Department of Health Clean Water Branch Polluted Runoff Control Program

Quarterly Status Reporting Form
Clean Water Act 319(h) NPS Implementation Program

Quarterly Status Reports are required per contract terms. If no work was done during the reporting period, the CONTRACTOR must provide an explanation of the circumstances.

This Quarterly Status Report is for the period indicated below **(check only one and insert year)**:

X January 1 – March 31,	_____	(Due April 15th)
April 1- June 30, 2021	_____	(Due July 15th)
July 1 – September 30,	_____	(Due October 15th)
October 1 – December 31		(Due January 15th)

Project Title: *Improve Coastal Water Quality and Coral Reef Health by Expanding Stream Gulch Restoration Actions in Wahikuli, West Maui*

Project Start/Completion Date: ___April 3, 2020 – April 2, 2023

Estimated % of Project Completed: ___45____%

Estimated % of Grant Funds Previously Requested: ___ 33____%

Name, telephone number, and e-mail of person to be contacted for questions regarding this report: Mandy Joslyn, mjoslyn@coral.org, 510-370-0509

Please provide the following information for this reporting period. Additional sheets may be attached:

Progress/tasks started and/or completed as defined in the Contract's Scope of Services during **current** reporting period.

Summary of work completed (list all tasks and deliverables)

Task/Deliverable	Due Date	Date Task Completed/ Deliverable Submitted
Transport equipment to site	9/30/2021	7/10/2021, 8/12/2021, 10/15/21, 11/12/21,12/9/21
Set up irrigation system	9/30/2021	7/24/2021

Prepare land	9/30/2021	7/21-23/2021, 8/6, 8//11, 8/142021, 9/2, 9/10, 9/16, 9/21/2021,10/15/21, 11/17/21, 12/10/21
Coordinate volunteers and contractors to implement Phase 1 BMPs	on-going	10/16/21, 2/5/22, 2/12/22, 3/12/22, 3/19/22
Install sediment posts	on-going	April in progress
Data collection (Site 7c)	9/30/2021	8/31/2021, 12/18/21, April in progress
Install turbidity boom equipment	8/11/21	5/6/21
Conducted data collection on estimated ground coverage for hydromulch	11/11/21	5/21/21

GRTS Load Reductions

Pollutant	Estimated Load Reduction
Nitrogen (lbs/yr)	N/A
Phosphorous (lbs/yr)	N/A
Sediment (tons/yr)	10 Tons per Year

Narrative Progress Report

The Coral Reef Alliance (CORAL) is incredibly grateful for support from the Hawai'i Department of Health (DOH) to save coral reefs in West Maui, a habitat that is critically important to Hawai'i as coral larvae exported from here helps replenish other reefs across several islands. This support has advanced our shared mission of improving the health of coral reefs in Maui and significantly reducing runoff impacting coastal waters.

With the support of the DOH Clean Water Branch Polluted Runoff Control Program, CORAL is implementing 30 highly effective best management practices (BMPs) and installing native plant rows behind these BMPs along a 1,000-foot long and 150-foot wide, steep and highly erosive, stretch of stream gulch in the Wahikuli Watershed. The BMPs include installation of vetiver grass rows, native kawelu and pili grass rows, coconut coirs, sandbag corridors, and a series of check dams and living check dams. We use a native forest structure of native plants in our native plant rows, including native grasses, shrubs, groundcovers, and trees. We monitor the amount of retained sediment (on land) to quantify BMP effectiveness. For the duration of this project, we also monitor turbidity in the stream and nearshore environment and share our results with practitioners and local decision makers.

Below, we outline our progress to date by objective, identify any problems, and identify tasks that will be completed in the next reporting period.

Objective 1: Stabilize a highly erosive site in Wahikuli Watershed by installing a minimum of 30 sediment-reduction Best Management Practices (BMPs) within a 1,000-foot stream gulch area.

In the last 3 months we installed an additional 12 BMPs and a check dam, bringing our total number of installed BMPs to 18 and check dams to 5. We also continued to monitor and water our hydroseeding plots within the Wahikuli restoration site, and are preparing to hold another round of distributing 'At home planting kits' for our volunteers to grow. We also continue road and site maintenance which is critical to ongoing success of this project. We are excited to report an increase in our volunteer turnout and foresee the average number of volunteers continuing to increase as life returns to normal after COVID.

