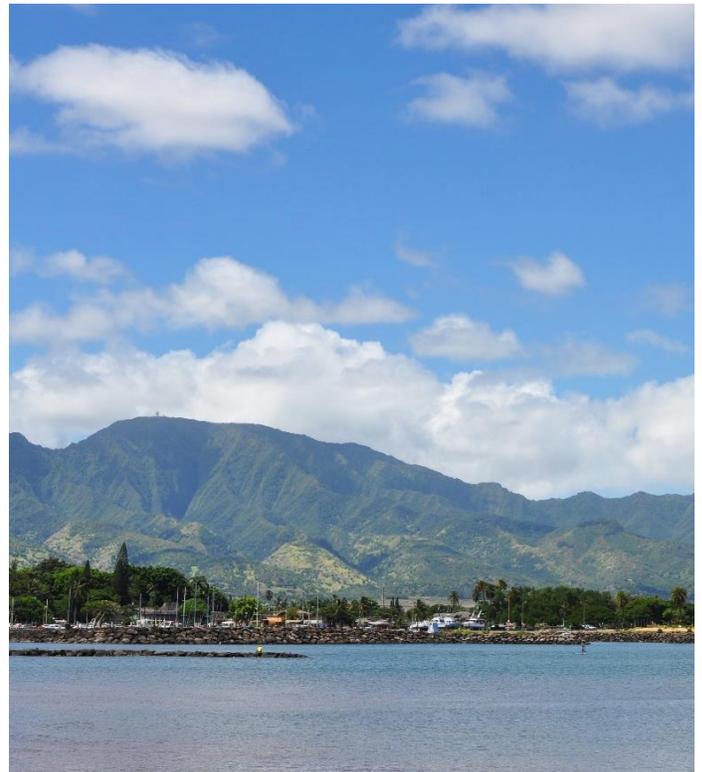


Polluted Runoff Control Program



2019 End of Year Report October 1, 2018 – September 30, 2019



Hawai'i State Department of Health  Clean Water Branch

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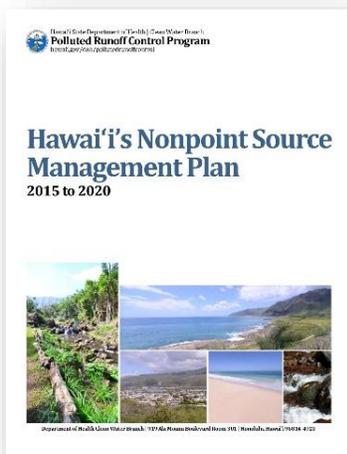
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Introduction



In 1987, Congress enacted Section 319(h) of the Clean Water Act (CWA), establishing a national program to control nonpoint source (NPS) pollution, also known as polluted runoff. Administered by the U.S. Environmental Protection Agency (EPA), the CWA §319(h) program provides funding to implement state NPS programs. The State of Hawai'i Department of Health (DOH) Clean Water Branch (CWB) Polluted Runoff Control Program (PRC) administers the state's NPS program to protect and improve the quality of Hawai'i's water resources by preventing and reducing NPS pollution. The Program's tasks include developing strategies and implementing projects to reduce NPS pollution and improve water quality. The Program is also responsible for updating *Hawai'i's Nonpoint Source Management Plan (NPS Plan)* every five years to coordinate the State's efforts to reduce polluted runoff.

The purpose of the 2019 End of Year Report is to assess the progress the PRC Program has made in implementing the *NPS Plan* in Fiscal Year 2019 (FY19; October 1, 2018 – September 30, 2019). This report will assess the Program's progress in achieving goals and objectives set forth in the *NPS Plan* as well as other administrative objectives that were included in the Program's FY19 Workplan.

Clean Water Act §319(h) Grants Management

In the past year, the Program managed five EPA CWA §319(h) grants (FY14, FY15, FY16, FY17, & FY18). At the end of September 2019, the FY14 grant closed and the Program was awarded a FY19 grant. Information about individual §319(h) grants are listed below by fiscal year.

Fiscal Year 2014 (Federal C996978714-1/State S-15-201); 10/1/2014 to 9/30/2019

The FY14 EPA CWA §319(h) grant is \$1,262,300 of federal funds with a State contribution of \$841,540 in non-federal match. \$1,003,320 of federal funds were expended for project implementation and \$258,980 was spent to support the Program. Approximately \$210,030 of project funds was originally budgeted for personnel but reclassified to contracts due to vacancies.

Fiscal Year 2015 (Federal C996978715-0/State S-16-201); 10/1/2015 to 9/30/2020

The total FY15 EPA CWA §319(h) grant is \$1,161,300 of federal funds and \$774,200 of State in-kind contributions. Approximately \$320,460 has been expended to support the Program, and \$840,840 of federal funds were expended, is currently encumbered, or will shortly be encumbered for project implementation. Approximately \$156,570 was reclassified from personnel to contracts due to vacancies.

Fiscal Year 2016 (Federal C996978716-0/State S-17-201); 10/1/2016 to 9/30/2021

The FY16 EPA CWA §319(h) grant is \$1,199,000 of federal funds with a State contribution of \$799,333 in non-federal match. \$872,980 of federal funds were expended, is currently encumbered, or will shortly be encumbered for project implementation and \$326,020 was spent to support the Program. Approximately \$209,780 was reclassified from personnel to contracts due to vacancies.

Fiscal Year 2017 (Federal C996978717-0/State S-18-201); 10/1/2017 to 9/30/2022

The total FY17 EPA CWA §319(h) grant is \$1,240,000 of federal funds and \$830,000 of State in-kind contributions. Approximately \$546,640 of federal funds were spent to support the Program and \$693,360 was expended, is currently encumbered, or will shortly be encumbered for project implementation. Approximately \$171,650 was reclassified from personnel to contracts due to vacancies.

Fiscal Year 2018 (Federal C996978718-0/State S-19-201); 10/1/2018 to 9/30/2023

The FY18 EPA CWA §319(h) grant is \$1,226,000 of federal funds with a State contribution of \$817,500 in non-federal match. Approximately \$436,010 of federal funds were expended to support the Program and \$789,990 was expended, is currently encumbered, or will shortly be encumbered for project implementation.

Fiscal Year 2019 (Federal C996978719-0/State S-20-201); 10/1/2019 to 9/30/2024

The Program was awarded an EPA CWA §319(h) grant of \$1,215,000 of federal funds with a State in-kind contribution of \$810,000. Approximately \$587,720 of federal funds will be spent to support the Program and \$627,280 is available to fund implementation projects. The Program anticipates that its procurement efforts will yield projects that can be funded by this grant and that all grant project funds will be encumbered in the fiscal year.

Non-Federal Match

The State relies on general funded salaries of personnel supporting the Program to meet its CWA §319(h) match obligation. General funded staff include the Clean Water Branch Chief, the Branch Secretary, an IT Specialist, a Quality Assurance/Quality Control Specialist, an Environmental Health Specialist (EHS) assigned to develop the State's Integrated Report, four neighbor island EHSs, and five Individual Wastewater System Engineers (IWSs) from the DOH Wastewater Branch (WWB).

The neighbor island EHSs collect marine surface water samples and investigate complaints related to both point source and NPS pollution. Because the Program's personnel are based on O'ahu, these neighbor island Clean Water Branch employees provide a valuable resource due to their physical presence in the community. They conduct outreach, introduce community groups to the Program, provide information about Program projects and partners, and keep the Program informed of activities in the Program's priority watersheds.

This past year the EHSs conducted 40 complaint investigations throughout the State (4 on Kaua'i; 7 on Moloka'i; 13 on Maui; and 16 on the Island of Hawai'i). Notable complaint investigations include: investigating a complaint of dumping sludge into Waimea River on Kaua'i, which was referred to the EPA for criminal enforcement; a complaint that a urinal drains directly into a ditch on Maui (CWB sent a warning letter to the property owner and has begun the process of enforcement); concerns over a cesspool overflowing on Moloka'i, which was referred to the Wastewater Branch; and a complaint that a farm was operating without a conservation plan and eroding topsoil on the Island of Hawai'i (CWB began the process of enforcement).

The IWSs are responsible for reviewing and approving plans and specifications for wastewater systems, inspecting wastewater system construction, and regulating wastewater systems in the State. In FY19, the IWSs conducted 212 IWS plan reviews, 31 follow-up plan inspections, and 32 other inspections on Kaua'i; 158 IWS plan reviews and 38 follow-up plan inspections on O'ahu; 281 IWS plan reviews, 43 follow-up plan inspections, and 5 other inspections on Maui; and 1,033 IWS plan reviews, 163 follow-up plan inspections, and 18 other inspections on the Island of Hawai'i (709 reviews, 109 follow-ups, and 4 other inspections in Hilo and 324 reviews, 54 follow-ups, and 14 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 to their proposed project(s).

§319(h) Grants						
Grant Year	FY14	FY15	FY16	FY17	FY18	FY19
Federal Funds	\$1,262,300	\$1,161,300	\$1,199,000	\$1,240,000	\$1,226,000	\$1,215,000
State Match	\$841,540	\$774,200	\$799,333	\$830,000	\$817,500	\$810,000
Program Personnel, Overhead, & Indirect	\$258,980	\$320,460	\$326,020	\$546,640	\$436,010	\$587,720
On-going, Encumbered, & Completed Projects	\$1,003,320	\$840,820	\$872,960	\$693,320	\$789,870	\$175,310
Project Funds Currently Available/Potential ULO	\$0	\$20	\$20	\$40	\$120	\$451,970
Unspent §319(h) Grant Funds Reclassified for Projects						
	\$210,030	\$156,570	\$209,780	\$171,650	N/A	N/A

Program Administration

In March, the Program finally became fully staffed when it filled its vacant Environmental Health Specialist position, which had been vacant for over a year.

§319(h) Grant-Funded Staff:

Program Specialist V	Michael Burke
Contracts Specialist	Joanna Yeh
Environmental Health Specialist IV	Jennifer Doi
Planner IV	Darcey Iwashita
Office Assistant III	Amy Kawai

Below is a summary of the Program's fiscal and administrative tasks and milestones for FY19:

Program Objectives	Milestones	Tasks & Deliverables	Progress
1. Obtain the FY 2020 319(h) grant	a. Develop Workplan Table, Narrative, and Budget	4/2019: Draft FY20 Workplan and PRC Budget submitted to CWB Chief and EPA for review.	Completed
	b. Negotiate and submit grant	4/2019: EPA & DOH grant negotiations meeting in SF.	Completed
		6/2019: Submit grant application to EPA.	Completed
2. Perform fiscal management to ensure successful and appropriate spending of 319(h) grant funds	a. Spend all awarded funds with no unobligated funds	Fiscal administration of open grants.	Completed (continuous)
	b. Reallocate unspent Personnel costs to contracts	10/2018: Identify unspent EHS personnel funds and reallocate towards contracts.	Completed

3. Perform reporting activities for projects, budget, and PRC assessments	a. Oversee contracts	Review QSRs and notify EPA of important changes.	Completed (continuous)
		Input data from QSRs and upload final reports to GRTS.	Completed (continuous)
		10/2018: Project summaries in End of Year Report.	Completed
	b. Participate in End of Year meetings with the EPA	11/2018: Prepare agenda and materials for PRC session.	Completed
		12/2018: Participate in meetings	Completed
	c. Prepare workplan progress reports and End of Year Report on progress implementing the NPS Management Plan	10/30/2018: FY2018 final workplan report.	Completed
		10/30/2018: Draft EOY report submitted to EPA.	Completed
		11/2018: Final EOY submitted to EPA.	Completed
		4/30/2019: Semi-annual workplan progress report for FY2019.	Completed
	d. Submit quarterly fiscal progress reports	Quarterly fiscal reports (Nov, Feb, May, Aug) submitted to EPA	Completed; changed to biannual reports
Monthly: PRC & EPA meet to discuss technical issues and review workplan progress.		Completed (continuous)	
e. Close out 2013 CWA 319(h) grant and review/manage status of 2014 CWA 319(h) grant	12/2018: Interim 2013 FFR.	Completed	
	1/2019: Final 2013 FFR.	Completed	
f. Update Viewer and create additional functionality	Continue updating Viewer as new projects are awarded and managed and new WBPs are approved.	Completed (continuous)	
	Continue working with the DOH Contractor on developing Viewer's reporting functions.	TNC & CORAL, who were awarded projects in August 2019, will be using the new online QSR reporting feature.	
4. Administer 319(h) Program	a. Manage 319(h) Program	Ensure the NPS Management Plan and FY 2018 Workplan are being implemented.	Completed (continuous)
	b. Assist with CWB strategic planning and programmatic support	Assist CWB with procurement and contract development.	Additional assistance to the CWB: Technical Assistance RFP and Master Contract, conference room chair procurement, and vehicle (truck) procurement for Monitoring.

		Assist CWB with other programmatic support, including strategic planning.	Completed (Monitoring Strategy, NPS branch, and HAR 11-56)
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Hawai'i's Nonpoint Source Management Plan Implementation

This section provides details on the Program's progress implementing the *NPS Plan* this fiscal year, organized by *NPS Plan* goals and objectives.

Goal 1: Assessment - Identify water quality trends and waters and watersheds impaired or threatened by nonpoint source pollution

Goal 1 of the *NPS Plan* sets forth the State's objectives and strategies for assessing water quality, including the development of monitoring plans and assessment methods (Objective 1) and monitoring and assessing waters to identify water quality impairments and trends (Objective 2).

Objective 1: Develop surface water quality assessment methods and monitoring plans to guide monitoring efforts

Under Goal 1, the State set a goal to complete three monitoring plans by 2020. In FY19, the draft monitoring plan for Hanalei Bay watersheds was completed (Appendix A), and the final plan will be completed in FY20. The monitoring plan includes 20 inland monitoring locations and four marine locations spanning four watersheds in the Hanalei Bay, including sampling locations for 319(h)-funded projects in the Waipa watershed (Watershed Implementation Project in the Ahupua'a of Waipa, Phases 1 and 2) selected to demonstrate project effectiveness. Parameters being monitored include physical and chemistry parameters, as well as fecal indicator bacteria (*Enterococcus* and *Clostridium perfringens*). The monitoring plan also identifies TMDL sampling locations for the Hanalei Bay area.

The second monitoring plan, which is for the West Maui watersheds, will be developed in FY20 after the Hanalei Bay monitoring plan is completed. The third monitoring plan to be developed will be an element of the Waikele Watershed and TMDL Implementation Plan, which will be completed in FY22. Implementation of the monitoring plan will help the CWB determine whether implementation of the sediment and nutrient load allocation/NPS component of the Waikele TMDL is improving water quality.

In addition to these monitoring plans, PRC developed a Quality Assurance Project Plan (QAPP) for Kawela Stream on Moloka'i in April (Appendix B). The mouth of Kawela Stream and a nearby coastal location were added as sampling sites by the Monitoring Section in early 2020. Monitoring at these locations was selected due to alternative watershed plan development by The Nature Conservancy (TNC) as part of the East Moloka'i Watershed Partnership's (EMWP) efforts to exclude ungulates from Kawela and surrounding watersheds to reduce erosion, allow for the regeneration of the native forest, and improve water quality and coral reef health.

The CWB also prepared a QAPP for Kaelepulu Stream on O'ahu, which was submitted to EPA for approval this fiscal year. It is intended to guide monitoring efforts that will be underway shortly to develop a TMDL for Kaelepulu Stream. The QAPP is structured to allow for additional inland waters to be added as appendices in the future. Streams in West Maui may be added to the QAPP as determined by the Branch when the West Maui monitoring plan is developed in FY20.

Finally, CWB drafted a Comprehensive Monitoring Strategy (CMS) for water quality monitoring this FY. PRC provided feedback during its development. The CMS will be completed in FY20.

Objective 2: Monitor and assess water quality to identify water quality impairments and improvements

The CWB Monitoring Section continued to conduct beach monitoring under its Beaches Environmental Assessment and Coastal Health Act (BEACH) grant, which includes marine water quality sampling in most CWB/PRC priority watersheds. For priority watershed inland waters in Hanalei Bay, the Program's contractor, the Waipa Foundation, continued to monitor water quality at 20 sampling locations in Waipa Stream, Waipa Estuary, and Waioli Estuary (Figure 1). Physical, chemical, and biological (fecal indicator bacteria) parameters were monitored at various intervals (weekly, biweekly, and/or monthly, depending on the parameter). Marine waters in Hanalei Bay were monitored at four sampling locations by the Monitoring Section's EHS. Data from these monitoring efforts will be used to demonstrate the effectiveness of the Waipa Foundation's §319(h)-funded restoration projects through 2021.



Figure 1. Marine (top) and select inland (bottom) water quality sampling locations in Hanalei Bay.

PRC decided not to continue monitoring He'eia Stream after the vacant EHS position was filled in March. The decision was based on a couple of factors: 1) objectives from the *NPS Plan* to delist He'eia Stream for turbidity, total phosphorous, and/or nitrate + nitrite were achieved by FY18, with a success story slated for submission to EPA in early FY20; and 2) University of Hawai'i (UH) Sea Grant, PRC's partner on two jointly funded projects, conducts water quality monitoring in He'eia Fishpond to provide data on water pollutant sources and concentrations. For the first factor, He'eia Stream was delisted for wet season turbidity and total phosphorous in 2016 and for wet season nitrate and nitrite in 2018. For the second factor, sampling for nutrients has been conducted by UH since 2017 and will continue through 2021, and sediment will be monitored starting in late 2019 or early 2020 (when the second phase of the project begins). In addition, as part of its second phase project, UH Sea Grant is conducting microbial source tracking to address wastewater pollution in the fishpond.

CWB also began monitoring Kawela Stream on Moloka'i monthly starting in March 2020. However, because Kawela Stream is an intermittent stream and has been dry during the dry season (April through October), no samples have been collected yet. Monthly sampling attempts will continue through FY20. Parameters to be monitored are ammonia, nitrate + nitrite, total nitrogen, total phosphorous, chlorophyll-*a*, TSS, turbidity, pH, dissolved oxygen, salinity, and temperature.

Hawai'i's Nonpoint Source Management Plan: Goal 1 Outcomes Checklist

- ✓ **Water quality monitoring plans and a standardized water quality assessment methodology are developed to guide consistent and comparable water quality monitoring efforts.**
In FY16, the CWB completed a standardized assessment methodology for marine waters, which was implemented in the 2016 and 2018 Integrated Reports. In FY17, the Program completed a draft Water Quality Monitoring Plan/Quality Assurance Project Plan for Hanalei Bay Watersheds. In FY19, the Program drafted the Quality Assurance Project Plan for Monitoring Kawela Stream, Moloka'i, and drafted the monitoring plan for Hanalei Bay watersheds. In FY19, the CWB prepared a QAPP for Kaelepulu Stream and the State's Comprehensive Monitoring Strategy, which is expected to be completed in FY20.
- ✓ **Coastal and inland waters are monitored and assessed every two years.**
Coastal and inland waters were monitored in FY16-FY19. The State's waters were assessed in the 2016 and 2018 Integrated Reports, which utilized the Program's monitoring data.
- ✓ **Two new inland waters are monitored and assessed.**
In 2017, the CWB began monitoring inland waters that had not been monitored or assessed in two or more years, including Waipa Stream, Waipa Estuary, and Waioli Estuary. In FY19, the CWB began monitoring a new inland waterbody, Kawela Stream.
- ✓ **Waterbodies that meet water quality standards or have impairments are identified.**
Waterbodies that were impaired or met water quality standards were identified in the 2016 and 2018 Integrated Reports. Based on these impairments, development of a TMDL for Kaelepulu began in FY19.
- ✓ **Trends in water quality are identified.**
Trends were identified for assessed waterbodies in the 2016 and 2018 Integrated Reports. In 2018, 13 new waterbodies were listed, and 22 waterbodies were delisted. Nearly all (98%) of CWB watershed assessment units do not meet water quality standards for turbidity. In a CWB priority watershed (He'eia), He'eia Stream was delisted for wet season total phosphorous and turbidity in 2016 and for wet season nitrate+nitrite-nitrogen in 2018, thereby meeting all wet season water quality standards as well as the *NPS Plan's* objectives.

Goal 2: Planning - Develop strategies, watershed-based plans, and TMDL+ plans to prevent and reduce NPS pollution

Under Goal 2 of *Hawai'i's Nonpoint Source Management Plan*, the State aimed to prioritize watersheds for restoration and protection (Objective 1), develop strategies for protecting high quality waters (Objective 2), and prepare watershed plans and TMDL+ plans (Objective 2).

Objective 1: Prioritize watersheds to focus water quality improvement and protection efforts

Prioritizing watersheds will help the CWB and the State focus its resources, including 319(h)-funded projects and water quality monitoring, in specific areas to improve and protect water quality.

In FY19, the Program used the Recovery Potential Screening Tool, which was developed for Hawai'i by EPA, to prioritize watersheds for protection, and developed a candidate list of watersheds to discuss with the CWB Monitoring Section as it developed the CMS. However, because the CMS was not completed and priority watersheds for monitoring were not established, the Program shifted towards engaging other stakeholders and used feedback from the *NPS Plan* survey and the Joint Government Water Conferences to define its priority watersheds as follows:

- All watersheds with watershed plans that are eligible for 319(h) funds will be State priority watersheds. This means that the State will have 41 priority watersheds (and possibly more by the time the *NPS Plan's* update is finalized in 2020). Priority watersheds will be added after their respective watershed plans are approved by DOH.
- Within the priority watersheds, priority protection watersheds or watershed areas and priority restoration watersheds or watershed areas will be determined based on the following criteria:
 - **Protection:** The watershed area is a priority watershed for Division of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW), a DOH Safe Drinking Water Branch (SDWB) source water protection area, or an area managed by a watershed partnership that is part of the Hawai'i Association of Watershed Partnerships (HAWP). These areas are generally high elevation native forests, where water quality is being threatened by invasive species such as feral ungulates and noxious weeds. NPS control efforts in these areas will focus on preventing NPS pollution and keeping pollutant levels in the watersheds area's waterbodies within the limits prescribed by the State's water quality standards (WQS).
 - **Restoration:** The watershed area has waterbodies on the 303(d) list, has a TMDL, and/or has been identified by another State agency as impaired. NPS efforts for these areas will be on restoring water quality so that the impaired waterbodies achieve WQS.

Additional priority protection and restoration watershed areas will be determined with other Program partners, including DLNR Division of Aquatic Resources (DAR) and UH land and sea grant programs, in early FY20. The Program discussed prioritizing protection areas with DOFAW in September and will be conducting a GIS analysis to determine overlapping 319(h) eligible watersheds and DOFAW priority areas in early FY20. Priorities, goals, and milestones for priority watersheds will be established by January 2020 and will be incorporated into the updated *NPS Plan*.

Objective 2: Develop strategies and measures of success for NPS protection

Strategies and measures of success developed in FY18 will be updated and incorporated into the *NPS Plan* update. While protection criteria have largely been determined in the protection strategy, the shift to prioritizing protection areas will result in a review of current protection criteria.

The Program continued to implement a three-year protection project with DOFAW in West Maui to protect relatively pristine forested areas from feral ungulates. The severe soil and vegetation disturbances caused by ungulates have resulted in significant erosion on high elevation forested areas of West Maui, which in turn has increased sediment delivery to streams and coastal areas and has negatively impacted coral reefs.

Last FY, the Program, SDWB, and DOFAW collaborated on an application for the Natural Resources Conservation Service's (NRCS) National Water Quality Initiative (NWQI) readiness phase and source water pilot in West Maui (see Goal 4 for more information on the NWQI), with the goal of combining efforts to protect waters in the region. During the Readiness Phase this FY, it was determined by NRCS that there was not enough producer interest or eligibility in the area. The Program continues to discuss with NRCS what other watersheds in the State may be eligible for an NWQI partnership. The SDWB implemented its NWQI source water pilot program.

Objective 3: Develop comprehensive watershed-based plans

Watershed-based plans (WBPs) are the foundation for most §319(h)-funded on-the-ground water quality improvement projects. There are 14 approved watershed plans covering 41 watersheds statewide (Kaua'i County: 7; City and County of Honolulu: 25; Maui County: 7; Hawai'i County: 2).

This fiscal year, the Program provided technical assistance and support to State and non-profit organizations in Maui and Moloka'i that are in the process of developing WBPs or alternative plans. In April, the Program reviewed Southwest Maui's revised draft watershed plan, provided feedback, and discussed the plan with its author, the Central Maui Soil and Water Conservation District (CMSWCD). The Program also gave CMSWCD \$14,000 in Program Funds (\$11,500 from FY14 funds, \$2,500 from FY16 funds) to complete the plan. The Program and CMSWCD will meet again in November to review another draft of the plan, with the completion of the plan anticipated by the end of FY20.

Hawai'i's Nonpoint Source Management Plan: Goal 2 Outcomes Checklist

- ✓ **Priority watersheds for WQ protection and restoration are determined for 2020-2025.**
The Program currently is focusing its efforts on its three existing priority watersheds (Hanalei Bay, He'eia, and West Maui). In FY19, all watersheds eligible for 319(h) project funds were established as NPS priority watersheds. Priority protection and restoration watershed areas will be determined with partners in FY20.
- ✓ **Strategies and goals for protecting high quality waters are developed.**
The Program included water quality protection in the CWB watershed prioritization matrix in FY16 to ensure that unimpaired waters were considered when new priority watersheds were determined. In FY17, the Program provided input on the Hawai'i Groundwater Protection Strategy (which SDWB implements) and began collaborating with DLNR-DOFAW to implement a watershed/water quality protection project in West Maui. In FY18, the Program completed a protection strategy to guide the Program's protection efforts.
- ✓ **A TMDL+ plan for Waikele watershed is developed.**
The Waikele TMDL for sediment and nutrients was completed in 2019. Development of the Waikele Watershed and TMDL Implementation Plan will begin in 2020.
- ✓ **Three new watershed-based plans are developed.**
The West Maui WBP for Kahana, Honokahua, and Honolulu was completed and approved in FY16. The Kaiaka Bay WBP was completed and approved in FY18. The Program reviewed drafts of the Southwest Maui WBP and provided feedback in FY18-19 and financial assistance in FY19. In FY18-19, the Program provided guidance to TNC on an alternative plan for Kawela watershed.

The Program also continued to provide guidance on the development of an alternative watershed plan for Kawela watershed in Moloka'i, where feral ungulates have created sediment problems along the southeast slope of the island. This area is managed by the East Moloka'i Watershed Partnership (EMWP), which includes the Nature Conservancy (TNC), Kamehameha Schools Bishop Estate, DOFAW, and other landowners and agencies. The Program, EPA, and TNC (the lead author of the plan) met to review a detailed outline of the plan this fiscal year. In April, the Program met with Hawai'i Rural Water Association (HRWA) at its annual Source Water Program kick-off needs assessment meeting and discussed the Kawela alternative plan. As a result, HRWA is providing planning support to TNC in 2019-2020 to draft the alternative plan. A completion date has not been set by TNC, but the Program anticipates that with HRWA's assistance, the alternative plan will be completed by 2020.

In March, the Program released an RFP for the Waikele Watershed and TMDL Implementation Plan. The contract for the plan's development was awarded to PG Environmental, who will complete the plan by FY22. The Waikele Watershed and TMDL Implementation Plan will use the nine-element watershed plan framework to provide implementation and monitoring strategies for the Waikele TMDL, which was completed in 2019. Pollutants targeted by the plan are sediment and nutrients.

Goal 3: Implementation - Implement NPS management strategies to restore impaired waters and protect high quality waters from NPS pollution

Implementation of NPS strategies is at the core of Hawai'i's §319(h) program. The State's main NPS implementation objective is to invest in projects to achieve measurable water quality improvements. More detailed project information for all FY19 projects can be found in Table 6.

