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UNIVERSITY OF HAWAI'I

Sea Grant Extension Service
School of Ocean and Earth Science and Technology

October 20, 2004

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Dear Ms. Salmonson,

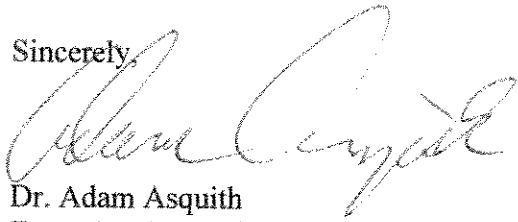
Finding of No Significant Impact (FONSI) for the Lumahai Environmental Data Collection-
Transmission Network, TMK 5-7-01, (Lumahai, Kauai), Hawaii

The University of Hawaii, Center for Conservation Research and Training has reviewed the
comments received during the 30-day public comment period which began on September 8,
2004. The agency has determined that this project will not have significant environmental effects
and has issued a FONSI. Please publish this notice in the next available OEQC Environmental
Notice. ✓

We have enclosed a completed OEQC Publication Form, and four copies of the final EA.

If you have any additional questions or require further assistance please contact me at 635-8290.

Sincerely,



Dr. Adam Asquith
Extension Specialist
Sea Grant College Program

UH Agricultural Research Station
7370-A Kuamoo Rd.
Kapaa, HI 96746

2004-11-08 FONSI

LUMAHAI ENVIRONMENTAL DATA COLLECTION TRANSMISSION NETWORK

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I. SUMMARY

Final CHAPTER 343, HAWAII REVISED STATUTES (HRS)
~~DRAFT~~ ENVIRONMENTAL ASSESSMENT

Project Name: Lumahai Environmental Data Collection-Transmission Network

Proposing Agency: University of Hawaii,
Center for Conservation Research and Training

Approving Agency: State Department of Land and Natural Resources

Project Location: Lumahai Valley, Namolokama, Laau
TMK Kauai: 5-7-01

Property Owner: Kamehameha Schools

LU Classification: Conservation, Subzone P1 (Restricted)

Anticipated Determination of Environmental Assessment:

A Finding of No Significant Impact (FONSI) is expected for the proposed project

Agencies Consulted During EA Preparation:

Federal: U.S. Department of Interior
U.S. Fish & Wildlife Service

State: Department of Health
Department of Land and Natural Resources
Division of Forestry and Wildlife
Historic Preservation Division
University of Hawaii
Environmental Center

City and County: Planning Department
Historic Preservation Review Board

Private: Waipa Foundation
Hanalei Heritage River Program
Hanalei Community Association
Kauai Heritage Center

SUMMARY OF PROPOSED ACTIONS

The University of Hawaii, in a cooperative effort with the landowner (Kamehameha Schools), The Waipa Foundation, and The Nature Conservancy, proposes to install a network of data collection / transmission stations in the Halelea District on the North Shore of Kauai. The objective of this project is to gather environmental data to help better understand, appreciate and manage the natural and cultural resources in the Lumahai watershed.

The project involves the establishment of weather stations at four (4) different sites throughout the Lumahai watershed. These stations will collect and transmit data wirelessly to a base station at Limahuli that will then relay real-time data to managers and users of Lumahai. These stations will also serve as VHF radio repeaters to allow managers and users of the valley to communicate within the valley and to communicate out to emergency stations at the coast.

The anticipated start date for this project is the last quarter of the 2004 calendar year. Each station takes 0.5 days to install. Given good weather conditions, all stations will be installed within a week.

Project funding originates largely from a National Science Foundation grant to the University of Hawaii. However, smaller funding and anecdotal support comes from the larger Lumahai Partnership, including Kamehameha Schools, The Waipa Foundation, and The Nature Conservancy Hawaii.

Project Purpose and Need:

This project is directed at the understanding and protection of native ecosystems and hydrologic resources, and improving the breadth, depth and safety of the area management and utilization.

Environmental Data:

Lumahai is the only large, undiverted stream on Kauai, with base flows of between 50 cfs and 100 cfs. It is still known locally for its healthy runs of 'o'opu nakea (*Awaous guamensis*).

