect human health and sensitive ecosystems through the protection and enhancement of ground water quality throughout the State of Hawaii.

The Safe Drinking Water Branch is currently drafting and will soon be submitting a new Comprehensive State Groundwater Protection Program Strategy/Plan to the EPA consistent with the Water Quality Plan. This will increase coordination between related water and protection programs to improve effectiveness and reduce duplicative efforts. It will also delineate roles and define processes for coordinating efforts between programs.

The following goals will guide the Program's development and implementation:

- Provide the State with greater flexibility to direct its Ground Water Protection (GWP) activities relative to various sources of contamination across the federal, state, and local programs and geographic areas, to achieve comprehensive resource-based ground water protection;

- Increase coordination between related programs to improve effectiveness and reduce duplicate efforts that cause ineffective expenditures of resources by the various Ground Water Protection programs;
- Demonstrate the State's proactive approach to Ground Water Protection, thus justifying increased funding for program development and additional flexibility from the EPA and other federal agencies;
- Clearly delineate the appropriate roles of federal, state, and local governments as partners in ground water protection and define processes for coordinating efforts between programs;
- Establish a mechanism for better recognition and understanding of the relationships between ground water quantity and ground water quality concerns;
- Improve public understanding of Ground Water Protection (GWP) concerns within the State, and provide a broader context for public participation; and
- Build a consensus across all levels of government, regarding the need for comprehensive Ground Water Protection and the basic structure of comprehensive protection programs.



Source: State of Hawaii Department of Health,
Safe Drinking Water Branch
Updated by: Environmental Planning Office

The Hawaii Comprehensive State Groundwater Protection Program Strategy/Plan begins with an assessment of the status of resource and quality at the water systems. The Safe Drinking Water Branch

utilizes monitoring, corrective actions, and protection to ensure that the ground water is safe. Other elements of the Hawaii Comprehensive State Groundwater Protection Program Strategy/Plan are listed in the figure above.

➤ **Recommended Actions**

DOH plans to complete development and implementation of a Comprehensive State Groundwater Protection Program/Plan by the end of 2014. Public Water Systems' input will be solicited during the development of the program/plan. The program/plan lists six (6) strategic activities intended to foster more efficient and effective protection of ground water. The strategic activities are:

- Establish specific Ground Water Protection goals to guide the relevant federal, State, and local programs operating within the State;
- Establish priorities, based on a characterization of the resource, identification of sources of contamination, and delineate the program's needs, to guide relevant federal, state, and local programs and activities;
- Define authorities, roles, responsibilities, and resources, and coordinating mechanisms between relevant federal, state, and local programs to address identified Ground Water Protection priorities;
- Define the necessary efforts consistent with the established priorities, detail the responsibilities of each program, and the coordination mechanisms between programs necessary to implement these efforts;
- Evaluate the effectiveness of the Ground Water Protection efforts by coordinating information collection to measure progress made toward the specific Ground Water Protection goals, then re-evaluate priorities and methods, and revise as-needed to increase the effectiveness of all ground water related programs; and
- Improve public education and participation in all aspects of Ground Water Protection.



Lahaina Tracer Study dye preparation and application

The Lahaina Groundwater Tracer Study – Lahaina, Maui, Hawaii, final report, dated June 2013, confirmed “the existence of a hydraulic connection between the injection of treated wastewater effluent at Lahaina Wastewater Reclamation Facility (LWRF), Maui County, Hawaii, and nearby coastal waters.” The report also confirmed a first arrival travel time of 84 days of the fluorescein dye from the LWRF injection Wells 3 and 4 to submarine springs, termed North Seep Group (NSG) (page ES-1).



Sampling public water system distribution system



Sampling shallow private groundwater wells



Safe Drinking Water Branch Judging Water-Related Projects at State Science Fair



Safe Drinking Water Branch Participating in Earth Day event at UH-Hilo



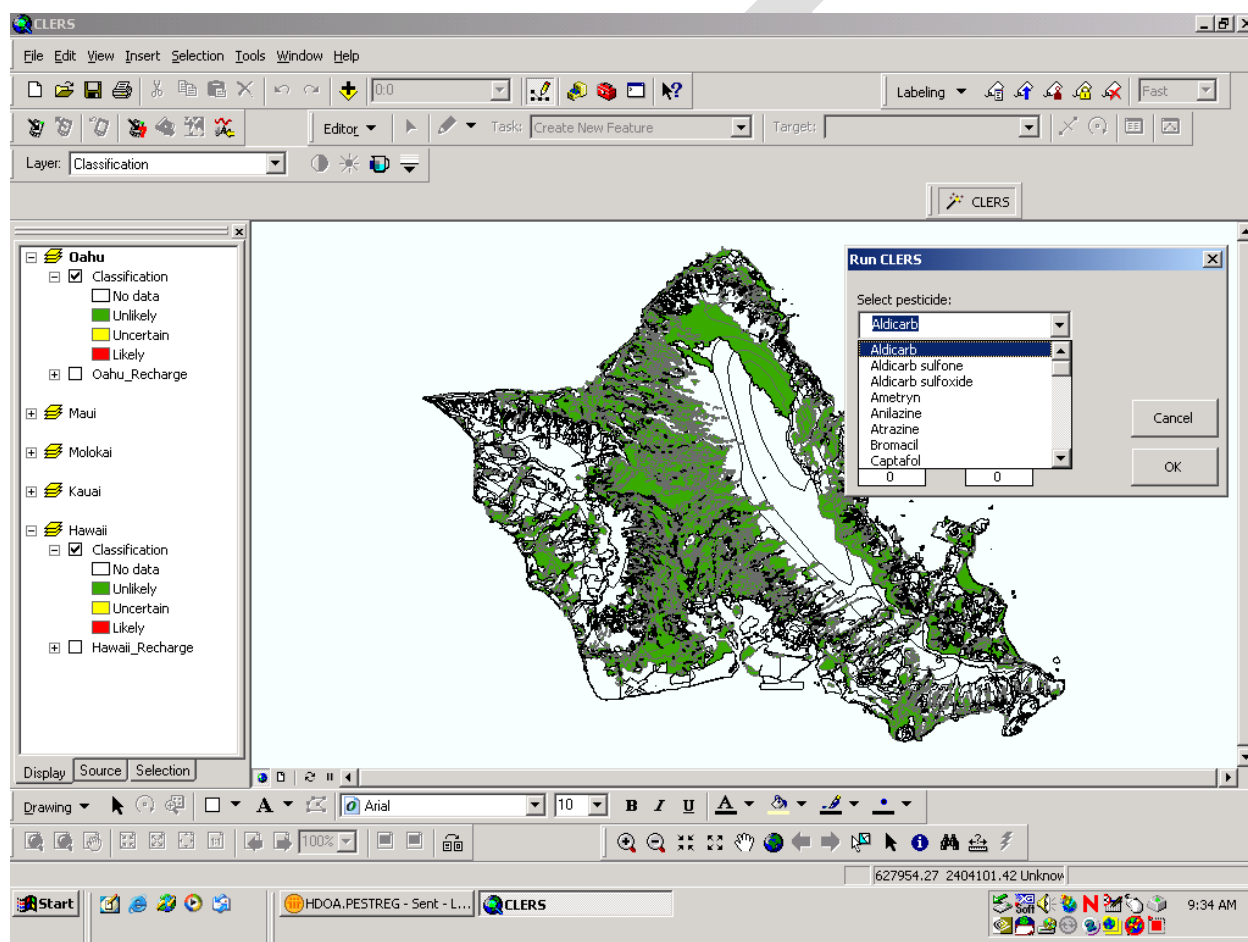
2013 Joint Government Water Conference - Maui



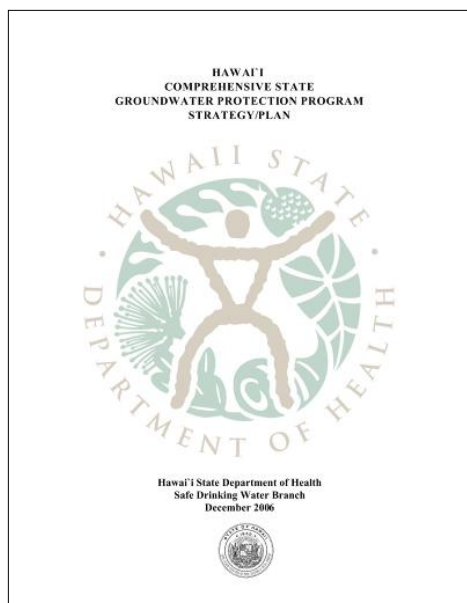
Maui Wellhead Protection Community Meeting

Contaminant Leaching Model (CLERS)

The Contaminant Leaching Model (CLERS) was developed to assist the Safe Drinking Water Branch to determine where historical contaminants would potentially appear in the future, and more importantly, to identify locations where there was no evidence of a contaminant. Those areas which did not have a contaminant would be able to request a waiver from the regulatory monitoring schedule. The Contaminant Leaching Model reviewed both chemical properties of the contaminant and the soil properties for transportability of the contaminant. The following screenshot shows the user where the pesticide, Aldicarb, is unlikely to be found on the Island of Oahu (green is unlikely to be present and is therefore good).



The Safe Drinking Water Branch and the University of Hawaii are conducting a study to analyze wastewater for pharmaceuticals and personal care products through Hawaii soils. The study is to identify pharmaceuticals and personal care products in wastewater as well as potential leachability of pharmaceuticals and personal care products through soils through an updated Contaminant Leaching Model. This will assist the Wastewater Branch with guidelines for recycled wastewater use.



➤ **Current Program Status**

The first version of the Comprehensive State Groundwater Protection Program/Plan was submitted to EPA Region 9, on December 6, 2000 (the document is dated November 30, 2000). It is the guiding document for the future of groundwater protection in Hawaii. Additional draft documents related to resource assessment and ground water quality monitoring were also prepared, dated December 2006. The Safe Drinking Water Branch, through its Ground Water Protection (GWP) Program, is currently reviewing and updating the Plan.

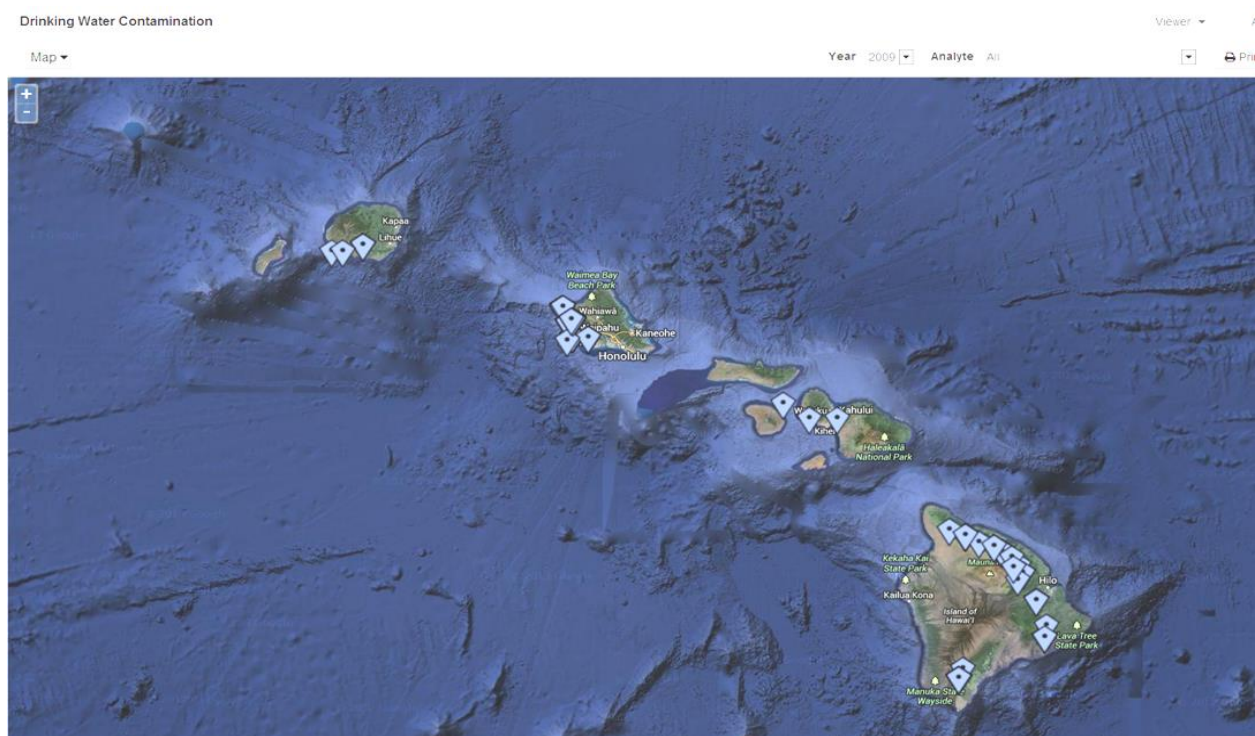
d. Groundwater Contamination Viewer

The Ground Water Protection Program has issued Groundwater Contamination Maps for the State of Hawaii since 1989. The maps are based on monitoring data for public drinking water wells and identify locations where groundwater contaminants have been detected and confirmed. The detected levels reported in the maps are below Federal and State drinking water standards, established to protect public health. Appropriate public health protection measures are implemented before contaminant levels reach these standards. These measures include the identification of organic and other chemical contaminants that have been detected in drinking water wells, select non-potable wells, and fresh water springs throughout the State. Contaminants may come from pesticides, industrial solvents, and other sources which are applied, spilled, or leaked into the ground. Data from some contaminated wells may not be reported because of lack of confirmed data or because the well has not been tested. Levels of groundwater contamination may fluctuate for a number of reasons, including:

- Diminishing or increasing levels of contamination;
- Chemical breakdown; and
- Variability in sampling and analytical methods.

Safe Drinking Water Branch has recently unveiled its new Groundwater Contamination Viewer, which is a publicly-accessible, online version of its Groundwater Contamination Maps that includes a glossary describing the terms and abbreviations used in the Viewer. The advantages of the Viewer include:

- Dynamic instead of Static Maps;
- Panning Capability;
- Querying with Advance Searches;
- Trend Analysis;
- Identifying Tools; and
- Yearly Data and Maps.



The Groundwater Contamination Viewer is available at: <https://eha-cloud.doh.hawaii.gov>.

e. Indicators

Hawaii is blessed to have very high quality ground water, as demonstrated by drinking water testing over more than 20 years. This sampling has shown that the State has undetectable levels of the many regulated metals. The Safe Drinking Water Branch has occasionally detected some non-metals, such as fluoride, at low levels, which it believes are naturally occurring. It has also found chromium VI (statewide scan in 2010), nitrate (based on historical data), and vanadium (indicated by high levels in soils and recently reported in some drinking water) which the Branch believes to be naturally occurring. Nitrate occurs naturally in the environment, but detections at elevated levels (above 5 milligrams per liter (ppm)) may indicate the impact of fertilizer use.

Safe Drinking Water Branch regular ground water testing does not include many minerals which are generally considered beneficial to health, however, one contaminant that it does look for is sodium. Sodium is perennially found in groundwater samples due to the nature of Hawaii's aquifers. The levels of sodium can vary greatly from source to source depending on the depth of the well, its proximity to the fresh water/salt water transition zone, and the intensity of the pumpage of the well.

Unfortunately, regular drinking water testing has shown that the ground water quality can be subject to contamination by human activities. Man-made chemicals (pesticides and industrial chemicals) have been detected in ground water, as demonstrated by the Groundwater Contamination Map Viewer. In general, this contamination is limited to the specific areas of the activity along with some drift in the direction of ground water flow. For instance, dibromochloropropane (DBCP), ethylene dibromide (EDB),

and trichloropropane (TCP) contamination are found in the areas of pineapple cultivation, such as central Oahu and central and west Maui. Atrazine contamination is found in areas of sugar cane cultivation, such as in Hamakua on Hawaii Island and in central Maui, and dieldrin and chlordane are found in urban areas of Honolulu.

The owners and operators of our public water systems have proven to be pro-active in their approach to providing safe drinking water. At times they have initiated treatment of the water to remove detected contaminants before the levels of those contaminants reach their corresponding drinking water standard.

The following table shows the high percentage of compliance the Safe Drinking Water Branch has achieved by working with public water system owners/operators.

Percentage of Population Served Safe Drinking Water

Drinking water that exceeds Maximum Contaminant Levels (MCLs) creates a risk of harm to human health. In calendar year 2013, 96.2% of Hawaii's residents and visitors were served drinking water that fell below all of the Maximum Contaminant Levels on a monthly basis (i.e., safe to drink, and in compliance with Maximum Contaminant Levels). Even using conservative assumptions, the compliance rate has consistently exceeded 95.0%. Whenever a violation is found in a public water system, the public is notified through electronic media, hand-delivered notices, or published notices. About 40,000 persons are served by small, unregulated systems such as individual home catchments. These systems are excluded from the indicators shown in the table.

Safe Drinking Water Branch employs many programs to strengthen public water system protection.

