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## CORAL REEF ALLIANCE

### FINAL REPORT

#### NOAA CORAL REEF CONSERVATION PROGRAM

Report Period: 9/1/2014 to 8/31/2015

November 25, 2015

#### A. Project Identifiers

- 1) *Project Title:* Minding the "CAP": Leveraging Tourism Relationships to Implement Conservation Action Plan Priorities that Reduce Coastal Pollution and Promote Coral Reef Health in West Hawai'i
- 2) *NOAA Grant Award Number:* **NA14NOS4820094**
- 3) *Project Manager:* Erica Perez, Program Manager
- 4) *Period Covered by this Report:* **09/01/2014 – 8/31/2015**
- 5) *Program Officer:* Liz Fairey

#### B. Project Summary

Some of the best remaining reefs in the state of Hawai'i exist along the west coast of Hawai'i Island; however, due to continued development, this situation is rapidly changing and the effects are starting to show on the reef. The South Kohala Conservation Action Plan (SKCAP) called for the strategic reduction in land-based pollutants entering the marine environment. CORAL is assisting in carrying out this key objective by leveraging our relationships with the accommodations sector and engaging with the wider West Hawai'i community to help reduce land-based pollutants. Over the 2014-15 grant period, CORAL: (1) worked with hotels, condo properties and marine recreation providers to execute reef stewardship activities that reduce land-based pollution; (2) identified additional research needs by investigating and summarizing water quality issues and communicating findings to resource managers and local stakeholders; and (3) initiated improvements to wastewater management practices by examining existing infrastructure and measuring local residents' interest and attitudes toward investing in additional local and regional solutions that will reduce nutrient pollution reaching coastal reefs.

These actions advanced sustainability initiatives that the Hawai'i Green Business Program and the SKCAP both support.

**C. Key Objectives**

Our key objectives for this grant were: (1) Hotels and their associated marine recreation providers in West Hawai'i develop a strong stewardship ethic that meets their interest in a sustainability-oriented brand and increases the environmental awareness of guests and clients through reef stewardship activities that reduce land-based pollution; (2) Coastal water quality issues in South Kohala that have the potential to affect both human and coral reef health are identified and summarized, and additional research needs are identified and communicated to resource managers and local stakeholders; and (3) Local wastewater management practices and opportunities for improvements in West Hawai'i are identified and summarized and attitudes of coastal residents are measured to test willingness to invest in additional local and regional solutions that will reduce nutrient pollution reaching the coastal reefs.

***Proposed Workplan & Progress***

<b>9/2014 to 2/2015</b>	<b>Progress to Date</b>
Disseminate stewardship guide via e-newsletter and direct delivery to target hotels	Completed: CORAL distributed our guides electronically to 100+ property owners and individuals in the accommodations industry. We distributed 350 hard copies of the <i>Hawai'i Hotel Reef Stewardship Guide</i> and 300 copies of <i>Low-Impact Development: Stormwater Management the Natural Way</i> to property managers, county and state department representatives, government officials and industry experts during four State/International Conferences.
Engage at least 50% of targeted West Hawai'i hotel/condo properties (5 of 10) through 1:1 or small group meetings to provide support for initiating and completing activities and practices outlined in the stewardship guide	Completed: We conducted 25 one-on-one meetings with nine hotels and two county tourism sector representatives, as well as dozens of community members that represent shoreline/condo properties. In addition, we sent two e-newsletters (Oct & Feb) on local watershed issues of interest to shoreline communities.

Conduct a workshop on stewardship guide content with 50% of West Hawai'i's hotel/condo properties in attendance	Completed: We conducted a stewardship guide workshop in November 2014 with representatives from six hotels (60%) and four local business owners.
<b>3/2015 to 8/2015</b>	<b>Progress to Date</b>
Confirm that a total of at least 70% of hotels or condo properties will apply at least two recommendations from the stewardship guide focused on maintaining good water quality or conserving water, or on another stewardship initiative (with full implementation realized within one year of attending a workshop/small group meeting)	Completed: 7 properties are in the process of implementing 16 recommendations from the stewardship guide. As a result of our efforts, an opportunity now exists to engage additional hotels in energy audits in the future and to leverage energy use to incentivize water reuse for golf courses and landscapes.
Publish findings from our wastewater management and water quality synthesis in e-newsletter and other community news outlets	Completed: We communicated the results of this synthesis to the wider public via our Puakō website <sup>1</sup> , which was promoted through email. The synthesis was shared with officials at the State Department of Health (DOH) and County Wastewater Branch as evidence in support of revisions to HAR 11-62 Hawai'i wastewater systems during the public testimony period.
Share findings from Puakō community engagement and/or survey via e-newsletter and other community news outlets	Completed: The Puakō community perceptions report is available at <a href="http://www.coral.org">www.coral.org</a> . We will share this information with homeowners as needed.