The valley terminus supports one of the most intact, diverse lowland rain forest systems in the State. Lumahai is sandwiched between Namolokama on the east and Laau on the west. While both plateaus are the same elevation and only 2.5 km apart they have very different plant communities. Namolokama is a windswept shrubland surrounding bogs, while Laau is a canopied *Metrosideros-Cheirodendron* forest. Lumahai Stream appears to receive most of its flow from these plateau areas and side-drainages rather than the valley terminus. Understanding how environmental conditions vary throughout the

watershed is important in managing for hydrology and stream life. Presently there are no weather data available for anywhere in Lumahai or throughout most of the adjacent watersheds. These stations will collect data on rainfall, temperature, humidity, solar radiation, wind speed and direction, and transmit the data to a base station which can then be accessed by Lumahai users.

In addition to recording environmental conditions in the watershed the stations will serve two additional functions by also transmitting data via a VHF signal.

Safety:

Virtually all of Lumahai is so remote that it does not receive cellular telephone coverage nor is it likely to in the future. As managers, volunteers, hunters and researchers begin to access the valley for management and education purposes they have no communications capacity. The VHF repeaters on the stations will allow complete communication among parties working in the valley and outside the valley using hand-held radios.

Data transmission:

In addition to weather information, the Lumahai Partnership anticipates that other data will be gathered from the upper valley for management, research, and educational purposes. Data on activities such as stream flow, animal movements or plant phenology are of interest to the partnership. The utility of these data can be maximized through real-time transmission via the VHF repeater network.

II. PROJECT DESCRIPTION

Location:

The project will be located in the ahupua'a of Lumahai in the Halelea District on the north Shore of Kauai. The project hopes to acquire data and provide communications throughout the entire ahupua'a, from the ocean, to Mahina Kehau pali mauka, to the summit of Namolokama and to the summit of Laau Ridge.

The project involves the installment of weather stations and VHF radio frequency repeaters at four (4) locations. 1) Namolokama, 2) Middle Lumahai, 3) Upper Lumahai, and 4) Laau Ridge (Figure 1). The weather stations are steel tripods ca 2.5 m tall. Each station supports equipment that will measure rainfall, temperature, humidity, solar radiation, wind speed and direction (Figure 2). These data will be transmitted to a base station which can then be accessed by Lumahai users. The VHF repeater will allow users of the valley to communicate effectively using hand-held radios. Access to each site is by helicopter. The weather stations require open area; sites were selected so that no vegetation will need to be removed. Each leg of the tripod will be secured to a length of short rebar pounded into the ground. Other than the incidental trampling of vegetation during installation and maintenance, no other disturbances will occur at each site.

Schedule:

Each station will require approximately 0.5 days to install and test. Theoretically, all four stations could be installed in one week. However, access to some of the locations is weather dependent and we anticipate that installment of all four stations may span a period of as long as six (6) weeks.

While only one trip to each site will be required to install each station, if problems arise in the system, some sites may be revisited for repairs. The stations are expected to last at least 5-10 years, although we anticipate the need to replace some components.

III. SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT

General: Unlike most other drainage systems on the north shore of Kauai which are narrow with steeply incised walls terminating in waterfalls, Lumahai is relatively broad and ends in a bowl-shaped amphitheater, without perched water sources creating terminal falls. Lumahai Stream drains a 15,000 acre watershed and maintains a base flow of ca 50 CFS. On the east it is bordered sequentially by Waipa, Waioli and Hanalei Valleys and on the west by Wainiha.

Lumahai is a gaining stream for its entire length, sourced primarily from numerous small side tributaries fed by perched dike water on the flanks of Namolokama. It has a very short estuarine segment that is vertically stratified, with freshwater running on top of saline waters directly into the ocean.

The historic human use of the middle and lower valley has not been well documented but was extensively altered by Hawaiians for taro cultivation, followed by 100 years of rice cultivation and then 50 years of cattle ranching. Presently there are no permanent residents anywhere in the entire watershed.