Table: Percentage of Population Served Safe Drinking Water

| Calendar Year | Total Population Served Drinking Water | Population Served Water Below MCLs* | Percentage Population Served Water in Compliance with MCLs* |
|--------------------------|--|-------------------------------------|---|
| 2007 | 1,341,430 | 1,329,748 | 99.1% |
| 2008 | 1,416,384 | 1,411,729 | 99.7% |
| State Fiscal Year | | | |
| 2009 | 1,440,715 | 1,432,116 | 99.4% |
| 2010 | 1,471,887 | 1,470,664 | 99.9% |
| Calendar Year | | | |
| 2011 | 1,473,960 | 1,472,420 | 99.9% |
| 2012 | 1,476,931 | 1,476,931 | 100% |
| 2013 | 1,505,329 | 1,448,126 | 96.2% |

* Maximum Contaminant Level

Cumulative Sanitary Surveys of Safe Drinking Water Systems

One of Safe Drinking Water Branch's most significant responsibilities is conducting sanitary surveys because they provide a review of the water system field conditions. Sanitary surveys are required to be

conducted periodically to determine the condition of various aspects of the public water system including sources, facilities, record-keeping, management, financial status, and operation. DOH is required to regularly conduct surveys of all public water system source, treatment, and distribution operations within a five-year period. There are a few public water systems which are on a three-year sanitary survey cycle.

Table: Cumulative Sanitary Surveys of Drinking Water Systems

| Calendar Year | Target Number of Systems Surveyed Annually | Surveys Actually Completed Annually | Target Cumulative Number of Systems Surveyed | Actual Cumulative Number of Systems Surveyed |
|---------------|--|-------------------------------------|--|--|
| 2007 | 26 | 23 | 26 | 23 |
| 2008 | 26 | 31 | 52 | 54 |
| 2009 | 26 | 28 | 78 | 82 |
| 2010 | 26 | 27 | 104 | 109 |
| 2011 | 26 | 41 | 130 | 150 |
| 2012 | 26 | 43 | 130 | 193 |
| 2013 | 26 | 20 | 132 | 213 |
| 2014 | 26 | 16* | | |

Source: Department of Health, Safe Drinking Water Branch (SDWB)

* Safe Drinking Water Branch's completed surveys as of 7/1/2014.

Note: Safe Drinking Water Branch target is to do at least 26 surveys a year so that each system is inspected at least every 5 years. The five-year cycle began in 2012.



Additional groundwater pollution prevention and control efforts are implemented by the Solid and Hazardous Waste Branch (discussed in SECTION III:3. below) and the Hazard Evaluation and Emergency Response Office in (discussed in SECTION III:4. below).

4. Wastewater Branch

The Wastewater Branch is focusing its efforts on upgrading and eliminating cesspools. A cesspool is an underground container that discharges raw, untreated domestic waste directly into the ground where it can spread and contaminate ground water, drinking water sources, streams, and the ocean by releasing disease-causing pathogens.

4.1 Upgrading and Eliminating Cesspools



Cesspool without its cover

DOH's Wastewater Branch is currently updating its administrative rules to prohibit the construction of new cesspools and require that existing cesspools be upgraded to septic systems or the property connect to a wastewater collection system upon transfer of property. Wastewater treatment facilities and septic systems treat wastewater before discharging it to the environment, but cesspools do not. In order to protect public health, new cesspools should be prohibited, and existing cesspools should be gradually

phased out through mandatory connection to a centralized wastewater collection system or upgrading to a septic system whenever property is transferred.

When connection to a wastewater collection system is not practical, a septic system should be installed to contain and treat wastewater before disposal. A septic system allows solids to settle in a tank where anaerobic organisms slowly digest organic solids and allow liquids to flow into a shallow absorption bed. A proper soil bed has a biologically active area in the first three feet of the soil layer where oxygen can support microorganism activity that neutralizes pathogens. The studies indicate that soil treatment is very effective in removing bacteria (fecal coliform was only 13 colony forming units (cfu) per 100 milliliters (mL) in leachate after soil treatment, versus 1,000,000 cfu/mL for cesspools).¹ Septic systems

¹ Human and Environmental Risk Ranking of Onsite Sewage Disposal Systems on Oahu, Hawaii," Robert B. Whittier (DOH) and Aly I. El-Kadi (University of Hawai'i at Manoa), December 2009.

with soil treatment also greatly reduce the amount of nitrogen and phosphorus compared to cesspools. An evaluation using the data from the Whittier and El-Kadi studies (see footnote 1, below) indicates that replacing cesspools with septic systems with soil treatment would reduce nitrogen discharges by more than 90% and phosphorus by more than 80%.

In contrast, when waste is delivered directly into subsoil that is too coarse or lacks oxygen, as usually happens with cesspools, biological activity to treat wastewater cannot be supported. Coarse, porous soil conditions and fractured lava or lava tubes are a problem particularly on the Hawaii Island (Big Island), where the majority of the cesspools in the State are located. Porous rock cannot effectively filter wastewater but instead allows easy flow within tubes and caves, as documented by the Hawaii Chapter of the National Speleological Society.² Other potential contamination arises from cesspools along the coast in close proximity to the ocean and/or ground water table.

Hawaii is the only state in the US that still allows construction of new cesspools. There are currently approximately 90,000 cesspools in the State—nearly 50,000 located on the Big Island, almost 14,000 on Kauai, over 12,000 on Maui, over 11,000 on Oahu, and over 1,400 on Molokai. Each year an additional 800 new cesspools are approved for construction.

Hawaii's cesspools release approximately 55 million gallons of untreated domestic wastewater into the ground each day. Untreated wastewater contains pathogens such as bacteria, protozoa, and viruses that can cause gastroenteritis, Hepatitis A, conjunctivitis, leptospirosis, salmonellosis, and cholera. Pharmaceuticals in wastewater, including disruptive hormones, also may adversely affect human health and aquatic organisms. Hawaii's cesspools also release as much as 23,700 pounds of nitrogen and nearly 6,000 pounds of phosphorus into the ground each day, which can stimulate undesirable algae growth, degrade water quality, and impact coral reefs.



Wastewater from a leaking cesspool

Health risks from cesspool chemical contamination include methemoglobinemia (or blue baby syndrome), when elevated nitrogen levels interfere with the transport of oxygen in the blood stream of young children.

Studies performed for DOH have designated “receptors of concern” as sensitive ecosystems that can potentially be adversely affected by cesspool effluent, or areas where potential human contact with cesspool contaminated waters may occur. These studies considered three receptors of concern: (1) drinking water sources; (2) streams and watersheds; and (3) coastal waters. Setback zones were

“Human Health and Environmental Risk Ranking of On-site Sewage Disposal Systems For the Hawaiian Islands of Kauai, Maui, Molokai and Hawaii,” Robert B. Whittier (DOH) and Aly I. El-Kadi (University of Hawai‘i at Manoa), June 2014.

²William R. Halliday, - Raw sewage and solid waste dumps in lava tube caves of Hawaii Island. Journal of Cave and Karst Studies, v. 65, n. 1, p. 68-75.

delineated around each receptor of concern based on either a fixed distance or a groundwater time of travel to the receptor of concern. Based on these studies, it was determined that there are approximately **87,000** cesspools that pose a risk to Hawaii's water resources. The purpose of these studies was to identify the cesspools and other individual wastewater treatment systems that have the potential for adverse receptor of concern impact. The presence of a cesspool within a receptor of concern's setback zone is considered to have the potential for a negative impact.

Cesspool effluent can also negatively impact drinking water wells by introducing biological and chemical contamination into a well's intake. Two setbacks were delineated for public drinking water wells based on the ground water travel time to the well intake. A 2-year time-of-travel setback for drinking water wells identifies those cesspools that have the potential to introduce chemical and biological contamination into a well. It is assumed that pathogens will not survive longer than two (2) years, but chemical contamination can persist much longer. A 10-year time-of-travel setback identifies those cesspools located near enough to a drinking water source that chemical decay and mixing with other ground water may not be adequate to ensure the desired quality of water captured by the drinking water well. There are approximately 2,700 cesspools that are located in areas within a 2 year time-of-travel to the intake of a public drinking water well. An additional 3,200 cesspools are located within a 10 year time-of-travel to a public drinking water well.

Cesspool effluent entering a stream can introduce pathogens and increase the nutrient loads in the streams, resulting in excessive plant growth. A 200 foot setback from the stream channel identifies those cesspools with the potential to introduce both pathogen and nutrient contamination to a stream. Perennial streams depend on discharge of ground water to the surface water to support stream flow during periods with no or little rainfall. Cesspools located within a perennial watershed can increase the nutrient load of the streams within that watershed.

There are approximately 6,700 cesspools that are located within 200 feet of a perennial stream channel in the State. There are approximately 31,000 cesspools that are located within perennial watersheds on the islands of Hawaii, Kauai, Maui, and Molokai. The number of cesspools within perennial watersheds on Oahu was not evaluated.

As with streams, cesspool effluent can introduce pathogens and nutrients to the coastal waters. The 200 foot coastal setback identifies those cesspools with the highest potential to introduce pathogen and nutrient contamination into the coastal waters. The 2-year time-of-travel setback identifies those cesspools that have the potential to increase the nutrient load in the coastal waters. There are approximately 1,900 cesspools that are located within 200 feet of the shoreline and 41,000 cesspools that are within the two (2) year time-of-travel of ground water to the shoreline.

The studies indicate that Hawaii Island and Kauai have the most high-risk areas for water quality degradation from on-site cesspool disposal systems:

- **Hawaii Island:** The northeast coast and west coast from Hualalai to south of Captain Cook have elevated risk of harm to coastal waters and drinking water. Hilo has high concentrations of on-site disposal systems. The Keaau/Mountain View District has

an even higher concentration of on-site disposal systems—50% higher than the level EPA considers “high density.” Hydrologic studies in the Keaau area indicate that the infiltration time of water from the ground surface to the water table is on the order of several hours to a few days.^{3, 3 4} This infiltration time is much shorter than the survival time of many pathogens, so there is a higher risk of pathogens entering the water table.⁵ Hawaii Paradise Park has about 4,100 cesspools in proximity to over 200 private domestic drinking water wells. DOH has found a troubling rate of human waste bacteria detection (fecal coliform) in 12% of the 57 drinking water well samples collected in Hawaii Paradise Park. Pahoa, Kapoho, Pahala, Naalehu, Hawaii Ocean View Estates, and Waimea are also areas of elevated risk.

- **Kauai:** In Wailua/Kapaa, there is a dense clustering of on-site systems in perennial watersheds and within a two-year travel time to the ocean, with higher risk of harm. The south shore from Poipu to Hanapepe, and Nawiliwili also have high risks.
- **Maui** has the highest number of on-site systems within the specified zones of contribution for drinking water wells, especially in up-country, but also in the Iao and Waihee Aquifer Sectors. There are elevated risks in coastal zones in Kaanapali, Kihei to Makena, Waihee/Waiehu, and the coastal area fronting the northwest slope of Haleakala.
- On **Oahu**, Koolauloa, Pupukea-Sunset Beach, Kahaluu, and Waialua are the areas with highest risk.
- On **Molokai**, there is elevated risk near the coast fronting the un-sewered areas near Kaunakakai.

Hawaii has fallen behind all other states in eliminating cesspool pollution. Even Rhode Island, which has the second largest number of cesspools in the nation (25,000), banned the construction of new cesspools **46 years ago** in 1968. Rhode Island’s Cesspool Act of 2007 mandates replacement of cesspools that are located within 200 feet of shoreline or wells.

Other states, including Iowa, New Jersey, and Massachusetts, require cesspools to be upgraded to septic systems whenever property ownership changes. Requiring cesspool upgrades when property is sold makes sense because the cost of the upgrade can be shared between the buyer and seller at a time when sellers, with proceeds from the sale, are better able to afford upgrading costs, and buyers, who are usually borrowing already for their purchase, may obtain additional financing for eliminating a cesspool.

The conditionally approved Coastal Nonpoint Pollution Control Program identifies on-site wastewater disposal systems as one of four remaining conditions Hawaii must address in order to gain full approval of the program.

³ “A Conceptual Model of Shallow Groundwater Flow Within the Lower East Rift Zone of Kilauea Volcano, Hawaii” Elizabeth A. Novak. University of Hawai’i Master’s Thesis. May 1995. Pg. 96.

There are approximately **87,000** cesspools in Hawaii that pose a potential risk to our water resources. These risks will increase with the growing population if Hawaii does not stop allowing the installation of new cesspools and will continue if they are not phased-out.

The County of Hawaii used American Reconstruction and Recovery Act funds to decommission large capacity cesspools and replace them with sewer lines in the town of Honokaa. Pursuant to Hawaii County Code, Section 21-5, lots accessible to a sewer line must connect to it. The lot owners along Mamane Street were required to connect to the County's sewer line at their own expense (approximately \$25,000.00). Part of the area that required connection to the Honokaa Sewer Project is within the Source Water/Wellhead Protection Area for the Hawaii Department of Water Supply's Haina Water System (PWS #161). The County of Hawaii requested and received Wellhead Protection-Financial Assistance Program grant funds to provide grants to those lot owners within the Wellhead Protection Area to connect to the sewer project. This partnership between the County and the Safe Drinking Water Branch served to protect public health and provide assistance to various lot owners.⁴

➤ ***Current Program Status***

The Wastewater Branch seeks to protect public health and preserve our natural resources by proposing administrative rules prohibiting the construction of new cesspools and requiring that existing cesspools be upgraded to septic systems or connect to sewer systems upon the sale of a property.



⁴ ASO Log No. 12-044 Contract Attachment – S1, Scope of Services, dated June 22, 2012.

5. State Revolving Funds

There are two types of Revolving Funds that the DOH Water Programs administer - Clean Water State Revolving Fund and the Drinking Water State Revolving Fund.

5.1 Clean Water State Revolving Fund Program



The Federal Water Quality Act of 1987 (the Act) created the State Revolving Fund Loan Program (commonly known as the Clean Water State Revolving Fund). The Act authorized low interest loans for the construction of publicly owned wastewater treatment works (POTWs), for implementation of a nonpoint source pollution control management program, and for implementation of an estuary conservation and management program. In 1988, the Hawaii State Legislature passed Act 365 establishing a State Water Pollution Control Revolving Fund to receive the federal capitalization grant. This Act was later superseded by H.R.S. Chapter 342D-Part V.



The Clean Water State Revolving Fund Program assists in financing the construction of water pollution control projects necessary to prevent contamination of our ground water and coastal water resources and to protect and promote the health, safety, and welfare of the citizens of the State of Hawaii. The Program provides low interest loans to County and State agencies to construct point source and nonpoint source water pollution control projects. Since it was established in 1988, the Program has issued over \$675.3 million in low interest loans, providing significant savings in interest costs to the counties.

The Clean Water State Revolving Fund Program will assist with financing projects that will protect public health and environment from both point source and non-point source pollution. It has provided funding to Hawaii and Kauai Counties for the replacement of large capacity cesspools. Kauai County used the funds to replace twenty-seven (27) large capacity cesspools for County parks and facilities. Hawaii County used the funds for three large capacity cesspool replacement projects: Komohana Heights LCC Replacement, Honokaa LCC Replacement, and Queen Liliuokalani Village LCC Replacement. A total of forty-seven (47) large capacity cesspools were closed as a result of these projects. The County of Hawaii also used the funds to replace ninety (90) large capacity cesspools at County parks and facilities.

The Clean Water State Revolving Fund Program also provides assistance to the Counties to use reclaimed water. The Program provided funding to the County of Kauai for their Waimea Wastewater Treatment Plant Expansion, Phase I Project. The project involved expanding the treatment plant capacity from 300,000 to 700,000 gallons per day and allowed new sewer service connections which were restricted due to lack of treatment capacity. The project has incorporated UV disinfection to produce R-1 quality water that can be used on the dry westside of the island of Kauai. In addition to contributing to water efficiency, a 124 kW photovoltaic system was constructed to provide renewable energy to make the plant more energy efficient.

For more information on the Clean Water State Revolving Fund, please visit:

<http://health.hawaii.gov/wastewater/home/cwsrf/>

5.2 Drinking Water State Revolving Fund Program



The Drinking Water Treatment Revolving Loan Fund is commonly known as the Drinking Water State Revolving Fund (DWSRF). The Fund must be administered, operated, and maintained to remain available in perpetuity to provide loans and other financial assistance to eligible public water systems for projects or activities eligible under H.R.S. § 340E-35 and the SDWA. In 1997, the Hawaii State Legislature passed Act 218, which established a Drinking Water Treatment Revolving Fund that was able to receive a federal capitalization grant. It was further amended in 2009 by Act 98 (see H.R.S. § 340E-35, available at:

http://www.capitol.hawaii.gov/hrscurrent/Vol06_Ch0321-0344/HRS0340E/HRS_0340E-0031.htm).

From 1997-2014, the Hawaii Drinking Water State Revolving Fund has financed over \$149,000,000 in County water supply projects, including treatment plants, new drinking water sources, and the replacement of aging waterlines and storage tanks. The resulting public health benefits and water and energy savings for over 1 million rate-paying residents statewide, coupled with the favorable debt service opportunity for the County entity (interest rates vary between 1% and 2% depending on the project loan amount), is a win-win for all parties. In addition, the Fund continues to provide additional subsidization (zero percent interest + principal forgiveness) to a select few qualifying “green” projects that provide water or energy efficiency benefits, thus reducing the effective interest rate to even lower levels. Significantly, most of the Program’s financed projects have benefitted *small water systems* serving less than 10,000 persons.