Objective 1: Invest in projects to achieve and demonstrate water quality improvements through implementation of watershed-based plans and TMDL+ plans

Invest in priority watersheds

In May, the Program released an RFP targeting its current priority watersheds (Hanalei Bay, He'eia, and West Maui) to focus on water quality improvements in these priority areas and to meet current *NPS Plan* objectives. Prior to the release of the RFP, Program staff conducted outreach in Maui, O'ahu, and Kaua'i and met with stakeholders on Maui to discuss the RFP process. The Program received two proposals – one from TNC to conduct feral ungulate management and control erosion in He'eia watershed, and one from the Coral Reef Alliance (CORAL) to install BMPs to restore a stream gulch and reduce sediment runoff in Wahikuli watershed in West Maui (see Table 6 for more project information). Both proposals were awarded in August and the organizations will begin implementing their projects in FY20. As a result of these new projects, PRC has achieved its target number of 319(h) projects in all of its priority watersheds.

In addition to these newly awarded projects, the Program is collaborating with UH Sea Grant on another project in He'eia watershed that builds on its current mangrove removal project. The new joint project, "Expanding Water Quality Improvement Projects at He'eia Fishpond," will remove an additional five acres of invasive mangrove and hau from the fishpond and install rain gardens in front of two storm drain outlets to reduce nutrient and sediment concentrations. The project also includes water quality monitoring within the fishpond and is expected to receive its NTP in early FY20.

The Program is also supporting a watershed coordinator for Ko'olaupoko Moku, which includes He'eia watershed and 17 additional watersheds on windward O'ahu. The watershed coordinator will conduct



Figure 2. Riparian restoration along Waipa Stream. Approximately 1.5 acres were restored in the first phase of the project.

extensive outreach and gather data needed to update the Ko’olaupoko Watershed Restoration Action Strategy, which has not been updated since 2007. The contract will be sent to the contractor, Hui O Ko’olaupoko, for execution in October 2019.

In addition, the Program supported the following projects in priority watersheds in FY19, including:

- The jointly funded 319(h)/DOFAW fencing project in West Maui watersheds to reduce erosion and sediment loadings caused by feral ungulate activity. The project includes the installation, retrofit, and replacement of over 16,000 feet in ungulate fencing to protect upper forested conservation lands from feral ungulate disturbance. The project began in January 2018 and will end in January 2021.
- The West Maui Ridge 2 Reef Watershed Coordinator, who is funded through 2020 via a collaboration between the Program and DLNR Division of Aquatic Resource (DAR).
- The He’eia Fishpond Mangrove Island Removal project (March 2017- September 2019) to reduce total phosphorous. The project was funded through a collaboration between the Program and UH Sea Grant.
- The Watershed Implementation Project for the Ahupua’a of Waipa, Phase 1 (February 2016 – August 2019) and Phase 2 (March 2019-March 2021), which aims to reduce total nitrogen, sediment, and bacteria (*enterococci*) through implementing agricultural and riparian BMPS and replacing cesspools (Figure 2).
- The Treatment Train project in West Maui, which is being implemented by Maui Land and Pineapple (MLP) from May 2019 through April 2022. The project aims to reduce sediment, total phosphorous, and total nitrogen using several BMPs across the watershed.

Invest in additional projects in non-priority watersheds with WBPs, with the goal of targeting runoff from cesspools, agriculture, and urban areas

In FY19, the Program focused on implementing the following agricultural runoff control projects, which aimed to reduce sediment, total phosphorous, and total nitrogen in non-priority watersheds:

- Agricultural Stewardship in the Ma'ili'ili Watershed (conservation planning, BMP implementation, outreach/education events);
- Ka'alaea and Waiahole Stream Restoration Phase 2 (conservation planning, BMP implementation, educational events);
- Pelekane Grazing Improvement Project (fence repair to allow for rotational grazing);
- Waimanalo Stream Restoration and Community Outreach (conservation planning, BMP implementation, education and outreach);
- Buffers and BMPS for Windward O'ahu (conservation planning, BMP implementation, outreach events); and
- Implementing Soil Management Strategies on O'ahu (soil nitrate and phosphate testing, fertilizer application reduction strategies; farmer training and outreach; only nutrients targeted).

The Program also jointly funded a Phase 2 project in Hakioawa watershed with the Kaho'olawe Island Reserve Commission (KIRC). The project's goal was to continue to restore additional bare areas of the watershed with native plants to reduce excessive erosion. The project was the subject of an [article](#) in the Honolulu Star Advertiser, which highlighted KIRC's efforts to restore the watershed (Figure 3).

Kahoolawe watershed rehabilitation bearing fruit

By Mindy Pennybacker
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The formerly bare, red-dirt slopes of Hakioawa watershed on the northern slopes of Kahoolawe island are now festooned with green through the labors of the Kahoolawe Island Reserve Commission and 199 volunteers from around the state.

August will mark the completion of a one-year watershed restoration project funded by a \$50,000 grant received through the state Department of Health, Clean Water Branch, Polluted Runoff Control Program and U.S. Environmental Protection Agency, KIRC announced Tuesday.

Work at the 108.7-acre project site, which rises from 400 to 1,300 feet in elevation, focused on soil erosion control through planting native flora and removing non-native weeds.

Every year, KIRC said, an esti-

mated 1.9 million tons of soil has eroded from Kahoolawe, its native habitat severely damaged by its former uses as a site for ranching, grazing goats and a U.S. military bombing range.

The danger of unexploded ordnance posed a special challenge at Hakioawa: No digging allowed.

"In this area, 90 to 95 acres were just surface-cleared of ordnance," said Paul Higashino, KIRC natural resource specialist. "We put in 20,000 plants without digging a hole."

The drought-resistant native plants included a variety of shrubs, ground cover and trees, such as aweoweo, aalii, kawelu, naio, wiliwili, ohai, uulei, mao and aliki, a native coastal grass.

Volunteers contributed more than 3,000 hours and moved 120,000 pounds of rock "all by hand, taking care not to pick up rocks from cultural sites, or artifacts," Higashino said. They constructed wattles — soil erosion



control devices that also conserve water and serve as raised planting beds — by encasing rocks, soil and mulch with burlap. They also laid irrigation lines to the plants, fed by solar water pumps from holding tanks in a catchment area.

Now the plants are flowering and putting out seeds, as well as leaf litter, Higashino said with a laugh.

He added that slowing erosion also reduces runoff and sedimen-

tation in the ocean habitat.

Kahoolawe remains harsh, windblown and dry. A week after leaving the island, "You can feel the grit in your hair and your ear a week later," Higashino said.

But you also remember "beautiful views of Maui and the ocean, and when whales are there you can hear them slap the water with their tails."

For more information call 243-5020 or visit kahoolawe.hawaii.gov.

Figure 3. Honolulu Star Advertiser July 15, 2019 article on the KIRC/319(h) restoration project on Kaho'olawe.

More information on the KIRC/319(h) project and the previously mentioned agricultural runoff control projects can be found in Table 6.

Assess effectiveness of 319(h) projects and document water quality trends and environmental results

The Program assessed project effectiveness and environmental results achieved by §319(h) projects through quarterly project status reports (QSRs), final project reports, water quality monitoring data, and the Integrated Report. All contractors receiving §319(h) funding are required to conduct monitoring to demonstrate project effectiveness and to report load reductions and environmental results in QSRs and final reports. The Program documented load reductions for each project and input them into the EPA's Grants Reporting and Tracking System (GRTS). Annual load reductions for each pollutant for each project are reported in Table 6. The total approximate load reductions achieved for this FY are:

- **Sediment:** 977 tons
- **Total Nitrogen:** 9,522 lb
- **Total Phosphorous:** 9,743 lb

In addition to the water quality assessments mentioned under Goal 1, the Program tracked water quality progress for two projects in which water quality data was readily available: the Waipa Foundation Phase 1 and 2 projects. Project water quality assessments comparing the FY19 geomean to the geomean of all previous data from 2017 to September 2018¹ were performed for this report and show improvements for turbidity, nutrients, and *Enterococcus* as follows:

- **Waipa Stream²** (on the 303(d) list for turbidity (dry season); 2008 TMDL for turbidity & TSS)
 - Turbidity improved from 1.54 NTU to 0.97 NTU (0.56 NTU reduction)
 - Total phosphorous and ammonia improved slightly (by 3.5 ug/L and 3.2 ug/L, respectively)
 - *Enterococcus* improved from 45 CFU/100ml to 23 CFU/100ml (22 CFU/100ml reduction)
- **Waipa Estuary (Muliwai)** (on the 303(d) list for *Enterococcus*, ammonia, total phosphorous, and turbidity; 2008 TMDL for turbidity & TSS)
 - Turbidity improved from 4.66 NTU to 3.22 NTU (1.44 NTU reduction)
 - Total phosphorous, total nitrogen, and ammonia improved slightly (by 3.8 ug/L, 12 ug/L, and 9 ug/L, respectively)
 - *Enterococcus* improved from 160 CFU/100ml to 130 CFU/100ml (30 CFU/100ml reduction)
- **Waioli Estuary (Stream Mouth)** (on the 303(d) list for *Enterococcus*, nitrate+nitrite, ammonia, total phosphorous, and turbidity; 2008 TMDL for turbidity/TSS)
 - Turbidity improved from 2.98 NTU to 2.47 NTU (0.52 NTU reduction)
 - Total phosphorous, total nitrogen, and ammonia improved slightly (by 6.9 ug/L, 15 ug/L, and 8 ug/L, respectively)
 - *Enterococcus* improved from 96 CFU/100ml to 46 CFU/100ml (50 CFU/100ml reduction)

Turbidity in the estuaries still significantly exceeds WQS, but with increased feral ungulate control and riparian restoration, the Program is hopeful that water quality improvements and progress towards achieving WQS will continue. The Program will continue to monitor progress, and in 2020, the CWB will

¹ *Enterococcus* assessments were based on the geomean of the entire data set, not the Water Quality Standards 30-day geomean.

² Data from both wet and dry seasons, combined.

assess water quality data for the Integrated Report to determine if any of these impaired waterbodies can be removed from the 303(d) list.

The Program also reviewed project data (e.g., load reductions) side-by-side with delistings from the 2018 Integrated Report to determine whether water quality improvements had been achieved. The Program found that He'eia Stream's water quality has progressively improved for wet season criteria and began developing an EPA WQ-10 success story, which will be submitted to EPA in early FY20. While project BMPs appear to be effective based on the reported load reductions and site visits, water quality benefits have not been observed yet for all watersheds with active projects. Reasons for this may include 1) the project's scale, which may be too small to significantly impact water quality; 2) the presence of other significant sources of NPS pollution in the watershed; and 3) insufficient water quality monitoring being conducted to show the project's water quality benefits. Because only a few inland waters are monitored by the State, most water quality data assessments are limited to marine waters, where a project's effectiveness might be masked by other NPS pollution sources in the watershed or pollution from neighboring watersheds. The CWB has documented improvements in inland water quality for waterbodies near active 319(h) projects (He'eia Stream and Hanalei Bay inland waters), and therefore water quality improvements for projects may be more easily demonstrated with inland water quality data rather than marine water quality data. Similarly, with pollutants that leach into groundwater like nitrate, groundwater quality data may also be useful in the future to supplement surface water quality data in assessing a project's impact on water quality.

PRC also monitored the progress of its §319(h) projects through site visits, meetings, and/or phone calls, depending on the location of the project and the project's status. Four site visits were conducted in FY19: UH Sea Grant's He'eia Fishpond project (November 2018), the Waipa Foundation's watershed restoration project in Kaua'i (December 2018), O'ahu RC&D's Ka'alaea Phase 2 project on O'ahu (January 2019), and O'ahu RC&D's Ma'ili'ili project on O'ahu (May 2019). For detailed information about site visits and other project status communication, see Goal 3 of the PRC Program's FY19 Workplan Progress Report, Appendix C.

Goal 4: Statewide NPS Program Development and Implementation - Develop and employ an effective statewide program to manage NPS pollution

A critical component *Hawai'i's Nonpoint Source Management Plan* is developing and implementing a statewide approach to managing NPS pollution. To accomplish this goal, the State draws upon various programs and resources, including its NPS program and other agencies and programs that manage water resources. The State relies on cross-program coordination to monitor and assess water quality, prepare and implement plans for NPS-related efforts, and demonstrate water quality improvements. Partnerships are therefore critical to the success of NPS management in Hawai'i.

Objective 1: Develop and implement the Coastal Nonpoint Pollution Control Program (CNPCP) to prevent and reduce coastal NPS pollution statewide

Developing and implementing a statewide program to prevent and reduce coastal NPS pollution is a priority for the Office of Planning CZM Program (OP-CZM) and the Program, who jointly administer the State's CNPCP. Hawai'i's CNPCP remains under conditional approval from the EPA and NOAA, with the following five Urban Area management measures still require approval: 1) New Development; 2) Operating (OSDS) 3) Planning, Siting, and Developing Roads and Highways; 4) Operation and Maintenance of Roads and Highways; and 5) Bridges (siting, design, and maintenance). In addition, one

Hawai'i's Nonpoint Source Management Plan: Goal 3 Outcomes Checklist

- ✓ **At least ten new §319(h)-funded NPS projects implemented to reduce and prevent NPS pollution.**
Four new §319(h) projects were implemented in FY16 and FY17: phase two of an agricultural runoff control project in Ka'alahea and Waiahole watersheds, an agricultural runoff control project in Ma'ilili watershed, a West Maui watershed coordinator, and a fishpond restoration project in He'eia watershed. In FY18, three new projects started: a feral ungulate fencing project in West Maui, an agricultural BMP project in Pelekane Bay, and a restoration and sediment reduction project in Hakioawa watershed. In FY19, five new projects started: phase two of a cesspool replacement, ungulate control, and riparian restoration project in Waipa watershed, Kaua'i; two agricultural runoff control projects in four watersheds in windward O'ahu; a watershed-scale project employing several BMPS to reduce sediment and nutrients in West Maui; and a soil management project on six farms on O'ahu aimed at reducing nutrients. In FY19, the State met its target number of projects implemented in priority watersheds.
- ✓ **Measurable water quality improvement in at least one NPS-impaired waterbody, resulting in a delisting and a WQ-10 success story.**
Water quality improvements were documented in He'eia Stream for FY16 (delistings for total phosphorus and turbidity) and FY18 (delisting for nitrate+nitrite). A WQ-10 success story for He'eia will be submitted to EPA in FY20.
- ✓ **Improvement in water quality in an impaired watershed due to restoration activities, resulting in a SP-12 success story.**
The Program continues to track all environmental results and water quality improvements for its §319(h) projects and expects to achieve this outcome by FY20.
- ✓ **Measurable pollutant load reductions and water quality improvement in at least two additional NPS-impaired watersheds.**
Pollutant load reductions for sediment and nutrients have been documented for over seven watersheds, and *Enterococcus* reductions in Hanalei Bay were reported in FY17 and FY19. In addition, turbidity and nutrient concentrations decreased in three inland waters in Hanalei Bay in FY19. Water quality improvements in additional watersheds will be identified in FY20 in the Integrated Report.

CNPCP administrative element, Monitoring and Tracking, requires approval. Once the Program obtains approval of these management measures, it will be able to implement the CNPCP and assess the water quality impacts of the CNPCP.

This fiscal year, the Program made progress in developing management measures that meet the conditions stated in the EPA and NOAA's 2012 Interim Decision Document regarding Hawai'i's CNPCP. The New OSDS management measure was approved in August. The Program submitted a strategy for meeting the Operating OSDS management measure to EPA/NOAA in February and received feedback from EPA in May, met with the Wastewater Branch to discuss the management measure, and has

changed its approach to meeting the management measure requirements as a result. The new proposed way forward is to require OSDS inspections at point of sale, either through changes to Hawai'i Administrative Rules Chapter 11-62 or through legislation, in FY20 or FY21. The WWB, with the assistance of PRC and the Cesspool Conversion Working Group, is leading this effort.

In addition to OSDS, the New Development management measure has been significantly revised to show how Kaua'i County's ordinances and stormwater manual meet the conditions of the management measure. The OP-CZM is leading the effort to submit this management measure, and with DOH's assistance has revised it twice in FY19, with the goal of submitting to EPA/NOAA by this end of 2019.

Progress is also being made on the Roads, Highways, and Bridges management measures. In September, the OP-CZM met with Hawai'i County Department of Public Works (DPW) to work together to create a roads BMP manual and field guide for Hawai'i County and to coordinate training and printing of the manual/field guide. OP-CZM prepared a draft scope of services for the development of the manual for Hawai'i DPW and DOH to review. The contract for the manual/field guide's development will be executed in FY20, with the expectation that the BMP manual will be completed within two years of the contract's execution. Finally, the Monitoring and Tracking administrative element will be submitted to EPA and NOAA in FY20, after the CWB's Comprehensive Monitoring Strategy is completed and can be incorporated into the submittal.

OP-CZM and the Program participated in two separate Coastal States Organization (CSO) work groups this FY. The conditionally approved CSO workgroup met monthly to go into more depth on management measure requirements, to provide more guidance on management measure submissions, and to assist in reviewing draft submissions. In addition, the State participated in regular bimonthly CSO calls this fiscal year and provided documents to the CSO online repository. The Program and OP-CZM received assistance and clarification on management measure requirements from CSO members from other states and will continue to participate in CSO calls until Hawai'i's CNPCP is approved by EPA and NOAA.

The State also is working on incorporating CNPCP management measure requirements into administrative rules to improve the State's management of NPS Pollution. This fiscal year, the PRC Program, CWB Enforcement Section, and the Deputy Attorney General completed the draft of the main body of HAR Chapter 11-56, Nonpoint Source Pollution Control, and three appendices that incorporate CNPCP management measure requirements for agriculture, forestry, and marinas and recreational boating. The proposed rules will 1) require those subject to register with DOH and submit water pollution prevention plans that meet the requirements of applicable management measures and 2) will ensure that the CNPCP management measures are implemented, tracked, and enforceable. DOH is currently meeting with other State agencies to discuss and revise the rules. DOH anticipates that the rules will go through the public comment process by mid FY20 and be submitted to the governor for approval by late FY20. remaining CNPCP management measure categories – Urban Areas, Hydromodifications, and Wetlands – have been incorporated into separate appendices but are not part of the current rules package. They will be added as appendices to HAR Chapter 11-56 at a later time.

Objective 2: Develop and implement strategies to address the State's major NPS pollution concerns

Cesspools

The Cesspool Workgroup meetings have been irregular after the passage of a bill (SB2567; Act 132) in 2018 that required the formation of a "Cesspool Conversion Working Group (CCWG)." In FY19, the Cesspool Workgroup only met in December to discuss updates regarding the CCWG, which consists of

the WWB Chief, SDWB, county wastewater agencies, the wastewater industry, the financial/banking industry, the UH Hawai'i Institute of Marine Biology (HIMB), the UH Water Resources Research Center (WRRC), the Hawai'i Association of Realtors, Surfrider Foundation, the State House, and the State Senate. The State's comprehensive cesspool conversion strategy will be submitted to the Legislature in FY20.

Agriculture

The Program's agricultural runoff strategy took on a regulatory approach this fiscal year, based on the CWB development of HAR Chapter 11-56, whose Appendix A will require applicable parties to implement management practices to meet most of the requirements of the six CNPCP agriculture management measures. These management practices are primarily BMPs for nutrient, sediment, irrigation, and pest management. In addition, the Program will continue with funding 319(h) projects that develop conservation plans, implement BMPs on farms, manage soil health, and conduct outreach to local farmers. The Program will continue to work with NRCS to implement the NWQI in at least one new watershed. The agricultural runoff strategy also includes more education and training of local farmers through the expertise of the UH College of Tropical Agriculture and Human Resources (CTAHR) Cooperative Extension. CTAHR Extension Agents will work one-on-one with farmers, make educational demonstration videos, and hold training events as part of the UH/319(h) jointly funded project implementing soil health strategies, which started in August. The Program will also work with the Hawai'i Department of Agriculture (HDOA) in FY20 to provide education and training on integrated pest management and proper pesticide protocols.

Objective 3: *Build new partnerships and strengthen existing partnerships to facilitate program coordination and integration for NPS management*

In FY19, the Program continued to develop its relationships with existing partners to coordinate and integrate NPS management efforts.

With CWB

- **Monitoring Section:** PRC participated in the drafting of the Comprehensive Monitoring Strategy, and the TMDL Coordinator assisted the PRC Program by serving on the evaluation committee for its Waialeale Watershed and TMDL Implementation Plan RFP. The Monitoring Section and PRC also worked together to select a sampling location in Kawela watershed and to monitor water quality in Hanalei Bay. In addition, the Program developed a QAPP for monitoring Kawela Stream to be used by the Monitoring Section.
- **Enforcement Section:** PRC worked with the Enforcement Section to draft the 11-56 rules. The Enforcement Section and PRC also conducted outreach together to other State agencies regarding the rules.
- PRC assisted the CWB with strategic planning and programmatic support. Specifically, PRC completed or assisted with six contracts, two RFPs, other procurement activities, and the creation of the NPS/Surface Water Protection Branch.

With DOH

- **Wastewater Branch (WWB):** The Program participated in the Cesspool Workgroup, which was largely inactive this year. The WWB, which leads the Cesspool Workgroup, has been focused on participating in the Cesspool Conversion Work Group (CWG). The Program also discussed CNPCP Operating OSDS management measure requirements and identified a path forward for approval.

- **Safe Drinking Water Branch (SDWB):** The Program had hoped to target West Maui with the SDWB for the NWQI, but there were not enough eligible or interested producers in West Maui for the Program to continue beyond the readiness phase. The Program provided revision to and feedback on the DOH Water Quality Plan, which was updated by SDWB this year, and also participated in the Joint Government Water Conferences, which were organized and hosted by SDWB. In addition, SDWB and PRC discussed its priorities with the Hawai'i Rural Water Association this fiscal year. PRC plans to work with SDWB to protect source water protection areas in a more targeted way and include these protection strategies in the *NPS Plan* update.
- **Environmental Resources Office (ERO):** The Program, along with CWB Enforcement Section, worked with ERO to draft and manage the administrative tasks necessary to create a new Surface Water Protection Branch within DOH's Environmental Management Division. The Program will be reorganized into the new branch, which will also be tasked with administering the finalized 11-56 rules.

State Agencies

- **DOFAW:** The Program continued to implement its joint fencing project in West Maui to reduce erosion and sediment runoff in conservation lands. In addition, in September the Program participated on DOFAW's Watershed Partnerships Program evaluation committee for its Watershed Partnerships Grant. The Program also discussed aligning priority areas to target together through DOH and DOFAW grants and obtained GIS data from DOFAW to determine where priority watershed areas overlap. The Program also met with DOFAW in September to discuss the 11-56 rules.
- **UH Sea Grant:** The Program and UH Sea Grant continued to implement a three-year mangrove removal project in He'eia watershed and will begin a new project together in FY20, which will remove additional mangroves and install raingardens at storm drain outfalls to improve water quality. In addition, the Program discussed updating boating outreach materials for the CNPCP and will be working with Sea Grant and DLNR Division of Boating and Ocean Recreation (DOBOR) in FY20 to develop and publish these materials.
- **UH CTAHR:** The Program supported CTAHR's Soil Health Management Strategy proposal for NRCS's Conservation Innovation Grant in FY18 by pledging to assist financially in implementing soil management strategies that mitigate nutrient and sediment runoff. While CTAHR did not receive the grant award, in August the Program jointly funded a project with CTAHR that will reduce nitrogen and phosphorous on six farms on O'ahu through implementing soil health strategies.
- **KIRC:** The Program partnered with KIRC to implement a jointly funded project to reduce sediment runoff in Hakioawa watershed on Kaho'olawe (Figure 3).
- **OP-CZM:** The Program continued to work closely with OP-CZM to strategize on meeting CNPCP management measure requirements and to develop and revise management measures to submit to EPA and NOAA for approval.
- **DAR:** The Program and DAR continued to support the West Maui Ridge to Reef Watershed Coordinator, who conducts outreach and coordinates partner activities and potential projects.
- **DOBOR:** The Program met with DOBOR in February to propose an update to its "Managing Boat Wastes" manual, which has not been updated in over 15 years. The manual will be updated in FY20. The Program also met with DOBOR to discuss 11-56 draft rules.

Local Agencies

- **City and County of Honolulu (CCH):** The Program and CCH co-sponsored the Waikiki Aquarium's annual Earth Day Mauka to Makai event, which enabled the public to visit the aquarium free of charge and learn about water-related issues from various agencies.
- **Hawai'i County DPW:** OP-CZM and DOH are working with Hawai'i DPW to develop a BMP Manual and Field Guide for Roads and Highways for Hawai'i County as part of the State's efforts to meet CNPCP requirements.

Federal Agencies

- **NRCS:** in FY18, the Program applied for the NWQI Readiness Phase in West Maui. In FY19, the Program and NRCS discussed the feasibility of NWQI implementation in West Maui. NRCS was unsuccessful with finding enough producers that meet the eligibility requirements for EQIP funds; most of the agricultural landowners are above the NRCS income cap. PRC and NRCS are pivoting to another state watershed, such as Waikele or Kaiaka Bay, that may be more qualified. Both are promising because the State already conducts marine water quality monitoring in these areas, and inland water quality monitoring in Waikele will most likely begin in FY22 or FY23 as part of the Program's implementation of the Waikele Watershed and TMDL Implementation Plan. The Program will continue to work with the NRCS to set goals for agricultural runoff control in its upcoming *NPS Plan* update. NRCS has already contributed suggestions for the *NPS Plan* update via the survey the Program released this fiscal year.

Outreach

This year, the Program partnered with CCH and Waikiki Aquarium to hold the 12th annual Mauka to Makai Earth Day Environmental Expo at Waikiki Aquarium. Approximately 2,400 people attended the family-friendly event, whose goal was to promote the importance of keeping Hawai'i clean and free of pollution from the mountains to the sea. The Program also required all §319(h) contractors to conduct outreach as a part of their projects, including a minimum of two press releases describing their projects. 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 have had the desired effect of generating local interest, particularly for attracting volunteers. Each awarded project also includes an education and outreach component to inform and engage residents in polluted runoff control efforts. Outreach events include volunteer work days, workshops, and field demonstrations.

In April, the Program met with stakeholders and the watershed coordinator in Maui to discuss its priority watersheds RFP, which was released in May. One of the stakeholders in attendance, CORAL, submitted a proposal and was awarded a grant for a stream gulch restoration project to reduce erosion in a West Maui priority watershed.

In May, the Program sent out a public survey to stakeholders to request 1) feedback on the Program and current *NPS Plan*, 2) suggestions for the *NPS Plan* update, and 3) stakeholders that should be included in NPS management activities. The survey closed in September; the results are discussed in the "Survey: Evaluation of the NPS Program and the NPS Management Plan" section of this report. The Program began conducting additional outreach to partners in September to determine overlapping priorities and establish objectives and milestones for NPS control for FY21-FY25, and will continue to meet with partners through FY20 as it updates the *NPS Plan*. Specific partners include DLNR (DOFAW, DAR, and DOBOR), watershed partnerships, NRCS, HDOA, Board of Water Supply, UH Sea Grant and CTAHR, KIRC, and DOH water branches.

The Program also conducted outreach at the five Joint Government Water Conferences (JGWCs) in August, which were held in each county (with two conferences on the Big Island), and through the *NPS Plan* survey. At the JGWCs, the Program Specialist presented on the PRC Online Viewer and the CWB's online platform for the public to use to find 319(h) project information, watershed plans, NPDES permit information, and water quality information. The Planner presented on the *NPS Management Plan* update and survey results.

The Program also continued to distribute outreach materials to schools upon request, including 700 coloring books to the U.S. Marines for its Earth Day and Back to School events. In addition, 100 coloring books were donated to the Department of Education, Kona District A+ (After-School) Program.