**Deliverables:**

1. Stewardship Guide Implementation Workshop: Completed
2. Summarizing Wastewater Management in Puakō: Attached
3. Synthesis of Existing Knowledge of Water Quality Issues in Puakō: Attached (two and three are the same document)
4. Community Perceptions Toward Wastewater Management in Puakō: Attached

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<sup>1</sup> [www.coral.org/puako](http://www.coral.org/puako)

## ***Objective 1: Hotel Outreach & Stewardship Guide Development***

In August 2014, CORAL published the *Hawai'i Hotel Reef Stewardship Guide*, as well as a stormwater management publication entitled *Low Impact Design and Development: Stormwater Management the Natural Way*, to assist hotel managers in exploring new sustainability approaches, tools and resources for their properties.<sup>2</sup> We distributed over 350 hard copies of the stewardship guide and 300 copies of the stormwater guide to department heads, management bodies and state and county departments, as well as electronically to over 100 property owners and individuals in the accommodations industry. In November, we hosted a workshop to launch the guides and provide an introduction to these new resources. The workshop included a review of ecosystem importance, Low Impact Design and Development Best Management Practices (LID BMPs) and challenges of implementing sustainable solutions. Attendees included stakeholders from four local businesses and staff from six major shoreline properties (including the Fairmont Orchid, Four Seasons at Hualalai, Hapuna Prince Hotel, Mauna Kea Beach Hotel and Mauna Lani Bay Hotel & Bungalows) representing more than 2,150 rooms. Representatives from the Kohala Coast Resort Association and the South Kohala community also attended. We also delivered hard copies through in person meetings and attendance at the following conferences:

- 2<sup>nd</sup> Annual Joint Government Water Conference at the King Kamehameha Beach Hotel, attended by ~60 delegates
- Hawai'i Landscape Conference at Hapuna Beach Resort, attended by ~100 delegates
- Hawai'i Conservation Conference at the University of Hawai'i Hilo, attended by ~2,000 delegates; attendees were from Hawaiian conservation organizations, academia, State and County regulators, natural resource managers, students, community and other nonprofits
- International Marine Tourism Conference at the Marriott Beach Hotel, attended by ~100 delegates; attendees were from universities and international researchers of marketing and tourism

Since CORAL's stewardship guide workshop, seven target hotels and condo properties in West Hawai'i have worked with CORAL and are currently at various stages of implementing 16 new initiatives identified in the guide and beyond. Initiatives include developing and implementing a marine outreach program for guests, developing a Keiki (kids) Marine Program, conducting onsite energy audits, implementing food and waste reduction projects and creating property-wide recycling programs. Two target properties have started green teams that comprise department heads and managers. These green teams already have projects underway. The Mauna Kea Green Team is conducting an energy audit with Hawai'i Energy soon and Hualalai is organizing a community and guest beach clean-up. Green teams will continue to use our stewardship guide to identify and support additional sustainability initiatives for their companies. A few especially productive properties include our current partners, the Mauna Lani, the Fairmont Orchid and the Four Seasons Hualalai. Another partner, the Mauna Kea Beach

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<sup>2</sup> The guide can be downloaded here: <http://coral.org/hotelstewardship/>

Hotel, organized a 2015 calendar of events to mark their 50<sup>th</sup> Anniversary and worked with CORAL to incorporate stewardship initiatives for their ocean and beach quarter into their anniversary activities throughout the year.

CORAL also maintained a partnership with the County Tourism Department to implement new projects that align with County initiatives and sustainability plans. These conversations are ongoing and the County is willing to distribute the guides to their contacts. They also expressed willingness to assist with additional workshops to carry on the lessons from the guides. This project will continue through the end of this year.

In addition to initiatives that were directly supported by CORAL, general support and engagement in sustainability has increased on Hawai'i Island since CORAL began working on these issues. There are a number of sustainability leaders emerging, including the Mauna Lani, the Fairmont Orchid, Kohanaiki Private Residence and Club and the Four Seasons Hualalai. At a minimum we see properties strive to participate in green certification programs in order to compete in a market of increasing sustainability-minded tourists and we anticipate that CORAL's guides and the examples created by our target properties will continue to influence this sustainability trend on Hawai'i Island.