For example, the Hakalau Spring Improvements Project for the Hawaii County Department of Water Supply’s Hakalau-Wailea water system, PWS #154 (population: 400), consisted of construction improvements to an existing spring-fed drinking water source that was severely dilapidated and had the potential for storm water intrusion. This condition would have forced the Hawaii County Department of Water Supply to construct a costly filtration plant and undertake rigorous monitoring of drinking water quality at the plant and in the distribution system based on new federal drinking water rules. Instead, the County utilized a \$606,167 Drinking Water State Revolving Fund construction loan to demolish the existing spring box and build a newer, more robust and secure enclosure that eliminated the potential

for storm water contamination, thus preserving a pristine spring source for drinking water use, and avoiding the need for costly treatment and monitoring.



For more information on the DWSRF, please visit: <http://health.hawaii.gov/sdwb/drinking-water-state-revolving-fund/>

6. Compliance and Enforcement

The Clean Water Branch, Safe Drinking Water Branch, and Wastewater Branch carry out enforcement cases for violations of water pollution control laws. In calendar year 2012, the Water Programs conducted a total of 507 field inspections, issued 100 warning notices and 43 field citations, initiated six (6) enforcement cases, and resolved six (6) formal cases. They sought a total of \$119,950 in penalties, and collected \$614,690 in penalty funds. In calendar year 2013, the Water Programs conducted a total of 494 field inspections, issued 79 warning notices and 42 field citations, initiated four (4) enforcement cases, and resolved two (2) formal cases. They also sought a total of \$73,086 in penalties, and collected \$211,850 in penalty funds.

The penalty funds received for each calendar year vary based on whether payments are collected once at the close of an enforcement case, or incrementally, based on an agreed-upon payment schedule. The penalties sought and received provided in the tables below do not take into account costs incurred by alleged violators for Supplemental Environmental Projects (SEPs) as a result of a settlement with DOH. Supplemental Environmental Projects are environmentally-beneficial projects related to the violation at issue, where costs for the Supplemental Environmental Projects are paid in exchange for a reduction in penalty amount. The Safe Drinking Water Branch issues penalties when appropriate, but focuses its compliance and enforcement efforts on bringing drinking water systems back into compliance as quickly as possible.

DRAFT - EHA Enforcement Report for Jan - Dec 2013 (Calendar Year 2013 - CY13)

| | Complaints | Field Inspections | Warning Notices | Field Citations | Enforcement Cases Issued | Penalties Sought | Formal Cases Resolved | Funds Received |
|---------------------------------------|--------------|-------------------|-----------------|-----------------|--------------------------|------------------|-----------------------|------------------|
| | Informal | Informal | Informal | CY 2013 | CY 2013 | CY 2013 | CY 2013 | CY 2013 |
| Clean Water Branch | | | | | | | | |
| Permitted Discharges (NPDES) | 0 | 65 | 11 | 0 | 1 | \$50,586 | 0 | \$0 |
| Non-permitted Discharges | 250 | 40 | 4 | 1 | 0 | \$0 | 0 | \$200,000 |
| Water Quality Certifications | 0 | 4 | 0 | 0 | 0 | \$0 | 0 | \$0 |
| CWB TOTAL | 250 | 109 | 15 | 1 | 1 | \$50,586 | 0 | \$200,000 |
| Wastewater Branch | | | | | | | | |
| Wastewater Treatment Plants | 10 | 89 | 3 | 0 | 0 | \$0 | 1 | \$9,000 |
| Individual Wastewater Systems | 85 | 184 | 31 | 25 | 3 | \$22,500 | 1 | \$2,500 |
| Animal Waste | 4 | 8 | 0 | 2 | 0 | \$0 | 0 | \$0 |
| Other | 69 | 81 | 13 | 14 | 0 | \$0 | 0 | \$350 |
| WWB TOTAL | 168 | 362 | 47 | 41 | 3 | \$22,500 | 2 | \$11,850 |
| Safe Drinking Water Branch | | | | | | | | |
| Public Water Systems | 1,093 | 22 | 15 | 0 | 0 | \$0 | 0 | \$0 |
| Wells - Underground Injection Control | 4 | 1 | 2 | 0 | 0 | \$0 | 0 | \$0 |
| SDWB TOTAL | 1,097 | 23 | 17 | 0 | 0 | \$0 | 0 | \$0 |
| CWB, WWB & SDWB Total | 1,515 | 494 | 79 | 42 | 4 | \$73,086 | 2 | \$211,850 |

Enforcement Report for Calendar Year 2012 - Water Programs

| | Inquiries & Complaints | Field Inspections | Warning Notices | Field Citations | Enforcement Cases Issued | Penalties Sought | Formal Cases Resolved | Funds Received |
|---------------------------------------|------------------------|-------------------|-----------------|-----------------------|--------------------------|-----------------------|-----------------------|-----------------------|
| | Informal | Informal | Informal | In Calendar Year 2012 | In Calendar Year 2012 | In Calendar Year 2012 | In Calendar Year 2012 | In Calendar Year 2012 |
| Clean Water Branch | | | | | | | | |
| Permitted Discharges (NPDES) | 2 | 63 | 3 | 0 | 2 | \$12,500 | 0 | \$0 |
| Non-permitted Discharges | 199 | 59 | 4 | 2 | 1 | \$250 | 2 | \$600,000 |
| Water Quality Certifications | 0 | 0 | 0 | 0 | 0 | \$0 | 0 | \$0 |
| CWB TOTAL | 201 | 122 | 7 | 2 | 3 | \$12,750 | 2 | \$600,000 |
| Wastewater Branch | | | | | | | | |
| Wastewater Treatment Plants | 7 | 46 | 0 | 0 | 1 | \$97,000 | 0 | \$0 |
| Individual Wastewater Systems | 90 | 179 | 43 | 23 | 2 | \$10,200 | 4 | \$12,590 |
| Animal Waste | 4 | 6 | 0 | 2 | 0 | \$0 | 0 | \$0 |
| Other | 48 | 72 | 38 | 16 | 0 | \$0 | 0 | \$2,100 |
| WASTEWATER BRANCH TOTAL | 149 | 303 | 81 | 41 | 3 | \$107,200 | 4 | \$14,690 |
| Safe Drinking Water Branch | | | | | | | | |
| Public Water Systems | 441 | 70 | 6 | na | 0 | \$0 | 0 | \$0 |
| Wells - Underground Injection Control | 10 | 12 | 6 | na | 0 | \$0 | 0 | \$0 |
| SDWB TOTAL | 451 | 82 | 12 | 0 | 0 | \$0 | 0 | \$0 |
| Water Programs | 801 | 507 | 100 | 43 | 6 | \$119,950 | 6 | \$614,690 |

Total



7. Challenges and New Initiatives

7.1 Intra-agency Coordination

One of the greatest challenges that the Clean Water Branch, Safe Drinking Water Branch, and Wastewater Branch face is finding ways to more effectively coordinate and collaborate amongst their programs and individual sections. Each Program must meet its own legal requirements, and often it is difficult to spend the time and energy necessary to take a step back to see how the work of each fits into the bigger picture in terms of watershed-based and statewide water quality protection and restoration.

To better address this issue, the Water Branches co-hosted working sessions in June 2014 with the EPA Region 9 staff members. The goal of the meetings was to re-introduce the tools each program has to better implement the watershed-based approach. Examples of these tools included a more clear understanding of the funding sources available (e.g., Clean Water Act 319(h) grants, Clean Water State Revolving Fund, and Drinking Water State Revolving Fund) and the interconnectedness of the work accomplished cross-programmatically. Some new initiatives that the water programs discussed with EPA at the June 2014 meetings included development of planning and assessment to better target staff and funding resources for project implementation, such as:

1. Development of a Standardized Water Quality Assessment Methodology to better streamline monitoring conducted for National Pollutant Discharge Elimination System permits, Clean Water Act 319(h) projects, and DOH Beach Monitoring;

2. Development of Regional Monitoring Plans;
3. Development of a prioritization matrix to prioritize impaired waterbodies and determine priority watersheds; and
4. Development of Total Maximum Daily Load –Watershed Based Plans (Hybrid Plans) to fulfill dual purposes of Total Maximum Daily Load implementation in National Pollutant Discharge Elimination System permits as well as Watershed Based Plan funding eligibility under Clean Water Act 319(h) grants.

7.2 Inter-agency Coordination

The Water Quality Plan also provides a unique opportunity to identify areas for inter-agency coordination and resource-sharing, as discussed in the Statewide Framework for Updating the Hawaii Water Plan. The Safe Drinking Water Branch meets quarterly with the Commission on Water Resource Management to discuss water issues and ground water protection projects, and the Water Quality Plan update and the Commission's ongoing update of its Water Resource Protection Plan (more information available at: <http://dlnr.hawaii.gov/cwrmp/planing/hiwaterplan/wrpp/>), provide an opportunity to pinpoint places where the agencies can pool resources and share information about areas of concern. In addition, DOH's Environmental Information Manager (See SECTION III:8.) has developed systems that allow for data sharing between Branches and Programs that are also available to other agencies and the public, which provide detailed environmental information about particular locations or sites around the State. For example, the recently-updated Environmental Health Warehouse (available at: <https://eha-cloud.doh.hawaii.gov>) allows a user to see who owns a facility, the type and ID number of the environmental permits they hold and the permits' effective dates, and geopolitical data about the site, including the watershed in which the facility is sited. This provides the opportunity for agencies to locate the point sources, nonpoint sources, and natural features in an area, and collaborate around planning and pollution control in that watershed.

7.3 Funding Issues

One of the other challenges DOH's Water Programs face is re-building their workforce after losing staff to the reduction-in-force in 2010, and retirement. Recently, Clean Water Branch has been able to fill previously vacant positions to issue National Pollutant Discharge Elimination System permits, and to conduct more regular water quality monitoring, research, and assessment, and it will soon fill vacant positions in the Polluted Runoff Control Program (Planner IV) and Monitoring & Analysis Section (Water Quality Standards Specialist).

The Safe Drinking Water Branch has not been able to fill the four positions it lost to the 2010 reduction-in-force (Oahu, Kauai, Maui, and Kona Environmental Health Specialists). In addition, it is establishing three positions (Geologist I, Program Specialist IV, and Chemist IV) to assist with the Drinking Water State Revolving Fund fifteen percent (15%) set-aside, Wellhead Protection – Financial Assistance Program.



The Wastewater Branch is still trying to prioritize its workload after losing a total of eight positions to the reduction-in-force. There are approximately 110,000 existing Individual Wastewater Systems (IWSs) and 250 wastewater treatment plants in the State and every year, the total number of new individual wastewater systems is increased by approximately 800 – 1,000. The number of new wastewater treatment plants is also increasing at a rate of 5-10 per year. Wastewater Branch currently has

a limited number of staff (12) to assist with managing these two programs. It does see the need to hire additional staff, however, finding the funding to support these new positions has been a challenge.

With a greater focus on collaboration, the targeting of resources under the watershed-based approach, and with a fuller staff, the Clean Water Branch, Safe Drinking Water Branch, and Wastewater Branch look forward to what lies ahead as they continue to protect and restore Hawaii's precious water resources.

7.4 Climate Change

Climate change is having broad-reaching effects in Hawaii, the United States and throughout the world. The DOH Water Programs are taking climate change into account as they move forward with their water quality work. The Clean Water Branch is planning to conduct studies to examine the effects of changing weather patterns and ocean chemistry as a result of climate change as it works to update its Water Quality Standards. Also, to help alleviate future water supply uncertainties related to the changing climate, the Wastewater Branch is working on updating its Guidelines for the Treatment and Reuse of Recycled Water to promote increased water reuse for activities such as landscape irrigation, because this will reduce the amount of drinking water that is used for non-drinking purposes. This is particularly important because some of Hawaii's drinking water wells have experienced and will continue to experience an increase in salinity as sea levels rise over the next several decades, and water reuse helps to reduce the pressure on drinking water supplies. In addition, DOH is working with other agencies and groups throughout the State to increase collaboration, streamline decision-making processes, and promote information-sharing related to climate change to help elevate awareness of environmental impacts and the need for adaptation. The State is in the process of developing policies and plans for climate change adaptation, including a plan to prepare for the effects of sea-level rise, that will apply to many of the State's agencies. The Governor, State Office of Planning, and the Department of Land and Natural Resources are taking the lead on developing these policies.

For more information on climate change, please visit: <http://health.hawaii.gov/epo/climate-change/>.

SECTION III: Water Quality Support

1. Water Quality Supporting Activities

In addition to the ongoing Water Program activities discussed in Section II., there are also many other Branches and Offices within DOH that do not focus solely on water issues, but nonetheless do work that assists the Water Programs with protecting State water quality. This includes diverse activities such as:

- Analyzing water samples;
- Monitoring ground water near landfills and leaking underground storage tanks;
- Directing cleanups of releases of hazardous materials to protect surface and ground water supplies
- Assisting with the creation of Water Quality Standards maps; and
- Helping develop on-line information systems that allow for improved coordination and data-sharing both between DOH Branches, and with other agencies and the public.

The following Section discusses these various Division, Branches and Offices, and their contributions to assessing and improving water quality in Hawaii.

2. State Laboratories Division

The State Laboratories Division's (SLD's) Environmental Health Analytical Services Branch (EHASB) and District Health Laboratories (Maui, Kauai, and Big Island of Hawaii) provide the Department of Health programs various types of analytical support related to water quality, including both routine regulatory monitoring and special projects support to DOH's Safe Drinking Water Branch and Clean Water Branch. The laboratories are credentialed by EPA directly (Environmental Health Analytical Services Branch) or through the State Laboratories Division's primacy to certify laboratories (District Health Labs), which is a prerequisite to performing regulatory analyses of drinking water. Regulatory and investigative sample analyses adhere to available EPA-approved methods and strict quality assurance protocols.

In an effort to automate some of the pre- and post-analytical processes for Environmental Health Analytical Services Branch and water purveyors, the Safe Drinking Water Branch funded a Sample Analyses Tracking System (SATS) and Sample Collection and Reservation System (SCRS) (available at: <http://eha-web.doh.hawaii.gov/scrs>) which are also used by State Laboratories Division. The Sample Analyses Tracking System (SATS) allows the water systems to track their submissions





once drinking water samples arrive at Environmental Health Analytical Services Branch to be analyzed for contamination, and went live in early 2012. Sample results are directly uploaded into the results database at DOH Safe Drinking Water Branch, and are available to the water systems the next morning. The Sample Collection and Reservation System went

live in mid-2013 with Kauai Department of Water and County of Hawaii Department of Water Supply spearheading the transition. Operations slowly expanded to include most of the water systems on all islands over the following 6 months. The Sample Collection and Reservation System contains the sampling calendar and produces chain-of-custody forms that accompany all drinking water samples sent to Environmental Health Analytical Services Branch for analysis.

New chemistry instrumentation has been scheduled for purchase within the next year. These instruments will replace aging or obsolete instrumentation. The acquisition of a new purge-trap-gas chromatograph-mass spectrometer (PT-GC-MS) will provide faster turn-around times with definitive identification of contaminant volatile organic compounds in potable water samples. Definitive identification of volatile organic compounds (VOC) is not possible with the existing purge-trap-gas chromatograph (PT-GC) method. Other anticipated replacement instruments include ICP-MS for heavy metals and HPLC for carbamates analyses.

Within the past 18 months, Environmental Health Analytical Services Branch has filled water chemist and microbiologist positions that had remained vacant for up to three years, including a Water Quality Assurance Microbiologist position that is vital to the laboratory. The new staff will allow the Branch to meet the program needs.

The State Laboratories Division and Environmental Health Analytical Services Branch administer the Drinking Water Lab Certification Program, which provides drinking water laboratory certification for laboratories performing regulatory analyses. There are currently four (4) chemistry and 12 microbiology laboratories that are inspected, audited, and certified annually. There are 37 mainland laboratories approved for analytical chemistry using a combination of state reciprocity, third-party certification, and documentation audits. No out-of-state laboratories are approved for microbiology analyses because of transportation limitations. This certification program performs admirably on annual EPA audits.