In March we hosted a successful volunteer event and installed 13 erosion control BMP rows and 1 check dam. BMP rows included 4 coconut coirs, 4 single pili grass rows, 1 double row of pili grass, and 4 rows of vetiver. We had a large turn out of 14 volunteers. During our upcoming volunteer event we plan to add mulch to the site and remove weeds in preparation for the coming dry season. This is important because it's been an usually dry rainy season and we have had to hand water the plants. Because of this we are halting all plantings until next year and will begin to focus on planting events at the greenhouse. We will have many healthy plants ready for the next rainy season.

The first plots of hydroseeding installed in Wahikuli were placed in our lower site and we have started to observe young a'ali'i seedlings emerging along with pili grass. This plot has also been watered 2-3 times a week because of the lack of rainfall. Unfortunately, while some larger plants were installed to provide shade for the seedlings, not all of them have survived due to the low rainfall this wet season.

Figure 1. Hydroseeding/hydromulching plot in Wahikuli location 5. The picture on the left is of the entire plot while the picture on the right is a close up of a portion of the plot. This close image shows the a`ali`i seedling.

Over the next several months our team will be planning activities for the next rainy season and growing and transplanting the native plants we will plant in the fall. We will also begin planting seeds of different species together to create companion plantings from the time of germination. In the field we have observed how companion plantings have increased a native plant's ability to establish and thrive and will continue to experiment and assess which species pairings dowell together.

With the COVID-19 pandemic still ongoing, CORAL continues to monitor local regulations to ensure we adhere to group size restrictions for our fieldwork and volunteer programs. Fortunately we have been able to increase our group size and eliminate some of our self imposed COVID-19 protocols. We do require adults and those over 16 to be fully vaccinated to participate in our events and we still adhere to social distancing guidelines.

Objective 2: Inform future restoration efforts by quantifying the effectiveness of stream gulch restoration in West Maui and communicating monitoring results to key stakeholders.

Monitoring

Over the course of this reporting period, we have conducted another round of sediment post monitoring, erosion transect and plant health data. In addition, we have finished processing the sediment grain size analysis from the DAR's marine sediment traps and have sent them to Oahu for processing. Through our partners we were able to gain access to the muffle furnace at a lab at the University of Hawaii's Institute of Marine Biology and will be using it to determine the proportion of marine and terrestrial sediment captured in the trap. We are also working with the West Maui Ridge to Reef Coordinator, Tova Callendar, to collect another round of stream bank erosion data during the next reporting period.

We are creating a comprehensive report on our findings for all of our Wahikuli sites. This report is a big step in our work because it's setting our project up as a demonstration for scaling. The report will be shared with partners and published on our website late summer or early fall. Initial findings suggest a minimum of 55 tons of sediment has been trapped in our Wahikuli sites. We are currently monitoring about 20% of the BMPs and are using the average accumulation of each BMP type and the slope the BMP is at to extrapolate how much sediment all of the BMPs are trapping in Wahikuli. In addition, we have observed a decline in the erosion rate of the dirt roads after BMPs have been installed. The report will include an overview of which BMPs are most effective at different slopes, which grass rows are best at establishing, and which BMPs trap the most fine-grained sediment.

Volunteer Engagement

CORAL held a total of 5 volunteer events between January and March, with the most recent volunteer event having the highest turnout we have had since the beginning of the COVID-19 pandemic. A total of 14 volunteers attended this event, including 8 local high school students from the Maui Huliau Foundation. During this one event we were able to install 13 BMPs and 1 check dam.

In addition to our volunteer events, we had a request to showcase native plants at a local restaurant, Down the Hatch. Down the Hatch has been a very supportive partner, allowing us to hold a plant distribution kit event onsite as well as offering discounts to CORAL volunteers. They now have 10 native plants they are growing for us with labels throughout their restaurant that highlight the importance of this project.

In honor of Earth Month we are hosting another planting kit pick up April 15th and 16th at the Pacific Biodiesel farm. We also have retrieved native trees grown out by the Ritz Carlton Kapalua's Ambassador's of the Environment Program. The Ritz Carlton grew 14 Milo and 2 Wili Wili trees for outplanting in our field sites and will be obtaining additional planting kits to grow with their guests. During their Ambassador's of the Environment program, they educate their guests using CORAL outreach materials about the connectivity of the upper parts of the watershed with the nearshore. As noted under Objective 1, we also held another distribution event for our 'At home planting kits' successfully engaging an additional 12 volunteers. We are happy to report that this program has been successful and volunteers are requesting more seeds, additional kits and have returned 2,526 plants. We anticipate receiving more plants during the next few months as plants grow and mature. CORAL was also featured as one of the Maui organizations reducing non-point source pollution in the Green Issue of the Maui Times (https://mauitimes.news/nonpoint-source-pollution-threatens-environment-and-health/) and we hope to engage with more volunteers as a result of that awareness raising article.

Meetings and Workshops

CORAL participated in several virtual meetings, webinars and presentations over the last quarter. The Senior Program Manager attended the quarterly West Maui Ridge to Reef Initiative meeting to share updates with partners as well as learning about our partners current work and upcoming opportunities. CORAL was also present for the celebration of the Hui O Ka Wai Ola's 200th sampling. This celebration was held at Hanakaoʻo Beach Park and had state representatives and various partners present.

Staff also attended the Climate Strong Island Network National Policy Framework Briefing. Our Senior Program Manager has been attending these meetings over the last few years and was able to participate in discussions around the 7 key issue areas. These include; Clean Energy, Watershed Planning, Food Security, Disaster Preparedness, Marine Economy, Waste management and Transportation. Participation in this group allows for the exchange of ideas and information with other islands facing similar issues, building more viable solutions to the issues all islands face.

During this reporting period, CORAL submitted an abstract to the Hawaii Rural Water Association conference being held on Hawaii Island in May 2022. The abstract was

selected and CORAL will be presenting on this work and how nature based solutions can reduce the impacts of stormwater on our coral reefs. We also submitted an abstract about this ahupua'a restoration work in Wahikuli for the Hawaii Conservation Conference on July 18-22, 2022.

Working with our new partner, Project Reef, we have held various meetings discussing further collaborations and exploring how they can work with hotels and or the county to facilitate a sunscreen swap. These swaps will be aimed at removing harmful sunscreens from the environment and replacing them with a reef friendly alternative.

The Maui CORAL team was also able to meet with a researcher from UC San Diego's Scripps Institution of Oceanography and PhD candidate Orion McCarthywho is creating a 3D model of West Maui Reefs through surveys of an area over time via structure from motion photogrammetry technology. His initial analysis investigated the recovery rate of corals after a severe bleaching event found that of all the sites monitored inMaui Nui, corals at Hanakao`o, which is at the base of the Wahikuli watershed showed the largest recovery over time–a +9.19% positive change). The explanatory variables for this positive change included coral cover percentage, species diversity and rugosity, just to name a few. These exciting preliminary results suggest there may be a positive impact downstream of our restoration efforts. However, more data is needed to confirm there is a correlation. While attribution is most difficult to link, we are encouraged and cannot ignore these positive results. Sadly, most other reefs along the West Maui coastline are showing downward and negative changes over the same time period. We will dig deeper into these results going forward to better understand the downstream impacts of our watershed restoration efforts in Wahikuli and what it takes to restore an oligotrophic system that benefits coral reefs.

The most exciting development over this reporting period has been the hiring and on-boarding of 2 new staff members, Taylor Cook and Makayla Richmond. Taylor was hired on as our new Research Officer and has already begun processing data from Wahikuli. Makayla Richmond was hired as the Hawaiian islands Coordinator and has been invaluable in organizing volunteer events and preparing for our next at home planting kit distribution event. These additional staff members have increased our team's capacity and are helping ensure this project will continue to move forward smoothly.

Information Sharing

The Maui team is currently drafting our final report for our NOAA Coastal Ecosystem Resiliency grant. A component of this grant is to analyze our data to determine which BMPs are performing best, as well as drafting a lessons-learned document to share with partners.

We intend to amplify the lessons gleaned and information gained at Wahikuli to scale this work to other watersheds. We received a small grant from a foundation to complement the sharing of knowledge around reducing land based pollution by convening practitioners in Maui and throughout the state to discuss the scaling up of watershed restoration efforts and other nature based solutions. We are also scheduled to engage

and share with others facing similar challenges at the Hawaii Rural Water Association Conference in May and the Hawaii Conservation Conference in July.

Knowledge sharing at HWRA and HCC here:

Description of any major issues/problems encountered and/or resolved that may affect the CONTRACTOR's ability to complete the project as required (i.e., weather, personnel, equipment, etc.). If there is a change in the project timeline or budget, provide an explanation, revised timeline, budget, and completion schedule. (Please note that no-cost extensions must be applied for through the Department, and will only be granted when the CONTRACTOR has demonstrated unforeseeable setbacks.)

The biggest challenge we have faced is the lack of rain during this reporting period. Other than December, 2021 where we had a large Kona storm, this wet season (January-March, specifically) has had very little rainfall and in fact, all of Maui County is currently under abnormally dry drought conditions and 100% of its residents are affected (https://www.drought.gov/states/Hawaii/county/Maui) As such the plants at our sites have been suffering and hiking trails are noticably dry with soil erosion. The catchment fields have not been able to fill the watering tanks as there has been no rain and plant survivorship and establishment has suffered as a result. Our contractors have been carrying water backpacks up through the site to irrigate the newly outplanted native species.

We continue to face challenges with motorcycle and dirt bike traffic as well as removal and/or damage to our equipment. During our data collection surveys, we found that most of the BMPs that had breaches have also had previous motorcycle damage. To address these issues, we continue to educate visitors and bikers about the importance of our work and we now distribute flyers to discourage these negative actions at our restoration sites.

Description of any significant findings, results, or conclusions. If none, please indicate so.
There have been none during this reporting period

CORAL will begin the installation of BMPs during the next reporting period and we plan to conduct the following tasks:

- Continue to transport equipment to and prepare the restoration site
- Maintain irrigation systems
- Coordinate volunteers and contractors to implement Phase 1 BMPs
- Conduct monitoring and gather data to inform progress on current and future project activities

● **Project Funds Summary, QSR #2, Reporting Period:** **October 1 – March 31, 2022**

Grant Funds

Summary- Grant Funds

No.	Description	Original Contract Amount	Contract Amounts from Preceding QSRs	Expenditures during this Quarterly Reporting Period	Current Contract Amount (Remaining Funds)
A.	Personnel Services	$ 118,719.00	$ 46,352.77	$ 17,773.90	$ 54,592.33
B.	Travel	$ 22,155.00	$ 4,269.04	$ 2,888.86	$ 14,997.10
C.	Operating Expenses	$ 1,500.00	$ 580.87	$ 175.00	$ 744.13
D.	Equipment	$ -		$	$ -
E.	Professional Services	$ 43,000.00	$ 8,460.90	$ -	$ 34,539.10
F.	Construction Materials & Supplies	$ 13,355.00	$ 5,207.43	$ 3,650.97	$ 4,496.60
G.	Other Miscellaneous Expenses	$ 16,281.50	$ 5,563.37	$ 2,262.99	$ 8,455.14
	TOTALS :	**$ 215,010.50**	**$ 70,434.38**	**$ 26,751.72**	**$ 117,824.40**

In-Kind Contributions (Matching Funds)

For this reporting period, we have received a total of $2,535.92 in matching funds through in-kind contributions. This total consists of plant donations, volunteer hours, and donations for land, greenhouse and water use to support our field operations. We continue to closely track these important in-kind contributions as they augment our budget and allow us to more sustainably continue our work through stakeholder engagement.

Summary- Match Funds

No.	Description	Original Contract Amount	Contract Amounts from Preceding QSRs	Expenditures during this Quarterly Reporting Period	Current Contract Amount (Remaining Funds)
A.	Personnel Services	$ 44,393.70	$ 22,159.71	$ 11,949.22	$ 10,284.77
B.	Travel	$ 16,095.00	$ 1,842.13	$ -	$ 14,252.87
C.	Operating Expenses	$ 1,237.50	$ 169.15	$ -	$ 28.54
D.	Equipment	$ -	$ -	$ -	$ -
E.	Professional Services	$ 10,000.00	$ 212.55	$ -	$ 9,787.45
F.	Construction Materials & Supplies	$ 0.00	$ -	$ -	$ 0.00
G.	Other Miscellaneous Expenses	$ 3,940.69	$ 2,124.60	$ 1,064.92	$ 751.17
	TOTALS :	**$ 75,666.89**	**$ 26,508.13**	**$ 13,014.14**	**$ 35,104.80**

Financial Report – *Beyond the excel spreadsheet, please briefly describe, if relevant, any significant variances between approved budget and actual spending by outcome/output and by expense category (personnel, contractors/consultants, sub-grants, other direct, equipment, etc.) :*

We are under budget on our expenses this quarter. The main reason for this is the seasonality of our work. During the dry season, we don't plant seedlings as they are unlikely to survive. This has resulted in a reduction in consultant and personnel expenses this quarter as compared to last. The secondary reason is that this project is co-funded through a NOAA grant that is due to end in April 2022. We have been able to cover some of the costs of this project with that co-funding. Finally, COVID-19 continues to hamper inter-island travel, meaning that the travel budget is underspent. Now that the wet season has started, our teams will be spending more time in the field and therefore we anticipate a return to expenses as budgeted.