#### *Looking ahead*

Through our engagement with this sector, we learned properties are particularly interested in the potential to reduce their energy use to enable them to cut costs and reduce their carbon footprint. We helped three properties implement energy audits with Hawai'i Energy. These audits show property operations managers the potential return on energy reduction investment as well as provide financing suggestions for implementation. This helps property staff make a clear business case to property owners for investing in energy reduction. We also provided them with project management tools to begin development of new initiatives. This will provide project leads with a clear process to identify key actions, players, financing and project goals while in the project development phase.

Through CORAL's work with the accommodations industry on Hawai'i Island, we determined that an important next step for reef stewardship would be increased use of recycled water. Reuse of treated wastewater can prevent polluted wastewater from reaching the ocean via injection wells and reduces the demand on freshwater resources. Through our engagement with the properties, we discovered that energy savings is a strong financial incentive for hotels to convert to using recycled water. Properties could realize significant energy savings by upgrading their water infrastructure to reuse treated wastewater, rather than pumping freshwater around their properties from wells.

In order to advance recycled water usage in this sector, CORAL will work with businesses to

identify the state of their water systems, including wastewater treatment facilities, and outline potential upgrades and energy savings that could be realized by converting to recycled water. We will also investigate any additional current barriers to broader use of recycled water and work with partners to initiate a campaign to overcome those barriers.

### ***Objective 2: Local Wastewater Management Practices and Coastal Water Quality Synthesis***

In addition to our efforts within the hotel sector, in 2014 CORAL launched a *Clean Water for Reefs* project in Puakō to work with local residents and conservation groups and address wastewater pollution. The goal is to achieve the SKCAP's overall objective of reducing land-based sources of pollution that are impacting coral reefs, while also involving the community—ensuring buy-in for potential solutions and informing decision-making.

To ensure we had a strong understanding of the context of this issue, CORAL worked with several partners such as The Nature Conservancy (TNC), University of Hawai'i Hilo (UHH) Marine Science and other lead researchers to provide a baseline of current wastewater technologies and synthesize existing water quality science in Puakō. CORAL contracted a graduate student from UHH to compose a report that summarized current local wastewater impacts with relation to sewage contamination in the town of Puakō and the South Kohala region. The student researched available information on current technology and coupled it with existing information on water quality in the same region. The report found a large number of Puakō residents use cesspools, which leach untreated wastewater onto nearshore coral reefs.<sup>3</sup>

#### *Looking ahead*

Additional research is necessary to illustrate the hydrological connection between cesspools and the marine environment to the community through additional dye-tracer studies and water quality testing. We plan to work closely with TNC to develop a 10-year monitoring plan with expert and citizen science components to measure the impact of replacing cesspools on water quality.

This monitoring program will also measure key indicators of coral reef health such as coral cover in order to track any ecosystem recovery that we hope to see as a result of this work. This program will provide an opportunity to see the before and after so that other communities can learn from our experience and ideally implement solutions for themselves. Our community perceptions report, described in the following section, outlines that some community members in Puakō are not convinced that the water quality issues and degradation they see on their local reef is connected to their community's wastewater treatment systems. They feel water pollution

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<sup>3</sup> We shared the report with our partners, the community and our South Kohala contacts; an electronic copy is also available on our Puakō project website for public viewing <http://coral.org/wordpress/wp-content/uploads/2014/10/Puako-Water-Quality-Synthesis.pdf>

originates elsewhere and are concerned about shouldering the cost of a local wastewater treatment transition if this will not solve the issue. These results highlight the need for a well-designed monitoring program. By incorporating a citizen-science component that engages local Puakō residents, we can strengthen the local communication and acceptance of results.

### ***Objective 3: Attitude and Interest of Coastal Residents in Implementing Water Quality Solutions***

During the first six months of this grant, CORAL launched a *Clean Water for Reefs* project in Puakō to engage the community on this issue. Through the project we conducted numerous meetings with community stakeholders, hosted and attended events in the town, presented at community meetings and went door-to-door to deliver CORAL information packets to update the community about the initiative and created a personalized website for the project. We also conducted short surveys to document local perceptions on the issue of water quality and alternative technologies under investigation in order to identify the concerns and questions of community members.

*Clean Water for Reefs* Puakō is a grassroots, collaborative and community-based project to replace ineffective wastewater treatment systems with better technology. CORAL designed the process to be inclusive and transparent, focusing on the need for support and buy-in from the local community for project success. In order to ensure we investigated and addressed all wastewater treatment options and issues thoroughly and efficiently, CORAL established the *Clean Water for Reefs* Advisory Committee. The committee comprises experts and representatives from county regulatory bodies, academia, the Puakō community and representatives from the construction, civil engineering and nonprofit sectors. In addition to this committee, we developed a communications strategy to connect regularly with homeowners in the community and elsewhere ensuring our strategies, processes and plans are in line with the community's needs and priorities.

CORAL, the advisory committee and the Puakō Community Association (PCA) examined a wide array of wastewater treatment systems and identified potential alternatives. CORAL contracted AQUA Engineering (AQUA) to conduct a feasibility study and preliminary engineering report for Puakō. The study investigated (1) installation of Aerated Treatment Units (ATUs); (2) an onsite private treatment facility; and (3) collection system connecting to Kalahuipua'a Lagoons Facility.

Since this project commenced, CORAL has directly communicated with 50% of the property owners in Puakō and 112 individuals have requested to receive project updates and communication via our email listserve. Over the past year we held four public events, sent out seven email and paper mail communications and had dozens of one-on-one meetings or phone calls with community members directly. Over the course of this grant we carried out two surveys

and compiled feedback and anecdotes regarding the attitudes and impressions of Puakō residents to the issue of poor water quality in their community.

In August 2015 and with support from the PCA, the advisory committee and AQUA, CORAL recommended a community-wide collection system connecting to an onsite treatment plant. Continued efforts are currently underway to identify the level of support for the onsite treatment plant. In September 2015, CORAL distributed an executive summary of the feasibility study, frequently asked questions and next steps along with a survey to gauge community interest in the recommended solution. We have received 74 completed surveys with 50% in support of the onsite treatment plant, 23% who need more info and 27% who do not yet support it.

Our community attitudes and perception report discusses Puakō community sentiment as well as the broader Hawai'i perspective on cesspool regulations. Results of the Puakō community perception study reveal broad concerns about wastewater pollution alongside reservations regarding financing the transition to new infrastructure. Our solution therefore must address this concern. To do this we must connect with and engage stakeholders regularly and in an inclusive and thoughtful way. Moving forward we need a strong communication and outreach plan to succeed in replacing cesspools with improved technology. We will develop this plan over the next few months in consultation with experts and our partners on the ground.

Through the course of this grant we were also involved in public hearings and stayed in contact with DOH to support cesspool-related rule changes and to understand public reaction and response to the proposed Hawai'i Administrative Rules, Title 11, Chapter 62, Wastewater Systems (HAR 11-62). The community perception report documents the following concerns regarding the HAR 11-62 and how community feedback resulted in voluntary rule changes:

- A lack of financial support from the government to make transitions
- The short timeline of 180 days to transition from cesspools after point of sale
- The burden on homeowners to make the adjustments themselves without government support
- The lack of assistance from state divisions
- The potential inability to keep up with infrastructure demands with the limited number of contractors available on-island
- The impact on the housing market for the point-of-sale transition

Despite these concerns, Hawai'i's residents supported a complete ban of new cesspools.

### *Looking ahead*

Results from our community perceptions report illustrate the importance of engaging the community in designing solutions to wastewater pollution. Specifically, solutions must include a financing strategy that has stakeholder buy-in. In communities such as Puakō, many homeowners are only present on island part-time, which can make it challenging to connect with



homeowners and successfully engage them on these issues. Our efforts illustrate the considerable time and effort necessary to stay adequately connected. However, successful engagement is essential to turn the tide on the current situation and design solutions that will be accepted in Puakō, then hopefully applied by other communities in the future. The failure to pass HAR 11-62 due to lack of community buy-in for the implementation plan illustrates this point.

Over the next few months CORAL will use the results from the community perceptions report to determine future communication and engagement activities necessary to secure full community support. Our goal is to communicate with every homeowner, identify the full suite of concerns they have and address these concerns through educational workshops and one-on-one communication. Regarding financial concerns, we will work with the community and other stakeholders to design a financing plan that has full public support and allows the community to move forward with construction, installation and connection to an onsite treatment plant.