2.1 Laboratory Testing

The Environmental Health Analytical Services Branch and District Health Laboratories provide both routine regulatory monitoring and special projects support to DOH's Safe Drinking Water Branch and Clean Water Branch. Drinking water special projects have included impact of Big Island VOG on catchment water quality, detection and response support to polychlorinated benzene (PCB) in Princeville, Kauai water storage, and ground water monitoring. Clean water projects include emergency response work due to the massive molasses spill into Honolulu Harbor in September 2013, wastewater investigations, and a collaborative molecular biology methods study with Stanford University. The 2013 testing statistics for State Laboratories Division are as follows:

2013 Testing Statistics for Safe Drinking Water Branch Samples

| Sample Analyzed to Determine: | 2013 | |
|-------------------------------|--------------|------------|
| | # of Samples | # of Tests |
| Chemistry | | |
| Regulatory | 2,518 | 8,486 |
| Specials | 147 | 547 |
| Microbiology | | |
| Regulatory | 1,873 | 1,921 |

Source: Department of Health, State Laboratories (SLD)

2013 Testing Statistics for Clean Water Branch Samples

| Sample Analyzed to Determine: | 2013 | |
|-------------------------------|--------------|------------|
| | # of Samples | # of Tests |
| Chemistry | | |
| Regulatory | 428 | 2,958 |
| Specials | 2 | 4 |
| Molasses Spill | 283 | 1,116 |
| Microbiology | | |
| Regulatory | 2,274 | 5,448 |
| Specials | 108 | 116 |
| Molasses Spill | 283 | 940 |

Source: Department of Health, State Laboratories Division



To learn more about SLD go to: <http://health.hawaii.gov/statelab/>

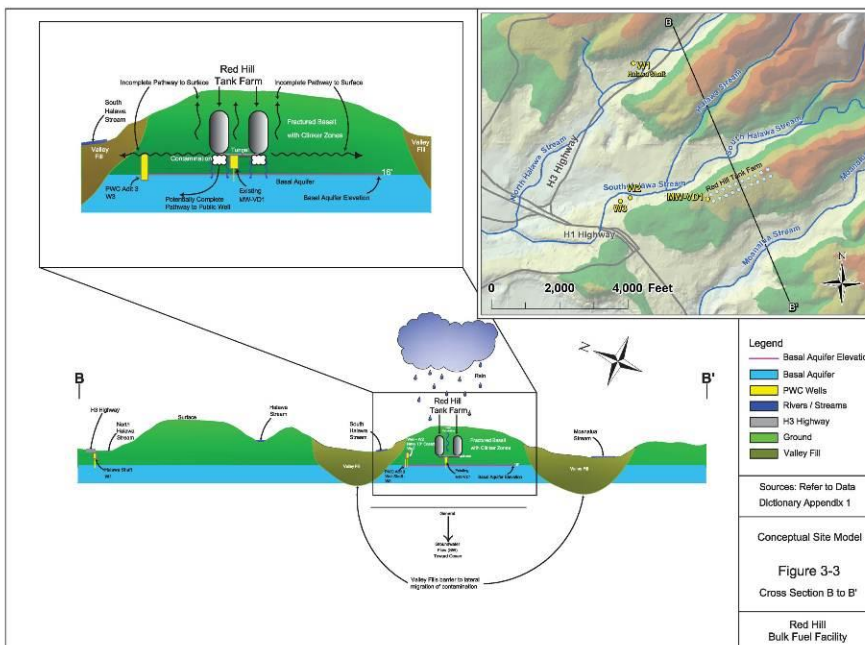
3. Solid and Hazardous Waste Branch

The Solid and Hazardous Waste Branch (SHWB) operates under the Federal Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.), H.R.S. chapters 342G, 342H, 342I, 342J, 342L, and 342N, and relevant sections of H.A.R. Title 11. All of the SHWB's various activities can benefit water quality because they help to prevent solid and hazardous waste from polluting surface and ground waters. The SHWB consists of the Hazardous Waste Section, Office of Solid Waste Management, Pollution Prevention and Waste Minimization Program, Underground Storage Tank Section, Hawaii Electronic Device Recycling Program, and Hi-5 Deposit Beverage Container (DBC) Recycling Program. The Hazardous Waste Section regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. Solid Waste Management regulates landfills, incinerators, transfer stations, recycling, composting facilities, and illegal dumping. For more information on SHWB, please visit:

<http://health.hawaii.gov/shwb/>.

3.1 Underground Storage Tank Program

The Program regulates underground storage tank (UST) systems, which store petroleum or hazardous substances. An underground storage tank is a tank, and any underground piping connected to the tank, that has at least 10 percent (10%) of its combined volume underground. Hawaii Administrative Rules (H.A.R.) Section 11-281-03 contains a list of exempt tanks. Airport hydrant fuel distribution underground storage tanks and tank systems directly connected to underground hydrant piping used to fuel aircraft and field-constructed underground storage tanks and tank systems are required to comply with H.A.R. Subchapters 6, 7, 8 and Sections 11-281-12 and 11-281-13. The EPA is proposing revisions to strengthen the federal UST regulations. Relevant underground storage tank regulations (H.A.R. Title 11, Chapter 281) were amended on August 9, 2013 to include requirements for new underground storage tank installations, operator training, permit requirements for existing underground storage tank system,



new remediation action levels, and delivery prohibition (which gives DOH the authority to prohibit the delivery, deposit, or acceptance of materials into an underground storage tank).

Figure 3.3 from Red Hill Bulk Fuel Storage Facility Draft - Work Plan, N62742-02-D-1802 CTO 007, dated April, 2005

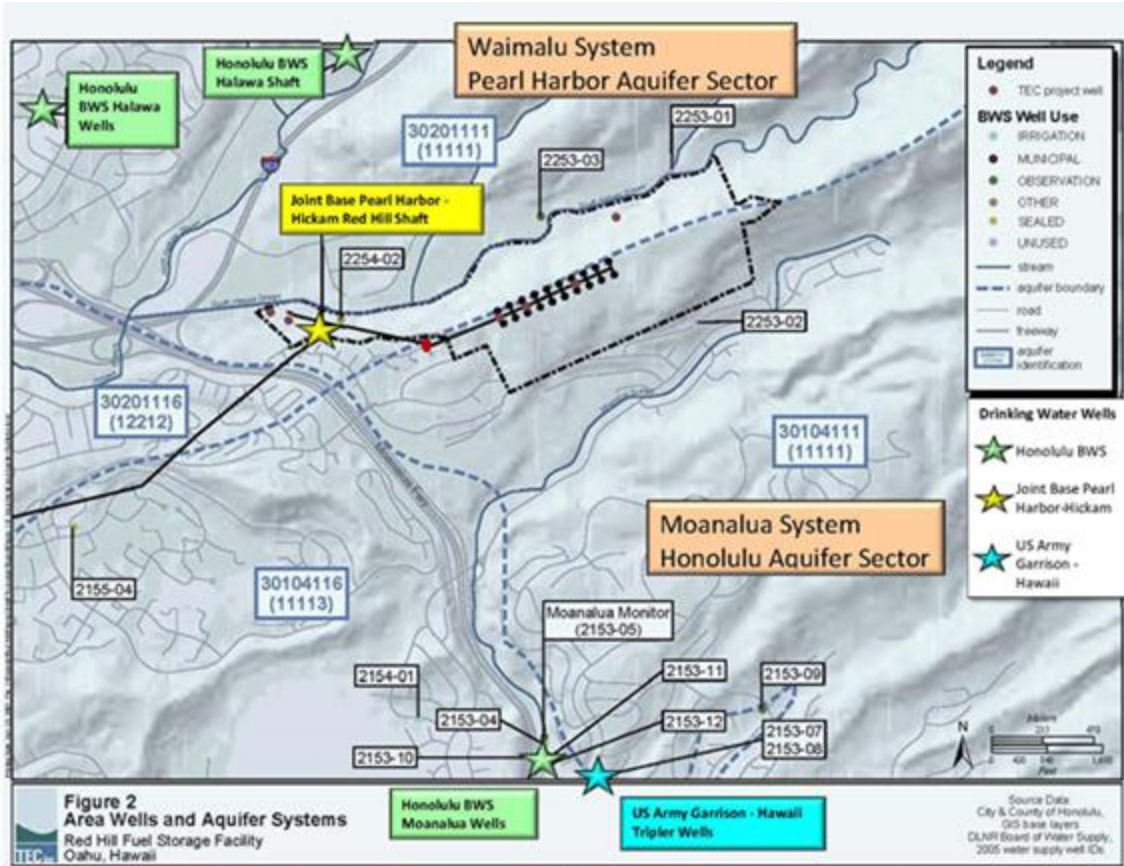


Figure 2 from Risk Assessment Letter Report, Contract #N47408-04-D-8514, Task Order 54, dated March 26, 2010.

The Underground Storage Tank Program is currently investigating the Joint Base Pearl Harbor-Hickam Red Hill Bulk Fuel Storage Facility. Constructed between 1940 to 1943, the Joint Base Pearl Harbor-Hickam Red Hill Bulk Fuel Storage Facility consists of 20 field-constructed underground storage tanks, each with a capacity of 12.6 million gallons. Two (2) of the 20 tanks are permanently out of service. The tanks currently contain jet fuel propellant (JP-5 and JP-8) and marine diesel fuel (F-76). Approximately 2.5 miles of pipeline to Pearl Harbor pump station service the tanks for delivery and dispensing. The Red Hill Bulk Fuel Storage Facility sits over a drinking water aquifer that services 25% of Oahu's population.

The Navy installed a leak monitoring system, referred to as "tell-tale," during tank construction. Between 1947 and 1983, 42 incidents were noted, of which only 15 incidents specified a release volume. The largest reported quantity was 32,765 gallons from Tank No. 1. The "tell-tale" system was closed by 1983.

On May 8, 1986, as required by Federal law, the Navy Region Hawaii registered as the owner of the Red Hill Complex. Between 1998 to 2002 the Navy took basalt cores from under each tank. The core samples demonstrate that 19 of 20 tanks are stained with petroleum.

DOH Solid and Hazardous Waste Branch and Safe Drinking Water Branch and the EPA are currently evaluating the risk of future releases at the Red Hill Bulk Fuel Storage Facility. Depending on the

outcome of the evaluation, several options exist to minimize any identified threat and improve the Red Hill Bulk Fuel Storage Facility. These options include:

- Improvements in Fuel Isolation Infrastructure;
- Improvements in Evaluating and Controlling Corrosion and Metal Fatigue;
- Improvements in Leak Detection;
- Evaluation of Secondary Containment; and
- Development and Implementation of Improved Catastrophic Release Contingency Plans.

Additional Groundwater Monitoring Well Locations

★ #1 & 2 – locations approved by DOH

★ #3 & 4 – proposed by Navy

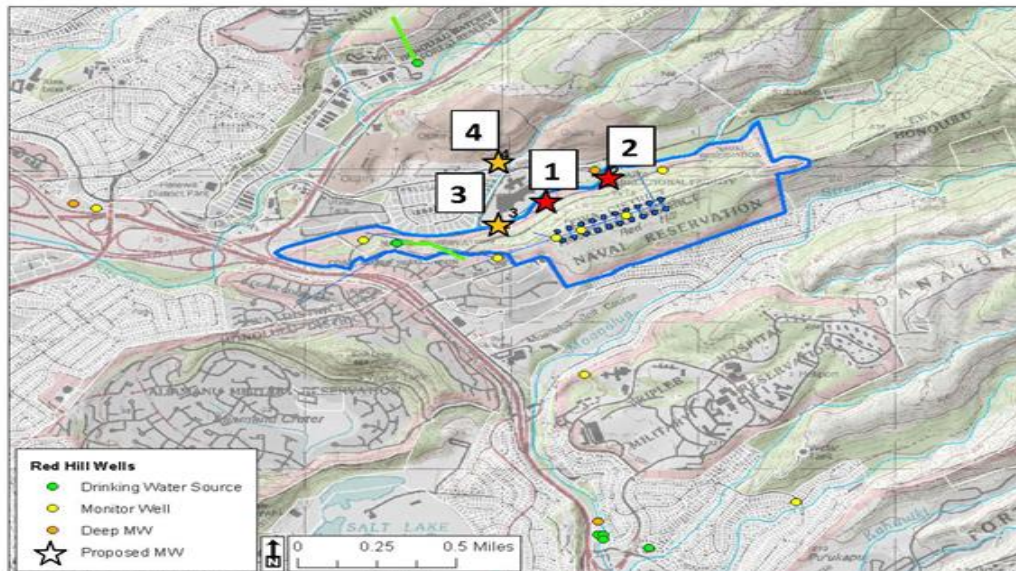


Figure from HDR Additional Monitoring Well Locations Letter, N62742-11-D-1800 Amendment No. 25, dated May 12, 2014.

DOH conducts compliance inspections to ensure that facilities comply with state regulations. Solid and Hazardous Waste Branch project officers verify that underground storage tank owners and operators remediate any releases or spills from a system. In 2013, the Program conducted 320 state-led inspections and issued 14 field citations. Recordkeeping violations were the most common reason for issuing citations.

Number of Leaking Underground Storage Tanks

| Calendar Year | Total Tanks | Active Tanks | Closed Tanks | Confirmed Releases | Clean-ups Partially Addressed | Clean-ups Not Initiated | Cumulative Completed Clean-ups |
|---------------|-------------|--------------|--------------|--------------------|-------------------------------|-------------------------|--------------------------------|
| 2006 | 7,832 | 2,001 | 5,831 | 1,875 | 206 | 94 | 1,574 |
| 2007 | 7,916 | 1,895 | 6,021 | 1,909 | 192 | 86 | 1,631 |
| 2008 | 7,845 | 1,770 | 6,075 | 1,955 | 184 | 76 | 1,695 |
| 2009 | 7,873 | 1,701 | 6,172 | 1,989 | 154 | 80 | 1,755 |
| 2010 | 7,897 | 1,679 | 6,248 | 2,019 | 180 | 45 | 1,794 |
| 2011 | 7,904 | 1,639 | 6,265 | 2,037 | 142 | 35 | 1,860 |
| 2012 | 7,974 | 1,653 | 6,321 | 2,052 | 109 | 36 | 1,907 |
| 2013 | 7,990 | 1,657 | 6,333 | 2,053 | 109 | 37 | 1,907 |

Source: Department of Health, Solid and Hazardous Waste Branch

3.2 Hazardous Waste Program

The Hazardous Waste Program is a regulatory program, authorized under H.R.S. 342J, that oversees the proper management, handling, and disposal of hazardous waste in Hawaii. Under H.A.R. Title 11, Chapters 260-279, the State Hazardous Waste Program staff inspect, monitor, and if necessary, take enforcement action against businesses handling hazardous waste. These businesses include generators, transporters, and treatment, storage, and disposal facilities. The Program also permits hazardous waste and used oil activities and oversees corrective action, which includes clean-up of contaminated sites, compliance assistance and outreach to small businesses to help minimize their hazardous waste, data management, and used oil contract management.

3.3 Solid Waste Management Program

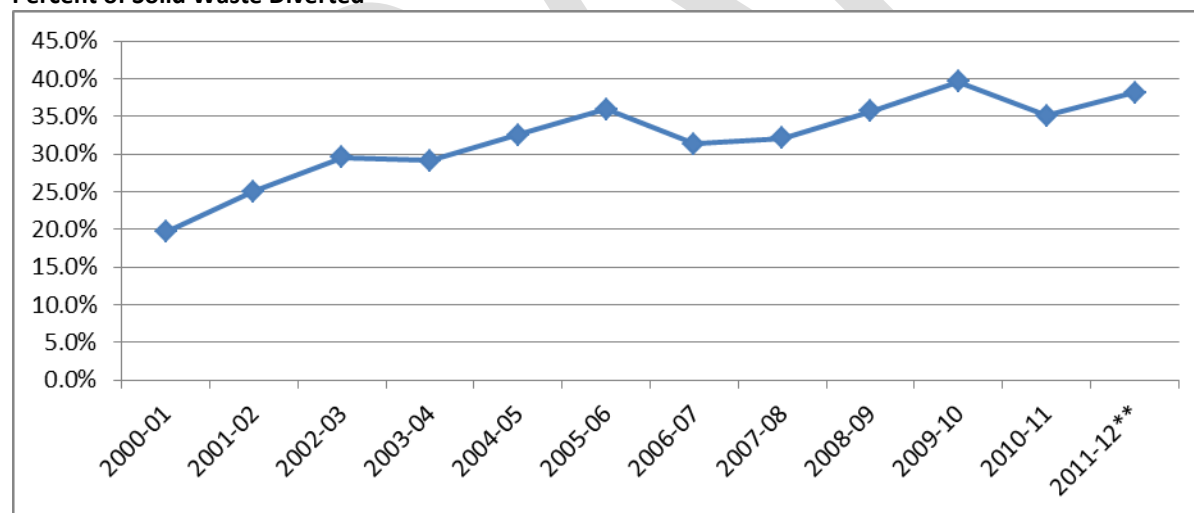
The Solid Waste Management Program consists of the Solid Waste Section and the Office of Solid Waste Management. The Solid Waste Section issues permits, monitors compliance, responds to complaints and, if necessary, takes enforcement actions against solid waste management facilities, such as landfills, waste-to-energy facilities, transfer stations, composting operations, and remediation, salvage, and waste treatment facilities. The Office of Solid Waste Management oversees statewide planning of solid waste management through State- and County-developed integrated solid waste management plans, promotes waste diversion from landfills through outreach and education, and implements statewide recycling programs such as the Glass Advance Disposal Fee (ADF) Program and the Deposit Beverage Container Program (DBC or "Hi-5"). These Programs have helped to keep beverage containers from being discarded as litter that ends up in Hawaii's waters. The SHWB keeps track of the amount of solid waste recycled and the DBC redemption rate.

