

**GRANT AGREEMENT FOR LEEWARD HALEAKALA WATERSHED RESTORATION
BETWEEN THE COUNTY OF MAUI AND THE UNIVERSITY OF HAWAII**

THIS AGREEMENT made and entered this ____ day of _____, 2016, by and between the COUNTY OF MAUI, a political subdivision of the State of Hawaii, through its DEPARTMENT OF WATER SUPPLY (hereinafter "County" or "DWS"), whose principal place of business and mailing address is 200 South High Street, Wailuku, Maui, Hawaii 96793, and THE UNIVERSITY OF HAWAII (hereinafter "UH"), an organization of the State of Hawaii (hereafter "State"), through its OFFICE OF RESEARCH SERVICES (hereinafter "ORS"), whose principal place of business is 2425 Campus Road, Sinclair Library Rm. 1, Honolulu, Hawaii 96822 and mailing address is 2440 Campus Road, Box 368, Honolulu, Hawaii 96822.

WITNESSETH:

WHEREAS: Leeward Haleakala once supported some of the tallest and most robust hardwood forests in the Pacific, but less than 5 percent of this former forest now remains due to degradation by grazing animals, invasion of non-native plants and fire;

WHEREAS: In 2003, the Leeward Haleakala Watershed Restoration Partnership (LHWRP) was formed to restore the native forests of leeward Haleakala and consists of public and private landowners from Makawao to Kaupo, as well as cooperating agencies, and DWS;

WHEREAS: The LHWRP has prepared a restoration plan which includes such measures as fencing, feral ungulate control, weed management, planting and dispersing native plant seed, fire management, resource monitoring, establishment of a small local forest hard wood industry, and other culturally appropriate uses that do not damage the watershed;

WHEREAS: In FY17, LHWRP proposes work in line with DWS' goals of protecting watershed forests in nearest proximity to DWS wells and reservoirs, continuing restoration at fenced sites, developing regional sources of koa and other native seeds, and documenting the effects of restoration on hydrology; and

WHEREAS: Benefits of this restoration project may include watershed enhancement and protection, conservation of unique, endemic plants and animals, and initiation of a local koa hardwood forest industry to perpetuate an important Hawaiian cultural resource. These efforts to the proposed project area are expected to increase fog drip, soil moisture, and recharge, while decreasing soil erosion.

NOW THEREFORE, IT IS HEREBY AGREED, by and between DWS and UH-ORS that the proposal attached as Exhibit "A" is incorporated hereto, made a part hereof, and shall be implemented as follows:

I. Responsibilities of Parties:

A. DWS Responsibilities:

1. DWS shall contribute grant funds for the implementation of the proposal attached as Exhibit "A", and shall provide payment of up to \$195,000.00 to UH-ORS for services rendered as described in the attached proposal and summarized in 1.B below.
2. DWS staff shall consult on and provide information, as needed, to assist in the implementation of the proposal attached as Exhibit "A".

B. UH-ORS Responsibilities:

UH-ORS shall implement the proposal attached as Exhibit "A", and shall exert the care and consideration necessary to implement the proposal in a safe and responsible manner. Deliverables under this Agreement include:

1. Inspect 13.52 miles of fences quarterly and after storms. Repair as quickly as possible, and survey for ungulate ingress, if needed.
2. Protect remaining koa forest at Kaupō Ranch. Contract construction of koa forest protection fence at Kaupō Ranch.
3. Increase ability to respond to drought and support invasive species control operations. Develop specifications and determine sites where catchment is needed. Install one water catchment system at Nu'u Mauka Ranch for restoration areas.
4. Work with researchers to install climate monitoring stations at Nu'u Mauka Ranch.
5. Control tree poppy (*Bocconia frutescens*) and pines (*Pinus* sp.) across 1,278 acres according to the LHWRP invasive species control plan.
6. Plant 3,500 native seedlings and seed scatter one million native seeds. Plant native seedlings at Nu'u Mauka Ranch.
7. Continue to work with the Hawaii Agriculture Research Center (HARC) to develop sources of fusarium-resistant koa.
8. Propagate native species from a variety of regional sources for restoration. Collect seeds to revegetate native forests of LHWRP.
9. Host two (2) volunteer work trips at a restoration site to engage the public in planting, seed collection, or other restoration effort.

II. Notices:

In the event that any party wishes to initiate cancellation or changes to provisions of this Agreement, notice shall be provided to the other party in writing. Any notice by any party to the other shall be in writing and shall be personally delivered or sent by certified or registered mail as follows:

David Taylor, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Maui, HI 96793

Darcie Yoshinaga, Interim Director
Office of Research Services - University of Hawaii
2440 Campus Road, Box 368
Honolulu, Hawaii 96822

III. Payment:

- A. Payment shall be made by DWS to UH-ORS in four (4) installments, upon submission of invoices and supporting documentation for expenses incurred. All requests for payment shall include both programmatic and financial progress reports.
- B. The first request for payment shall be invoiced no earlier than ninety (90) days from the date of the Notice to Proceed and shall not exceed 20 percent of the total grant amount.
- C. The second request for payment shall be invoiced no earlier than 180 days from the date of the Notice to Proceed and combined with the first request for payment shall not exceed 50 percent of the total grant amount.
- D. The third request for payment shall be invoiced no earlier than 270 days from date of the Notice to Proceed and combined with the first and second requests for payment shall not exceed 75 percent of the total grant amount.
- E. The fourth and final request for payment shall be made upon satisfactory completion of the Project and shall include the balance of funds due. The final request for payment shall be made no earlier than 365 days and no later than 455 days from the date of the Notice to Proceed. Should a six (6) month no-cost extension be granted, final request for payment shall be invoiced no later than thirty (30) days after the extension period. The final report shall include a disk with copies of the Geographic Information System (GIS) map layers generated by the Project, and any other work deliverables as indicated in the proposal.
- F. UH-ORS shall retain copies of documentation for a period of three (3) years after completion of this Agreement required to substantiate all expenditures and shall make such documentation available to DWS for inspection or audit upon request.
- G. Expenditures shall be made in accordance with the budget for the Project contained in Exhibit "A", and shall apply to the work items summarized above in I.B.

IV. Indemnification:

The State shall be responsible for all damages, injury, or death caused by the State's officers, employees, volunteers, and agents, in the course of their employment, services, and/or activities under this Agreement, to the extent that the State's liability for such damage, injury, or death has been determined by a court of competent jurisdiction or otherwise agreed to by the State, and the State shall pay for such damages, injury, or death to the extent permitted by law. Further, to the extent permitted by law, the State shall indemnify, defend, release, and hold harmless the County, its officers, agents, and employees, from and against any and all actions and claims arising, either directly or indirectly, out of or resulting from the errors, omissions, or acts of the State, its officers,

employees, volunteers, or agents, occurring during or in connection with the performance of the State's services or activities under this Agreement. This indemnification agreement is intended to be as broad and inclusive as permitted by the laws of the State of Hawaii and if any portion is held invalid, the balance shall notwithstanding continue in full force and effect.

V. Time of Completion

Work under this Agreement shall be performed within twelve (12) months from the date of the Notice to Proceed. Should there be extenuating circumstances (i.e. weather, seasonal, etc.), UH-ORS shall be given an extension not to exceed six (6) months. Request for extension shall be submitted to DWS in writing ninety (90) days prior to the end of the Project period.

VI. Rights and Responsibilities

The rights and responsibilities of each party described herein shall remain in force and effect until such time as each party's Project responsibilities are completed.

VII. Successors and Assignees

All terms, conditions, provisions, warranties and covenants contained herein shall apply to and bind the respective successors and assignees of the parties hereto.

VIII. General Terms and Conditions:

The General Terms and Conditions attached hereto as Exhibit "B" shall be incorporated and made a part of this Agreement.

IX. Agreement Voluntary:

It is hereby expressly understood and agreed that this Agreement has been freely and voluntarily entered into by the parties and this Agreement cannot be altered, amended, modified or otherwise changed except in writing executed by a duly authorized representative of each of the undersigned.

X. Exhibits:

Exhibits "A" and "B" are attached hereto and incorporated herein by this reference:

"A" - FY 2017 Proposal from Leeward Haleakala Watershed Restoration Partnership
-UH-ORS

"B" - General Terms and Conditions - DWS Grants

COUNTY:
COUNTY OF MAUI

By _____
ALAN. M. ARAKAWA
Mayor

GRANTEE:
UNIVERSITY OF HAWAII

By _____
DARCIE YOSHINAGA
Interim Director
Office of Research Services

APPROVAL RECOMMENDED:

LYNN ARAKI-REGAN
Budget Director

DANILO F. AGSALOG
Director of Finance

DAVID S.TAYLOR
Director of Water Supply

APPROVED AS TO FORM AND LEGALITY:

JENNIFER M.P.E. OANA
Deputy Corporation Counsel
County of Maui

STATE OF HAWAII)
) SS.
COUNTY OF MAUI)

On this _____ day of _____, 20____, before me personally appeared **ALAN M. ARAKAWA**, to me personally known, who, being by me duly sworn or affirmed, did say that he is the Mayor of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument is the lawful seal of the said County of Maui, and that the said instrument was signed and sealed on behalf of said County of Maui by authority of its Charter; and the said **ALAN M. ARAKAWA** acknowledged the said instrument to be the free act and deed of said County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Stamp or Seal]

Notary Public, State of Hawaii

Print Name: _____

My commission expires: _____

NOTARY PUBLIC CERTIFICATION	
Doc. Date: _____	# Pages: _____
Notary Name: _____	Judicial Circuit: _____
Doc. Description: _____	

Notary Signature: _____	[Stamp or Seal]
Date: _____	

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 20__, before me personally appeared _____, to me personally known, who, being by me duly sworn or affirmed, did say that such person executed the foregoing instrument as the free act and deed of such person, and if applicable, in the capacity shown, having been duly authorized to execute such instrument in such capacity.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Stamp or Seal] _____
Notary Public, State of _____
Print Name: _____
My Commission Expires: _____

NOTARY PUBLIC CERTIFICATION	
Doc. Date: _____	# Pages: _____
Notary Name: _____	Judicial Circuit: _____
Doc. Description: _____	

[Stamp or Seal]	
Notary Signature: _____	
Date: _____	



The Leeward Haleakalā Watershed Restoration Partnership

3620 Baldwin Ave., Suite 202/203, Makawao, HI 96768 Living Indigenous Forest Ecosystems
Ph. (808) 573-8989
Fax (808) 573-1932
www.lhwrp.org

Dept. of Hawaiian Homelands
Dept. of Land & Natural Resources
Haleakalā National Park
Haleakalā Ranch
Ka'ono'ulu Ranch
Kama'ole Ranch
Kaupō Ranch
Maui County
Nu'u Mauka Ranch
Thompson Ranch
'Ulupalakua Ranch
US Geological Survey
John Zwaanstra

Request for FY17 DWS support for the Leeward Haleakalā Watershed Restoration Partnership



**Submitted by the University of Hawaii
November, 2015**

A. PROJECT BACKGROUND

Describe how your proposed work will benefit and/or improve the drinking water supply of Maui. How is your proposed work important and relevant to the mission of the Maui County DWS – *To Provide Clean Water Efficiently*? What are the consequences of not doing this work in the context of preserving, protecting and sustaining Maui’s drinking water supply?