Objective 4: Apply adaptive management to improve the State NPS Program and investigate innovative approaches to address NPS pollution in Hawai'i

This objective covers several milestones, including program assessment, staff development, and investigating new ways to improve the Program and address NPS pollution problems in Hawai'i.

Determine progress implementing the NPS Management Plan

The Program determines progress in implementing the *NPS Plan* twice a year through its fiscal year workplan that is submitted to EPA in April as part of its §319(h) grant application and through its End of Year Report. The Program also held semi-annual 3-day internal meetings to discuss projects, monitoring, plans, outreach, and other Program tasks, and requested CWB staff from other sections (generally the Monitoring Section) to participate depending on the topic. Semi-annually, the Program submitted progress reports on accomplishing workplan tasks, which are based on the goals and objectives set forth in the *NPS Plan*. This report is the expanded version of those progress reports; the checklist for each goal summarizes progress made in achieving *NPS Plan* objectives.

Investigate innovative approaches and develop new strategies to address NPS pollution

A new step the State took this year to address NPS pollution is establishing the Surface Water Protection Branch (SWPB) within DOH to implement Hawai'i Revised Statute §342E, Non-Point Source Pollution Management and Control. In 2019, the Legislature approved and provided DOH new funding to establish the Surface Water Protection Branch to enact HAR Chapter 11-56. Staff from the PRC Program and CWB Enforcement Section were involved with drafting and managing the administrative requirements necessary for Legislative approval and are now focused on managing the internal HR processes to staff the new branch in FY20.

In addition to administering the Program and managing the requirements to establish a new DOH branch, staff in the Program collaborated with the CWB Enforcement section and the Attorney General's Office to develop a new regulatory approach to NPS management. After it is established, the SWPB will administer HAR 11-56, which fulfills HRS §342E to manage NPS pollution. As previously described under Goal 4, Objective 1, the CWB Enforcement Section, PRC, and its Deputy Attorney General completed the draft of HAR 11-56 in 2019. This includes the main body and three appendices that address specific sources of NPS pollution – agriculture, forestry, and marinas and boating. Each appendix requires those subject to 11-56 to implement practices that meet management measure requirements for preventing or reducing pollution generated from specific activities. Any person/agency subject to the rules must register with DOH and submit a Water Pollution Prevention Plan that provides information on how

management measures will be implemented and maintained. There are also monitoring/inspection and reporting requirements.

As drafted, HAR Chapter 11-56 applies only to public lands. DOH conducted outreach to other agencies that the rules would affect – primarily HDOA and DLNR. Three meetings were held in FY19 to discuss the rules and appendices with these agencies and their respective Deputy Attorneys General. Outreach with affected agencies will continue into FY20 as the draft rules are revised based on feedback from those agencies. DOH plans to publish the rules for public comment in mid FY20.

The Program also investigated alternative planning strategies for watersheds and TMDLs. In FY18 the Program met with members of the EMWP twice to discuss developing an alternative plan for Kawela watershed. This fiscal year, the Program reviewed and provided feedback to the EMWP on the alternative plan's development, which is currently in a detailed outline form. The Program also discussed the alternative plan with the Hawai'i Rural Water Association, who will assist the EMWP with developing the plan in FY19-20. The Program also participated in an Association of Clean Water Administrators (ACWA) webinar on TMDL alternatives and discussed this approach with the CWB Monitoring Section. In FY20 the Program will determine whether it's feasible to develop any TMDL alternatives as milestones for the *NPS Management Plan* update.

Finally, the Program also looked at new ways it could address NPS pollution via the *NPS Management Plan* Survey, which was mentioned earlier under Goal 4, Objective 3. The survey included questions pertaining to how the State could improve the way it administers the 319(h) grant program and what should be included in the *NPS Plan* update. The survey responses provided new ways and approaches the Program will explore as it updates the *NPS Plan* in FY20. Please see the "Survey: Evaluation of the NPS Program and the NPS Management Plan" section.

Evaluate PRC Program / Update the NPS Management Plan

The National NPS Training Workshop (held in early FY19), as well as ACWA webinars, provided the Program with new ideas to evaluate the PRC Program and update the *NPS Plan*. One of the tools the State of Indiana used to update its management plan was an online survey, and the Program contacted the Indiana Department of Environmental Management for more information. The Program created two surveys on the Program and the *NPS Plan* update – one was released internally within CWB and the other was released a few weeks later for public feedback. The Program is evaluating itself using the survey responses and unmet milestones from the current *NPS Plan* as starting points. A draft of this evaluation will be completed in December to ensure that major challenges are addressed prior to the revision of the goals, objectives, and milestones of the *NPS Plan*. The final draft will be completed at the end of FY20, when the Program completes implementing its current *NPS Plan* and provides the final assessment and report on its implementation.

The National NPS Training Workshop also helped refocus the Program's evaluation process on stakeholder participation rather than relying primarily on project and water quality data to drive the Program's assessment and the development of its updated *NPS Plan*. While the Program plans to continue using pollutant load reduction data from its projects and water quality data from the Integrated Report to evaluate and plan, the emphasis of the *NPS Plan's* update will be on setting new goals and objectives that can be accomplished through partnerships and improved outreach.

During the period between the public survey's release (May) and close (September), the Program reviewed *NPS Plans* from other states and began updating its *NPS Plan* using more recent water quality

data and assessments in the chapter on water quality problems in Hawai'i. In addition, the Program began updating the chapter on legal authority over NPS to include HAR 11-56 and the new Surface Water Protection Branch. The Program also created a timeline for completing the plan's update, which will include a public comment period before the plan is submitted to EPA for approval in August 2020. After the survey results were analyzed in September, the Program began scheduling meetings with

Hawai'i's Nonpoint Source Management Plan: Goal 4 Outcomes Checklist

- ✓ **CNPCP receives full approval under CZARA.**
The State received interim approval for the New OSDS Management Measure in 2019.
- ✓ **Status of CNPCP management measure implementation is determined.**
The Program will determine management measure implementation status after the CNPCP is approved.
- ✓ **At least three NPS restoration and protection projects are implemented through partnerships, including one funded through the DWSRF or CWSRF.**
The Program began implementing a project with the UH Sea Grant Program to restore He'eia Fishpond in FY17. In FY18, the Program implemented two projects through a collaboration with DLNR-DOFAW and a project through collaboration with KIRC. In FY19, the Program began implementing a project with UH CTAHR to implement soil health management strategies on several farms on O'ahu. Since FY16, the Program has partnered with DLNR-DAR to fund the West Maui Ridge to Reef Watershed Coordinator position. The Program discussed funding opportunities with SDWB using the DWSRF but was unsuccessful; DWSRF set-aside funds were used for other SDWB projects. DOH's CWSRF focus is on large scale infrastructure projects that limit partnership opportunities.
- ✓ **Statewide approaches to managing NPS pollution from cesspools, urban areas, and agriculture are developed.**
In FY16, the Cesspool Workgroup developed a framework for the State's approach to eliminating cesspools. In FY18, the Cesspool Workgroup prioritized areas for cesspool replacements and conducted outreach in each county. A Cesspool Conversion Working Group was established by the State Legislature passing Act 132 in FY18. This group will develop a more comprehensive cesspool replacement strategy in FY20. In FY19, the Program completed draft rules to regulate NPS runoff from certain agricultural activities/lands, which comprises the bulk of the Program's agricultural runoff strategy. The 11-56 rules will also address urban areas in the future, including cesspools.
- ✓ **Integration among DOH CWB, SDWB, and WWB programs is improved to more effectively target resources towards water quality improvements.**
Since FY16, the CWB, SDWB, and WWB have worked together in the Cesspool Workgroup to create solutions for the State's cesspool problems. The Program continues to work with the CWB to monitor and assess water quality and develop monitoring plans and TMDL implementation plans. The Program works with WWB to meet CNPCP requirements. The Program plays a role in the SDWB's Hawai'i Groundwater Protection Strategy, and in FY18 worked with SDWB to target West Maui for the NWQI readiness phases. The Program also participated and gave presentations at the 2018 and 2020 Joint Government Water Conference, which was organized by the SDWB.

potential partners to update the *NPS Plan's* goals and objectives. Agencies that can contribute to watershed plan development and/or NPS control project implementation were targeted. The objectives of these meetings are to identify overlapping goals and priorities related to NPS management and collaborate on financing, developing or implementing plans, and/or implementing projects.

Attend relevant training workshops and conferences

In November, the Program Specialist attended the National NPS Training Workshop in Colorado Springs; the Program's Planner attended online. The workshop provided the Program an opportunity to learn about new ways to approach NPS management, such as partnerships with FEMA. The Program explored potential FEMA opportunities due to two disaster declarations (Kilauea Volcano eruption and Hanalei flooding) but the location and lack of county support precluded success. The Program also attended and presented at all five Joint Government Water Conferences in August and learned about what other State and local agencies are doing to manage water pollution. The Joint Government Water Conferences also provided valuable networking time with other state and county agency leaders, nonprofit resource managers, and interested citizens.

The Program also attended one day of the three-day Hawai'i Conservation Conference in Honolulu in July to view presentations on current restoration efforts in Hawai'i. Program staff attended a session devoted to He'eia watershed, one of the CWB's priority watersheds. Staff were informed of other projects occurring in the watershed. The Program also attended a session about water quality and coral monitoring by researchers and staff from DAR. The Program will meet with DAR in early FY20 to discuss improving the State's approach to reducing NPS pollution that impacts coastal waters and coral reefs in conjunction with DAR's coral and water monitoring efforts.

PRC staff also attended several trainings this year. The Contracts Specialist attended procurement training in Honolulu in October, and the Program Specialist attended supervisory training in December. The new EHS attended a two-day training on GRTS in April and input all open project data into GRTS before the end of the fiscal year. The Planner attended ESRI ArcGIS Pro training in September to learn spatial analysis tools for planning.

Survey: Evaluation of the NPS Program and the NPS Management Plan

In May 2019, the Program sent out a public on-line survey on the PRC Program, the State's approach to controlling NPS pollution, and Hawai'i's NPS Management Plan. The purpose of the survey was to use the feedback provided by survey respondents on these topics to improve the Program and the State's NPS management efforts and to guide goals and objectives for the NPS Management Plan update. The survey link was sent to the entire CWB staff, the Program's RFP email distribution list, and other individuals and organizations with ties to the Program and CWB. Recipients were asked to forward the link to others in their respective fields and communities that also might provide feedback. The target audience was primarily those involved in water resources management, but wider public participation was encouraged.

CWB staff were asked to take a test survey that contained many of the same questions as the public survey. The goal was to obtain feedback on the Program and NPS Management Plan from CWB staff and determine whether any survey questions should be added, revised, or removed from the public survey. Survey responses by CWB staff (12 respondents total) are included below, where noted.

In August, the Program Specialist and Planner gave presentations about the NPS Program, NPS Management Plan, and the survey at the Joint Government Water Conferences in each county to encourage more survey participation. Unfortunately, the survey closed in September but fielded only 41 responses, despite the large turnout and interest expressed at all the Joint Government Water Conferences. Follow-up reminders to take the survey were sent to the Joint Government Water Conference attendees and the Program's contacts but were largely ignored. However, the 41 respondents did provide valuable feedback and suggestions. A summary of the responses is provided below, and a copy of the survey itself can be found in Appendix C.

Survey Respondents

A total of 41 people responded to the public survey. The majority of survey responses were from people located on O'ahu (63%). Smaller number of respondents were from the Big Island (12%), Maui (10%), and Kaua'i (5%), with 7% respondents from out of state or from more than one Hawai'iian island.

Nearly all of the respondents (98%) were involved in work associated with NPS pollution. A large portion of the respondents were conservation professionals (37%) and/or water quality professionals (32%) (these categories were not mutually exclusive). A similarly large number of respondents were part of a watershed group (34%). A smaller number of respondents were farmers (5%) and from private industry (5%). Many of the respondents were academics (17%), and several of the respondents (12%) were current or former PRC Program grantees or partners.

Takeaways:

- The Program should boost its outreach on the Big Island, Maui, and on Kaua'i, where survey turnout was relatively low, despite recent outreach and current 319(h) projects and partnerships on Maui (3 projects in FY 2019, a watershed coordinator, and partnerships with DOFAW and West Maui Ridge to Reef members) and to a lesser extent Kaua'i (1 current project).
- Because over a third of respondents identified as being part of a watershed group, the Program should investigate collaborating with these groups and conduct further outreach as the plan is being updated. The Program has awarded funds to watershed groups, such as Hanalei Watershed Hui and the Ala Wai Watershed Association, within the past few years, and could highlight and/or expand the role watershed groups will have in NPS management in the updated plan.

Survey Responses: Current NPS Program and NPS Management Plan evaluation

There were two survey questions posed to evaluate the current NPS Management Plan and the PRC Program. Survey takers were first asked whether the current *NPS Plan* goals address the needs of the State. The responses overall were positive, although some respondents felt the Plan's goals were inadequate (Figure 4). The second question was open-ended and asked what people liked and disliked about the PRC Program (Table 1). Many of the respondents (19%) stated that they did not know enough about the Program to answer the question. In addition, this question was skipped by 24% of the respondents, suggesting that they did not know enough about the Program to comment. Some

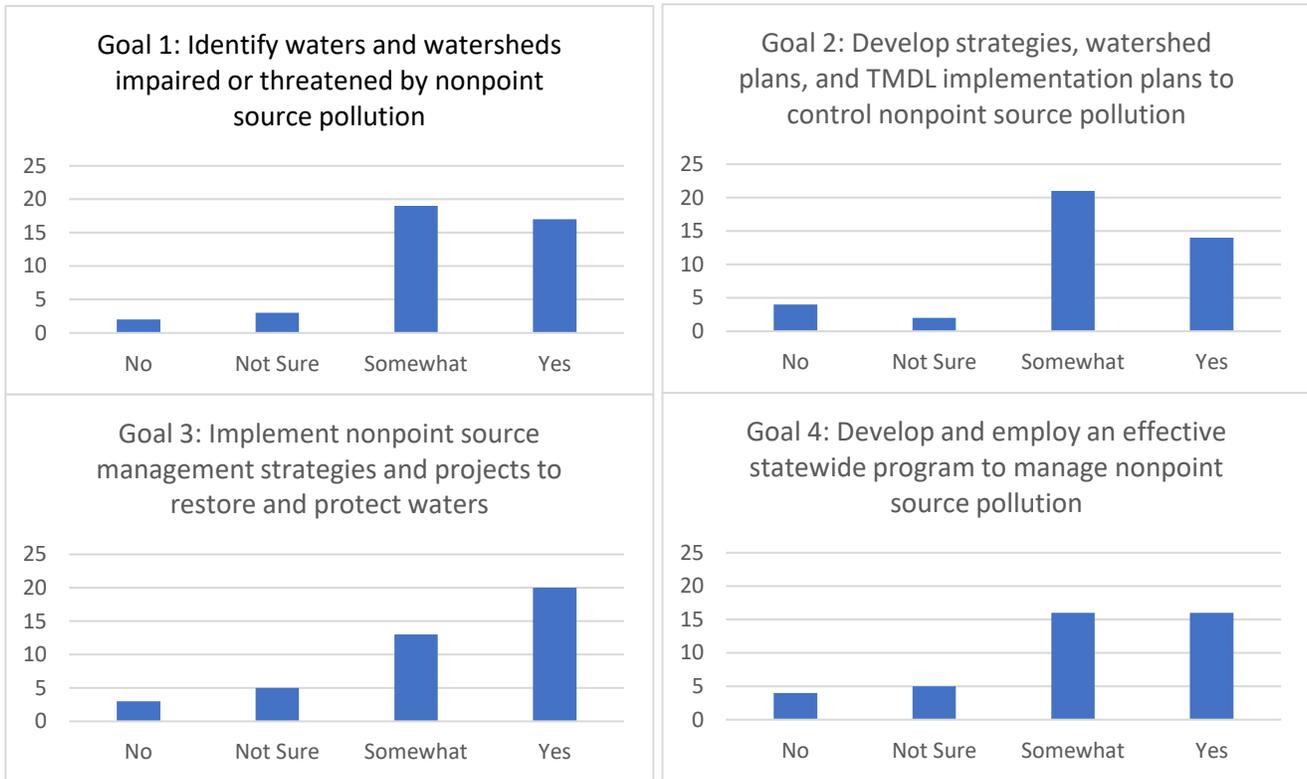


Figure 4. Survey responses for whether the NPS Management Plan goals address the State’s needs

Table 1. Survey responses for likes and dislikes about the PRC Program

Likes about the PRC Program (Number of Responses)	Dislikes about the PRC Program (Number of Responses)
Staff dedication and response to inquiries (7)	Lack of enforceable objectives; lack of NPS enforcement (4)
Program’s mission and goals; focus on real NPS problems (3)	Limited resources, including understaffed program (3)
Ease of access to information, including watershed plans (2)	Not doing enough to control runoff; inadequate protection of coastal marine resources (2)
Effectiveness of program activities; water quality improvements in targeted areas (2)	Not enough outreach, particularly to people/groups less familiar with CWB (2)
Provide funding for specific projects (1)	Slow progress in water quality improvements (2)
Large amounts of funding that allow for more impactful NPS reduction projects (1)	Reporting requirements burdensome for contractors/partners (1)
Focus on BMPs (1)	Weak interagency communication (1)
Specific information provided in the NPS Management Plan (1)	Lack of diversity in approach; too focused on cesspools (1)
Continuously improving (1)	Not community-based or locally led (1)
Good public outreach (1)	Too much bureaucracy involved for projects (1)
	Difficult to wade through information (1)

respondents posted suggestions for the Program that were neither likes nor dislikes; these suggestions were considered under survey responses for a following question about how the State could improve its approach to addressing NPS pollution (Table 3). Below is a summary of likes and dislikes about the PRC.

Most of the dislikes and deficiencies identified in this question could be expounded upon in a following survey question, which asked survey takers to describe ways in which the State could improve the way it administers the 319(h) Program. Answers to this question were reviewed and classified under categories to better see where most of the suggestions for improvements lay. Some answers were general and pertained the program's scope, while others were specific to certain program activities and requirements. Suggestions for point-source rather than NPS pollution were not included in the results reported below.

Table 2. Summary of survey responses (with response frequency) to “In what ways could Hawai'i improve the way it administers its NPS grant program to be more effective?” (Responses in red are from CWB staff.)

OUTREACH AND EDUCATION
Increase public awareness and outreach, particularly to groups that are not familiar with the program. <i>Specific suggestions:</i> develop an outreach plan, do TV and radio commercials, more education on 319(h) grant eligibility, more education on the <i>NPS Plan</i> and annual monitoring reports to community groups, NGOs, and state and local agencies (5)
Update website to have a resources page for residents and citizen scientists to provide more information and engage community in water quality monitoring and reporting areas of concern or spills (2)
PROGRAM SCOPE
Allow use of 319(h) funds for monitoring; develop monitoring programs to quantify impact where needed (2)
Data metrics (before/after) (2)
Add more extensive lists of contaminants to water quality standards (1)
Have specialists in different NPS-related fields, such as construction, agriculture, and urban (1)
Administer the program locally (by island) (1)
Revisit agricultural issues and requirements concerning conservation plans (1)
Look into use of easements for wetland protection and restoration (1)
Have a targeted theme each year (e.g., year of the cesspool) (1)
Allow for more priority watersheds (1)
NPS PROJECTS
Provide step-by-step instructions for estimating pollutant load reductions and provide support for modeling load reductions (2)
Modify reporting for pollutant load reductions. Specific suggestion: Account for future load reductions that will result from project BMPs (after the contract has ended); adjust reporting load reductions for lag time (1)
Conduct more site visits to see project progress and challenges first-hand (1)
Look for shovel-ready projects to implement (1)
More small projects (1)
PLANNING AND FINANCING
Expand eligible watersheds by developing more watershed plans and alternative plans (2)
Streamline <i>NPS Planning</i> and projects with required plans and permits (1)

Coordinate funding for communities to develop new watershed plans (1)
Partner with other agencies that develop watershed management plans to increase potential eligibility for 319(h) funding (1)
Look for other sustainable financing mechanisms (outside the 319(h) grant) to improve infrastructure (1)
Find ways to lower match required for NPS projects to encourage more participation in RFPs (1)
State should contribute general funds to supplement the PRC grant funds to implement a larger number of projects that improve water quality and to develop additional watershed plans. Additional personnel are needed (1)
REQUEST FOR PROPOSALS AND REPORTING
Reduce contracting time between award and project start (4)
Reduce reporting frequency to semi-annual or annual (1)
Release more RFPs with a broader focus (1)
POLICIES AND ENFORCEMENT
Enforce against persons causing runoff (3)
Create a separate Environmental Cabinet or central oversight agency (2)
Create stronger policies or laws to discourage / regulate pollution (1)
Define how NPS will be enforced and revise WQS accordingly (1)
PARTNERSHIPS
Foster private-public partnerships and ground-up support for NPS management (1)
Involve NGOs (1)
Engage more partners, especially other state agencies that have overlapping responsibilities (1)
Streamline acceptable reporting requirements across partner agencies (1)

Takeaways:

- Staff commitment and responsiveness to inquiries were the most commonly liked attribute of the Program, followed by the Program's mission and focus. Suggestions for improving the State's NPS program included obtaining additional funds outside the 319(h) grant to hire additional personnel.
- The most commonly stated dislike of the PRC Program is that it lacks enforceability of NPS pollution and that it is understaffed and/or is limited by lack of resources. Enforcement was one of the most common suggestions to how the NPS Program could be improved.
- While the effectiveness of projects in targeted areas was cited by some, others stated that Program was not adequately addressing NPS pollution problems in general.
- Lack of outreach to groups outside of CWB was stated as a shortcoming by some respondents. The 19% of respondents that stated that they didn't know enough about the Program to respond to the questions regarding what they liked and disliked about the Program suggests that outreach could be improved. In addition, the most common suggestion for improving the State's *NPS Plan* was improving outreach and education through various methods.
- Suggestions for improving the NPS Program ranged from topics such as water quality monitoring, watershed planning, reporting requirements, and partnerships.

Survey Responses: NPS Management Plan Update Suggestions

The survey contained two questions that specifically related to the content of the NPS Management Plan, including water quality goals the State should achieve (Tables 4 and 5). In addition, the survey asked for organizations the Program/DOH should partner with to manage NPS pollution to meet the new goals established in the updated NPS Management Plan (Table 6).

Table 3. Summary of survey responses (with response frequency) to “What nonpoint source and/or water quality accomplishments should Hawai‘i achieve by 2025?” (Responses in red are from CWB staff.)

Water Quality Monitoring
Accurate and faster water quality testing technology being employed (3)
Public access to monitoring data through an online platform (2)
Implement TMDLs (especially Ala Wai) (2)
At least 1 water quality monitoring site per 10 miles of coastline (1)
Notify all relevant agencies if values exceed WQS within their respective management regions (1)
More beaches and stream mouths monitored (1)
Ensure water flowing through streams and channelized stormwater systems are of similar WQ to their former natural state.
Reevaluate WQS and their validity to Hawai‘ian waters and revise them if necessary
Collect nutrient loading data for all major watersheds (1)
More regular monitoring (1)
Ensure that DOH has monitoring, reporting, and data sharing for WQ monitoring efforts (1)
Establish functioning stream gages again to determine discharge and suspended sediment (1)
Ensure beach and drinking water are safe (1)
De-list one priority watershed waterbody, with an EPA success story (1)
Bring 50% of impaired waterbodies below state standards (1)
Test all streams for NPS pollution (1)
Comprehensive monitoring (coastal and inland) to support NPS BMP effectiveness (1)
Delist streams and waterbodies, particularly those that have the greatest potential to be delisted (1)
Address Pollution Sources
Reduce and prevent erosion from all lands; reduce sediment and erosion measurably (in a priority watershed) (4)
Eliminate all or replace a significant number of cesspools with tertiary treatment systems (3)
Reduce pollution impacts from feral ungulates (3)
Reduce brown water events by some percentage (e.g., 25%) (2)
Outfit all (or 50% of) storm drain inlets with capture/filter devices; debris catchment at drain outlets (2)
Reduce nitrogen and phosphorous in surface water and groundwater measurably/by 90% (in a priority watershed) (2)
Reduce pharmaceuticals and fertilizers in surface waters (1)
Ban use of harmful herbicides and pesticides in coastal environments (1)
Control all (or some percent of) large sources such as agriculture, golf courses, parks, conservation land, commercial/industrial, and roads (1)
Establish a TMDL for TSS for Kahoolawe in Hakiowawa watershed (1)
Notable trash and sediment reductions entering State waters (1)

Clean up the Ala Wai Canal (1)
Centrifugal force separators in concrete lined channels (1)
Use floating islands to filter TSS and heavy metals (1)
Substantial reduction in runoff and sedimentation via increased on-site retention, projects that increase permeability of hardened streams and infrastructure, and aquifer recharge (1)
Address channelized and hardened waterways that efficiently kills coral (1)
Achieve tangible reductions in nutrients and sediment from stormwater by investing in natural filtration engineering technology (1)
Act on 75% of impaired waters and watersheds (1)
All significant farms develop/implement a conservation plan (1)
Wastewater
Sustainable financing for sewage upgrade from cesspools and septic systems (3)
Convert all wastewater treatment facilities to R1-level water reuse, with 50% reuse achieved (1)
Onsite wastewater tracking system that allows for identification of cesspools eligible for various sources of financial assistance, with priority for funding based on distance to surface water or aquifer. Database would provide foundation of OSDS O & M program with automated queries (Georgia Health Dept used 319(h) funding to develop WELSTROM database) (1)
Coordination
Work with relevant agencies and stakeholders to reach common goals of all existing WQ plans; use an inter-agency collective mission and coordinate NPS protection activities; work with partners in a pilot watershed (4)
Establish government and non-profit partnerships to promote on-the-ground change (e.g., planting rain gardens); work with partners in a pilot watershed (2)
Convene working groups to find solutions to and root problems of erosion (1)
Create a “regulatory working group” that includes CWRM, SDWB, WWB, CWB and county planning departments (and any other Hawai’i regulatory agency that deals with cesspools and new construction or variance requests) to establish consistent and standardized criteria and processes for 1) cesspool elimination and 2) wellhead protection. Strategic plan from a regulatory working group that ranks priorities and identify practices that should be banned (1)
Planning
Seek additional funding for the PRC Program to develop watershed plans and reduce NPS Pollution (1)
Enable watersheds that aren’t priority watersheds to apply for and receive 319(h) funds (1)
Continue efforts to create requirements to control NPS pollution from agricultural lands (1)
Create a plan and method to reduce stormwater and wastewater pollution (considering zoning laws and OSDS density) (1)
Create financial incentives for the adoption of BMPs that measurably reduce NPS at their source (1)
Incorporate water catchment into all future housing and commercial developments as well as roadways to prepare for climate change (1)
More watershed plans; one watershed plan/year; alternative plans (7) to increase number of 319(h)-eligible watersheds (1)
Priority focus areas for CWB and WWB on every island and/or county (1)
Develop open source geodatabase that contains various sources of pollution with data contributions from private, federal, county, state and NGOs (1)
Complete CNPCP management measures with identifying needs that partners can potentially assist with (1)
Develop increased capacity in the state for conducting NPS protection activities (1)
Show strength and leadership in new directions (1)
NPS Branch (1)

Qualitative and quantitative measures of progress or successes/failures in improving WQ (1)
Project Implementation
Watershed restoration funding and efforts, with focus on forested upper watersheds and use of non-invasive plants (8)
Fund more experimental projects to determine BMP efficacy (1)
Provide financial support for community-based projects (1)
Outreach
Increase public outreach and engage stakeholders (1)
More education on what the problem is and all the ways to stop it (1)
Training for professionals and citizen on stormwater and agricultural BMPs (1)
Better education of public on urban runoff, esp. oil, grease, toxic chemicals, and bacteria and nutrients from pet wastes and feral animals (1)
Enforcement
Regulate NPS with clearly defined water quality management process that includes enforcement (3)
Enforce construction regulations for runoff (1)

Table 4. Summary of survey responses (with response frequency) to “What should be incorporated into the updated version of Hawai‘i’s Nonpoint Source Management Plan?” (Responses in red are from CWB staff.)