Vegetation changes significantly from the beach to the valley terminus. Approximately 5 acres are still used for taro cultivation and another 10 acres used for cattle and horse pasturage. The riparian areas in the lower reaches are large, dense, monotypic thickets of hau (*Hibiscus tiliaceous*). The mid-reaches of the valley are dominated by *Dicranopteris* fern slopes. Riparian areas along the main stream and tributaries are dominated by non-native trees such as Java plum (*Syzygium cumini*), Mango (*Mangifera indica*), strawberry guava (*Psidium cattleianum*), *Cecropia obtusifolia* and kukui (*Aleurites moluccana*). Understory vegetation is composed largely of invasive shrubs such as Coster's Curse (*Clidemia hirta*) and Australian tree fern (*Cyathea cooperi*).

The bowl-shaped valley terminus above 1600 feet elevation represents some of the best remaining lowland wet forest on the island of Kauai. The tall statured forest has a diverse canopy of 'ohia lehua (*Metrosideros polymorpha*), 'ohi'a ha (*Syzygium sandwicensis*), hame (*Antidesma platyphyllum*), and 'ohe mauka (*Tetraplasandra oahuensis*). Laau

Ridge is a high-stature 'ohi'a and 'olapa (*Cheirodendron trigynum*) forest typical of much of the Alakai swamp. Namolokama also has high elevation wet forest communities but also contains low-stature, wind swept 'ohi'a forest and open bogs.

Flora: Plant surveys have been conducted for Namolokama, Laau and upper Lumahai Valley, but not for the middle and lower valley. Over a dozen rare plants are known from the larger project area (Appendix A) and certainly more will be discovered. Vegetation surveys were conducted within a 10m radius of the footprint of each station (Appendix B) and no rare plants were observed.

Fauna: Preliminary bird surveys conducted on Laau Ridge recorded the presence of 'apapane (*Himatione sanguinea*), 'i'iwi (*Vestiaria coccinea*), 'anianiau (*Hemignathus parvus*), 'akeke'e (*Loxops caeruleirostris*), Kaua'i 'amakihi (*Hemignathus kauaiensis*), and Kaua'i 'elepaio (*Chasiempus sandwichensis*), all of which are endemic to Kauai or the Hawaiian Islands. Indigenous birds observed include the Hawaiian short-eared owl (*Asio flammeus sandwichensis*), and the white-tailed tropic bird (*Phaethon lepturus*). Comprehensive bird surveys have not been conducted for upper Lumahai or Namolokama but casual observations indicate the presence of 'apapane, 'amakihi, 'elepaio and koloa-maoli (*Anas wyvilliana*).

Most significantly, there are colonies of listed Newell's shearwater (*Puffinus newelli*) and Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*) in the upper valley. Colonies of Newell's shearwater also probably occur throughout the middle and lower valleys although these have not yet been surveyed. No evidence of burrows or past nesting was observed within a 10m radius of each of the station sites.

Cultural Resources: The history of the project area and its use by native Hawaiians is not well documented. All of Lumahai is considered a very significant place to kama'aina of the north shore and there are many historic features recorded in legend and recent accounts. The upper valley, Namolokama, and Laau in particular are considered wao akua. These areas are to be accessed with the utmost care and respect, following appropriate cultural protocols. Therefore a Hawaiian cultural practitioner will be present on every installation and maintenance trip for the stations. In addition, each of the station sites has been surveyed by an archaeologist and lacks any evidence of cultural use or historic sites (Appendix C).

Sensitive Habitat: The entire project area is considered sensitive, both biologically and culturally. The objective of this project is to provide information and tools to assist in the appropriate and sensitive management of the area. We have consulted with local experts who have advised that the project intent and activities are acceptable for the area with the assistance of cultural practitioners.

Other Uses: The project area, located on private property, is not open for public use at this time. A few local hunters occasionally access the lower portion of Lumahai Valley, but do not reach any of the locations in the proposed project. However, hunters, students,

and community volunteers will begin to access the more remote areas covered by this project through the larger Lumahai Partnership objectives. These groups will directly benefit from the increased safety and communications capacity that this project will provide.

IV. SUMMARY OF MAJOR IMPACTS

Major Positive Impacts

- Increased understanding of watershed function for management
- Real-time weather data available for users of Lumahai
- Information for watershed education program
- Communication capacity for partnership in Lumahai

Major Negative Impacts

No major impacts are expected to result from this project.