- Please provide brief background information about your organization, including an organizational chart.
- Please provide maps, figures, and photos as appropriate.

Description of how LHWRP’s work will benefit/improve Maui’s drinking water supply

The Leeward Haleakalā Watershed Restoration Partnership (LHWRP) was formed to provide a framework for collaborative restoration of native watershed forests on the leeward flanks of Haleakalā. Intact native forests perform a wide variety of ecosystem services, one of the most tangible being water capture via the hydrologic cycle. A healthy forest combs moisture from the clouds, slows the transfer of water to the forest floor, reduces erosion and sedimentation, and naturally filters water that feeds stream flow and aquifer recharge. The loss of native forests that has occurred on leeward Haleakalā has resulted in increase in floods as water flows unobstructed from high elevation to low, in increase in wildfires from the non-native grasses and trees that are fire-prone, extinction of unique native species, sedimentation of nearshore reefs, and reduced streamflow and aquifer recharge. The fog drip capture that native forests provide in these precipitation-limited regions is critical for producing the freshwater supply needed for residential, agricultural, and commercial use.

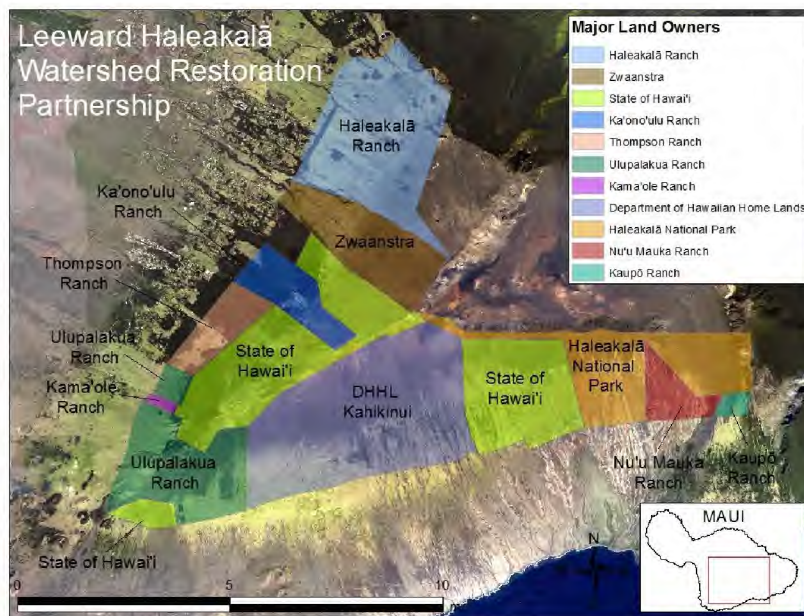
The consensus from the scientific community is that climate change projections indicate the trend of reduced/less consistent rainfall, more intense storm events, reduced stream flow, and higher evaporation rates makes availability of freshwater resources uncertain. This projection is further complicated by several factors. The health of our native forests is declining as they are increasingly being dominated by invasive plant species such as strawberry guava that do not process precipitation as efficiently as native forests. Populations of feral ungulates are spreading into priority watershed forests and devour nearly all vegetation. This contributes to soil erosion and loss of biodiversity. Increases in development and population growth pressure our already water-limited resources further. LHWRP’s efforts to restore native forests across landowner boundaries on a regional scale serve as an investment in our island’s future. Seeing the need to protect existing watershed forests as well as develop additional sources to meet future population growth, Maui County’s Department of Water Supply has been proactive in championing forest protection, restoration, and research intended to benefit these ecosystems and the services they provide.

The long-term costs of not doing this work outweigh the short-term financial investment. Severe droughts, floods, fires, and natural disasters create immense economic impacts. Island societies such as in Greece have seen the financial impacts of forest loss created by having to import fresh water. For island communities, having to import a necessity such as freshwater creates tremendous risk and imperils our societies’ independence and security. Technological advances

such as saltwater filtration are extremely costly. In contrast, protecting and expanding native forest cover allows natural processes to do a significant amount of the work to produce clean water efficiently for us, as well as expands opportunities for research, education, perpetuation of Hawaiian culture, and recreation.

Background information about LHWRP

Prior to the 1800s, the leeward flanks of Haleakalā were covered in extensive cloud forests dominated by the native koa (*Acacia koa*) tree. These koa forests, among the most robust and diverse in the Hawaiian archipelago, supported abundant native Hawaiian flora and fauna, some of it found nowhere else in the world. Koa forests also provided valuable cultural resources, including logs for *wa'a* (canoes) and plants utilized for a variety of both practical and ceremonial purposes. Through fog interception these 100 ft-tall forests contributed to much greater levels of water resources in this rainfall-challenged region. In the past 200 years, deforestation due to feral ungulates, fire, and other factors has reduced forest cover to 5-10% of former extents. In response to this decline, the Leeward Haleakalā Watershed Restoration Partnership (LHWRP) was formed in June 2003 by a voluntary alliance of 11 private and public landowners and supporting agencies. These landowners agreed to take on the decades of deforestation, fire, and invasive plant and animal species that had reduced biodiversity, watershed function, cultural resources, and economic potential drastically. The Partnership’s goal is to restore native watershed forests on Haleakalā from Makawao to Kaupō. Benefits from regional native forest restoration include increased water quantity and quality, conservation of unique native plants and animals, diversification of Maui’s rural economy, and perpetuation of important Hawaiian cultural resources. See map 1.



Map 1. Overview of LHWRP landscape and landowners, fencelines completed (solid lines) and proposed/in progress (dotted lines), as well as restoration demonstration exclosures and seed farm sites.

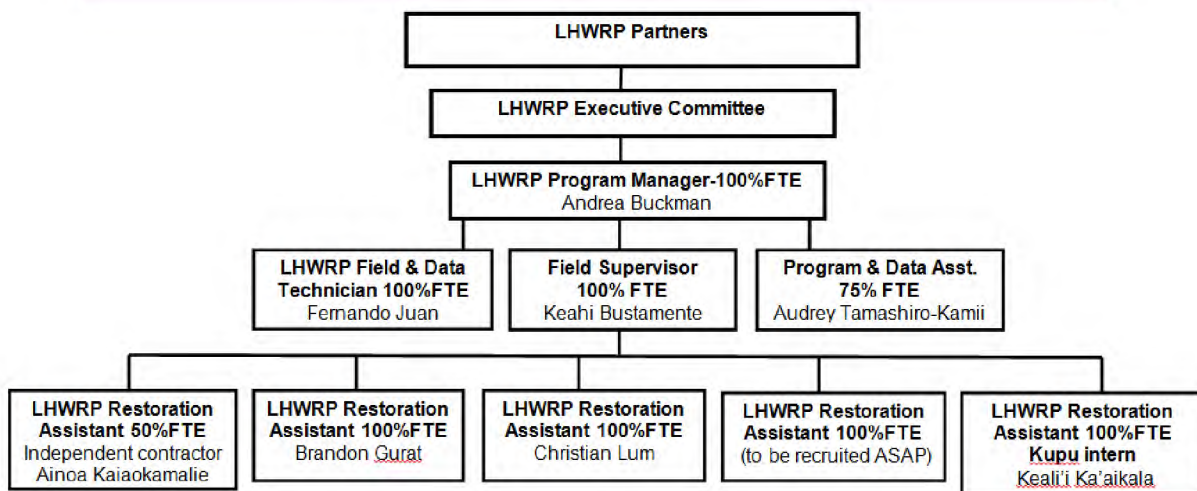
Organizational chart

LHWRP currently employs a staff of seven (as of October 2015) to manage the 43,175 acre partnership landscape. Since its inception, the Partnership has initiated or facilitated watershed management, research and volunteer/educational opportunities on much of this landscape. LHWRP applies a suite of well-established best management practices to control invasive plants, manage feral ungulates, out-plant native plants, conduct restoration, monitor and protect rare species, and educate and engage with the public. In addition, LHWRP staff work with partners and others to refine restoration techniques, develop new technologies for managing invasive plants and animals, conduct management-oriented research, and develop collaborative strategies for effectively managing at larger landscape levels.

LHWRP staff is currently composed of a five-person field crew supervised by a Field Supervisor. A Field and Data technician is responsible for data entry and processing. A Program and Data Assistant handles the administrative, financial, and human resources aspects of the program. The Program Manager is responsible for coordinating all aspects of the program, including funding, partner communications, management planning, and reporting. The Program Manager is supervised and advised by an Executive Committee of landowning Partners. The Partners are the foundation of the Partnership and guide restoration priorities based on the individual goals and needs of each landowner. In FY17, we project to have at least one additional Restoration Assistant, a Field Crew Leader, a part-time Outreach Coordinator, and a Program and Data Asst. at 100% FTE. A summary of each current position description can be found on page 26 of the budget in the budget justification section.



LHWRP Organization Chart, October 2015





Aerial view of Kahikinui forest, Department of Hawaiian Home Lands. A study on fog drip capture by Dr. James Juvik of the U.S. Geological Survey was conducted here, demonstrating the potential value of fog drip capture.

B. PROJECT GOALS AND OBJECTIVES

How will your project address the need to provide future drinking water source and supply for the Maui County DWS?

- What are the benefits of your work? Does your existing watershed management plan have clear objectives and goals to address specific threats/problems recognized and approved by DWS?

Fog drip is a type of precipitation that forms when fog droplets collect on the leaves in the forest and eventually drip down to the ground. This process is important in areas such as Leeward Haleakalā where rainfall is minimal. Recent studies in Hawaiian forests have shown that forests comprised of native trees use less water than forests dominated with non-native trees, thereby promoting groundwater recharge. According to one study, published by Dr. Giamballuca in 2008, a forest dominated by invasive strawberry guava had 27% higher evapotranspiration (ET) than a nearby forest dominated by native tree species. This pattern was more pronounced during the dry season, with the non-native forest using disproportionately more water than the native dominated forest (53% higher ET). Based on these findings, evapotranspiration is directly equated with water available for aquifer recharge and municipal water supply systems. Reducing groundwater resource will have serious economic and environmental impacts. This study underscored the importance of protecting our native forest ecosystems, which have evolved to use regional precipitation most efficiently over time.

Restoration of a highly diverse and highly degraded dry forest at Auwahi, Maui has transformed the vegetation from grazed non-native pastureland to a native shrub understory with scattered remnant native trees. Profound hydrological changes are occurring in the restored forest compared to surrounding invaded grasslands. An initial rapid hydrologic assessment performed by Perkins et al. with the USGS at Auwahi showed promising results with the forest restoration site having greater soil hydraulic conductivity, subsurface wetting, and hydrophobicity. Thanks to support from the DWS, preliminary findings from last year's soil moisture studies at Auwahi show that these vegetation changes have led to three important signs of recovered hydrologic function in the restored area compared to the non-native grasslands: 1) soil moisture transfers more rapidly down through the soil column, 2) soil moisture reaches greater depth, and 3) soils maintain a cooler and less variable temperature across depths. We are encouraged by these findings as we launch into large scale restoration efforts with hopes of recovering both biogeochemical and hydrological processes for increasing watershed function.

