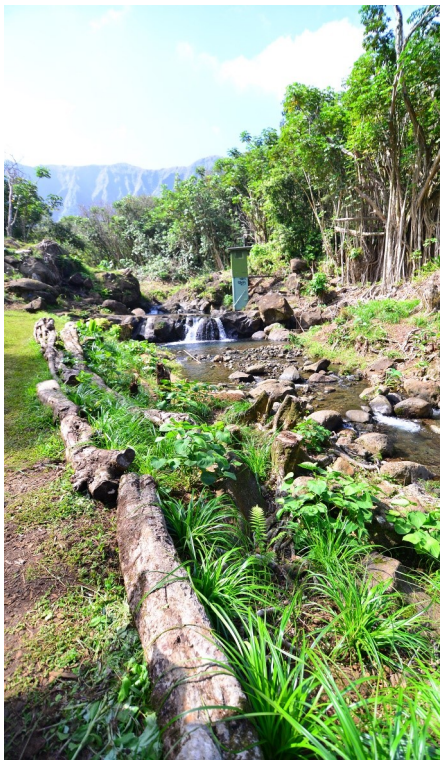
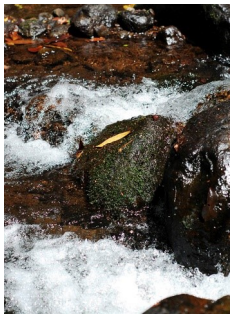
Hawai'i State Department of Health | Clean Water Branch
Polluted Runoff Control Program

2015 End of Year Report

October 1, 2014 to September 30, 2015





919 Ala Moana Boulevard Room 301 | Honolulu, Hawai'i 96814-4920 | hawaii.gov/doh/pollutedrunoffcontrol

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Executive Summary

Fiscal Year (FY) 2015 was a successful year for the State Department of Health (DOH) Clean Water Branch's (CWB) Polluted Runoff Control Program (Program). The U.S. Environmental Protection Agency (EPA) approved the Program's updated Nonpoint Source (NPS) Management Plan for the State of Hawai'i, which was completed in 2000. The updated management plan outlines and details new goals and implementation strategies to address the State's polluted runoff challenges over the next five years. It also serves as a guide to direct federal, state, and county resources towards NPS pollution control measures and activities aimed at improving water quality and protecting water resources in Hawai'i.

The Program also moved another step closer to becoming fully staffed. In 2015, the Program filled two positions, Program Specialist V and Office Assistant III, and began the process of converting its vacant Grants Management Specialist IV position to a General Professional IV position. The Program intends to fill the position in 2016.

Currently, there are eleven Clean Water Act (CWA) Section 319(h)-funded projects (or awarded projects awaiting contract execution), four of which are located within the CWB's priority watersheds (He'eia, West Maui, and Hanalei Bay). These projects range from implementation of Best Management Practices (BMPs) on agricultural lands to the targeted construction of bio-swales. Four 319(h)-funded projects have been completed during this fiscal year. The Program is proud to report the following load reductions due to its efforts implementing projects throughout the State:

Nitrogen Load Reduction:	**12,032 lbs**
Phosphorous Load Reduction:	**1,801 lbs**
Sediment Load Reduction:	**3,344 tons**

The Program and the Department of Business, Economic Development and Tourism's (DBEDT) Office of Planning (OP) continue to work together to obtain approval of the State's Coastal Nonpoint Pollution Control Program (CNPCP). Currently, six management measures to control NPS pollution in urban areas and one administrative element for monitoring and tracking require approval by the EPA and the National Oceanic and Atmospheric Administration (NOAA). In 2015 the Program and OP met with the CWB, the DOH Wastewater Branch (WWB), and the EPA on several occasions to outline the path to obtain approval for these unapproved management measures.

The Program focused most of its outreach efforts on building and strengthening partnerships with other water quality-related agencies and programs. These partnerships enable the Program to leverage resources and funding for 319(h) projects, which increases the likelihood of successful project implementation and water quality improvements. In 2015 the Program discussed potential projects with the DOH water branches, the Department of Land and Natural Resources (DLNR), the University of Hawai'i, and Maui County. The Program also continues to dedicate some outreach and education efforts towards the general public to instill behavioral changes and improve water quality over time.

On September 25, 2015 the DOH was awarded $1,161,300 from the EPA. The DOH will commit $774,200 in non-federal match as required by the 319(h) grant conditions. This funding will support the Program's staff and overhead, finance polluted runoff watershed implementation projects in priority watersheds, and sponsor NPS education and outreach events.

319(h)-Funded Project Summaries

The following table summarizes all completed, continuing, and new projects for FY15. Detailed descriptions and additional information can be found in the following project-specific pages below.

Completed Projects	Key Outcomes and Updates
He'eia Stream Riparian Restoration Phase II (Figure 1, A)	The riparian corridor mauka of the Phase I site was planted with native sedges. Approximately 800 meters of streambank was restored on both edges of the stream, up to the U.S. Geological Survey (USGS) Stream Gage Station. This project was completed in June 2015. **Estimated Load Reductions:** ▪ **Total Nitrogen: 303 lbs/yr** ▪ **Total Phosphorous: 50 lbs/yr** ▪ **Sediment: 25 tons/yr**
Hawai'i Homeowner Raingarden Manual and Implementation (Figure 1, B)	The contractor developed a homeowner raingarden manual for residents throughout the State to install raingardens on their property. Three raingardens were installed in the Ko'olaupoko watersheds in public areas (He'eia State Park, Hawai'i Pacific University, and Windward Community College) for the community to view and to demonstrate practices featured in the manual. Fifteen additional raingardens have been installed at private homeowner residences. The manual was distributed to local community groups and libraries and is also available online. This project was completed in August 2015. **Estimated Load Reductions:** ▪ **Total Nitrogen: 75 lbs/yr** ▪ **Total Phosphorous: 36 lbs/yr** ▪ **Sediment: 3 tons/yr**
Waimanalo Stream Restoration and Community Outreach Phase II (Figure 1, C)	Nine farms worked with the contractor to install cost-shared BMPs in Waimanalo and Kahawai watersheds. The contractor sponsored two field days for local farmers and other community members to view the BMPs and learn about the cost-share project. This project was completed in June 2015. **Estimated Load Reductions:** ▪ **Total Nitrogen: 720 lbs/yr** ▪ **Total Phosphorous: 272 lbs/yr** ▪ **Sediment: 156 tons/yr**
Windward Mall Raingarden Retrofit (Figure 1, D)	Retrofits of three parking lots at the mall were completed in September 2015. The project was completed in September 2015, with the contractor and landowner continuing to maintain the sites. **Estimated Load Reductions:** ▪ **Total Nitrogen: 44.4 lbs/yr** ▪ **Total Phosphorous: 7.2 lbs/yr** ▪ **Sediment: 0.7 tons/yr**

Continuing Projects	Key Outcomes and Updates
He'eia Stream Riparian Restoration Phase III (Figure 1, E)	The contractor removed approximately three acres of mangroves and replaced them with native plants in the lower reach of He'eia Stream. The contractor also began hillside scarring restoration in 2015. A site visit will be conducted in January 2016. **Estimated Load Reductions:** ▪ **Total Nitrogen: 2,200 lbs/yr** ▪ **Total Phosphorous: 800 lbs/yr** ▪ **Sediment: 250 tons/yr**
Manoa Watershed Improvement Project (Figure 1, F)	The contractor started restoration of approximately 1,800 feet of riparian corridors in the upper Ala Wai watershed by implementing BMPs from the property owner's conservation plan. BMPs include streambank stabilization and replacing invasive species with native plants. A site visit will be conducted in January 2016. **Estimated Load Reductions:** ▪ **Sediment: 198 tons/yr**
Ka'alaea and Waiahole Stream Restoration (Figure 1, G)	The contractor is implementing cost-share practices from approved conservation plans for eight farms. An education and outreach day was held in October 2015. A site visit will be scheduled for February 2016. **Estimated Load Reductions:** ▪ **Total Nitrogen: 1,200 lbs/yr** ▪ **Total Phosphorus: 410 lbs/yr** ▪ **Sediment: 700 tons/yr**
Watershed Based Plan (WBP) for the Kaiaka Watershed (Figure 1, H)	The Program is jointly funding the development of a WBP for Kaiaka watershed with the City and County of Honolulu (CCH).
Windward Community College Low-Impact Retrofit Phase II (Figure 1, I)	The contractor will reduce impervious surfaces at the site and install a pre-treatment area, two large parking infiltration islands, retrofitted storm drains within the adjacent rain garden, and interpretive signage. **Estimated Load Reductions:** ▪ **Total Nitrogen: 12 lbs/yr** ▪ **Total Phosphorous: 6 lbs/yr** ▪ **Sediment: 1.1 tons/yr**
Agricultural District Erosion Control in Wahikuli and Honokowai Watersheds: Assessment and Installation (Figure 12, A)	Agricultural roads and fallow fields in Wahikuli and Honokowai are targeted for BMs to decrease sediment loading. A site visit will be conducted in November 2015. **Estimated Load Reductions:** ▪ **Sediment: 140 tons/yr**
Reducing Sedimentation in the Hakioawa Watershed (Figure 12, B)	The contractor continues to revegetate barren land with native plants and install geotextile rolls to reduce sediment runoff. A site visit was conducted in January 2015. **Estimated Load Reductions:** ▪ **Sediment: 500 tons/yr**
Implementation of Best Management Practices in the Wai'ula'ula Watershed (Figure 15, A)	To keep the Waikoloa and Wai'ula'ula streams in pristine condition, the contractor began installing raingardens in the local shopping center, stabilizing streambanks, and restoring riparian corridors via revegetation throughout the watershed. A site visit was conducted in August 2015. **Estimated Load Reductions:** ▪ **Total Nitrogen: 1,400 lbs/yr** ▪ **Total Phosphorus: 220 lbs/yr** ▪ **Sediment: 1,200 tons/yr**

New Projects	Key Outcomes and Updates
Pelekane Bay Watershed Restoration Project, Phase 3 (Figure 15, B)	The contractor will continue maintaining existing sediment check dams, continue feral ungulate control, and has installed 15 additional check dams to decrease sediment loading in Pelekane Bay by approximately 10 tons per check dam. A site visit will be conducted in March 2016. **Estimated Load Reductions:** ▪ **Sediment: 150 tons/yr**
Replacing Small Capacity Cesspools with Advanced Wastewater Systems in Hanalei Bay Watershed (Figure 18, A)	This project will provide funding to cost-share the replacement of small capacity cesspools with advanced wastewater systems in the Hanalei Bay region. A minimum of 12 of the 15 cesspool swaps will be owner-occupied properties. The targeted NPS pollutants include bacteria and nutrients. **Estimated Load Reductions:** ▪ **Total Nitrogen: 4,815 lbs/yr** ▪ **Fecal Coliforms: 1.21×10^{18} CFU/yr** ▪ **Biological Oxygen Demand: 846 lbs/yr** ▪ **Total Suspended Solids: 418 lbs/yr**
Watershed Implementation Project for the Ahupua'a of Waipa (Figure 18, B)	The contractor will replace cesspools, remove feral ungulates, install constructed wetlands, install livestock fencing/watering, conduct stream restoration, and revegetate and control erosion in the forested uplands of Waipa watershed. **Estimated Load Reductions:** ▪ **Total Nitrogen: 1263 lbs/yr** ▪ **Fecal Coliforms: 2.41×10^{17} CFU/yr** ▪ **Biological Oxygen Demand: 169.2 lbs/yr** ▪ **Total Suspended Solids: 663 lbs/yr** ▪ **Sediment: 20 tons/year**

O‘ahu 319(h) Projects

There are nine 319(h)-funded projects on the island of O‘ahu. Below is a description of the projects, including contractor information, grant award and match amounts, project start and end dates, project location, partners, pollutants addressed, and environmental results.