Solid Waste Recycled in Hawaii (in tons)

| State Fiscal Year | Generated | Disposed | Diverted | Percent Diverted |
|-------------------|-----------|-----------|----------|------------------|
| 2000-01 | 1,794,496 | 1,441,000 | 353,496 | 19.7% |
| 2001-02 | 1,971,336 | 1,478,668 | 492,668 | 25.0% |
| 2002-03 | 2,115,313 | 1,489,974 | 625,339 | 29.6% |
| 2003-04 | 2,140,648 | 1,517,915 | 622,733 | 29.1% |
| 2004-05 | 2,116,724 | 1,427,904 | 688,820 | 32.5% |
| 2005-06 | 2,227,124 | 1,425,752 | 801,373 | 36.0% |
| 2006-07 | 2,526,134 | 1,733,889 | 792,245 | 31.4% |
| 2007-08 | 2,617,350 | 1,778,009 | 839,341 | 32.1% |
| 2008-09 | 2,532,370 | 1,629,397 | 902,973 | 35.7% |
| 2009-10 | 1,636,298 | 988,444 | 647,854 | 39.6% |
| 2010-11 | 1,786,343 | 1,159,027 | 627,316 | 35.1% |
| 2011-12** | 1,593,887 | 1,147,194 | 608,857 | 38.2% |

Source: Department of Health, Solid and Hazardous Waste Branch

** Incomplete: Statistics for diversion and generation from the County of Maui are currently unavailable.

Percent of Solid Waste Diverted

4. Hazard Evaluation and Emergency Response Office

The mission of the Hazard Evaluation and Emergency Response (HEER) Office is to address all aspects of releases of hazardous substances and pollutants, including oil, into the environment. The HEER Office work includes preventing, planning for, and responding to hazardous substance releases, or risks of releases, including those into water. It accomplishes this mission by addressing contaminated sites with the highest risk to human health and the environment first, preventing contamination rather than cleaning up after the fact, and basing decisions on sound scientific principles and common sense. More information on the Hazard Evaluation and Emergency Response (HEER) Office is available at: <http://eha-web.doh.hawaii.gov/eha-cma/Org/HEER/>

Hazard Evaluation and Emergency Response (HEER) Office Hazard Evaluation Section provides ecological and human health risk assessment, conducts toxicological assessments of chemical threats to human health, establishes appropriate cleanup levels for chemical contamination, and assists the public with information concerning the health effects of chemicals. The Hazard Evaluation and Emergency Response (HEER) Office works closely with other programs to assess safety of our drinking water supplies, local fisheries and recreational waters.

4.1 Pesticides

In 2013, in response to House Concurrent Resolution (HCR) 129, the Hazard Evaluation and Emergency Response Office released a Legislative Report investigating current and historic uses of atrazine in Hawaii, and its impact on groundwater and surface waters in the State. The study reaffirmed the safety of the drinking water supply and made recommendations to address data gaps. This report is available on line at <http://co.doh.hawaii.gov/sites/Leg>.

To address data gaps identified in the Atrazine Report, and to address growing public concern about offsite impacts of pesticides used in large agricultural operations, The Office's scientists worked closely with the Clean Water Branch (see SECTION II:2.1), DOA and USGS to develop and implement a Statewide Pesticide Sampling Pilot Project that was completed in early 2014. The study gathered data on the levels of 136 different pesticides in surface water at 24 sites around the state. For more information on the findings, and to see the draft report, please visit: <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/pesticides>. The Hazard Evaluation and Emergency Response (HEER) Office and DOA are currently gathering public input about the draft study and compiling recommendations for future actions.

In 2013, the Hazard Evaluation and Emergency Response Office worked with the University of Hawai'i Cancer Center to respond to numerous community inquiries regarding suspected elevated rates of cancer among residents of Kaua'i. Community members and medical professionals raised concerns on Kauai about the health impact on local communities from pesticides used by agricultural chemical companies. The Hawaii Tumor Registry evaluated the incidence of cancer on Kauai compared to the entire state of Hawaii. The evaluation found that there is not a higher incidence of cancer for the specific geographic regions on the island, as compared to the State of Hawaii overall. The report and a fact sheet, and other information about ongoing pesticide work at DOH are available on Hazard Evaluation

and Emergency Response (HEER) Office's website at <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/HDOH-Pesticide-Studies-and-Coordination-with-other-Agencies>.

4.2 Other Chemicals

In June 2012, the Hazard Evaluation and Emergency Response (HEER) Office published a [report](#) on the human health risks of 1,2,3-Trichloropropane, a contaminant found in some sources of drinking water in Hawaii. The purpose of the Report is to review the available data on the potential human health effects of TCP as a drinking water contaminant, and evaluate the adequacy of Hawaii's Maximum Contaminant Level for Trichloropropane.

In May 2014, the Office published a fact sheet on vanadium to assist the public with interpreting recently published information about vanadium in Hawaii's drinking water. Vanadium is a naturally-occurring mineral in Hawaii's volcanic soils and ground water, and is not considered to be harmful at current levels.

The Hazard Evaluation and Emergency Response Office also tracks data related to toxic, oil, and chemical releases in Hawaii. This data is available on the EPA Toxic Release Inventory website at: http://iaspub.epa.gov/triexplorer/tri_broker_statefs.broker?p_view=STCO&SFS=YES&trilib=TRIQ1&year=2012&state=HI

Hawaii Toxic Release Inventory (Calendar Year 2012*)

| Category | Amount in pounds |
|--|------------------|
| Recycled On-site | 12,204 |
| Recycled Off-site | 2,326 |
| Energy Recovery On-site | 17,000 |
| Energy Recovery Off-site | 514 |
| Treated On-site | 3,886,674 |
| Treated Off-site | 24,718 |
| Total On-site Disposal to Class I Underground Injection Wells | 0 |
| Total other On-site Disposal or other releases | 2,494,931 |
| Total Off-site Disposal to Class I Underground Injection Wells | 194,858 |
| Total other Off-site Disposal or Other Releases | 666 |
| Total Production-related Waste Managed | 6,633,891 |

Source: EPA, TRI Explorer State of Hawaii Fact Sheets (Hawaii Department of Health, Hazard Evaluation and Emergency Response Office)

* Preliminary 2012 data as of EPA update, released September 2013

4.3 Oil and Chemical Releases to Land and Water

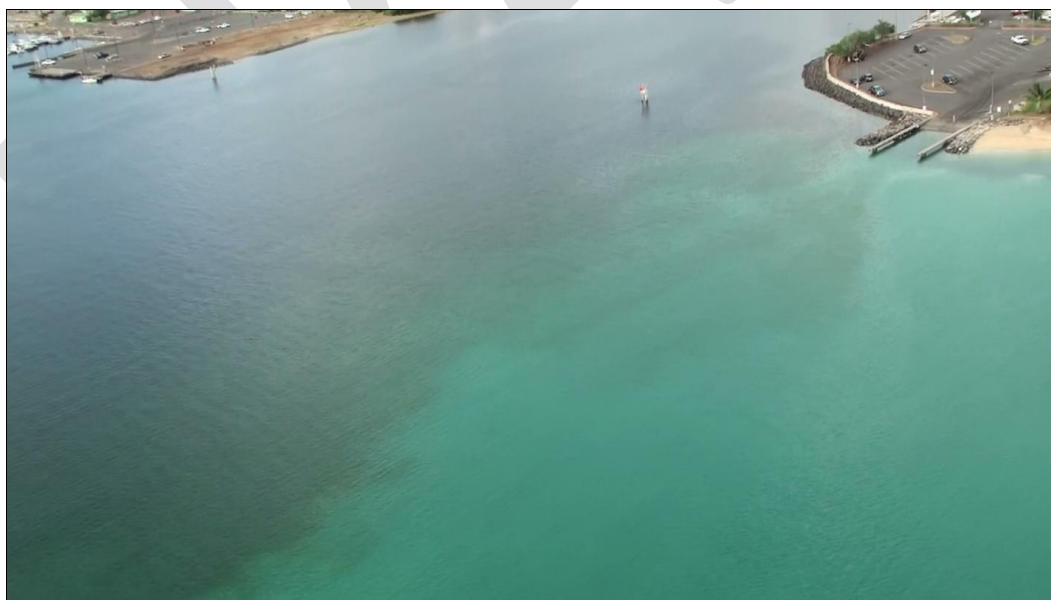
Any release of oil, chemicals, or other potentially toxic substances must be reported to DOH. Between 2006 and 2011, the Hazard Evaluation and Emergency Response Office crews respond to an average of 370 oil and chemical spills per year. Most are minor, a few are major, and some are false alarms.

Oil and Chemical Releases (2006-2011)

| Calendar Year | Oil Releases to Land | Oil Releases to Water | Total Oil Releases | Chemical Releases to Water | Chemical Releases to Land | Total Chemical Releases | Total Oil & Chemical Releases |
|---------------|----------------------|-----------------------|--------------------|----------------------------|---------------------------|-------------------------|-------------------------------|
| 2006 | -- | -- | 206 | -- | -- | 178 | 384 |
| 2007 | -- | -- | 289 | -- | -- | 200 | 489 |
| 2008 | -- | -- | 198 | -- | -- | 107 | 305 |
| 2009 | 56 | 87 | 143 | 62 | 63 | 125 | 268 |
| 2010 | 126 | 92 | 218 | 65 | 131 | 196 | 414 |
| 2011 | 185 | 72 | 257 | 63 | 51 | 114 | 371 |

Source: Department of Health, Hazard Evaluation and Emergency Response Office

Under the leadership of DOH and DLNR, State and Federal partners, Matson, and other supporting entities, continue to address restoration and recovery from the ecological impacts of the 233,000 gallon molasses spill on Sept. 9, 2013 near Pier 52 in Honolulu Harbor. The Hazard Evaluation and Emergency Response Office provided the Incident Commander, Emergency Responders and the Environmental Unit Chief for the Emergency phase of the Response, when rapid coordinated action was needed to assess, respond and mitigate the harmful effects of the molasses spill on the ecosystem and human users of the affected waters. DOH Clean Water Branch conducted frequent water sampling at locations throughout Honolulu Harbor and Keehi Lagoon throughout the response, until water sampling revealed that dissolved oxygen and pH levels had returned to normal target levels, and normal activities could safely resume within the Harbor and Lagoon.



For more information about the Hazard Evaluation and Emergency Response Office, please visit: <http://eha-web.doh.hawaii.gov/eha-cma/Org/HEER/>.

| TRI On-site and Off-site Reported Disposed of or Otherwise Released (in pounds), for All industries, for All chemicals, Hawaii, 2012 | | | | | | | | | | | |
|--|--|--|--------------------------|--|---|--|-----------------|------------|---|---|-----------|
| Row # | Chemical | Other On-site Disposal or Other Releases | | | | Off-site Disposal to Class I Underground Injection Wells, RCRA Subtitle C Landfills, and Other Landfills | | | | Total On- and Off-site Disposal or Other Releases | |
| | | Underground Injection Class I Wells | Surface Water Discharges | Underground Injection Class II-V Wells | Total On-site Disposal or Other Sub Total | Underground Injection to Class I Wells | Other Landfills | Sub Total | Total Off-site Disposal or Other Releases | | |
| 1 | 1,2,4-TRIMETHYLBENZENE | 0 | 16 | 0.25 | 8,664.82 | 8,664.82 | . | 4 | 4 | 8,668.82 | |
| 2 | 1,3-BUTADIENE | 0 | 0 | 0 | 1,324.00 | 1,324.00 | . | . | . | 1,324.00 | |
| 3 | 3-iodo-2-propynyl butylcarbamate | . | . | . | . | . | . | . | . | . | |
| 4 | ALUMINUM (FUME OR DUST) | 0 | 0 | 0 | 0 | 0 | . | . | . | 0 | |
| 5 | AMMONIA | 0 | 1,500.00 | 4,500.94 | 158,878.94 | 158,878.94 | . | . | . | 158,878.94 | |
| 6 | ARSENIC | 0 | 0 | 0.002 | 0.002 | 0.002 | . | . | . | 0.002 | |
| 7 | Barium compounds | 0 | 0 | 0 | 32 | 32 | 172,240.00 | 172,240.00 | 172,240.00 | 172,272.00 | |
| 8 | BENZENE | 0 | 16 | 0 | 13,763.35 | 13,763.35 | 4.023 | 4.023 | 4.797 | 13,768.15 | |
| 9 | BENZO(G,H,I)PERYLENE | 0 | 0.3 | 0 | 31.817 | 31.817 | 0.3 | 0.3 | 0.7 | 32.517 | |
| 10 | CARBONYL SULFIDE | 0 | 0 | 0 | 940 | 940 | . | . | . | 940 | |
| 11 | CERTAIN GLYCOL ETHERS | 0 | 0 | 0 | 19,500.00 | 19,500.00 | . | . | . | 19,500.00 | |
| 12 | CHLORINE | 0 | 0 | 0 | 10 | 10 | . | . | . | 10 | |
| 13 | CHLORODIFLUOROMETHANE | 0 | 0 | 0 | 176 | 176 | . | . | . | 176 | |
| 14 | CHROMIUM | 0 | 0 | 0.0008 | 0.0008 | 0.0008 | . | . | . | 0.0008 | |
| 15 | COPPER | 0 | 0 | 0.013 | 70,333.01 | 70,333.01 | . | . | . | 70,333.01 | |
| 16 | CRESOL (MIXED ISOMERS) | 0 | 0 | 0 | 1,470.00 | 1,470.00 | . | . | . | 1,470.00 | |
| 17 | CYCLOHEXANE | 0 | 16 | 0 | 14,158.77 | 14,158.77 | 0 | 0 | 0 | 14,158.77 | |
| 18 | DIOXIN AND DIOXIN-LIKE COMPOUNDS | 0 | 0 | 0 | 0.0063568 | 0.0063568 | ** | ** | ** | 0.0022173 | 0.0085741 |
| 19 | ETHYLBENZENE | 0 | 16 | 0.05 | 6,878.87 | 6,878.87 | 5.06 | 5.06 | 7.76 | 6,886.63 | |
| 20 | ETHYLENE | 0 | 0 | 0 | 29,500.00 | 29,500.00 | . | . | . | 29,500.00 | |
| 21 | ETHYLENE GLYCOL | 0 | 0 | 0 | 12,697.00 | 12,697.00 | . | . | . | 12,697.00 | |
| 22 | HYDROCHLORIC ACID (1995 AND AFTER "ACID A | 0 | 0 | 0 | 153,227.00 | 153,227.00 | . | . | . | 153,227.00 | |
| 23 | HYDROGEN CYANIDE | 0 | 0 | 0 | 47,000.00 | 47,000.00 | . | . | . | 47,000.00 | |
| 24 | HYDROGEN SULFIDE | 0 | 0 | 0 | 1,746.00 | 1,746.00 | . | . | . | 1,746.00 | |
| 25 | LEAD | 0 | 0 | 0 | 97,507.20 | 97,507.20 | 0.7 | 0.7 | 0.7 | 97,507.90 | |
| 26 | LEAD COMPOUNDS | 0 | 19 | 5.6 | 1,205.80 | 1,205.80 | 2,558.43 | 2,558.43 | 2,765.47 | 3,971.27 | |
| 27 | MANGANESE | 0 | 0 | 0.0421 | 0.0421 | 0.0421 | . | . | . | 0.0421 | |
| 28 | MERCURY | 0 | 0 | 0 | 191 | 191 | . | . | 0 | 191 | |
| 29 | MERCURY COMPOUNDS | 0 | 4.3 | 0.93 | 39.67 | 39.67 | 92.483 | 92.483 | 113.9820024 | 153.6520024 | |
| 30 | METHANOL | 0 | 0 | 0 | 595 | 595 | . | . | . | 595 | |
| 31 | METHYL ISOBUTYL KETONE | 0 | 0 | 0 | 880 | 880 | . | . | . | 880 | |
| 32 | METHYL TERT-BUTYL ETHER | 0 | 0 | 0 | 399.3 | 399.3 | . | . | . | 399.3 | |
| 33 | N-BUTYL ALCOHOL | 0 | 0 | 0 | 44,300.00 | 44,300.00 | . | . | 230 | 44,530.00 | |
| 34 | N-HEXANE | 0 | 16 | 0 | 45,370.49 | 45,370.49 | 7 | 7 | 7 | 45,377.49 | |
| 35 | NAPHTHALENE | 0 | 16 | 0 | 8,808.43 | 8,808.43 | 6 | 6 | 8 | 8,816.43 | |
| 36 | NICKEL COMPOUNDS | 0 | 1 | 0 | 22,001.00 | 22,001.00 | 1,000.00 | 1,000.00 | 1,001.00 | 23,002.00 | |
| 37 | NITRATE COMPOUNDS | 0 | 433,602.00 | 0.059 | 433,612.06 | 433,612.06 | . | . | . | 433,612.06 | |
| 38 | NITRIC ACID | 0 | 0 | 0 | 0 | 0 | . | . | . | 0 | |
| 39 | NITROGLYCERIN | 0 | 0 | 0 | 0 | 0 | . | . | . | 0 | |
| 40 | PENDIMETHALIN | 0 | 0 | 0 | 0.4 | 0.4 | . | . | . | 0.4 | |
| 41 | PHENOL | 0 | 0 | 0 | 18 | 18 | . | . | . | 18 | |
| 42 | PHOSPHORUS (YELLOW OR WHITE) | 0 | 0 | 0 | 0 | 0 | . | . | . | 0 | |
| 43 | POLYCYCLIC AROMATIC COMPOUNDS | 0 | 390 | 0 | 1,612.50 | 1,612.50 | 11.8 | 11.8 | 14.5 | 1,627.00 | |
| 44 | PROPYLENE | 0 | 0 | 0 | 84,200.00 | 84,200.00 | . | . | . | 84,200.00 | |
| 45 | SULFURIC ACID (1994 AND AFTER "ACID AEROSC | 0 | 0 | 0 | 1,138,202.00 | 1,138,202.00 | . | . | . | 1,138,202.00 | |
| 46 | TETRACHLOROETHYLENE | 0 | 0 | 0 | 230 | 230 | . | . | . | 230 | |
| 47 | TOLUENE | 0 | 16 | 0.13 | 22,034.38 | 22,034.38 | 17.15 | 17.15 | 24.75 | 22,059.13 | |
| 48 | VANADIUM COMPOUNDS | 0 | 0 | 0 | 3 | 3 | 18,890.00 | 18,890.00 | 18,890.00 | 18,893.00 | |
| 49 | XYLENE (MIXED ISOMERS) | 0 | 33 | 0.41 | 56,564.40 | 56,564.40 | 22.34 | 22.34 | 198.17 | 56,762.57 | |
| Total | | 0 | 435,661.60 | 4,508.42 | 2,498,106.26 | 2,498,106.26 | 0 194,859.29 | 194,859.29 | 195,510.83 | 2,693,617.09 | |

TRI On-site and Off-site Reported Disposed of or Otherwise Released (in grams), for All industries, for Dioxin and Dioxin-like compounds, Hawaii, 2012

| | | | | | | | | | |
|------------------------------------|---|---|---|---------|---------|--------|--------|--------|---------|
| 1 DIOXIN AND DIOXIN-LIKE COMPOUNDS | 0 | 0 | 0 | 2.88288 | 2.88288 | 1.0056 | 1.0056 | 1.0056 | 3.88848 |
|------------------------------------|---|---|---|---------|---------|--------|--------|--------|---------|

Note: Reporting year (RY) 2012 is the most recent TRI data available. Facilities reporting to TRI were required to submit RY 2012 data to EPA by July 1, 2013. TRI Explorer is using an updated data set (released to the public in March 2014). This dataset includes revisions processed by EPA as of March 2014 for the years 1988 to 2012. Revisions submitted to EPA after this time are not reflected in TRI Explorer reports.