Expanding native forest cover through forest protection and restoration will increase the quantity of precipitation that can be captured and made available for surface water and aquifer recharge. Watershed forest restoration has multiple benefits, but the four primary goals that our efforts focus on is restoring forest to increase watershed function and capacity, preserve biodiversity, perpetuate Hawaiian cultural resources, and protect economic resources and a diversified rural economy.

The LHWRP Management Plan was written in 2006 by regional experts in ecology and land management. It has served the staff well in guiding priority efforts. In FY16, the Management Plan will be updated and adapted to address the threats, challenges, and goals that have evolved over the past decade. LHWRP staff will work with individual landowners, land management experts, partner agencies (including DWS), researchers, and colleagues to update the plan and create achievable action items and projected costs. If there are any DWS staff that would like to review the 2006 Plan, an electronic copy is available upon request.

- Please clearly define your methodological approach to achieve desired results which contribute to DWS's objectives to conserve Maui's County's water sources and to provide clean water efficiently?

LHWRP staff follow the priorities outlined in the LHWRP Management Plan. In recent years, staff have worked to develop individual management plans at each project site, including a detailed action plan to guide field efforts and funding priorities. LHWRP also developed an invasive species control plan in 2015 to establish goals for invasive species control work through 2020. LHWRP's primary focus is to protect remaining native forests and restore degraded forest/pasture to native forest cover in order to mitigate the threats of climate change, fire, invasive species, and erosion. At each site, specific restoration goals are set annually, and funds are sought to satisfy the ecological need at the particular site. Staff track effort and collect field data, conduct periodic and consistent monitoring to make sure timelines are being met. In addition, depending on funding levels, LHWRP hopes to expand collaboration with the University of Hawai'i, U.S. Geological Survey, and other groups to track the local climatic, hydrologic, and ecological changes that occur as restoration proceeds.

- If possible, quantify the value of what you are proposing.

In 2012, the State of Hawai'i had undertaken a progressive campaign to protect and restore watershed forests titled "The Rain Follows the Forest". While determining the monetary value of native watershed forests is difficult there are a few examples from research conducted that was cited to justify the State's investment. State Division of Forestry and Wildlife staff cited data estimating that forests can increase water capture by 30%. A study conducted in the Ko'olau mountains of Oahu concluded that 1% loss of recharge cost \$42 million. UH research concluded that invasive plants reduced estimated groundwater recharge on the East side of Hawai'i Island by 85 million gallons per day. A desalination plant that was planned for Ewa on Oahu is estimated to cost \$40 million to construct, and produce 5 million gallons of water per day at a cost of \$5 million per year. The government of Greece, another vulnerable island society, conducted costly modeling in the face of climate change, and estimates that water importation costs will reach .51-1.84% of GDP by 2100, depending on the climate change projection scenario used. For perspective, in 2013 Greece's GDP was \$242.2 billion, which would equate to a cost of \$123.5 million – 4.46 billion.

As our experience proceeds, we plan to continue to refine costs and benefits of our efforts scientifically by working with researchers and experts like those at DWS, and communicate those costs to the public through our outreach efforts.

- Please explain how you will implement best management practices, foster innovation, and exemplify efficient execution of a program management plan to produce quantifiable results.

LHWRP staff are employed by the University of Hawai'i's Pacific Cooperative Studies Unit (PCSU). PCSU's policies, as well as LHWRP's internal policies, require staff maintain training standards and in some cases certifications to ensure that conservation efforts are implemented safely and in alignment with current research and technological capabilities. Staff participate in trainings ranging from safe pesticide application to defensive driving to tree climbing, and also follow Standard Operating Procedures (SOP's) for a variety of aspects of the work. LHWRP takes a cooperative approach, and works with researchers, scientists, and land managers to develop restoration techniques. When possible, staff conduct work trade with other organizations throughout the islands, such as Kaho'olawe Island Reserve Commission, Mauna Kea Watershed Restoration Project, Maui Invasive Species Committee, and others to learn from these groups and build upon our experience. LHWRP focuses on collaboration with partners across landowner boundaries to address common threats and maintain an innovative, creative mindset to take on the complex challenges of restoration and adapt as needed.

In addition, LHWRP is fortunate to have an excellent Executive Committee that provides guidance and advice on program operations, including an updated Management Plan that will be completed by the end of FY16. LHWRP also encourages staff participation in conferences, forums, and workshops, as well to conduct literature review in order to stay current with land management research and land management strategies as the field evolves. At each site, periodic

aerial surveys are conducted to observe changes or identify threats that are difficult to detect on the ground. Detailed ecosystem monitoring plots based on National Park standards are/will be installed to track changes to the restoration sites over time. Finally, all staff effort is tracked in a database so that progress and actual costs and statistics can be monitored and adapted as necessary.

As each project site has different challenges, substrates, invasive species issues, and remaining forest components, LHWRP mitigates the threats from invasive plants and animals by fencing the area, removing feral ungulates, and conducting invasive plant control. Restoration trials are then conducted, building upon the experience staff have gained from working in other sites, learning from other crews, or reviewing literature. This enables trials at a small scale to be implemented to ensure that regional-scale efforts will be effective and efficient. Trials in place at Kahikinui and Nu'u aided in developing guidelines for optimal tree planting spacing, illuminated the need for grass control and/or carefully timed planting after ungulate removal, determined efficacy of seed scattering, and honed methods for seed balls to be used to supplement planting.

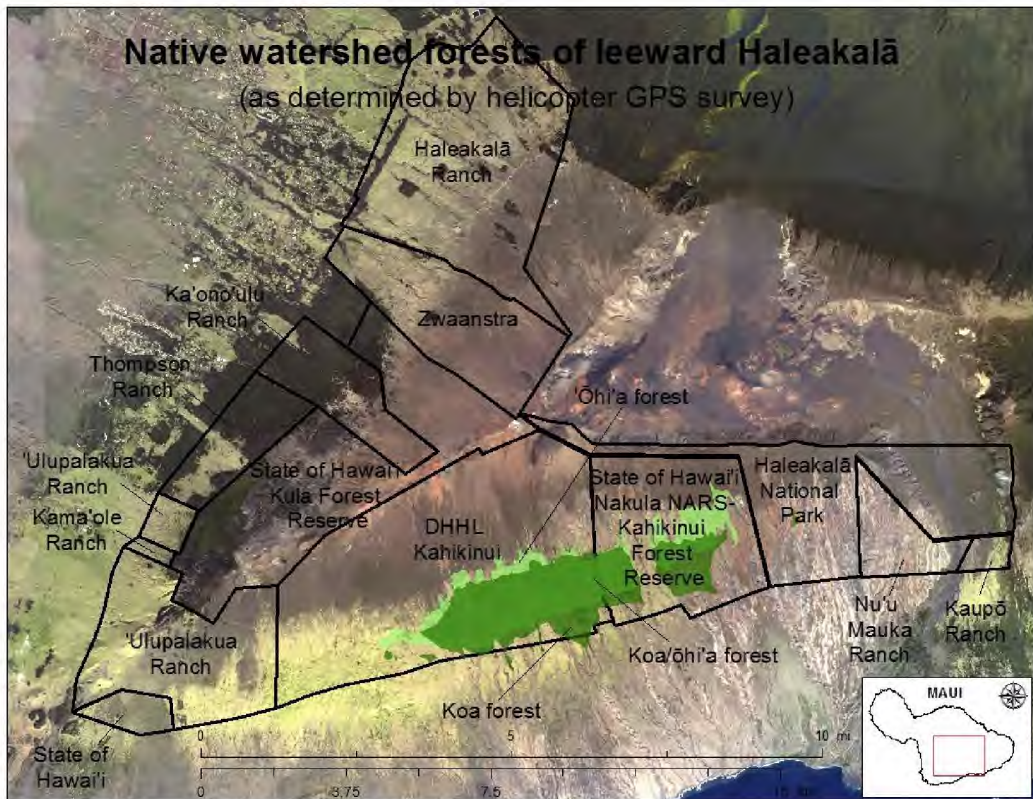


Aerial photo of demonstration planting trial site at Nakula where different spacing for tree and shrub planting was experimented with and the need for grass control carefully timed with planting was identified.

C. LOCATION AND SIZE OF PROJECT AREA

- Provide quantifiable information, such as where you will be doing your work and the size of the area you plan to address through your proposal.
- Provide maps, aerial and other photos, and graphics as necessary

The LHWRP Management Plan called for protection of existing native watershed forests as the priority before restoring already degraded landscapes. This would enable preservation of existing natural watershed processes, seed sources for restoration, and habitat for native plant, animal, and invertebrate species. Restoration is a costly process, and so preserving remnant ecosystems would optimize restoration potential for these systems, as well as provide sites where restoration techniques and diverse seed sources could be identified (map 2).

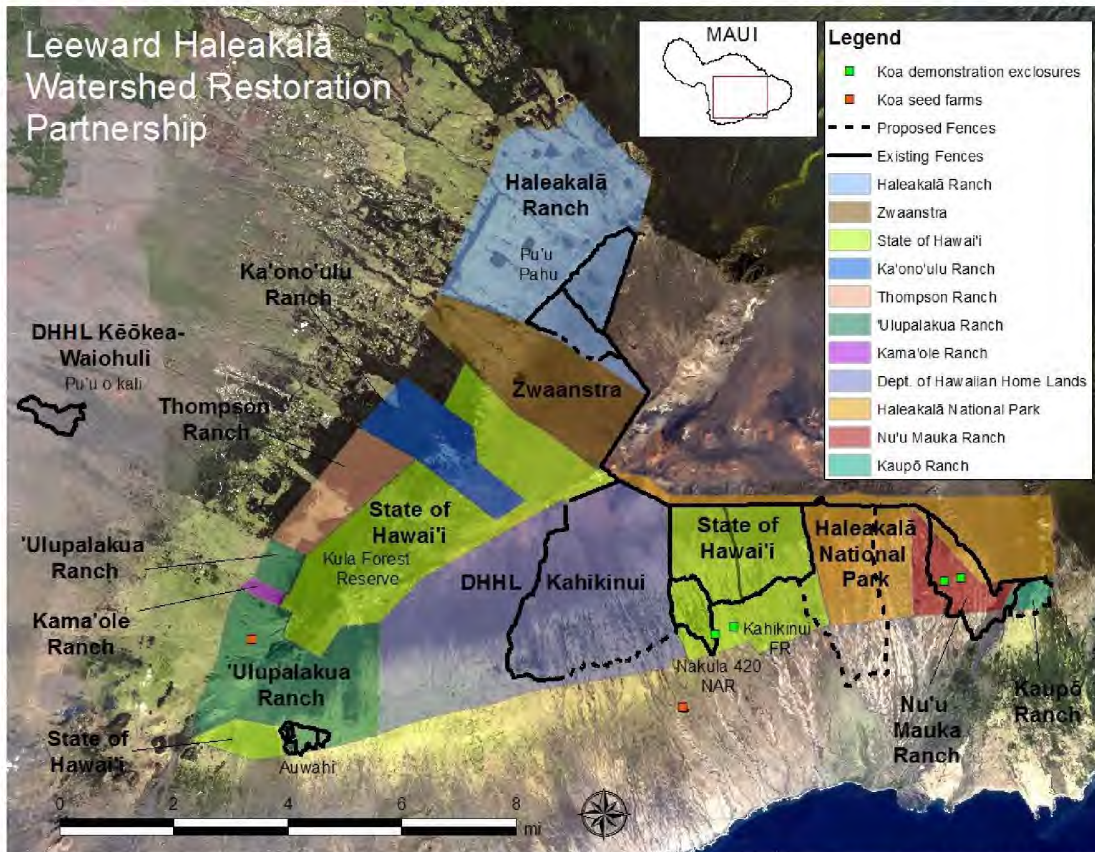


Map 2. LHWRP boundaries with remaining native koa-'ohi'a forests in green. This area was identified as priority for protection and restoration in the LHWRP Management Plan. With fences to protect these and adjacent areas nearly complete, Partnership staff have begun looking to other sites with high diversity and restoration potential.