OUTREACH AND EDUCATION
Advertising or marketing 319(h) Program and/or NPS Management Plan to the public (2)
Identify specific stakeholders (1)
Public education (1)
Training and technical support for modelling pollutant load reductions (1)
Create incentive for citizen science groups to collect usable water quality data (1)
Training for professionals and/or citizens on stormwater BMPs in urban areas alongside agricultural BMPs (1)
More infographics and executive summaries of the plan communicated to outside groups/agencies (1)
WATER QUALITY MONITORING AND ASSESSMENT
Increase WQ monitoring to determine impairments and incremental progress in restoring WQ; data collection in coastal waters, perennial streams, groundwater, and stormwater discharge; randomized sampling of other pollutants (e.g., pesticides, microplastics, pharmaceuticals) (5)
Implement, develop, and update TMDLs (3)
Update WQS – to be reflective of biological needs of stream and near-shore ecosystems, replace turbidity standard with TSS (2)
Make monitoring data accessible and easy to use through an online platform; make it easier for citizen science groups and environmental organization to share their water quality monitoring data/results with CWB (2)
Modernize and update statewide WQ monitoring (1)
Update water quality data and watershed- or WQ-related research results (1)
Use data from citizen groups who follow DOH protocols (1)
AREAS / TOPICS OF FOCUS
Prioritize watersheds ; prioritize by sector (e.g., priority agricultural watersheds or forest watersheds); at least one priority watershed per county/island; engage specific watersheds (5)
More focus on consequences of climate change and sea level rise (2)
Improve infrastructure and reduce feral ungulates; DLNR-type activities (e.g., invasive species removal, fencing/ungulate control) (2)

Prioritize work in a watershed that could have substantial impact by metric (1)
Prioritize work in a watershed if all necessary partners in watershed are actively involved (1)
Provide priorities by island (1)
Forest protection (1)
Restoration at headwaters (1)
Establish process to move away from use of injection wells (1)
Excessive sedimentation from Kahoolawe (1)
Place-based programs to provide education and wastewater solutions (1)
Reduction of pollution sources including PCPs hitting coastal waters thru sewage discharge (1)
Subterranean groundwater inputs in leeward Hawai'i Island for monitoring and mitigation efforts (1)
More focus on protection activities (1)
NPS PROJECT-SPECIFIC
Emphasis on large-scale projects (1)
Fund projects serving community needs (1)
Projects funded under emergency declarations should be monitored for runoff impacts (1)
Floating islands to filter TSS and heavy metals (1)
Cesspool remediation funding for private lands (1)
PLANNING AND EVALUATION
Strategies to support efforts to mitigate NPS pollution (with focus on streams that have data on pollutant concentrations) (3)
Measures of effectiveness; process to assess the effectiveness of various watershed projects to improve water quality; Results from the previous NPS pollutant reduction projects, including BMP effectiveness data (3)
Find ways to lower matching costs required for NPS control projects to encourage more participation in RFPs; more creativity in finding funding sources for personnel and project needs (2)
Plans for how to reduce NPS pollution (1)
Progress goals (1)
Analyze and identify trends (1)
Look to other states or watershed groups that have implemented low bar measures which require little capital and result in immediate benefits to WQ (1)
Find other ways to attain WQS (1)
Increase the number of approved watershed plans (1)
Net-zero strategies incorporated into site development regulations (1)
Measurable targets and consequences for failing to meet targets (1)
Better checklist of what needs to be done and who will do it (1)
Follow up on past projects (1)
POLICIES AND PROCEDURES
Enforce city departments of planning and permitting actions to approve developments near the coast without adequately addressing NPS concerns (pursuant to the Coastal Zone Management Act) (1)
Incentives for polluters to adopt NPS mitigation strategies or fee structure for polluters (1)
More enforcement of TMDLs (1)
Utilize available stormwater service fee (1)
NPS Branch foundation and implementation (1)
PARTNERSHIPS
Partner with outside organization to increase capacity and leverage; collaboration with watershed groups; more active coordination among agencies and organization that regulate NPS or fund NPS projects; graphic identifying local partners that have overlapping goals/functions (4)

Align DOH and DOFAW priorities for certain areas and watersheds (1)
Improve data-sharing – identify challenges and resources (1)
Look into Board of Water Supply watershed-based conservation efforts, including watershed plans (1)
OTHER ACTIVITIES / INFORMATION
Easier way to access resources and attention outside of preparing a watershed-based plan (1)
Research – NPS-control pilot tests [of BMPs] to develop knowledge of efficacy and performance, maintenance requirements, and location-appropriate technology (1)
Results of EPA’s Waterscape Tool (1)

Table 5. Survey responses to “Please list any organizations that the Department of Health should partner with to manage nonpoint source pollution more effectively”

State	Frequency	Current or Recent* 319(h) Partner
Office of Planning	2	Yes
Department of Agriculture	3	No
DLNR	2	Yes
DLNR-DAR	2	No
DLNR-DOFAW	1	Yes
HACD/Soil & Water Conservation Districts	4	Yes (SW Maui S&WCD)
DOH-Wastewater Branch	1	Yes
UH	3	Yes
UH-WRRC	4	No
UH-CTAHR, Cooperative Extension	2	Yes
Uh Sea Grant	1	Yes
Cesspool Conversion Working Group	1	Yes
Department of Education	1	No
KIRC	1	Yes
Dept of Hawai’ian Homelands	1	No
County	Frequency	Current or Recent* 319(h) Partner
“Counties”	1	Yes (CCH)
City Parks	1	No
Boards/Depts of Water Supply	1	No
Depts of Planning and Permitting	1	No
City and county agencies	1	Yes (CCH)
Federal	Frequency	Current or Recent* 319(h) Partner
NRCS	3	No
NOAA, NOAA Coral Reef Conservation Program	3	Yes (CNPCP)
USGS	1	No
USFWS	1	No
EPA	1	Yes
Dept of Interior	1	Yes (NOAA)
Dept of Defense	1	No
Army Corps of Engineers	1	No
NGOs and Community-Based Organizations	Frequency	Current or Recent* 319(h) Partner
Malama Pupukeya	1	No
Hawai’i Association of Watershed Partnerships	2	No
Hanalei Watershed Hui	1	Yes (grant recipient)

Hawai'i Farm Bureau / Hawai'i Grazing Land Coalition	2	No
Hawai'i Farmers Union United	1	No
Surfrider Foundation	3	No
Hawai'i Cattlemen's Council	1	No
Coral Reef Alliance	1	Yes (grant recipient)
The Nature Conservancy	3	Yes (grant recipient)
Malama Maunaloa	1	No
Neighborhood Boards	1	
Watershed protection programs	2	Yes (grant recipient)
Resource Conservation & Development Councils	1	Yes (grant recipient)
Invasive species councils	1	No
Other	Frequency	Current or Recent* 319(h) Partner
Farmers	1	No
SRGII	1	Yes (grant recipient)
Farmer associations	1	No
Construction associations	1	No
Homeowner associations	1	No
Resorts	1	No
Large landowners	1	Yes (grant recipient)

* Recent = within five years

Takeaways for the NPS Management Plan Update:

- DOH should provide more outreach, education, and other resources to the public and other agencies with regards to NPS problems and NPS management efforts, with a focus on getting the word out about NPS pollution and providing resources to citizen scientists interested in or already conducting water quality monitoring.
- DOH should work with more agencies, including watershed partnerships, to collectively plan, leverage funding, and more effectively address statewide pollution problems such as erosion and sediment.
- DOH/the State should conduct more enforcement of water quality violations and of NPS pollution in general.
- DOH should conduct more water quality monitoring and develop a better way to share data with other agencies and organizations.
- DOH/the State should develop more watershed plans and create more ways of financing NPS control projects and plans.
- DOH/the State should develop specific goals and objectives to address 1) specific sources of pollution, 2) water quality monitoring improvement efforts, 3) watershed planning, 4) funding mechanisms and opportunities, 5) enforcement, 6) partnerships, and 7) outreach and education.
- DOH/the State should continue implementing NPS control projects that focus on BMP implementation to restore watershed/watershed areas.
- DOH/the State should continue to find financing methods to replace cesspools with better wastewater treatment systems.

Table 6. Clean Water Act §319(h) Projects for Fiscal Year 2019

Project Title (Watershed), Contractor	Project Description & Update	Environmental Results and Pollutant Load Reductions	Start-End Dates and Funding
Watershed Implementation Project for the Ahupuaʻa of Waipa (Waipa), The Waipa Foundation	<p>The project was completed in August 2019. The contractor: 1) replaced three (3) cesspools in the project area with a traditional septic system, a modified septic system with mounded leachfield, and an aerobic treatment unit; 2) developed a feral ungulate removal program with area hunters to reduce the population of feral ungulates in the watershed; 3) developed a five thousand (5,000) square feet constructed wetland; 4) installed livestock fencing and water troughs to close a paddock to prevent livestock from entering the Waipa watershed drainage ditches; 5) implemented taro loʻi management practices at the Waipa Taro Farm; 6) restored and stabilized approximately two (2) acres of the lower portion of the Waipa Stream with in-stream habitat enhancement, removal of invasive plant species, revegetation with native plants, and installation of sediment control measures; 7) stabilized approximately one (1) acre of upland forest area. The contractor also conducted water quality monitoring and hosted community volunteer workdays and taro loʻi workshops.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Sediment: 20 ton/year • Total nitrogen: 1,263 lb/year • Bacteria: 2.41×10^{17} CFU/year • Biological oxygen demand: 169 lb/year • Total suspended solids: 663 lb/year 	<p>2/22/2016 – 8/21/2019 \$386,290 (§319(h)) \$108,650 (match)</p>
Maʻiliʻili Reservoir Mitigation Project (Maʻiliʻili), Hui Ku Maoli Ola	<p>Restoration of the reservoir in Maʻiliʻili watershed includes improving wetland and wildlife habitat, trapping NPS pollutants before they are deposited into Maʻiliʻili Stream, and educating local school children about NPS prevention methods. Outreach and education will consist of activities in the community to encourage participation during scheduled workdays at the project site. Participants will assist in site preparation, plant native vegetation, and assist with maintenance. This is a SEP project (not funded by 319(h), but match is used). The contractor is currently awaiting the issuance of a permit from the City & County of Honolulu and approvals from the landowner (Hawaiʻi Department of Hawaiʻian Home Lands).</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Total nitrogen: 1,000 lb/year • Total phosphorus: 200 lb/year • Sediment: 100 ton/year 	<p>2/29/2016 – 2/28/2021 Funded by a DOH & CCH SEP agreement \$727,080 (SEP) \$201,560 (match)</p>
West Maui Ridge to Reef Priority Watershed Coordinator (West Maui), Department of Land and Natural Resources (DLNR)	<p>The Watershed Coordinator continues to conduct education and outreach and coordinate various water quality improvement projects among partners in the West Maui watersheds. The Watershed Coordinator is conducting at least forty (40) outreach events, including community events and workshops. Other outreach consists of press releases for</p>	<p>N/A</p>	<p>11/14/2016 – 11/13/2020 \$192,400 (§319(h)) \$22,330 (match)</p>

events and water quality improvement projects, social media campaigns, targeted email announcements, regular updates to the West Maui Ridge to Reef website and assisting the PRC program with coordinating RFP outreach in West Maui.

Agricultural Stewardship in the Ma'ili'ili Watershed (Ma'ili'ili),
O'ahu Resource Conservation & Development Council (ORCD)

This project was completed in June 2019. ORCD assisted agricultural producers with the development of seven (7) conservation plans, provided cost-share funding to implement BMPs arising from those plans, and developed operations and maintenance plans to ensure the continued efficacy of the installed BMPs. ORCD also sponsored four (4) field days and public informational meetings to inform area farmers about conservation practices and BMPs that reduce soil erosion and improve water quality.

Estimated Load Reductions:

- Sediment: 62 ton/year
- Total nitrogen: 319 lb/year
- Total phosphorus: 108 lb/year

12/19/2016 –
6/18/2019
\$146,300 (\$319(h))
\$43,730 (SEP)
\$61,680 (match)

Ka'alaea and Waiahole Stream Restoration Phase 2 (Ka'alaea and Waiahole),
O'ahu Resource Conservation & Development Council (ORCD)

This project was completed in September 2019. (It was extended for three (3) months through a no-cost extension to provide the contractor with additional time to complete their final conservation plan and to implement additional BMPs.) ORCD assisted local farmers with the development of five (5) conservation plans and implemented BMPs from conservation plans designed to improve water quality. The contractor completed two (2) field days in Ka'alaea watershed and two (2) field days in Waiahole watershed and discussed and demonstrated BMPs to local agricultural producers.

Estimated Load Reductions:

- Sediment: 55 ton/year
- Total nitrogen: 124 lb/year
- Total phosphorus: 53 lb/year

12/19/2016 –
9/19/2019
\$216,810 (\$319(h))
\$95,400 (match)

He'eia Fishpond Mangrove Island Removal Project (He'eia),
University of Hawai'i Sea Grant College Program

UH Sea Grant is conducting a multi-phase mangrove (*Rhizophora mangle*) removal project that will eliminate cattle egret habitat and reduce total phosphorous. In Phase 1, UH Sea Grant removed mangroves and non-native plants from the staging area along the southwestern wall of He'eia Fishpond and implement BMPs to reduce erosion and runoff from the staging area. In Phase 2, UH Sea Grant removed mangroves from a "mangrove island" in He'eia Fishpond. The contractor is currently replanting the staging area and mangrove island with native plants, implementing erosion control measures, and maintaining the project sites for twelve (12) months (Phases 3 and 4). UH Sea Grant has hosted a workshop for local stakeholders on mangrove removal and continues to collaborate with Paepae o He'eia to provide stewardship for He'eia Fishpond. Due to weather delays, the contractor requested a twelve (12) month no-cost contract extension to complete the project. The no-cost contract extension is current pending approval.

Estimated Load Reductions:

- Total nitrogen: 2 lb/year
- Total phosphorus: 657 lb/year

3/14/2017 –
9/13/2020
\$189,500 (\$319(h))
\$57,570 (match)

Pelekane Grazing Improvement Project (Kawaihae), Department of Land and Natural Resources (DLNR)	DLNR will implement agricultural BMPs in Pelekane to reduce sediment, total nitrogen, and total phosphorous. Activities include repairing an existing damaged paddock fence in Pelekane Bay to allow for controlled and rotational grazing in various paddocks, installing a new paddock fence to create a lower paddock and upper paddock for rotational grazing, and reducing the usage rate of a watering trough located near the Mekeahua Stream.	Estimated Load Reductions: <ul style="list-style-type: none"> • Sediment: 10 ton/year • Total nitrogen: 1,467 lb/year • Total phosphorus: 1,833 lb/year 	1/31/2018 – 1/30/2020 \$90,000 (\$319(h)) \$22,500 (match)
DLNR, Div. of Forestry and Wildlife: Polluted Runoff Control Project for West Maui (West Maui), Department of Land and Natural Resources (DLNR)	DLNR will install new ungulate control fence and retrofit existing fencing to exclude feral ungulates from the Pu'u Kukui Watershed Preserve in Honolulu, Honokahua, and Kahana watersheds. DLNR will also retrofit an existing ungulate control fence to exclude feral ungulates from the Kapunakea Preserve in Wahikuli and Honokowai watersheds.	Estimated Load Reductions: <ul style="list-style-type: none"> • Sediment: 40 ton/year 	1/30/2018 – 1/29/2021 \$735,160 (\$319(h)) \$184,000 (match)
Reducing Excessive Sedimentation in the Hakioawa Watershed of Kahoolawe Island (Phase 2) (Hakioawa), Kaho'olawe Island Reserve Commission	This project was completed in August 2019. The project reduced erosion and sediment loads in the Hakioawa watershed by removing non-native vegetation and replacing them with approximately ten thousand (10,000) native plants, extending and adding irrigation lines to support native vegetation, and installing soil erosion control devices, including gabions, wattles, swales, and geotextiles.	Estimated Load Reductions: <ul style="list-style-type: none"> • Sediment: 20% reduction in TSS in Hakioawa Stream 	8/9/2018 – 8/8/2019 \$49,590 (\$319(h)) \$150,140 (match)
Waimanalo Stream Restoration and Community Outreach - Phase 3 (Waimanalo), O'ahu Resource Conservation & Development Council (ORCD)	ORCD will develop a minimum of five (5) new conservation plans and establish a BMP Investment Fund to administer cost-share grants to at least five (5) farms. ORCD will also evaluate the long-term effectiveness of BMPs previously implemented (in Phases I and II) and provide updated load reductions. ORCD plans to conduct one field day to feature agricultural BMPs designed to reduce NPS pollution and will conduct additional education and outreach activities throughout the watersheds.	Estimated Load Reductions: <ul style="list-style-type: none"> • Sediment: 200 ton/year • Total nitrogen: 175 lb/year • Total phosphorous: 65 lb/year 	12/4/2018 – 12/3/2020 \$247,720 (\$319(h)) \$73,590 (match)
Watershed Implementation Project for the Ahupua'a of Waipa – Phase 2 (Waipa), The Waipa Foundation	The Waipa Foundation will build upon the progress made in the Waipa Phase 1 by: 1) replacing five (5) existing cesspools along the Waipa, Waioli, and Waikoko Stream watersheds with alternative Individual Wastewater Systems (IWS); 2) continuing the feral ungulate removal program implemented in Waipa Phase 1; 3) restoring 1 acre of the lower Waipa Stream riparian corridor and re-treating the areas of the Waipa Stream that were damaged by the April 2018 floods; 4) implementing taro lo'i management practices; and 5) maintaining BMPs installed in Waipa Phase 1.	Estimated Load Reductions: <ul style="list-style-type: none"> • TSS: >40,000 lb/year • Fecal Coliform: ~2x10¹⁵ CFU/year 	3/20/2019 – 3/19/2021 \$351,000 (\$319(h)) \$110,380 (match)

<p>Buffers and BMPs for Windward O'ahu (Kahalu'u, Waihe'e, and Haiamoa), O'ahu Resource Conservation & Development Council (ORCD)</p>	<p>ORCD will develop five (5) new conservation plans for local farmers in the Kahalu'u, Waihe'e, and Haiamoa watersheds and will assist the farmers in implementing BMPs that improve water quality from the conservation plans. The contractor will also restore three hundred (300) feet of riparian buffer along the Kahalu'u and Waihe'e streams. The contractor will also outreach by sponsoring two field days on farms in the Kahalu'u, Waihe'e, and Haiamoa watersheds to demonstrate riparian restoration techniques and highlight agricultural BMPs designed to reduce nonpoint source pollution.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Sediment: 162 tons/year • Nitrogen: 300 lbs/year • Phosphorus: 150 lbs/year 	<p>4/11/2019 – 10/10/2021 \$304,730 (\$319(h)) \$78,770 (match)</p>
<p>Treatment Train: An Ahupua'a' Approach to Watershed Best Management Practice in West Maui (West Maui), Maui Land & Pineapple Company, Inc. (MLP)</p>	<p>MLP will implement a series of treatment measures and BMPs strategically placed for a sequential, multi-layered approach (Treatment Train) to reduce nonpoint source pollution in the Pu'u Kukui Watershed Preserve located within the Honolua, Honokahua, Kahana, and Honokowai watersheds of West Maui. The Treatment Train will include the following BMPs: push pile stabilization, establishment of a native plant nursery and seed bank, landscape restoration, stream and gulch restoration, lo'i restoration, conservation fence maintenance, feral ungulate management, and invasive plant management.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Sediment: 178.05 tons/year • Phosphorus: 205.90 lbs/year • Nitrogen: 515.90 lbs/year 	<p>5/1/2019 – 4/30/2022 \$600,000 (\$319(h)) \$549,560 (match)</p>
<p>Implementing Soil Management Strategies on O'ahu (Honouliuli, Ma'ili'ili, and Kaiaka Bay), University of Hawai'i College of Tropical Agriculture and Human Resources</p>	<p>This project will improve water quality by implementing nutrient and soil management strategies. The contractor will work with participating farmers to utilize nitrate and phosphate technologies to reduce the amount of fertilizer applied and apply appropriate soil amendments on six (6) farms in the Honouliuli, Ma'ili'ili, and Kaiaka Bay watersheds. The contractor will also conduct education and outreach on soil and nutrient management by providing one-to-one training to participating farmers, conducting training workshops to interested farmers in the watersheds, and developing two (2) training video presentations.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • TP: 6,450 lbs/year • TN: 6,181.25 lbs/year 	<p>8/12/2019 – 8/11/2022 \$349,920 (\$319(h)) \$94,460 (match)</p>
<p>Ko'olaupoko Moku Watersheds Coordinator (Ko'olaupoko Moku), Hui o Ko'olaupoko</p>	<p>The Watersheds Coordinator will collect data and complete reports on past and current monitoring projects, implementation projects, and outreach efforts/projects in the Ko'olaupoko Moku Watersheds. The Watersheds Coordinator will also develop and implement an outreach plan to establish stakeholder support for the planned update to the Ko'olaupoko Watershed Restoration Action Strategy (KWRAS).</p>	<p>N/A</p>	<p>Anticipated NTP: 12/2019 \$150,560 (\$319(h)) \$48,130 (match)</p>

<p>Expanding Water Quality Improvement Projects at He'eia Fishpond (He'eia) University of Hawai'i Sea Grant College Program</p>	<p>The University of Hawai'i Sea Grant College Program will build upon the success of their He'eia Fishpond Mangrove Island Removal Project by removing an additional 5.25 acres of invasive mangrove and hau from the He'eia Fishpond and installing rain gardens in front of two (2) storm drain outlets to reduce nutrients and sediment concentrations in the He'eia Fishpond.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • TP: 8.69 lbs/year • TN: 47.74 lbs/year • TSS: 2,341.68 lbs/year 	<p>Anticipated NTP: 12/2019 \$306,460 (\$319(h)) \$71,110 (match)</p>
<p>Waikele Watershed & Total Maximum Daily Load Implementation Plan (Waikele) PG Environmental, LLC</p>	<p>The contractor will develop a watershed implementation plan for the Waikele watershed to achieve the nonpoint source pollutant load reductions for sediment and nitrogen as prescribed in the 2019 "Turbidity, Sediment, and Nutrient Total Maximum Daily Loads for the Waikele Watershed" TMDL plan.</p>	<p>N/A</p>	<p>Anticipated NTP: 4/2020 \$149,980 (\$319(h))</p>
<p>He'eia Watershed Ungulate-Exclusion Fencing and Erosion Control (He'eia) The Nature Conservancy</p>	<p>This project will focus on reducing sediment, total nitrogen, and total suspended solids in the He'eia watershed by installing an ungulate fence in the 22-acre sub-watershed above the He'eia estuary and coordinating with community partners/groups to remove feral ungulates in the fenced area and restore native vegetation.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Nitrogen: 160 lbs/year • Sediment: 540 tons/year 	<p>Anticipated NTP: 4/2020 \$210,930 (\$319(h)) \$52,730 (match)</p>
<p>Expanding Stream Gulch Restoration Actions in Wahikuli, West Maui (West Maui) Coral Reef Alliance</p>	<p>The Coral Reef Alliance will implement a multi-phase BMP installation project along a steep and highly erosive gulch in the Wahikuli watershed to reduce sediment. The planned BMPs include: vetiver sediment traps, native grass sediment traps, check dams, and coconut coir/GroSoxx corridor.</p>	<p>Estimated Load Reductions:</p> <ul style="list-style-type: none"> • Sediment: 45 tons/year 	<p>Anticipated NTP: 4/2020 \$215,010 (\$319(h)) \$76,970 (match)</p>

Hanalei Bay Watersheds Monitoring Plan 2019

Prepared by: Polluted Runoff Control Program
State of Hawai'i, Clean Water Branch

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ACRONYMS/ABBREVIATIONS

BMP	Best Management Practice
CFU	Colony Forming Units
COC	Chain of Custody
CWA	Clean Water Act
CWB	Clean Water Branch
DO	Dissolved Oxygen
DOH	Department of Health
EHASB	Environmental Health Analytical Services Branch
EHS	Environmental Health Specialist
FIB	Fecal Indicator Bacteria
FY	Fiscal Year
HAR	Hawai'i Administrative Rules
MPN	Most Probable Number
NO3+NO2	Nitrate + Nitrite
NPS	Nonpoint Source
PRC	Polluted Runoff Control
QA	Quality Assurance
QAP	Quality Assurance Plan
QAPP	Quality Assurance Project Plan
QC	Quality Control
RPD	Relative Percent Difference
SLD	State Laboratory Division
SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids

1.0 Introduction

Clean Water Act (CWA) Section 319 Nonpoint Source (NPS) Management Program provides federal funds to designated state and tribal agencies to implement NPS management programs and projects aimed at preventing and reducing NPS pollution. In Hawai'i, the Department of Health (DOH) Clean Water Branch (CWB) Polluted Runoff Control (PRC) Program administers the State's NPS Program. Section 319(h) funding requires the State to:

“identify, to the extent that information is available, the progress made in reducing pollutant loads and improving water quality in the navigable waters.”

The Hanalei Bay Watersheds on the island of Kaua'i were designated a CWB priority in 2015 for water quality investments due to current and previous assessments, water quality improvement efforts within the watersheds, community support, and the potential for waterbodies in the watersheds to be delisted from Hawai'i's impaired waters list (CWA Section 303(d) list).

The purpose of the Hanalei Bay Watersheds Monitoring Plan is to assess the water quality health of the watersheds in Hanalei Bay. Stream and coastal water samples collected throughout the Hanalei Bay Watersheds will be used to characterize surface water quality and analyze pollutant concentrations by comparing monitoring data to the Hawai'i State water quality standards numeric and narrative requirements, as found in the Hawai'i Administrative Rules (HAR, Chapter 11-54). Monitoring data will also be used to evaluate the effectiveness of 319(h) funded projects within the Hanalei Bay watersheds.

DOH and its contractor, Waipā Foundation, will collect water quality samples from designated beach, stream, and drainage ditch locations to characterize the variability in pollutant loads. These samples will be processed by DOH laboratories. Any sample location that DOH (and its contractor) cannot sample, will be collected by another project or contractor, and may need to be analyzed at another laboratory at their expense. Key personnel involved in this Monitoring Plan are listed in Table 1 below.