Total 319(h) funds allocated to projects on O‘ahu: $2,447,270
Total matching funds for 319(h) projects on O‘ahu: $1,157,331

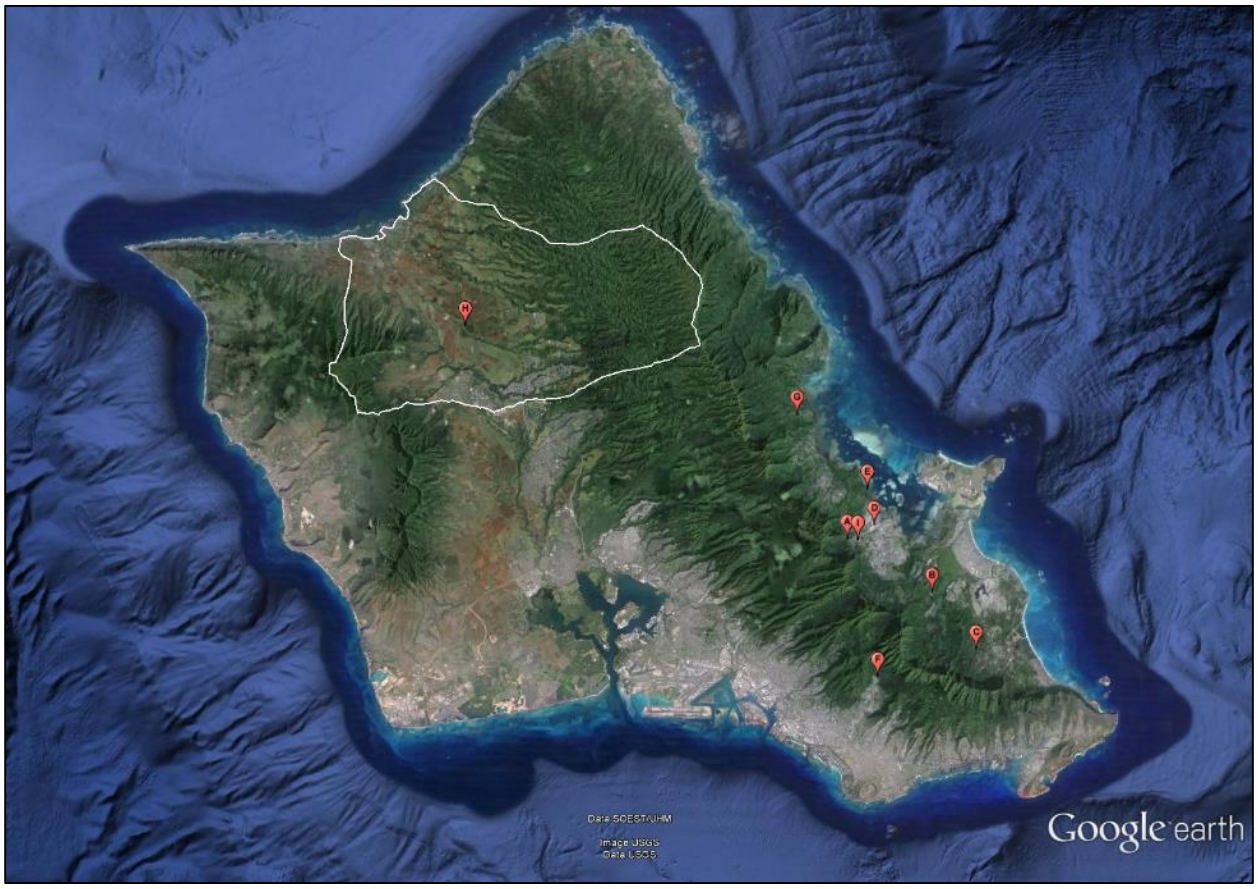


Figure 1: Aerial view of O‘ahu project locations

He‘eia Stream Riparian and Water Quality Improvements Phases II & III (Figure 1, A, E)

Contractor: Hui O Ko‘olaupoko
Todd Cullison, Director
1051 Keolu Drive #208, Kailua, HI 96734
(P) 808-277-5611
www.huihawaii.org

Phase II 319(h) Funds:	$215,526	**Phase II Match:**	$232,238
Phase III 319(h) Funds:	$747,026	**Phase III Match:**	$284,372

Phase II Start/End: 6/29/2012 – 1/28/2015
Phase III Start/End: 6/20/2013 – 6/19/2016

Location: He‘eia Watershed

Partners: CWB, Hui Ku Maoli Ola, Hawai‘i Pacific University, Papahana Kuaola

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
He‘eia Stream has several water quality impairments, including excessive Nitrate+Nitrite, Total Phosphorous, Turbidity, and Total Suspended Solids. Implementation of the Ko‘olaupoko WBP in He‘eia is necessary to mitigate some of these impairments, which are in part caused by severe streambank erosion and overgrowth of non-native invasive plant species. The lower watershed is dominated by mangroves and other non-native invasive vegetation (Figure 5).

In Phase II of the project, the contractor stabilized 800 meters of streambanks and riparian areas along He‘eia Stream by removing non-native plants and replacing them with native and naturalized shrubs and sedges (Figure 4), which have a greater potential to reduce erosion and increase nutrient uptake. Native and naturalized plants used in restoration include ti (*Cordyline* spp.), hinahina (*Heliotropium anomalum*), kalo (*Colocasia esculenta*), hapu‘u ferns (*Cibotium* spp.), and kukui (*Aleurites moluccana)*. The contractor also educated the nearby community about NPS pollutants via pamphlets, hosting public site visits and volunteer restoration days, and meeting with nearby homeowners to discuss proper fertilizer usage.

In Phase III of the project, the contractor is working in both the upper and lower areas of the watershed. In the upper areas of the watershed, invasive vegetation with shallow roots on steep gradients have created unstable land, resulting in large erosional scars. The project is stabilizing the scarring by installing approximately 24,000 square feet of erosion control matting planted with native vegetation. Sedimentation basins measuring approximately 6,000 square feet each are being installed at the base of the scars to remove most of the visible erosional inputs. In the lower watershed areas, the contractor has nearly completed removing mangroves in approximately three out of the four proposed acres of wetlands and has begun replanting the area with native and naturalized plants.

Over 10,000 volunteer hours have been contributed to the three phases of this project.

Figure 2: Mangrove removal and replanting of native plants at the mouth of He‘eia Stream

Figure 3: Upper He‘eia Stream riparian restoration as of December 2015

Environmental Results:
Ground cover has increased in the riparian areas and improved the overall water quality by decreasing sediment loads and water movement from the streambanks during rain events. Sediment loading has been reduced by approximately 275 tons per year. Total Nitrogen has been reduced by approximately 2,503 lbs, and Total Phosphorous has been reduced by approximately 850 lbs. Revegetation with native plants has also increased native plant diversity in the streambank and stream mouth areas, increasing the probability that native flora and fauna will repopulate their natural habitats. During water quality monitoring, O‘opu have been spotted in the stream mouth corridor.

Hawai‘i Homeowner Raingarden Manual and Implementation (Figure 1, B)

Contractor: Hui o Ko‘olaupoko
Todd Cullison, Director
1051 Keolu Drive #208, Kailua, HI 96734
(P) 808-277-5611
www.huihawaii.org

319(h) Funds: $107,064
Match: $119,687

Start/End: 3/1/2011 – 8/31/2015

Location: Ko‘olaupoko Watershed

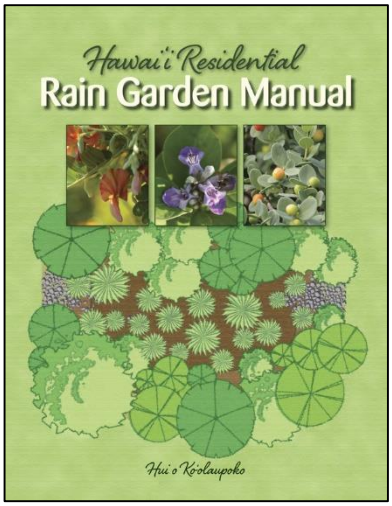


Figure 4: Hawai‘i Residential Rain Garden Manual

Partners: CWB, Hui Ku Maoli Ola

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
Hui O Koʻolaupoko developed a raingarden manual that enables homeowners to customize raingardens for their specific locations (e.g., Windward, Leeward, mauka (mountain), and makai (ocean)). Raingardens have been installed in the Heʻeia State Park, Hawaiʻi Pacific University's Windward Campus, and Windward Community College to demonstrate to the community the benefits of installing raingardens. Eight raingardens have been installed by residents in the Pikoiloa neighborhood and an additional seven raingardens have been installed in homes throughout the Koʻolaupoko Watershed.

The contractor is working with the community to increase raingarden awareness and installation throughout the Koʻolaupoko watershed. The raingarden manuals have also been distributed to local public libraries and community groups and is available online at:
http://www.huihawaii.org/uploads/1/6/6/3/16632890/raingardenmanual-web-res-smaller.pdf

Environmental Results:
Total Nitrogen, Total Phosphorous, and Sediment load reductions resulting from raingarden installations have been estimated at 75 lbs, 36 lbs, and 3 tons, respectively.