Since LHWRP's formation in 2003, an incredible amount of watershed protection work has taken place on State, Federal and private lands. Approximately 2,529 acres have been fenced and protected from ungulates with an additional 10,505 acres protected in the next few years as fences in progress are completed. LHWRP's watershed restoration efforts are focused on nine project sites totaling 16,496 acres. Sites with nearest proximity to DWS water sources and/or where work with DWS funds is focused are italicized (map. 3):

- 1) *Pu'u Pahu, Haleakalā Ranch – 1,401 acres*
- 2) *Auwahi, Pu'u Makua, and HARC seed farm, 'Ulupalakua Ranch – 378 acres*
- 3) *Pu'u-o-kali, Department of Hawaiian Home Lands Waiohuli – 236 acres*
- 4) *Kahikinui, Department of Hawaiian Home Lands – 6,400 acres*
- 5) *Haleakalā Ranch's Waioapai parcel & Kahaleaimakani HARC seed farm – 281 acres*
- 6) *Nakula Natural Area Reserve – 1,518 acres*
- 7) *Kahikinui Forest Reserve – 2,203 acres*

- 8) Haleakalā National Park’s Nu’u parcel – 3,300 acres
- 9) Nu’u Mauka Ranch –1,014 acres
- 10) Kaupō Ranch – 215 acres



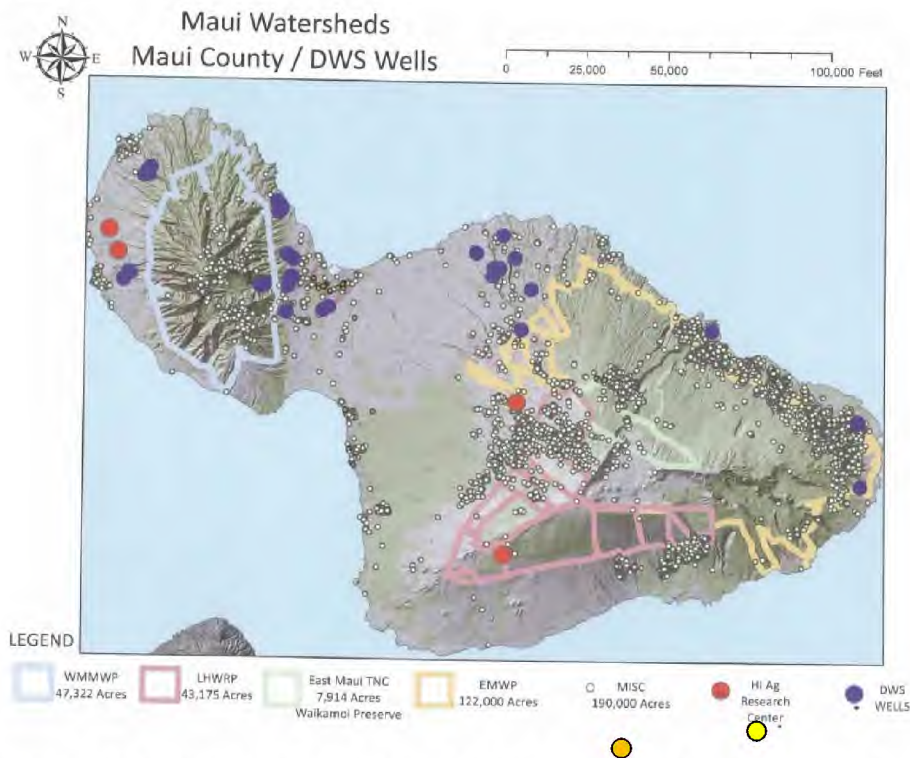
Map 3. Overview of LHWRP landscape and landowners, including fencelines completed (solid lines) and proposed/in progress (dotted lines), as well as restoration demonstration exclosures and seed farm sites.

- Show the proximity of your proposed work to the nearest DWS water source(s).

The majority of LHWRP’s work to date has been focused on Haleakalā’s south slope, from Auwahi on ‘Ulupalakua Ranch to Kaupō, in order to protect remaining native watershed forest. Although this region is distant from the nearest DWS wells and reservoirs (see map 4), it was critically important work that laid the groundwork for partner collaboration, restoration technique development, and organizational development. Now that those priority forests are in some stage of protection, with fences either constructed/funded and invasive species control and monitoring underway, staff have been able to expand the vision of restoration to Haleakalā’s southwest slope, nearer to DWS reservoirs. LHWRP’s project at Kaupō Ranch does directly support the surface water system that supplies 22-30 families in Kaupō. Much of LHWRP’s work is an investment in Maui’s future water resources, intended to expand the potential for fog drip capture and increased surface water utilization for agriculture and the existing rural communities in the short term, and create vast forests in the long term that can both provide significant sources of surface water and aquifer recharge.

LHWRP has worked over the last several years with the Hawai’i Agriculture Research Center

(HARC) to gather seed from Maui field sites to be screened for genetic resistance to *Fusarium oxysporum*, a highly damaging naturally occurring forest pathogen. LHWRP and HARC are developing regional seed farms to increase seed production of *koa*, especially of *Fusarium*-resistant *koa* seedlings. In 2015, LHWRP assisted HARC and Haleakalā Ranch in the completion of the third of several planned regional seed farms. A fourth farm at Kaupō will be planned in FY17 to complete the seed farms desired for eco-region specific seed sources. These seed farms are strategically located at sites across leeward Haleakalā in preparation for regional restoration of the entire LHWRP landscape (map 4). LHWRP staff also recently completed tree climbing training with HARC and the U.S. Forest Service to enable staff to safely gather seeds from native trees to optimize genetic diversity and ability to utilize seeds from regional sources for restoration.

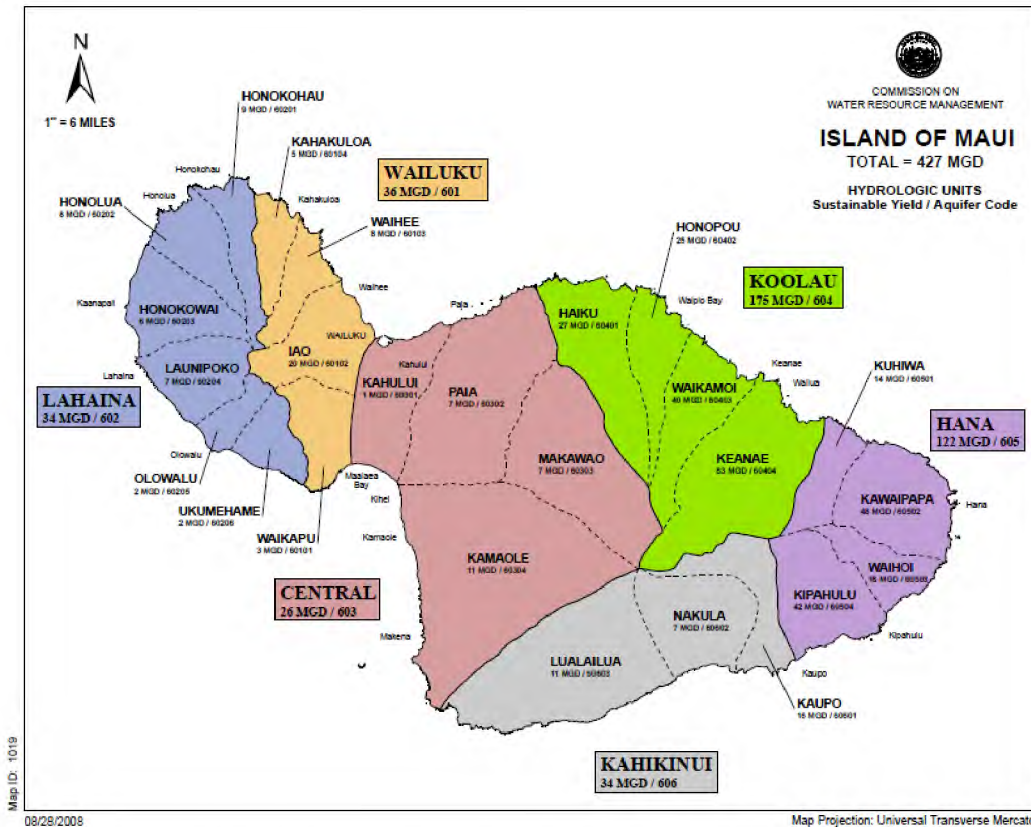


Map 4. Overview of DWS resources in relation to LHWRP and other Watershed Partnership boundaries. The orange dot indicates the Hawai'i Agricultural Research Center (HARC) seed farm completed in 2015 at Kahaleimakani, Haleakalā Ranch. The yellow dot indicates the HARC site proposed at Kaupō Ranch in FY17.

- Explain how your efforts in the location and project area may enhance available and clean water supply.

Although much of LHWRP's work is not in close proximity to current placement of DWS reservoirs and wells, the value of these watersheds and their potential to capture water and replenish aquifers should not be underestimated. Aquifer connectivity is poorly understood, and it may be possible that water captured from leeward ecosystems could be replenishing the same aquifer tapped by communities in adjacent areas. Regardless, the contribution of aquifers within the LHWRP region is significant, according to 2008 Hawai'i Commission on Water Resource Management data, providing an estimated sustainable yield 52 Million Gallons per Day (MGD). See Map 5. It is unknown how that number would change given large-scale

reforestation and the resultant surface water that could be utilized. Given the uncertainties of climate change, population growth projections, and vulnerabilities inherent to island ecosystems, protecting remaining watershed forests and expanding/restoring degraded ecosystems will create additional sources of water for agricultural, residential, and commercial use. In the face of quickly spreading invasive species, forest pathogens, and natural disasters, expanding our options for sources of fresh water by expanding watershed forests is a logical investment, and one that Maui's Department of Water Supply has been committed to.



Map 5. Map of hydrologic units and estimated sustainable yield as defined by the Hawai'i Commission on Water Resource Management (CWRM).