Table 1: Key Project Personnel

Name	Title	Contact Information	Responsibility
Gary Ueunten	EHS DOH CWB Monitoring and Analysis Section	DOH Clean Water Branch - Kaua'i Kaua'i District Health Office 3040 Umi Street Lihue, HI 96766 (808) 241-3322 gary.ueunten@doh.hawaii.gov	Conduct coastal monitoring on Kaua'i; Coordinate laboratory analysis with State laboratories; Coordinate sample pick up and transportation with contractor
Myron Honda	Supervisor DOH CWB Monitoring and Analysis Section	DOH Clean Water Branch - O'ahu 2827 Waimano Home Road, Room 225 Pearl City, HI 96782 (808) 586-4309 myron.honda@doh.hawaii.gov	Staff management
Jennifer Doi	EHS DOH CWB PRC Program	DOH Clean Water Branch - O'ahu 2827 Waimano Home Road, Room 225 Pearl City, HI 96782 (808) 586-4309 jennifer.doi@doh.hawaii.gov	Project oversight; Coordinate and assist CWB Monitoring Section and PRC contractor
Michael Burke	Supervisor DOH CWB PRC Program	DOH Clean Water Branch - O'ahu 2827 Waimano Home Road, Room 225 Pearl City, HI 96782 (808) 586-4309 michael.burke@doh.hawaii.gov	Program oversight
Eleanore Sato	Laboratory Manager DOH Kaua'i District Laboratory	DOH Kaua'i District Health Laboratory 3040 Umi Street Lihue, HI 96766 (808) 241-3840 eleanore.sato@doh.hawaii.gov	Manage DOH laboratory on Kaua'i
	DOH Kaua'i District Laboratory	DOH Kaua'i District Health Laboratory 3040 Umi Street Lihue, HI 96766 (808) 241-3840	Process microbiological (FIB) samples
Danilo "Danny" Licudine	Supervisor DOH SLD EHASB Water Pollution Laboratory	DOH SLD EHASB 2725 Waimano Home Road Pearl City, HI 96782 (808) 453-6682 danilo.licudine@doh.hawaii.gov	Manage water pollution (chemistry) laboratory on O'ahu
	DOH SLD EHASB Water Pollution Laboratory	DOH SLD EHASB 2725 Waimano Home Road Pearl City, HI 96782 (808) 453-6682	Process chemistry samples
Matt Rosener, P.E.	Hydrologist/Project Manager Waipā Foundation	Waipā Foundation P.O. Box 1189 Hanalei, HI 96714 (808) 826-9969 laminarmatt@gmail.com	Waipā Project management; training of staff; overseeing water monitoring and sample collection
Emmaleah Stauber	Water Quality Technician Waipā Foundation	Waipā Foundation P.O. Box 1189 Hanalei, HI 96714 (808) 826-9969 emmaleah@hawaii.edu	Waipā water monitoring and sample collection

2.0 Background

The Hanalei Bay Watersheds (Hanalei, Wai'oli, Waipā, and Waikoko watersheds) are located on the north shore of the island of Kaua'i. Four main streams drain into Hanalei Bay: Hanalei River, Wai'oli Stream, Waipā Stream, and Waikoko Stream (see Figure 1). Previous water quality assessments in these watersheds have shown impairments due to excessive levels of turbidity (often used as a proxy for suspended sediment concentration), Fecal Indicator Bacteria (FIB) (enterococci), and nutrients.

Figure 1: Hanalei Bay Watersheds and Streams



The freshwater portion of Hanalei River is on Hawai'i's 2018 303(d) list of impaired waters for enterococci (dry and wet seasons) and Total Phosphorus (TP) (dry season). The estuary portion of Hanalei River is listed for enterococci, TP, turbidity, and ammonia near the stream mouth and for turbidity in the upper portion of the estuary. Hanalei Bay was assessed for enterococci and turbidity at two (2) coastal locations within the Hanalei Watershed: *Hanalei Bay Landing* and *Hanalei Bay Pavilion*. *Hanalei Bay Landing* is listed as impaired for enterococci, and both locations are listed for turbidity impairment.

Water quality assessments for Wai'oli Stream indicate the freshwater portion of the stream network is impaired for enterococci and turbidity during the dry season. Insufficient data currently prevents assessment for the wet season. The estuary portion of Wai'oli Stream is listed as impaired for enterococci, nitrate+nitrite (NO₃+NO₂), TP, turbidity, and ammonia. Wai'oli Beach, located in Hanalei Bay within the Wai'oli Watershed, is listed as impaired for turbidity.

Waipā Stream is listed for turbidity impairment (dry season), but insufficient data currently prevents assessment for several other water quality parameters. Waipā Stream Estuary is listed for enterococci, TP, turbidity, and ammonia impairment.

Waikoko Stream Estuary is listed as impaired for multiple parameters: enterococci, Total Nitrogen (TN), NO₃+NO₂, TP, turbidity, and ammonia.

In response to previous 303(d) listings for the Hanalei Bay tributary systems, Total Maximum Daily Loads (TMDLs) were developed and approved in 2008 for the inland segments of the Hanalei Bay watersheds: Hanalei River and Estuary (enterococci, turbidity, total suspended solids [TSS]), Wai'oli Estuary (turbidity, TSS), Waipā Stream and Estuary (turbidity, TSS), and Waikoko Estuary (turbidity, TSS). TSS TMDLs are included as a surrogate for turbidity TMDL. TMDLs for enterococci and turbidity for the waters of Hanalei Bay (encompassing *Hanalei Bay Landing*, *Hanalei Bay Pavilion*, and *Wai'oli Beach Park* sites) were developed and approved in 2012.

Watershed Management Plan for Hanalei Bay Watershed (Volume 1: Watershed Characterization and Volume 2: Strategies and Implementation) was developed by the Hanalei Watershed Hui from 2012 to 2014. That management plan and the TMDLs represent the framework for improving water quality in the Hanalei Bay Watersheds to comply with water quality standards.

In Fiscal Year (FY) 2015, the PRC Program awarded funding to the Waipā Foundation's *Watershed Implementation Project for the Ahupua'a of Waipā* project using 319(h) funds. The project will implement practices described in *Watershed Management Plan for the Hanalei Bay Watersheds* via a comprehensive suite of Best Management Practices (BMPs) throughout the Waipā watershed over two years, with the goal to reduce bacterial and nutrient loads. BMPs include cesspool replacements, constructed wetland, feral ungulate removal, livestock fencing and watering, taro lo'i management, stream restoration, and forested upland erosion control and revegetation. The water quality monitoring component for Waipā Foundation's project is included in this Hanalei Bay Monitoring Plan.

3.0 Goals and Objectives

This Monitoring Plan is designed to produce water quality data to achieve the following objectives:

- Provide baseline data for new sites and a better understanding of water quality dynamics in areas which no water quality data currently exists;
- Identify trends in water quality for previously established monitoring sites;
- Evaluate the effectiveness of recently implemented BMPs;
- Show a decrease in pollutant loads (nutrients, turbidity, and FIB) to the point of delisting from Hawai'i's 303(d) list;
- Assess the overall health of the Hanalei Bay Watersheds.

In order to achieve the above objectives, the data collected for this monitoring plan shall be of high quality such that it can be used for 303(d) water quality assessments.

Physical *in-situ* measurements and water quality samples collected by DOH personnel will be under the guidance of the DOH CWB Quality Assurance Project Plan (QAPP) for Beach Monitoring and the QAPP for Near Shore Coastal Chemistry Monitoring, as well as all Standard Operating Procedures (SOPs) cited within these QAPPs. DOH laboratories have developed their own Quality Assurance Plans (QAPs) relevant to their specific laboratories.

Since Waipā Foundation will mimic DOH's physical monitoring and water quality sample collection methods, and DOH laboratories will run the analyses, the Waipā Foundation monitoring component will also follow the guidance of DOH's QAPPs. Waipā Foundation also developed their own QAPP, detailing their sampling efforts.

Any persons or organization not covered in this monitoring plan must specify the data quality objectives and acceptance criteria for their sampling plan.

Physical data collected by DOH and Waipā Foundation and DOH laboratory data will be entered into the CWB Water Quality Data System (CWB Data System). The CWB Data System has built-in quality control (QC) checks and measures to ensure data is transferred correctly and the data generated is of sound quality. Details of the CWB Data System and data management can be found in DOH's QAPPs.

As with data management, DOH has an established Quality Assurance (QA) Program (see DOH's QAPPs). Waipā Foundation personnel will follow DOH data management and QA protocols for their monitoring portion.

4.0 Sample Design and Rationale

4.1 Location, Parameter, Frequency

Water quality will be measured at several coastal (beach), stream, and drainage ditch sites throughout the Hanalei Bay Watersheds for physical, bacterial, and/or chemical parameters. Frequency of monitoring will be determined by project and sample location. Parameters that may be monitored are listed in Table 2. Sample design is broken down into 3 main projects, with project #2 (Waipā Ahupua‘a) consisting of 4 components.

Table 2: Example of Parameters to be Monitored

Physical	Fecal Indicator Bacteria (FIB)	Chemistry
Temperature	enterococci	Ammonia
Salinity	<i>Clostridium perfringens</i>	Nitrate+Nitrite
Conductivity		Total Nitrogen
pH		Total Phosphorus
Dissolved Oxygen		chlorophyll- <i>a</i>
Turbidity		Dissolved Silica
		Total Suspended Solids
		Orthophosphate
		Nitrite

4.1.1 Project 1: DOH Monitoring

DOH will routinely monitor four (4) coastal sites within Hanalei Bay: *Hanalei Bay Landing*, *Hanalei Bay Pavilion*, *Wai‘oli Beach Park*, and *Waikoko Beach* (see Figure 2, blue pins). These locations provide a longitudinal profile along the Hanalei Bay coastline.

Under the BEACH Act monitoring program, *Hanalei Bay Landing*, *Hanalei Bay Pavilion*, and *Wai‘oli Beach Park* will be monitored for FIB (enterococci and *Clostridium perfringens* [*C. perfringens*]) on a weekly basis, along with *in-situ* physical parameters (temperature, salinity, pH, dissolved oxygen (DO), and turbidity). *Waikoko Beach* will also be monitored for FIB and physical parameters, on a monthly rotation. Chemistry samples will be collected monthly at *Hanalei Bay Pavilion* for nutrients (ammonia, NO₃+NO₂, TN, and TP) and chlorophyll-*a*.

Table 3: DOH Monitoring Locations and Frequency

	Latitude	Longitude	Physical	FIB	Chemistry
Hanalei Bay Landing	22.213	-159.497	weekly	weekly	
Hanalei Bay Pavilion	22.207	-159.499	weekly	weekly	monthly
Wai‘oli Beach Park	22.203	-159.504	weekly	weekly	
Waikoko Beach	22.205	-159.515	monthly	monthly	

Figure 2: DOH Monitoring Locations



End of Weke Road is a historical DOH site located in the Hanalei River estuary. This site will not be monitored as part of this sample design but may be included in the future with available funds.

4.1.2 Project 2: Waipā Ahupua‘a

Waipā Foundation will conduct water quality monitoring as part of their *Watershed Implementation Project for the Ahupua‘a of Waipā 319(h)* project. Sample design for the Waipā Ahupua‘a will assess the effectiveness of BMP implementation, with the goal of decreasing nutrients, turbidity, and FIB to the point of delisting from Hawai‘i’s 303(d) list. Physical parameters will be measured *in-situ* or at the Waipā Foundation office, while FIB and chemistry samples will be analyzed by DOH staff at DOH laboratories on Kaua‘i and O‘ahu. The monitoring strategy for this project consists of the following four (4) components:

1. Continuous physical measurements at two (2) gaging stations along Waipā Stream;
2. Weekly physical measurements at nine (9) sites along Waipā Stream and one (1) site at the Wai‘oli Stream mouth;
3. Biweekly FIB and monthly chemistry monitoring at four (4) sites;

4. Monthly physical and chemistry monitoring at ten (10) drainage ditch sites.

Waipā Component 1

Existing infrastructure will be utilized to operate two (2) continuous monitoring stations along Waipā Stream. Measurements for physical water quality parameters will be made at an hourly frequency (or less) via permanently-deployed monitoring instrument. *Stream Gage* station is located roughly ¼ mile upstream where Waipā Mauka Road first crosses Waipā Stream (see Figure 3, red pin 1). This location is above all planned BMP installations, with the exception of the Feral Ungulate Removal BMP occurring throughout the watershed. While conditions in the upper watershed are not pristine, there is no current land use farther upstream of *Stream Gage* station. Water quality measured at this point in the stream network represents the collective runoff contributed by the relatively large drainage area in the wildland portion of the Waipā Watershed. Direct stream discharge measurements will be made as needed at *Stream Gage* to develop and maintain a stage-discharge relationship (i.e., rating) for this station.

The second continuous monitoring station will be *Estuary Gage*, located on the west side of Waipā Stream near the Waipā taro patches (see Figure 3, red pin 5). This station is located roughly at the mid-point of the Waipā Stream estuary (approximately halfway between the stream mouth and the head of tide). Direct stream discharge measurements will not be made at *Estuary Gage* since stage-discharge ratings generally cannot be developed for stream sections under tidal influence.

Continuous monitoring measurements using a Eureka Manta2 multimeter or equivalent will include temperature, conductivity, salinity, DO, turbidity, and stage (i.e., water level). The *Stream Gage* and *Estuary Gage* stations bracket a stream reach where active restoration treatments have been occurring over the past several years. Comparisons of these two stations will inform the effects of the restoration treatments on water quality in Waipā Stream.

Waipā Component 2

Weekly physical measurements will be taken at a total of ten (10) sites. Water quality parameters to be measured using a handheld multimeter and bench turbidimeter include: temperature, conductivity, salinity, pH, DO, and turbidity.

Nine (9) of the sites are along Waipā Stream, including both *Stream Gage* and *Estuary Gage* stations. This monitoring component is a continuation of previous monitoring efforts by Waipā Foundation; all nine Waipā Stream sites have been monitored for the same water quality parameters for over 2 years. Weekly Waipā Stream sites are: *Stream Gage* (continuous station), *1st Crossing*, *Ford Crossing*, *Bamboo Patch*, *Boat Crossing*, *Drainage Swale*, *Ditch Junction*, *Estuary Gage* (continuous station), and *Muliwai* (see Figure 3, red pins 1, 2, 3, 5 and

yellow pins). These monitoring sites provide a longitudinal profile along Waipā Stream from a point upstream of all active land management (*Stream Gage*) down to the stream outlet into Hanalei Bay (*Muliwai*). Several of these sites are adjacent to land use transition areas in within the stream corridor. *Drainage Swale* is located in a side channel of Waipā Steam that empties into a large drainage ditch near the northwest corner of the Waipā pastures. The upper five sites (*Stream Gage* to *Boat Crossing*) are located in the freshwater segment of the stream, while the lower sites (*Ditch Junction*, *Estuary Gage*, and *Muliwai*) are located in the estuary (tidally influenced, brackish) segment.

Weekly physical measurements will also be taken at *Wai'oli Stream*, located at the mouth of Wai'oli Stream near its point of discharge into Hanalei Bay (Figure 3, red pin 4).

Table 4: Waipā Continuous and Weekly Monitoring Locations and Frequency

	Figure 3 pin	Latitude	Longitude	Physical
Stream Gage	red 1	22.194	-159.519	continuous, weekly
1 st Crossing	yellow	22.196	-159.519	weekly
Ford Crossing	yellow	22.198	-159.519	weekly
Bamboo Patch	yellow	22.200	-159.518	weekly
Boat Crossing	red 2	22.200	-159.517	weekly
Drainage Swale	yellow	22.201	-159.517	weekly
Ditch Junction	yellow	22.202	-159.516	weekly
Estuary Gage	red 5	22.203	-159.516	continuous, weekly
Muliwai	red 3	22.204	-159.514	weekly
Wai'oli Stream	red 4	22.203	-159.510	weekly

Figure 3: Waipā Continuous (red pins 1 & 5) and Weekly (all red and yellow pins) Monitoring Locations



Waipā Component 3

Biweekly monitoring for FIB will occur at four (4) locations already established in the weekly physical measurement sample design. FIB water quality samples will be collected from Waipā Stream at *Stream Gage*, *Boat Crossing*, and *Muliwai*, as well as *Wai'oli Stream* (see Figure 3 and 4, red pins 1-4). Additionally, chemistry samples will be collected monthly from these locations.

Waipā Foundation will collect FIB samples in 500 mL sterile Nalgene containers and chemistry samples in clean 1-Liter brown plastic (polyethylene or polypropylene) containers. All samples will be stored immediately in coolers on wet ice or dry icepacks. The cooler of samples will be picked up by DOH personnel for delivery or shipment to DOH laboratories for analysis. FIB (enterococci and *C. perfringens*) samples will be delivered to the DOH Microbiology Laboratory in Lihue, Kaua'i for analysis. Chemistry samples will be shipped to the DOH State Laboratories Division (SLD) Environmental Health Analytical Services Branch (EHASB) Water Pollution Laboratory in Pearl City, O'ahu. Chemical parameters to be analyzed include, but are not limited to: ammonia, NO₃+NO₂, TN, TP, Orthophosphate, Nitrite, and Dissolved Silicate.

Waipā Component 4

Monthly chemistry water quality samples will also be collected from ten (10) sites located in ditches that drain the Waipā pastures and taro lo'i area, along with physical measurements. *Estuary Gage* (Figure 4, red pin 5) will also be monitored monthly for chemical parameters.

Seven (7) sample sites are located in the upstream and downstream drainage ditches near the Waipā pastures: *Mauka Ditch Upper*, *Mauka Ditch Lower*, *Middle Ditch Upper*, *Middle Ditch Middle*, *Middle Ditch Lower*, *Makai Ditch Upper*, and *Makai Ditch Lower* (see Figure 4, green pins 1-7). Upstream and downstream sites for each ditch will be compared to identify rapid changes in water quality and determine the effects of land use and BMP implementation.

Three (3) sites will focus on the Constructed Wetland BMP near the Waipā taro patches: *Auwai Well* (the freshwater supply ditch above the taro patch), *Waikoko Mauka* (constructed wetland inlet point), and *Waikoko Makai* (constructed wetland outlet point) (Figure 4, green pins 8-10). Chemistry monitoring at these locations will be used to determine if the wetland BMP has any effect on nutrient concentrations in effluent water from the upstream taro lo'i.

Chemistry sample collection will follow the same procedures as component #3. Physical measurements for temperature, conductivity, salinity, pH, DO, and turbidity using a handheld multimeter and bench turbidimeter will follow component #2.

Table 5: Waipā Biweekly FIB and Monthly Chemistry Monitoring Locations and Frequency

	Figure 4 pin	Latitude	Longitude	FIB	Chemistry	Physical
Stream Gage	red 1	22.194	-159.519	biweekly	monthly	continuous/ weekly
Boat Crossing	red 2	22.200	-159.517	biweekly	monthly	weekly
Muliwai	red 3	22.204	-159.514	biweekly	monthly	weekly
Wai'oli Stream	red 4	22.203	-159.510	biweekly	monthly	weekly
Estuary Gage	red 5	22.203	-159.516		monthly	continuous/ weekly
Mauka Ditch Upper	green 1	22.190	-159.515		monthly	monthly
Mauka Ditch Lower	green 2	22.201	-159.516		monthly	monthly
Middle Ditch Upper	green 3	22.198	-159.514		monthly	monthly
Middle Ditch Middle	green 4	22.201	-159.515		monthly	monthly
Middle Ditch Lower	green 5	22.203	-159.515		monthly	monthly
Makai Ditch Upper	green 6	22.200	-159.512		monthly	monthly
Makai Ditch Lower	green 7	22.202	-159.513		monthly	monthly
Auwai Well	green 8	22.203	-159.515		monthly	monthly
Waikoko Mauka	green 9	22.205	-159.517		monthly	monthly
Waikoko Makai	green 10	22.205	-159.516		monthly	monthly

Figure 4: Waipā Biweekly FIB and Monthly Chemistry Monitoring Locations



4.1.3 Project 3: TMDL Sample Locations

Pending future funding, nine (9) sample sites previously identified in the Hanalei Bay TMDL report may also be monitored by DOH or its contractor. Seven (7) sample sites are located along Hanalei River (Figure 5, white pins), providing a longitudinal profile of Hanalei River. Two (2) sites are located in Wai’oli Stream (Figure 5, pink pins).

Table 6: TMDL Sample Locations

	Figure 5 pin	Latitude (estimate)	Longitude (estimate)
Dolphin	white	22.204494	-159.488922
FEL2	white	22.209161	-159.482286
Bridge	white	22.210850	-159.475839
Hanalei Lower	white	22.202	-159.470
Upper ISCO	white	22.197	-159.464
Hanalei Upper	white	22.190	-159.467
USGS Gage	white	22.18035	-159.4661
Wai’oli Upper	pink	22.191269	-159.499792
Wai’oli Lower	pink	22.197444	-159.504369

Figure 5: TMDL Sample Locations



The TMDL sample sites should be monitored for physical (e.g., temperature, conductivity, salinity, pH, DO, turbidity), FIB (enterococci) and chemical (e.g., ammonia, NO₃+NO₂, TN, TP, TSS) parameters.

Any contractor may be responsible for all sampling and laboratory cost.

4.2 Field and Analytical Methods

Physical measurements and water quality sample collection can be made directly in the waterbody, or by collecting a bucket of water to take measurements on land. The sampler will be positioned downstream in relationship to the measurement instrument or sample container during collection, so as not to interfere or contaminate the samples. Samples should be collected six (6) to twelve (12) inches below the surface, if applicable, without disturbing the floor bed. Table 7 lists the DOH and Waipā sample measurement and collection method SOPs. Sample measurement and collection is briefly discussed below. For detailed methodology, refer to applicable SOPs listed in Table 7.

Table 7: DOH and Waipā Sample Measurement and Collection Method SOPs

Parameter	Instrument	CWB/Waipā Method SOP
Physical (Temperature, Salinity/Conductivity, pH, DO)	YSI ProPlus	CWBMON018 / SOP #1 (Multi-probe Field Sampling)
Physical (Turbidity)	Hach 2100q	CWBMON019 / SOP #2 (Turbidity Measurement)
Continuous Physical	Eureka Manta2	n/a / SOP #1 (Multi-probe Field Sampling)
FIB	n/a	CWBMON009
Chemistry	n/a	CWBMON015

4.2.1 Physical

Physical measurements, using either a handheld or permanently-deployed multimeter instrument, include water temperature, conductivity, salinity, pH, and dissolved oxygen. Turbidity will also be measured, either in the field or at the Waipā Foundation office immediately following each monitoring run. Turbidity samples not measured at the sample locations may be measured at the end of the sample run by collecting turbidity samples in labeled 100 mL triple-rinsed containers and preserved on ice. Chilled samples will be warmed to ambient temperature before analysis. Table 8 lists the type of field instruments to be used by DOH and Waipā Foundation.

Table 8: DOH and Waipā Field Monitoring Instruments

Parameter	DOH	Waipā (weekly)	Waipā (continuous)
Temperature	YSI ProPlus	YSI ProPlus	Eureka Manta2
Salinity	YSI ProPlus	YSI ProPlus	Eureka Manta2
Conductivity	--	YSI ProPlus	Eureka Manta2
DO	YSI ProPlus	YSI ProPlus	Eureka Manta2
pH	YSI ProPlus	YSI ProPlus	--
Turbidity	Hach 2100q	Hach2100q	Eureka Manta2
Stage	--	--	Eureka Manta2

4.2.2 FIB

Fecal Indicator Bacteria (FIB) concentrations will be assessed by monitoring for enterococci. DOH uses enterococci as an indicator of pathogens associated with sewage. Enterococci Water Quality Standards apply to all recreational waters of Hawai'i (HAR 11-54). Samples collected for enterococci will be analyzed by the DOH Microbiology Laboratory in Lihue, Kaua'i, unless otherwise specified. The DOH laboratory utilizes the Enterolert Quanti Tray method created by IDEXX Laboratories. Enterolert is an EPA-approved enzyme substrate method reported as Most Probable Number (MPN)/100 mL. DOH also uses *C. perfringens* as a secondary tracer of potential sewage contamination. However, only enterococci results are used for BEACH Act decisions.

Table 9: DOH FIB Analytical Methods and Quality Control Acceptance Criteria

Parameter	Method Number or Description	Target Accuracy	Target Precision	Detection Limit*
Enterococci	Enterolert (enzyme substrate method) ASTM D6503-99	100%	95%	1 colony forming unit per 100 mL
<i>Clostridium perfringens</i>	Modified membrane filtration method (Armon and Payment, 1988)	100%	95%	1 colony forming unit per volume filtered

* The Membrane Filtration procedure expresses concentration units as cfu/100 mL. Defined Substrate Methods (Enterolert™) utilize MPN/100 mL. Although not technically equivalent, both methods (and therefore the resulting units) are acceptable for the monitoring purposes described in this document.

Water quality samples for FIB should be collected prior to any other sample collection or *in-situ* measurements for that site to avoid contamination. FIB samples will be collected in properly labeled sterile 500 mL Nalgene bottles. Samplers should avoid contact with the sample bottle neck and cap to avoid contamination. Sample bottles should be capped immediately and stored on ice.

4.2.3 Chemical

Chemistry water quality samples will be collected in labeled 1- or 2-Liter brown plastic (polyethylene or polypropylene) containers. Chemistry samples will be analyzed by the DOH SLD EHASB Water Pollution Laboratory in Pearl City, O'ahu using the following methods:

Table 10: DOH Chemistry Analytical Methods and Quality Control Acceptance Criteria

Parameter	Method Number or Description	Target Accuracy	Target Precision*	Minimum Reporting Limit (µg/L)
Ammonia Nitrogen	EPA 350.1	80% - 120%	<20% RPD	2
Nitrate + Nitrite Nitrogen (NO ₃ +NO ₂)	EPA 353.2, Rev 2.0	80% - 120%	<20% RPD	1
Total Nitrogen	EPA 353.2, Rev 2.0 UV-Alkaline Persulfate Digestion	80% - 120%	<30% RPD	25
Total Phosphorus	EPA 365.1 UV-Alkaline Persulfate Digestion	80% - 120%	<30% RPD	5
Chlorophyll- <i>a</i>	EPA 447.0 SM 10200 H 3, fluorescence	90% - 110%	<10% RPD	0.01
Total Suspended Solids (TSS)	EPA 160.2	80% - 120%	<20% RPD	500
Dissolved Silicate	EPA 366.0	80% - 120%	<30% RPD	500
Nitrite	EPA 353.2, Rev 2.0	80% - 120%	<20% RPD	1
Orthophosphate	EPA 365.1	80% - 120%	<30% RPD	5

*The Relative Percent Difference (RPD) is a measurement of precision, comparing two similar samples (e.g., matrix spike/matrix spike duplicate pair; field sample duplicates).

4.3 Sample Handling and Preservation

All samples must be handled and preserved in a consistent manner to assure sample integrity.

Table 11 identifies the sample container type, preservation, and hold time requirements.

Table 11: Sample Container, Preservation, and Hold Time Requirements

Parameter	Container Type	Preservation	Hold Time
Temperature	n/a	n/a	immediately
Salinity/Conductivity	n/a	n/a	immediately
pH	n/a	n/a	immediately
Dissolved Oxygen	n/a	n/a	immediately
Turbidity	100 mL plastic	Cool to < °4	immediately or 48 hours
FIB (enterococci and <i>C. perfringens</i>)	Sterile 500 mL Nalgene	Cool to < °10	8 hours
Ammonia	2-Liter Brown plastic	Cool to < °6	28 days
Nitrate+Nitrite	2-Liter Brown plastic	Cool to < °6	28 days
Total Nitrogen	2-Liter Brown plastic	Cool to < °6	28 days
Total Phosphorus	2-Liter Brown plastic	Cool to < °6	28 days
Chlorophyll-a	2-Liter Brown plastic	Cool to < °6	48 hours
Phosphate	2-Liter Brown plastic	Cool to < °6	28 days
Dissolved Silica	2-Liter Brown plastic	Cool to < °6	28 days

Water quality samples to be analyzed off-site of sample collection locations shall be properly labeled. Labels should contain at a minimum, sample location and date and time of collection. Labels should be marked with indelible ink.

All samples to be analyzed off-site will be transported or shipped in coolers to provide protection, insulation, and containment in case of breakage or spillage. Samples will be packed in coolers with adequate quantities of ice to ensure samples maintain the required preservation temperature. Samples to be shipped to the DOH Water Pollution Laboratory on O'ahu for analysis will be frozen before shipping via commercial carrier. Coolers should be securely fastened with duct or packing tape to ensure they do not accidentally open.

A Chain of Custody (COC) form must accompany each set of water samples to the laboratory to document the possession and transportation of the samples. The COC list of samples should match the sample container labels. The COC should also contain the date and time of collection, as well as which parameters to be analyzed. The COC must be signed and dated by the field person(s) who maintained custody of the samples during collection, transport, and relinquishment to the laboratory. When samples are shipped to O'ahu, the COC should be placed in a plastic bag to protect it from exposure to condensation and placed in the cooler.