However, we have identified three potential negative impacts:

- Introduction of non-native weeds to station sites
- Two of the stations may be visible from low altitude helicopter flights such as those shuttling workers or education groups
- The process may not comply with Hawaiian cultural protocols

V. PROPOSED MITIGATION MEASURES

Weed Introductions

At all sites, strict protocols will be used to: 1) Clean all gear (station equipment and personnel gear) to prevent the introduction of new weed seeds, 2) During maintenance of stations monitor for and remove any weeds that become established or expand as a result of the disturbance, 3) Remove all rubbish and waste

Visibility

All station infrastructure and equipment will be painted green to blend into the background vegetation. Our experience from installing these stations at other locations is that they are barely visible and certainly not conspicuous from more than a few hundred meters distance.

Cultural Protocols

A Hawaiian cultural practitioner will be present on every installation and maintenance trip for the stations. In addition, all other personnel on each trip will receive training and pre-trip briefing on compliance with cultural protocols for the project and activity.

VI. ALTERNATIVES CONSIDERED

Alternative: No Action

This action would limit the partnership's ability to understand and care for the Lumahai watershed and its resources. In the short term, lack of detailed, real-time weather data and communications would hamper scheduling and transportation for management work groups and education groups. In the long term, lack of understanding of watershed functions may hinder management decisions and reduce capacity to demonstrate improvements. This alternative accepts the present status of understanding, management and education for Lumahai. This alternative is not consistent with the partnership's common goals.

VII. ANTICIPATED DETERMINATION

Based on the assessment above we conclude that the Lumahai Environmental Data Collection-Transmission Network will not have any significant adverse impacts on the environment. Therefore, we feel that preparation of an environmental impact statement is not required.

VIII. FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The environmental impacts of the Lumahai Environmental Data Collection-Transmission Network have been evaluated in relation to the thirteen significance criteria listed in the Guidebook for the State Environmental Review Process. The criteria and the effects this project will have are listed below.

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The purpose of this project to better understand the watershed functions of Lumahai and provide communications for resource management and education. Rather than destroy natural resources, this project will lead to greater protection and management. This project, from installation of the stations to discussion and utilization of environmental information, will be assisted and guided by local Hawaiian community members and Hawaiian cultural practitioners to assure that Hawaiian cultural resources are recognized, respected, protected and accessed appropriately.

2. Curtails the range of beneficial uses of the environment.

This project will increase the range of uses of Lumahai to include native forest management, hunting, education, and research.

3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revision thereof and amendments thereto, court decisions, or executive orders.

The proposed project is in compliance with the state's long term

environmental policies and goals that promote understanding and protection of Hawaii's natural resources.

4. Substantially affects the economic or social welfare of the community or state.

The project will not impact either the economic or social welfare of the community.

5. Substantially affects public health.

It is anticipated that subsequent research and management allowed by this project will address watershed and human health issues such as leptospirosis.

6. Involves substantial secondary impacts, such as population changes or effects on public facilities.

The remoteness and steep terrain of the project area precludes any impact on population or public facilities.

7. Involves a substantial degradation of environmental quality.

The physical activities required for this project involve little or no disturbance to vegetation or substrate. The purpose of this project is to better understand and provide support for management of the Lumahai watershed, leading to improved environmental quality.

8. Is individually limited but has considerable effect upon environment or involves a commitment for larger actions.

This project does not involve a commitment to larger actions. However, it is designed to support ongoing and future management, education and research activities in Lumahai.

9. Substantially affects a rare, threatened or endangered species or its habitat.

This project will not affect any rare protected species or its habitat.

10. Detrimentally affect air or water quality or ambient noise levels.

Access to the station sites will be by helicopter. Helicopters will transport equipment and personnel from a pasture LZ in Waipa to the station sites. These flights will occur during normal work hours and will not fly over residences. Thus, noise level will be elevated during the installation flights, but it will be minor and short term.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater or coastal waters.

This project is in an upland area and will not detrimentally affect any coastal areas or bodies of water. The project will not negatively affect an environmentally sensitive area or damage a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land.

12. Substantially affect scenic vistas and view plans in county or state plans or studies.

The north shore of Kauai is known for its scenic beauty and mountain landscape and the community is extremely sensitive to this issue. The weather stations will be located more than 5 miles from the coast and none are within line of sight view from any point on the coast. Thus, the stations cannot be seen from any public or privately accessed viewing site.