Complementary to the inherent benefits of forest protection and restoration is the reduction of erosion and sedimentation of nearshore marine ecosystems. Sediment transport at sites such as Nu'u Mauka Ranch has lead to several feet of soil loss in some areas. LHWRP installed an erosion monitoring study to track the rates of soil loss/transport and monitor changes over time as restoration proceeds. A photo of the erosion and degradation at Nu'u along with a schematic of the erosion pin study are below. This is the site where outplanting is proposed in FY17, with the goal of planting native seedlings and scattering seeds to re-establish vegetative cover and reduce soil loss and transport to the wetland and reefs downslope.

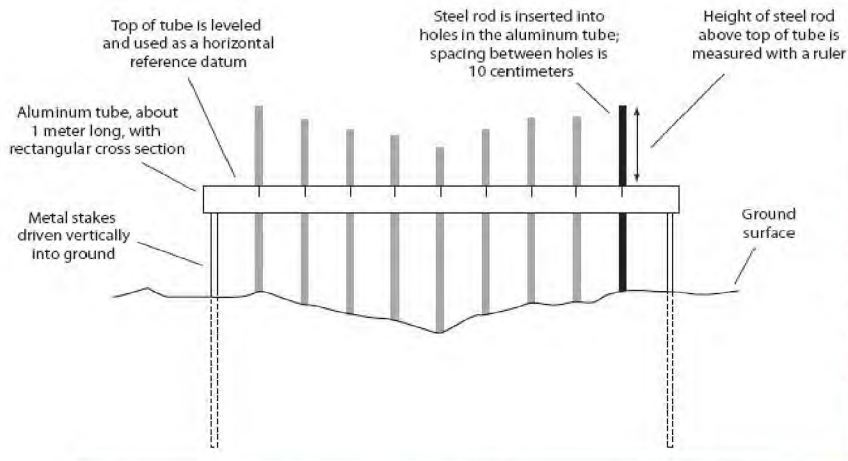


Image of site where outplanting and erosion monitoring are underway at Nu'u Mauka Ranch. At top left, a schematic of the erosion pin study methodology.

D. SCOPE OF WORK

Describe the work you are proposing (as if to someone who has never heard of your organization or the work you have done in the past), and answer the following:

In FY17, LHWRP proposes work in line with DWS' goals of protecting watershed forests in nearest proximity to DWS wells and reservoirs, continuing restoration at fenced sites, developing regional sources of koa and other native seeds, and documenting the effects of restoration on hydrology.

- Is your project scope of work well-organized, practical, and cost-effective?

Our scope of work is organized and prioritized based on the LHWRP Management Plan and action plans developed for individual project sites. As our work sites are very remote, significant planning and strategizing takes place to ensure all field operations are implemented safely and efficiently. Several members of the LHWRP staff have worked together for more than seven years, and have experience and first-hand knowledge of the challenges and successes at each

site. This knowledge is shared with new staff, who are encouraged to be observant, thorough, creative, and contribute new ideas for how to improve efficiency. LHWRP works with local businesses and other contacts to secure in-kind donations as much as possible. All helicopter time is strategically planned, and often aerial surveys or fence checks are incorporated into transport time to camping trips. Backcountry trips require camping for typically four days to maximize time in the field and justify the costs of helicopter transport. When possible, LHWRP staff work with other conservation groups flying in the area to get 'bumped up' to our field sites and reduce transportation time. Planting protocols have been developed over years of experience at Auwahi and other sites to maximize seedling survival. Monitoring of all effort and ecological status of work sites, including seedlings survival, is tracked in our database and reviewed quarterly so adjustments can be made if needed.

Our scope of work includes the following goals/objectives, which are explained in more detail within the chart below in the Project Deliverables section on page 20:

LHWRP Proposed Scope of Work

1. Construct and maintain watershed forest protection fences

LHWRP's efforts for this proposal are focused on maintaining fences and ensuring enclosures remain ungulate free at Pu'u Pahu on Haleakalā Ranch, Pu'u-o-kali at Department of Hawaiian Home Lands Waiohuli, and at cooperative LHWRP/HARC seed farm sites. Funds are requested to protect an important stand of koa trees and complete regional watershed forest fencing at Kaupō Ranch.

2. Add capacity for freshwater use at restoration sites

Leeward ecosystems face serious threats from fire and drought. Increasing water availability to water seedlings if natural precipitation is insufficient could enable survival of outplanted seedlings and depending on the type of catchment, create sources of freshwater to use for fire abatement. Field crews in remote camp sites need access to freshwater as well for invasive species control. Thoroughly cleaning gear and maintaining hygiene during extended camping trips is important for field crew health and for reducing unintended contamination. For these crews working long hard days in sun/cold/wind/rain, a shower at the end of the day can be an important morale booster.

3. Restoration project planning and monitoring

Vegetation monitoring will continue at Nu'u Mauka Ranch in accordance with native seedling planting. LHWRP also plans to work with CTAHR to install weather monitoring stations that will also capture changes in microclimate.

4. Continue priority invasive species control

Reducing establishment and/or spread of invasive species requires consistent access, botanical knowledge, and dedicated vigilance. Regularly monitoring known populations of invasive species, and methodically reducing the footprint where they are established supports restoration efficacy. GPS locations for each population/individual controlled are

marked, and numbers of mature and immature individuals are recorded per species. Aerial surveys are also conducted as funding allows to detect individuals in areas not regularly visited on foot.

5. Continue revegetation with native species within fenced units

LHWRP will continue outplantings at Nu'u Mauka Ranch to encourage native vegetation establishment in order to reduce soil loss and increase habitat for native species so that forest function, can return. This site is upslope of an important regional wetland and Nu'u Bay, and reducing the flow of sediment into these sensitive areas is a priority. The establishment of vegetation will slow the flow of water downslope, enable it to be better utilized for ranching and agriculture at lower elevations, as well as to provide habitat for a variety of rare native species.

LHWRP staff will conduct regular monitoring for fruiting *koa* trees and observe phenology to maximize seed collection of native species per region. We will work with HARC to continue to screen mother trees for *Fusarium* resistance and outplant resistant strains at seed farm sites. Other species will be planted at seed farm sites as well to create efficient seed gathering opportunities.

6. Raise awareness of the ecological, cultural, and economic value of Hawaiian watersheds

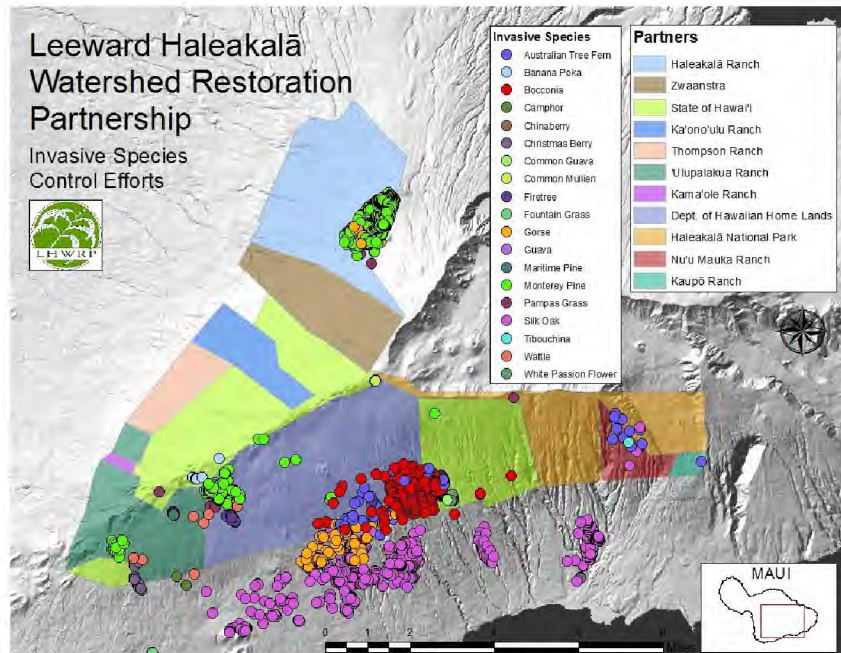
Many people are disconnected from the natural systems that sustain us. The food chain, the hydrological cycle, the ability of our forests to clean air and sequester carbon, are theoretical for many. Connecting people to the forest, and educating them about the importance of watershed protection for the ecosystem services it provides, as well as the less tangible benefits, is critical for ensuring watershed protection remains valuable to our communities. Understanding our reliance upon our ecosystems and our ability to restore them is a powerful tool that can be utilized to engage a wide variety of audiences, and bring much-needed manpower to restoration.

- What are your integrated measures to prevent further watershed or water supply degradation and to help restore Maui County's watersheds?

LHWRP's focus on invasive species control (see map 6) with the goal of preventing establishment of habitat-modifying invasive species, such as strawberry guava, enables staff to focus on prevention versus response. LHWRP uses native seeds from regional sources to optimize survival potential, and monitors outplantings to track restoration success and make adjustments as needed. Ecosystem monitoring will document the changes in vegetation cover, species composition, invasive species presence, and other parameters. LHWRP will focus on restoring and maintaining fenced project sites before expanding to new areas. Staff will continue to seek knowledge and input from scientists and land managers.

- What are your project's scientific and technical merits, and how will they help continually produce useful results to enhance Maui County's water supply and advance the watershed conservation field?

LHWRP is based on science and respect for ecological needs. Documenting methodology so it can be replicated and/or modified is crucial to ensuring our efforts are effective, efficient, and safe. We will continue to work with a variety of scientists, advisors, partners, and supporters to seek the most current, innovative, and effective restoration methods available. We will expand our database and continue to track efforts, conduct thorough surveys and monitoring, and adaptively manage areas in response to restoration trials, environmental changes, and other unforeseen challenges. We will continue to produce technical reports and publications as much as possible, and encourage staff to present and participate at conferences and training opportunities.



Map 6. LHWRP landscape and areas of invasive species control. Most of these species are invasive trees that threaten the restoration potential of these areas. LHWRP completed an Invasive Species Control Plan in 2015.

- Does your scope of work include public outreach and education?

LHWRP does not have an Outreach Coordinator position at this time. However, outreach is an essential part of conservation if durable results are desired. Project sites are remote, extremely rugged and dangerous, and in most cases require helicopter access, making volunteer inclusion difficult. To offer volunteers a better understanding of the work we do, LHWRP will host two volunteer trips in conjunction with our regular field operations to physically less demanding sites for planting, seed collection, or other restoration work such as seed ball production and invasive species removal. We will also participate in conferences and forums to raise awareness and encourage a sense of connection and commitment to natural resource protection in the community.

E. TIMELINE

As exact timing of notices to proceed are difficult to determine, this timeline was prepared based on a generic twelve month calendar, with month 1 beginning on the start date of the grant, and quarters indicating three month blocks.