TRI data may also be obtained through EPA Envirofacts.

Users of TRI information should be aware that TRI data reflect releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released.

Off-site disposal or other releases show only net off-site disposal or other releases, that is, off-site disposal or other releases transferred to other TRI facilities reporting such transfers as on-site disposal or other releases are not included to avoid double counting.

For purposes of analysis, data reported as Range Code A is calculated using a value of 5 pounds, Range Code B is calculated using a value of 250 pounds and Range Code C is calculated using a value of 750 pounds.

A decimal point, or ".", denotes the following: if a decimal point is reported across an entire row, the facility submitted a Form A (i.e., the facility certified that its total annual reportable amount is less than 500 pounds, and does not manufacture, process, or otherwise use more than 1 million pounds); or if a decimal point is reported in a single column, the facility left that particular cell blank in its Form R submission (a zero in a cell denotes either that the

5. Environmental Resources Office

The Environmental Resources Office (ERO) provides administrative oversight, services, and technical assistance to all programs within DOH's Environmental Health Administration (EHA), including the Water Programs. This involves coordinating the State budgeting process, human resources management, financial management, procurement, fiscal administration of federal grants (including time and effort reporting), contract administration, assessment of program structure and effectiveness, and facilities requirements. Also, the Environmental Resources Office Water Revolving Fund Staff specifically provides loan management and financial administration for the Clean Water State Revolving Fund and Drinking Water State Revolving Fund Programs.

5.1 Grants

Number of Grants Managed

| Type of Grant | 2013 |
|--|------|
| Surface Water Pollution Control | 18 |
| Drinking Water Protection | 12 |
| Solid Waste Management & Protection | 3 |
| Wastewater Treatment | 7 |
| Hazard Evaluation and Emergency Response | 4 |
| Information Management and Technology | 5 |

Source: Department of Health, Environmental Resources Office

5.2 State Revolving Fund Loans

The Environmental Resources Office (ERO), Water Revolving Fund (WRF) staff (formerly known as the Grant Management (GM) section) is tasked with managing, tracking, and reporting the fiscal and loan activities of the Water Pollution Control Revolving Fund (also known as the Clean Water State Revolving Fund), and the Drinking Water Treatment Revolving Loan Fund (also known as the Drinking Water State Revolving Fund). For more information on these loan programs, see SECTION II:5. The Clean Water State Revolving Fund Program was established in 1988 to provide below-market interest rate loans in perpetuity to county and state agencies for the construction of wastewater treatment facilities, as required by the Clean Water Act of 1987. Similarly, the Drinking Water State Revolving Fund Program was established in 1997 to provide funding for drinking water infrastructure projects using the successful Clean Water State Revolving Fund program as its model. The Drinking Water State Revolving Fund is responsible for implementing the provisions of the Safe Drinking Water Act Amendments (SDWAA) of 1996 that require the fund to issue low interest loans to public water systems that need improvements.

The Environmental Resources Office, Water Revolving Fund staff issue loans, provide customer service to borrowers, track and report the project loan agreements, disburse loan funds, collect loan

repayments, and oversee administrative expenses, financial reporting, cash management, and all other related activities.

In June 2012, the Grants Management section was taken out of the Wastewater Branch, relocated to the Environmental Resources Office, and renamed Water Revolving Fund staff. This action was meant to further clarify and accurately describe its functions to ensure that the funds operate in perpetuity.

In addition, the interests of the Wastewater Branch and Safe Drinking Water Branch are served more efficiently and effectively by the move, which enables the Environmental Resources Office, and renamed Water Revolving Fund staff to provide consistent and unbiased support to both State Revolving Fund programs and avoid any conflicts of interest that have the potential to arise when the Environmental Resources Office, and renamed Water Revolving Fund program is solely under the control of a Branch that derives direct benefit from one of the loan funds.



Hawaii Loa Ridge, Oahu

6. Environmental Planning Office

The Environmental Planning Office (EPO) assists the entire Environmental Health Administration with a variety of internal and external projects, creation of plans, strategic planning, including development of the Water Quality Plan, and public outreach and communication. Environmental Planning Office also works on a range of DOH initiatives, like future DOH accreditation and health equity (environmental justice), assists with developing new Environmental Health Administration initiatives, reviews and disseminates state and federal land use documents, and compiles an annual Environmental Health Management Report that tracks trends and provides updates on Environmental Health Administration's monitoring and enforcement activities. Environmental Planning Office, in partnership with DLNR and NOAA, also distributes grant funding to each county in the state to assist communities that have been heavily affected by marine debris.

Environmental Planning Office also represents DOH in an organization called Hawaii Green Growth, which is comprised of government agencies, non-profit organizations, and members of the business community that work to achieve statewide sustainability targets for clean energy, local food production, smart growth, and solid waste and natural resource management. Environmental Planning Office also assists with Hawaii Invasive Species Council (HISC) outreach and project funding allocation decisions.



Environmental Planning Office also provides legislative coordination for Environmental Health Administration during the Hawaii Legislative Session by tracking and reviewing bills, assigning them to the relevant Environmental Health Administration Branch or Office, drafting testimony on legislation that affects multiple branches or offices within Environmental Health Administration, and attending legislative hearings. Environmental Planning Office has previously testified on a number of bills that have implications for water quality during the past several legislative sessions, including on bills that would authorize DOH to adopt fees to manage pollution from nonpoint sources and individual wastewater systems and to establish a water pollution control account to manage the fees and provide funding for water quality work; increase funding for DOH's Environmental Response Revolving Fund, which supports a variety of DOH water program positions; establish an Environmental Information Management Office, which develops information systems to manage water quality and other environmental data (see Section III. 8. below); and that develop a framework for climate change and sea level rise adaptation in Hawaii.

The Environmental Planning Office also has an Environmental Geographic Information Systems (eGIS) Program that provides support to Environmental Health Administration through the creation, analysis, and mapping of data. Managing people and environmental resources safely and effectively presents great challenges, and Geographic Information Systems facilitates informed decision-making because it can relate vast amounts of disparate information through the use of location as the key indexing variable.

The Environmental Geographic Information Systems Program has recently collaborated with Clean Water Branch to update the Hawaii State Water Quality Standards Maps (see SECTION VII.:, above), which geographically depict the standards set forth in H.A.R. Chapter 11-54. The updated maps for the Main Hawaiian Islands are available on the Clean Water Branch's Water Quality Standards page (<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/>). The Environmental Geographic Information Systems (eGIS) program will also be working with Safe Drinking Water Branch to update its Underground Injection Control data. The Environmental Planning Office's Environmental Geographic Information Systems program also collaborates with the Hawaii Statewide Geographic Information Systems (Program and Environmental Health Administration's Environmental Information Manager (see 8. below). For more information on Environmental Planning Office, visit its website at: <http://health.hawaii.gov/epo/>.

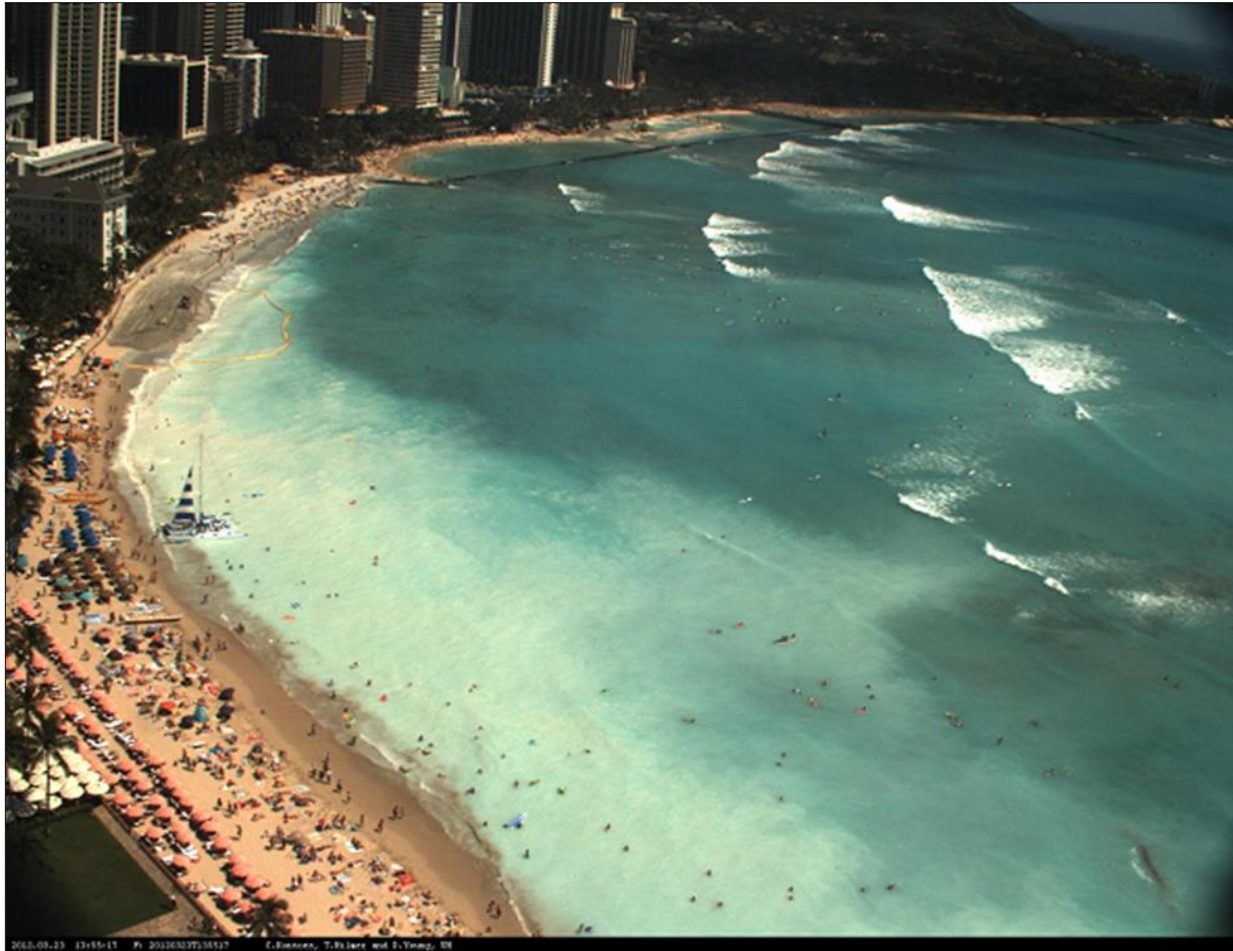


7. Compliance Assistance Office

In accordance with H.R.S. § 342B-63, the Compliance Assistance Office (CAO) is a one-stop, non-regulatory office that can assist small businesses understand and comply with the environmental regulations that DOH administers. The services the Compliance Assistance Office offers are confidential, free of charge, and provide a point of access to government to facilitate the exchange of information and communication. As a neutral party and mediator, the office can help by investigating and resolving disputes and increase DOH's and other government agencies' understanding of small business concerns. It works with government and business representatives to develop proposals which remove unwarranted hurdles to small businesses. The Compliance Assistance Office conducts voluntary site assessments of businesses to determine compliance with applicable environmental regulations, including those under the Clean Water Act, Safe Drinking Water Act, and other statutes that affect State water quality; provides regulatory guides and other documents; and assists businesses which have exhausted readily available dispute resolution mechanisms within DOH.

In 2012, the Compliance Assistance Office held 85 meetings with members of the business community to improve their understanding of environmental regulations and laws pertaining to the National Pollutant Discharge Elimination System permit process. For more information, please visit:

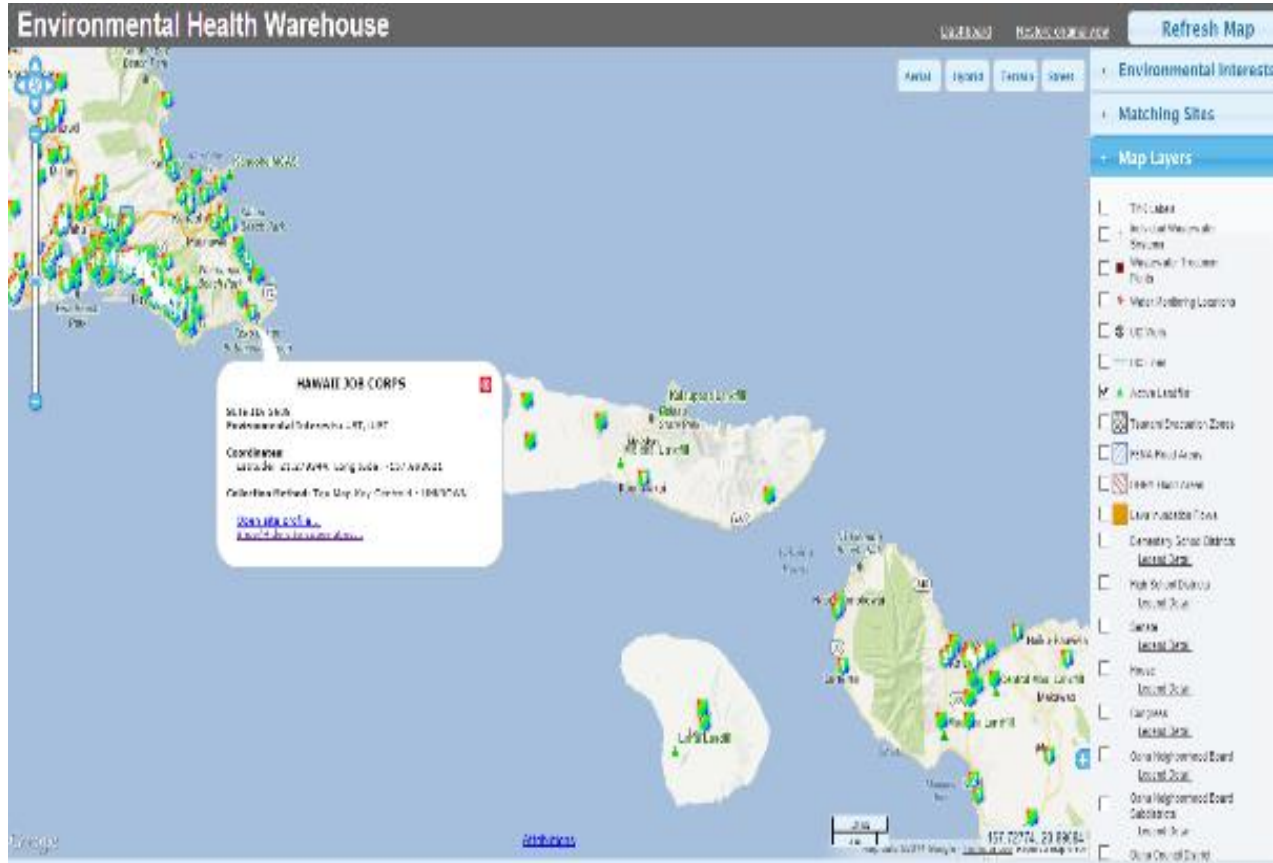
<http://health.hawaii.gov/cao/>.



8. Environmental Information Manager

The Environmental Information Manager (EIM) oversees the coordination, collaboration, strategic planning, and facilitation of Environmental Health Administration's information management and information technology (IM/IT) activities, many of which relate to water quality and have improved the accessibility of and ability to share water quality-related data. The State has been working towards government transparency and streamlining environmental business processes, and the Environmental Information Manager has been collaborating with Environmental Health Administration's environmental programs to develop information systems that benefit the public and the regulated community.

The Environmental Information Manager has recently implemented systems that provide government transparency and streamline processes, including the e-Permitting Portal application, the Environmental Health Warehouse (EHW), the Water Pollution Control (WPC) Viewer, Water Quality Data Viewer, and the Sample Analysis Tracking System (SATS).