5.0 Quality Assurance/Quality Control

Monitoring conducted by DOH personnel will fall under DOH's QAPP for Beach Monitoring and QAPP for Near Shore Coastal Chemistry Monitoring.

Field instruments must be properly calibrated prior to use. Daily calibration checks should be performed prior to monitoring the first site, and at the end of that day's sample run after the last site.

Temperature control blanks will be collected during FIB monitoring.

DOH Laboratories maintain their own formal QC programs that are managed by a QA Officer on staff to ensure proper QA/QC procedures are implemented.

6.0 Assessment and Reporting

DOH will verify and validate the quality of the data entered into the CWB Data System. The PRC Program will utilize the data to assess the current health of the waterbodies and the effectiveness of past and current BMP implementation within the watersheds. The Monitoring and Analysis Section may use the data for inclusion in the and 303(d) impaired waters list and assessment.

The Waipā Foundation Manager will review and assess their data. Quarterly status reports will be submitted to the PRC Program that will detail water quality sampling for the previous quarter and any issues the project may have run into. A final report at the project's conclusion shall also be submitted to the PRC Program, assessing any changes in water quality that may be due to the project's BMP implementation.

APPENDIX A

**Hanalei Bay Watersheds Monitoring Plan
Addendum 1
2019**

Prepared by: Polluted Runoff Control Program
State of Hawai'i, Clean Water Branch

Purpose for Addendum

In Fiscal Year (FY) 2018, the PRC Program awarded funding to the Waipā Foundation for an additional project, *Watershed Implementation Project for the Ahupuaʻa of Waipā - Phase 2*, using 319(h) funds. This project will build upon the progress made by the management practices implemented during Phase 1 of the project. Management practices for Phase 2 include replacement of five (5) cesspools, stream restoration, continued feral ungulate removal program and taro loʻi management, and maintenance of Phase 1 BMPs.

This addendum will address the water quality monitoring component for Waipā Foundation Phase 2. Sample collection and analysis procedures will not change from the Hanalei Bay Monitoring Plan.

Sample Design and Rationale

Location, Parameter, Frequency

Waipā Foundation will conduct water quality monitoring as part of their *Watershed Implementation Project for the Ahupuaʻa of Waipā - Phase 2* 319(h) project. The monitoring strategy for this project consists of the following four (4) components:

1. Continuous physical measurements at two (2) gaging stations along Waipā Stream;
2. Weekly physical measurements at ten (10) locations: eight (8) sites along Waipā Stream, one (1) site at the Waiʻoli Stream mouth, and one (1) site at Waikoko Stream mouth;
3. Biweekly FIB monitoring at five (5) locations;
4. Monthly chemistry monitoring at five (5) locations.

Monitoring locations, analysis type, and frequency are listed in Table 1. Corresponding pins are mapped in Figure 1. Each component is described in further detail below.

Table 1: Waipā Phase 2 Monitoring Locations and Frequency

	Pin	Latitude	Longitude	Physical	FIB	Chemistry
Stream Gage	red 1	22.194	-159.519	continuous, weekly	biweekly	monthly
1 st Crossing	yellow	22.196	-159.519	weekly	--	--
Ford Crossing	yellow	22.198	-159.519	weekly	--	--
Bamboo Patch	yellow	22.200	-159.518	weekly	--	--
Boat Crossing	red 2	22.200	-159.517	weekly	biweekly	monthly
Ditch Junction	yellow	22.202	-159.516	weekly	--	--
Estuary Gage	pink	22.203	-159.516	continuous, weekly	--	--
Muliwai	red 3	22.204	-159.514	weekly	biweekly	monthly
Waiʻoli Stream	red 4	22.203	-159.510	weekly	biweekly	monthly
Waikoko Stream	red 5	22.207	-159.517	weekly	biweekly	monthly

Figure 1: Waipā Phase 2 Monitoring Locations



Waipā Component 1

Waipā Foundation will carry on continuous physical water quality monitoring at gaging stations *Stream Gage* (Figure 1, red pin 1) and *Estuary Gage* (Figure 1, pink pin). Measurements will be made at an hourly frequency (or less) via permanently-deployed monitoring equipment. Continuous monitoring measurements using a Eureka Manta2 multimeter or equivalent will include temperature, conductivity, salinity, DO, turbidity, and water level. Direct stream discharge measurements will be made as needed at *Stream Gage* to develop and maintain a stage-discharge relationship (i.e., rating) for this station. Direct stream discharge measurements will not be made at *Estuary Gage* since stage-discharge ratings generally cannot be developed for stream sections under tidal influence.

Waipā Component 2

Weekly physical measurements will be taken at a total of ten (10) locations. Water quality parameters to be measured using a handheld multimeter and bench turbidimeter include: temperature, conductivity, salinity, pH, DO, and turbidity.

Eight (8) sites located along Waipā Stream were monitored during Phase 1: *Stream Gage, 1st Crossing, Ford Crossing, Bamboo Patch, Boat Crossing, Ditch Junction, Estuary Gage, and Muliwai* (Figure 1, red pins 1-3, yellow pins, pink pin). Weekly physical measurements will also be taken at the existing *Wai'oli Stream* monitoring site, (Figure 1, red pin 4). One (1) new monitoring site will be established within the Waikoko Stream mouth, *Waikoko Stream* (Figure 1, red pin 5).

Waipā Component 3

Biweekly monitoring for FIB will occur at five (5) locations: *Stream Gage, Boat Crossing, Muliwai, Wai'oli Stream, and Waikoko Stream*. Waipā Foundation will collect FIB samples in 500 mL sterile Nalgene containers. Samples will be stored immediately in coolers on wet ice or dry icepacks. The cooler of samples will be picked up by DOH personnel for delivery to the DOH Microbiology Laboratory in Lihue, Kaua'i for enterococci and *C. perfringens* analysis.

Waipā Component 4

Monthly chemistry water quality samples will also be collected from the five (5) FIB monitoring locations. Chemistry samples will be collected in clean 1-Liter brown plastic (polyethylene or polypropylene) containers.

Samples will be stored immediately in coolers on wet ice or dry icepacks. Samples will then be transferred to a walk-in cooler at the Waipā office following sample collection. Frozen samples will be transferred to DOH personnel for shipment to the DOH State Laboratories Division (SLD) Environmental Health Analytical Services Branch (EHASB) Water Pollution Laboratory in Pearl City, O'ahu. Chemical parameters to be analyzed include, but are not limited to: ammonia, NO₃+NO₂, TN, TP, Orthophosphate, Nitrite, and Dissolved Silicate.

Quality Assurance Project Plan for Monitoring Kawela Stream, Moloka'i

PRCQAPP001

State of Hawai'i
Department of Health
Polluted Runoff Control Program

April 2019

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ACRONYMS/ABBREVIATIONS

BMP	Best Management Practices
CWA	Clean Water Act
CWB	Clean Water Branch
DO	Dissolved Oxygen
DOH	Department of Health
EHASB	Environmental Health Analytical Services Branch
EHS	Environmental Health Specialist
EMD	Environmental Management Division
EPA	(U.S.) Environmental Protection Agency
NO ₃ +NO ₂	Nitrate + Nitrite
NPS	Nonpoint Source
PRC	Polluted Runoff Control
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RPD	Relative Percent Difference
SLD	State Laboratories Division
SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
USGS	United States Geological Survey

INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes monitoring associated with Kawela Stream. Data generated under this QAPP are intended for use by the Hawaiʻi Department of Health (DOH) Clean Water Branch (CWB) Polluted Runoff Control (PRC) Program for assessing Kawela Stream health, and by the CWB Monitoring and Analysis Section for the assessment of waterbodies in accordance with Clean Water Act (CWA) Sections 303(d) and 305(b) (Integrated Report). Other uses of the data are not supported, and it is the sole responsibility of the user for determining the appropriateness of any such use. The content and format of this QAPP follows the requirements and guidance of United States Environmental Protection Agency (EPA) QA/R-5, *EPA Requirements for Quality Assurance Project Plans* (EPA, 2001) and is in conformance with the DOH Environmental Management Division (EMD) *Quality Management Plan* (QMP) (DOH 2013). This document describes the required elements needed to assure data quality for decision making.

This document is valid for a period of not more than five (5) years from the date of approval, after which it may be re-issued, revised and resubmitted for approval, or withdrawn.

1.0 PROJECT MANAGEMENT

1.1 Project/Task Organization

The mission of the PRC Program is to “protect and improve the quality of Hawaiʻi’s water resources by preventing and reducing nonpoint source (NPS) pollution” (DOH, 2015). The PRC Program achieves its mission by administering the CWA Section 319 Nonpoint Source Management Program, which provides federal funds to implement NPS management projects. In Hawaiʻi, Section 319 funds support implementation projects that improve water quality in watersheds throughout the State. The PRC Program’s Environmental Health Specialist (EHS) provides technical resources and support on matters relating to polluted runoff and watershed protection.

The CWB Monitoring and Analysis Section is responsible for identifying sources of water pollution through area surveillance, special studies, and routine water monitoring, and evaluates the quality of surface waters to determine if their designated uses are being protected. The Monitoring and Analysis Section routinely monitors coastal waters in support of CWA Section 303(d) list of impaired waters, Section 305(b) report (Integrated Report), and Total Maximum Daily Load (TMDL) development. Routine monitoring includes *in-situ* field measurements and water quality sample collection for analysis at DOH laboratories.

The State laboratories that provide analytical services to CWB operate under the DOH State Laboratories Division (SLD). The Water Pollution Section of the DOH SLD Environmental Health Analytical Services Branch (EHASB) on O'ahu analyzes CWB's chemistry water quality samples.

The PRC Program, Monitoring and Analysis Section, and DOH EHASB laboratory personnel associated with Kawela Stream monitoring, their positions, and their roles and responsibilities are listed in Table 1.

Table 1: Project Personnel

Name	Position	Roles/Responsibilities
Michael Burke	PRC Program Supervisor	Program oversight; budget and grant awards management; procurement assistance
Jennifer Doi	PRC Program EHS IV	Technical project oversight; inland water quality monitoring; monitoring effort oversight
Myron Honda	Monitoring and Analysis Section Supervisor	Section staff management; report preparation; document review
Scott Murakawa	Monitoring and Analysis Section EHS IV	Island of O'ahu (Lana'i and Moloka'i) monitoring
Danilo (Danny) Licudine	DOH SLD EHASB Chemistry Laboratory Supervisor	Chemistry laboratory management; sample analysis

1.2 Problem Definition/Background

Local community groups and other government agencies have shown interest in improving and protecting Moloka'i's coral reef. There is significant concern that coral reef health is being impaired by sediment erosion in the upper watersheds due to feral ungulates and bare land. Best Management Practices (BMPs) are being implemented in Kawela watershed to address the sediment runoff by utilizing fencing to control the feral ungulates, which leads to revegetation of bare land.

The PRC Program will assess the current health of Kawela Stream and collect baseline data for the stream. The baseline data can be used to support watershed planning efforts and assess the effectiveness of any future BMP implementation in the watershed. Additionally, the State is

required to submit to EPA a water quality report and list of impaired waters, CWA Sections 305(b) and 303(d), every two years. The State must identify waters that are impaired or in danger of becoming impaired and must prioritize the list of impaired waterbodies. The Monitoring and Analysis Section intends to use the data from the Kawela Stream monitoring for this assessment.

The United States Geological Survey (USGS) also monitors Kawela Stream, just below the confluence of the upstream tributaries. The USGS gage collects stream discharge (flow) and height data, as well as samples for suspended sediment concentration.

1.3 Project/Task Description

Kawela Watershed is located on the southern coast of the island of Moloka'i (see Figure 1 and inset). Kawela Stream and its tributaries are intermittent waterbodies that begin in the Kamakou Mountains and discharges directly into the Pacific Ocean. Ocean current trends westerly along the shoreline.

Figure 1: Area Map



The Monitoring and Analysis Section EHS assigned to Moloka'i will monitor water quality at Kawela Stream and Kawela shoreline on a monthly basis. The PRC Program EHS may offer assistance as needed, however sample collection can be completed safely by a single EHS. Monitoring will include *in-situ* physical parameters, including Turbidity, as well as water quality parameters, such as Total Suspended Solids (TSS) and nutrients. Kawela Stream will be sampled for as long as the Monitoring and Analysis Section performs routine monitoring in the area or until the PRC Program Supervisor deems that monitoring in the area is no longer necessary.

1.4 Quality Objectives and Criteria

The Monitoring and Analysis Section routinely monitors near shore waters for physical, biological, and chemical parameters, and therefore has EPA-approved QAPPs for near shore monitoring. Quality objectives for *in-situ* physical measurements and biological parameters are covered in the *Quality Assurance Project Plan for BEACH Monitoring* (QAPP for Beach) (DOH, 2017), including all Standard Operating Procedures (SOPs) discussed in the QAPP for Beach. The SOPs for field measurements are valid for both inland and coastal waterbodies. Since the Monitoring and Analysis Section EHS will be the primary sample collector for this project, all *in-situ* physical measurements are covered by the QAPP for Beach.

Quality objectives for chemistry monitoring, including sample collection and analysis, are covered in the *Quality Assurance Project Plan for Near Shore Coastal Chemistry Monitoring* (QAPP for Chemistry) (DOH, 2018) and the associated SOPs. Chemistry monitoring for the Kawela shoreline site will be covered by the QAPP for Chemistry. Since the method for collecting and analyzing inland (stream) waters are identical to near shore monitoring, chemistry monitoring objectives for the Kawela Stream site will follow the QAPP for Chemistry.

This QAPP for monitoring Kawela Stream shall cover any additional monitoring components not established in the Monitoring and Analysis Section QAPPs, such as identifying the inland sample location and the addition of TSS analysis.

1.5 Special Training/Certification

Refer to Section 2.6 of both the QAPP for Beach and the QAPP for Chemistry for training requirements.

1.6 Documentation and Records

Document control, including field records, laboratory results, and electronic data storage, shall follow Section 2.7 of both the QAPP for Beach and the QAPP for Chemistry.

2.0 DATA GENERATION AND ACQUISITION

2.1 Sample Process Design

Kawela Stream will be monitored where the stream crosses under Kamehameha V Highway, near the bridge. This sample site is located at an accessible site at the lower end of the watershed near the discharge point into the Pacific Ocean (see Table 2 and Figure 2). Kawela Stream can be accessed by foot via an access ramp.

A shoreline sample site (*West of Kawela Stream Mouth*) to the west of Kawela Stream will also be monitored. The shoreline site is located behind the property at 2786 Kamehameha V Highway. The property owner has given permission to access this site.

Table 2: Sample Locations

Sample Location Name	Latitude	Longitude
Kawela Stream	21.06494	-156.94866
West of Kawela Stream Mouth (Kawela Shoreline)	21.06587	-156.95349
USGS Gage 16415600	21.069972	-156.948333

2.2 Sampling Methods

Since Kawela Stream is an intermittent stream, monitoring will occur only when there is sufficient flow to collect a representative sample enough to fill the sample containers.

Field measurements will be collected *in-situ* following the methods in QAPP for Beach (Section 3.2.1). Physical parameters to be measured in the field include Temperature, Salinity, Dissolved Oxygen (DO), pH, and Turbidity.

Chemistry water quality sample collection shall follow the water sample collection methods in QAPP for Chemistry (Section 3.2.2). Chemistry parameters to be analyzed include ammonia, nitrate+nitrite (NO₃+NO₂), Total Nitrogen (TN), Total Phosphorus (TP), chlorophyll-*a*, and TSS. Due to the additional TSS analysis, an additional 1-Liter (or two 500 mL) plastic (e.g., polyethylene or polypropylene) container will be collected at each site along with the routine 2-Liter amber plastic container.

Figure 2: Sample Locations



2.3 Sample Handling and Custody

Chemistry sample handling and custody shall follow the requirements in QAPP for Chemistry (Section 3.3). Specific sample handling and preservation requirements for the addition of TSS are in Table 3.

Table 3: Sample Handling, Preservation, and Hold Time Requirements

Water Quality Parameter	Container Type	Sample Volume	Field Preservation	Holding Time (days from sampling)
Total Suspended Solids	plastic (polyethylene or polypropylene)	1 Liter	Cool to below 6 °C	7 days

2.4 Analytical Methods

Methods for field measurements, including instrument-specific SOPs can be found in the QAPP for Beach (Section 3.2.1). Laboratory analytical methods for the chemistry samples are found in Section 3.4 of the QAPP for Chemistry.

The analytical method and acceptance criteria for the additional TSS analysis utilized by the DOH EHASB laboratory are in Table 4.

Table 4: Analytical Method and Quality Control Acceptance Criteria for TSS

Water Quality Parameter	Method Number	Target Accuracy	Target Precision	Minimum Reporting Limit	Project Comparison Criteria (mg/L)*
Total Suspended Solids	EPA 160.2	80% - 120%	< 20% RPD [†]	500 µg/L	20.0 (wet season) 10.0 (dry season)

*Inland (stream) criteria specifies wet season from November 1 through April 30, and dry season from May 1 through October 31.

[†]Relative Percent Difference (RPD) is a comparison of two similar samples (e.g., matrix spike/matrix spike duplicate pair).

2.5 Quality Control

Field measurements and instrument performance specifications are found in the QAPP for Beach (Section 3.2.3). Laboratory quality control for the EHASB laboratory is discussed in Section 3.5.1 of the QAPP for Chemistry.

2.6 Instrument/Equipment Testing, Inspection, and Maintenance

Maintenance of field monitoring equipment is discussed in Section 3.2.4 of the QAPP for Beach. The maintenance and inspection of laboratory equipment is carried out by the EHASB staff and overseen by the laboratory Quality Assurance (QA) officer and chemistry laboratory supervisor.

2.7 Instrument/Equipment Calibration and Frequency

Calibration of field equipment is discussed in Section 3.2.5 of the QAPP for Beach, and further detailed in the instrument-specific SOPs. Laboratory equipment calibration is discussed in Section 3.5.3 of the QAPP for Chemistry.

2.8 Inspection/Acceptance for Supplies and Consumables

Acceptability of supplies is discussed in Section 3.6 of both QAPP for Beach and QAPP for Chemistry.

2.9 Non-direct Measurements

Non-direct measurements are data or information used for decision-making, that were either compiled from outside sources, were originally collected for some other purpose, or were obtained from non-measurement sources (e.g., historical databases, literature files). Outside sources of information may be used to enhance the quality of the information produced, such as Google Earth or GIS maps to help document the location of sample sites.

The PRC Program may review data generated at the USGS gage to supplement the Kawela Stream site data to get an overall health of the entire stream network. The Monitoring and Analysis Section has stricter requirements for data inclusion in assessments, thus will not utilize the USGS gage data.

2.10 Data Management

Field and laboratory data management is discussed in Section 3.8 of both the QAPP for Beach and the QAPP for Chemistry.

3.0 ASSESSMENT AND OVERSIGHT

3.1 Assessments and Response Actions

Assessments and reports are discussed in Section 4.0 of the QAPP for Beach and the QAPP for Chemistry.

4.0 DATA VALIDATION AND USABILITY

Data verification and validation is discussed in Section 5.0 of the QAPP for Beach and the QAPP for Chemistry.

REFERENCES

United States Environmental Protection Agency (EPA). 2001. *EPA Requirements for Quality Assurance Project Plans QA/R-5* (EPA/240/B-01/003). Office of Environmental Information, Washington, D.C.

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Goal 1: Identify water quality trends and waters/watersheds impaired or threatened by NPS pollution						
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
1. Develop surface water quality assessment methods & monitoring plans to guide monitoring efforts	a. Develop and implement Hanalei Bay WQ monitoring plan/QAPP	EHS, Monitoring, QA/QC Officer, EPA	9/2019: Review and incorporate U.S. EPA comments to the Water Quality Monitoring Plan/QAPP for Hanalei Bay watersheds	A revised monitoring plan will be submitted to EPA Region 9 by August 2019, with a final version expected to be completed by September or October 2019 and implementation of the revised plan expected by the end of 2019.	A draft monitoring plan was completed, and a final plan is on track to be completed in October. An addendum to the monitoring plan was made to include Waipa Phase 2 monitoring activities. PRC is waiting for QAPP clarification from EPA.	
	b. Develop West Maui Regional QAPP	EHS, CWB, West Maui Watershed Coordinator, EPA	12/2018-2/2019: Continue discussions with West Maui citizen sampling group (Hui O Ka Wai Ola), West Maui watershed coordinator, CWB branch sections, PRC, and develop foundation for West Maui WQ Monitoring Plan + QAPP. Determine scope of monitoring plan and whether the plan should be project based.	The West Maui monitoring plan will be developed after the Hanalei monitoring plan is completed (late FY19 or early FY20). Maui Land & Pineapple will submit a QAPP as part of its project, which will be reviewed and approved by PRC. In FY20, a statewide inland water QAPP is being investigated by PRC/Monitoring, which will address West Maui.	PRC is waiting for MLP's deliverables (which include its monitoring plan) and is on track to complete this plan in early FY20. A draft inland QAPP for Ka'elepulu was submitted to the EPA QA office by the CWB Monitoring Section, with the possibility that other streams (including those in West Maui) can be added as appendices after EPA approval.	
			6/2019: Draft WQ Monitoring Plan + QAPP submitted to CWB QA/QC & U.S. EPA. 9/2019: Meet with partners to discuss WQ Monitoring Plan + QAPP comments from EPA.	N/A N/A	N/A; the monitoring plan will be completed in FY20. N/A	
c. Investigate developing a statewide inland water QAPP	EHS, Monitoring	3/2019: Begin determining requirements for inland water quality monitoring, specifically whether an inland QAPP should be developed by the CWB.	Developing a statewide inland QAPP was discussed several years ago for the CWB but was not completed. PRC met with the Monitoring supervisor in March 2019 to discuss the development of one. An approved inland QAPP would be useful to ensure that data collected for inland waters can be assessed in the IR, precluding the need to develop an inland QAPP for each new waterbody CWB/PRC wants to monitor (which results in significant delays). PRC would utilize the inland QAPP to develop 319 project-specific SAPs. PRC and Monitoring will continue to discuss whether a statewide inland QAPP is necessary or appropriate and will make a final determination in FY20.	A draft inland QAPP for Ka'elepulu was submitted to EPA QA office by the Monitoring Section, with the possibility of other streams being added as appendices in the future.		
2. Monitor and assess water quality (WQ) to identify water quality impairments and improvements	a. Target chemistry monitoring at priority sites	PRC, Monitoring	Chemistry monitoring will be targeted at He'eia Stream and Hanalei Bay watersheds	Chemistry sampling is ongoing for Hanalei watershed sites. He'eia Stream has not been sampled this FY because of the EHS vacancy.	Chemistry sampling is ongoing for Hanalei watershed sites. He'eia Stream was not sampled this FY because of the EHS vacancy and PRC decision to not recommence monitoring (see 2b, below) at He'eia Stream.	
	b. Monitor He'eia Stream WQ	EHS, Monitoring	Continue water quality sampling at He'eia Stream twice a month	Monitoring has not been conducted at He'eia Stream this FY due to the EHS vacancy. The new EHS will assess WQ data as she develops the He'eia Stream Success Story to decide whether to continue monitoring by 8/2019.	PRC did not conduct monitoring in He'eia; see explanation below.	

Goal 1: Identify water quality trends and waters/watersheds impaired or threatened by NPS pollution (cont.)

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
2. Monitor and assess water quality (WQ) to identify water quality impairments and improvements (cont.)	b. Monitor He'eia Stream WQ (cont.)	PRC, Monitoring	8/2019: Determine whether to continue monitoring in He'eia based on WQ trends, other WQ monitoring efforts in the watershed, and whether He'eia is selected as a priority watershed for 2020+	N/A	PRC will not continue monitoring He'eia Stream after the EHS vacancy was filled in March because He'eia Stream has achieved all water quality standards for the wet season and a success story is being developed. Objectives for He'eia watershed in the NPS Management Plan included delisting He'eia Stream for (wet season) turbidity or TP, and/or nitrate + nitrite (wet and dry seasons). He'eia Stream was delisted for wet season TP and turbidity in 2016 and for wet season nitrate and nitrite in 2018, thereby meeting the objectives of the plan. PRC's contractor (UH Sea Grant) and other NERRs partners continue to conduct WQ monitoring in the watershed.
	c. Monitor Hanalei Bay WQ	EHS, Monitoring	Water quality sampling in Hanalei Bay (weekly by EHS, biweekly by PRC contractor)	In Progress	Completed (continuous)
		PRC, Monitoring	8/2019: Determine whether to continue monitoring in Hanalei based on WQ trends, project needs, and whether Hanalei is selected as a priority watershed for 2020+	N/A	N/A
	d. Document He'eia Stream and Hanalei Bay WQ	EHS, Monitoring	Continue uploading WQ monitoring data to WQX (formerly STORET)	In Progress	Completed (continuous)
	e. Evaluate WQ monitoring efforts	EHS	10/2018: Include WQ monitoring assessment and evaluation in the PRC End of Year Report	Completed; the End of Year Report was submitted.	Completed
	f. Monitor Kawela Stream WQ	EHS, Monitoring	3/2019: Monitor Kawela Stream and an adjacent beach site for TSS, NH ₃ , NO ₃ +NO ₂ , TN, TP, Chl-a.	CWB Monitoring decided to resume monitoring in Moloka'i, and asked PRC if we wanted to monitor any waters there. Because an alternative plan for Kawela watershed is under development, PRC requested a monitoring location in Kawela Stream. An adjacent beach sampling site will also be monitored. Monitoring is expected to continue for a minimum of two years to collect baseline data for the watershed.	Completed (continuous); In April 2019 PRC developed a QAPP for Kawela Stream monitoring. Moloka'i BEACH sampling efforts began in March, but no samples have been collected at the Kawela stream site because the stream has been dry. Monthly sampling attempts will continue through FY20 at a minimum.

Goal 2: Develop strategies, watershed-based plans, and TMDL+ plans to prevent and reduce NPS pollution

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
1. Prioritize watersheds to focus WQ improvement and protection efforts statewide	a. Re-prioritize watersheds to identify a minimum of three priority watersheds	PRC, CWB	1/2019: Meet with CWB to discuss re-prioritizing watersheds, develop consensus on prioritization tools & develop timeline. 3/2019: Create short-list of priority watersheds by implementing prioritization matrix & other tools.	In progress. The watershed prioritization matrix was modified in March to incorporate the Recovery Potential Screening tool, which was completed for HI in May 2018. The short-list will be completed by the end of March.	PRC created a list of candidate priority watersheds for protection exclusively using the HI RPS Tool, and met with the Monitoring Section to discuss. However, because Monitoring was still drafting its comprehensive monitoring strategy (CMS) which would address prioritization, PRC prioritization efforts were put on hold. Based on feedback from the NPS Plan Survey in September 2019, PRC tentatively revised its classification of “priority watershed” and changed its prioritization process. All watersheds with watershed plans will be considered “priority watersheds,” which is the equivalent of about 8% of the State’s watersheds. The Program decided to shift away from using the RPS tool to prioritize watersheds and will instead prioritize based largely on partner priorities for restoration and protection. The Program identified restoration criteria (e.g., TMDLs, 303(d)-listed waterbodies) and protection criteria (e.g., DOFAW priority areas, DOH-SDWB source water protection areas, watershed partnership-managed lands). Priority watershed and watershed areas will be identified and further refined with stakeholders in October - December as the NPS Management Plan is updated. The CMS was not completed in FY19 and most likely will not be used to identify priority watersheds, but may help narrow down potential priority restoration areas where WQ monitoring will regularly occur.
		PS, Planner, CWB	4-5/2019: Investigate priority watershed candidates from shortlist and begin outreach with community groups, interested parties, and other government agencies.	N/A	
		PRC, CWB	6/2019: Final list of priority watersheds and potential partners. 6/2019: List of candidate watershed for future CWB efforts.	N/A	
2. Develop strategies and measures of success for NPS protection	a. Develop strategies for NPS protection	PRC	Implement protection strategies #1-5 and 7; begin incorporating protection strategies into NPS Plan update.	Protection strategies will be incorporated in the NPS Management Plan update in FY20. CWB is establishing protection area (watershed) criteria using the RPS Tool indicators, including watershed health, soil erodibility, land use, and other stressor and social indicators. Implementation of a protection project in West Maui is still in progress.	To facilitate coordination with other agencies, PRC has adopted some protection criteria from DOFAW (e.g., DOFAW priority watershed areas) and has received DOFAW’s GIS data to identify priority areas that have existing 319(h) watershed plans. The HI RPS Tool may still be used for narrowing down watersheds for watershed plans designed for protection/NPS prevention but will not be the primary method for determining protection watersheds. Implementation of a protection project in West Maui with DOFAW is still in progress.