Description of each deliverable	Expected amount of time to complete deliverable (# Months/# Weeks)	Time frame (include expected months)
Inspect 13.52 miles of fences quarterly and after storms. Repair as quickly as possible, and survey for ungulate ingress if needed.	20 person days/quarter 20 person days after severe storms	Quarters 3-4 Fences inspected once per quarter and after severe storms
Contract construction of koa forest protection fence at Kaupō Ranch	2 person days 3 time / year	Quarters 1-2
Develop specs and determine site where catchment is needed. Install one water catchment system at Nu'u Mauka Ranch for restoration areas	3 person days/Qtrs 1 & 2	Develop specs Quarter 1-2 Install catchment system Quarter 2
Work with researchers to install climate monitoring stations at Kahikinui, and Nu'u Mauka Ranch	9 person days/Qtr 1 & 2	Specs developed Quarter 1 Equipment purchased Quarter 1 Stations installed Quarter 2
Control priority invasive species across 1,278 acres according to the LHWRP invasive species control plan	10 person days/2 months	Quarterly work trips, with the majority of work taking place Quarters 1-2
Plant 3,500 native seedlings and seed scatter 1 million native seeds	20 person days/month during fall and winter months	Plant and seed scatter in fall and winter months (quarters depending on timing of grant)
Host two volunteer work trips at a restoration site to engage the public in planting, seed collection, or other restoration effort	Trips to be planned in conjunction with existing staff trips.	Plan calendar in Quarter 1 with most trips held in Quarters 2 and 3

F. PROJECT DELIVERABLES

Goal/Objective 1: Construct and maintain watershed forest protection fences		
Task	Deliverable	Measure of Success

Ensure fenced restoration areas at Pu'u-o-kali, Pu'u Pahu, and the three koa seed farms are ungulate-free	Inspect 13.52 miles of fences quarterly and after storms. Repair as quickly as possible, and survey for ungulate ingress if needed.	1. Quarterly reports, including map documenting fences inspected and any repairs required. 2. Documentation of ungulate survey/removal effort
Protect remaining koa forest at Kaupō Ranch	Contract construction of koa forest protection fence at Kaupō Ranch	1. Quarterly reports, including map of final fence route once completed
Goal/Objective 2: Add capacity for freshwater use at restoration sites		
Task	Deliverable	Measure of Success
Increase ability to respond to drought and support invasive species control operations	Develop specs and determine sites where catchment is needed. Install one water catchment system at Nu'u Mauka Ranch for restoration areas	1. Quarterly reports including plan for each catchment system. 2. Map and photos of final location and installation
Goal/Objective 3: Restoration project planning and monitoring		
Task	Deliverable	Measure of Success
Track environmental conditions including wind speed, humidity, air and soil temp over time as restoration proceeds	Work with researchers to install climate monitoring stations at Nu'u Mauka Ranch	1. Quarterly reports documenting technology selected and construction of station. Map and photos of final location and installation. Data collection initiated.
Goal/Objective 4: Continue priority invasive species control		
Task	Deliverable	Measure of Success
Continue control of priority invasive species across LHWRP	Control tree poppy (<i>Bocconia frutescens</i>) and pines (<i>Pinus</i> sp.) across 1,278 acres according to the LHWRP invasive species control plan	1. Quarterly reports documenting number of individuals/acres and phenology of plants controlled per species
Goal/Objective 5: Continue revegetation with native species within fenced units		
Task	Deliverable	Measure of Success
Plant native seedlings at Nu'u Mauka Ranch	Plant 3,500 native seedlings and seed scatter 1 million native seeds	1. Quarterly reports and map documenting location, area, and numbers planted/scattered per species. 2. Data on survival will be included after Q1.

Continue to work with HARC to develop sources of fusarium-resistant koa	Continue to identify mother koa trees and conduct seed collection	1. Outplant koa trees within the Kahaleimakani exclosure at Haleakalā Ranch. 2. Maintain existing seed farms at 'Ulupalakua and Mahanalua .
Propagate native species from a variety of regional sources for restoration	Collect seeds to revegetate native forests of LHWRP and deliver to native plant nurseries.	1. Map and report of collection sites and numbers of seeds collected per species
Goal/Objective 6: Raise awareness of the ecological, cultural, and economic value of Hawaiian watersheds		
Task	Deliverable	Measure of Success
Involve the public in watershed restoration	Host two volunteer work trips at a restoration site to engage the public in planting, seed collection, or other restoration effort	1. Quarterly reports summarizing trip location, volunteer participation, and work accomplished



Double rainbow over Kaupō gap, where a population of koa trees like those seen at bottom right are slated for protection with funds requested from DWS. This population of koa is important as it is one of the only reliable sources of seed on leeward Haleakalā, and is being threatened by strawberry guava, Australian tree fern, and invasive grasses.

G. BUDGET SUMMARY



County of Maui
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Project Budget Summary

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Expense Categories	Amount Requested	Matching Funds	Total Budget
A. Personnel (Payroll taxes & fringes)	\$121,476	\$0	\$121,476
B. Transportation (e.g. fuel, etc)	\$0	\$0	\$0
C. Contractual (e.g. helicopter)	\$27,800	\$0	\$27,800
D. Utilities (e.g. telephone/cell, water electricity, etc)	\$3,840	\$0	\$3,840
E. Travel	\$4,490	\$0	\$4,490
F. Field crew costs	\$2,330	\$0	\$2,330
G. Supplies, materials & equipment	\$5,082	\$0	\$5,082
H. A&O Costs	\$16,882	\$0	\$16,882
I. Other Costs	\$13,100	\$0	\$13,100
Total	\$195,000	\$0	\$195,000



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A. PAYROLL COSTS

Organization Name: Leeward Haleakalā Watershed Restoration Partnership

Position Name/Title List by position and % of 40 hour week	Salary	Amount Requested
Program Manager 100% FTE	\$69,392	\$17,348
Field Supervisor 100% FTE OR Field Crew Leader (to be recruited at 100% FTE)	\$56,582	\$14,146
	Not to exceed \$48,000	
Field & Data Technician 100% FTE or Crew Leader FTE 100% (please see justification on the following page)	\$54,744	\$13,686
Restoration Assistant #1 100% FTE	\$35,264	\$8,816
Restoration Assistant #2 100% FTE	\$33,050	\$8,263
Restoration Assistant #3 100% FTE	\$31,476	\$7,869
Program & Data Assistant 100% FTE	\$46,628	\$11,657
Payroll Taxes		\$6,674
Fringes and Benefits		\$24,535
PCSU Specialist (5% on Direct Cost)		\$8,482
Total		\$121,476

Narrative Description (project responsibility by position/title)

Descriptions for all staff are identified. Personnel costs requested in this proposal support seven key positions for LHWRP that directly contribute to achieving the mutual goals of the Partnership and DWS. These positions are hired through the Research Corporation of the University of Hawai'i, which operates with a standardized, merit-based ranking system that determines the pay rate for each staff member. The fringe benefit costs range on average from 23-29% based on each staff member's health plan, personal status (i.e. single vs. married with three dependents), etc.

- ▲ **LHWRP Program Manager** – Oversees all financial and budgetary details for LHWRP, communicates with partners and supporting partners, conducts partnership meetings, and oversees grant applications and reporting. Oversees implementation of watershed forest restoration action plans and research projects. Works with LHWRP Field Supervisor and Program and Data Assistant to update and develop long term programmatic plans.
- ▲ **LHWRP Field Supervisor** – Coordinates, plans, and manages complex on-the-ground projects including restoration, research and monitoring, invasive species control, and fence development, construction and maintenance. Trains and supervises field crew and volunteers. Coordinates and oversees logistics, purchases and operations to safely implement research and restoration activities.
- ▲ **LHWRP Field Crew Leader** – Works with Field Supervisor to develop safe and effective fieldwork plans for restoration sites. Leads crew, contractors, interns, and volunteers when Field Supervisor is not in the field or when two crews are working at different project sites. Conducts outplanting of native species, control of invasive species, monitoring of rare species, fence construction and maintenance, data collection, and education to community members during volunteer events. Coordinates restoration assistant schedules and oversees inventory field crew, base yard, and supplies inventory. Project need currently requires capacity for two crews to operate simultaneously, and for field operations to be maintained when the Field Supervisor is required to stay out of field for planning and reporting. This position is not yet filled. DWS funds will support either the Field Supervisor or Field Crew Leader, depending on who is leading the field operation funded by DWS in FY17.
- ▲ **LHWRP Field and Data Technician** – Collects and manages all field data in multiple program data bases. Produces spatial displays and maps of field efforts for internal analysis and presentations. Conducts outplanting of native species, control of invasive species, monitoring of rare species, fence construction and maintenance, data collection, and education to community members during volunteer events. (Staff for this position is currently on leave and may require a future drop in FTE. In

which case, LHWRP requests the flexibility to utilize funds allocated for this position to partially support a Crew Leader (description above). The Crew Leader would cover all of the Field and Data Technician's on-the-ground and logistic responsibilities preventing interruption of field work.)

- ▲ **LHWRP Restoration Assistants (3)** – Execute on-the-ground land management, forest restoration, applied research, and community outreach throughout the LHWRP. Conducts outplanting of native species, control of invasive species, monitoring of rare species, fence construction and maintenance, data collection, and education to community members during volunteer events. Funds requested will either enable us to fund 25% of three Restoration Assistants, or 25% of one Assistant and 50% of one Assistant.

- ▲ **LHWRP Program and Data Assistant** – Responsible for general program support duties required to effectively administer project. Manages project data and provides data analysis to evaluate and facilitate fieldwork. Assists with project planning and reporting. Manages, maintains and organizes office files and provides administrative oversight, including staff timesheet reporting, travel arrangements, purchase requests, and tracking budgets.

- ▲ **PCSU Specialist** – PCSU handles the administration of payroll, purchasing and accounts payable, employee benefits and additional human resource services. PCSU also provides significant project management and scientific expertise as well as a direct connection to University staff, students and other resources. The PCSU rate for this grant is 5%. All PCSU Specialist Personnel Fees will be listed on the Quarterly Payroll Reports.



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B. TRANSPORTATION COSTS

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expense	Amount Requested
<i>Transportation Costs are budgeted in the following categories:</i>	
Fuel – See “G. Supplies, Materials & Equipment”	
Vehicle Maintenance & Repair – See “I. Other”	
Vehicle Insurance – See “I. Other”	

Narrative Justification

Fuel listed according to the UH fiscal Budget Category that corresponds to DWS Budget Category “G. Supplies Materials & Equipment”

Vehicle Maintenance & Repair is listed according to the UH fiscal Budget Category that corresponds to DWS Budget Category “I. Other”

Vehicle Insurance is listed according to the UH fiscal Budget Category that corresponds to DWS Budget Category “I. Other”



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C. CONTRACTUAL SERVICES
 (e.g. helicopter, etc.)

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expense	Amount Requested
Helicopter transport to field sites (@ \$1,200/hr)	\$12,000
Contract technical assistance (computer support and repair, database management, scientific assistance)	\$3,000
Native seedlings propagation	\$3,500
Technical training and certification courses	\$1,300
Contract for staging and transport of fence materials for Kaupō Ranch	\$8,000
Total	\$27,800

Narrative Justification

Helicopter Services: to transport crew, gear, and supplies to remote work areas. 10 hours X \$1,200 = \$12,000

Contract Technical Assistance: \$1,500 for data base upgrades and maintenance, and \$1,500 for IT support, systems upgrade, troubleshooting, maintenance and hardware repair, and/or specialized research or field assistance

Native Seed Propagation for out planting: 3,500 seedlings \$3,500

Technical Training and Certification Courses: In order to remain in RCUH compliance, LHWRP contracts specific trainers to maintain their skills and certify staff in First Aid/CPR, chainsaw use, helicopter, ropes for Rappelling or Tree Climbing, or other required training \$1,300.