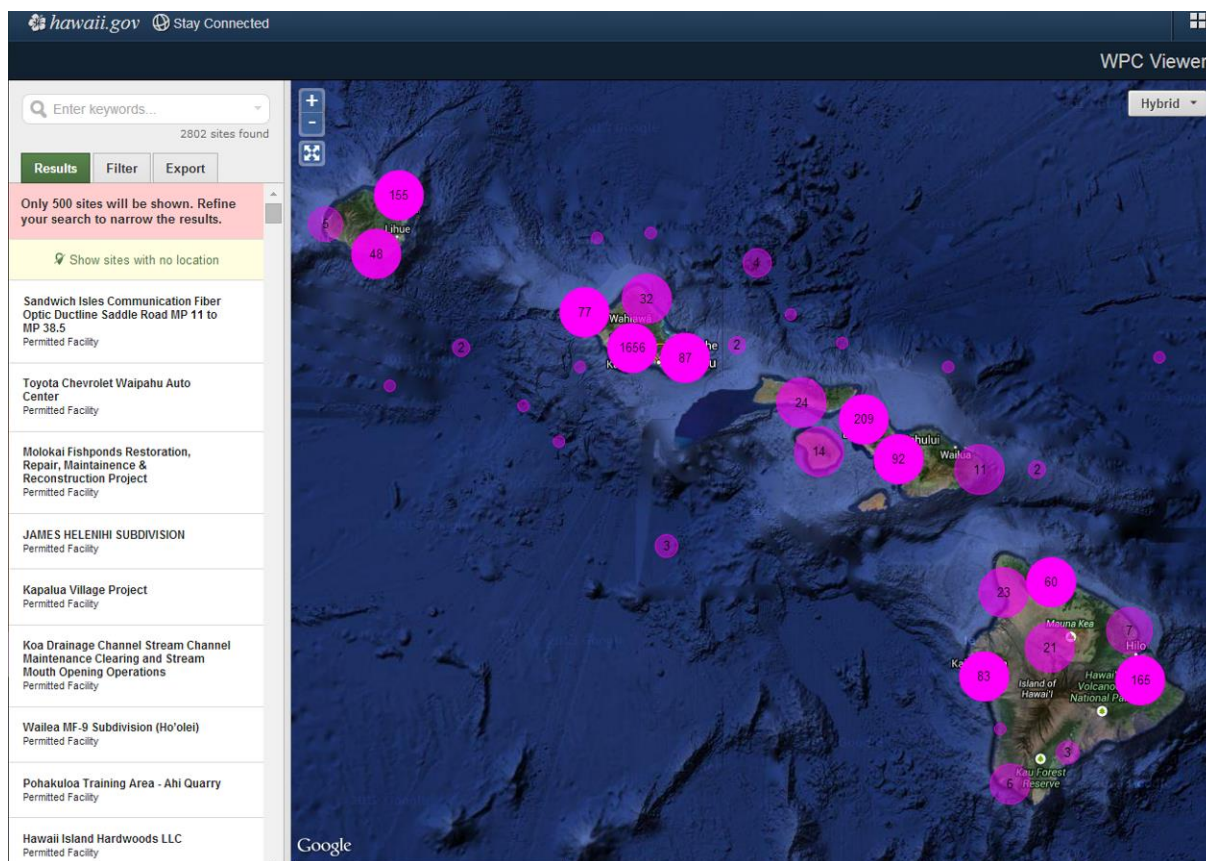


These systems help to meet the Hawaii Water Plan Statewide Framework's recommendation that DOH develop linkages between inter-agency programs, because they assist with:

- Coordinating data collection and monitoring efforts;
- Developing a common database and ensuring data consistency; and
- Establishing a protocol for more effective data sharing.

The Environmental Information Manager developed and implemented the **Environmental Health Warehouse (EHW)** to provide Environmental Health Administration programs with integrated access to environmental facilities and sites in geospatial mapping and tabular formats. The Environmental Health Warehouse identifies facilities with National Pollutant Discharge Elimination System permits, as well as drinking water facilities (internal only), underground storage tank, and hazardous waste sites. The Environmental Information Manager's goal is to include Environmental Health Administration -regulated facilities in the Environmental Health Warehouse, which will enable Environmental Health Administration to make better environmental decisions by sharing information across programs.

The **e-Permitting Portal** was developed to streamline the environmental permitting process. The regulated community and public can access all of Environmental Health Administration's environmental permit applications through the Portal, and can learn about, complete, and submit applications online. It also allows the user to pay permit application fees online and track the status of submitted applications.



The **Water Pollution Control Viewer** shares National Pollutant Discharge Elimination System data with internal and external stakeholders, such as permit profiles for the facility/project, and contact, permit, inspection, and enforcement information. It also provides access to over 50,000 Clean Water Branch documents. The National Pollutant Discharge Elimination System program controls water pollution by regulating point sources that discharge pollutants into State waters.

The Environmental Information Manager also developed the **Water Quality Data Viewer**, which provides the public with the ability to query water quality information and return results in a spatially enabled and/or tabular format. It also allows the user to view beach warnings, advisories and postings, and it offers drill-down capabilities to find water sampling test result data. The Viewer allows authorized personnel to create and post beach warnings, advisories, and other postings by drawing affected areas with polygons using a mapping tool.

The **Sample Analysis Tracking System** is a Web-based system that allows the State Laboratory Division and three (3) neighbor island District Health Laboratories to track and manage chemistry, microbiology, and lead/copper drinking water samples. The system was designed to manage information about the collected sample, analysis results, and other notes recorded by laboratory analysts. The system also facilitates the laboratory quality assurance, review, and approval process. Sample Analysis Tracking System includes a feature that allows a user to export drinking water sample result information into the electronic format required by Safe Drinking Water Branch for automatic import into other reporting systems.

The Environmental Information Manager has assisted the following programs with new IT systems:

Clean Water Branch

- Water Quality Data Viewer (Beach & Stream Warnings, Advisories, Postings)
- Water Pollution Control System
- Beach Notification Data Exchange Flow to EPA
- Mobile Field Inspection System
- Integrated Compliance Information System (ICIS)-National Pollutant Discharge Elimination System Data Exchange Flow to EPA
- WPC and e-Permitting Integration (In-progress)
- Polluted Runoff Control System (In-Progress)

Safe Drinking Water Branch

- Safe Drinking Water Information System Viewer
- GPS Device Location Coordinate Capture Application
- Sample Analysis Tracking System
- Sample Collection & Reservations System
- Groundwater Contamination Viewer
- Underground Injection Control System (In-Progress)

The screenshot displays the 'Sample Collection & Reservation System' web application. At the top, the header includes the Hawaii State Department of Health logo and the title 'Sample Collection & Reservation System'. A 'Login' link is visible in the top right corner. Below the header, there is a 'Tasks' section with five icons: 'Schedule/Initiate Samples', 'Find Samples', 'Review State Laboratory Calendar', 'Sampling Instructions / Resources', and 'SDWIS Viewer'. To the right of the tasks, there are two search sections: 'Find Sample' and 'Find Chain of Custody'. Each section has a text input field and a prompt to 'Enter the [SCRS/COC] number and use the Enter key to view [sample/COC] detail.'.

Solid and Hazardous Waste Branch

- Publicly-accessible Environmental Health Warehouse that identifies all Leaking Underground Storage Tank facilities in mapping or tabular formats

Hazard Evaluation and Emergency Response Office

- Website Redesign & Content Management Application (CMA)
- Homeland Emergency Response Exchange (HERE) Application
- iHEER System

State Laboratories Division: Environmental Health Analytical Services Branch

- Sample Analysis Tracking System
- Sample Collection & Reservations System

Office of Environmental Quality Control (OEQC)

- OEQC Viewer

To view all publicly-available systems, please visit: <https://eha-cloud.doh.hawaii.gov/portal>.



9. Office of Environmental Quality Control

The Office of Environmental Quality Control (OEQC) is an attached agency under the administration of DOH that is charged with implementing the Hawaii Environmental Policy Act (HEPA), Hawaii's environmental review law, which is set forth in H.R.S. Chapter 343. The Office receives and reviews hundreds of land use and other environmental disclosure documents every year, many of which have the potential to affect water quality. It publishes The Environmental Notice twice a month, which provides information to the public on Environmental Assessments and Environmental Impact Statements that are under review and available for comment.

The Office of Environmental Quality Control was created in recognition of the interdependence and critical relationship between our economy and our environment. Water provides a perfect example of how the economy and the environment go hand in hand. Unless we have adequate, clean supplies of water, our economy and human activities cannot and will not function properly.

Wai is water in Hawaiian, *waiwai* is wealth, and the two go together, inextricably. This Plan on water and water quality is critical to Hawaii's future – our health and our wealth. Planning and preparing for future needs and challenges can and will only happen if we have information on the existing supplies and quality of our water, and we take the time to study and understand the clear challenges ahead of us.

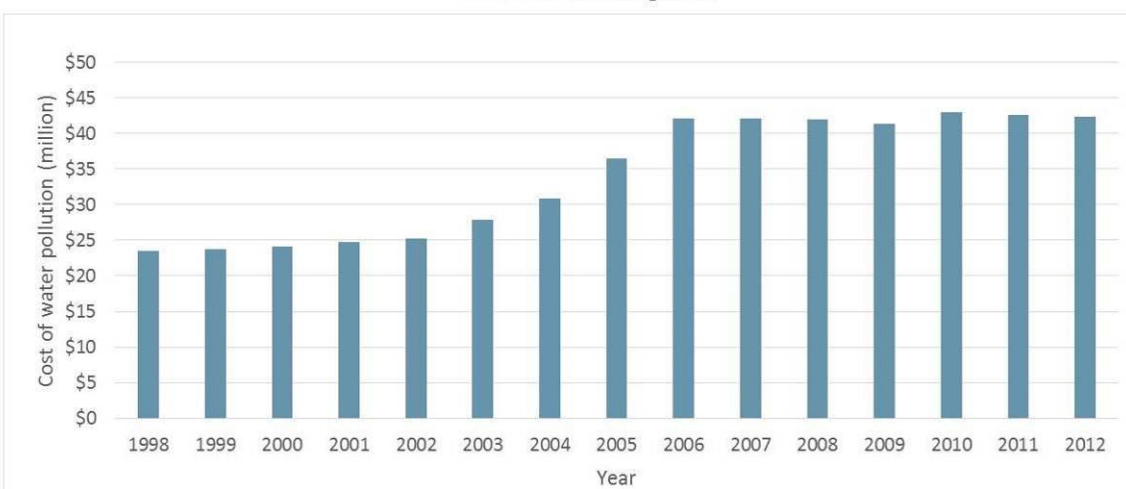
The Hawaii State Environmental Council Annual Report provides a snapshot of the issues, challenges, and accomplishments of the Environmental Council (EC) and the Office of Environmental Quality Control (OEQC) in monitoring the progress of state, county, and federal agencies in achieving the state's environmental goals and policies.

The subject of the 2012 and 2013 annual reports is the Genuine Progress Indicator (GPI). The goal of the Genuine Progress Indicator (GPI) is to create a standardized method for measuring the true health of the economy that includes environmental and social factors along with economic ones.

The Genuine Progress Indicator (GPI) study included an analysis of the cost of inland and coastal water pollution. The inland water pollution cost value was developed using State stream impairment ratios and a per capita value developed in a reference Genuine Progress Indicator (GPI) study. In 2012, the cost of water pollution for the State of Hawaii is valued at \$42 million (adjusted to 2000 US dollars).

This report is provided in compliance with H.R.S., Chapter 341-6: "The council shall monitor the progress of state, county, and federal agencies in achieving the State's environmental goals and policies and with the assistance of the director shall make an annual report with recommendations for improvement to the governor, the legislature, and the public no later than January 31 of each year."

Figure 5. Cost of water pollution from impaired streams in Hawai'i (1998–2012) (2000 USD); years 1999–2001, 2003, 2005, 2007–2009 are interpolated



Source: 2012 HI State Environmental Council Annual Report

Simply said, when it comes to water-related challenges, there is no scarcity. That is one more reason state agencies, the private sector, and the public must not look for solutions to water resource problems separately, haphazardly, or only after it is too late. The Water Quality Plan will help everyone examine water issues carefully, with thoughtful planning ahead and plenty of public input. The results will be better management, use, and protection of our precious water resources, promoting the public interest and maximizing our collective prosperity.

For more information on OEQC, please visit: <http://health.hawaii.gov/oeqc/>



SECTION IV: Relevant Statutes and Rules

There are a variety of federal and state statutes that establish requirements for DOH water quality work. These statutes set forth basic regulatory mandates, and DOH's Water Programs use these as a starting point to develop their various policies and regulations.

1. Federal Statutes

The Clean Water Act (CWA) and the Safe Drinking Water Act are the two most relevant Federal Acts referenced in the Water Quality Plan.

1.1 Clean Water Act

Clean Water Act (CWA): <http://www2.epa.gov/laws-regulations/summary-clean-water-act>

33 U.S.C. §1251 et seq. (1972), also referred to as CWA §101 et seq. (1972)

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into waters of the United States and Water Quality Standards for surface waters. The basis of the Act was enacted in 1948 and was called the Federal Water Pollution Control Act, but it was significantly reorganized and expanded in 1972. Under the Clean Water Act, EPA has implemented pollution control programs such as setting wastewater standards for industry and setting Water Quality Standards for all contaminants in surface waters. EPA has delegated authority to the State of Hawaii to administer the National Pollutant Discharge Elimination System (NPDES) program.

Relevant Clean Water Act Statutory Sections

| | |
|---------|---|
| §303(d) | Governs listing of impaired waters and establishment of TMDLs |
| §305(b) | Governs Water Quality Monitoring and Assessment Reports (Integrated Reports), which are due every 2 years on even years |
| §319 | Governs nonpoint source management programs |
| §401 | Governs Clean Water Act Water Quality Certification |
| §402 | Governs National Pollutant Discharge Elimination System (NPDES) permitting |
| §404 | Governs regulation of the discharge of dredged and/or fill materials in waters of the U.S., including wetlands |



1.2 Safe Drinking Water Act

Safe Drinking Water Act: <http://water.epa.gov/lawsregs/rulesregs/sdwa/>

The Federal Safe Drinking Water Act (SDWA), originally passed by Congress in 1974, is the statute that establishes regulation of drinking water in the United States. It was originally enacted to ensure that the public has a safe and healthy source of drinking water. Under the Safe Drinking Water Act, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The law underwent significant amendments in 1986 and 1996 that require many actions to protect drinking water sources.

Consistent with the Safe Drinking Water Act, DOH's administrative rules in H.A.R. Section 11-20-2, defines a public water system (PWS) as "a system which provides water for human consumption, through pipes or other constructed conveyances if such system has at least fifteen service connections or regularly serves at least twenty-five individuals or an average of twenty-five individuals daily at least sixty days per year." Human consumption includes: drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene. (from 63 Fed. Reg. 41941, August 5, 1998 - <http://www.gpo.gov/fdsys/pkg/FR-1998-08-05/pdf/98-20904.pdf>). The Safe Drinking Water Act does not regulate private drinking water wells that serve fewer than 25 individuals.

The Underground Injection Control (UIC) Program established in the Safe Drinking Water Act is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal to prevent contamination of underground drinking water resources.

Relevant Safe Drinking Water Act Statutory Sections

- §1412 Governs Regulatory Program (e.g., Standards and Regulation Development, Byproducts, Small Systems Technology)
- §1413 Governs Public Water Supply Supervision
- §1414 Governs Consumer Awareness (requires the annual "consumer confidence report")
- §1419 Governs Operator Certification
- §1420 Governs Capacity Development
- §1429 Governs State Ground Water Protection
- §1445 Governs Monitoring
- §1452 Governs Drinking Water State Revolving Fund (DWSRF)
- §1453 Governs Source Water Protection
- §1458 Governs Drinking Water Studies and Research

2. State Statutes

Available at: <http://www.capitol.hawaii.gov/hrscurrent/>

Water Quality Plan: H.R.S. Chapter 174C (State Water Code)

Solid Waste: H.R.S. Chapter 340A

Wastewater Treatment Personnel: H.R.S. Chapter 340B

Safe Drinking Water: H.R.S. Chapter 340E

Hawaii Law for Mandatory Certification of Public Water System Operators: H.R.S. Chapter 340F

Water Pollution: H.R.S. Chapter 342D

Nonpoint Source Pollution Management and Control: H.R.S. Chapter 342E

3. Hawaii Administrative Rules

Available at:

<http://gen.doh.hawaii.gov/sites/har/admrules/default.aspx>

Emergency Plan for Safe Drinking Water: H.A.R. Chapter 11-19

Public Water Systems: H.A.R. Chapter 11-20

Backflow and Cross-Connection Control: H.A.R. Chapter 11-21

Underground Injection Control: H.A.R. Chapter 11-23

12/21/2000 Amendment, Underground Injection Control: H.A.R. Chapter 11-23a

Certification of Public Water System Operators: H.A.R. Chapter 11-25

Water Quality Standards: H.A.R. Chapter 11-54

Water Pollution Control: H.A.R. Chapter 11-55

Wastewater Systems: H.A.R. Chapter 11-62

Water Pollution Control Revolving Fund or Environmental State Revolving Fund: H.A.R. Chapter 11-65



4. Traditional and Customary Rights

Kuleana Act of 1851 – Native Tenants' Rights: H.R.S. Section 7-1

Hawaiian Use: H.R.S. Section 1-1

1978 Hawaii Constitution Article XII, Section 7



SECTION V: Information Sources

1. General

- **Statewide** - Charting Tomorrow – A Plan for a Brighter Future in Hawaii:
<http://neilabercrombie.com/charting-tomorrow-plan-for-hawaii/>
 - New Day Plan: <http://governor.hawaii.gov/a-new-day-in-hawaii-plan/>
- **DOH**
<http://health.hawaii.gov/>
 - DOH Strategic Plan: <http://health.hawaii.gov/opppd/>
- **Environmental Health Administration**
 - Environmental Health Management Report:
<http://health.hawaii.gov/epo/home/environmental-health-management-report/>

2. Water Branches

<http://health.hawaii.gov/water/>

- a. **Clean Water Branch (CWB):** <http://health.hawaii.gov/cwb/>
 - State of Hawaii Integrated Reports (Clean Water Act §§ 303(d), 305(b))
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/integrated-report-and-total-maximum-daily-loads/>
 - 2013 Water Quality Maps
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/>
 - Polluted Runoff Control Program
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/>
 - Hawaii's Implementation Plan for Polluted Runoff Control
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/prc-hawaiis-implementation-plan/>
 - Coastal Nonpoint Pollution Control Program Management Plan
<http://planning.hawaii.gov/czm/initiatives/coastal-nonpoint-pollution-control-program/hawaii-cnppc-management-plan-1996/>
 - End of Fiscal Year Reports
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/>
 - Watershed Planning Guidance
http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/hi_watershed_guidance_final.pdf

- Wastewater
<http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/polluted-runoff-control-program/wastewater/>

b. Safe Drinking Water Branch: <http://health.hawaii.gov/sdwb/>

- Ground Water Protection Program
<http://health.hawaii.gov/sdwb/gwprotection/>
- Ground Water Protection Plan
(no link available at this time)
- Water Resource Protection Program
(no link available at this time)
- Groundwater Contamination Viewer
<http://health.hawaii.gov/sdwb/groundwater-contamination-viewer/>
- Comprehensive State Groundwater Protection Program Strategy/Plan
(no link available at this time)
- Groundwater Quality Monitoring Plan
(no link available at this time)
- Groundwater Resources Assessment Strategy/Plan
(no link available at this time)
- Underground Injection Control Program
<http://health.hawaii.gov/sdwb/uicprogram/>
- Source Water Assessment and Protection Program
<http://health.hawaii.gov/sdwb/swap/>
- Drinking Water State Revolving Fund
<http://health.hawaii.gov/sdwb/drinking-water-state-revolving-fund/>

c. Wastewater Branch (WWB): <http://health.hawaii.gov/wastewater/>

- Guidelines for the Treatment and Reuse of Recycled Water
<http://health.hawaii.gov/wastewater/files/2013/06/reuse-final.pdf>
- Guidelines for Livestock and Waste Management
http://health.hawaii.gov/wastewater/files/2013/06/livestock_appendix.pdf
- DOH Large Capacity Cesspools Memorandum
<http://health.hawaii.gov/wastewater/files/2013/06/lccmemo.pdf>
- Clean Water State Revolving Fund

<http://health.hawaii.gov/wastewater/home/cwsrf/>

3. Supporting Division, Branches and Offices

3.1 State Laboratories Division (SLD)

<http://health.hawaii.gov/statelab/>

- Environmental Health Analytical Services Branch

<http://health.hawaii.gov/statelab/ehasb/>

3.2 Solid and Hazardous Waste Branch (SHWB)

<http://health.hawaii.gov/shwb/>

- Guidance Documents
<http://health.hawaii.gov/shwb/hazfaq/>
- Underground Storage Tank Closure and Release Response Technical Guidance Manual
<http://www.hawaiidoh.org/references/HDOH%202000.pdf>
- Groundwater Monitoring Guidance Document for Landfills
<http://health.hawaii.gov/shwb/files/2013/06/higwmdoc.pdf>

3.3 Hazard Evaluation & Emergency Response Office (HEER)

<http://eha-web.doh.hawaii.gov/eha-cma/Org/HEER/>

- Screening for Environmental concerns at Sites with Contaminated Soil and Groundwater
<http://eha-web.doh.hawaii.gov/eha-cma/Downloads/HEER/ealvolume2app2to9fall2011.pdf>
- Pesticide Studies
<http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/HDOH-Pesticide-Studies-and-Coordination-with-other-Agencies>

3.4 Environmental Planning Office (EPO)

<http://health.hawaii.gov/epo/>

- Land Use Planning Reviews
<http://health.hawaii.gov/epo/home/landuse-planning-review-program/>
- Climate Change
<http://health.hawaii.gov/epo/climate-change/>

3.5 Compliance Assistance Office (CAO)

<http://health.hawaii.gov/cao/>

3.6 Environmental Information Manager (EIM)

<https://eha-cloud.doh.hawaii.gov/>

3.7 Office of Environmental Quality Control (OEQC)

<http://health.hawaii.gov/oegc/>

4. Others

4.1 Commission on Water Resource Management:

- Hawaii Water Plan
<http://dlnr.hawaii.gov/cwrmp/planning/hiwaterplan/>
- Water Resource Protection Plan
<http://dlnr.hawaii.gov/cwrmp/planning/hiwaterplan/wrpp/>

4.2 Department of Land and Natural Resources:

- Engineering Division: State Water Projects Plan:
<http://dlnr.hawaii.gov/cwrmp/planning/hiwaterplan/swpp/>
- The Rain Follows The Forest Plan
<http://dlnr.hawaii.gov/rain/plan/>
- Hawaii Water Conservation Plan
<http://files.hawaii.gov/dlnr/cwrmp/planning/hwcp2013.pdf>

4.3 Department of Agriculture:

- Agricultural Water Use and Development Plan – (December 2003)
<http://hdoa.hawaii.gov/wp-content/uploads/2013/07/AWUDP-Dec2003rev2004.pdf>

4.4 Department of Business, Economic Development, and Tourism:

- Coastal Zone Management
<http://planning.hawaii.gov/czm/>
- Ocean Resources Management Plan
<http://planning.hawaii.gov/czm/ocean-resources-management-plan-ormp/>

4.5 Federal:

- EPA Strategic Plan
<http://www2.epa.gov/planandbudget/strategicplan>

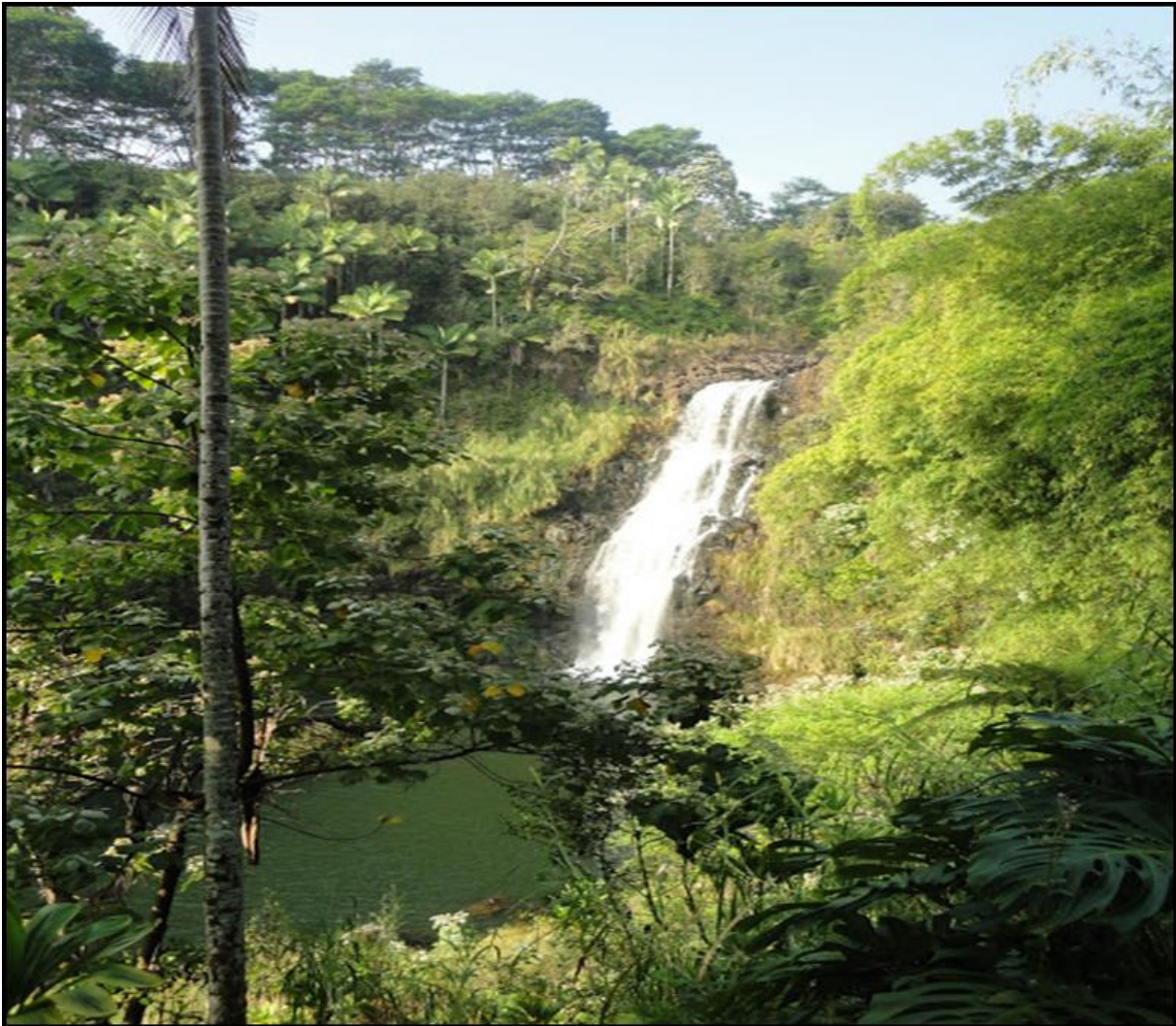
4.6 Counties:

- County Water Use and Development Plans
<http://dlnr.hawaii.gov/cwrmp/planning/hiwaterplan/countyplans/>
- Kauai Water Use and Development Plan
<http://files.hawaii.gov/dlnr/cwrmp/planning/wudpka1990.pdf>
- Oahu Water Management Plan
<http://files.hawaii.gov/dlnr/cwrmp/planning/wudpoa1990.pdf>
- Maui County Water Use and Development Plan
<http://files.hawaii.gov/dlnr/cwrmp/planning/wudpoa1990.pdf>
- Hawaii County Water Use and Development Plan
<http://files.hawaii.gov/dlnr/cwrmp/planning/wudpha2012.pdf>



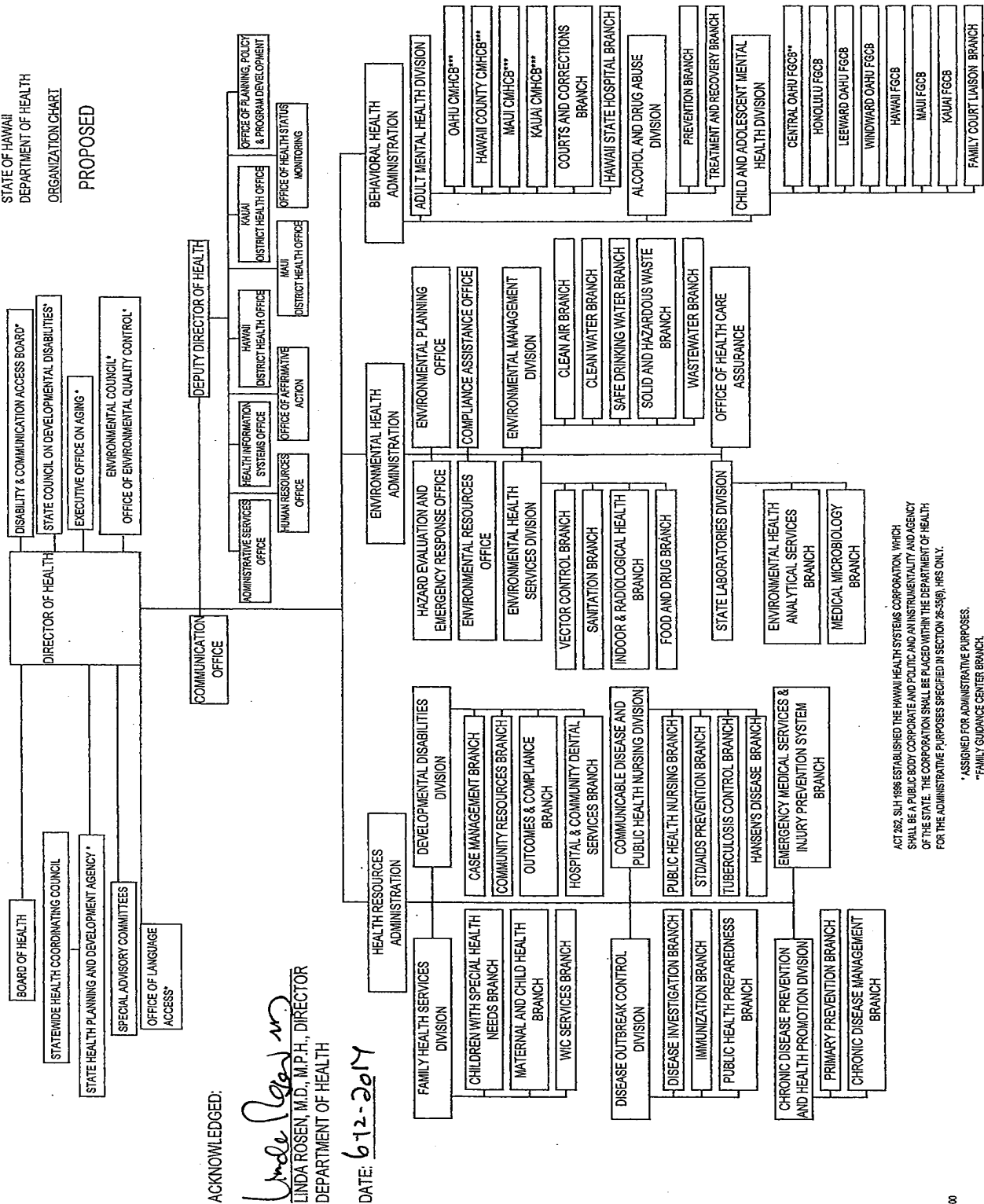
SECTION VI: Organization Charts

DOH is one of the largest, most diverse, and multifaceted agencies in Hawaii. It has a broad mandate to monitor, protect, and enhance the State's health and environment. It is comprised of four administrations, including Environmental Health, Health Resources, Behavioral Health, and General Administration and has four neighbor island district health offices located on Hawaii (Kona and Hilo), Maui, and Kauai.



STATE OF HAWAII
DEPARTMENT OF HEALTH
ORGANIZATION CHART

PROPOSED



ACKNOWLEDGED:

Linda Rosen
LINDA ROSEN, M.D., M.P.H., DIRECTOR
DEPARTMENT OF HEALTH

DATE: 6-12-2014

ACT 262, SLH 1986 ESTABLISHED THE HAWAII HEALTH SYSTEMS CORPORATION, WHICH SHALL BE A PUBLIC BODY CORPORATE AND POLITICAL AND INSTRUMENTALITY AND AGENCY OF THE STATE. THE CORPORATION SHALL BE PLACED WITHIN THE DEPARTMENT OF HEALTH FOR THE ADMINISTRATIVE PURPOSES SPECIFIED IN SECTION 26-35(6), HRS ONLY.

* ASSIGNED FOR ADMINISTRATIVE PURPOSES.

** FAMILY GUIDANCE CENTER BRANCH.

*** COMMUNITY MENTAL HEALTH CENTER BRANCHES.

Environmental Health Administration Organization

| HAWAII DEPARTMENT OF HEALTH, ENVIRONMENTAL HEALTH ADMINISTRATION | | |
|---|---------|--|
| DEPUTY DIRECTOR, ENVIRONMENTAL HEALTH, GARY GILL (PHONE 586-4424) | | |
| | | |
| Environmental Health Services Division | --- --- | Environmental Management Division |
| Lynn Nakasone (phone 586-4576) | | Stuart Yamada P.E. (phone 586-4305) |
| Indoor & Radiological Health Branch | | Clean Water Branch |
| Jeff Eckerd (phone 586-4700) | | Alec Wong P.E. (phone 586-4309) |
| | | Solid & Hazardous Waste Branch |
| Food Safety & Vector Control Branch | | Steven Chang P.E. (phone 586-4226) |
| Peter Oshiro (phone 586-8000) | | Safe Drinking Water Branch |
| | | Joanna Seto P.E. (phone 586-4258) |
| | | Clean Air Branch |
| Hazard Evaluation & Emergency Response Office | --- | Nolan Hirai P.E. (phone 586-4200) |
| Dr. Keith Kawaoka (phone 586-4249) | | Wastewater Branch |
| | | Sina Pruder P.E. (phone 586-4294) |
| Environmental Resources Office | | |
| Nancy Bartter (phone 586-4575) | --- --- | Environmental Planning Office |
| | | Laura McIntyre AICP (phone 586-4337) |
| Environmental Information Manager | | |
| Andy Matsumoto (phone 586-4641) | --- --- | Compliance Assistance Office |
| | | Genevieve Salmonson (phone 586 4527) |
| | | |
| State Laboratories Division | | |
| Dr. Christian Whelen (phone 453-6650) | | |
| Environmental Health Analytical Services Branch | | |
| Wanda Chang (phone 453-6683) | | |
| Medical Microbiology Branch | | |
| Gail Kunimoto (phone 453-6711) | | |
| Laboratory Emergency Response Program | | |
| Rebecca Sciulli (phone 453-5993) | | |

SECTION VII: Water Quality Maps