13. Requires substantial energy consumption.

The major energy consumption for this project will be the fuel required for helicopter flights to the station sites. All sensors and equipment on the stations are run off photovoltaic panels.

IX. PERMITS REQUIRED

This project requires a Departmental permit from the Board of Land and Natural Resources (Section 13-5-33 Hawaii Administrative Rules) because the project falls in a Protective (P) subzone. This permit will be requested in September 2004.

IX. EA PREPARATION

This Environmental Assessment was prepared in consultation with Kamehameha Schools, The Waipa Foundation, and The Nature Conservancy Hawaii. The primary EA preparer is:

Adam Asquith
University of Hawaii
Sea Grant College Program
7370 Kuamoo Rd.
Kapaa, HI 96746
808-635-8290

Appendix A:

Rare species of Hawaiian plants that have been observed in Lumahai, Namolokama, or Laau.

Plants	Status
<i>Alsinodendron lychmoides</i>	<i>Endangered</i>
<i>Bonamia menziesii</i>	<i>Endangered</i>
<i>Chamaesyce remyi</i> var. <i>remyi</i>	<i>Candidate</i>
<i>Chamaesyce remyi</i> var. <i>kauaiensis</i>	<i>Candidate</i>
<i>Cyrtandra cyaneoides</i>	<i>Endangered</i>
<i>Cyrtandra oenobarba</i>	<i>Species of Concern</i>
<i>Eurya sandwicensis</i>	
<i>Labordia lydgatei</i>	<i>Endangered</i>
<i>Melicope cruciata</i>	
<i>Melicope paniculata</i>	<i>Candidate</i>
<i>Myrsine petiolata</i>	
<i>Phyllostegia renovans</i>	<i>New species</i>
<i>Platydesma rostrata</i>	<i>Candidate</i>
<i>Pritchardia perlmanii</i>	<i>New Species, one of two known populations</i>
<i>Wikstroemia skottsbergii</i>	<i>Previously believed extinct</i>

Upper Lumaha'i and surrounding slopes have been designated as Critical Habitat for following species:

Plant	Status
<i>Adenophorus periens</i>	<i>Endangered</i>
<i>Alsinodendron lychmoides</i>	<i>Endangered</i>
<i>Bonamia menziesii</i>	<i>Endangered</i>
<i>Cyanea recta</i>	<i>Threatened</i>
<i>Cyanea remyi</i>	<i>Endangered</i>
<i>Cyrtandra cyanoides</i>	<i>Endangered</i>
<i>Cyrtandra limahuliensis</i>	<i>Threatened</i>
<i>Hesperomania lydgatei</i>	<i>Endangered</i>
<i>Isodendrion longifolium</i>	<i>Endangered</i>
<i>Labordia lydgatei</i>	<i>Endangered</i>
<i>Myrsine linearifolia</i>	<i>Endangered</i>
<i>Scheidea membranacea</i>	<i>Endangered</i>

Appendix B. Site descriptions and vascular plants located at each of the proposed weather stations sites. These lists were compiled by surveying an area within a 10 m radius of the footprint of the weather station.

Site 1. Namolokama, Figure 2. (N 0448397 E 2447682)

Description: This is the point of a narrow ridge descending southwest off Namolokama. It is a well used animal trail with much exposed rock and soil.

Dubautia paleata
Vaccinium calycinum
Vaccinium dentatum
Metrosideros polymorpha
Nertera granadensis
Juncus planifolius
Sacciolepis indica
Deschampia nubigena
Dichanthelium sp.
Odontosoria chinensis
Sadleria cyatheoides
Lycopodium venustulum

Site 2. Middle Lumahai, Figure 3. (N 0446325 E 2449480)

Description: This site is in the middle of a broad, flat, gently sloping ridge descending west off Namolokama and sitting just above Lumahai Stream. The area appears to have been severely disturbed by recent hurricanes, with very few standing trees and almost 100% ground cover of the weedy bushy beard grass, *Schizacrium condensatum*.