Staging and Transport of Kaupō Fence Materials: LHWRP originally requested \$25,000 in fence materials for the Kaupō fence project. Since then LHWRP has secured fence materials and are requesting to apply \$8,000 towards the staging and transport of materials.



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D. UTILITIES

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses	Amount Requested
Telephone (Land line & Internet) Hawaiian Telcom @ \$120/ month	\$780
Telephone (cell) Verizon for 7 core staff @ \$70 / month & 1 tablet @ \$20 / month	\$3,060
Electricity – See “I. Other” (included with Rent)	
Printer/fax/copy maintenance and quarterly billing – See “I. Other”	
Total	\$3,840

Narrative Justification

Funding requested for utilities is essential to maintain basic administrative and management operations.

Hawaiian Telcom: LHWRP’s landline and internet service: \$130 x 6 months = \$780

Verizon: LHWRP cell phones for 7 core staff are required to ensure safety in remote field locations and are used in lieu of radios as radio transmission/reception is not available at most field sites. Plan includes unlimited voice and texting at \$55/person and data at \$15/person

7 LHWRP staff: \$70 X 7 staff X 6 months = \$2,940

LHWRP is testing the use of tablets in the field to collect data and utilize for presentations and meetings. Access fee is \$10/month, insurance is \$10 and the data is shared on the phone plan.

1 tablet \$20 X 6 = \$120

Phone upgrades are listed in “G. Supplies, Materials & Equipment”

Electricity: Included with Rent and listed under “I. Other”

Printer/fax/copy maintenance and quarterly billing is listed in “I. Other”



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E. TRAVEL

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses (e.g. airfare, lodging, etc.)	Amount Requested
Airfare	\$1,000
Lodging & Travel MIE (ground transport, parking and per diem \$50/day)	\$750
Crew subsistence for camping (RCUH rate of \$20/day)	\$2,740
Conference/workshop/coursework fees – Please see “I. Other”	
Total	\$4,490

Narrative Justification

Airfare: Inter-island Travel r/t for 5 meetings and conference/training.
5 x \$200 = \$1,000

Lodging and Travel MIE (Meals and Incidental Expense): Hotel \$500; Baggage Fees, Parking and Ground Transportation \$100; Per diem \$50 x 3 days = \$150 (for Hawaii Conservation Conference or other conferences/symposiums.) \$50/day per diem is the approved inter-island travel MIE rate approved by RCUH.

Subsistence: Back Country Camping Meal Allowance at RCUH approved rate of \$20/day x 137 days = \$2,740

Conference, Workshop, Coursework Fees are listed according to the UH fiscal Budget Category that corresponds to DWS Budget Category “I. Other”



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F. FIELD CREW COSTS

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses	Amount Requested
Field crew personal gear (rain gear, work pants, socks, boots, water bottles, first aid kits)	\$2,000
Replacement Field Gear including Storage	\$330
Total	\$2,330

Narrative Justification

Field Crew Personal Gear:

LHWRP Basic gear and tools for staff as needed \$2,000: All items are considered essential items to conduct LHWRP field work in an efficient and safe manner. Funds will either be used to gear up a new staff or replace existing staff gear. (General cost for gear required are listed here as a reference: backpack \$180, boots \$300, large dry bag 115L \$110, sleeping bag \$200, flight suit & gloves \$175, rain gear \$150, safety work shirts \$15, work pants \$35, socks \$10, and personal protection items like first aid supplies, sunscreen, glasses \$20, gloves \$20).

Replacement Field Gear as needed \$330: Hand/Power Tools, Radios, Technical Field Gear and Storage



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G. SUPPLIES, MATERIALS & EQUIPMENT

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses	Amount Requested
Office supplies and organization	\$500
Software and technology: Office, GIS computer accessories	\$521
Fuel: 3 vehicles, 1 Polaris and for power tools	\$1,700
Verizon Phone Upgrades/Replacements	\$250
Equipment Maintenance and Repair	\$500
Fence materials for Kaupō Ranch fence (funding for materials secured however \$8,000 in staging and transport is still necessary. See "C. Contractual Services").	\$0
Water Catchment System: 1 tank	\$1,611
Total	\$5,082

Narrative Justification

LHWRP Office supplies for outreach, reporting, maintaining records and files, and ensuring administrative work continues efficiently and uninterrupted: \$500 (copy paper, files, folders, binders, envelopes, tape, cleaning supplies, paper goods, postage, pens, organization supplies, laminating paper, stationary goods, etc.

Software and Technology: Office \$65, 2 GIS \$250, jump drives, data storage, and computer accessories \$206.

Fuel: LHWRP has 3 vehicles (Frontier, Tacoma & Ram) which are used for transporting field crews, volunteers and equipment to project sites, training, meetings and events. 1 off-road utility vehicle (Polaris) transports staff and supplies where the trucks are unable to access.

LHWRP Fuel for 3 vehicles to access remote work sites: \$200/mo x 6 = \$1,200

LHWRP Fuel for Polaris to access remote work sites: \$60/mo x 6 = \$360

LHWRP Fuel and oil for power tools: \$140

Verizon Phone Upgrades/Replacements in 2016-2017: = \$250. If staff phones are damaged as a result of field conditions and not personal or negligent use, replacement is covered by the project. Upgrade eligibility is determined by the UH contract with Verizon and are approved on a rotating basis as needed.

LHWRP Equipment Maintenance and Repair \$500: to maintain and repair power tools (chainsaws, weed whackers, drills etc.) and all hand tools such as stretcher bars.

Fence Materials \$0: Funding for the 530 meters of fence was secured through another grant, however, \$8,000 will be needed to stage and transport the materials. (See "C. Contractual Services" for Materials Staging and Transport).

Water Catchment System (Nu'u Mauka Ranch) \$1,611: One 1,500 gallon tank or tanks required for comparable capacity + shipping



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H. ADMINISTRATIVE & OVERHEAD COSTS

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses	Amount Requested
UH Indirect Cost @ 10%	\$16,882
PCSU Specialist (5% on direct costs) \$8,482 – Please see “A. Personnel Costs”	
Total Administrative & Overhead Costs	\$16,882

Narrative Justification

LHWRP is a project of the University of Hawai‘i’s Pacific Cooperative Studies Unit (PCSU) and its staff are employees of the Research Corporation of the University of Hawai‘i (RCUH). Grants are fiscally managed by the Office of Research Services (ORS) of the University of Hawaii (UH) which charges 10% as indirect fees. *UH Indirect Costs are not applied to \$9,300 Rent.

PCSU Specialist Personnel Fees are listed according to the UH fiscal Budget Category that corresponds to DWS Budget Category “A. Personnel”

Total Combined Indirect/Direct Administrative & Overhead Costs: \$25,364 or 13.0%

Description	Amount
UH Indirect 10%	\$16,882
PCSU Specialist 5%	\$8,482
Total A & O	\$25,364

Percentage: 13.0%



County of Maui
 Department of Water Supply
Watershed Protection Grant Program
 Fiscal Year 2017

I. OTHER

Organization Name Leeward Haleakalā Watershed Restoration Partnership

Breakdown of Expenses	Amount Requested
Office rent including CAM, security, tax etc. and electricity = \$1,550 x 6 months	\$9,300
Vehicle Maintenance and Repairs: vehicle parts/supplies, safety checks \$25, and registration fee \$6 for three vehicles, one off-road utility vehicle and one trailer owned by UH	\$2,000
LHWRP Vehicle Insurance \$125 X 4	\$500
Printer/fax/copy maintenance and quarterly billing \$150/qtr	\$600
Conference/workshop/coursework fees	\$700
Total Other Costs	\$13,100

Narrative Justification

Funding requested for rent is essential to maintain basic administrative and management operations. LHWRP Office Rent: (\$1,141 rent + \$294 CAM + \$115 electricity) x 6 = \$9,300

Many of LHWRP project sites are in remote areas of southern Haleakalā and require access via helicopter, 4x4 vehicle, or All-Terrain Vehicles. Rugged 4 wheel drive roads cause significant wear and tear on vehicles, and results in relatively high maintenance costs for new tires, brakes, shocks, and other repairs. The Partnership maintains three vehicles (Frontier, Tacoma & Ram) which are used for transporting field crew, volunteers and equipment to project sites, training, meetings and events. It also has one off-road utility vehicle (Polaris) to transport staff and supplies where the trucks are unable to access, and one trailer to haul the off-road vehicle.

Vehicle Maintenance / Repair \$400 X 5 = \$2,000

Vehicle Insurance 4 X \$125 = \$500

LHWRP’s multi-function copier is leased from Maui Office Machines at \$600/year. Additionally quarterly billing is approx. \$150/qtr depending upon the number of copies made during the period. LHWRP is requesting \$600 to cover half of the annual lease and usage expenses. Conference/workshop/coursework fees: Registration for Hawaii Conservation Conference or other conferences/symposiums: 2 staff X \$350 = \$700

GENERAL TERMS AND CONDITIONS – DWS GRANTS

In consideration of the grant of COUNTY funds, GRANTEE covenants and agrees to the following terms and conditions in the use and administration of COUNTY funds. In the event the following conditions conflict with any term, provision, condition and/or covenant contained in the body of the Grant Agreement and any subsequent amendments, the terms, provisions, conditions and/or covenants contained in said body shall prevail.

PAYMENTS

1. GRANTEE shall submit to the COUNTY written Request for Payment. Each request shall be authenticated as to accuracy by the GRANTEE, and verified by the designated COUNTY departmental officer. Each request shall include the following:
 - a. Certification by the GRANTEE that the work for which payment is requested was performed in accordance with the terms of this Agreement;
 - b. Certified payroll records for the applicable time period or phase for which payment is being requested; and
 - c. Copies of all contracts, bills, invoices and purchase orders which support the request, which shall:
 - i. Be of certified copy of the original document.
 - ii. Be on the letterhead of the respective contractor or subcontractor requesting payment.
 - iii. Be signed by an authorized official of the GRANTEE.
 - iv. Identify the Project, the nature of the work or materials provided, and the specific phase of the Project for which the work or materials were provided.
2. The COUNTY may withhold any or all payments to the GRANTEE if the amount of payment as requested is, in the COUNTY'S determination, unreasonable or does not comply with the terms of this Agreement.
3. GRANTEE shall not alter SCOPE OF WORK which provided the justification for the grant without first obtaining the prior written consent of the COUNTY. GRANTEE shall inform COUNTY of any proposed changes to the budget allocations or project description or schedule outlined herein.

RECORDS AND REPORTING

4. GRANTEE shall keep records and prepare reports, including detailed, separate financial records relating to ALL GRANT FUNDS. All accounts shall be prepared and maintained according to generally accepted accounting principles and as otherwise provided by law. GRANTEE shall maintain such accounts and documents as will serve to permit expeditious determination to be made at any time of the status of funds within the award, including the disposition of all monies received from COUNTY and the nature and amount of all charges claimed to be against such funds.