Figure 5: Signs have been posted throughout neighborhoods in the Koʻolaupoko Moku to inform residents about raingardens

Waimanalo Stream Restoration and Community Outreach Phase II (Figure 1, C)

Contractor: O'ahu Resource Conservation & Development Council
Jean Brokish, Interim Executive Director
P.O. Box 209, Kunia, HI 96759
(P) 808-622-9026
oahurcd.org

319(h) Funds: $162,417
Match: $51,100

Start/End: 4/30/2013 – 6/30/2015

Location: Waimanalo Watershed

Partners: CWB, Hui O Ko'olaupoko, US Department of Agriculture Natural Resources Conservation Service (NRCS), Windward O'ahu Soil and Water Conservation District

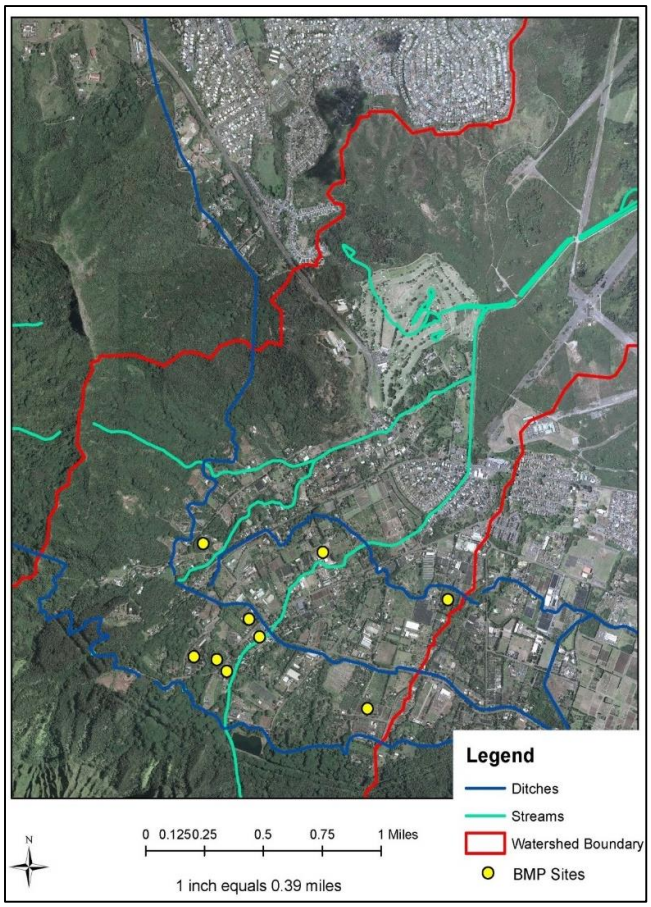


Figure 6: Aerial view of the locations of farms where BMPs have been implemented

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
Nine farms received a portion of 319(h) funding to cost-share BMPs from their conservation plans. The BMPs included compost structures, soil remediation and mulching, riparian area protection (riparian vegetative buffers), and slope stabilization. Two field days for education and outreach were held to demonstrate the effectiveness of the BMPs.

Environmental Results:
Estimated load reductions from implementation of the nine conservation plans are approximately 720 lbs of Total Nitrogen, 272 lbs of Total Phosphorous, and 156 tons of Sediment.

Windward Mall Raingarden Retrofit (Figure 1, D)

Contractor: Hui O Ko'olaupoko
Todd Cullison, Director
1051 Keolu Drive #208, Kailua, HI 96734
(P) 808-277-5611
www.huihawaii.org

319(h) Funds: $222,218
Match: $62,516

Start/End: 6/21/2013 – 10/31/2015

Location: Ka‘elepulu Watershed

Partners: CWB, Hui Ku Maoli Ola, Kamehameha Schools Bishop Estate, Roth Ecological Design Inc., Green Girl Land Development Solution

Pollutants Addressed: Total Nitrogen, Nitrate + Nitrite, Total Phosphorous, Sediment, and Vehicular Residue

Description:

Windward Mall is located in He‘eia watershed and is the largest single site of impervious surface in the watershed. This project reduced the amount of NPS pollutants entering directly into the Kahuhipa Stream from parking lots at the Windward Mall (Figure 8) by mimicking the natural processes of infiltration. Three raingardens composed of soils that aid infiltration and native plants for phytoremediation and six BMPs were strategically sited to reduce stormwater flows and impervious surface runoff. The project also informed the public about NPS pollutants in a highly visible area via interpretive signs, an informational kiosk, and landowner presentations.

Figure 7: The Windward Mall upper parking lot retrofit project includes installing a raingarden with native plants to reduce stormwater flows. The project was completed in September 2015 (photo taken December 2015)

Environmental Results:

Load reductions for Total Nitrogen, Total Phosphorous, and Sediment are estimated to be 44.4 lbs, 7.2 lbs, and 0.7 tons, respectively.

Figure 8: A large raingarden was installed to trap stormwater as part of the Windward Mall parking lot project completed in September 2015 (photo taken December 2015)

Manoa Watershed Improvement Project (Figure 1, F)

Contractor: Ala Wai Watershed Association, Inc.
Karen Ah Mai, Executive Director
2146 St. Louis Drive, Honolulu, HI 96816
(P) 808-955-7882
www.alawai.org

319(h) Funds: $298,212
Match: $75,000

Location: Manoa Watershed

Start/End: 6/5/2014 – 12/5/2016

Partners: NRCS, O'ahu RC&D, CCH, U.S. Army Corps of Engineers, South O'ahu Soil and Water Conservation District, Department of Land and Natural Resources (DLNR)

Pollutants Addressed: Sediment

Description:
Manoa Stream is on the DOH's 303(d) list for Total Nitrogen, Nitrate + Nitrite, Total Phosphorous, and Turbidity. The Ala Wai watershed WBP (which includes Manoa watershed) identifies sediment from conservation areas as a major pollutant affecting the water quality of Manoa Stream and ultimately the Ala Wai Canal. The goal of this project is to reduce sediment loading by improving and stabilizing 1,800 feet of streambanks and forest buffers in and adjacent to a private parcel operated by Paradise Park. This goal will be accomplished via the removal of invasive species, row planting of native flora on sloping and near-vertical banks, installing vegetated buffers and erosion matting while new plants take root, and removing trees to increase sunlight. The contractor has started clearing non-native invasive plants and replacing them with native vegetation. Community education will also be key to increasing stewardship of the watershed and preventing overgrowth of invasive plants.

Figure 9: Understory and upper section of Manoa streambank restoration area (photo taken December 2015)

Environmental Results:
Implementing these management measures will decrease erosion in the upper conservation areas of the watershed, resulting in sediment load reductions of 198 tons per year.

Ka‘alaea and Waiahole Stream Restoration (Figure 1, G)

Contractor: O‘ahu Resource Conservation & Development Council
Jean Brokish, Interim Executive Director
P.O. Box 209, Kunia, HI 96759
(P) 808-622-9026
oahurcd.org

319(h) Funds: $298,791
Match: $75,518

Start/End: 9/19/2014 – 9/18/2017

Location: Ka‘alaea & Waiahole Watersheds

Partners: NRCS, Windward Soil and Water Conservation District
Pollutants Addressed: Total Nitrogen, Nitrate + Nitrite, Total Phosphorus, and Sediment

Description:
Ka‘alaea Stream is on DOH’s 303(d) list for Total Nitrogen, Nitrate + Nitrite, and turbidity, and Waiahole Stream is listed for Total Phosphorous and Nitrate + Nitrite. Agricultural BMPs in the Ka‘alaea and Waiahole watersheds are identified as priorities in the Ko‘olaupoko WBP, and several agricultural parcels have been identified for conservation planning and implementation in the WBP. The O‘ahu Resource Conservation and Development Council will implement cost-share agreements with at least 20 farmers to install and maintain BMPs identified in approved conservation plans. To date, four farmers are implementing BMPs from approved conservation plans. Four field days are scheduled to provide farmers the opportunity to demonstrate the benefits of conservation planning and implementation.

Figure 10: A local farm in the Ka‘alaea watershed adjacent to Ka‘alaea stream (photo taken December 2015)

Environmental Results:
The contractor has estimated that with twenty farms implementing BMPs, the project should decrease Total Nitrogen by 1,200 lbs per year, Total Phosphorous by 410 lbs per year, and Sediment by 700 tons.

Watershed-Based Plan for the Kaiaka Watershed (Figure 1, H)

Contractor: CCH Department of Facilities Maintenance, Storm Water Quality Branch
Randall Wakumoto
1000 Uluohia Street, Suite 212, Kapolei, HI 96707
(P) 808-768-3300
www.cleanwaterhonolulu.com/storm

319(h) Funds: $210,000
Match: $210,000

Start/End: 12/2/2014 – 12/1/2015

Location: Kaiaka Watershed

Partners: AECOM, Townscape Inc.

Description:
Kaiaka Bay is on DOH's 303(d) list as impaired for Enterococci, Total Nitrogen, Nitrate + Nitrite, Ammonium, Turbidity and Chlorophyll-A. A watershed plan that meets the EPA's nine key elements is being developed to fund implementation projects. The Watershed Analysis Risk Management Framework (WARMF) model will be used to determine loads and load reductions for proposed projects and to prioritize these projects. The PRC Program continues to meet and assist AECOM, Townscape, and the CCH with the watershed plan's development.

Windward Community College Low-Impact Retrofit Phase II (Figure 1, I)

Contractor: Hui O Koʻolaupoko
Todd Cullison, Director
1051 Keolu Drive #208, Kailua, HI 96734
(P) 808-277-5611
www.huihawaii.org

319(h) Funds: $186,016
Match: $46,900

Start/End: TBD

Location: Keaʻahala Watershed

Partners: Horsley-Whitten, Windward Community College

Pollutants Addressed: Total Nitrogen, Total Phosphorus, Sediment

Description:

The proposed project will reduce polluted stormwater at Windward Community College (WCC). The project site is parking lot at WCC, which will be retrofitted to capture, infiltrate, and process pollutants before they reach the stream and ultimately Kane‘ohe Bay. Specifically, the retrofit will include a pre-treatment area, two large parking infiltration islands or rain gardens with native vegetation, a retrofitted storm drain with an adjacent rain garden, and interpretive signage.

Anticipated Environmental Results:
This project will reduce NPS pollution by capturing 90% of stormwater runoff volume entering the stream.

Figure 11: Windward Community College overflow parking lot prior to retrofit (photo taken December 2015)

Maui and Kahoʻolawe 319(h) Projects

There are three 319(h)-funded projects on the islands of Maui and Kahoʻolawe, including one that was canceled in FY15. Below is a description of the projects, including contractor information, grant award and match amounts, project start and end dates, project locations, partners, pollutants addressed, and environmental results.

Total 319(h) funds allocated to projects on Maui & Kahoʻolawe: $694,305
Total matching funds for 319(h) projects on Maui & Kahoʻolawe: $365,974

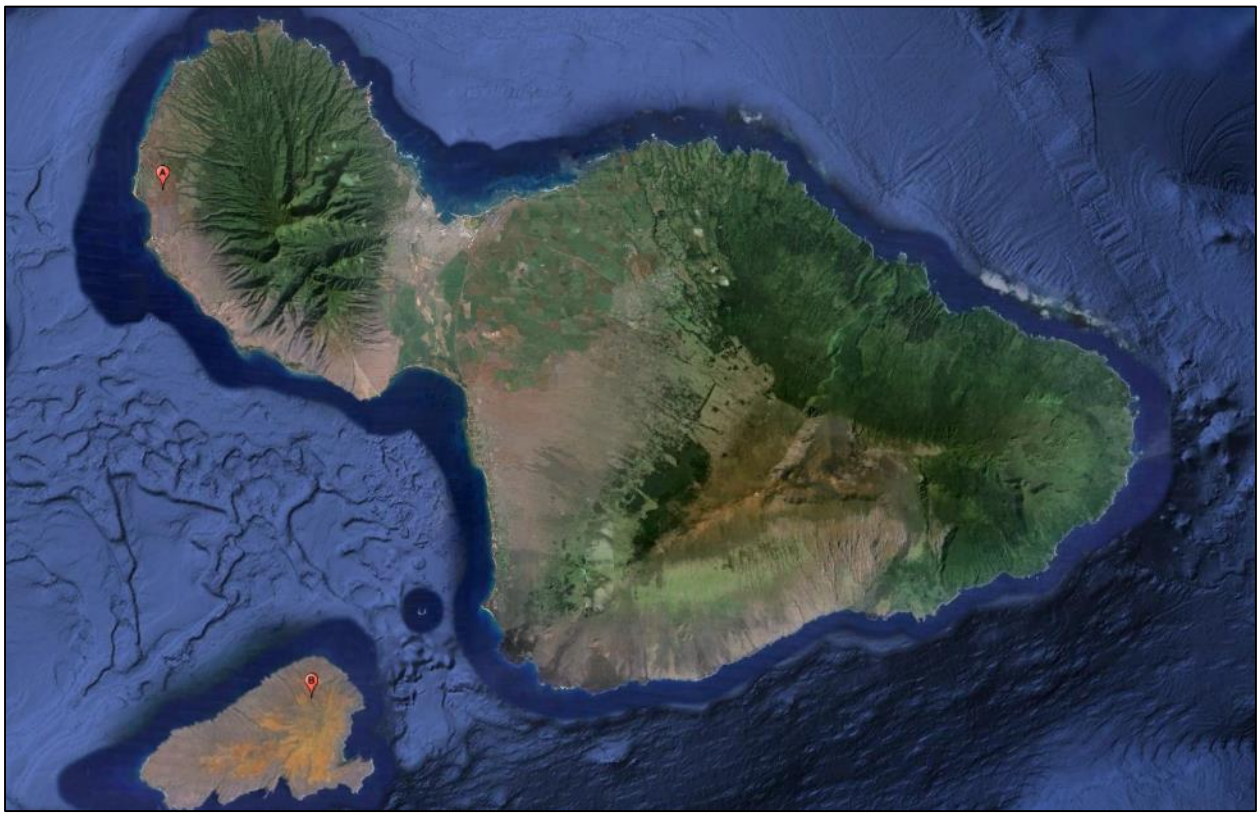


Figure 12: Aerial view of Maui and Kahoʻolawe project locations

Agricultural District Erosion Control in Wahikuli and Honokowai Watersheds: Assessment and Installation (Figure 12, A)

Contractor: SRGII
Kristin Duin, Principal
111 Hekili Street, Suite A373, Kailua, HI 96734
(P) 808-356-0552
www.srgii.com

319(h) Funds: $376,143
Match: $99,618

Start/End: 6/10/2014 – 6/9/2016

Location: Wahikuli and Honokowai Watersheds

Partners: Tova Callendar (West Maui Watershed Coordinator), NRCS, West Maui Soil and Water Conservation District

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
Wahikuli Stream is not on Hawai'i's 303(d) list for any known pollutant, but Honokowai Stream is listed visually for turbidity. The Wahikuli and Honokowai WBP prioritizes agricultural districts as problem areas that contribute large sediment loads due to derelict agricultural roads and fallow fields. There are approximately 170 miles of relic agricultural roads eroding at differing rates throughout the two watersheds. An assessment of the roads and fields was conducted, and approximately 20 miles of derelict roads and fields were prioritized for BMP implementation. BMPs include road surface improvements (grading, crowning, cross-sloping, and installing ditches and improved outlets), road drainage improvements (broad-based dips, water bars, energy dissipaters, road grading, drainage ditches, and detention basins), sediment retention basins, conservation cover, contour furrows, and vegetated filter strips.

Figure 13: Current conditions of relic agricultural roads in Honokowai during rainy conditions (photo taken November 2015)

Environmental Results:
Approximately 150 tons of sediment will be removed with BMP implementation and roadway remediation.

Reducing Sedimentation in the Hakioawa Watershed (Figure 12, B)

Contractor: Kaho'olawe Island Resource Commission
Lyman Abbott, Project Manager
844 Kolu Street, Suite 201, Wailuku, HI 96793

(P) 808-243-5020
kahoolawe.hawaii.gov

319(h) Funds: $294,188
Match: $246,600

Start/End: 4/1/2013 – 6/30/2016

Location: Hakioawa Watershed

Partners: USGS, DLNR

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
Hakioawa watershed is largely impacted by soil erosion caused by high winds, low rainfall, and lack of wind protection due to lack of soil cover; over 82% of the watershed is bare soil. The Hakioawa WBP prioritized a large area of barren land for restoration. For this project, the contractor revegetated the priority area with native plants that can survive Kaho'olawe's harsh growing conditions. The contractor is using an innovative strategy called the "kipuka" (clear place or oasis within a lava bed where vegetation may grow) for this restoration effort. Approximately 20,000 native plants are being planted in 1,300 kipuka to restore ground cover in the watershed. Geotextile rolls are also being used to decrease sedimentation rates by slowing and retaining water flows and facilitating infiltration into the ground. In addition, over 1,000 volunteers have devoted more than 10,000 hours for this project. The project was extended to continue work within the watershed.

Figure 14: BMPs to capture sediment in Hakioawa watershed (photo taken February 2015)

Environmental Results:
The project will increase vegetated ground cover and reduce sediment by 500 tons per year.

"Curbing" Nonpoint Source Pollution in Wahikuli and Honokowai Watersheds: Installation of Curb Inlet Baskets

Contractor: SRGII
Kristin Duin, Principal
111 Hekili Street, Suite A373, Kailua, HI 96734
(P) 808-356-0552
www.srgii.com

319(h) Funds: $23,974
Match: $19,756

Location: Wahikuli and Honokowai Watersheds

Partners: Tova Callendar (West Maui Watershed Coordinator), County of Maui, Ka'anapali Operations Association, State Department of Transportation (DOT)

Pollutants Addressed: Sediment and Trash

Description:
The contractor proposed to install approximately 38 curb inlet baskets to trap and remove sediment, trash, and other urban pollutants. Targeted areas included roads owned by the County of Maui and the DOT, resort and residential condominiums, and commercial properties. Letters of support were obtained by the contractor to install a baskets in several proposed areas. However, the project was cancelled because the contractor was unable to obtain commitments to maintain the baskets after installation.

Hawai‘i Island 319(h) Projects

There are two 319(h)-funded projects on the island of Hawai‘i. Below is a description of the projects, including the contractor information, grant award and match amounts, project start and end dates, project location, partners, pollutants addressed, and environmental results.

Total 319(h) funds allocated to projects on Hawai‘i: $503,638
Total matching funds for 319(h) projects on Hawai‘i: $150,895

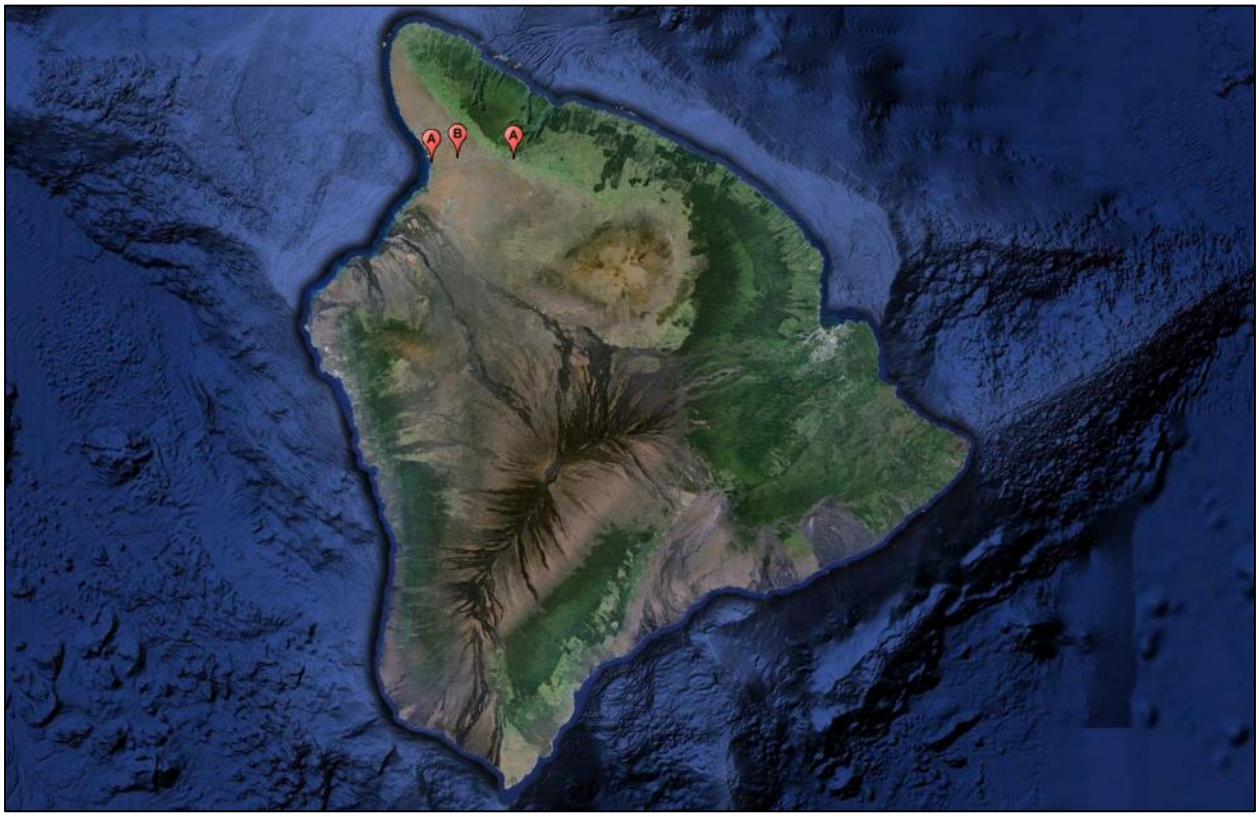


Figure 15: Aerial view of the island of Hawai‘i’s project locations

Implementation of Best Management Practices in the Wai‘ula‘ula Watershed (Figure 15, A)

Contractor: University of Hawai‘i Sea Grant College Program
Sierra Tobiason/Darren Okimoto, South Kohala Coastal Partnership Coordinator
(P) 808-313-2653
www.southkohalacoastalpartnership.com

319(h) Funds: $427,218
Match: $107,077

Start/End: 12/15/2014 – 12/14/2016

Location: Wai‘ula‘ula Watershed

Partners: Kohala Watershed Partnership, Parker School, Waimea Outdoor Circle, Ke Ala Kahawai O Waimea, NRCS, DLNR

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Description:
The Waiʻulaʻula watershed contains high quality waters, including segments of Waikoloa Stream and Waiʻulaʻula Stream. The project aims to implement BMPs at five locations within the watershed. A 440 square foot raingarden will be installed at a local shopping center to decrease urban stormwater runoff. Three sections along the riparian corridor (totaling 11,000 linear feet) will be restored with vegetative buffers. One acre of riparian zone will be restored at the mouth of Waiʻulaʻula Stream to treat water before it flows out to the reefs and ocean. In addition, slope stabilization with erosion mats and coir logs will cover approximately 12 acres. The contractor has started to stabilize slopes in two of the four proposed areas.

This project also aims to involve the public and create behavior changes by providing site tours and establishing the South Kohala Stream Team, which will provide local knowledge and technical expertise on restoration, design, and implementation of BMP activities at each site.

Figure 16: Streambank restoration along Waiʻulaʻula Stream (photo taken February 2015)

The project has had a few setbacks in the first year of implementation: the lower area was damaged by a brushfire in August 2015, and the contractor's project manager left the position in August 2015. While project progress has been slowed, BMP implementation had not yet begun at the location of the brushfire, and a new project manager will be hired in December 2015.

Environmental Results:
Nonpoint Source Pollution and Erosion Comparison Tool (N-SPECT) modeling estimates that the implemented BMPs and restoration of riparian areas will result in a 10% reduction in Total Nitrogen, an 8% reduction in Total Phosphorus, and a 1% reduction in Sediment. The contractor will also collect in-situ samples to analyze for Total Nitrogen, Nitrate + Nitrite, Total Phosphorous, and Total Suspended Solids to determine actual load reductions. An increase in native vegetation will also result in habitat improvement.

Pelekane Bay Watershed Restoration Project, Phase 3 (Figure 15, B)

Contractor: The Kohala Center, Inc.
Melora Purell, Project Coordinator
P.O Box 437462, Kamuela, HI 96743
(P) 808-887-6411
kohalacenter.org

319(h) Funds: $76,420
Match: $43,818

Start/End: 3/12/2014 – 3/11/2016

Location: Pelekane Bay Watersheds

Partners: NRCS, Mauna Kea Soil & Water Conservation District, DLNR, Parker Ranch, Kohala Watershed Partnership

Pollutants Addressed: Total Nitrogen, Total Phosphorous, and Sediment

Figure 17: Sedimentation basin in Pelekane Bay containing approximately 10 tons of sediment (photo taken August 2015)

Description:
Pelekane Bay is on Hawai'i's 303(d) list for Enterococci, Total Nitrogen, Nitrate + Nitrite, Total Phosphorous, Chlorophyll A, and Ammonia. Extensive areas of bare soil at lower, drier elevations have developed over time due to fire, uncontrolled populations of feral goats, and drought. These bare areas have resulted in large loads of sediment and nutrients in downstream waterways and nearshore environments after storm events. Watershed restoration and erosion mitigation measures have been implemented over the last five years to address these threats to water quality. The American Recovery and Reinvestment Act of 2009 funded the installation of 93 sediment check dams in the Pelekane Bay watersheds. This 319(h) project continues to support sediment control measures by maintaining the 93 check dams and installing 15 additional check dams. In addition, the project will maintain a perimeter fence that restricts feral ungulates, whose activity is known to cause soil disturbance and erosion. Feral goats are also being removed within the fenced areas.

Environmental Results:
Existing check dams will reduce sediment by over 900 tons per rain event. The new check dams will reduce sediment by approximately 150 tons of sediment per rain event.

Kauaʻi 319(h) Projects

There are two 319(h)-funded projects on the island of Hawaiʻi. Below is a description of the projects, including the contractor information, the grant award and match amounts, project start and end dates, project location, partners, pollutants addressed, and environmental results.

Total 319(h) funds allocated to projects on Kauaʻi: $853,423
Total matching funds for 319(h) projects on Kauaʻi: $420,466

Figure 18: Aerial view of Kauaʻi project locations

Replacing Small Capacity Cesspools with Advanced Wastewater Systems in Hanalei Bay Watershed (Figure 18, A)

Contractor: Hanalei Bay Watershed Hui
Makaala Kaaumoana, Project Coordinator
P.O. Box 1285, Hanalei, HI 96714
(P) 808-826-1985
www.hanaleiwatershedhui.org

319(h) Funds: $467,132
Match: $311,821

Start/End: TBD

Location: Hanalei Watershed

Partners: SRGII, Wastewater Branch, individual property owners

Pollutants Addressed: Total Nitrogen, Total Phosphorous, Total Suspended Solids, Biological Oxygen Demand, Bacteria

Description:
Hanalei River and Hanalei Bay have TMDLs for *Enterococcus* and turbidity, and Hanalei Stream has TMDLs for *Enterococcus,* turbidity, and total suspended solids. The Hanalei Bay Watershed Management Plan identified aging cesspools in the Hanalei River watershed as a contributor of bacteria and nutrients. This project will replace small capacity cesspools with aerobic treatment units within the Hanalei Bay region. Specifically, the contractor will replace twelve owner occupied cesspools within 750 yards of surface water as well as three transient vacation rental cesspools, which will decrease the amount of untreated wastewater entering surface waters.

Environmental Results:
The contractor estimates load reductions of 84 lbs of total nitrogen per year as well as $1.6x10^{15}$ CFUs per unit installed.

Watershed Implementation Project for the Ahupua'a of Waipa (Figure 18, B)

Contractor: The Waipa Foundation
Matt Rosener, Project Coordinator
P.O. Box 1189, Hanalei, HI 96714
(P) 808-826-9969
www.waipafoundation.org

319(h) Funds: $386,291
Match: $108,645

Start/End: TBD

Location: Waipa Watershed

Partners: Kamehameha Schools, Wastewater Branch, Hawaii Pacific Trenchless Inc., the Nature Conservancy, Lyon Arboretum, DLNR-DAR

Pollutants Addressed: Total Nitrogen, Total Phosphorous, Total Suspended Solids, Biological Oxygen Demand, Bacteria, Sediment

Description:
This project is a watershed wide approach to water quality improvement and includes streambank/riparian management, feral ungulate control, agricultural BMPs, and cesspool replacements. The contractor will remove feral ungulates from conservation land, revegetate upland areas to control erosion, and restore riparian areas in the lower reaches of Waipa Stream. The contractor will also install constructed wetlands and livestock fencing/watering within agricultural sections of the watershed. Finally, the contractor will replace three cesspools with aerobic treatment units.

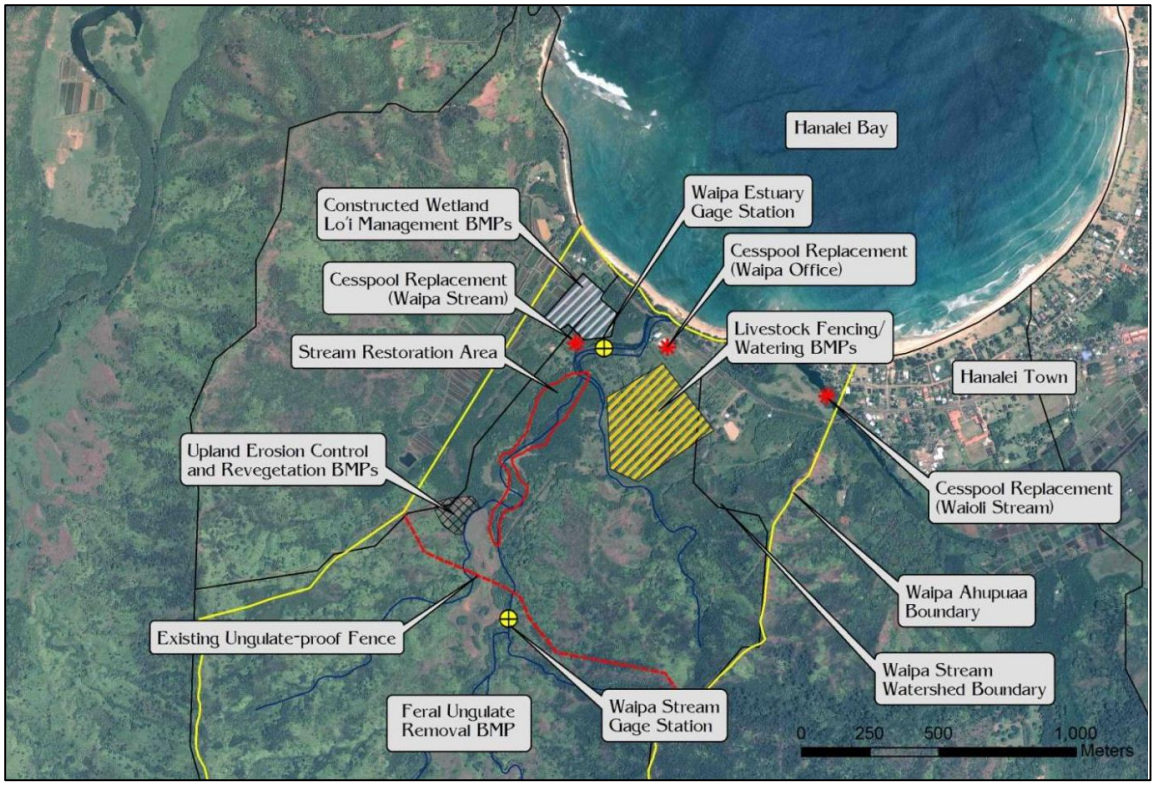


Figure 19: Aerial view of the projects to be implemented in Waipa watershed

Environmental Results:

Estimated load reductions for all practices are 1,263 lbs of Total Nitrogen per year, 2.41×10^{17} CFU per year, 169.2 lbs of biological oxygen demand per year, and 663 lbs of total suspended solids per year.

Grant Implementation

In 2014-15, the Program managed five EPA CWA Section 319(h) grant awards (FY10, FY11, FY12, FY13, & FY14). At the end of September 2015, the FY10 grant closed and the Program was awarded its FY15 grant.

In 2015, the Program experienced a challenge with drafting and executing its NPS implementation project contracts arising from its Request for Proposals (RFP), as its Program Specialist took an extended leave of absence due to illness. The delay meant that the Program was unable to encumber its FY14 grant funds within the federal fiscal year. The Program anticipates that two new contracts will be encumbered shortly after the start of the new fiscal year and a third contract encumbered by the end of the calendar year.

Individual grant awards are listed below by fiscal year, with specific 319(h) funded projects highlighted. Outcomes, load reductions, and other specific information for these projects can be found in the project-specific pages in this report or in previous end of year reports.

Fiscal Year 2010 (9290-10): 10/1/2010 to 9/30/2015

The Program's Fiscal Year 2010 grant expired on September 30, 2015. The Program spent approximately $1,596,300 in federal funds and provided an additional $1,064,200 in non-federal match by the expiration date. A total of fifteen projects were contracted for funding under this grant. However, three projects were later cancelled. Approximately $1,302,890 of federal funds has been expended for project implementation, and approximately $293,410 has been spent to support the Program.

The following eight projects have been completed:

- $131,880 to implement BMPs in the Wailupe Beach Park to reduce runoff;
- $56,970 to extend the State Conservation Specialists Program (partially funded, remainder of the $975,730 project total from FY10 and State special funds);
- $107,060 to develop a Homeowner's Raingarden Installation Booklet and install raingardens throughout the Koʻolaupoko watershed;
- $136,120 to fund Phase II of the Heʻeia Stream Riparian Restoration project (partially funded, remainder of the $215,530 project total from FY08);
- $116,220 for the installation of low-impact designs in a shopping center parking lot in Heʻeia watershed (partially funded, remainder of the $222,220 project total from FY09);
- $38,760 to update Hawai'i's Implementation Plan for Polluted Runoff Control; and
- $57,420 to fund Phase II to implement BMPs on agricultural lands in Waimanalo watershed (partially funded, remainder of the $162,420 project total from FY09).

The following three projects were cancelled:

- $0 to install stabilize upland erosion in Wailupe watershed, which was cancelled in 2011 because the contractor was unable to perform the work as proposed;

- $0 to install paddock fencing in Waiʻulaʻula watershed, which was cancelled in 2012 due to the presence of an endangered bat in the area and the budget increase to protect it; and

- $23,970 to install curb inlet baskets in the Wahikuli and Honokowai watersheds, which was cancelled in 2015 due to a lack of committed organizations and groups willing to maintain the baskets after installation.

The following five projects are on-going:

- $210,000 to develop the Kaiaka Bay Watershed WBP;

- $140,000 to implement BMPs and provide extensive community outreach in Heʻeia watershed (colloquially known as Heʻeia Phase III), (partially funded, remainder of the $747,030 project total from FY11 & FY12);

- $84,450 to implement BMPs in agricultural lands in the Wahikuli and Honokowai watersheds (partially funded, remainder of the $376,140 project total from FY09, FY11 & FY12);

- $175,040 to implement BMPs in Hakioawa watershed (partially funded, remainder of the $294,190 project total from FY11); and

- $25,000 to stabilize and remediate streambanks in Ala Wai watershed (partially funded, remainder of the $298,210 project total from FY11 & FY12).

Fiscal Year 2011 (9290-11); 10/1/2011 to 9/30/2016

The Program was awarded an EPA CWA 319(h) grant for the State Fiscal Year 2011 that will expire on September 30, 2016. The total federal award is $1,355,490, with a State in-kind contribution of $1,144,510. A total of six projects are contracted for funding under this grant, however one project has been cancelled. Approximately $840,010 of federal funds has been expended or is currently encumbered for project implementation, and approximately $515,480 has been spent to support the Program.

The five current projects are:

- $307,030 to implement BMPs and provide extensive community outreach in Heʻeia watershed (colloquially known as Heʻeia Phase III), (partially funded, remainder of the $747,030 project total from FY10 & FY12);

- $119,150 to implement BMPs in Hakioawa watershed (partially funded, remainder of the $294,190 project total from FY10);

- $191,700 to implement BMPs in agricultural lands in Wahikuli and Honokowai watersheds (partially funded, remainder of the $376,140 project total from FY09, FY10 & FY12);

- $52,630 to stabilize and remediate streambanks in Ala Wai watershed (partially funded, remainder of the $298,210 project total from FY10 & FY12); and

- $169,510 to implement BMPs in Waipa watershed (partially funded, remainder of the $386,290 project total from FY12 & FY14).

The following project was cancelled:

- $0 to install curb inlet baskets in the Wahikuli and Honokowai watersheds, which was cancelled in 2015 due to a lack of committed organizations and groups willing to maintain the baskets after installation

Fiscal Year 2012 (9290-12); 10/1/2012 to 9/30/2017

The Program was awarded an EPA CWA 319(h) grant for the State Fiscal Year 2012 that will expire on September 30, 2017. The total federal award is $1,209,000, with a State in-kind contribution of $807,970. Currently, there are a total of seven projects contracted for funding under this grant and one project in development. $745,170 of federal funds has been expended or is currently encumbered for project implementation, and $419,330 has been spent to support the Program. Approximately $44,500 of Base personnel funds remains unspent due to the formerly vacant Planner IV and Program Specialist positions. These unspent grant funds will be used to fund a project arising from the Program's FY14 RFP and will be contracted by December 2015.

The seven current projects are:

- $300,000 to implement BMPs and provide extensive community outreach in He'eia watershed (colloquially known as He'eia Phase III), (partially funded, remainder of the $747,030 project total from FY10 & FY11);

- $220,580 to stabilize and remediate streambanks in Ala Wai watershed (partially funded, remainder of the $298,210 project total from FY10 & FY11);

- $76,420 to install new and maintain existing sediment check dams, and maintain feral ungulate-proof fencing, in Pelekane Bay watershed;

- $86,720 to implement BMPs in agricultural lands in the Wahikuli and Honokowai watersheds (partially funded, remainder of the $376,140 project total from FY09, FY10 & FY11);

- $9730 to implement BMPs in Wai'ula'ula watershed (partially funded, remainder of the $427,220 project total from FY13);

- $29,690 to implement BMPs in agricultural lands in the Ka'alaea and Waiahole watersheds (partially funded, remainder of the $298,790 project total from FY13); and

- $22,020 to implement BMPs in Waipa watershed (partially funded, remainder of the $386,290 project total from FY11 & FY14).

One project is in development:

- $44,500 to replace cesspools with aerobic treatment units in the Hanalei Bay watersheds (partially funded, remainder of the $467,200 project total from FY13 & FY14).

Fiscal Year 2013 (9290-13); 9/30/2013 to 9/29/2018

The Program was awarded an EPA CWA 319(h) grant for the State Fiscal Year 2013 that will expire on September 29, 2018. The total federal award is $1,146,000, with a State in-kind contribution of $764,000. There are two projects contracted for funding under this grant, totaling $686,590 in expended or encumbered funds. A third project is under development. Approximately $390,200 was spent to support

the Program. $69,210 of Program personnel funds is unspent due to the formerly vacant Planner IV and Program Specialist positions, which will be used to fund the aforementioned third project arising from the Program's FY14 RFP.

The two projects are:

- $417,490 to implement BMPs in Wai'ula'ula watershed (partially funded, remainder of the $427,220 project total from FY12); and

- $269,100 to implement BMPs in agricultural lands in the Ka'alaea and Waiahole watersheds (partially funded, remainder of the $298,790 project total from FY12).

One project is in development:

- $69,210 to replace cesspools with aerobic treatment units in the Hanalei Bay watersheds (partially funded, remainder of the $467,200 project total from FY12 & FY14).

Fiscal Year 2014 (9290-14); 10/1/2014 to 9/30/2019

The Program was awarded an EPA CWA 319(h) grant for the State Fiscal Year 2014 that will expire on September 30, 2019. The total federal award is $1,262,300, with a State in-kind contribution of $841,535. There are two projects contracted for funding under this grant, totaling $380,770 in encumbered funds and an additional $89,300 of Project funds available to support a Watershed Coordinator in the West Maui watersheds. A third project is under development that will encumber $205,730 in Project funds and $147,770 in Program funds. Approximately $389,740 of federal Program funds was spent to support the Program. $79,270 of Program personnel funds was not spent due to the formerly vacant Program Specialist and vacant Grant Management Specialist positions and will be used for project implementation. The $49,000 balance will be used to fund projects arising from the Program's FY15 RFP.

The two projects are:

- $194,760 to implement BMPs in Waipa watershed (partially funded, remainder of the $386,290 project total from FY11 & FY12); and

- $186,020 to retrofit a parking lot at Windward Community College in Kea'ahala watershed.

One project is in development:

- $353,490 to replace cesspools with aerobic treatment units in the Hanalei Bay watersheds (partially funded, remainder of the $467,200 project total from FY12 & FY13).

Fiscal Year 2015 (9290-15); 10/1/2015 to 9/30/2020

The Program was awarded an EPA CWA 319(h) grant for the State Fiscal Year 2015 that will expire on September 30, 2020. The total federal award is $1,161,300, with a State in-kind contribution of $774,200. Approximately $477,020 of federal funds will be spent to support the Program and $684,280 is available to spend on projects. The amount of federal Program funds available for supporting projects will increase slightly due to the vacant Grant Management Specialist position. The approximate amount will be calculated at the end of the fiscal year or when the position is filled. The Program anticipates that its FY15 RFP will yield projects that can be funded by this grant and anticipates releasing its RFP in December 2015 to encumber all federal grant funds in one year.

Grants Summary						
State Fiscal Year	FY10	FY11	FY12	FY13	FY14	FY15
Budgeted Program Personnel & Overhead	$315,260	$515,480	$419,330	$390,200	$389,740	$477,020
On-going, Encumbered & Completed Projects	$1,302,890	$840,010	$789,670	$755,800	$823,560	$0
Available Contract Funds	($21,850)	$0	$0	$0	$0	$684,280
Reclassified Personnel Funds	$0	$0	$0	$0	$49,000	TBD
Total EPA Award	$1,596,300	$1,355,490	$1,209,000	$1,146,000	$1,262,300	$1,161,300

Non-Federal Match

The State relies on general funded salaries from personnel supporting the Program to meet its CWA 319(h) match obligation. General funded positions include: the Branch Chief of the CWB, a CWB Clerical employee, an IT Specialist, a Quality Assurance/Quality Control Specialist, three outer-island Environmental Health Specialists (EHSs), and five Individual Wastewater System Engineers (IWSs).

The EHSs are tasked with collecting marine surface water samples and investigating complaints related to both point- and NPS pollution. Because of Program personnel limitations, these outer island employees effectively act as the Program's eyes and ears and provide a physical presence on the outer islands that the Program cannot provide. In 2015, the EHSs responded to 17 complaints. Key NPS pollution issues addressed included: discharges of dog waste and chlorine bleach into a drain easement, clearing debris left in a stream, and oil from leaking vehicles flowing into storm drains.

Under the aegis of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 and the EPA's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, the IWSs are responsible for the review and approval of plans and specifications for wastewater systems, inspection of wastewater systems construction, and regulating wastewater systems in the State. In 2015, the IWSs conducted 197 IWS plan reviews and 10 inspections on Kaua'i, 214 IWS plan reviews and 1 inspection on O'ahu, 316 IWS plan reviews and 8 inspections on Maui, and 893 IWS plan reviews and 33 inspections on the Island of Hawai'i (537 reviews and 15 inspections in Hilo and 356 reviews and 18 inspections in Kona).

Additionally, all implementation project contractors are required to contribute a minimum of $0.25 for every $1 in federal grant funds received from the State. This supplements the State's general funded salary match and assists the State with meeting its non-federal match requirement via pass-through to the EPA, while also demonstrating contractor commitment for its proposed project.

Staffing Overview

The Program successfully filled its vacant Office Assistant III position in March 2015 and its vacant Program Specialist V position in May 2015. The Program converted its Planner III position into a Planner IV position in August 2015 due to tenure. The Program will be converting its remaining vacant position, the Grants Management Specialist IV, into a General Professional IV due to required State personnel adjustments. The Program anticipates filling this position in FY16.

PRC Program Staff:

Clean Water Branch Chief	Alec Wong
Program Specialist V	Michael Burke
Environmental Health Specialist IV	Greg Takeshima
Grants Management Specialist IV	Vacant
Planner IV	Darcey Iwashita
Office Assistant III	Amy Young

As mentioned previously, general funded positions that meet the Program's 319(h) match obligation also include an IT Specialist, a Quality Assurance/Quality Control Specialist, three outer-island Environmental Health Specialists (EHSs), and five Individual Wastewater System Engineers (IWSs).

Hawai‘i’s Nonpoint Source Management Plan

The State NPS Management Plan for 2015-2020 was approved by the EPA in September 2015. Formerly called “Hawai‘i’s Implementation Plan for Polluted Runoff Control,” the State’s NPS Management Plan was last updated in 2000. In contrast to the 2000 plan, the updated plan establishes goals, objectives, strategies, and milestones directed at preventing and reducing NPS pollution and improving water quality. Specifically, the NPS Management Plan focuses on establishing partnerships to align goals and leverage resources in three priority watersheds (Hanalei Bay, He‘eia, and West Maui) to maximize water quality improvements.

The State’s new goals identified in the NPS Management Plan are:

1. Identify water quality trends and waters and watersheds impaired or threatened by NPS pollution (**Assessment**);
2. Develop strategies, watershed-based plans, and Total Maximum Daily Load implementation (TMDL+) plans to prevent and reduce NPS pollution (**Planning**);
3. Implement NPS management strategies to restore impaired waters and protect high quality waters from NPS pollution (**Implementation**); and
4. Develop and employ an effective statewide program to manage NPS pollution (**Statewide NPS Program Development**).

The NPS Management Plan also advances the State’s efforts to obtain full approval of Hawai‘i’s Coastal Nonpoint Pollution Control Program (CNPCP), which was established under Section 6217 of CZARA. Both the Program and the CNPCP seek to prevent and reduce polluted runoff in order to protect and improve water quality. To this end, Hawai‘i’s NPS Management Plan provides guidance in coordinating PRC and CNPCP goals and activities with various federal, state, and local programs to more effectively manage NPS pollution throughout the State.

By implementing Hawai‘i’s NPS Management Plan and working towards achieving its goals, the Program anticipates the following major milestones by 2020:

- Implementation of at least 10 Section 319-funded polluted runoff control projects, including a minimum of three projects implemented through partnerships;
- Approval and implementation of the CNPCP;
- Measurable water quality improvements in at least four NPS-impaired watersheds;
- Prioritization of watersheds to focus the State’s water quality improvement efforts;
- Water quality monitoring and assessment in three new inland waters;
- The State’s first TMDL+ plan;
- Three new watershed-based plans;
- New statewide strategies that address water quality protection and runoff from cesspools, agriculture, and urban areas; and
- Increased coordination among federal, state, and local agencies to control polluted runoff.

The Program has updated its FY16 workplan to reflect the State’s new approach to NPS management outlined in the NPS Management Plan.

Coastal Nonpoint Pollution Control Program

Currently, Hawai'i's CNPCP remains under conditional approval from the EPA and NOAA. Management measures for Agriculture, Forestry, Hydromodifications, Marinas and Recreational Boating, and Wetlands have been approved. The following six Urban Area management measures still require approval: 1) New Development; 2) New Onsite Disposal Systems (OSDS) 3) Operating OSDS; 4) Planning, Siting, and Developing Roads and Highways; 5) Operation and Maintenance of Roads, Highways, and Bridges; and 6) Bridges (siting, design, and maintenance). In addition, one CNPCP administrative element, Monitoring and Tracking, requires approval. The Program continues to work with the Office of Planning to obtain full approval of the CNPCP. Once the Program obtains approval of these management measures, it will be able to more effectively implement and assess the water quality impacts of the CNPCP.

New Development

The New Development management measure aims to control runoff from new development and redevelopment. In order to obtain approval for this management measure, the State needs to show that three of the four counties either have programs and policies consistent with the New Development management measure or NPDES municipal separate storm sewer (MS4) permits that exempt them from this management measure. Currently, CCH and Hawai'i County either have rules consistent with the New Development management measure or MS4 permits that exempt them from this management measure. In FY14, the Office of Planning submitted a request to NOAA and EPA for feedback on federal approvability of this management measure based on Maui County's post-construction stormwater control ordinance and rule. In June 2015, NOAA and EPA determined that Maui County's rule was not in conformity with the New Development management measure. In September 2015, the Program and Office of Planning met with the CWB Engineering Section to discuss Maui's MS4 permits and to determine a path forward for the management measure's approval.

New Onsite Disposal Systems

The New OSDS management measure aims to prevent the discharge of pollutants from OSDS into groundwater, direct OSDS installation away from unsuitable areas, establish protective setbacks of OSDS from surface waters, establish separation between OSDS and groundwater, and regulate OSDS nitrogen loadings where conditions indicate that excess nitrogen may adversely affect surface waters. For approval of this management measure, the State must include enforceable policies and mechanisms for denitrifying OSDS where applicable. The Program, Office of Planning, and DOH Wastewater Branch (WWB) are working together to meet the conditions for this management measure and anticipate its approval in 2016.

Operating Onsite Disposal Systems

The Operating OSDS management measure requires the State to establish policies to ensure that existing OSDS are 1) maintained to prevent discharge on the ground, 2) inspected to ascertain failure, and 3) replaced or upgraded to treat influent and manage nitrogen loadings. In order to obtain approval, the OSDS management measure must develop an OSDS inspection program that can ascertain system failures. The Program, Office of Planning, and WWB are working with the EPA to develop an inspection program that will meet the management measure's requirements, with the goal of obtaining approval for this management measure in 2016.

Planning, Siting and Developing Roads and Highways; Siting and Design for Bridges

These management measures ensure that roads, highways, and bridges are planned, sited, and developed to protect areas that provide water quality benefits, limit land disturbances to reduce erosion, and limit disturbance of natural drainage features. The Office of Planning and the Program are working with the State Department of Transportation and the counties to address these management measures, with the goal of obtaining the EPA and NOAA's approval for this management measure in 2016.

Operation and Maintenance for Roads and Highways; Maintenance for Bridges

These management measures require the State to incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters and protect aquatic ecosystems from adverse effects. The Office of Planning and the Program are working with the counties and CWB to meet the conditions for these management measures and anticipate their approval by in 2016.

Monitoring and Tracking

Section 6217 of CZARA requires the State to describe its monitoring and tracking techniques to assess the success of the management measures in reducing pollution and improving water quality. The Program and Office of Planning are developing strategies to meet the requirements for this management measure, including utilizing the State's NPS Management Plan, the Ocean Resource Management Plan (ORMP), GRTS, NPDES and Water Quality Certification, and the PRC Viewer, as well as gathering data from partners involved in the ORMP. The Program expects to obtain approval of a statewide monitoring and tracking strategy by 2017.

Watershed-based and Total Maximum Daily Load Plans

Over the past four years, the Program has made an effort to increase the number of WBPs to increase the number of watersheds eligible for 319(h) funding. In 2014, the Program and CCH began a cost-share to develop the Kaiaka WBP and continued to work on the plan with contractors (AECOM and Townscape, Inc.) through 2015. The Kaiaka WBP is scheduled for completion in 2016. In addition, the Program provided monthly technical feedback on the development of West Maui Ridge to Reef Initiative's Kahana, Honokahua, and Honolua WBP, which is scheduled for completion in 2016.

In 2015, the Program began studying the costs and benefits of integrating WBPs with Total Maximum Daily Load (TMDL) plans into one TMDL implementation (TMDL+) plan. The Program believes that merging an effective WBP with an approved TMDL will eliminate redundancies, reduce costs, and most importantly facilitate implementation of the TMDL to achieve water quality improvements. The Program and the CWB have already begun the process of creating a TMDL+ plan for Waikele watershed, beginning with TMDL development for sediment for Waikele Stream. The CWB TMDL Coordinator and the Program also began creating a framework for the TMDL+ plan to guide the plan's development once the TMDL is completed in FY16.

Monitoring

In FY15, the Program continued to conduct water quality monitoring, monitor the progress of 319(h) projects, and track pollutant load reductions resulting from project implementation.

Water Quality Monitoring

The Program requires both qualitative and quantitative water quality monitoring from its contractors for most projects. In FY15, the Program met with contractors to assist with the development of monitoring plans and monitoring approaches to demonstrate project effectiveness. The data provided by contractors were reviewed, analyzed, assessed, modeled, and submitted to the CWB's Monitoring and Analysis Section for use in the State's Water Quality Monitoring and Assessment Report (Integrated Report).

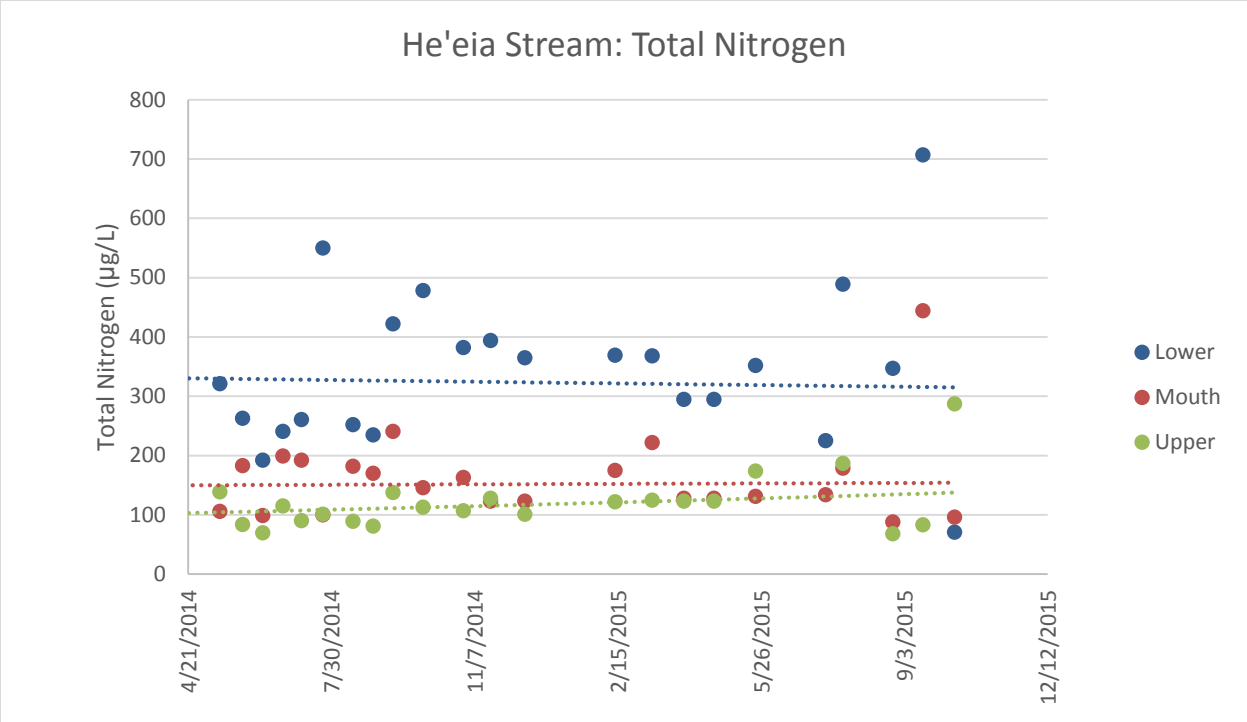
Since 2013, the Program has been implementing a water quality monitoring plan that targets He'eia watershed. The primary goal of the Program's monitoring efforts in He'eia is to determine if He'eia Stream is responding positively to 319(h) implementation projects. The Program's EHS has been collecting stream samples from three stream sites (upper, lower, and mouth) in the watershed twice a month for chemical analysis by the DOH State Laboratory. From October 2014 to September 2015, the Program collected and analyzed 45 samples from these sites.

The data show that Total Nitrogen is elevated in the urban corridor (lower site) of He'eia watershed (Figure 1). The low concentration of Total Nitrogen near the mouth relative to the lower sampling site suggests that remediated wetlands at the mouth of He'eia Stream are functioning and reducing Total Nitrogen inputs from the urban corridor. Thus the mangrove removal and revegetation efforts, which began in March 2015 as part of the larger He'eia Stream Riparian Restoration Project Phase III, appear to be positively impacting He'eia Stream's water quality.

Water quality data for He'eia Stream show that Total Phosphorus concentrations are slightly elevated near the mouth of He'eia Stream relative to the upper area of the watershed, which is mostly conservation land. This suggest that water quality in the urbanized core (lower site) and the conservation land areas of He'eia watershed appear to be benefitting from the 319(h) projects implemented in the upper areas of the watershed.

With 319(h) projects still underway in He'eia Watershed, the Program will continue to monitor He'eia Stream to track water quality improvements. The Program will use He'eia Stream's water quality data to guide its selection of implementation projects in the upcoming RFP targeted at He'eia Watershed. Specifically, the RFP will solicit projects in He'eia Watershed that address urban Total Nitrogen sources as well as Total Phosphorous, since He'eia Stream was listed for Total Phosphorous (wet season) in the 2014 Integrated Report. The RFP will also target BMPs for the mouth and the non-remediated wetlands near He'eia Stream to reduce Total Nitrogen and Total Phosphorous.

In FY15, the Program also made plans to expand its water quality monitoring efforts. Within the next four years, the Program will develop water quality monitoring plans and conduct monitoring in two additional priority watersheds (Hanalei Bay and West Maui) and Waikele watershed.



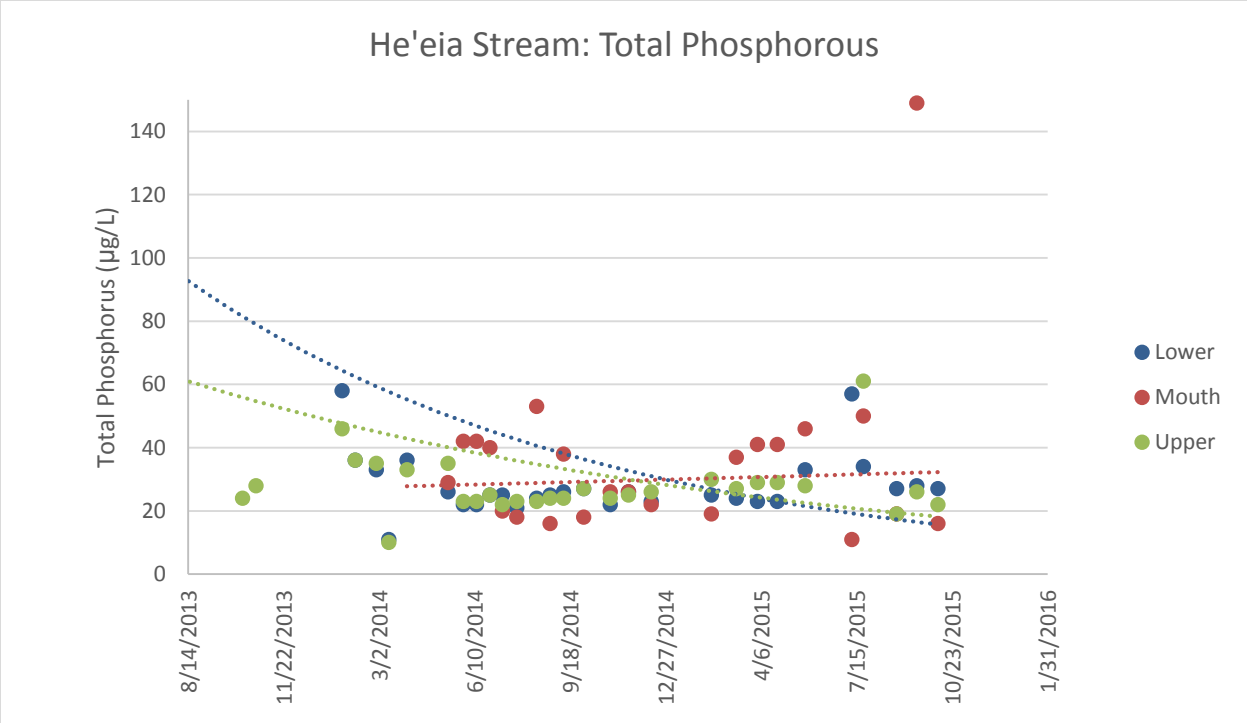


Figure 20: Total nitrogen and total phosphorous concentrations at three He'eia Stream sampling locations (Mouth, Lower, and Upper).

319(h) Project Monitoring

The Program continued to monitor the progress of its 319(h) projects through site visits, quarterly status reports, and final project reports for completed projects. In addition, all contractors receiving 319(h) funding were required to conduct monitoring to demonstrate project efficacy. Contractors generally

monitored water quality to determine effectiveness of projects that involve on-the-ground implementation. Other monitoring methods, including modeling, biological indicator surveys, and photo-points, were employed in conjunction with water quality sampling. Incorporating a multi-faceted approach to monitoring enabled the Program to have a greater understanding of the results from each project.

Grant Reporting and Tracking System (GRTS) Load Reductions

Using water quality data and modeling, the Program estimated pollutant load reductions for each project. Load reductions are the quantitative measuring stick that the Program uses to determine the efficacy of each project. For FY15, the Program calculated the following load reductions that resulted from 319(h) project implementation:

Nitrogen Load Reduction:	**12,032 lbs**
Phosphorous Load Reduction:	**1,801 lbs**
Sediment Load Reduction:	**3,344 tons**

Load reductions were entered into GRTS to track pollutant load reductions for each project and for the fiscal year.

Education and Outreach

In 2015 the Program continued to focus its education and outreach efforts on community groups and local contractors and also made efforts to increase the Program's visibility among federal, state, and county government agencies.

The Program met with four local non-profit organizations and community groups on Kauaʻi in November 2014, prior to releasing its RFP. The Program discussed State procurement procedures and the RFP process, reviewed proposed projects arising from the respective WBPs, and visited potential site locations. Two of the non-profits, Waipa Foundation and Hanalei Watershed Hui, that the Program met with submitted proposals and received 319(h) grant awards in March 2015.

The Program also gave presentations to local groups and potential federal and state partners highlighting the Program's water quality improvement efforts and 319(h) funding opportunities. One presentation was given at the Heʻeia Symposium, which was organized by the University of Hawaiʻi Sea Grant Program to create a better dialogue between federal, state, and local organizations involved in natural resource protection, restoration, and research in Heʻeia watershed. The Program discussed its successes in Heʻeia and provided information on future 319(h) grant opportunities to the various stakeholders present at the symposium.

The Program also focused its outreach efforts on federal, state, and county agencies to identify ways to leverage resources to more effectively implement polluted runoff control projects. The Program discussed Farm Bill programs and agricultural runoff projects with the Natural Resources Conservation Service (NRCS), with the goal of identifying overlapping watersheds and water quality projects of interest. In addition, in FY15 the Program discussed water quality protection projects with the DLNR Division of Forestry and Wildlife (DOFAW) and plans to collaborate with them on an ungulate fencing project to protect drinking water sources and surface waters from NPS pollution in FY16 or FY17. The Program also regularly met with another State agency, the Office of Planning, as part of its efforts to achieve CNPCP approval.

At the county level, in 2015 the Program met and continues to meet regularly with CCH to develop Kaiaka Bay's watershed plan, which is jointly funded by CCH and the Program. In addition, in FY15 the Program made its first outreach efforts in Maui County and met with the Department of Public Works and Board of Water Supply to discuss potential projects and funding opportunities in the West Maui watersheds.

The Program has strengthened partnerships within the DOH in 2015. The Program worked with the Wastewater Branch (WWB) to make progress in obtaining approval of the CNPCP and to implement cesspool replacement projects on Kauaʻi. The Program also met with the Safe Drinking Water Branch (SDWB) to discuss a water quality protection project that both programs will fund within the next two years through the 319(h) program and Drinking Water State Revolving Fund set-asides. Finally, within the CWB, the Program met regularly with the TMDL Coordinator to develop the Waikele TMDL implementation plan and to strategize watershed prioritization. The Program and CWB also coordinated water quality monitoring activities this year and contributed to each other's respective reports and plans, including the State's NPS Management Plan and the CWB's new standardized assessment methodology for the Integrated Report.

The Program continues to require all 319(h) contractors to conduct outreach, including a minimum of two press releases describing their projects (at least one is required prior to on-the-ground implementation, and one after the project's completion). These press releases are designed to provide the public with basic information about NPS pollution and provide an opportunity for members of the community to become involved in watershed activities in their area. In conversations with the Program's partners, the press releases had the desired effect of generating local interest when. Each awarded project also included an education and outreach component to inform and engage local residents in polluted runoff control efforts.

The Program also provided educational materials to youth through an outreach event at the Waikiki Aquarium and through the donation of water quality-themed coloring books to elementary schools. In April 2015, the Program co-sponsored (with CCH) the Mauka to Makai Earth Day event at Waikiki Aquarium. FY15 was the eighth year that this event was held, and over 3,100 visitors attended. The Program distributed over 1,000 coloring books to families and youth, who had the opportunity to learn about preventing and reducing water pollution and to pose for pictures with the Program's mascot, Apoha.

Program Development

The Program participated in various training workshops and conferences to discuss NPS management approaches, learn about new NPS concerns in Hawai‘i, and enhance skills. In October 2014, the EHS participated in the GRTS Training in Seattle to receive GRTS updates and improve reporting of pollutant load reductions. In November 2014, the Grants Management Specialist and the Planner attended the National NPS Training Workshop in Dallas to learn about different states' approaches to addressing NPS pollution, various funding mechanisms, and ways to integrate and coordinate federal and state programs to achieve water quality improvements. The Grants Management Specialist also attended several State procurement training classes to enhance knowledge of procurement procedures. In August 2015, the EHS and Planner attended the Hawai‘i Conservation Conference (HCC) in Hilo to learn about current local natural resource conservation and restoration efforts, research, and challenges. In particular, HCC enabled the Program to identify hotspots of water pollution in Hawai‘i as well as agencies and organizations involved in addressing these water quality problems. This knowledge will help the Program plan for future projects and partnerships in Hawai‘i.

Fiscal Year 2016: Looking Ahead

Fiscal Year 2016 promises to be a year of growth for the Program. The Program plans to fill its General Professional IV position by June 2016. Being fully staffed will increase the capacity of the Program to implement the State's NPS Management Plan and achieve water quality and program goals.

In FY16, the Program will focus on obtaining approval of the CNPCP. The Program will also assist in completing the CWB's watershed prioritization matrix, which will be used to identify new priority watersheds and target resources to achieve water quality improvements in the coming years. Fiscal Year 2016 will also see the development and completion of several water quality related plans and documents, including the West Maui Regional Monitoring Plan, the Kaiaka Bay watershed plan, the Waikele TMDL and TMDL+ workplan, the Hanalei Bay water quality monitoring plan, and the West Maui watershed plan for Kahana, Honokahua, and Honolua. The Program will also begin to work with other agencies and programs to create frameworks for the State's strategies on managing runoff from agriculture and cesspools.

The Program also will continue to build and strengthen partnerships in FY16. The agencies and organizations with which the Program plans to engage and coordinate planning and implementation efforts in FY16 include: DOH water branches, Office of Planning, DLNR, West Maui Ridge to Reef Initiative, University of Hawai'i, Hawai'i Department of Agriculture, NOAA, and CCH.

Fiscal Year 2016 will also see the implementation of two newly 319(h)-funded projects in Hanalei and Waipa watersheds on Kaua'i. The Program will also release a new RFP in FY16 targeting watersheds on He'eia watershed, with the goal of achieving further water quality improvements in He'eia Stream.