Goal 2: Develop strategies, watershed-based plans, and TMDL+ plans to prevent and reduce NPS pollution (cont.)						
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
3. Develop watershed-based plans (WBPs) and TMDL+ plans	a. Coordinate efforts with CWB to complete TMDL+ Implementation Plan	PRC, TMDL Coordinator	3-4/2019: Determine TMDL+ Implementation plan requirements and scope of plan for RFP	The TMDL Implementation Plan/WBP RFP was released on March 8. RFP meetings are scheduled for April and May 2019	Completed; the contract was sent to ASO in September.	
		CS	5/2019: Draft and release RFP (30-day RFP) 5/2019: Schedule meetings to discuss proposals/BAFOs			
		PRC, EPA, TMDL Coordinator	6-7/2019: Evaluate proposals and BAFOs (meetings)			N/A
		CS	7/2019: Award notification			N/A
		CS, PS	7-8/2019: Meetings with applicants to discuss award decisions (if necessary)			N/A
	b. Update KWRAS WBP	CS		12/2018: Ko'olaupoko Coordinator contract submitted to DOH-ASO for review 6/2019: Ko'olaupoko Coordinator contract NTP	The draft contract was submitted to ASO in March 2019 and NTP is expected in August 2019. The WBP update RFP will be released in late FY20 or early FY21 depending on availability of Program funds.	Contract revisions were sent to the Program from the AG in late September and will be sent to the contractor for execution in October 2019.
			PRC, Ko'olaupoko Coordinator	8/2019: Review Ko'olaupoko WRAS with coordinator		
	c. Assist in the development of new WBPs	EHS, Planner		Ongoing: Review and approve WBPs	No WBPs have been submitted to the Program to date this FY.	Completed. The Program reviewed a draft of the Southwest Maui watershed plan and an outline of the Kawela watershed alternative plan. See below for more details. No new watershed plans were approved. TNC planned to have a draft ready by the end of September. The plan is being developed based on TNC's capacity (with some assistance from the Hawai'i Rural Water Association), so deadlines are flexible. The Program continues to stay in touch with TNC about the plan's development and expects a draft will be completed in FY20. The Program reviewed a draft of the Southwest Maui Watershed Plan in April and provided feedback at a meeting with the authors (Central Maui Soil and Water Conservation District, or CMSWCD). The plan has been significantly revised and improved and included most of the required elements. PRC gave CMSWCD \$14,000 in Program funds (\$11,500 from FY14, \$2,500 from FY16) to complete the plan, because CMSWCD did not have funds to cover the plan's completion. PRC will be meeting with the authors again in November 2019 to discuss a final draft of the plan submitted in October.
			Planner, EHS	Ongoing: Assist with Kawela watershed alternative plan development	TNC submitted a revised draft outline in February. The PRC reviewed the outline and have contacted EPA to set up a meeting to discuss the plan outline.	
			EHS	Provide technical assistance and feedback on WBP development as needed	No WBPs currently require technical assistance, but the SW Maui continues to be revised and might require assistance.	

Goal 2: Develop strategies, watershed-based plans, and TMDL+ plans to prevent and reduce NPS pollution (cont.)					
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
3. Develop watershed-based plans (WBPs) and TMDL+ plans (cont.)	c. Assist in the development of new WBPs (cont.)	Planner	Update Eligible Watersheds list when new WBPs are approved	No new watersheds have been added to date this FY.	No new watersheds have been added to date this FY.
		Planner, EHS	9/2019: Using watershed prioritization list, determine whether new priority WBPs require updating or development.	N/A	PRC is still determining whether it will update older plans or invest in new plans; there is significant interest from stakeholders to increase the number of watersheds with approved plans. PRC will evaluate this as it prioritizes protection and restoration watersheds/watershed areas with CWB and other agencies in early FY20, and as funding allows.

Goal 3: Implement NPS management strategies to restore impaired waters and protect high quality waters from NPS						
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
1. Invest in projects to achieve and demonstrate water quality improvements through implementation of WBPs	a. Target the FY 2019 RFP in a priority watershed (Hanalei Bay)	PRC	12/2018 - 1/2019: Determine focus of RFP (specific project types, pollutants, etc.)	An implementation RFP will be released in May for all priority watersheds (rather than only Hanalei) so that PRC can meet NPS Management Plan objectives. The RFP release has also been swapped with the Waikele TMDL Implementation/Watershed Plan RFP. An award for the Implementation RFP will be decided in late July or early August 2019, with an NTP expected by April 2020.	Completed; award notifications were sent to CORAL (West Maui) and TNC (He'eia) in August and contracts are being drafted by PRC.	
		PS, CS	1/2019: RFP outreach			
		CS	2/2019: RFP development & release (30-day RFP)			
		CS	2/2019: Schedule meetings to discuss proposals/BAFOs			
		PRC, EPA	4/2019: Evaluate proposals and BAFOs (meetings)			
		CS	5/2019: Award notification			
		CS, PS	5-6/2019: Meetings with applicants to discuss award decisions (if necessary)			
		CS	6-7/2019: Develop contract and submit to DOH-ASO			
	b. Investigate potential projects in priority watersheds with other government agencies outside of the RFP		PS, Planner	See Partnerships section Goal 4, Objective 3 for details.	See Partnerships section Goal 4, Objective 3 for details.	See Partnerships section Goal 4, Objective 3 for details.
			PS, Planner	Quarterly: Check progress of UH/partner activities in He'eia as the NERR Management Plan is implemented; continue to meet with UH/partners for project development.	He'eia NERR management plan implementation progress was discussed with UH and partners at a site visit earlier this FY. The PRC is also reviewing a proposed Phase 2 project for He'eia Fishpond and will continue to discuss overall watershed implementation with UH in April discussions. PRC expects an award decision by June.	PRC and UH Sea Grant agreed on a Phase 2 project collaboration in He'eia Fishpond and expects the NTP in December. The awarded TNC project will also be implemented in He'eia NERR and is using NERR partner water quality monitoring data to support their project.
			Planner	10/2018: Finalize project proposal forms for government agencies	Completed	Completed
	c. Draft and execute contracts & contract modifications		CS	As required by State procurement law and as necessary for the Program	In progress	Completed (continuous)
	d. Support open CWA 319(h) projects/contracts		PRC	See attached Projects List for individual project information	Six new projects began or were awarded in FY19: Waimanalo Stream Restoration and Community Outreach Phase 3, Watershed Implementation Project for Waipa Phase 2, Buffers and BMPs for Windward Oahu, Treatment Train BMPs in West Maui, Ko'olaupoko Moku Watersheds Coordinator, and Implementing Soil Management Strategies on O'ahu. There are 9 other ongoing projects that started before FY19. Please see the attached Projects List table for details on all projects.	Two additional projects were awarded in August 2019: TNC's He'eia fencing project and CORAL's agricultural road restoration in West Maui. The Waikele TMDL Implementation/Watershed Plan development RFP was awarded to PG Environmental in May. PRC also began collaborating with UH Sea Grant on the He'eia Fishpond Phase 2 project (storm drain catchment, removal of invasive mangroves). Please see attached Projects List
			CS	Quarterly: Ensure all contract deliverables are received	Completed/In progress. The CS continues to track deliverables and update the Viewer.	Completed (continuous)
			CS, EHS	Quarterly: Update Projects List	Completed/In progress	Completed (continuous)
		EHS	Quarterly: Track project progress, load reductions, and input data into GRTS and Viewer Ongoing: Provide feedback on QSRs and technical assistance to contractors	In progress In progress; the new EHS is becoming familiar with projects, contractors, and reporting requirements.	All current project information has been updated in GRTS and the Viewer Completed; feedback on QSRs and all deliverables were provided to contractors.	

Goal 3: Implement NPS management strategies to restore impaired waters and protect high quality waters from NPS (cont.)					
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
1. Invest in projects to achieve and demonstrate water quality improvements through implementation of WBPs (cont.)	e. Conduct project status checks to measure contractor progress and ensure contractors are on target to achieve load reductions	PRC	Fall (10-12/2018): Site visit/inspections for Kaua'i projects; conference call/meeting with Maui contractors	PRC did a site visit with the Waipa Foundation in Kaua'i in December 2018 and checked in with Maui contractors and the watershed coordinator via email. The Waipa Foundation project is making good progress. PRC viewed a streambank restoration area and an ungulate fencing area.	Completed
			Winter (1-3/2019): Site visit/inspections for O'ahu projects; conference call/meeting with Big Island contractors	PRC conducted a site visit at He'eia Fishpond in November 2018; the mangroves from the island had been removed and additional mangroves around the pond had also been removed; restoration with natives had not yet started. PRC also attended an ORCD outreach event (Ka'alaea Phase 2) in January. PRC will contact the new Kohala Center project manager in March or April to check up on the grazing project in Pelekane Bay	Completed
			Spring (4-6/2019): Site visit/inspections for Maui projects; conference call/meeting with Kaua'i contractors	PRC will conduct a site visit in Maui (for the DLNR project) after its outreach meeting for its implementation RFP.	PRC conducted a site visit of the ORCD Ma'ili'ili project in May. Current work site in Maui (DOFAW fencing project) is inaccessible without helicopter; therefore no site visit was conducted when PRC visited Maui. The MLP project has not begun installing BMPs; a site visit will be conducted in FY20. The Program regularly communicates with Waipa Foundation over phone and email about their project progress.
			Summer (7-9/2019): Site visit/inspections for Big Island; conference call/meeting with O'ahu contractors	N/A	PRC did not conduct a site inspection on the Big Island in the summer due to a delay by the Kohala Center (fencing construction has not yet begun), but has been in regular communication with the new project manager and new director of the Kohala Center.

Goal 4: Develop and employ an effective statewide program to manage NPS pollution					
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
1. Develop and implement the Coastal Nonpoint Pollution Control Program (CNPCP) to prevent and reduce coastal NPS pollution statewide	a. Obtain approval of remaining conditions for CNPCP	Deputy AG, PS, Planner, Enforcement	10/2018 - 9/2019: Continue to draft 11-56 NPS rules. Finish draft body by 12/2018. Finish draft appendices (A through F) by 9/2019.	Chapter 11-56 rule development is in progress. The 11-56 body was completed in March and the DOH Attorneys General plan to meet with AGs of other departments to discuss. Two appendices for Marinas and Forestry have been drafted and are being finalized by the AG's contractor, PG Environmental. An Appendix for Agricultural sources of NPS has been drafted and revised several times and will be finalized by May. The three other appendices (Developed/Urban Areas, Wetlands, Hydromodifications) have been drafted but will not be finalized until July 2019. An implementation plan to roll out the rule package was drafted in February and is currently being revised.	Final internal drafts of the 11-56 chapter and Appendices A through C were completed in September 2019. Outreach to affected state agencies began in the summer, including a meeting among the Deputy Attorneys General (Deputy AGs) in July, a meeting for CWB to present the rules to the Deputy AGs and their clients (August 2019), and another meeting for CWB to discuss the rules and specific appendices with the DLNR Deputy AG and his clients (DOFAW and DOBOR; September 2019). CWB and the state agencies involved with agriculture (HDOA, ADC) will meet again in early FY20 to discuss the rules, specifically Appendix A. DLNR is largely supportive of the rules. The other appendices (D-F) have been drafted but will not be included in the initial rules package. Anticipated final versions of the draft are expected by December 2019 or January 2020 (after stakeholder input is incorporated), when the Department plans to put the rules out for public comment.
			12/2018: Develop a timeline for rules package		
		Planner, OP-CZM	10/2018 - 9/2019: Bimonthly work meetings with OP-CZM		
	10/2018 - 9/2019: Participate in bimonthly CSO calls	PRC and OP-CZM met and discussed management measures over emails and CSO-related calls. PRC provided OP-CZM with feedback on the New Development management measure drafts and the Roads, Highways, and Bridges management measure strategy this FY and will continue to work together on management measures until approval. Completed (continuous)			

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)						
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
<p>1. Develop and implement the Coastal Nonpoint Pollution Control Program (CNPCP) to prevent and reduce coastal NPS pollution statewide (cont.)</p>	<p>a. Obtain approval of remaining conditions for CNPCP (cont.)</p>	<p>Planner, OP-CZM</p>	<p>11/2018 - 9/2019: Assist in Necessary Action plan development. Completed draft expected by 9/2019. Final plan to be submitted to NOAA by 2/2020.</p> <p>12/2018: Request all previous CNPCP submissions from EPA.</p> <p>12/2018-1/2019: Put together a completed management measures package (New Development, New OSDS, RHB); submit to EPA.</p> <p>3/2019: Submit strategies for meeting outstanding MMs to EPA.</p>	<p>PRC and OP-CZM continue to meet and work together to draft, review, and submit management measures and to clarify CNPCP requirements with NOAA and EPA. Per EPA's suggestions, the outstanding MMs will not be submitted as a package but will be submitted as each management measure is completed. PRC submitted its New OSDS MM to CSO workgroup for feedback in January and plans to send the final version to EPA in April. An updated Operating OSDS strategy was submitted to EPA and NOAA in February. 11-56 Appendices are heavily based on CNPCP management measures, and the relevant management measures are being updated as 11-56 is drafted. The PRC met with DOBOR in February to discuss specific Marinas management measures and plan to partner with DOBOR and UH Sea Grant to update boating/boater outreach manual that includes management practices from the 6217(g) guidance.</p>	<p>OP-CZM will be submitting the Necessary Action Plan in FY20 and PRC will assist in its development.</p> <p>Completed; the program sent a list of submissions it needs to EPA. PRC is submitting management measures as they are completed. It submitted one complete management measure write-up for New OSDS in July and received approval (via email) in August. The Program also received comments from EPA on its Operating OSDS strategy and has chosen its approach in meeting OSDS requirements as a result. PRC has been in contact with UH Sea Grant and DOBOR regarding the boating outreach manual and will be meeting in October 2020 to begin the process of updating the manual jointly, with the final deliverable expected in late FY20. The New Development management measure will be submitted in FY20, and OP is working with Hawaii County DPW on the Roads, Highways, and Bridges BMP manual, which will be completed in FY20, with the goal of meeting RHB management measure requirements by 2021.</p> <p>Completed</p>	
			<p>3-9/2019: Begin compiling interim approved MMs for updating as 11-56 appendices are developed.</p> <p>7/2019: Address feedback from EPA on submitted management measures and strategies; set a timeline and prepare for re-submission.</p>			<p>The timeline will be established in the Necessary Action Plan that OP-CZM will submit to NOAA in FY20 and that PRC will assist with implementing. Internally, PRC set a deadline to submit the monitoring and tracking administrative element write-up in FY20, once the Monitoring Section completes its CMS, and to work with WWB on a bill for OSDS inspections for the 2020 legislative session in FY20.</p>
			<p>8-9/2019: Continue to work on outstanding MMs.</p>			
<p>2. Develop and implement strategies to address the State's major NPS pollution concerns</p>	<p>a. Develop a statewide strategy to address runoff from cesspools</p>	<p>Planner, PS, Monitoring, WWB, SDWB</p>	<p>Participate in quarterly Cesspool Workgroup meetings and assist Cesspool Coordinator in completing workgroup tasks.</p>	<p>The Cesspool WG met in December 2018 to discuss updates regarding the Cesspool Conversion group established by the Legislature.</p>	<p>Cesspool WG meetings were put on hold in 2019 while the WWB Chief is focused on Cesspool Conversion Working Group efforts.</p>	

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
2. Develop and implement strategies to address the State's major NPS pollution concerns (cont.)	a. Develop a statewide strategy to address runoff from cesspools (cont.)	PS, Planner, CS, WWB	Provide support with implementing the cesspool strategy per revised rules and new legislation, focusing on priority areas outlined in the DOH Report to the Legislature.	PRC will provide support to the WWB as needed by the WWB and the conversion group. The new strategy/plan will not be completed in draft form until 2019 and will not be finalized until 2020.	PRC provided procurement support as part of the Cesspool Conversion Working Group outreach efforts.
	b. Implement statewide strategy to address runoff from agriculture	PS, Planner	11-12/2018: Participate in readiness phase kickoff and meetings with NWQI coordinator to begin readiness phase watershed assessments.	PRC met with NRCS and the SDWB in February to discuss the NWQI. PRC met again with NRCS in March, who will contract for watershed assessment information required to complete the readiness phase and be eligible for the implementation phase. PRC and NRCS also discussed the potential to expand NWQI monitoring to Hilo.	There is a lack of qualified cooperators in West Maui due to the AGI barrier, so NRCS and PRC are identifying a different watershed. NRCS will continue its efforts in Hilo, and PRC will likely submit Waikele or Kaiaka watersheds to be added for a 319/NRCS NWQI implementation application in FY20 (September). PRC met with NRCS to refine NWQI efforts and has identified potential areas. Collaboration is largely limited to expenses associated with additional water quality monitoring, so efforts will be made to select watersheds where the CWB Monitoring Section may also assist with monitoring efforts. PRC believes Waikele watershed would be a good fit because of the recent monitoring data collected during TMDL development and due to TMDL implementation planning expected to begin in 2021 but needs to work with NRCS to assess whether there will be enough eligible and interested producers in the watershed. CTAHR received its NTP in August.
		Planner, PS	10/2018 - 9/2019: Implement soil health management strategies via project development and implementation with UH-CTAHR partnership. NTP for soil health management project expected by 7/2019.	The soil health management project with UH-CTAHR is in contract development. The NTP is expected by October 2019.	
3. Build new partnerships and strengthen existing partnerships to facilitate program coordination and integration for NPS management	a. Identify potential partnerships and NPS-related projects that would benefit from cross-program coordination	PRC	1/2019: Meet with HDOA to discuss partnership opportunities and implement ag strategies.	PRC had meetings with HDOA in December and February to discuss partnership opportunities and pesticides outreach. While no projects are in the pipeline, communication will continue as the NPS Management Plan is updated.	PRC met with HDOA at the Joint Government Water Conference in August, with an informal agreement that they will collaborate as part of the NPS Management Plan update in FY20.

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
3. Build new partnerships and strengthen existing partnerships to facilitate program coordination and integration for NPS management	a. Identify potential partnerships and NPS-related projects that would benefit from cross-program coordination (cont.)	PRC	7/2019: Develop list of potential partners based on watershed prioritization results.	N/A	Although priority watersheds have not been finalized (see Goal 2), PRC developed a list of potential partners for the next NPS Management Plan period (FY21-FY25). These include: DLNR-DOFAW & DAR, watershed partnerships (UH/HAWP), NRCS, HDOA, BWS, UH CTAHR, UH Sea Grant, KIRC, DBEDT, and the other DOH water branches. PRC began meeting with some of these partners in August and will continue meet with them to identify common goals and priorities in early FY20.
	b. Improve 303(d) and 319(h) integration	PRC, TMDL Coordinator	3-4/2019: Determine TMDL+ plan scope for RFP & evaluate proposals.	The CWB TMDL coordinator provided feedback on the RFP and discussed the scope of the TMDL implementation plan with PRC. The TMDL coordinator also volunteered to participate in the RFP.	Completed
			2018-2019: CWB watershed prioritization effort (Goal 2, Obj. 1). See Goal 4, Obj. 2a for coordination with WWB.	The CWB sections are prioritizing watersheds in March.	See above (Goal 2, Obj. 1)
	c. Improve 319(h) and WWB coordination to address NPS pollution from OSDS	Planner, PS, WWB	See Goal 4, Obj. 2a for coordination with WWB.	See Goal 4, Obj. 2a for coordination with WWB.	See Goal 4, Obj. 2a for coordination with WWB.
	d. Improve 319(h) and SDWB coordination to protect source waters from NPS pollution	Planner, PS, SDWB, PRC	Coordinate with SDWB as they implement the HI Groundwater Protection Strategy.	PRC and SDWB are partnering to target West Maui for the NWQI readiness phase and source water protection pilot and continue to implement the Groundwater Protection Strategy.	Coordination was attempted for West Maui NWQI, but it wasn't feasible for PRC because lack of eligible cooperators (see Goal 4, Objective 2b, above).
	e. Provide outreach through partnerships	PS	4/2019: Co-Sponsor Waikiki Aquarium Earth Day event (estimate ~4,000 visitors).	Completed in March (payment was submitted)	Approximately 2,400 visitors participated at this year's event. PRC attributes the drop in attendance to the event being held on Easter weekend
PRC			Participate in a local conference/symposium to conduct outreach and develop and maintain partnerships.	Completed; PRC's Program Specialist presented on outreach and the Planner presented on the NPS Management Plan update at all five Joint Government Water Conferences in August. In July, the Program also attended one day of the Hawai'i Conservation Conference that had sessions on restoration in general and on restoration in He'eia specifically, as well as presentations on water quality and coral research.	

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)						
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
3. Build new partnerships and strengthen existing partnerships to facilitate program coordination and integration for NPS management (cont.)	e. Provide outreach through partnerships (cont.)	PS	Continue to distribute outreach materials and manuals (Hawaii Watershed Guidance, the NPS Management Plan, NPS coloring books) to stakeholders and other interested groups.	300 coloring books were donated to the U.S. Marines in March.	In addition to the 300 coloring books that were distributed to the Marine Corps for its April Earth Day event at Kaneohe Bay, another 400 coloring books were donated to the Marines for its Back to School event at Kaneohe Bay (8/2019). 100 books were also donated to the Dept. of Education Kona District A+ (after-school) Program (5/2019).	
4. Apply adaptive management to improve the State NPS Program and investigate approaches to address NPS pollution	a. Determine progress implementing the NPS Management Plan	Planner	10-11/2018: Evaluate successes, challenges, and progress towards achieving goals in End of Year Report.	Completed	Completed	
	b. Assess effectiveness of 319(h) projects	EHS	Quarterly: Analyze project data from QSRs (final QSR from contractor for FY2018 due 10/15/2018).	QSRs continue to be reviewed for contract deliverables and load reductions.	Completed (continuous)	
		Planner, EHS	Assessments and load reductions included in PRC End of Year Report and PRC Viewer.	Completed in the End of Year Report; ongoing in the PRC Viewer.	Completed (continuous)	
		Planner	Submit PRC End of Year Report (10/30/2018 draft, 11/2018 final report).	Completed	Completed	
		Planner, EHS	11-12/2018: Review changes to EPA success story categories and criteria and begin developing He'eia success story 1/2019: Submit He'eia success story for WQ-10a	The new EHS will be analyzing He'eia Stream water quality and project data to complete the WQ-10 success story by the end of this FY. The SP-12 success story (if supported by project/watershed data) will be developed in FY20.	PRC continued to look at project data (load reductions, when the project was implemented) side-by-side with delistings to begin developing the success story for He'eia Stream for meeting wet season water quality standards for nutrients and turbidity.	
		EHS	8/2019: Determine whether He'eia watershed is on track to qualify for an SP-12 success story.	The new EHS will be analyzing He'eia Stream water quality and project data to complete the WQ-10 success story by the end of this FY. The SP-12 success story (if supported by project/watershed data) will be developed in FY20.	The WQ-10 success story will be submitted in early FY20. PRC still needs to check with the EPA in FY20 regarding EPA changes to the SP-12 success story.	
8/2019: Review other projects, watersheds, etc. for SP-12 eligibility and create a list of eligible success stories.			Waipa Stream (Waipa watershed) was identified for a potential success story because water quality data is being routinely collected. Data collected in FY19 show slight improvements for some parameters. PRC will work with its contractor, Waipa Foundation, to assess the data and determine if it qualifies for a success story in FY20.			
			9-10/2019: Develop success story in conjunction with End of Year Report.		See above information on success stories development.	

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)							
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status		
4. Apply adaptive management to improve the State NPS Program and investigate approaches to address NPS pollution (cont.)	c. Investigate innovative approaches and develop new strategies to address NPS pollution	PRC	Ongoing: Development of alternative watershed plan with TNC, HAWP, and UH; investigate ideas from the National NPS Workshop to incorporate into the FY20 workplan and the NPS Management Plan update.	The alternative plan is still being developed and is in outline form. Feedback on the first draft outline was provided in October, and a new draft was submitted for EPA and PRC to review in Feb. PRC has responded to TNC and is scheduling a meeting to discuss the revised outline. Ideas to investigate from the NPS conference include looking into FEMA funding for projects in Kaua’i and the Big Island, as well as approaches to updating the NPS Management Plan.	TNC has not yet submitted its draft of the alternative plan. PRC determined that working with FEMA was not feasible due to 1) lack of overlapping eligible watersheds on Big Island, and 2) the unpredictability of where FEMA will respond to emergencies in the State in the next five years. FEMA work on Kauai near the Hanalei Bay watersheds was completed FY19. Other state NPS plans (New Mexico, Indiana, Kansas, etc.) were reviewed for the NPS Management Plan update. See Goal 4, Obj 1a for admin. rule approach to NPS mitigation.		
	d. Attend relevant training workshops and conferences to learn additional knowledge and skills for implementing the program	PS, Planner	PRC	11/2018: Participate in the National NPS Training Workshop (esp. sessions on updating State NPS management plans).	Completed	Completed	
			PRC	7/2019: Hawai’i Conservation Conference (3-4 staff).	N/A	PRC attended one day of the 3-day Hawai’i Conservation Conference to attend talks/sessions on restoration in general and on restoration in He’eia specifically, as well as water quality/coral monitoring by various organizations, including DLNR-DAR.	
		PS, Planner	(Bi)Monthly: Participate in ACWA webinars	Relevant ACWA calls/webinars are not happening bimonthly as expected. PRC attended the only call this FY (on evidence-based approaches to science communication) in November and will be participating in the next call on NPS Management Plans.	PRC attended the webinar on NWQI in April and NPS Management Plans in May; the latter was extremely helpful in providing ideas for the NPS Management Plan update process.		
		PS, EHS, Planner	1-3/2019: Request/participate in (Region 9) GRTS Training/GRTS OBI for when new EHS is hired.	A two-day GRTS training for the new EHS has been scheduled for April 2019.	Completed		
	e. Provide CWB program support throughout development of CWB Program Improvement Plan	PRC		Participate in local technical training on relevant topics, specifically (but not limited to): state procurement, modeling, watershed/TMDL planning, enforcement, ArcGIS, water quality assessment, etc.	The CS attended procurement training in October. The PS attended supervisory training in December. Additional GIS training for the EHS and Planner is planned for May.	In September, the Planner participated in a 3-day training on ArcGIS Pro to learn how to use Pro and conduct spatial analysis and develop maps; the EHS will attend the same training in FY20.	
				Continue implementation of Blue Earth solutions and adapt PRC activities accordingly.	Completed	Completed; activities identified in the Blue Earth report that can be employed at the branch level are being implemented	
				Biweekly: Discuss progress in meeting BE’s recommendations at CWB supervisor meetings	Completed	Completed	
f. Hold three-day PRC “retreat”		PRC	10/2018: Conduct End of Year assessment -- discuss progress in implementing the NPS Management Plan and workplan, identify unmet goals and objectives in NPS Plan; discuss and prepare for FY2019 workplan tasks.	Completed and included in the End of Year Report in October 2018.	Completed		

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status	
4. Apply adaptive management to improve the State NPS Program and investigate approaches to address NPS pollution (cont.)	f. Hold three-day PRC "retreat" (cont.)	PRC	3/2019: Review workplan progress, develop FY20 workplan priorities and tasks, discuss NPS Management Plan update, plan for RFPs and projects, address program needs, meet with CWB staff to discuss various workplan related tasks.	Completed	Completed	
	g. Evaluate PRC Program	Planner	10-11/2018: Continue to collect data from previous reports and GRTS.	Based on presentations at the National NPS Training Workshop in November, the plan update process has changed to focus on stakeholder recommendations, setting new goals and objectives, improving efficiencies within PRC and the CWB, and improving collaboration within the CWB sections and with other government departments and programs.	The PRC Program evaluation is currently underway, with the analysis of the survey results completed in September (see Objective h, below). There was a delay in obtaining data from GRTS and project QSRs because of the 14-month EHS vacancy. The new EHS, who has finished inputting data from over a year's worth of projects and reconciling previous project records, will obtain some data on projects (e.g. load reductions) through GRTS OBI to assist in guiding the update's goals and objectives. Data and input from stakeholders were provided in a survey and has been used to evaluate the Program. A final evaluation of the Program will be completed in Q1 of FY20; for now only the evaluation made based on survey responses has been completed and included in the FY19 End of Year Report.	
			12/2018-2/2019: Analyze data.			
			4/2019: Draft evaluation completed for PRC review.			
			5/2019: Final evaluation with recommendations for NPS Management Plan update.			
	h. Update Hawai'i's NPS Management Plan	PRC	3/2019 Review NPS Management Plan for successes and challenges, determine scope of update needed, and develop preliminary list of updates and a timeline.	PRC has begun updating the implementation table for the plan update and is reviewing the NPS Training Workshop presentations for NPS Plan updates. PRC will meet at the end of the month or early April to discuss plan ideas and suggestions.	The Program set a schedule for the Plan's update in July. PRC discussed the results of two surveys of the program and the NPS Management Plan. The Program began reviewing the current NPS Plan in September for successes and challenges, based largely on what milestones have been achieved and not achieved in the current NPS Plan.	
			Planner	4-5/2019: Review ACWA/319 guidance on and requirements for NPSMP updates.	N/A	Completed
				5/2019: Develop survey for stakeholders/public on suggested NPS Plan update (using Indiana's template).	N/A	Completed
			6/2019: Release survey (surveymonkey or similar online survey tool).	N/A	Two surveys were developed: the first survey, released in April, was internal (CWB) and the second survey, released at the end of May and open until mid-Sep, was public (the surveys had some identical questions). The suggestions provided in the surveys are being used to guide the plan's update. Please see attached for public survey questions.	

Goal 4: Develop and employ an effective statewide program to manage NPS pollution (cont.)

Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
4. Apply adaptive management to improve the State NPS Program and investigate approaches to address NPS pollution (cont.)	h. Update Hawai'i's NPS Management Plan (cont.)	Planner	7/2019: Review results of survey; summarize and discuss with PRC. 4-7/2019: Update first four chapters (background/non-planning elements of plan).	N/A	Completed; results are included in the End of Year Report.
		PRC	7-8/2019: Develop broad goals and objectives based on PRC Program Evaluation, Objective 4f above, new priority watersheds, and survey results.	N/A	Two introductory chapters on water quality problems in Hawai'i and regulatory authorities were updated in May. These are being finalized in Q1 of FY20 based on survey results and other agency priorities.
		Planner	9/2019: Final list of planning updates and final timeline for update.	N/A	Completed in July 2019; revised in September as a result of survey results.
			9/2019: Begin update of planning and partnership chapter(s) with new goals, objectives, and milestones.	N/A	Completed; meetings were/are being scheduled with potential partners and stakeholders from September through December.

Perform fiscal, reporting, and administrative duties to ensure the PRC Program continues to achieve its mission					
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
1. Obtain the FY 2020 319(h) grant	a. Develop Workplan Table, Narrative, and Budget	Planner, PS	4/2019: Draft FY20 Workplan and PRC Budget submitted to CWB Chief and EPA for review.	Draft FY20 workplan began in March and will be finalized by April.	Completed
	b. Negotiate and submit grant application	CWB Chief, PS	4/2019: EPA & DOH grant negotiations meeting in SF. 6/2019: Submit grant application to EPA.	N/A N/A	Completed Completed
2. Perform fiscal management to ensure successful and appropriate spending of 319(h) grant funds	a. Spend all awarded funds with no unobligated funds	PS, ERO, ASO, DAGS	Fiscal administration of open grants.	In progress	Completed (continuous)
	b. Reallocate unspent Personnel costs to contracts	PS, ERO, ASO	10/2018: Identify unspent EHS personnel funds and reallocate towards contracts.	In progress	Completed
3. Perform reporting activities for projects, budget, and PRC assessments	a. Oversee contracts	CS	Review QSRs and notify EPA of important changes.	In progress	Completed (continuous)
		EHS	Input data from QSRs and upload final reports to GRTS.	Will resume once the new EHS's training is completed in April	Completed (continuous)
		CS, EHS	10/2018: Project summaries in End of Year Report.	Completed	Completed
	b. Participate in End of Year meetings with the EPA	PRC, EPA	11/2018: Prepare agenda and materials for PRC session.	Completed	Completed
			12/2018: Participate in meetings	Completed	Completed
	c. Prepare workplan progress reports and End of Year Report on progress implementing the NPS Management Plan	Planner, EPA	10/30/2018: FY2018 final workplan report.	Completed	Completed
			10/30/2018: Draft EOY report submitted to EPA.	Completed	Completed
			11/2018: Final EOY submitted to EPA.	Completed	Completed
			4/30/2019: Semi-annual workplan progress report for FY2019.	This will be submitted in March	Completed
			Monthly: PRC & EPA meet to discuss technical issues and review workplan progress.	Paused while EPA Project Coordinator was on detail	Completed (continuous)
d. Submit quarterly fiscal progress reports	ERO, PS	Quarterly fiscal reports (Nov, Feb, May, Aug) submitted to EPA	Paused while EPA Project Coordinator was on detail	Completed; changed to biannual reports	
e. Close out 2013 CWA 319(h) grant and review/manage status of 2014 CWA 319(h) grant	ERO, ASO, PS	12/2018: Interim 2013 FFR. 1/2019: Final 2013 FFR.	Completed Completion confirmation pending from ASO	Completed Completed	
f. Update Viewer and create additional functionality	PRC	Continue updating Viewer as new projects are awarded and managed and new WBPs are approved.	In progress	Completed (continuous)	
		Continue working with the DOH Contractor on developing Viewer's reporting functions.	User accounts developed so that contractors can submit QSRs through the Viewer. List of potential future Viewer changes sent to DOH Senior IT Specialist and Contractor.	TNC & CORAL, who were awarded projects in August 2019, will be using the new online QSR reporting feature.	
4. Administer 319(h) Program	a. Manage 319(h) Program	PS	Ensure the NPS Management Plan and FY 2018 Workplan are being implemented.	In progress	Completed (continuous)
	b. Assist with CWB strategic planning and programmatic support	CS	Assist CWB with procurement and contract development.	Completed (5 contracts, 1 RFP)	Additional assistance to the CWB includes: CWB Technical Assistance RFP and Master Contract, conference room chair procurement for the branch, and vehicle (truck) procurement for the Monitoring Section.

Perform fiscal, reporting, and administrative duties to ensure the PRC Program continues to achieve its mission (cont.)					
Program Objectives	Milestones	Staff	Tasks & Deliverables	March 22, 2019 Status	September 30, 2019 Status
4. Administer 319(h) Program (cont.)	b. Assist with CWB strategic planning and programmatic support (cont.)	PS	Assist CWB with other programmatic support, including strategic planning for CWB.	The PS is participating in the CWB CMS development, attending quarterly supervisor meetings, assisting CWB with several procurement requests/needs, and managing the NPS Branch administrative needs.	Completed (continuous)

Hawai'i's Nonpoint Source Management Plan Survey

PURPOSE

The Department of Health [Polluted Runoff Control \(PRC\) Program](#) is updating [Hawai'i's Nonpoint Source Management Plan](#) for 2021-2025. The plan serves as a guide for the State's administration of the Clean Water Act Section 319 grant program, which was established to reduce and prevent nonpoint source pollution and improve water quality.

To more effectively manage nonpoint source pollution statewide, it is important to get stakeholder feedback on the PRC Program and on Hawai'i's Nonpoint Source Management Plan. Please complete the following survey to evaluate the PRC Program and assist with the revision of Hawai'i's Nonpoint Source Management Plan.

The survey will be available from May 29 - August 30. Please note that survey responses will not be saved if the survey page is closed.

If you have any questions about this survey, the Nonpoint Source Management Plan, or the the PRC Program, please contact michael.burke@doh.hawaii.gov.

Thank you for taking this survey! We appreciate your feedback and interest in protecting and restoring Hawai'i's waters.

WHAT IS NONPOINT SOURCE POLLUTION?

Nonpoint source pollution is caused when rainfall picks up and carries away natural and human-made pollutants as it moves over and through the ground, depositing the pollutants into rivers, streams, lakes, wetlands, coastal waters, and ground waters. Nonpoint source pollution may cause water quality problems and have harmful effects on drinking water supplies, recreation, coral reef ecosystems, and wildlife.

Nonpoint source pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. Nonpoint source pollution can include:

- Excess fertilizers, herbicides, and pesticides from agricultural lands and residential areas;
 - Sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks;
 - Oil, grease, and toxic chemicals from urban runoff and energy production;
 - Bacteria and nutrients from livestock, pet wastes, and faulty cesspools and septic systems;
 - Pharmaceuticals and personal care products from residential and urban areas; and
 - Atmospheric deposition and hydromodification.
-

What part of Hawai'i are you from?

Kaua'i

O'ahu

Moloka'i

Lana'i

Maui

Big Island

Other (please specify)

Horizontal scrollbar

How would you describe your relationship to nonpoint source work in Hawai'i?

Check all that apply

*

* Required

Interested citizen

Part of a watershed group

Farmer

Private industry

Water quality professional

Conservation professional

Academic

PRC Program grantee or partner (current or former)

Not applicable

Other (please specify)

What nonpoint source pollution and/or water quality accomplishments should Hawai'i achieve by 2025?

Do the current Nonpoint Source Management Plan goals address the needs of the State?

* Required

	No	Somewhat	Yes	Not sure
Goal 1: Identify waters and watersheds impaired or threatened by nonpoint source pollution *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goal 2: Develop strategies, watershed plans, and TMDL implementation plans to prevent & reduce nonpoint source pollution *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goal 3: Implement nonpoint source management strategies and projects to restore impaired waters and protect high quality waters *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goal 4: Develop and employ an effective statewide program to manage nonpoint source pollution *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What should be incorporated into the updated version of Hawai'i's Nonpoint Source Management Plan? *

* Required

What do you like and dislike about the Polluted Runoff Control Program?

1000 //

In what ways could Hawai'i improve the way it administers its nonpoint source grant program to be more effective?

1000 //

Please list any organization(s) that the Department of Health should partner with to manage nonpoint source pollution more effectively.

The Polluted Runoff Control Program may wish to contact you to discuss your responses. If you would be willing to discuss your answers, please provide your contact information below.

Your contact information and responses will be confidential.

Hawaii State Department of Health Polluted Runoff Control Program
Project Funding by Grant

ASO#	Contractor	Project Title	Status	Start	End	Budget	Grant	Type	Expended	Balance
N/A	Central Maui Soil & Water Conservation District	Southwest Maui Watershed-Based Plan Finalization	E	N/A	N/A	11,500.00	C9-96978714-1	Prog	11,500.00	0.00
						2,500.00	C9-96978716-0	Prog	2,500.00	0.00
					Total:	14,000.00			14,000.00	0.00
20-166	Coral Reef Alliance	Improve Coastal Water Quality and Coral Reef Health by Expanding Stream Gulch Restoration Actions in Wahikuli, West Maui	D	N/A	N/A	47,000.00	C9-96978718-0	Proj	0.00	47,000.00
						168,010.50	C9-96978719-0	Proj	0.00	168,010.50
					Total:	215,010.50			0.00	215,010.50
N/A	Dept. of Attorney General	HAR 11-56 NPS Rules Development	E	N/A	N/A	55,489.08	C9-96978714-1	Prog	55,489.08	0.00
17-061	Dept. of Land & Natural Resources (DAR)	West Maui Ridge to Reef Priority Watershed Coordinator	E	11/14/16	11/13/20	100,000.00	C9-96978713-0	Proj	100,000.00	0.00
						92,402.42	C9-96978714-1	Proj	92,402.42	0.00
					Total:	192,402.42			192,402.42	0.00
18-146	Dept. of Land & Natural Resources (DOFAW)	Pelekane Grazing Improvement Project	E	1/31/18	1/30/20	90,000.00	C9-96978716-0	Proj	90,000.00	0.00
17-195	Dept. of Land & Natural Resources (DOFAW)	DLNR, Div. of Forestry and Wildlife: Polluted Runoff Control Project for West Maui	E	1/30/18	1/29/21	160,000.00	C9-96978713-0	Proj	160,000.00	0.00
						84,510.92	C9-96978714-1	Proj	84,510.92	0.00
						164,149.26	C9-96978715-0	Proj	164,149.26	0.00
						326,500.79	C9-96978716-0	Proj	203,430.74	123,070.05
					Total:	735,160.97			612,090.92	123,070.05
16-103	Hanalei Watershed Hui	Replacing Cesspools with Advanced Wastewater Systems in Hanalei Bay Watershed	C	4/15/16	1/20/18	0.00	C9-96978714-1	Proj	0.00	0.00
16-050	Hui ku Maoli Ola	Ma'ili'iili Watershed Implementation Project	E	2/29/16	2/28/21	727,082.45	SEP	N/A	38,542.39	688,540.06
19-206	Hui o Ko'olaupoko	Ko'olaupoko Moku Watersheds Coordinator	R	N/A	N/A	10,559.33	C9-96978715-0	Proj	0.00	10,559.33
						140,000.00	C9-96978718-0	Proj	0.00	140,000.00
					Total:	150,559.33			0.00	150,559.33
16-049	Hui o Ko'olaupoko	Windward Community College Low-Impact Retrofit Phase II	C	2/22/16	12/31/17	25,888.26	C9-96978714-1	Proj	25,888.26	0.00
13-112	Kaho'olawe Island Reserve Commission	Reducing Excessive Sedimentation in the Hakioawa Watershed of Kaho'olawe Island	C	4/1/13	4/1/15	175,038.13	C9-96978710-0*	Proj	159,894.50	15,143.63
						119,149.34	C9-96978711-0	Proj	119,149.34	0.00
						15,143.63	C9-96978714-1	Proj	15,143.63	0.00
					Total:	309,331.10			294,187.47	15,143.63
18-240	Kaho'olawe Island Reserve Commission	Reducing Excessive Sedimentation in the Hakioawa Watershed of Kaho'olawe Island (Phase 2)	C	8/9/18	8/9/19	49,586.34	C9-96978714-1	Proj	49,586.34	0.00
19-156	Maui Land & Pineapple Co., Inc.	Treatment Train: An Ahupua'a Approach to Watershed Best Management Practices in West Maui	E	5/1/19	5/1/22	212,510.92	C9-96978716-0	Proj	0.00	212,510.92
						387,488.07	C9-96978717-0	Proj	0.00	387,488.07
					Total:	599,998.99			0.00	599,998.99
20-165	The Nature Conservancy	He'eia Watershed Ungulate-Exclusion	D	N/A	N/A	210,934.10	C9-96978718-0	Proj	0.00	210,934.10
17-060	O'ahu Resource Conservation & Development Council	Ka'alaea and Waiahole Stream Restoration/Phase 2	C	12/19/16	9/19/19	216,811.20	C9-96978715-0	Proj	175,662.02	41,149.18
17-059	O'ahu Resource Conservation & Development Council	Agricultural Stewardship in the Ma'ili'iili Watershed	C	12/19/16	6/18/19	43,732.63	SEP	N/A	43,732.63	0.00
						146,302.88	C9-96978715-0	Proj	146,302.88	0.00
					Total:	190,035.51			190,035.51	0.00
18-209	O'ahu Resource Conservation & Development Council	Waimanalo Stream Restoration and Community Outreach - Phase 3	E	12/4/18	12/3/20	147,716.49	C9-96978714-1	Proj	147,716.49	0.00
						100,000.00	C9-96978716-0	Proj	0.00	100,000.00
					Total:	247,716.49			147,716.49	100,000.00
19-154	O'ahu Resource Conservation & Development Council	Buffers and BMPs for Windward O'ahu	E	4/11/19	10/10/21	150,000.00	C9-96978714-1	Proj	150,000.00	0.00
						125,000.00	C9-96978715-0	Proj	0.00	125,000.00
						29,726.24	C9-96978717-0	Proj	0.00	29,726.24
					Total:	304,726.24			150,000.00	154,726.24
20-143	PG Environmental	Waikele Watershed and Total Maximum Daily Load Implementation Plan	D	N/A	N/A	149,984.79	C9-96978718-0	Prog	0.00	149,984.79
20-123	University of Hawai'i (CTAHR)	Implementing Soil Management Strategies and Soil Testing Technologies	E	8/12/19	8/12/22	349,922.86	C9-96978717-0	Proj	0.00	349,922.86

Status
 C: Completed
 E: Contract Executed/Project in Progress
 R: Contract Under Review (ASO/Attorney General/Etc.)
 D: Contract Development (PRC)

*These funds were originally encumbered for the respective projects but were ultimately unspent by the contractors. This unspent balance was unencumbered and used for other PRC projects.

ASO#	Contractor	Project Title	Status	Start	End	Budget	Grant	Type	Expended	Balance
17-100	University of Hawai'i (Sea Grant)	He'eia Fishpond Mangrove Island Removal Project	E	3/14/17	9/13/20	189,504.70	C9-96978715-0	Proj	149,026.78	40,477.92
20-139	University of Hawai'i (Sea Grant)	Expanding Water Quality Improvement Projects at He'eia Fishpond	R	N/A	N/A	64,510.92	C9-96978717-0	Proj	0.00	64,510.92
						241,951.06	C9-96978718-0	Proj	0.00	241,951.06
					Total:	306,461.98			0.00	306,461.98
15-028	University of Hawai'i (Sea Grant)	Implementation of BMPs in the Wai'ula'ula Watershed	C	12/15/14	8/31/18	9,732.21	C9-96978712-0	Proj	9,732.21	0.00
						417,485.73	C9-96978713-0*	Proj	413,798.72	3,687.01
						34,824.37	C9-96978714-1*	Proj	0.00	34,824.37
						44,709.71	C9-96978715-0*	Proj	0.00	44,709.71
					Total:	506,752.02			423,530.93	83,221.09
16-048	The Waipa Foundation	Watershed Implementation Project for the Ahupua'a of Waipa	C	2/22/16	8/21/19	169,511.44	C9-96978711-0	Proj	169,511.44	0.00
						22,024.70	C9-96978712-0	Proj	22,024.70	0.00
						194,755.10	C9-96978714-1	Proj	194,755.10	0.00
					Total:	386,291.24			386,291.24	0.00
19-155	The Waipa Foundation	Watershed Implementation Project for the Ahupua'a of Waipa - Phase 2	E	3/20/19	3/19/21	150,997.60	C9-96978714-1	Proj	150,997.60	0.00
						150,000.00	C9-96978716-0	Proj	0.00	150,000.00
						50,000.00	C9-96978717-0	Proj	0.00	50,000.00
					Total:	350,997.60			150,997.60	200,000.00

Status

C: Completed
E: Contract Executed/Project in Progress
R: Contract Under Review (ASO/Attorney General/Etc.)
D: Contract Development (PRC)

*These funds were originally encumbered for the respective projects but were ultimately unspent by the contractors. This unspent balance was unencumbered and used for other PRC projects.

Potential Unliquidated Obligations

FY14 C996978714-1 (S-15-201/9290-14)			10/1/14 - 9/30/19
Category	Budget	Spent/Encumbered	Balance
Payroll	196,000.00	197,715.02	(1,715.02)
B-Costs (Spent)	33,476.05	33,523.65	(47.60)
B-Costs (Encumbered)		0.00	0.00
Contracts (Spent)	1,003,323.95	530,053.96	473,269.99
Contracts (Encumbered)		482,292.37	(482,292.37)
Indirect	29,500.00	28,731.11	768.89
Balance			(10,016.11)
Revenue Adjustment			(20,917.42)
Potential FY14 Unliquidated Obligations			10,901.31
FY15 C996978715-0 (S-16-201/9290-15)			10/1/15 - 9/30/20
Category	Budget	Spent/Encumbered	Balance
Payroll	312,279.10	258,507.77	53,771.33
B-Costs (Spent)	15,575.00	18,384.82	(2,809.82)
B-Costs (Encumbered)		233.00	(233.00)
Contracts (Spent)	788,777.75	635,140.94	153,636.81
Contracts (Encumbered)		206,627.10	(206,627.10)
Indirect	44,668.15	43,566.61	1,101.54
Balance			(1,160.24)
Revenue Adjustment			(12,335.23)
Potential FY15 Unliquidated Obligations			11,174.99
FY16 C996978716-0 (S-17-201/9290-16)			10/1/16 - 9/30/21
Category	Budget	Spent/Encumbered	Balance
Payroll	271,552.84	266,921.54	4,631.30
B-Costs (Spent)	19,325.00	18,227.07	1,097.93
B-Costs (Encumbered)		0.00	0.00
Contracts (Spent)	843,203.02	295,930.74	547,272.28
Contracts (Encumbered)		373,070.05	(373,070.05)
Indirect	64,919.14	40,868.60	24,050.54
Balance			203,982.00
Revenue Adjustment			(8,546.93)
Potential FY16 Unliquidated Obligations			212,528.93
FY17 C996978717-0 (S-18-201/9290-17)			10/1/17 - 9/30/22
Category	Budget	Spent/Encumbered	Balance
Payroll	425,562.21	315,851.80	109,710.41
B-Costs (Spent)	42,775.00	1,908.64	40,866.36
B-Costs (Encumbered)		0.00	0.00
Contracts (Spent)	693,359.34	465.49	692,893.85
Contracts (Encumbered)		429,649.10	(429,649.10)
Indirect	78,303.45	57,228.75	21,074.70
Balance			434,896.22
Revenue Adjustment			(18,341.03)
Potential FY17 Unliquidated Obligations			453,237.25
FY18 C996978718-0 (S-19-201/9290-18)			9/30/18 - 9/29/23
Category	Budget	Spent/Encumbered	Balance
Payroll	339,137.54	322,248.06	16,889.48
B-Costs (Spent)	34,475.00	25,352.60	9,122.40
B-Costs (Encumbered)		0.00	0.00
Contracts (Spent)	789,986.15	0.00	789,986.15
Contracts (Encumbered)		0.00	0.00
Indirect	62,401.31	46,815.83	15,585.48
Balance			831,583.51
Revenue Adjustment			0.00
Potential FY18 Unliquidated Obligations			789,986.15
FY19 C996978719-0 (S-20-201/9290-19)			10/1/19 - 9/30/24
Category	Budget	Spent/Encumbered	Balance
Payroll	451,076.63	0.00	451,076.63
B-Costs (Spent)	45,075.00	0.00	45,075.00
B-Costs (Encumbered)		0.00	0.00
Contracts (Spent)	627,279.82	0.00	627,279.82
Contracts (Encumbered)		0.00	0.00
Indirect	91,568.55	0.00	91,568.55
Balance			1,215,000.00
Revenue Adjustment			0.00
Potential FY19 Unliquidated Obligations			627,279.82
Total Potential 319(h) Unliquidated Obligations			2,105,108.45

Planned Encumbrances & RFPs

FY14 C996978714-1 (S-15-201/9290-14)				10/1/14 - 9/30/19
Category	Amount	Cost	Balance	
Projected FY14 ULO	10,901.31		10,901.31	
Awarded Contracts Under Development/Review		0.00		
Planned RFPs		0.00		
Other Program Expenditures				
- 2017 Waikiki Aquarium Mauka to Makai Earth Day		10,901.31		
Subtotal		10,901.31		
FY14 Final Estimated ULO				0.00
FY15 C996978715-0 (S-16-201/9290-15)				10/1/15 - 9/30/20
Category	Amount	Cost	Balance	
Projected FY15 ULO	11,174.99		22,076.30	
- (2017 Waikiki Aquarium Mauka to Makai Earth Day)	(10,901.31)			
Awarded Contracts Under Development/Review				
- Hui o Ko'olaupoko Watershed Coordinator		10,559.33		
Planned RFPs		0.00		
Other Program Expenditures				
- UH Sea Grant/DLNR-DOBOR Boater's Guide		11,500.00		
Subtotal		22,059.33		
FY15 Final Estimated ULO				16.97
FY16 C996978716-0 (S-17-201/9290-16)				10/1/16 - 9/30/21
Category	Amount	Cost	Balance	
Projected FY16 ULO	212,528.93		212,528.93	
Awarded Contracts Under Development/Review				
- Maui Land & Pineapple West Maui Treatment Train		212,510.92		
Planned RFPs		0.00		
Other Program Expenditures		0.00		
Subtotal		212,510.92		
FY16 Final Estimated ULO				18.01
FY17 C996978717-0 (S-18-201/9290-17)				10/1/17 - 9/30/22
Category	Amount	Cost	Balance	
Projected FY17 ULO	453,237.25		453,237.25	
Awarded Contracts Under Development/Review				
- Maui Land & Pineapple West Maui Treatment Train		387,488.07		
- UH Sea Grant He'eia Phase II		64,510.92		
Planned RFPs				
Other Program Expenditures				
- UH Sea Grant/DLNR-DOBOR Boater's Guide		1,200.00		
Subtotal		453,198.99		
FY17 Final Estimated ULO				38.26
FY18 C996978718-0 (S-19-201/9290-18)				9/30/18 - 9/29/23
Category	Amount	Cost	Balance	
Projected FY18 ULO	789,986.15		789,986.15	
Awarded Contracts Under Development/Review				
- Hui o Ko'olaupoko Watershed Coordinator		140,000.00		
- UH Sea Grant He'eia Phase II		241,951.06		
- PG Environmental Waikale TMDL Implementation Plan		149,984.79		
- TNC He'eia Watershed Ungulate Fencing & Erosion Control		210,934.10		
- Coral Reef Alliance Stream Gulch Restoration Actions in West Maui		47,000.00		
Planned RFPs				
Other Program Expenditures				
Subtotal		789,869.95		
FY18 Final Estimated ULO				116.20
FY19 C996978719-0 (S-20-201/9290-19)				10/1/19 - 9/30/24
Category	Amount	Cost	Balance	
Projected FY19 ULO	627,279.82		627,279.82	
Awarded Contracts Under Development/Review				
- Coral Reef Alliance Stream Gulch Restoration Actions in West Maui		168,010.50		
Planned RFPs				
- PRC FY20 Implementation RFP (January 2020)		451,500.00		
Other Program Expenditures				
- UH Sea Grant/DLNR-DOBOR Boater's Guide		7,300.00		
Subtotal		626,810.50		
FY19 Final Estimated ULO				469.32
Total Potential 319(h) Unliquidated Obligations				189.44
Potential Projects & Future RFPs				
- UH Sea Grant/DLNR-DOBOR Boater's Guide		20,000.00		
- PRC FY20 Implementation RFP (January 2020)		451,500.00		
- Ko'olaupoko Moku WBP Update		250,000.00		