Clidemia hirta
Lantana camara
Spathoglottis plicata
Bobea brevipes
Alyxia oliviformis
Antidesma platyphyllum
Metrosideros polymorpha
Schizachyrium condensatum
Odontosoria chinensis
Dicranopteris linearis
Nephrolepis exalta

Site 3. Upper Lumahai, Figure 5. (N 0444805 E 2445406)

Description: This site is in the middle of a broad, flat, gently sloping ridge descending north off the pali of Mahinakehau. The area is poorly drained and supports a sparse, open low-stature forest. The area is relatively undisturbed with predominately native vegetation.

Alyxia oliviformis
Antidesma platyphyllum
Metrosideros polymorpha
Chamaesyce remyi var. *remyi*
Broussaisia arguta
Hedyotis terminalis
Psychotria mariniana
Melicope clusiifolia
Wikstroemia oahuensis
Carex wahuensis
Cladium jamaicense
Machaerina mariscoides
Schizachyrium condensatum
Odontosoria chinensis
Dicranopteris linearis
Nephrolepis exalta

Site 4. Laau Ridge, Figure 6. (N 0444551 E 2447985)

Description: This area is a small, wet, flat at the head of a steep gully draining the east face of Laau. The area is heavily worked by pigs and the ground cover is mostly weedy *Juncus*, *Sacciolepis*, and *Schizacrium*.

Metrosideros polymorpha
Broussaisia arguta
Juncus planifolius
Melicope clusiifolia
Machaerina mariscoides
Sacciolepis indica
Schizachyrium condensatum
Dicranopteris linearis
Odontosoria chinensis
Sadleria cyatheoides
Lycopodium venustulum
Carex alligata
Cheirodendron platyphyllum
Cheirodendron forbesii

Appendix C.

T. S. Dye & Colleagues, Archaeologists, Inc.

735 Bishop St., Suite 315, Honolulu, Hawaii 96813

Reference: 043-1

August 11, 2004

P. Holly McEldowney
State Historic Preservation Division
601 Kamokila Boulevard, #555
Kapolei, HI 96707

Dear Dr. McEldowney:

Subject: Draft Archaeological Assessment of Four Weather Station Sites at Lumaha'i, Kaua'i

At the request of The Nature Conservancy, *T. S. Dye & Colleagues, Archaeologists, Inc.* has conducted an archaeological survey of four proposed weather station sites at Lumaha'i, Kaua'i. The four weather station sites, shown on the accompanying map, are in remote locations that were accessed by helicopter under the direction of Adam Asquith. Proposed weather station sites 1, 2, and 3 were inspected by Tom Dye between April 6-11, 2004. Proposed weather station site 4 was inspected by Jeff Putzi on July 19, 2004. At each station, the area of potential effect was defined broadly to include the helicopter touchdown location, a staging area for the construction materials, transport routes, and the actual site of the weather station. Excluding the transport routes, whose lengths vary, an area of approximately 500 m² at each weather station site was inspected for signs of surface architectural remains or other indication of past human activity by a single archaeologist who walked over the area of potential effect for approximately 30 minutes. This level of effort was sufficient to find any historic properties at the surface of these locations.

A review of the State Historic Preservation Division geographic information system (<http://mano.icsd.hawaii.gov/~ckomoek>) shows that the only historic site known for Lumaha'i Valley is site 147, located near the coast. There are no known sites in the valley interior or along the ridges separating Lumaha'i from neighboring valleys.

Proposed weather station site 1 is located on the western edge of Nāmōlokama Mountain overlooking Lumaha'i Valley at an elevation of approximately 4,200 ft. above sea level. The ground here is saturated with water and the vegetation is low. Surface visibility is generally good. No historic property or other evidence of human activity was found.

Proposed weather station site 2 is located on a broad ridge overlooking the Lumaha'i River at approximately 1,000 ft. above sea level. The sloping land of the ridge sup-

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To P. Holly McEldowney

August 11, 2004

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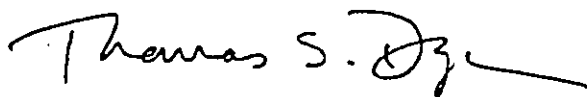
ports low vegetation and the standing deadwood of a once open forest. Surface visibility is relatively poor here, due to the thick vegetation. The surface is rocky with many large boulders. No historic property or other evidence of human activity was found.

Proposed weather station site 3 is located on the slopes at the head of the valley at approximately 2,040 ft. above sea level. The forest is open here and most of the vegetation is low. Ground visibility is generally good. No historic property or other evidence of human activity was found.

Proposed weather station site 4 is located on Lā'au Ridge overlooking Lumaha'i Valley at an elevation of approximately 4,200 ft. above sea level. The surrounding forest is low and the site is situated in a clearing sparsely covered with low grasses. Ground visibility was good within both the clearing and the forest leading from the helicopter landing site to the proposed weather station site. No historic property or other evidence of human activity was found.

The weather station sites are located in remote areas that would have been utilized little, if at all, on a temporary basis during the traditional Hawaiian period. No evidence of human activity was found at any of the weather station sites. Therefore we believe that no historic properties will be affected by construction of the four proposed weather station sites.

Sincerely,

A handwritten signature in black ink that reads "Thomas S. Dye" with a stylized flourish at the end.

Thomas S. Dye
President

Appendix D. Maintenance Plan

Stations at all sites will be inspected for maintenance needs annually, or more frequently if transmission is impaired, or received data are suspect. A Hawaiian cultural practitioner will be present on every maintenance trip for the stations. In addition, all other personnel on each trip will receive training and pre-trip briefing on compliance with cultural protocols for the project and activity.

During every visit, strict protocols will be used to: 1) Clean all gear (station equipment and personnel gear) to prevent the introduction of new weed seeds, 2) Monitor for and remove any weeds that become established or expand as a result of the disturbance, 3) Remove all rubbish and waste.

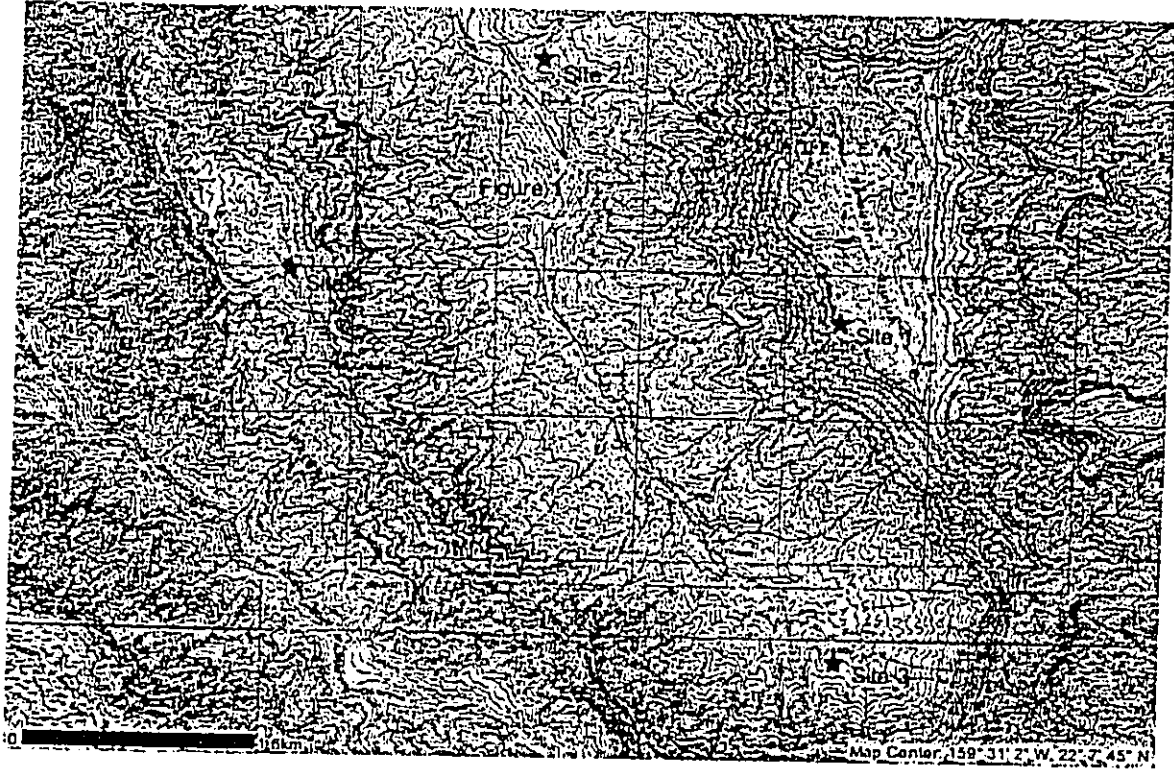


Figure 1. Proposed locations of weather stations and repeaters in Lumahai watershed.

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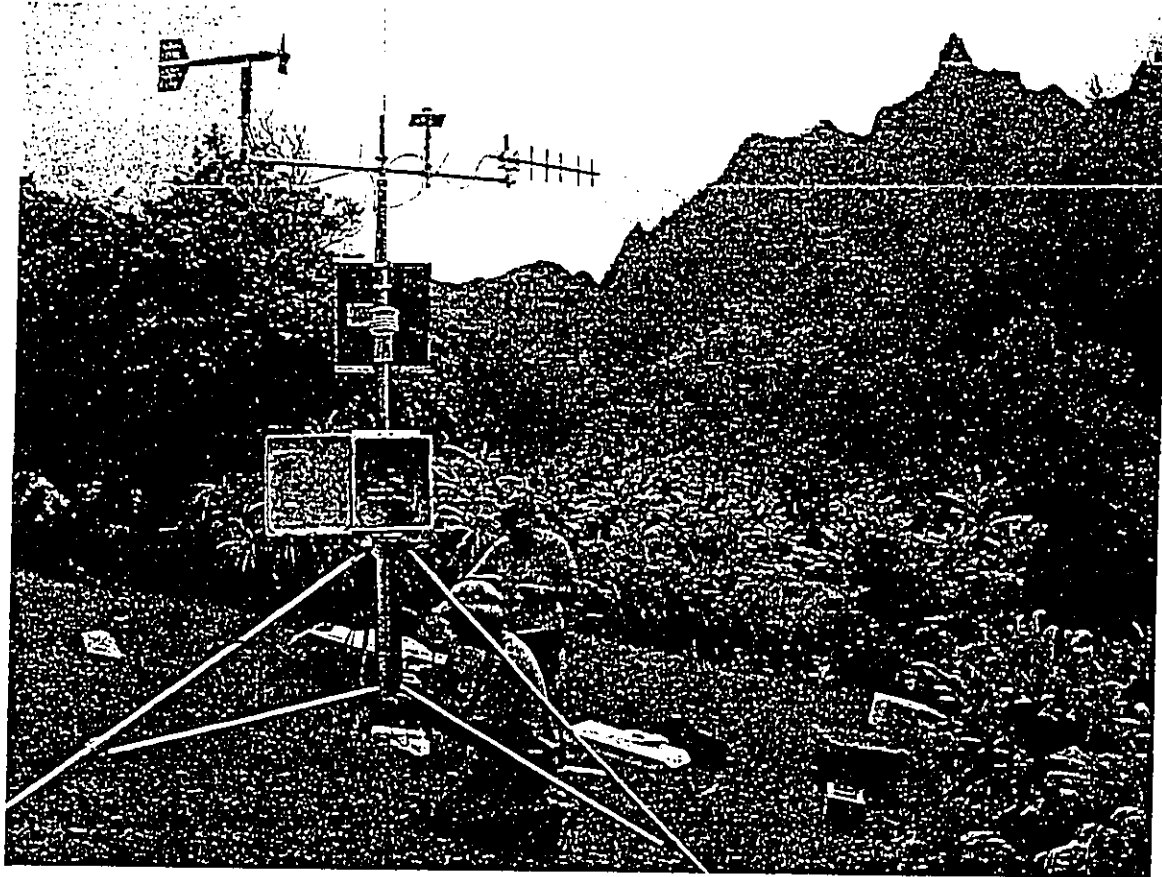


Figure 2. Example of weather station proposed for installation in Lumahai, Kauai.

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Figure 3. Site 1. Namolokama.



Figure 4. Site 2. Middle Lumahai.

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Figure 5. Site 3. Upper Lumahai



Figure 6. Site 4. Laau Ridge