5. Unless otherwise required in the Agreement or in related application submittals, GRANTEE shall supply COUNTY with a copy of its audited annual financial statements, prepared by its Certified Public Accountant(s). GRANTEE shall, upon request of COUNTY or State of Hawaii, provide COUNTY and State of Hawaii full access to inspect or audit GRANTEE'S records, report books, files, and other financial records and documents to allow COUNTY and State of Hawaii to determine compliance with the terms of this Agreement, measure program effectiveness, and assure proper expenditure. GRANTEE shall cooperate fully and assist the COUNTY and State of Hawaii in any such audit or inspection.
6. GRANTEE shall provide COUNTY written quarterly narrative progress reports regarding the Project and the use of grant funds within thirty (30) calendar days following the end of each report quarter. GRANTEE'S quarterly status reports shall contain the following information: a summary of program status in relation to goals, objectives, and scheduled action steps outlined in the grant proposal; numbers and descriptions of people or businesses served; financial status report of COUNTY funds used; and narrative report, including progress in meeting performance standards and economic self-sufficiency, if appropriate.
7. GRANTEE shall comply with all requests of the State of Hawaii for information and reports regarding the Project and GRANTEE'S operations.

GRANT AWARD RESTRICTIONS

8. GRANTEE shall not use grant funds to compensate its employees more than the wages then prevailing in the State of Hawaii for employees with similar skills and abilities.
9. GRANTEE shall not use grant funds for lobbying purposes or activities.
10. GRANTEE shall not use any grant funds for purposes of entertainment or perquisites. For purposes of this Agreement, "perquisites" means a privilege provided or service rendered by GRANTEE to an employee, officer, director, or member of GRANTEE to reduce that individual's personal expenses.
11. Grant funds shall not be used to recruit or convert a person to a new faith, institution, or cause.

NON-COMPLIANCE, SUSPENSION AND TERMINATION

12. GRANTEE'S failure to faithfully perform any part of this Agreement or any of the additional terms and conditions herein in a timely or proper manner shall constitute noncompliance. If the noncompliance continues for thirty (30) days after written notice thereof is delivered to GRANTEE or mailed to its last known address; or, if such noncompliance cannot be reasonably cured within thirty (30) days, but GRANTEE has failed to commence to cure such noncompliance and has failed to continue to

diligently use its best efforts to cure such noncompliance; or, if GRANTEE shall become bankrupt; or, if GRANTEE fails to perform any of the terms of this Agreement; or, if GRANTEE abandons or substantially suspends any part of this Agreement Scope of Work, the COUNTY may, at its sole discretion, take any one or more of the following actions:

- a. Withhold grant fund payments pending correction of the noncompliance by the GRANTEE;
- b. Disallow all or part of the cost/expense of the work, activity or action not in compliance;
- c. Suspend or terminate, wholly or partially, the current award of this Agreement with the GRANTEE;
- d. Withhold additional award(s) to the GRANTEE; and
- e. Terminate this Agreement without service or notice or legal process and without prejudice to any other remedy or right of action for breach of contract.

Upon termination of this Agreement, all finished or unfinished documents, data, studies, and reports purchased or prepared by the GRANTEE pursuant to this Agreement shall be transferred to the COUNTY.

13. Any costs incurred by the GRANTEE resulting from any obligations incurred by GRANTEE during suspension or after termination of this Agreement are not allowable unless the COUNTY authorizes such costs in the Notice of Suspension or Termination issued to the GRANTEE. The determination of eligible costs shall be made by the COUNTY in its sole discretion.

Further, the COUNTY may terminate this Agreement without cause by giving written notice to the GRANTEE thirty (30) calendar days before the effective date of such termination.

OTHER GRANT REQUIREMENTS

14. GRANTEE shall give the COUNTY and, if applicable, the State of Hawaii appropriate recognition in all grant-funded programs and printed materials.
15. GRANTEE shall comply with its articles of incorporation and/or bylaws and all relevant COUNTY, State and/or Federal rules and regulations concerning its policies and operations.
16. GRANTEE shall not discriminate either in the hiring of staff, use of volunteers, use of facilities, or delivery of client services on the basis of sex, sexual orientation, national origin, age, race, color, religion or disability. GRANTEE shall comply with all applicable federal and state laws prohibiting discrimination.

17. GRANTEE shall comply with all applicable federal, state and COUNTY licensing requirements and with all applicable accreditation and other standards of quality generally accepted in the field of GRANTEE'S activities.
18. If GRANTEE is a nonprofit organization, GRANTEE shall establish and be governed by bylaws or policies which shall include provisions relating to nepotism and management of potential conflict-of-interest situations, as required by Section 3.36.040(c) of the Maui County Code.

TERMINATION OF GRANT AGREEMENT (GRANT CLOSE OUT)

19. GRANTEE shall not dispose of any real or personal property acquired with grant funds received under this Agreement without first receiving prior written consent of the COUNTY. Should GRANTEE cease to use any real or personal property acquired with grant funds for purposes described in this Agreement, GRANTEE shall either:
 - a. Pay the COUNTY the current fair market value of the asset; or
 - b. Transfer the control of the asset to the COUNTY.
20. Upon expiration or termination of this Agreement, the GRANTEE shall transfer to the COUNTY:
 - a. Any COUNTY funds on hand at the time of expiration or termination;
 - b. Any account receivables attributed to the use of COUNTY funds; and
 - c. Any real and/or personal property acquired or improved in whole or in part with COUNTY funds.
21. FINAL REPORT - Within thirty (30) days after expiration of the time of performance, GRANTEE shall submit to COUNTY a final project report in a form satisfactory to COUNTY documenting GRANTEE'S efforts toward meeting the requirements of this Agreement, an inventory of all equipment costing individually \$500.00 or more acquired with funds provided under this Agreement, and a list of expenditures incurred in the performance of this Agreement.

GRANTEE'S final project report shall contain information which shall be completed using the template below (Final Report Template - Form 4.4).



County of Maui
 Department of Water Supply
Watershed Protection Grants
 Fiscal Year 2017

Reimbursement Request Form

Organization Name _____

Expense Categories	Grant Amount	Payment #1	Payment #2	Payment #3	Final Payment	Balance
Personnel (Payroll Taxes & Fringes						
Transportation						
Contractual (e.g. helicopter)						
Utilities (e.g. telephone/cell, water electricity, etc)						
Travel						
Field Crew Costs						
Supplies, Materials & Equipment						
Administrative & Overhead Costs (not to exceed 10% of total grant amount)						
Other costs						
Total						

Sample Format for Quarterly Reporting

1. Background (only needed for first report)

2. Tasks Completed during the period: (as applicable)
 - a. Animal Control
 - i. Miles of fences surveyed
 - ii. Number of animals removed (number or %)
 - b. Weed Control
 - i. Acres surveyed (number)
 - ii. Number of weeds removed (%)
 - c. Invasive Species
 - i. Acres surveyed (number)
 - d. Invasive Species Removed (%)
 - i. Monitoring results
 - ii. Number of Aalii/Koa planted
 - iii. Installed exclosures
 - iv. Number of Volunteers recruited; number of volunteer hours

3. Budget Summary – expenses should be in accordance with the approved grant agreement budget, if revision is needed, please see guidelines in Item #4.
 - a. Justification for delay in the performance of deliverables (e.g. weather, under staff, season for planting, etc.)

 - b. Expenses incurred during the performance period (please attach copy of receipts)

4. Budget Revision Guidelines
 - a. Budget deviations of **less than 20%** per budget item are allowed without a formal budget revision
 - b. Budget deviations of **more than 20%** per budget item require a written budget revision request submitted in **advance**.
 - c. Moving 10% of costs between “Payroll” and “Other Costs” budget categories is **NOT** permitted
 - d. Budget revision request (s) can be submitted anytime during the project period prior to the end of the 3rd quarter.
 - e. The **Request for Grant Budget Revision** form must be used to make changes which do not require a contract amendment. Budget Revision Table should reflect entire budget, including items with no changes.

FINAL REPORT TEMPLATE

BACKGROUND

Complete a description of how your program achieved the goals, objectives and scheduled action steps outlined in grant proposal.

GOALS/OBJECTIVES

Provide a list of the goals and objectives from your grant application.

BENEFITS to MAUI COUNTY

Describe how your project/program has benefited the people of Maui County in relation to the goal of the DWS (providing clean water more efficiently). Keep in mind that Maui County DWS manages approximately 36,000 services on Maui and Molokai, and that the funds provided to you are from their revenues, not the general fund (tax base for all of the residents and businesses of Maui County). Include the numbers and descriptions of people and/or businesses served (please include an Excel table).

TASKS COMPLETED FOR FY 17

Provide in detail what tasks you have completed per your grant application (and any additional tasks as appropriate). Please include maps, geospatial data, photos and other documentations as appropriate.

STAFF EMPLOYED

Include the number of Full Time Employees (FTEs) as paid by these grant funds; total number of hours worked during the fiscal year, and total amount of grant funds spent in salary (including benefits and fringe).

INVENTORY OF EQUIPMENT (costing individually \$500 or more acquired with DWS grant)

Equipment Item (name and brand)	Value when purchased	How used	When acquired

AMOUNT OF FUNDING LEVERAGED

Please include an Excel table that identified the amount of funding you received from DWS, amount received from other sources. Please identify all sources by name, and state/federal/county government and or private, nonprofit entity. (PLEASE USE FORM 4.6)

FUNDING NEEDED AND WHAT YOU COULD DO IF THERE WAS MORE FUNDING

Provide an explanation of how you would spend additional grant funds if you had them. Please include whether or not new initiatives could be started, if these would include additional outreach opportunities, new equipment to be purchased and or if you had additional revenues whether it may impact amount of potential revenues to be leveraged.

CONSEQUENCES OF A DECREASE IN FUNDING

If, during the course of budget, there was to be a decrease in funding available for watershed programs- how would this impact your program/project? Please describe and if possible provide documentation as to whether you would lose staff, amount of time previously spent on specific activities would have what type of detrimental effect? How would a decrease in funding impact any leveraging activities (funds and/or resources from other sources)?



County of Maui
 Department of Water Supply
Watershed Protection Grants
 Fiscal Year 2017

Leveraged Funds – FY 2016

Grantee: _____

SOURCE OF FUNDS	Type of Entity (government/ private/ nonprofit)	Amount of Funds Leveraged	
		Cash	In-Kind

**County of Maui
Department of Water Supply
Water Resources and Planning Division**

REQUEST FOR GRANT BUDGET REVISION

Grantee _____ Contract # _____

Revision Requested for: ___ 1st Qtr ___ 2nd Qtr ___ 3rd Qtr Revision # _____

	APPROVED BUDGET	CHANGE + / (-)	REVISED BUDGET	JUSTIFICATION (ATTACH ADDITIONAL SHEET IF NEEDED)
Personnel (Payroll Taxes & Fringes)				
Transportation				
Contractual (e.g. helicopter)				
Utilities (e.g. telephone/cell, water, electricity, etc)				
Travel				
Field Crew Costs				
Supplies, Materials & Equipment				
Administrative & Overhead Costs (not to exceed 10% of total grant amount)				
Other costs				
Total Budget				

Print Name and Title

Signature

Date

DWS Use	Date Received:	<input type="checkbox"/> Approved <input type="checkbox"/> Denied	WRPD Manager:	Date Approved: