CONSERVATION DISTRICT USE APPLICATION (CDUA)

All permit applications shall be prepared pursuant to HAR 13-5-31

File No.:	
Acceptance Date:	180-Day Expiration Date:
Assigned Planner:	

for DLNR Use

PROJECT NAME: Helios Hanalei - Single Family Residence

Conservation District Subzone: Resource

Identified Land Use: R-B
(Identified Land Uses are found in Hawai'i Administrative Rules (HAR) §13-5-22 through §13-5-25)

Project Address: Kuhio Highway
Hanalei, Kauai

Tax Map Key(s): (4) 5-4-004:032

Ahupua'a: Hanalei

District: Halelea

County: Kauai

Island: Kauai

Proposed Commencement Date: Planning and permitting: 12/18; construction 3/19

Proposed Completion Date: 3/21

Estimated Project Cost: approx $3,000,000

TYPE OF PERMIT SOUGHT: ☒ **Board Permit** ☐ **Departmental Permit**

☐ Temporary Variance *(ref §13-5-36)*

☐ Site Plan Approval *(ref §13-5-38)*

Note: The two items on the left do not require that a full CDUA be filled out. Please complete the first four pages of this application and refer to the relevant HAR sections for the required documentation.

ATTACHMENTS *(where applicable)*

$ 2,500 Application Fee *(ref §13-5-32 through 34)*

$ TBD Public Hearing Fee *($250 plus publication costs; ref §13-5-40)*

☒ 20 copies of CDUA for Board and Departmental Permits *(5 hard + 15 hard or digital copies)*

☒ Management Plan *or* Comprehensive Management Plan *(ref §13-5-39 and Chapter 13-5 Exhibit 3)*

☒ Draft / Final Environmental Assessment *or* Draft / Final Environmental Impact Statement

☐ Special Management Area Determination *(ref Hawai'i Revised Statutes (HRS) 205A)*

☐ Shoreline Certification *(ref §13-5-31(a)(8))* if land use is subject to coastal hazards.

☐ Kuleana documentation *(ref §13-5-31(f))* if applying for a non-conforming kuleana use.
☐ Boundary Determination *(ref §13-5-17)* if land use lies within 50 feet of a subzone boundary.

REQUIRED SIGNATURES

Applicant

Name: Helios Hanalei LLC
Title; Agency:
Mailing Address: 3350 Riverwood Parkway, Suite 425
Atlanta, Georgia 30339
Contact Person & Title: Michael Gearon
Phone: (678) 427-9934
Email: mgearon@heliosholdings.net
Interest in Property: fee owner

Signature: _____ **Date:** 7/31/18

Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

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Landowner (if different than the applicant)

Name: same
Title; Agency:
Mailing Address:

Phone:
Email:

Signature: _____ **Date:** _____

For State and public lands, the State of Hawai`i or government entity with management control over the parcel shall sign as landowner.

Agent

Agency: Bays Lung Rose & Holma
Contact Person & Title: A. Bernard Bays
Mailing Address: 700 Bishop Street, Suite 900
Honolulu, Hawaii 96813
Phone: (808) 523-9000
Email: ABB@legalhawaii.com

Signature _____ **Date:** 7/31/18

For DLNR Managed Lands

State of Hawai`i
Chairperson, Board of Land and Natural Resources
State of Hawai'i

Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809-0621

Signature: _____ **Date:** _____

PROPOSED USE

Total size/area of proposed use (indicate in acres or sq. ft.): 4,996 sq ft

Please provide a detailed description of the proposed land use(s) in its entirety. Information should describe what the proposed use is; the need and purpose for the proposed use; the size of the proposed use (provide dimensions and quantities of materials); and how the work for the proposed use will be done (methodology). If there are multiple components to a project, please answer the above for each component. Also include information regarding secondary improvements including, but not limited to, grading and grubbing, placement of accessory equipment, installation of utilities, roads, driveways, fences, landscaping, etc.

Attach any and all associated plans such as a location map, site plan, floor plan, elevations, and landscaping plans drawn to scale (*ref §13-5-31).*

Helios is proposing to construct a 5-bedroom single-family dwelling on the Lot which is located in the State Conservation District (Resource Subzone). The dwelling would be located on a gently sloping bluff (the "proposed site" or "project site") in the center of the western end of the Lot. The proposed site is relatively flat (see topographic map included in the attached Environmental Assessment) and is covered with grasses and weeds with limited to no presence of native plant species. The site was cleared by a previous owner and has been unused for at least the past 50 years.

The Proposed Dwelling. The proposed single-family dwelling is a 5-bedroom, 5 1/2 bathroom modular style home which would be located at the western end of the Lot. The proposed dwelling would be a single-story structure with maximum height of 18 feet 1.5 inches above existing grade (almost 7 feet lower than the maximum of 25 feet prescribed in HAR §13-5). The structure would have a finished living space under roof of 4,342 square feet and a swimming pool and spa/hot tub area of 622 square feet with a pool equipment area of 32 square feet, resulting in a "total maximum developable area" of 4,996 square feet. All elements of the dwelling and swimming pool are set back no less than 58 feet from Kuhio Highway (on the northeast boundary) and no less than 150 feet from the Hanalei-facing Lot boundary.

The Topographic Map, the relevant Tax Map, Site Plans (including Landscape Plan) and Floor Plan for the residence are included in the attached Environmental Assessment. Elevations showing the exterior of the dwelling, together with photographs of the project site with 20 foot story poles are also included. In addition, photographs from the perspective of various locations around Hanalei, including Waikoko, the Hanalei Pier, Hanalei Park and certain roads, are included to indicate the minimal visual effect the single family dwelling will have on the Hanalei community. These photographs depict how the dwelling site would appear to the naked eye when viewed from the various points on the Hanalei Valley floor.

Dwelling Exterior Finishes. The exterior walls of the dwelling are finished with teak siding, exterior windows and doors will be tinted glass (minimally reflective), and privacy garden walls are lava rock. The roof is cedar shake. The driveway will be crushed coral at the existing grade.

The Landscape Plan. The Landscape Plan calls for removal of a limited portion of the existing invasive species within the bluff area of the project site, the preservation of existing hala trees, and the planting of large canopy trees and other plants:

(i) The project site would be planted with up to four (4) large canopy trees including milo and hala trees near the house and in the circular driveway, and native loulu palms around the circular driveway as signature plants. Napaka will be planted to enclose the pool equipment area. Existing Strawberry guava, Silver oak and Java plum, all invasive species, will be removed from the house site and immediate vicinity. Hala trees within the project site will be maintained to preserve the Hawaiian sense of place. The existing pasture area will be maintained in its current closely mowed condition.

(ii) The residence would have groupings of native loulu palms around the circular driveway.

(iii) Areas outside the project site (the vast majority of the Lot, including all areas bounding the Kuhio Highway) will remain as dense vegetation to maintain visual privacy and to prevent erosion of sloped areas.

Wastewater. Wastewater from the dwelling will be addressed using an underground, self-contained, extended aeration wastewater treatment system which processes all wastewater. This system is summarized in the attached Environmental Assessment. The wastewater system will comply with Department of Health requirements for wastewater disposal.

Site Development - Excavation. The contours of the proposed site will not be altered, other than excavation of the area immediately beneath the proposed dwelling to accommodate its foundation and excavation of the swimming pool.

EXISTING CONDITIONS

Please describe the following, and attach maps, site plans, topo maps, colored photos, and biological or archaeological surveys as appropriate:

Existing access to site:

The parcel is undeveloped, except for an entrance gate and a rock wall along a small portion of the perimeter abutting Kuhio Highway constructed in accordance with Conservation District Use Permit CDUP-KA3729 approved by the State of Hawaii Board of Land and Natural Resources on April 20, 2015, and an unpaved driveway to the proposed site of the residence.

Existing buildings/structures:

None

Existing utilities (electrical, communication, gas, drainage, water & wastewater):

Water, electric, telephone, and cable tv/internet are available at the street boundary. The County of Kauai does not provide sewer service to this area. The water meter has been installed. No other utility meters have been installed at the property.

Physiography (geology, topography, & soils):

The majority of the Lot is gently sloping terrain falling from approximately 471 feet of elevation to about 460 feet of elevation resulting in an overall maximum gradient of seven percent (7%). This gently sloping bluff area is the planned site of the residence. The remainder of the Lot is steeply sloped and heavily forested. The Lot is located on an ancient wave-cut terrace underlain by lava flows associated with Mount Namahana, an extinct, secondary volcanic vent structurally connected to Mount Wai'ale'ale, the principal volcano that created the island of Kauai. The volcanic rocks have been altered by chemical processes to form thick zones of saprolite. The soil mantle overlying the saprolite formation is composed of a silty clay or silt assigned to the Makapili series. This soil is characterized by a low shrink/swell potential but high corrosion potentials with respect to uncoated steel and concrete. The erosion hazard is considered slight to moderate on slopes of the inclination typical of the bluff portion of the Lot where the residence is to be located.

Hydrology (surface water, groundwater, coastal waters, & wetlands):

The site appears to drain uniformly with no apparent ravines, defiles, indentations or drainages. There is no observable erosion occurring. The existing contours of the site will be maintained. No rain gutters will be installed on the dwelling thus allowing the rainwater from the roof to disburse across the property to be absorbed within the landscaping without concentrating to cause erosion. Therefore, rainfall will generally be absorbed on the site and storm water flow will continue as under existing conditions. The Lot is located within Flood Zone X, an area determined to be outside the 0.2% annual chance floodplain. See attach FIRM map.

On the extremely rare occasion that the purified saltwater swimming pool or spa/hot tub requires draining for repair work, the pool would be pumped on a day without rain and water will be slowly pumped onto to a relatively flat area allowing the water to soak into the land with excess sheeting away from house. The effect might be similar to a large rain event but in no event would that purified saltwater from the pool leave the boundaries of the Lot. A pool management plan has been prepared for use in the event that the pool requires partial or complete drainage for repair work. See attached

pool management plan.

The parcel receives approximately 78 inches of annual rainfall (University of Hawaii Rainfall Atlas). There is no evidence of significant surface flows to the Lot originating from neighboring properties. There may be some drainage from Kuhio Highway on the northeast side of the Lot from seeps and springs emerging from existing points of contact between permeable and impermeable soil zones. Test borings on the Lot showed no free ground water. See attached Supplementary Slope Stability and Hydrogeology Report prepared by JPB Engineering.

Flora & fauna (indicate if rare or endangered plants and/or animals are present):
No rare or endangered plants or animals have been identified on the property.

Fauna. During stationary point-counts, nine species were observed utilizing the Lot and an additional five species were encountered while traversing the Lot between count stations: Spotted Dove (Streptopelia chinensis); Red Junglefowl (Gallus gallus); Northern Cardinal (Cardinalis cardinalis); Chestnut Munia (lonchura atricapilla); Scaley-breasted Munia (Lonchura punctulata); House Finch (Haemorhous mexicanus); Western Meadowlark (Sturnella neglecta); White-rumped Shama (Copsychus malabaricus); House Sparrow (Passer domesticus); Common Myna Bird (acridotheres tristis); Red-crested Cardinal (Paroaria coronate) Japanese White-eye (Zosteropos japonicas); and Cattle Egret (Bubulcus Ibis). The Hawaiian Goose or nene (Branta sandvicensis) is common in nearby Hanalei National Wildlife Refuge and around the Princeville golf courses. Two seabirds – the Hawaiian Petrel (Pterodroma sandwichensis) and the Hawaiian sub-species of Newell's Shearwater (Puffinus auricularis newelli) – regularly fly over the region but were not observed during the survey.

No mammals nor signs of their presence were detected on the Lot during the survey. A domestic dog (Canis l. familiaris) was heard barking, the sound originating from houses north of the Lot, across Kuhio Highway. The Hawaiian hoary bat (Lasiurus cinerius semotus) is an endangered species that is fairly common in the lowlands of Kauai. Although not detected during the course of surveying the Lot, it is likely that this endangered species uses resources in the general area. Hawaiian hoary bats are foliage-roosting, over-disbursed mammals; that is, they roost in low numbers widely separated from one another. A Natural Resources Surveys report, dated June 14, 2017, was prepared by AECOS, Inc. and a discussion is included in the attached Environmental Assessment.

The proposed project will not adversely impact fauna in the area of the project site. To the contrary, the introduction of large blooming canopy trees may provide harborage and forage for native forest bird species. Also, maintenance of the project area in short grass will provide harborage for native birds, including the Koloa, and Nene, both common in the Princeville and Hanalei area. The proposed project is also not anticipated to adversely impact threatened or endangered species. In the event that any endangered species were found on the property, such as the Nene, all current occupants of the property would comply with all legal protections of endangered species, including the federal Endangered Species Act and Hawaii Revised Statutes Chapter 195D. As an example, outdoor activities, including construction during the construction period, which could threaten or disturb a Nene found on the open grassy areas of the Lot would cease until the Nene chose to leave the area on its own. A qualified water bird biologist will conduct a survey of the property at least two weeks prior to the commencement of construction in order to eliminate threats to possible nesting birds. Removal of vegetation within the Lot may temporarily displace bats using trees for roosting. However, these bats use multiple roosts within their home

territories and disturbance from the removal of a roosting tree is likely to be minimal. An exception is the removal of trees during the bat pupping season.

The following mitigation measures are planned for the project: At least two weeks prior to the commencment of construction, a qualifed waterbird biologist will conduct a survey of the Lot to check for waterbird nesting. Exterior lighting will be shielded to reduce interactions with Hawaiian petrels and Newell's shearwaters moving between inland nesting sites and the ocean. Shielding will be accomplished by limiting exterior lighting to fixtures under the eaves or soffits which point downward. No sconces or up lighting will be used as exterior lighting. The eaves of the dwelling are 6 feet wide, significantly larger than typical home eave overhangs, which helps to shield downward pointing exterior lights and interior lights. The dwelling also utilizes tinted glass windows which helps to block interior lighting from escaping outwards. No tiki torches will be installed in the landscaping. No trees or other vegetation taller than 15 feet will be disturbed, removed, or trimmed during the Hawaiian hoary bat pupping season of June 1 through September 15. These trees and other vegetation may provide roosting sites for Hawaiian hoary bats.

Flora. A Natural Resources Surveys report, dated June 14, 2017, was prepared by AECOS, Inc. Between surveys conducted in 2008 and 2017, 12 species of ferns and 120 taxa of flowering plants were identified on the Lot, representing all plants identified in both surveys. Four of the 12 species of ferns identified are native species (indigenous or endemic). Among the flowering plants, 6 indigenous and no endemics are listed. Early Polynesian introductions total 5 flowering plants. None of these species is considered rare in the Hawaiian Islands.

The vegetation covering the eastern two-thirds of the Lot is mostly mixed, secondary forest with a generally sparse understory. Between the Kuhio highway verge of the upper arm of the loop and the steep slopes along the lower arm is a closed or nearly closed canopy forest of mostly introduced tree species: mango (Mangifera indica), avocado, (Persea americana), sirus tree (Albezia lebbeck), and gunpowder tree (Terma orientalis). Also common in this area are native or Polynesian-introduced ("canoe plants") hala (Pandanus tectorius), niu or coconut (Cocos nucifera) and hau (hibiscus tilaceus). Much of the project area on the western third of the Lot has been cleared and is close-cropped grassy field with a few scattered trees. This area was once covered in strawberry guava (Psidium cattleianum) scrubland. This scrubland extended over much of the western third of the Lot and surrounds the project area. A portion of the west-facing slope, extending below the project area to the highway, supports a mixture of trees and mostly shrubs, with wait-a-bit (Caesalpinia decapetala) prominent. Scattered ornamentals are present, planted especially along the residence entrance driveway.

No mitigation measures are proposed based on specifics of the observed flora. The Lot supports a number of old hala trees that provide an ambiance of a Hawaiian sense of place and these trees will be preserved to the extent possible. These trees are sparsely scattered around the project area and are prominent in parts of the steep-sloped eastern half of the Lot away from the project area. The Landscape plan proposes the planting of large flowering canopy trees (milo, hala) and native palms, as well as limited removal and continued control of invasive plant species covering the project site.

Natural hazards (erosion, flooding, tsunami, seismic, etc.):

The Lot is located within Flood Zone X, an area determined to be outside the 0.2% annual chance floodplain. The area is also outside the tsunami inundation zone due to its elevation and is of low seismic risk. See attached Seismic-Hazard Maps for Hawaii. Slope mitigation work covering approximately 3 acres of the Lot was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 2006-085546. This Right of Entry granted the State temporary use of a portion of the Lot for slope mitigation work along Kuhio Highway for protection of the highway from rockfalls. A Grant of Easement to the State of Hawaii granted Slope Easement 1 for the maintenance of the slope mitigation work and recorded as Document No. 2010-000301. The completed physical improvements of this mitigation work consist mainly of anchors, cables and steel mesh netting and will remain in place preventing erosion on the covered areas and eliminating rockfalls onto the highway. Helios plans no alterations to the Lot which will impact or alter the likelihood of erosion or rockfalls from the Lot. More information on the slope stabilization work can be for in the Final Environmental Assessment Kuhio Highway Slope Stabilization January 2009. A Supplementary Slope Stability and Hydrogeology Report was prepared by JPB Engineering, Inc for the property. Based on analysis of the soils at the site, the Supplementary Report concludes that the slope below the proposed development will remain stable under all foreseeable conditions. We note that during the historic floods affecting Hanalei in April, virtually no damage occurred along this highway margin, while many other areas of the north shore were severely damaged by landslides.

Historic & cultural resources:

Kuhio Highway, also known as the Kauai Belt Road, adjacent to the Lot, is on the National Register of Historic Places, as is the nearby Hanalei Bridge. Their applicable criteria include A (property associated with events that have made a significant contribution to the broad pattern of our history) and C (property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction) with significance for engineering, social history, transportation and commerce. Kuhio Highway between Princeville and Ha'ena is part of the original belt road system and retains its historic significance and character in its location, alignment, design, setting and association. The project will not affect the location, alignment, design, setting or association of the historic roadway as the improvements on the Lot will be minimally visible from the roadway and no alterations will be made to the Kuhio Highway.

An Archaeological Inventory Survey ("AIS") covering the Lot, was completed in July 2017 by Exploration Associates, Ltd and is attached as Exhibit 8. While two historic properties were located within the Lot, no cultural materials or historic properties were found during the surface and subsurface work in the project area. Trenches were excavated within the footprint of the single-family residence, the swimming pool location, the site of the wastewater treatment system and other utility locations.

The AIS noted -

The project area is defined as the single-family residence including the swimming pool and ancillary improvements. Currently the project area is fairly level and maintained in grass. Subsurface testing (6 backhoe trenches) were placed in the location of the proposed development. No cultural material or historic properties were found during the surface and subsurface work in the project area. Within the

parcel, two historic properties were identified: Old Government Road portion (50-30-03-02353) and a pre-contact historic structure comprised of a rock formation (50-30-03-02354). The location of these historic properties is well outside of the development area but on the Lot.

SIHP# 50-30-03-2353 is an old road documented as significant under criteria D (for its information content). From the historic documentation, this road appears to be built before 1833. Its use was mostly abandoned when the new Kauai Belt Road was constructed. Occasionally it was used as an emergency route. No further work is recommended for this historic property but because of its location, it is being preserved "as is".

SIHP# 50-30-03-02354 is an approximately 15 x 7-meter pre-contact historic property located in a dense area of guava forest near the northern point of the property. SIHP# 50-30-03-02354 is significant under multiple criteria D and E (E being significant to the Native Hawaiian culture). Four features have been identified within that historic property. Two mounds, one rock wall and several rough stones outline a rough boundary of the historic property. A preservation plan is recommended for this historic property, with further detailed mapping with appropriate buffers and will be maintained by the owner.

The State Historic Preservation Division has recommended a preservation plan including a buffer zone to safeguard the pre-contact historic property from future adverse activities in the surrounding area, which Helios has agreed to implement. In setting the buffer zone, the AIS and preservation plan expressly considered the planned residential dwelling.

Historic and Cultural Properties are more fully discussed in the attached Environmental Assessment for the project.

EVALUATION CRITERIA

The Department or Board will evaluate the merits of a proposed land use based upon the following eight criteria *(ref §13-5-30(c))*

1. The purpose of the Conservation District is to conserve, protect, and preserve the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. *(ref §13-5-1)* How is the proposed land use consistent with the purpose of the conservation district?

   Currently, the proposed site is dominated by invasive species which are spreading throughout the site. The proposed project's Landscape Plan would remove some invasive plants within the mostly cleared bluff area where the single-family dwelling will be located, add up to four (4) large canopy trees (milo, hala) , preserve existing hala trees and maintain the mowed grass areas. The maintenance of open and mowed grass areas will provide harborage and forage for native bird species, including the Kolea, Koloa and Nene. These native birds are currently found in the surrounding areas and are likely to utilize the Lot. The introduction of large flowering canopy trees may provide forage for native forest birds.

   The proposed project has little to no adverse impacts on natural or cultural resources in the area or on the property itself. The choice of a site set back from the sloped edge of the Lot, no less than 58 feet from the Lot boundary, the limitation of the dwelling to a single story, the choice of the dwelling's materials and colors, and the plan for the surrouding foliage eliminate or adequately mitigate the visual impact of the home. The home will not be visible from either the Hanalei Valley Overlook or the Hanalei Bay Overlook. It will be minimally visible from few locations within the Hanalei Valley and its beaches.

   The State Historic Preservation Division has recommended a preservation plan including a buffer zone to safeguard the previouslly unprotected pre-contact historic property from future adverse activities in the surrounding area, which plan Helios has agreed to implement. In setting the buffer zone, the AIS and preservation plan expressly considered the planned residential dwelling.

2. How is the proposed use consistent with the objectives of the subzone of the land on which the land use will occur? *(ref §13-5-11 through §13-5-15)*

The property is located within the Resource Subzone. The construction of one single-family dwelling for residential use, conforming with the applicable design standards referenced in HAR §13-5-41, on the Lot is a reasonable and beneficial use of the project site, consistent with the objectives of the Conservation District and the Resource subzone. After development of the proposed single family dwelling, no further dwellings are permissible in the Conservation District. Accordingly, all areas of the Lot outside the home site will remain undeveloped, consistent with the Conservation District's overall goal of conservation and preservation.

3. Describe how the proposed land use complies with the provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management" *(see 205A objectives on p. 9).*

   The property is not located on the shoreline and therefore does not adversely affect public use of beaches or other shoreline elements. The property is outside the tsunami inundation zone and in Flood Zone X, the area determined to be outside the 0.2% annual chance flood zone so it is not impacted by coastal or flooding hazards. As discussed above and in the attached Environmental Assessment, activities at the property will have no significant direct or indirect impact on the

Hanalei River, the adjacent valley wetlands or the coastal waters (including Hanalei Bay).

The adjacent Kuhio Highway, also known as the Kauai Belt Road, is on the National Register of Historic Places, as is the nearby Hanalei Bridge. The project has no significant direct or indirect impact on either. A previously unknown approximately 15 x 7-meter pre-contact historic property has been located in a dense area of guava forest near the northern point of the property. The State Historic Preservation Division has recommended a preservation plan including a buffer zone to safeguard the pre-contact historic property from future adverse activities in the surrounding area, which Helios has agreed to implement. In setting the buffer zone, the AIS and preservation plan expressly considered the planned residential dwelling.

The visual impact on the Hanalei and Princeville communities is limited. The proposed dwelling is only one story with a maximum height of 18 feet 1.5 inches (almost 7 feet lower than the maximum of 25 feet prescribed by HAR 13-5). The home will be set within the dense vegetation bordering Kuhio Highway, which will remain undisturbed. Given the vegetation along Kuhio Highway and around the residence and the roofing and exterior materials used, the proposed residence will blend into its surroundings and will be largely obscured to passing vehicle and pedestrian traffic on Kuhio Highway. The residence will not be visible from either the Hanalei Valley Overlook or the Hanalei Bay Overlook. The residence will be minimally visible from some areas of Hanalei Valley.

4. Describe how the proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.

The proposed project will not adversely impact fauna in the area of the project site. To the contrary, the introduction of large blooming canopy trees (milo, hala) may provide harborage and forage for native forest bird species. Also, maintenance of the project area in short grass will provide harborage for native birds, including the Kolea, Koloa, and Nene, both common in the Princeville and Hanalei area. The proposed project is also not anticipated to adversely impact any threatened or endangered species. In the event that any endangered species were found on the property, such as the Nene, all current occupants of the property would comply with all legal protections of endangered species, including the federal Endangered Species Act and Hawaii Revised Statutes Chapter 195D. As an example, outdoor activities, including construction during the construction period, which could threaten or disturb a Nene found on the open grassy areas of the Lot would cease in the vicinity of the bird until the Nene chose to leave the area on its own. Removal of vegetation within the property may temporarily displace Hawaiian hoary bats using trees for roosting. However, these bats use multiple roosts within their home territories and disturbance from the removal of a roosting tree is likely to be minimal. An exception is the removal of trees during the bat pupping season.

The following mitigation measures are planned for the project: At least two weeks prior to the commencment of construction, a qualifed waterbird biologist will conduct a survey of the Lot to check for waterbird nesting. Exterior lighting will be shielded to reduce interactions with Hawaiian petrels and Newell's shearwaters moving between inland nesting sites and the ocean. Shielding will be accomplished by limiting exterior lighting to fixtures under the eaves or soffits which point downward. No sconces or up lighting will be used as exterior lighting. The eaves of the dwelling are 6 feet wide, significantly larger than typical home eave overhangs, which helps to shield downward pointing exterior lights and interior lights. The dwelling also utilizes tinted glass windows which

helps to block interior lighting from escaping outwards. No tiki torches will be installed in the landscaping. No trees or other vegetation taller than 15 feet will be disturbed, removed, or trimmed during the Hawaiian hoary bat pupping season of June 1 through September 15. These trees and other vegetation may provide roosting sites for Hawaiian hoary bats.

No mitigation measures are proposed based on the lack of significant native species of observed flora at the property. The property supports a number of old hala trees that provide an ambiance of a Hawaiian sense of place and these trees will be preserved to the extent possible. These trees are sparsely scattered around the project area and are prominent in parts of the steep-sloped eastern half of the Lot away from the project area. The Landscape plan proposes the planting of up to four large flowering canopy trees (milo, hala) and native palms, as well as continued control of invasive plant species covering the project site, thus improving the flora.

5. Describe how the proposed land use, including buildings, structures and facilities, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.

The built environment immediately adjacent to the Lot is a roadway (Kuhio Highway) and the Hanalei National Wildlife Refuge, including the Hanalei Valley Overlook. Established in 1972, Hanalei National Wildlife Refuge ("Refuge") is the oldest of Kaua'i's three national wildlife refuges and is owned and maintained by the United States Fish and Wildlife Service ("USFWS"). The 917-acre Refuge is located mainly in the Hanalei River Valley and extends upslope to abut the eastern end of the Lot. The Refuge is not open for public access. Across Kuhio Highway from the Princeville Shopping Center, the Hanalei Valley Overlook provides public viewing of the Refuge and the valley. According to a draft 2002 Environmental Assessment of the proposed relocation and expansion of the overlook, approximately 350 vehicles and four to ten tour busses were expected on the site daily (an estimated 900 visitors per day). A Kauai Island Utility Substation and transmission lines are located on the Refuge property near the eastern boundary of the Lot.

Development in the near vicinity of the proposed site includes residential, agricultural and commercial development, as well as community services providers. Directly across Kuhio Highway and from the Lot are the Hanalei Garden Farms condominium and various homestead properties accessed from Kuhio Highway and Hanalei Plantation Road. These properties include homes, farm dwellings, other farm structures and agricultural activities. The Hanalei Fire and Police Station, also known as Station 1, is located approximately 0.1 mile from the Lot. The County of Kauai Fire Department, Fire/Rescue/HazMat/Medical Response Operations program, provides fire protection and suppression, rescue (ocean and land), hazmat and emergency medical services (basic life support) as well as pre-fire planning and inspection. The Princeville Shopping Center is located approximately 0.5 mile to the northeast of the Lot on Kuhio Highway. The Princeville Shopping Center includes a United States Post Office, Foodland grocery store, gasoline station and other shops and restaurants. Less than 1 mile east from the Lot is the entrance to the Princeville Resort, which includes the St. Regis Princeville Resort, various condominium and subdivision homes and the Makai Golf Course. The Princeville Airport runway is approximately 2.5 miles east of the Lot. Although at present there are no regular commercial flights using the airport, there was regular commercial service in the past, which could be reintroduced. In addition, the airport is open to use by private aircraft and is regularly used by tour helicopters.

Given the Princeville Shopping Center, Hanalei Fire and Police Station and multiple residences, this portion of Kuhio Highway is a developed residential and commercial area. The proposed home is at the far end of the Lot from the boundary of the Hanalei National Wildlife Refuge and is not visible from the Hanalei Valley Overlook or the Hanalei Bay Overlook. As a result, the proposed single-family dwelling will have no material impact on the overall visual appearance of the area in terms of its existing "natural" condition. With respect to natural foliage, the area has been largely overtaken by invasive vegetation. The existing vegetation bordering Kuhio Highway will remain, blocking the view of the residence from the roadway and providing privacy. The introduction of one single family dwelling to the community will have no significant impact on existing traffic conditions on Kuhio Highway. The incremental use associated with the proposed single-family dwelling used only for residential purposes is inconsequential.

6. Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon.

Because only one residence is planned for the property, the residence will be only minimally visible from Kuhio Highway. The residence will not be visible from the Hanalei Valley Overlook or the Hanalei Bay Overlook. The proposed dwelling is one story with a maximum height of 18 feet 1.5 inches (almost 7 feet lower than the 25 foot maximum prescribed by HAR 13-5). The home will be set within the dense vegetation bordering Kuhio Highway, which will remain undisturbed. Given the vegetation along Kuhio Highway and around the residence and the roofing and exterior materials used, the proposed residence will blend into its surroundings and will be largely obscured to passing vehicle and pedestrian traffic on Kuhio Highway.

The introduction of up to four large flowering canopy trees (milo, hala) and native palms (loulu), together with the maintenance of exisitng hala trees on the Lot, will improve upon the natural beauty of the property, as will continued maintenance to prevent the regrowth of invasive species currently growing uncontrolled on the property.

7. If applicable, describe how subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.

N/A

8. Describe how the proposed land use will not be materially detrimental to the public health, safety and welfare.

The town of Princeville includes two major hotels (the St. Regis Princeville and the Westin), over 1,500 time-share and condominium properties, and over 700 single- family residences. Princeville's population in 2010 was 2,158. Princeville includes a commercial area, the 74,000 square foot Princeville Shopping Center, which includes a 24,666 square foot Foodland supermarket, an ACE Hardware store and numerous other small businesses and restaurants.

Hanalei had approximately 300 residences in 2010. The area often referred to as Hanalei Town supports a small commercial district with shops, restaurants and other businesses. The remainder of the Hanalei Valley is very rural and scenic and includes a National Wildlife Refuge, some residences and taro farms.

The introduction of one single family dwelling to these communities will have no material impact on

existing traffic conditions on Kuhio Highway or the provision of public safety services by the Kauai Police Department and Kauai Fire Department. The volume of traffic from one single-family dwelling used only for residential purposes will be immaterial to the current Kuhio Highway traffic. Like the entrance to the nearby Hanalei Valley Overlook, no specific traffic modifications are planned for Kuhio Highway for vehicles turning into the Lot. Unlike the well-used Hanalei Valley Overlook, instances of vehicles turning into the Lot will be infrequent. Up to three vehicles can pull into the driveway and stop before the gate is opened to allow vehicles to proceed further into the property, eliminating the need for vehicles to wait in the street while the gate is opened. No significant traffic delays are anticipated due to vehicles turning into the Lot. Vehicles leaving the Lot will have little to no impact on traffic flow.

The existing driveway accesses Kuhio Highway adjacent to the current location of the gate which is closed for public safety to curtail traffic passing along Kuhio Highway when the Hanalei River floods at the nearby Hanalei Bridge (the "flood gate"), a not infrequent occurrence. Because both the driveway and the flood gate are currently in existence, the inclusion of a single-family dwelling within the Lot will not affect the traffic along Kuhio Highway in the event of the closure of the flood gate. Like the rest of the public, the Lot owner would not have access to Hanalei Town across the Hanalei Bridge in the event of the closure of the flood gate, but can proceed toward Princeville. In the event of road closure, drivers sometimes use the area fronting the driveway gate to turn around and can continue to do so after the dwelling is constructed.

CULTURAL IMPACTS

Articles IX and XII of the State Constitution, other state laws, and the courts of the State, require government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups.

Please provide the identity and scope of cultural, historical, and natural resources in which traditional and customary native Hawaiian rights are exercised in the area.

A cultural impact assessment was conducted for this parcel. No traditional cultural practices have been documented for this property. Interviews with informants stated that in modern times the area did have some occasional pig hunting, guava and sisal collecting and cannabis growing. It was a heavily overgrown area and most informants did not recall much about the area and had little access nor reason to frequent that parcel. A few informants mentioned they thought there was a Chinese cemetery and other informants stated there was an ahu or heiau on this parcel. The cultural impact assessment can be found in the attached Environmental Assessment.

The adjacent Kuhio Highway, also known as the Kauai Belt Road, is on the National Register of Historic Places, as is the nearby Hanalei Bridge. Their applicable criteria include A (property associated with events that have made a significant contribution to the broad pattern of our history) and C (property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction) with significance for engineering, social history, transportation and commerce. The Kuhio Highway between Princeville and Ha'ena is part of the original belt road system and retains its historic significance and character in its location, alignment, design, setting and association. The project will not affect the location, alignment, design, setting or association of the historic roadway as the improvements on the Lot will be minimally visible from the roadway and no alterations will be made to Kuhio Highway.

An Archaeological Inventory Survey ("AIS") covering the Lot, was completed in July 2017 by Exploration Associates, Ltd and is attached as Exhibit 8. While two historic properties were located within the Lot, no cultural materials or historic properties were found during the surface and subsurface work in the project area. Trenches were excavated within the footprint of the single-family residence, the swimming pool location, the site of the wastewater treatment system and other utility locations.

The AIS noted -

The project area is defined as the single-family residence including the swimming pool and ancillary improvements. Currently the project area is fairly level and maintained in grass. Subsurface testing (6 backhoe trenches) were placed in the location of the proposed development. No cultural material or historic properties were found during the surface and subsurface work in the project area. Within the parcel, two historic properties were identified: Old Government Road portion (50-30-03-02353) and a pre-contact historic structure comprised of a rock formation (50-30-03-02354). The location of these historic properties is well outside of the development area but on the Lot.

SIHP# 50-30-03-2353 is an old road documented as significant under criteria D (for its information content. From the historic documentation, this road appears to be built before 1833. Its use was mostly abandoned when the new Kauai Belt Road was constructed. Occasionally it was used as an emergency route. No further work is recommended for this historic property but because of its location, it is being preserved "as is".

SIHP# 50-30-03-02354 is an approximately 15 x 7-meter pre-contact historic property located in a dense area of guava forest near the northern point of the property. SIHP# 50-30-03-02354 is significant under multiple criteria D and E (E being significant to the Native Hawaiian culture). Four features have been identified within that historic property. Two mounds, one rock wall and several rough stones outline a rough boundary of the historic property. A preservation plan is recommended for this historic property, with further detailed mapping with appropriate buffers and will be maintained by the owner.

The State Historic Preservation Division has recommended a preservation plan including a buffer zone to safeguard the pre-contact historic property from future adverse activities in the surrounding area, which Helios has agreed to implement. In setting the buffer zone, the AIS and preservation plan expressly considered the planned residential dwelling

Identify the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impaired by the proposed action.

No traditional and customary Native Hawaiian rights have been identified so none will be affected or impaired.

What feasible action, if any, could be taken by the Board of Land and Natural Resources in regards to your application to reasonably protect Native Hawai'i rights?

No traditional and customary Native Hawaiian rights have been identified relating to this property.

OTHER IMPACTS

Does the proposed land use have an effect (positive/negative) on public access to and along the shoreline or along any public trail?

No. The property is not along a shoreline. No public trails cross or abut the property.

Does the proposed use have an effect (positive/negative) on beach processes?

No. The property is not along a shoreline.

Will the proposed use cause increased sedimentation?

No. No water courses cross or abut the property. The following best management practices will be employed during construction and as ongoing maintenance of the propery. Land disturbance shall be minimized. Construction activities with the potential to produce stormwater run off will not be conducted during periods of heavy rain. Dust and erosion control measures shall be employed, including grassing or other vegetative ground cover maintained on exposed areas. Temporary erosion control measures shall remain in place until final site stabilization and landscaping is complete. Areas outside the project site will remain as currently densely vegetated to maintain privacy and prevent erosion of sloped areas.

Slope mitigation work covering approximately 3 acres of the Lot was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 2006-085546. This Right of Entry granted the State temporary use of a portion of the Lot for slope mitigation work along Kuhio Highway for protection of the highway from rockfalls. A Grant of Easement to the State of Hawaii granted Slope Easement 1 for the maintenance of the slope mitigation work and recorded as Document No. 2010-000301. The completed physical improvements of this mitigation work consist mainly of anchors, cables and steel mesh netting and will remain in place preventing erosion on the covered areas and eliminating rockfalls onto the highway. Helios plans no alterations to the Lot which will impact or alter the likelihood of erosion or rockfalls from the Lot. More information on the slope stabilization work can be for in the Final Environmental Assessment Kuhio Highway Slope Stabilization January 2009. A Supplementary Slope Stability and Hydrogeology Report was prepared by JPB Engineering, Inc for the property. Based on analysis of the soils at the site, the Supplementary Report concludes that the slope below the proposed development will remain stable under all foreseeable conditions. We note that during the historic floods affecting Hanalei in April, virtually no damage occurred along this highway margin, while many other areas of the north shore were severely damaged by landslides.

The existing contours of the site will be maintained. Therefore, rainfall will generally be absorbed on the site and storm water in extreme conditions will continue to flow in the same as under the current circumstances. No rain gutters will be installed on the dwelling, except limited gutters immediately above the front entrance, thus allowing the rainwater from the roof to disburse evenly across the property to be absorbed within the soil and landscaping without concentrating to cause erosion.

Neither the purified saltwater swimming pool nor the spa/hot tub will be drained on a regular basis. Each is designed for maintenance and cleaning of the purified saltwater within the pool or spa/hot tub respectively. On the extremely rare occasion that the purified saltwater swimming pool or spa/hot tub requires draining for repair work, the pool would be pumped on a day without rain and water will be slowly pumped onto to a relatively flat area allowing the water to soak into the land with excess sheeting away from house. The effect might be similar to a large rain event but in no event would that purified saltwater from the pool leave the boundaries of the Lot. A pool

management plan has been prepared for use in the event that the pool requires partial or complete drainage for repair work. See attached pool management plan.

Will the proposed use cause any visual impact on any individual or community?

Yes. The structure will be minimally visible from limited areas within Hanalei Valley. However, the single family dwelling will be maintained in accordance with the compatibility provisions of Hawaii Administrative Rules §13-5, including landscaping to screen visibility of the structure from off site and the use and maintenance of materials for the roof and exterior walls to blend with the environment. The exterior walls of the dwelling are finished with teak siding, exterior windows and doors will be tinted glass (minimally reflective), exterior columns are concrete wrapped with teak and privacy garden walls are lava rock. The roof is cedar shake. These design elements are intended to cause the structure to blend with the surrounding environment.

Please describe any sustainable design elements that will be incorporated into the proposed land use (*e.g. the use of efficient ventilation and cooling systems; renewable energy generation; sustainable building materials; permeable paving materials; efficient energy and water systems; efficient waste management systems; etc.).*

The single family dwelling and swimming pool are the only signficant structural elements of non-permeable material utilized in the project. The dwelling will be constructed principally of concrete, wood, rock and glass. The driveway will be maintained as permeable crushed coral. The County of Kauai does not provide wastewater treatment services to this area. Domestic waste water from the proposed dwelling would be processed by an underground, self-contained, extended aeration wastewater treatment system. The system will be in compliance with State Department of Health and County requirements.

If the project involves landscaping, please describe how the landscaping is appropriate to the Conservation District (*e.g. use of indigenous and endemic species; xeriscaping in dry areas; minimizing ground disturbance; maintenance or restoration of the canopy; removal of invasive species; habitat preservation and restoration; etc.)*

The proposed project's Landscape Plan will positively impact the project site flora. No species that is listed in the state or federal governments endangered species statutes or considered a candidate species, or is rare, or is of any special concern was observed at the Lot. Therefore, no mitigation measures are proposed based on specifics of the observed flora. The Lot does support a number of old hala trees that provide an ambiance of a Hawaiian sense of place and these trees will be preserved to the extent possible. These trees are sparsely scattered around the project area and are prominent in parts of the steep-sloped eastern half of the Lot away from the project area. The plan proposes continued control of invasive plant species covering the project site and the reintroduction of native loulu palms and the planting of up to four flowering large canopy trees (milo, hala). Maintenance of open mowed grassy areas will provide potential habitat to native birds such as Nene, Kolea and Koloa and flowering canopy trees could provide forage for native forest birds. No grading or other significant ground disturbance will be done outside the footprint of the house and swimming pool.

Please describe Best Management Practices that will be used during construction and implementation of the proposed land use.

The following best management practices shall be implemented at all times to the maximum extent

practicable to prevent damage or disruption to the environment and the property of others.

To the extent practicable, site work shall be limited to between the hours of 7 a.m. and 7 p.m., Monday through Friday. If conditions require non-emergency nighttime work during the autumn seabird fall season (September 15-December 15), use of lighting shall be restricted between 9 p.m. to 4:30 a.m. If lighting of the work area is required in such situation, all lights shall be shielded and directed downwards to the maximum extent possible and shall not include floodlighting.

Land disturbance shall be minimized. Construction activities with the potential to produce stormwater run off will not be conducted during periods of heavy rain. Dust and erosion control measures shall be employed, including grassing or other vegetative ground cover maintained on exposed areas. Temporary erosion control measures shall remain in place until final site stabilization and landscaping is complete. Areas outside the project site will remain as currently densely vegetated to maintain privacy and prevent erosion of sloped areas.

All materials stored on site shall be stored in a neat and orderly manner and, to the extent applicable, in their proper containers and if possible under roof or other protective enclosure. All waste materials shall be collected and stored in a securely lidded dumpster that does not leak. All trash and construction debris shall be deposited in the dumpster, which shall be emptied as frequently as necessary at a site approved by the Department of Health of the State of Hawaii. No construction waste materials shall be buried on site.

Upon completion of construction, domestic waste water from the single family home will be processed by an underground, self-contained extended aeration wastewater treatment system. This system will be in compliance with State Department of Health and County of Kauai requirements.

All exterior lighting of the finished project will be shielded to reduce interactions with Hawaiian petrels and Newell's shearwaters moving between island nesting sites and the ocean. No tree removal will be conducted during the pupping season of Hawaiian hoary bats (June 1-September 15). Much of the project area will be maintained in short grass which can provide harborage for native birds such as Koloa (Hawaiian duck) and Nene (Hawaiian goose). Maintenance of large blooming canopy trees may provide harborage and forage for native forest bird species.

The single family dwelling will be maintained in accordance with the compatibility provisions of Hawaii Administrative Rules §13-5, including landscaping to screen visibility of the structure from off site and the use and maintenance of materials for the roof and exterior walls to blend with the environment. The driveway will be maintained in crushed coral in order to limit impermeable surfaces on the Lot. No further alterations to the general contours of the Lot are planned.

The historic property identified on the Lot will be maintained in accordance with an approved preservation plan, including maintenance of an appropriate buffer zone.

Please describe the measures that will be taken to mitigate the proposed land use's environmental and cultural impacts.

Best management practices will be employed throughout the construction process. The dwelling and surrounding landscaping will be designed to conform to the existing contours of the project site and not materially alter the existing topography. The only permanent alteration of the site's contours will be for the foundation of the dwelling itself and for the pool and spa. The Landscape Plan will not require any material modification of the existing terrain or excavation.

Because the existing contours of the site will be maintained, rainfall will generally be absorbed on the site and storm water in extreme conditions will continue to flow in existing directions discharging to Kuhio Highway, as under the current circumstances. No rain gutters will be installed

on the dwelling, except limited gutters immediately above the front entrance, thus allowing the rainwater from the roof to disburse evenly across the property to be absorbed within the soil and landscaping without concentrating to cause erosion. Slope mitigation work covering approximately 3 acres of the Lot within the drainage area was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 2006-085546 and will remain unaltered in place.

Neither the purified saltwater swimming pool nor the spa/hot tub will be drained on a regular basis. Each is designed for maintenance and cleaning of the purified saltwater within the pool or spa/hot tub respectively. On the extremely rare occasion that the purified saltwater swimming pool or spa/hot tub requires draining for repair work, the pool or the spa/hot tub would be pumped on a day without rain and water would be pumped onto to a relatively flat landscaped area to allow most of the purified saltwater to soak into land and excess water to sheet-flow away from the house to be absorbed by the soil. The effect might be similar to a large rain storm in the event of a complete draining of the pool, less for a partial draining event or for the spa/hot tub, but in no event will purified saltwater from the pool would leave the boundaries of the Lot.

The proposed project will not increase the risk of natural hazards (i.e., landslides) due to the very limited alteration of site drainage, location of the dwelling on the level portion of the Lot and the existing slope stabilization improvements which will remain in place.

The proposed project will have no significant direct or indirect impact on the Hanalei River, the adjacent valley wetlands or the coastal waters (including Hanalei Bay). Potable water will be supplied to the Lot by a County of Kauai Water Department approved water meter.

No mitigation measures are proposed based on specifics of the observed flora. The Lot supports a number of old hala trees that provide an ambiance of a Hawaiian sense of place and these trees will be preserved to the extent possible. These trees are sparsely scattered around the project area and are prominent in parts of the steep-sloped eastern half of the Lot away from the project area. The Landscape plan proposes the planting of up to four large flowering canopy trees (milo, hala) and native loulu palms, as well as continued control of invasive plant species covering the project site.

The following mitigation measures are planned for fauna which may be affected by the project: At least two weeks prior to the commencment of construction, a qualifed waterbird biologist will conduct a survey of the Lot to check for waterbird nesting. Exterior lighting will be shielded to reduce interactions with Hawaiian petrels and Newell's shearwaters moving between inland nesting sites and the ocean. Shielding will be accomplished by limiting exterior lighting to fixtures under the eaves or soffits which point downward. No sconces or up lighting will be used as exterior lighting. The eaves of the dwelling are 6 feet wide, significantly larger than typical home eave overhangs, which helps to shield downward pointing exterior lights and interior lights. The dwelling also utilizes tinted glass windows which helps to block interior lighting from escaping outwards. No tiki torches will be installed in the landscaping. No trees or other vegetation taller than 15 feet will be disturbed, removed, or trimmed during the Hawaiian hoary bat pupping season of June 1 through September 15. These trees and other vegetation may provide roosting sites for Hawaiian hoary bats.

The project's visual impacts will be mitiaged by the existing dense vegetation surrounding the project area and further supplemented by the four large canopy trees which will be planted pursuant to the Landscape Plan. At night, it is possible the proposed dwelling's lights could be minimally visible from parts of the Hanalei Valley floor (note, hundreds of lights in Hanalei are visible from the eastern valley rim). This impact would be mitigated by the surrounding vegetation, the residence's setback within the Lot, the Landscape Plan's use of foliage, and compliance with down lighting requirements for all exterior lights, including the use of 6 foot eaves on the dwelling and tinted glass windows which reduce the escape of interior lights outward.

The addition of a single-family residence in Princeville will have no material impact on population metrics of the area. The introduction of one single family dwelling to the community will have no significant impact on existing traffic conditions on Kuhio Highway. The incremental use associated with the proposed single-family dwelling is inconsequential.

There should be no significant impact on historic or cultural sites. As mentioned, the AIS identified two historic properties were located within the Lot, however no cultural materials or historic properties were found during the surface and subsurface work in the project area. Trenches were excavated within the footprint of the single-family residence, the swimming pool location, the site of the wastewater treatment system and other utility locations. The buffer zone around the pre-contact historic structure safeguards the historic preserve from uses of the Lot, including construction activities.

SINGLE FAMILY RESIDENTIAL STANDARDS

Single Family Residences must comply with the standards outlined in HAR Chapter 13-5, Exhibit 4. Please provide preliminary architectural renderings (e.g. building foot print, exterior plan view, elevation drawings; floor plan, etc.) drawn to scale.

SIZE OF LOT

	Existing	Proposed	Total
Proposed building footprint	0	4,342 sq ft	4,342 sq ft
Paved areas/ impermeable surfaces	0	654 sq ft	654 sq ft
Landscaped areas	approx 0.5 acres	approx 0.5 acres	approx 0.5 acres
Unimproved areas	approx 13.5 acres	approx 13.5 acres	approx 13.5 acres

SETBACKS Front: >58' Side: >185' Back: >150'

SHORELINE PROPERTIES

Average Lot Depth (ALD): N/A Average annual coastal erosion rate: N/A

Minimum shoreline setback based on Exhibit 4: N/A

Actual shoreline setback or proposed structure: N/A

MAXIMUM DEVELOPABLE AREA

The Maximum Developable Area includes all floor areas under roof, including first, second, and third stories, decks, pools, saunas, garage or carport, and other above ground structures.

Maximum Developable Area based on Exhibit 4: 5,000

Actual Developable Area of proposed residence: 4,996

Actual height of the proposed building envelope as defined in Exhibit 4: 18' 1.5"

COMPATIBILITY

Provide justification for any propose deviation from the established residential standards.

No deviation is proposed.

How is the design of the residence compatible with the surrounding area?

The single family dwelling will be maintained in accordance with the compatibility provisions of Hawaii Administrative Rules §13-5, including landscaping to screen visibility of the structure from off site and the use and maintenance of materials for the roof and exterior walls to blend with the environment. The exterior walls of the dwelling are finished with teak siding, exterior windows and doors will be tinted glass

(minimally reflective), exterior columns are concrete wrapped with teak and privacy garden walls are lava rock. The roof is cedar shake. These design elements are intended to cause the structure to blend with the surrounding environment. The driveway will be maintained in crushed coral at the existing grade in order to limit impermeable surfaces on the Lot. No further alterations to the general contours of the Lot are planned.

While limited removal of invasive species is permitted in the Resource Subzone without a permit, any future significant alteration to the landscaping of the property, including, but not limited to, the clearing of vegetation which screens views of the structure from outside the property, will require the owner to submit a new CDUA to the BLNR if the BLNR determines this clearing could have a significant negative secondary impact on the natural or cultural resources or the surrounding community. (HAR §13-5-24). The residence shall not be used for rental or any other commercial purposes, unless approved by BLNR. Transient vacation rentals are prohibited. (HAR §13-5-42).

If grading is proposed, include a grading plan which provides the amount of cut and fill. Has grading or contouring been kept to a minimum?

The contours of the property will not be altered, other than excavation of the area immedately beneath the proposed single family dwelling to accommodate its foundation and excavation of the swimming pool. The full extent of any grading work will be less than one acre and less than 100 cubic yards of material.

CHAPTER 205A – COASTAL ZONE MANAGEMENT

Land uses are required to comply with the provisions and guidelines contained in Chapter 205A, Hawai'i Revised Statutes (HRS), entitled "Coastal Zone Management," as described below:

- **Recreational resources:** Provide coastal recreational opportunities accessible to the public.
- **Historic resources:** Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- **Scenic and open space resources:** Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
- **Coastal ecosystems:** Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
- **Economic uses:** Provide public or private facilities and improvements important to the State's economy in suitable locations.
- **Coastal hazards:** Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
- **Managing development:** Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- **Public participation:** Stimulate public awareness, education, and participation in coastal management.
- **Beach protection:** Protect beaches for public use and recreation.
- **Marine resources:** Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

MANAGEMENT PLAN REQUIREMENTS

Certain land uses require that a Management Plan be approved by the Board of Land and Natural resources. The Management Plan can be processed concurrently with the Conservation District Use Application and must be consistent with HAR Chapter 13-5, Exhibit 3. Please attach the proposed Management Plan as a separate document.

Pursuant to the above, Management Plans must include:

- General description of the proposed use (e.g. forestry, fishpond, astronomy, aquaculture, agriculture)
- Project location (e.g. island maps, location map, site plan (drawn to scale))
- Natural resource assessment, including descriptive information about the natural resources in the project vicinity such as biological, archaeological, cultural, geological, coastal, recreational, and scenic resources, where applicable. The presence of any threatened or endangered species shall be disclosed.
- A description of best management practices used during project construction and implementation (e.g. mitigation measures).
- A description of the best management practices to be used during the lifetime of the project (e.g. mitigation measures)
- A description of the conservation methods as applications to be used in the short term and long term (e.g. mitigation measures)
- Description of existing uses and facilities, if any.
- Description of proposed facilities and uses, including phases, if applicable.
- Project schedule including description of project sequencing from project construction to project completion and on-going maintenance plans, including a description and timing of natural resource monitoring and maintenance plans.
- A description of the annual reporting requirements.
- Any other information or data, as required by the department.

CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

_____

Signature of authorized agent(s) or if no agent, signature of applicant

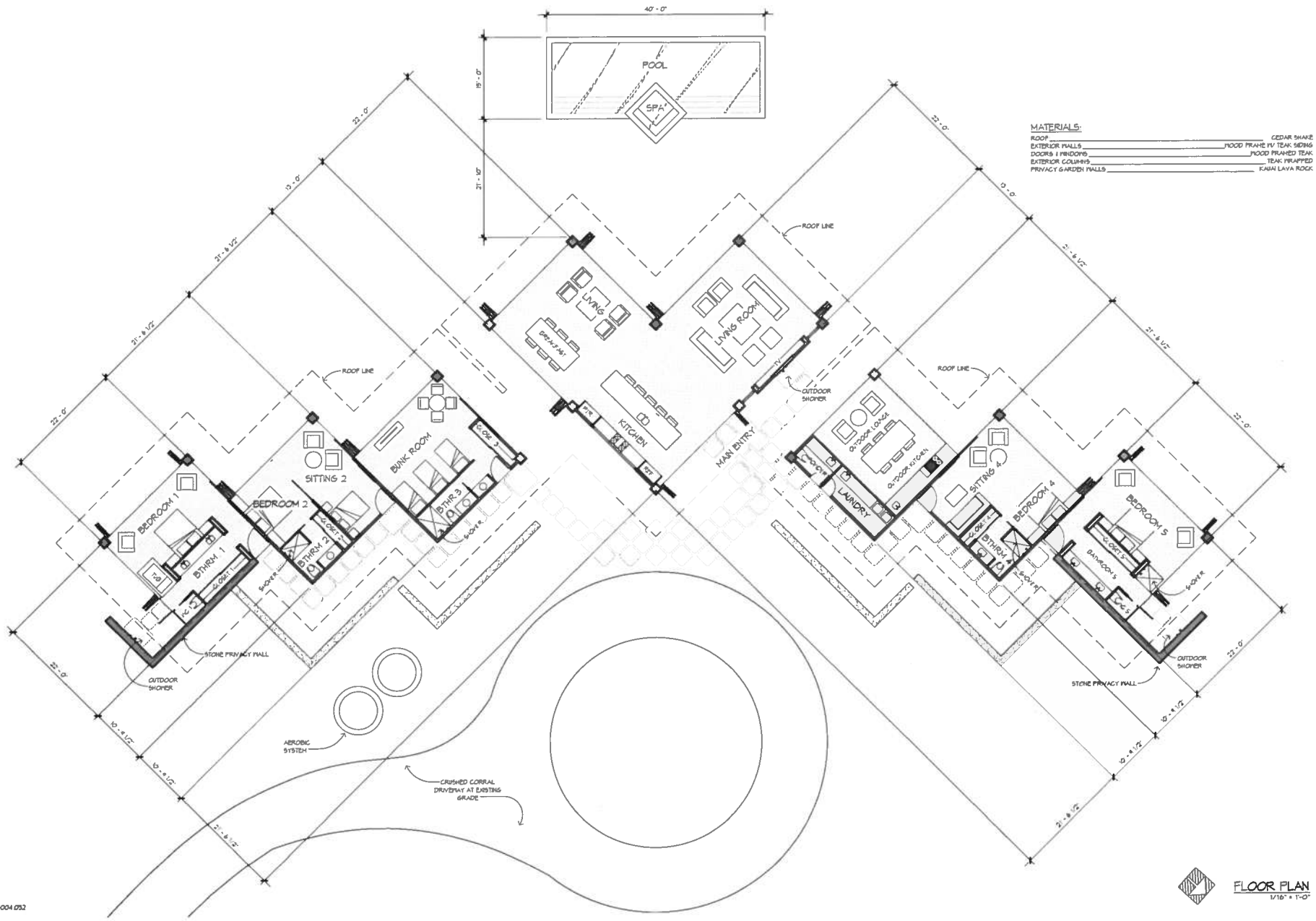
AUTHORIZATION OF AGENT

I hereby authorize_____to act as my representative and to bind me in all matters concerning this application.

_____

_____

Signature of applicant(s)



MATERIALS:

ROOF	CEDAR SHAKE
EXTERIOR WALLS	WOOD FRAME W/ TEAK SIDING
DOORS & WINDOWS	WOOD FRAMED TEAK
EXTERIOR COLUMNS	TEAK WRAPPED
PRIVACY GARDEN WALLS	KAUAI LAVA ROCK

FLOOR PLAN
1/16" = 1'-0"

TMK: (4) 5-4-004:052

PRINT DATE
1-9-2018
10:20:50 AM

REVISION #

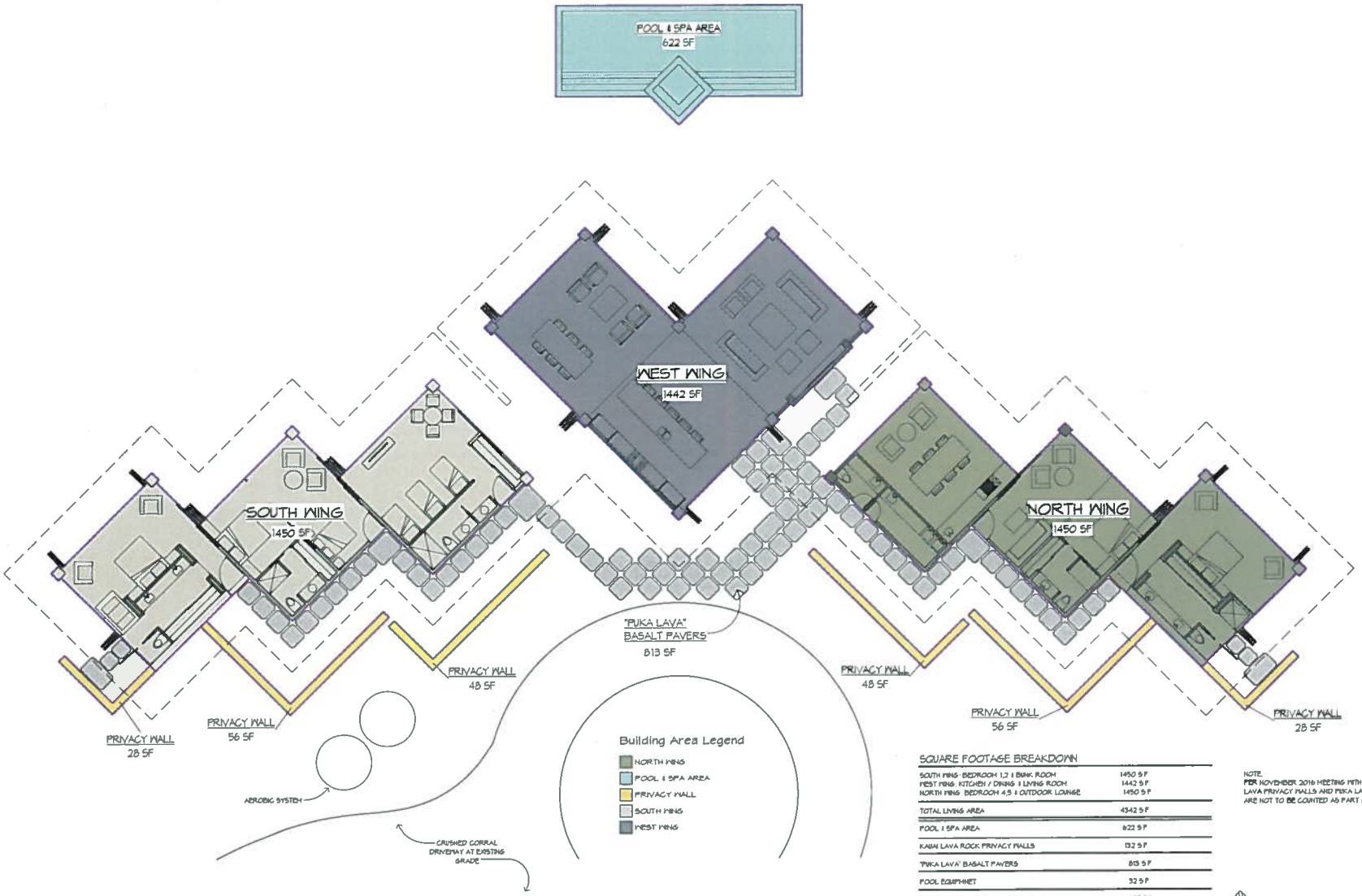
REVISION DATE

DESIGN CONCEPTS - 2484 KEKEKE ST. SUITE 102 KILAUEA, HI 96754 USA +1 808 828 0180 WWW.DCKAUAI.COM

GEARON RESIDENCE

SHEET

A-2



SQUARE FOOTAGE BREAKDOWN

SOUTH WING: BEDROOM 1,2 & BUNK ROOM	1450 SF
WEST WING: KITCHEN / DINING & LIVING ROOM	1442 SF
NORTH WING: BEDROOM 4,5 & OUTDOOR LOUNGE	1450 SF
TOTAL LIVING AREA	4342 SF
POOL & SPA AREA	622 SF
KAUAI LAVA ROCK PRIVACY WALLS	132 SF
"PUKA LAVA" BASALT PAVERS	813 SF
POOL EQUIPMENT	32 SF
AEROBIC SYSTEM (UNDERGROUND)	127 SF

NOTE:
PER NOVEMBER 2016 MEETING WITH SAM LEMMO
LAVA PRIVACY WALLS AND PUKA LAVA PAVERS
ARE NOT TO BE COUNTED AS PART OF MDA

LOT COVERAGE PLAN

1/16" = 1'-0"

TMK: (4) 5-4-004:032

PRN: DATE
1.9.2018
10:20:33 AM

REVISION 1

REVISION DATE

DESIGN CONCEPTS - 2484 KEKEKE ST., SUITE 102, KILAUEA, HI 96754, USA +1 808 828 0160 WWW.DCKAUAI.COM

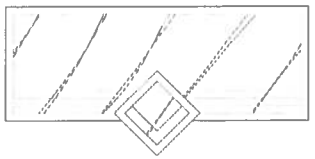
GEARON RESIDENCE

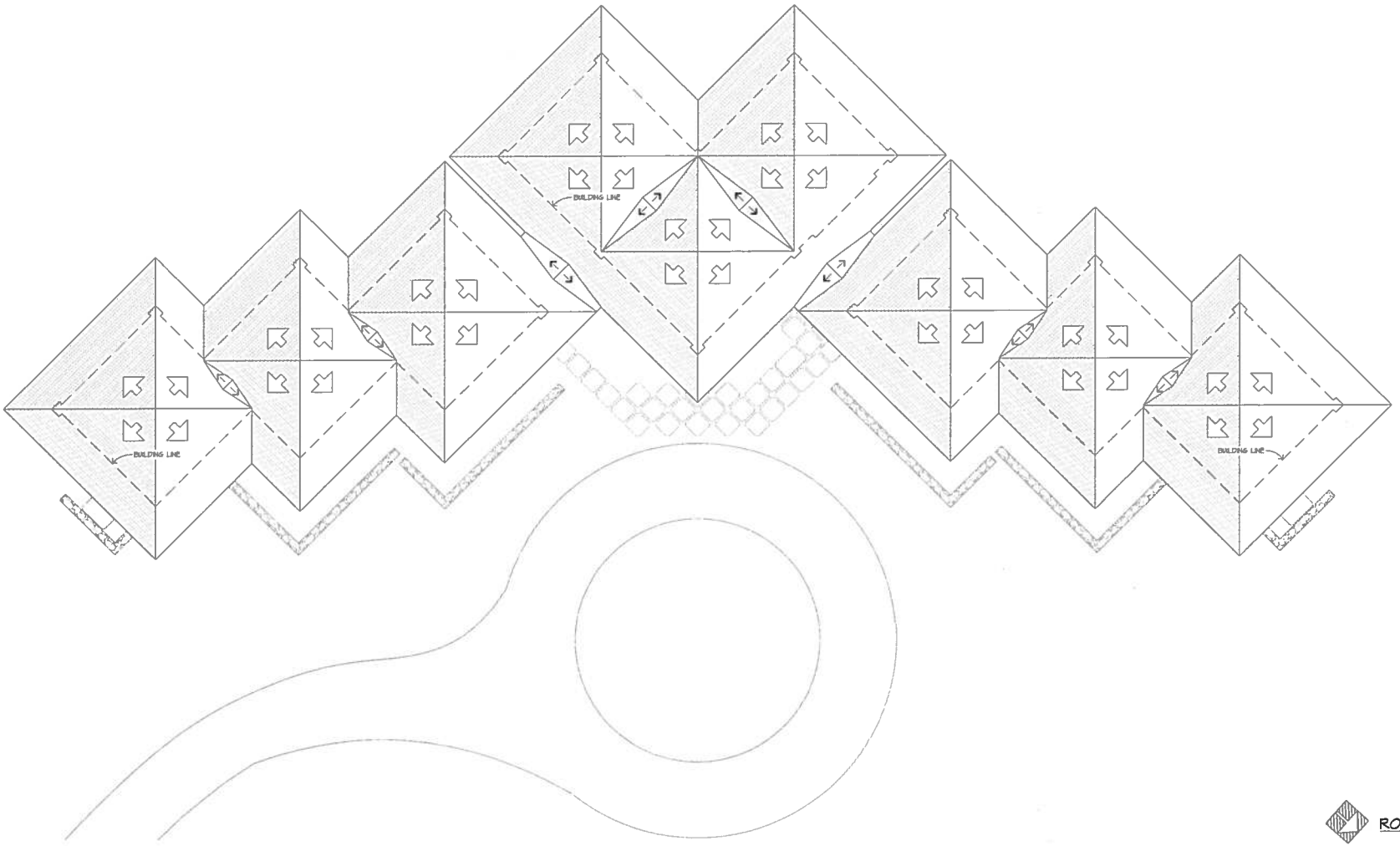
SHEET

A-2.1

TYPICAL ROOF CONSTRUCTION:

TAPER SAWN CEDAR WOOD SHAKES 8" EXPOSURE, OVER 30 LB FELT UNDERLAYMENT, OVER PALISADES SAHT, OVER 5/8" CDX PLYWOOD, OVER "ALUMA FOIL" OR EQUAL, OVER 3 X RAFTERS





TMK: (4) 5-4-004:052

ROOF PLAN
1/16" = 1'-0"

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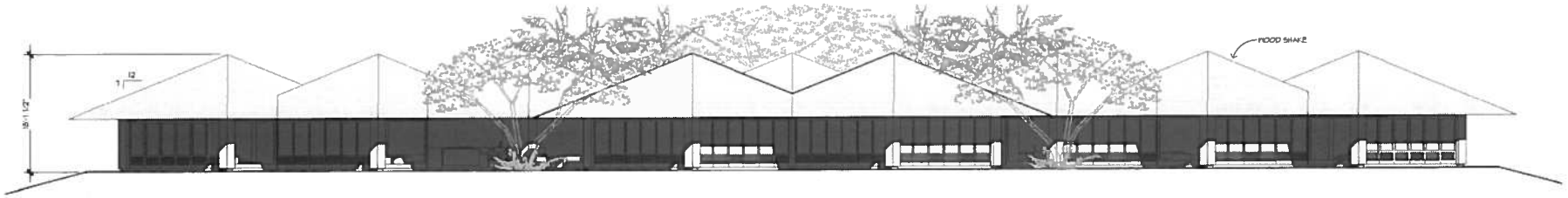
REVISION #

REVISION DATE:

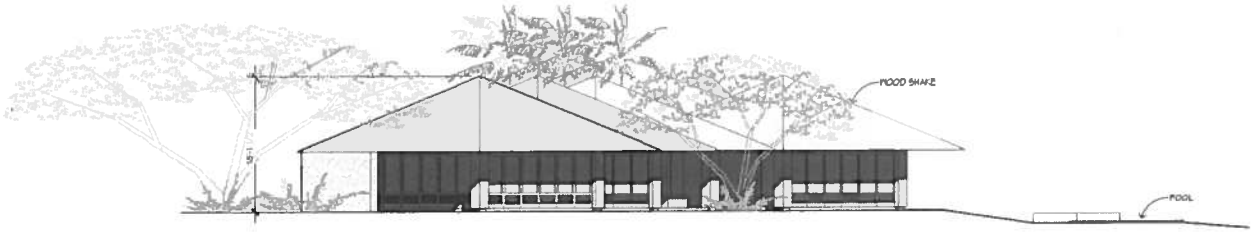
DESIGN CONCEPTS - 2484 KEKEKE ST., SUITE 102, KILAUEA, HI 96754 USA - +1 808 828 0160 WWW.DCKAUAI.COM

GEARON RESIDENCE

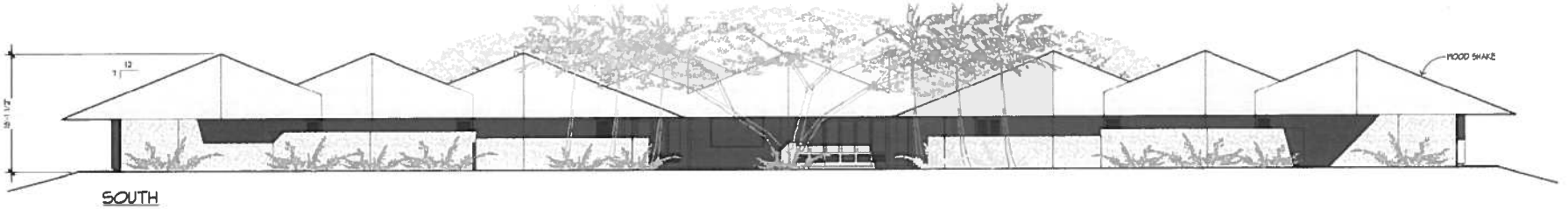
SHEET:
A-2.2



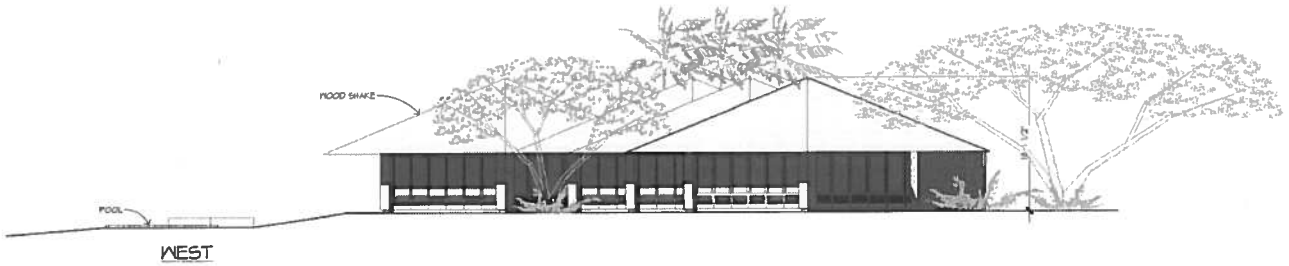
NORTH



EAST



SOUTH



WEST

EXTERIOR ELEVATIONS

1/16" = 1'-0"

TMK: (4) 5-4-004:052

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REVISION:

REVISION DATE:

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GEARON RESIDENCE

SHEET:

A-3



NORTH



SOUTH



EAST

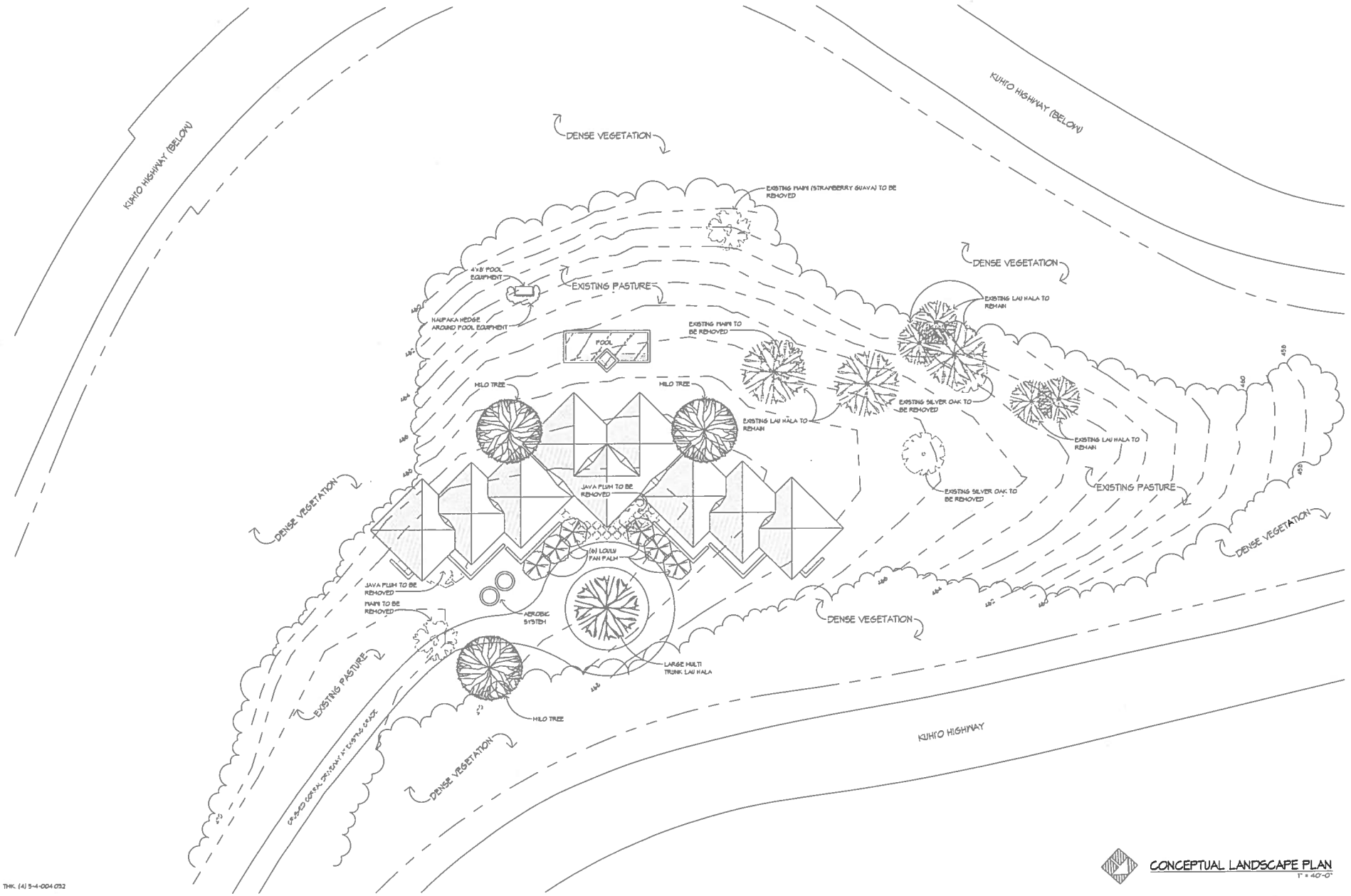


WEST

EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"


VIEW OF PROPERTY WITH 20' STORY POLES
3
2
1



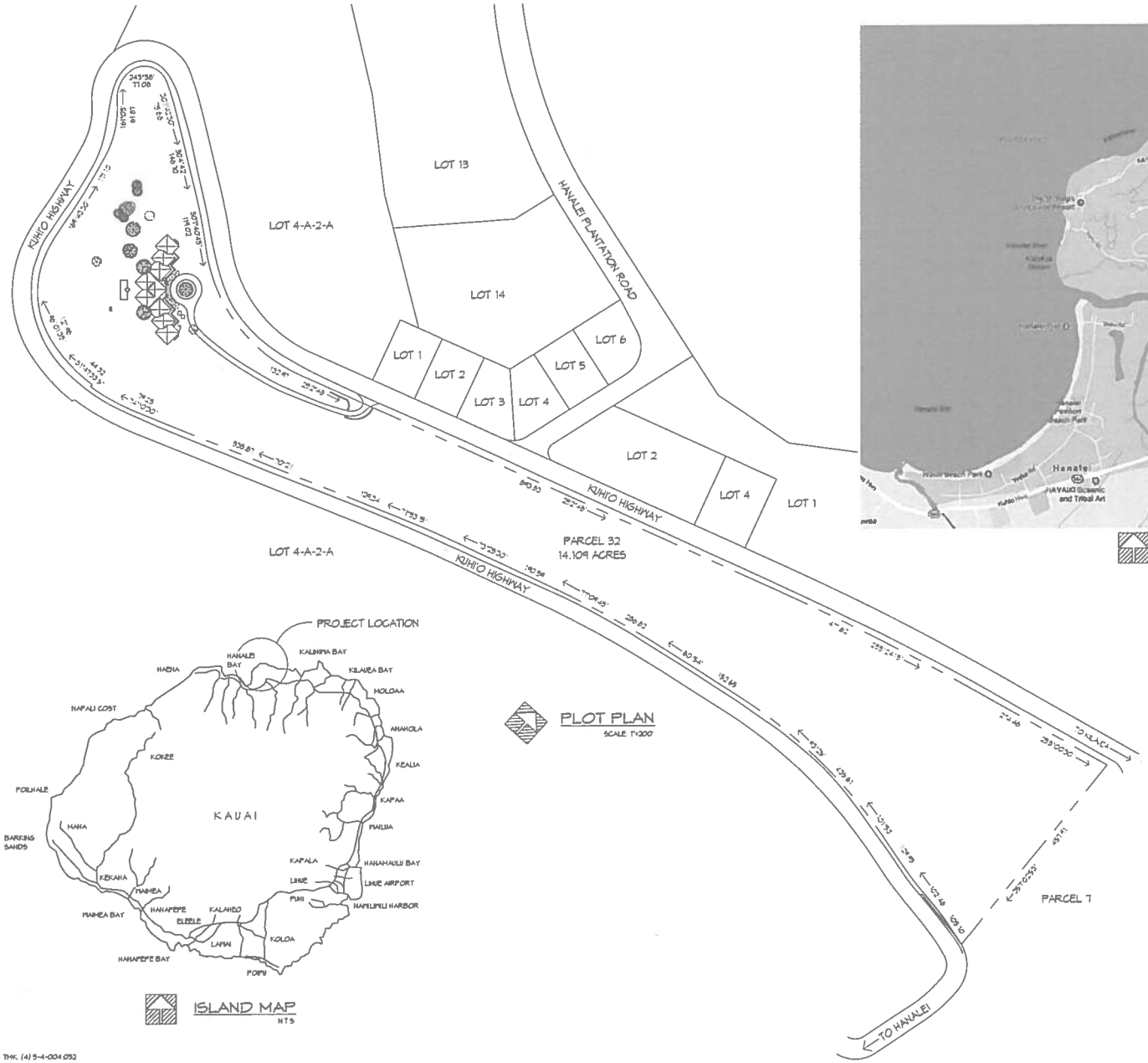
CONCEPTUAL LANDSCAPE PLAN
1" = 40'-0"

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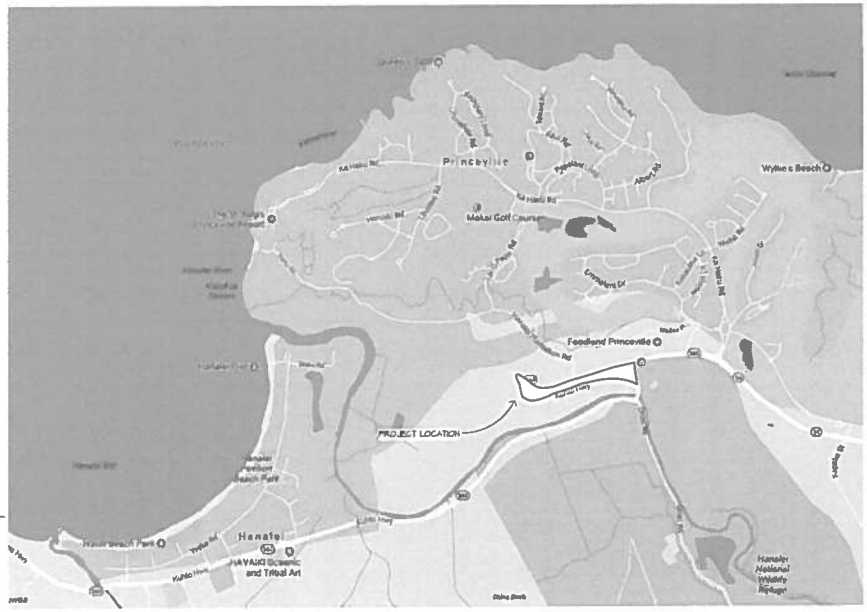
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GEARON RESIDENCE

SHEET
L-1



PLOT PLAN
SCALE: 1"=200'



VICINITY MAP
NTS

ISLAND MAP
NTS

DRAWING INDEX		
SHEET #	SHEET NAME	SCALE
A-0	COVER SHEET	NTS
A-1	PLOT PLAN	AS NOTED
A-1.1	SITE PLAN	1"=80'-0"
A-2	FLOOR PLAN	1/8"=1'0"
A-2.2	ROOF PLAN	1/8"=1'0"
A-3	EXTERIOR ELEVATIONS	1/8"=1'0"
C-1	CONCEPTUAL GRADING PLAN	1"=30'-0"
L-1	CONCEPTUAL LANDSCAPE PLAN	1"=40'-0"

TMK: (4) 5-4-004:052

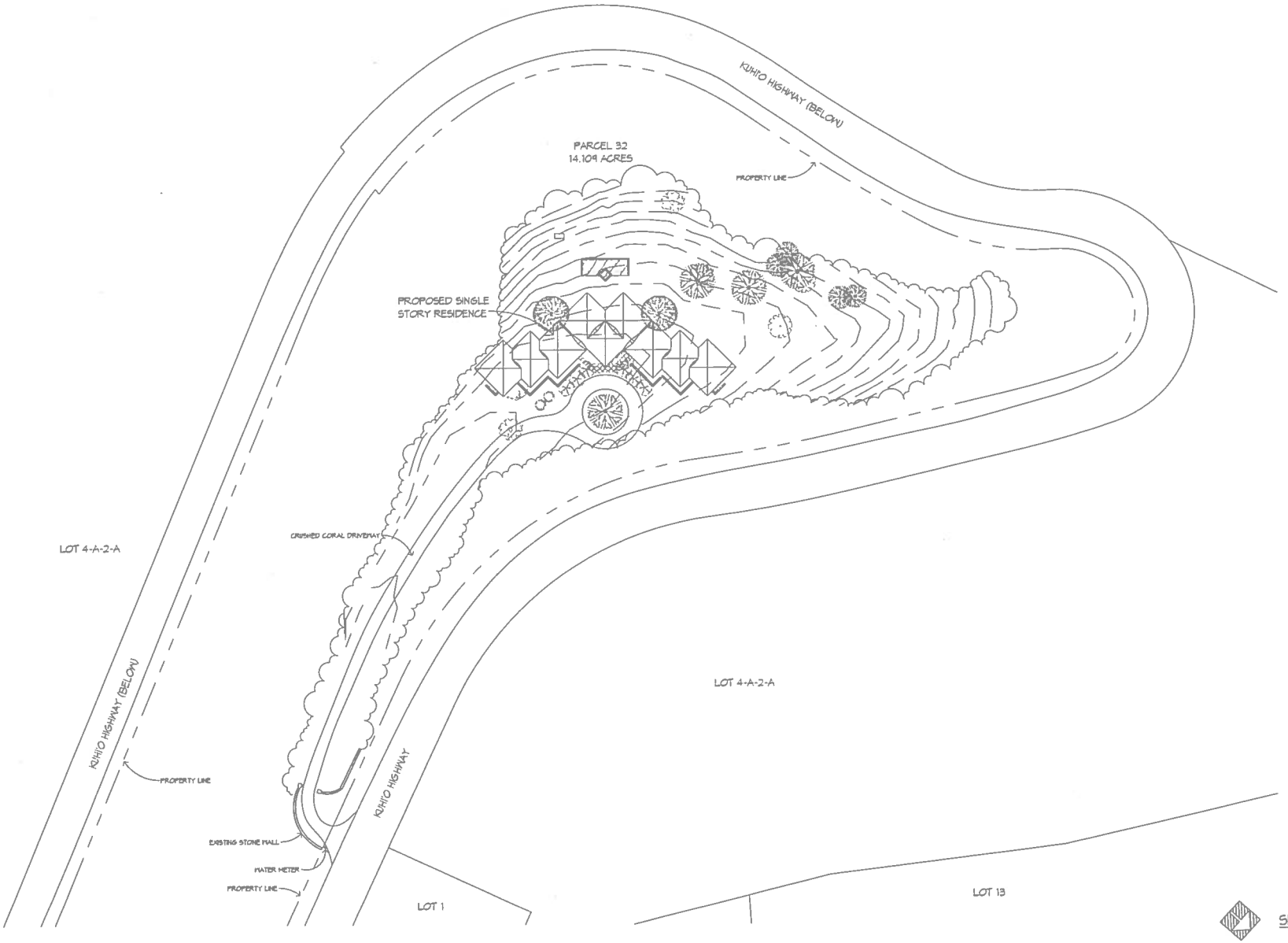
PLOT PLAN
As indicated

PLOT DATE: 1/9/2018 10:20:45 AM
REVISION #
REVISION DATE:

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GEARON RESIDENCE

SHEET
A-1



SITE PLAN
1" = 80'-0"

TMK: (4) 5-4-004:052

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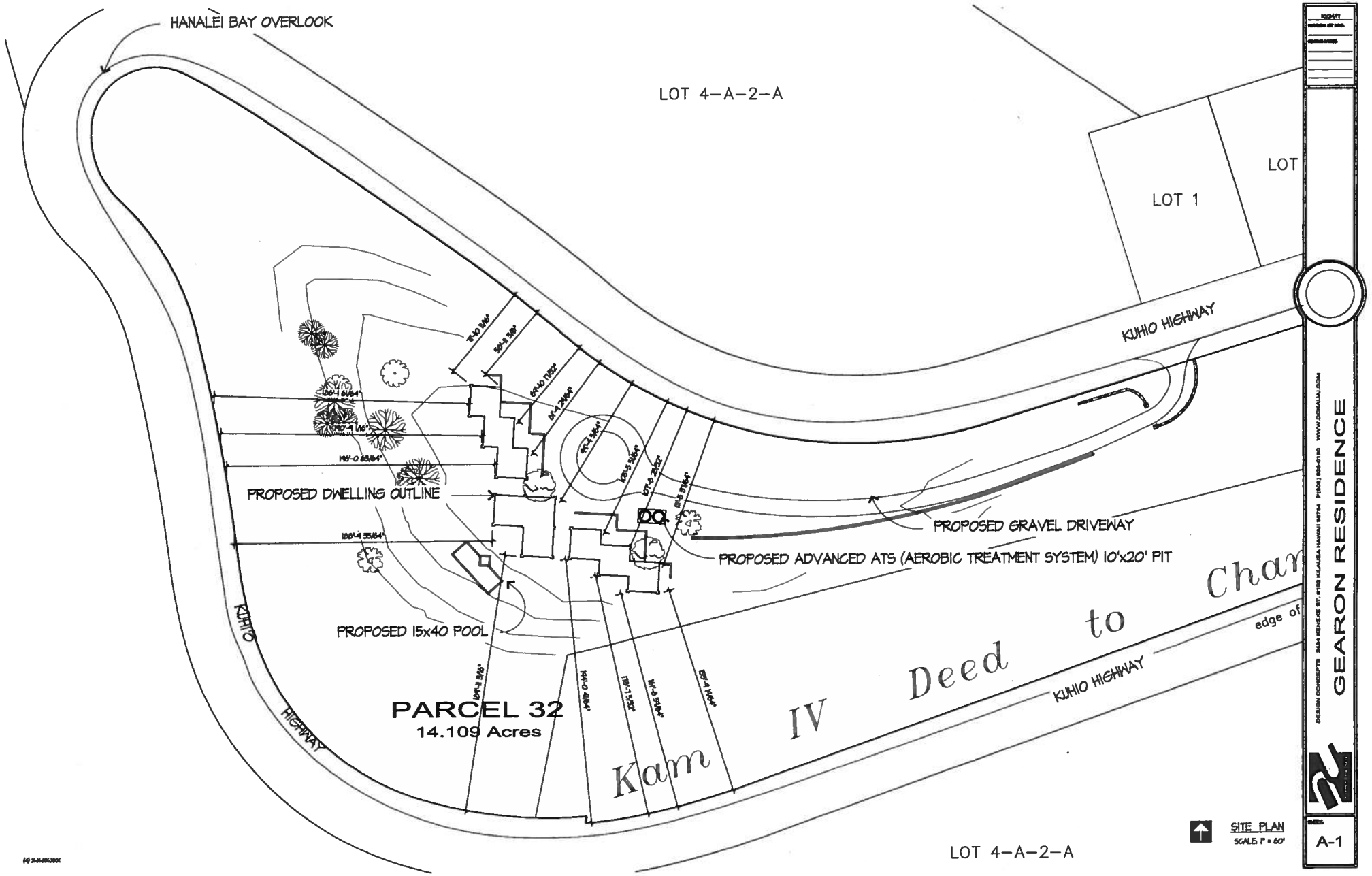
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DATE

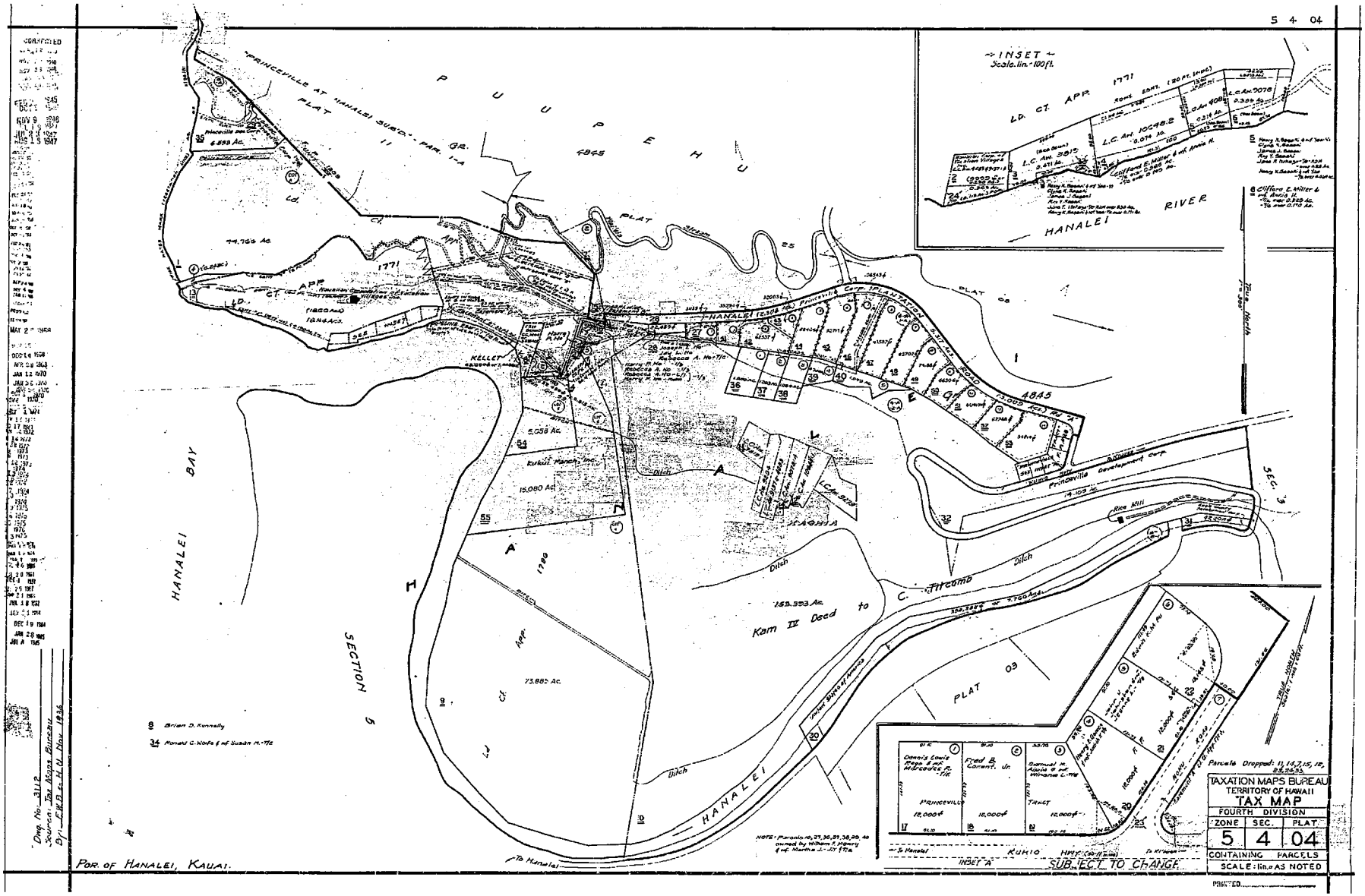
DESIGN CONCEPTS - 2484 KEKEKE ST., SUITE 102, KILAUEA, HI 96754, USA - +1 808 828 0160 WWW.DCKAUAI.COM

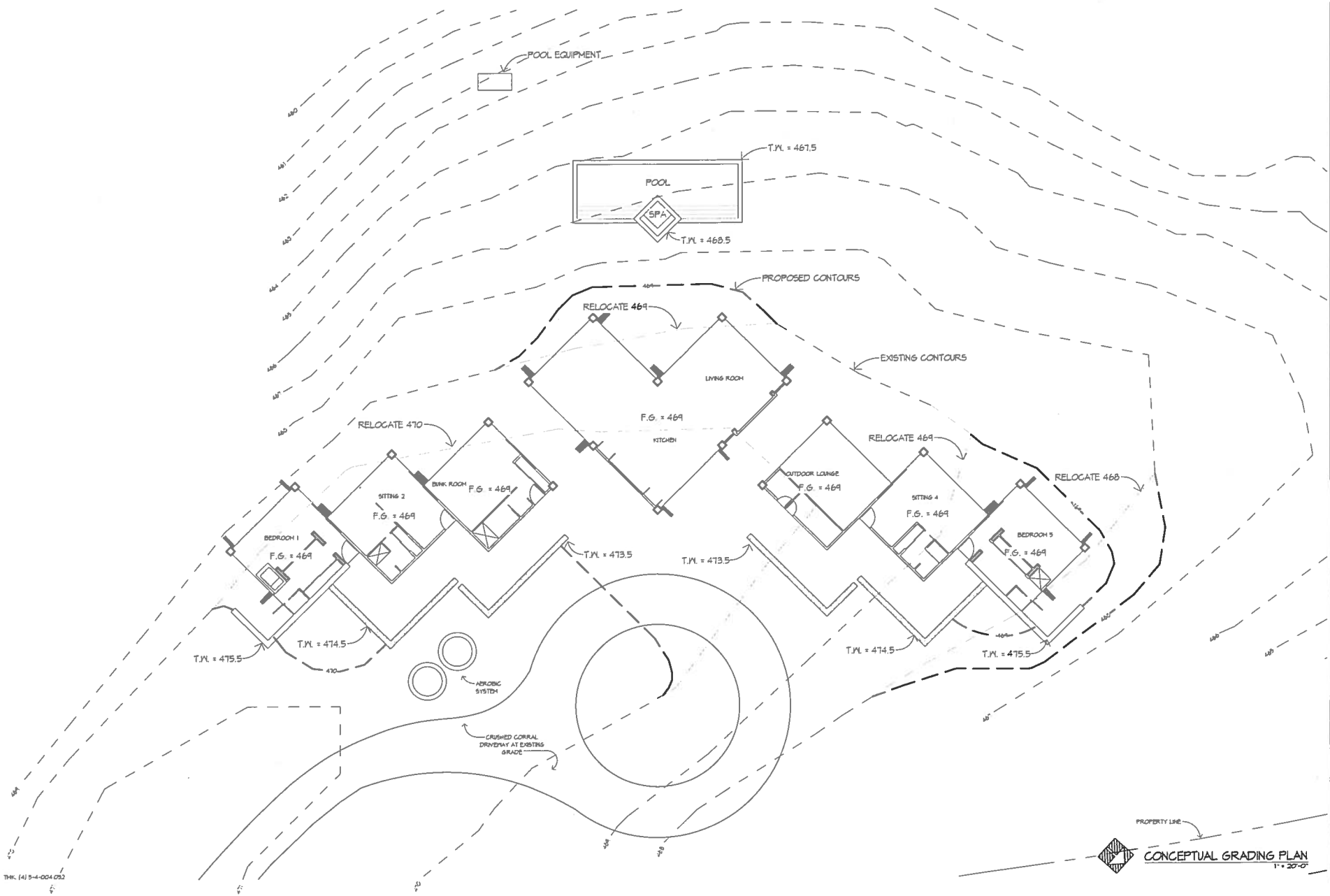
GEARON RESIDENCE

SHEET
A-1.1


560


HANALEI BAY OVERLOOK
LOT 4-A-2-A
LOT 1
LOT
KUHIO HIGHWAY
PROPOSED DWELLING OUTLINE
PROPOSED GRAVEL DRIVEWAY
PROPOSED ADVANCED ATS (AEROBIC TREATMENT SYSTEM) 10'x20' PIT
PROPOSED 15x40 POOL
KUHIO HIGHWAY
PARCEL 32
14.109 Acres
Kam IV Deed to Char
edge of
KUHIO HIGHWAY
LOT 4-A-2-A
SITE PLAN
SCALE 1" = 60'
GEARON RESIDENCE
A-1


5 4 04
INSET
Scale: 1in.=100ft.
PRINCEVILLE AT HANALEI SUBD. - PAR. II
PLAT
PUUPEHU
4865
HANALEI
RIVER
PLAT 02
PLAT 03
HANALEI BAY
SECTION 5
KUHIO HWY (50-ft. R/W)
To Hanalei
To Kilauea
Kuhio Ranch, Inc.
15.080 Ac.
5.056 Ac.
73.885 Ac.
155.393 Ac.
Kam IV Deed to C. Titcomb
Princeville Development Corp.
Princeville Ranch Partnership
Inland Boats of Kauai
Ditch
KELLET
HAGHIA
Brian D. Kennelly
Ronald C. Klotz & wf Susan M.-Tte
NOTE: Parcels 10, 27, 30, 31, 38, 39, 40 owned by William T. Henry & wf Martha J.-Jr Tte
Parcels Dropped: 11, 14, 7, 15, 12, 25, 26, 35
INSET 'A'
SUBJECT TO CHANGE
TAXATION MAPS BUREAU
TERRITORY OF HAWAII
TAX MAP
FOURTH DIVISION
ZONE 5 | SEC. 4 | PLAT 04
CONTAINING PARCELS
SCALE: 1in.= AS NOTED
PRINTED
POR. OF HANALEI, KAUAI.
Orig. No. 3112
Source: Tax Maps Bureau
By: E.E.D.'s H.D. Nov. 1936

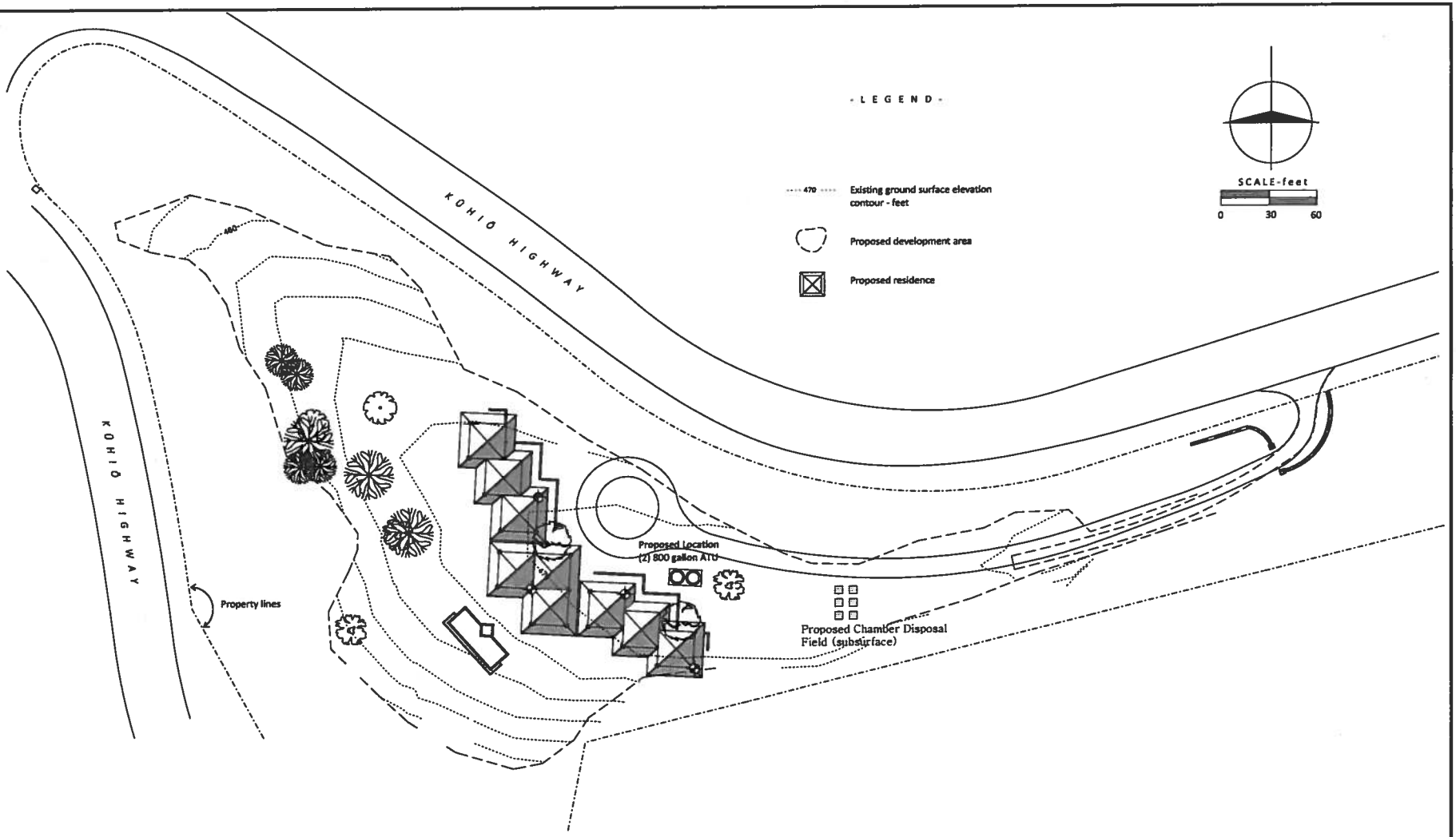


CONCEPTUAL GRADING PLAN
1" = 30'-0"

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GEARON RESIDENCE

C-1



Individual Wastewater System
Proposed Location (2) 800
Aerobic Treatment Tanks &
Chambered Disposal Field

Bases: 1. Esaki Surveying & Mapping, Inc., 2016, *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Haleiea, Kaua'I, Hawai'I, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016.

2. Design Concepts, 2016, *Site Plan, Gearon Residence* (scale: 1" = 60'), Sheet A-1, dated December 14, 2016.

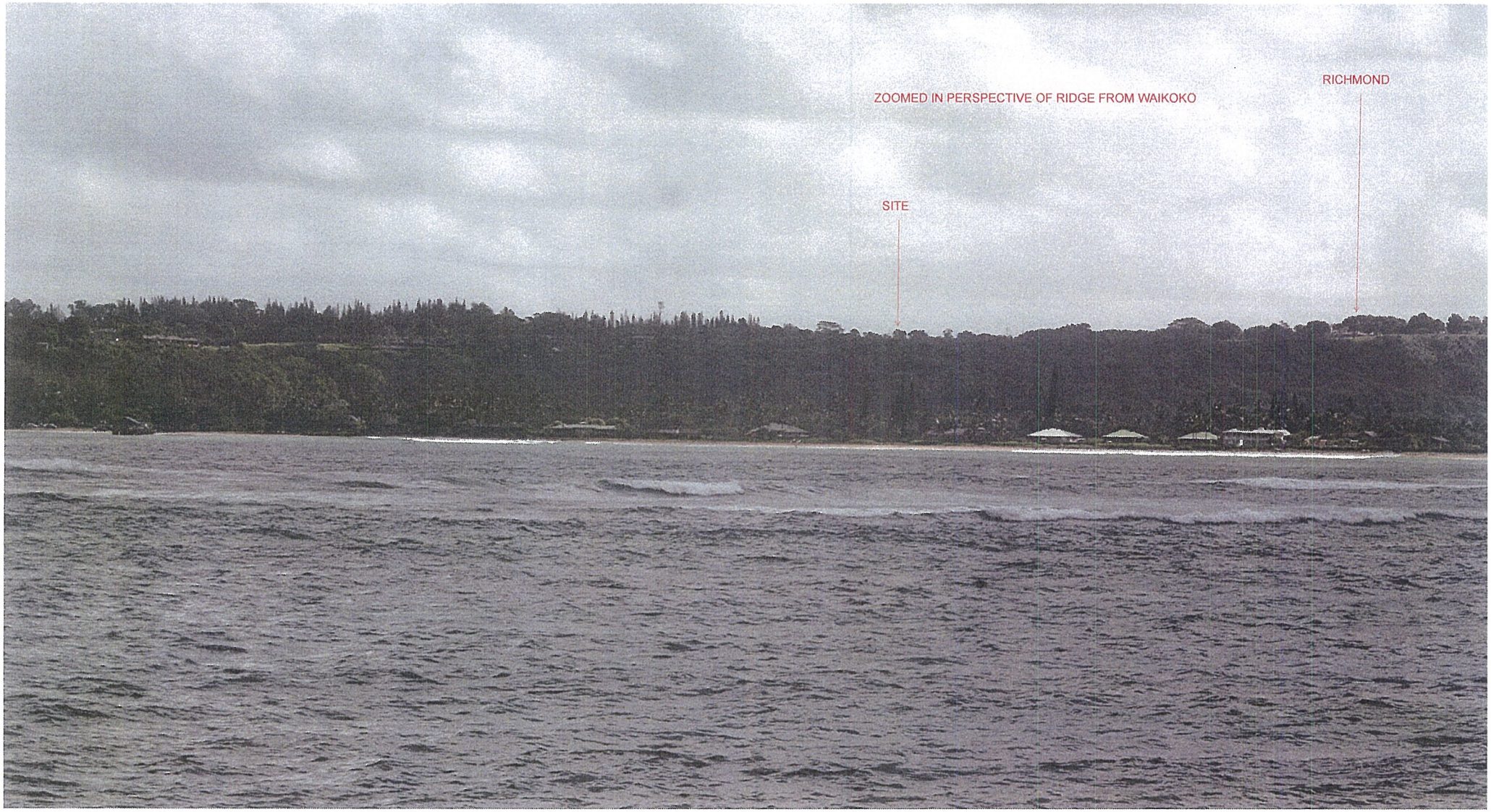
SITE PLAN

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

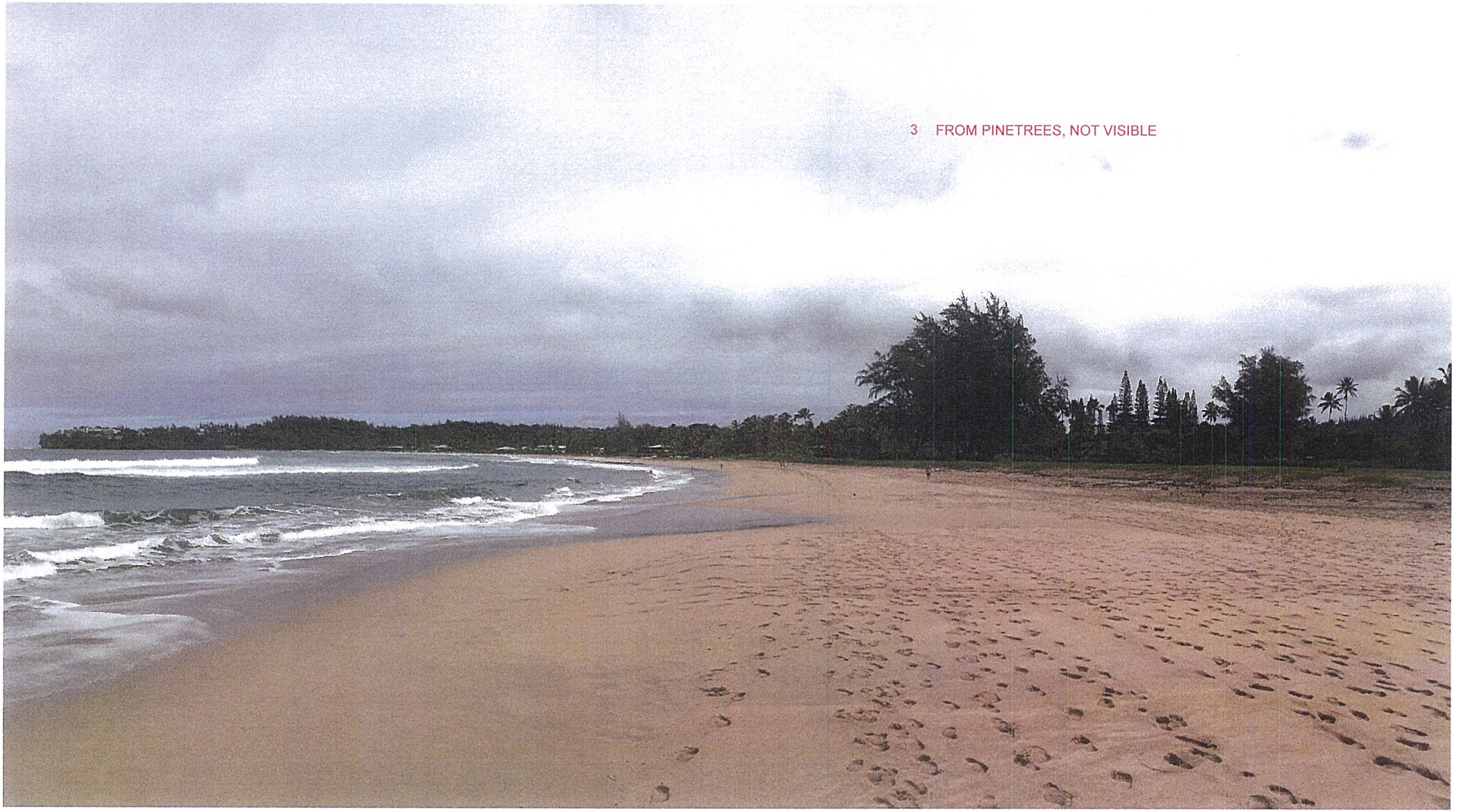
DATE: July 2017

PLATE NO. A2


Makahoa Point
Hanalei River
Kialakua Stream
Waikoko Reef
Hanalei Pier
Foodland Princeville
Hanalei Valley Lookout
Kuhio Hwy
Hanalei Bay
Hanalei Pavilion Beach Park
Waioli Beach Park
Hanalei
Infinite Arts Gallery
Makaihuwea
China Ditch
Google
SAMPLE IMAGE OF RICHMOND SUPERIMPOSED MODEL


ZOOMED IN PERSPECTIVE OF RIDGE FROM WAIKOKO
SITE
RICHMOND


2 HUMAN PERSPECTIVE FROM WAIKOKO



3 FROM PINETREES, NOT VISIBLE


5 FROM HANALEI PARK, NOT VISIBLE


VIEW FROM KUHIO HIGHWAY

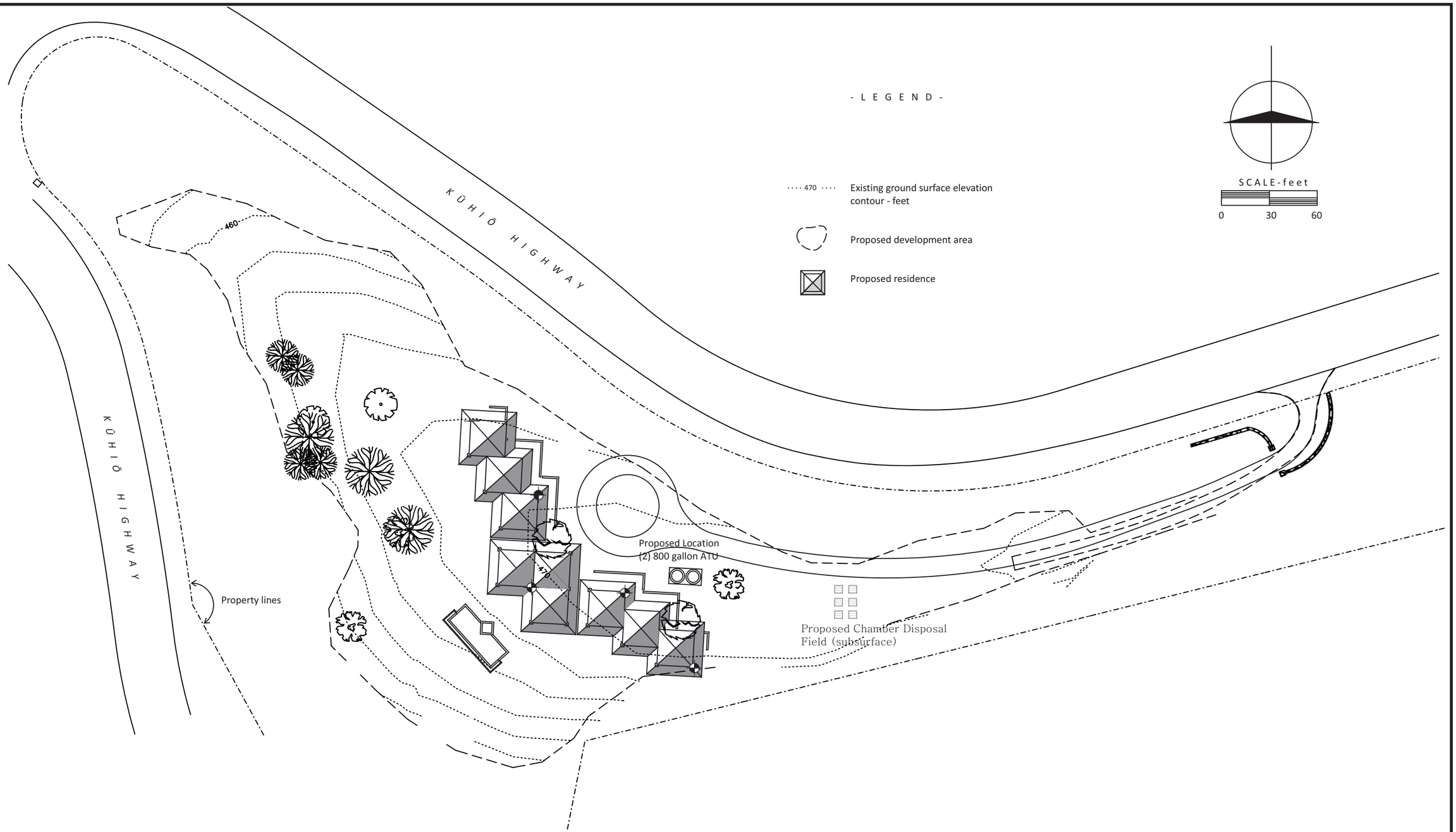

ZOOMED IN VIEW FROM KUHIO HIGHWAY
COVERS, SIMILAR DESIGN

VIEW FROM OHIKI ROAD





4 FROM PIER , NOT VISIBLE



Individual Wastewater System
Proposed Location (2) 800
Aerobic Treatment Tanks &
Chambered Disposal Field

Bases: 1. Esaki Surveying & Mapping, Inc., 2016, *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Halelea, Kaua'i, Hawai'i, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016.

2. Design Concepts, 2016, *Site Plan, Gearon Residence* (scale: 1" = 60'), Sheet A-1, dated December 14, 2016.

SITE PLAN

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: July 2017

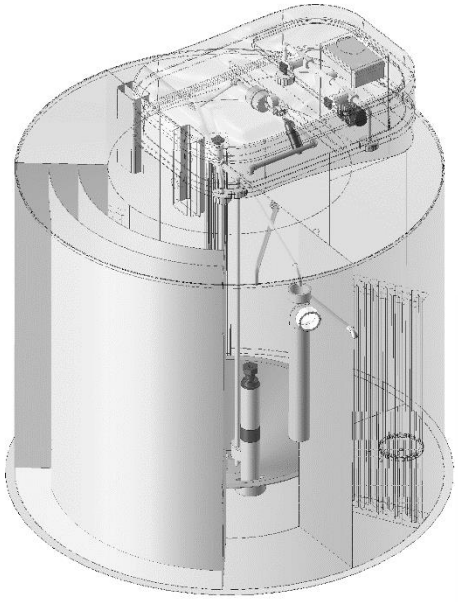
PLATE NO. A2

Product Overview

WaiponoPure Wastewater Treatment System

Certified to:

National Sanitary Foundation (NSF) International Standard /
American National Standard (ANSI) Standard 40 & 245, Class I



WaiponoPure by Thetis Pacific LLC
94-515 Ukee Street #301
Waipahu, HI 96797
www.WaiponoPure.com

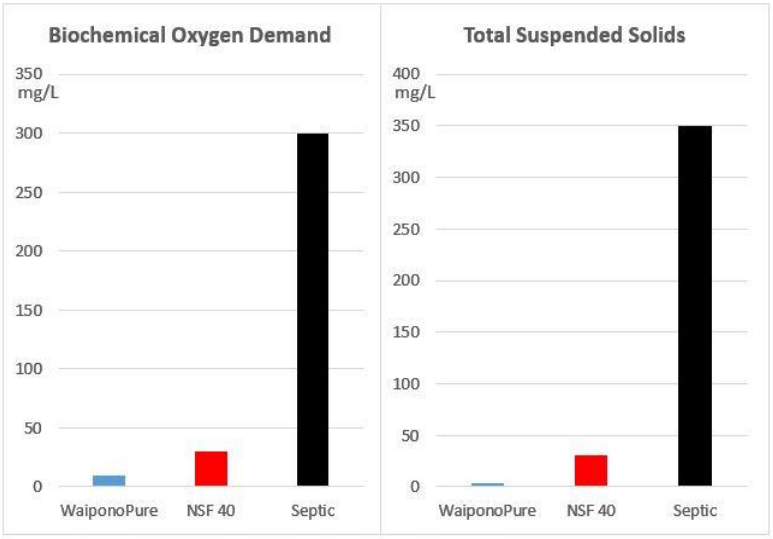
By Thetis Pacific LLC
94-515 Ukee Street #301 | Waipahu, HI 96797
www.waiponopure.com | info@waiponopure.com
808.369.7116

Cleaner Water

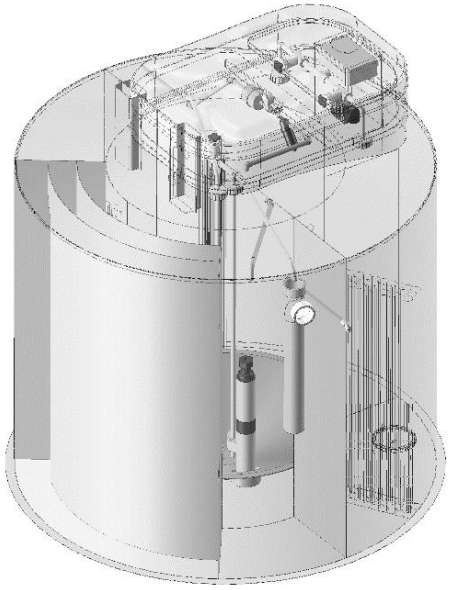
The WaiponoPure advanced wastewater treatment system cleans sewage more effectively than conventional septic systems in Hawaii. Stringent testing by the University of Hawaii Water Resources Research Center (WRRC) shows that WaiponoPure products treat domestic wastewater to a quality that is 300% better than national standards. The WaiponoPure system utilizes the same proven treatment processes typical of municipal treatment plants, but which are compact, self-contained units ideally suited for homes and small business off the sewer network.

The WaiponoPure system is an extended aeration wastewater treatment system with a two-stage biological process to optimize denitrification. The ability of the WaiponoPure system to provide clean effluent enables the reuse of precious water for irrigation purposes, helping to conserve resources.

Through development of superior wastewater treatment products and absolute dedication to customer satisfaction, WaiponoPure envisions a Hawaii landscape free of pollution from cesspools and failed septic systems. We aim to promote and enable responsible stewardship of Hawaii's environment.



Testing by WRRC at UH Manoa, Report WRRC-2015-01.
Samples from WaiponoPure Wastewater Treatment System headworks.
NSF 40 Standard Requirement for Aerobic Treatment Units, 2013.
Septic data from US EPA Onsite Sewage Treatment Systems Manual.



WaiponoPure System

Process

The WaiponoPure treatment system converts wastewater from the home into a clear, odorless liquid using both suboxic and aerobic compartments to maximize biological treatment effectiveness. The effluent enters the system through a pretreatment chamber where larger solids settle temporarily until they are broken up over time. The wastewater flows into a suboxic compartment that has low oxygen levels to promote denitrification. Liquid from the suboxic compartment then flows into a series of aerobic compartments in which several diffusers pump fine bubbles into the effluent. The rising air bubbles deliver oxygen to enable aerobic organisms to thrive and ultimately decompose waste. Turbulence caused by the rising air bubbles also creates a mixing pattern which keeps the waste sludge in suspension ("mixed liquor"), helping eliminate the build-up of sludge. The superior treatment process of the WaiponoPure system, including constant recirculation of the mixed liquor, reduces the need for sludge removal, a key benefit that reduces operating costs.

By Thetis Pacific LLC
94-515 Ukee Street #301 | Waipahu, HI 96797
www.waiponopure.com | info@waiponopure.com
808.369.7116

Most of the nutrient digestion takes place in the aerobic chambers of the WaiponoPure system utilizing a combination of an attached and suspended growth process. The attached film grows on biomedia and the suspended growth is created by mixing and recirculation of sludge. This combination results in a treatment efficiency that exceeds the individual performance of an attached or suspended growth process.

- Simple
- Reliable
- Efficient

The treated wastewater flows from the aeration compartments into a clarifier that has a cone shaped bottom. The clarifier allows the water to settle so that any suspended solids in the mixed liquor can settle and be pumped back to the suboxic compartment for further biological treatment. The remaining clear water from the clarifier is pumped from a final clean water compartment to an irrigation and/or disposal system.

System Features

- Extended Aeration – Multiple aerobic compartments with diffusers promote biological decomposition of waste sludge. Longer mixing time and recirculation with aged sludge offers a stable biological ecosystem better adapted for effectively treating waste load fluctuations while also accommodating variable occupancy loads.
- Biological filter media – Biomedia provides a complex structured surface area where beneficial bacterial colonies can grow, forming biofilm. The biomedia allows water to pass over the colonies, helping to filter the wastewater and bring nutrients and oxygen that are required for treatment. The retention time and biomass are increased to ensure superior treatment performance.
- Suboxic Treatment – The process of removing nitrogen from wastewater, or denitrification, requires contact time in a low oxygen, or suboxic, environment. WaiponoPure's suboxic compartments achieve denitrification and sets our system apart from other ATU's that do not provide suboxic treatment.

Advantages

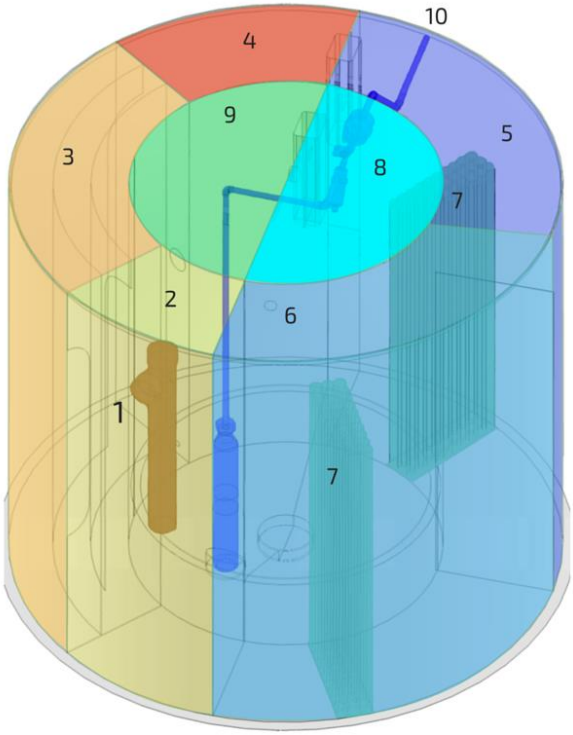
- Advanced Treatment – WaiponoPure uses proven, advanced biological treatment processes typical of municipal secondary treatment facilities.
- Compact Design – WaiponoPure packages advanced wastewater treatment processes into one compact, self-contained unit with no extra septic tanks or complicated plumbing.
- Quick Installation – Our system is fast to install and suitable for both new construction and renovations.

- Environmentally Friendly
- High Performance
- Compact Unit
- Reliable
- Easily Maintained
- Onsite Treatment

- Environmentally Friendly – WaiponoPure mitigates the impact of wastewater effluent on the environment by treating wastewater before it is released to the ground.
- Engineering – WaiponoPure's team of engineers will custom design each system in cooperation with the property owner, architect, or contractor.
- Project Management – our staff has over six decades of project management experience and will guide each project to ensure successful completion.

WaiponoPure
ADVANCED WASTEWATER TREATMENT

WaiponoPure Process Diagram



1. Sewage From House – Receiving inlet attenuates the flow of wastewater
2. Pretreatment Chamber—Wastewater settles into the receiving tank
3. Suboxic Chambers – Two compartments where low oxygen fosters the reduction of nitrate to nitrogen by bacteria through the biochemical process known as
4. denitrification that allows the gas to be released into the atmosphere
5. Aerobic Chambers – Two compartments, each of which contains diffusers supplied by an air compressor. Aerating the mixture promotes beneficial
6. biological processes where oxygen can support microorganism activity that naturally neutralizes pathogens.
7. Biomedia Filters—Complex structured surface area that promotes growth of resident biofilm and aids the mixing of bacteria and sewage to help filter wastewater.
8. Clarification Chamber - Due to aeration, the mixture has suspended particulates that may need further treatment. Thus the clarification compartment allows for the resettling of suspended sludge to return to the suboxic compartment through a settling and pump process
9. Finishing Chamber - Subsequent to clarifying, treated water is stored in the finishing chamber and exits the treatment unit on a designed timed discharge period.
10. Effluent Discharge—A durable, high efficiency water pump discharges the treated water. The treated water exceeds national standards for wastewater treatment unit certifications.

WaiponoPure WP800 Technical Specifications	
Diameter	7’
Height	8’ 6”
Weight (empty)	847 Lbs
Top Load	> 500 PSF
Lateral Load	> 63 PCF
Hydraulic Loading	Up to 800 gallons/day
Suboxic Chambers	844 gallons
Aerobic Chambers	846 gallons
Clarifier	282 gallons
Finishing Chamber	212 gallons
Total Hydraulic Volume	1972 gallons
Operating Freeboard	400 gallons
Operating Liquid Height	74"
WaiponoPure WP800 Electrical Specifications	
Voltage	120 Volts AC
Power (peak)	9.9 Amps
Energy Use	4.3 kWh/day
Air Pumps (2):	HiBlow Model 80 (80 LPM)
Water Pump:	Little Giant WE20G05P4-21 (26 GPM)

WaiponoPure
By Thetis Pacific LLC
94-515 Ukee Street #301
Waipahu, HI 96797
808.369.7116
info@waiponopure.com
www.waiponopure.com

Because we continuously improve our products and services, we reserve the right to change specifications without prior notice.

GEOTECHNICAL REPORT

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

JPB Engineering Project No. 16273.01G

JPB ENGINEERING, INC.

GEOTECHNICAL REPORT
GEARON RESIDENCE
KŪHIŌ HIGHWAY AT HANALEI PLANTATION ROAD
PRINCEVILLE, KAUA'I, HAWAI'I

Project No: 16273.01G

Date: May 22, 2017

Prepared for:

Michael Gearon

Prepared by:

JPB Engineering, Inc.
47-388 Hui 'Iwa Street, Suite 16
Kāne'ohe, Hawai'i 96744

Authored by:



Paul C. Weidig
Licensed Professional Engineer No. 8,047-C

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

May 22, 2017

Project No. 16273.01G

To: Michael Gearon
3350 Riverwood Parkway, Suite 425
Atlanta, Georgia 30339

Subject: Geotechnical Investigation
Gearon Residence
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

Attached is our report of the geotechnical investigation we conducted for your new residence in Princeville on Kaua'i. The principal conclusions and recommendations are as follow:

- The borings encountered loose to semicompact silt to an average depth of about six feet. Below the surficial soil horizon, soft to very soft, clayey silt was discovered to the maximum depth explored, approximately 14.5 feet, except in the two lowermost borings where soft clayey silt was penetrated to an average depth of 12.5 feet, below which medium-stiff saprolite (intensely weathered volcanic rock) was penetrated to the maximum depth explored, about 14.5 feet at those points. No free ground water was intercepted in any of the five borings.

- The new home and exterior privacy walls can be supported upon conventional continuous and isolated reinforced concrete foundations based in and underlain by undisturbed native soils. Our investigation also indicates that the concrete slab-on-grade living area floors and exterior concrete slabs can be supported upon recompacted soils, new engineered fill, or a combination thereof. Specific recommendations are presented in the report.

- We should be retained to review the construction plans and specifications to determine whether the recommendations contained in this report are adequately reflected in those documents. We also should be retained to test and observe any earthwork construction as well as to inspect the foundation excavations.

If you have any questions regarding this report, or if we can be of assistance to you in any other way, please do not hesitate to call. Mahalo for this opportunity to be of service.

Respectfully submitted,

Paul C. Weidig, P.E.
Senior Geotechnical Engineer

PCW/lr/16273.01G

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  - Fill Material 5
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  - Atterberg Limits Test Data ..... Plate No. B1
  - Direct Shear Test Data ..... B2 – B3
  - Unconfined Compressive Strength Test Data ..... B4 – B7
- Appendix C - References

DISTRIBUTION

INTRODUCTION

Purpose

A geotechnical investigation has been conducted for the Gearon residence to be constructed in Princeville, Kauaʻi. The subject property is located on Kūhiō Highway opposite its inersection with Hanalei Plantation Road. The purposes of this study have been to gather information on the nature, distribution and characteristics of the subsurface earth materials and ground water conditions at the site, and to prepare specific recommendations for use in project design and construction.

Scope

The scope of this investigation is described in our proposal of December 16, 2016. On April 24 and 25, 2017, our field representative conducted a reconnaissance of the property and mapped the locations of five test borings that were drilled and sampled to a maximum depth of about 14.5 feet. Our field engineer logged, classified and recovered relatively undisturbed samples of the earth materials drawn from selected vertical intervals in each boring. Ground water level observations in each boring were recorded during exploration and at intervals following completion.

The samples were transported to our office for laboratory testing and further classification. The laboratory testing program comprised determinations of natural moisture content, dry unit weight, plasticity, direct shear, unconfined compressive strength and compressibility properties.

This report contains our findings regarding site soil, ground water and other geologic conditions; conclusions pertaining to expansive soils, settlement, bearing capacity and foundation conditions; and, recommendations for site preparation and grading, foundations, floor support, swimming pool design, drainage and erosion control.

In Appendix A, the location of the project site is shown in relationship to surrounding landmarks and cultural features on Plate No. A1, Vicinity Map. The approximate locations of the test borings are depicted in relationship to the proposed residence, existing ground surface elevation contours and the property lines on Plate No. A2, Site Plan. Geotechnical descriptions and related data recorded during the field exploration phase of our study are displayed on Plates No. A3 through A7, Logs of Borings. A key to the soil symbols and identification criteria used on the logs is presented on Plate No. A8, Unified Soil Classification System.

The results of the natural moisture content and dry unit weight tests are posted on the Logs of Borings, on which are also indicated the types of other laboratory tests conducted on corresponding samples. The remaining laboratory test data are contained in Appendix B. The results of the plasticity tests are shown on Plate No. B1, Atterberg Limits Test Data. Summaries of the strength tests appear on Plates No. B2 and B3, Direct Shear Test Data, and on Plates No. B4 through B7, Unconfined Compressive Strength Test Data.

References consulted during the course of our investigation are listed in Appendix C.

Project Description

According to preliminary architectural plans (Clan Architecture, LLC, 2017), the new residence will consist of a series of contiguous, one-storey, Balinese-style modules which together will form an aerial "V" shape. Pairs of wings adjoining the central daytime living quarters will be composed of three offset but conjoined nighttime living modules, each about 22 feet square in plan view. The east wing will house a guest bedroom with a connecting full bathroom; two additional guest bedrooms with a single, common full bathroom; and a master bedroom suite. The north wing will include an office, a powder room, a guest bedroom with a connecting full bathroom, and a second master bedroom suite. The central daytime living area modules will cover the laundry, kitchen and pantry, dining and living rooms.

Offset, stone masonry privacy walls equipped with outdoor showers will extend along the front sides of each wing module. Additional improvements will includes a new gravel driveway, an aerobic effluent treatment system, and a swimming pool with an incorporated hydrotherapy spa,

The individual, overheight modular roof systems will consist of conically arranged wood fan rafters supporting wood sheathing, felt underlayments and sawn wood shake cladding.

FINDINGS

Site Description

As shown on Plates No. A1 and A2, the subject property is an irregularly-shaped parcel encompassing approximately 14.109 acres of gently sloping terrain bordered by Kūhiō Highway (State of Hawaiʻi, 1996). The lot boundaries are marked by gated wire fencing. Access to the proposed construction area is afforded by a graveled drive.

The property margins are marked by stands of indigenous trees and the interior, although mostly cleared, contains a dozen others. Ground within the proposed home site falls from approximate elevation 471 feet mauka to about elevation 460 feet makai, resulting in an overall a maximum gradient approaching seven percent.

Geologic Setting

The subject property is located on an ancient wave-cut terrace underlain by lava flows associated with Mount Nāmāhana, an extinct, secondary volcanic vent structurally connected to Mount Waiʻaleʻale, the principal volcano that created the island of Kauaʻi (Macdonald, 1960). The volcanic rocks have been altered by chemical processes to form thick zones of saprolite.

The soil mantle overlying the saprolite formation is composed of a silty clay or silt assigned to the Makapili series. This soil is characterized by a low shrink/swell potential but high corrosion potentials with respect to uncoated steel and concrete. The erosion hazard is considered slight to moderate on slopes of the inclination typical of the site (Foote, *et al.*, 1972).

Earth Materials

The borings encountered a reddish-orange, very moist loose to semicompact silt (Unified Soil Classification: ML) to an average depth of about six feet. This soil is identified as a part of the Makapili series, described above. Below the surficial soil horizon, brick red, very moist, soft to very soft, clayey silt (MH) was discovered to the maximum depth explored, approximately 14.5 feet, except in the two lowermost borings. At those points, soft clayey silt was penetrated to an average depth of 12.5 feet, below which dusky orange-brown, very moist, medium-stiff saprolite was penetrated to the maximum depth explored, about 14.5 feet.

Laboratory test results revealed that the soil moisture contents steadily increase and the associated dry unit weights gradually decrease with greater depth. Further subsurface details are depicted on Plates No. A3 through A8.

Ground Water

Each test boring was checked for the presence of ground water during exploration and at intervals following completion. No free ground water was observed at any location.

CONCLUSIONS

Expansive Soils

The results of Atterberg limits tests, appearing on Plate No. B1, indicate that the surficial soil has negligible plasticity characteristics (average plasticity index = 3 percent) and low water retention properties (average liquid limit = 45 percent). The plasticity index is the maximum range of water contents which a soil can assume under natural conditions. It represents the difference between the liquid limit, or the maximum amount of water that a soil is capable of absorbing without becoming fluid, and the plastic limit, or the minimum amount of water a soil can hold without crumbling. The Atterberg limits test data confirm that the surficial soil is virtually nonexpansive.

Bearing Capacity

Direct shear strength tests conducted on selected samples of the surficial soils yielded an average internal friction angle approaching 27^{o} and an average cohesion value on the order of 290 pounds per square foot, as shown on Plates No. B2 and B3. The internal friction angle is a measure of soil grittiness, while the cohesion component is a measure of soil stickiness. Unconfined compressive strength tests performed on selected samples of the surficial soil reached an average ultimate undrained shear strength near 2,780 pounds per square foot, as illustrated on Plate No. B4. These results confirm that the surficial soils can support structural loads of moderate intensity.

By contrast, similar tests completed on selected samples of the immediately underlying soils attained a markedly lower average ultimate strength of just 750 pounds per square foot, as illustrated on Plates No. B5 and B6. The degree to which superposed foundations can be safely loaded is in part governed by the limited bearing capability and settlement sensitivity of these weaker soils.

Unconfined compression tests performed on selected samples of saprolite beneath the zone of compressible soils reached an average undrained shear strength on the order of 2,800 pounds per square foot, as portrayed on Plate No. B7. These results indicate that the saprolite formation can sustain structural loads of at least intermediate intensity.

Settlement

Laboratory test data indicate that the modulus of vertical subgrade reaction, which is fixed for a particular range of loading conditions, is on the order of 142 pounds per cubic inch for the surficial soils. This implies that these soils can be expected to compress one inch under a uniform load of about 10 tons per square foot. The calculated modulus for the underlying soft, clayey silt deposit is approximately 56 pounds per cubic inch, so it could be expected to settle one inch under a uniform load of about 4 tons per square foot.

The results of the consolidation tests, shown on Plate No. B8 demonstrates that the clayey silt deposit is appreciably compressible. The calculated preconsolidation pressure is about 520 pounds per square foot at a depth of 10 feet. The preconsolidation pressure is the load under which these soils have been subjected in the past. The coefficient of consolidation, which represents the ratio between applied load and expected amount of compression, was measured at about 7.5 percent at a depth of 10 feet. The calculations show that predicted future settlements due to the influence of the anticipated overlying structural loading increases will be negligible. Rate of consolidation analyses indicate that 95 percent compression of these soils has already occurred under the weight of the soil overburden.

If the new foundations and floor slabs are designed in accordance with the recommendations of this report, we expect a maximum total foundation settlement of less than 0.50 inch, a maximum differential settlement of less than 0.25 inch between any two adjacent foundations, and floor slab settlements well below 0.15 inch.

Foundation Conditions

Our study indicates that the new home and exterior privacy walls can be supported upon conventional continuous and isolated reinforced concrete foundations based in and underlain by undisturbed native soils. Our investigation also indicates that the concrete slab-on-grade living area floors and exterior concrete slabs can be supported upon recompacted soils, new engineered fill, or a combination thereof.

RECOMMENDATIONS

Site Preparation and Grading

Clearing and Grubbing – All surface vegetation and unwanted trees along with roots half an inch in diameter should be removed from the construction areas, together with any rubbish or rubble. Excavations and depressions resulting from clearing and grubbing operations should be dug out to firm soil and backfilled with suitable materials in accordance with the following recommendations.

Subgrade Preparation - Where fill is to be constructed, exposed soils should be scarified to a depth of six inches, brought to at least the optimum moisture content, and compacted to not less than 90 percent relative density in accordance with ASTM Designation D 1557-12. Elsewhere, including cut areas, all exposed soil surfaces beneath the building, driveway and other pavement areas should be brought to at least the optimum moisture content and compacted not less than 90 percent relative compaction in accordance with the above standard.

Inability to achieve the stipulated minimum level of compaction should be used as a field criterion to identify areas of loose or disturbed soils that should be overexcavated and replaced with engineered fill, processed, placed and compacted as described below; or, stabilized in accordance with the recommendations of the project geotechnical engineer.

Fill Material - Prior to use, all intended fill material should be approved by the project geotechnical engineer. On-site soil may be reused as incidental engineered fill provided that it is processed to remove vegetation and other perishable substances along with any rubbish and stones or irreducible hard lumps exceeding two inches in largest dimension.

All other structural fill should consist of imported soil which should be clean material conforming to the foregoing criteria. In addition, imported soil should have a plasticity index not exceeding 20 when tested in accordance with ASTM Designation D 4318-10 and at least 20 percent of the particles should pass the No. 100 sieve when tested in accordance with ASTM Designation D 422-07.

Fill Placement and Compaction - All fill and backfill material should be placed in horizontal lifts not exceeding eight inches in loose thickness. Each lift should be brought to at least the optimum moisture content and compacted to not less than 90 percent relative compaction, per ASTM Designation D 1557-12.

All earthwork operations should be observed and the soils tested by the project geotechnical engineer or his representative. The further recommendations of this report are contingent upon adherence to this and the previous recommendations.

Foundations

The new home and exterior privacy walls should be supported upon conventional, continuous and isolated, reinforced concrete footings based in undisturbed soil. All foundations should be at least 16 inches wide and should be based at a minimum depth of 18 inches in undisturbed soil. Foundations so established should be designed for maximum net allowable bearing values of 2,100 pounds per square foot for working load or 2,800 pounds per square foot for total load, including the effect of seismic or wind forces.

Foundation concrete should be placed neat, without forming, against trimmed earth. A total of 30 percent of the weight of foundation concrete extending below lower adjacent finished grade should be added to the net loads at that level to account for the difference in weight between soil and structural concrete.

Foundation resistance to horizontal displacement will be provided by passive earth pressures and sliding friction. Passive earth resistance should be assumed to act as an equivalent fluid weighing 275 pounds per cubic foot exerted against any appropriate vertical foundation face; however, the uppermost six inches of foundation embedment should be disregarded unless protected by an adjoining pavement or concrete slab. Frictional resistance should be computed as 0.34 times the applied working load exerted against any appropriate horizontal foundation face. These values carry a safety factor of 1.5. If resistive components derived from passive pressures and sliding friction are combined, the larger should be reduced by half.

Resistance to foundation uplift will be provided by the weight of foundation concrete; soil resistance developed along shear planes extending from the outer foundation edges and upward at 70^{o} from the horizontal; and, the weight of soil overlying the pullout envelope enclosed by the foundation edges, shear planes and finished grade. The weight of foundation concrete should be assumed at 100 pounds per cubic foot. The weight of soil within the pullout envelope should be assumed at 65 pounds per cubic foot and the resistance acting along the shear planes defining the pullout envelope should be assumed at 150 pounds per square foot. These values also carry a safety factor of 1.5

Site Class E per Table 1613.5.2 of the *International Building Code* (2006) should govern earthquake design considerations. The soil profile associated with Site Class E is “soft clay soil.”

Concrete Slabs

Living area, outdoor shower and patio concrete slab-on-grade floors should be at least 4.5 inches thick. Each floor slab should be underlain by a capillary break consisting of a blanket of crushed rock at least four inches thick. This material should be "3B fine" drain rock, conforming to ASTM C33-90, No.67 gradation. If enhanced protection against termite invasion is desired, a four-inch thick blanket of basaltic termite barrier sand could be installed instead of the capillary break. In either case, an impervious membrane at least six mils thick should be installed above the capillary break zone. A course of damp, clean sand about two inches thick over the membrane is suggested to assist in protecting the membrane from punctures during construction as well as to enhance curing of the overlying slab concrete. In addition, the floor slabs should be reinforced with minimum No. 4 deformed steel bars set on maximum 18-inch centers in each direction. All reinforcing should be positioned at slab middepth. If the effects of thermal expansion are of concern, exterior slabs should be provided with construction joints consisting of ruled notches spaced no farther apart than eight feet on centers in each direction.

Swimming Pool

The pool shell should be designed to resist at-rest lateral earth pressures equivalent to those exerted by a fluid weighing 45 pounds per cubic foot. Additionally, the pool should be provided with a hydrostatic relief valve to prevent heaving of the pool shell that may be caused by local seepage from rooftop landscape irrigation or other sources.

The concrete pool deck should be at least 4.5 inches thick. The decking should be underlain by a six-inch thick layer of "3B fine" material, conforming to ASTM C33-90, No.67 gradation. The pool deck should be reinforced with minimum No. 4 bars placed on 18-inch centers in each direction. All reinforcing should be positioned at slab middepth. In addition, it is recommended that the reinforced deck slabs be cantilevered over the pool bond beam in lieu of standard coping. A watertight seal should be installed between the concrete deck slab and the bond beam.

Drainage and Erosion Control

Discharge from the building roof systems as well as runoff from the pavement and exterior flatwork areas should be directed away from the building lines. The new roof systems should be provided with flashing and downspouts to collect and divert runoff through a closed piping system and away from the foundations. All drainage systems should be maintained on a routine basis. Runoff onto areas where soils remain exposed should be dispersed to avoid points of concentrated flow and subsequent erosion.

Supplemental Services

JPB Engineering, Inc. should be retained to review the construction plans and specifications to determine whether the recommendations contained in this report are adequately reflected in those documents. The results of our review would be described in writing. JPB Engineering, Inc. also should be retained to test and observe any earthwork construction as well as to inspect the foundation excavations.

LIMITATIONS

This report has been prepared for the exclusive use of Michael Gearon and his designated agents. The information contained in this report is intended for the project described. If subsurface conditions different from those described in this report are discovered during construction, then the information presented herein shall be considered invalid, unless the changes are reviewed, and any supplemental or revised recommendations issued in writing by JPB Engineering, Inc. If more than one year passes between the date of this report and initiation of construction, the contents of this report must be reviewed and, if necessary, modified in light of intervening changed conditions.

Site conditions and cultural features described in the text are those existing at the time of our field reconnaissance and exploration, on 24 and 25, 2017, and may not necessarily be representative of such conditions at other places and times. Similarly, the test borings represent subsurface conditions at the times and locations indicated; it is not warranted that they are representative of such conditions at other locations and times. The locations and elevations of the test borings are referenced to documents titled: *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Halelea, Kaua'i, Hawai'i, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016, by Esaki Surveying & Mapping, Inc.; and, *Site Plan, Gearon Residence* (scale: 1" = 60'), Sheet A-1, dated December 14, 2016, by Design Concepts. Boring locations and elevations are to be considered approximate only.

Services performed by JPB Engineering, Inc. conform to generally accepted practices of other consultants who undertake similar studies at the same time and in the same geographical area as does our firm. No other warranty is expressed or implied.

APPENDIX A

Field Exploration

APPENDIX A

Field Exploration

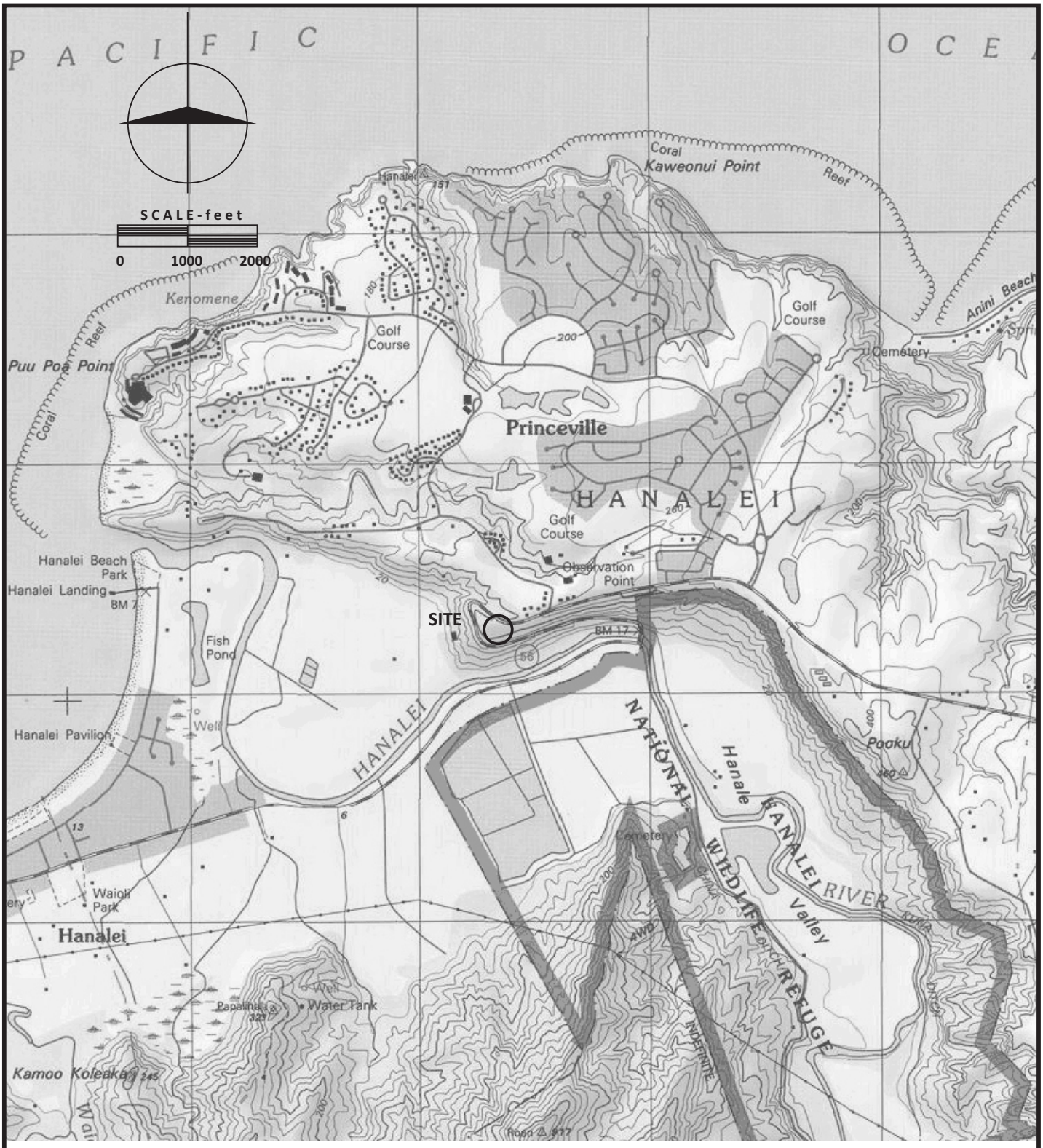
On April 24 and 25, 2017, our field representative conducted a reconnaissance of the site and surrounding vicinity. The location of the project is shown in relationship to surrounding landmarks and cultural features on Plate No. A1, Vicinity Map.

Our geotechnical exploration program was conducted under the supervision of our field representative, who logged, classified, and recovered relatively undisturbed samples of the earth materials drawn from selected vertical intervals in each of five test borings. The approximate locations of the test borings are depicted in relationship to the proposed residence, existing ground surface elevation contours and the property lines on Plate No. A2, Site Plan.

The borings were advanced to a maximum depth of approximately 14.5 feet below existing ground surface. The borings were drilled and sampled with a Dando Terrier drill rig equipped with four-inch-diameter, solid -stem helical flight augers. At selected vertical intervals in each boring, relatively undisturbed samples of the earth materials were obtained by means of a 3.0-inch-O.D. (2.5-inch-I.D.) split-spoon sampler containing stacks of thin-walled, brass rings, each one inch long. The sampler was advanced by hammer blows produced by a 140-pound hammer freely falling 30 inches, in accordance with ASTM Designation D 1586-11. The number of blows required to drive the sampler a total distance of 18 inches was recorded, and the sum of the hammer blows for the second and third 6-inch increments, or blow count, was recorded for each drive. The blow counts recorded for the split-spoon sampler are approximately twice those of the corresponding “Standard Penetration” blow counts. All of the samples were sealed in moisture-proof containers and transported in shock-resistant cases to our laboratory for further classification and testing. The samples were sealed in moisture-proof containers and transported in shock-resistant cases to our laboratory for further classification and testing.

The earth materials were classified by color, texture, consistency, tactile moisture, and other relevant characteristics. The field classifications were recorded on the field logs, which were edited for final presentation. Ground water level observations were made during drilling and upon completion of the borings, which were backfilled with tamped soil following exploration.

The Logs of Borings are depicted on Plates No. A3 through A7. A key to the soils symbols and identification criteria used on the logs is presented on Plate No. A8, Unified Soil Classification System.



Base: United States Geological Survey, 1996, *Hanalei Quadrangle, Hawai'i - Kaua'i Co., Island of Kaua'i*, 7.5 Minute Series (Topographic)

VICINITY MAP

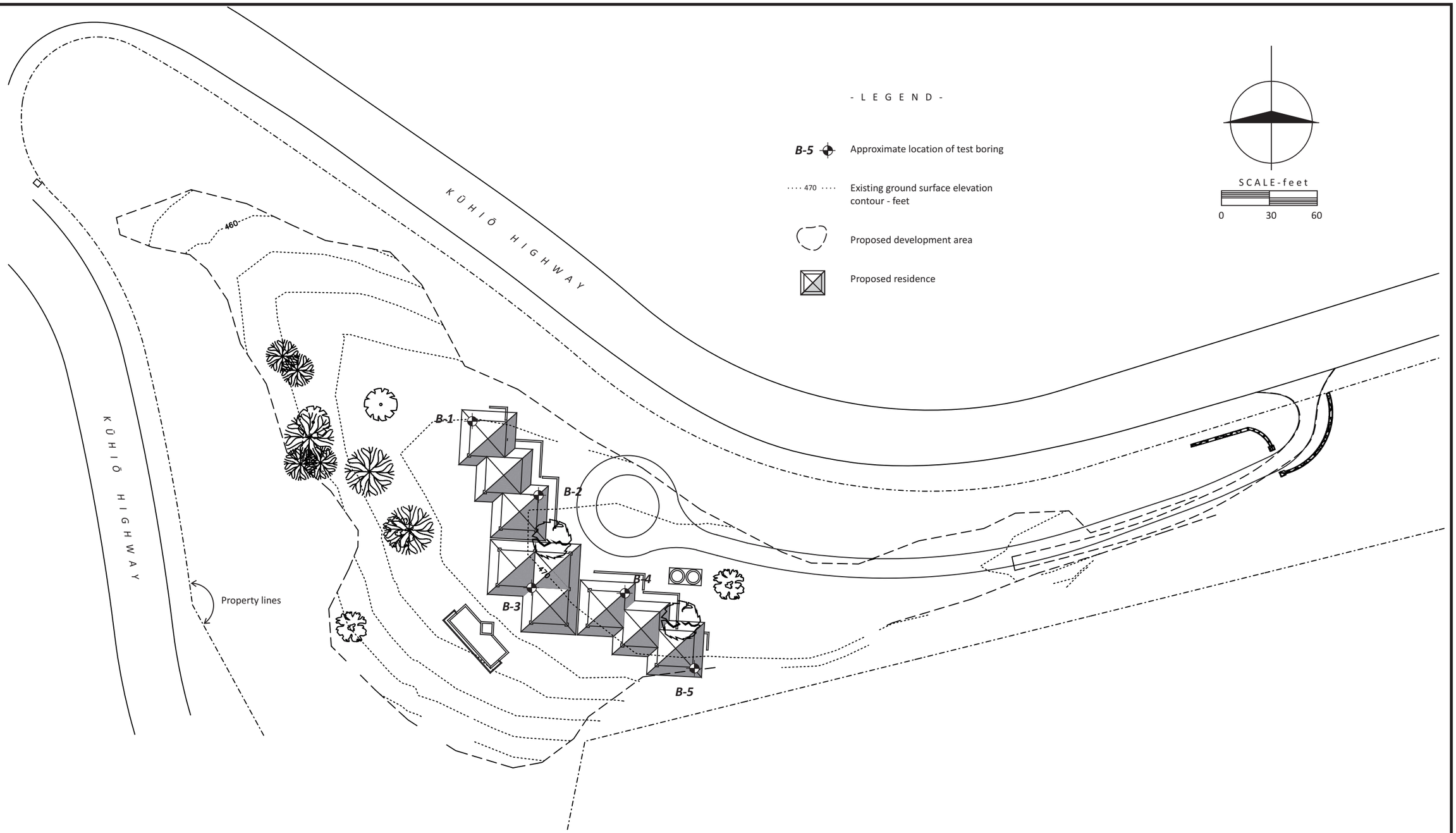
JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A1



JPB ENGINEERING, INC.
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Bases: 1. Esaki Surveying & Mapping, Inc., 2016, *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Halelea, Kaua'i, Hawai'i, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016.

2. Design Concepts, 2016, *Site Plan, Gearon Residence* (scale: 1" = 60'), Sheet A-1, dated December 14, 2016.

SITE PLAN

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: April,2017

PROJECT NO. 16273.01G

PLATE NO. A2

BORING LOCATION: See Site Plan

DRILLER: JPB Engineering, Inc.

BORING ELEVATION: 468.1 ft.

LOGGED BY: Berwin Chow

DATE DRILLED: April 24, 2017

TYPE DRILL RIG: Dando Terrier/4" dia. solid stem augers

BORING NO. B-1

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
									ML	**SILT**, reddish-orange, very moist, semicompact
AL	83	38.4		2	34	SB-1				
	82	38.5			21	SB-2	5			
									MH	**CLAYEY SILT**, brick red, very moist, soft
UC	74	52.8	0.37		7	SB-3				
							10			
CN	76	49.9			4	SB-4				very soft
										SAPROLITE, dusky orange-brown, very moist, medium-stiff
UC	88	32.7	4.13		17	SB-5				
							15			Bottom of Boring No. B-1 @ 14.5 ft. No free ground water observed.
							20			

SAMPLE TYPE

BK - Bulk
CB - Core Barrel
DN - Denison Sampler
SB - Split Barrel
SP - Standard Penetration
ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
CN - Consolidation
DS - Direct Shear Strength
SA - Sieve Analysis
SS - Shrink/Swell
UC - Unconfined Compression

LOG OF BORING

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A3

BORING LOCATION: See Site Plan

DRILLER: JPB Engineering, Inc.

BORING ELEVATION: 469.6 ft.

LOGGED BY: Berwin Chow

BORING NO. B-2

DATE DRILLED: April 25, 2017

TYPE DRILL RIG: Dando Terrier/4" dia. solid stem augers

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
									ML	**SILT**, reddish-orange, very moist, semicompact
UC	88	35.8			30	SB-1				
DS	89	31.1			19	SB-2	5			loose
									MH	**CLAYEY SILT**, brick red, very moist, soft
UC	66	40.8	0.66		6	SB-3				
	85	37.6			10	SB-4	10			
UC	78	45.9	0.98		8	SB-5				
							15			Bottom of Boring No. B-2 @ 14.5 ft. No free ground water observed.
							20			

SAMPLE TYPE

BK - Bulk
CB - Core Barrel
DN - Denison Sampler
SB - Split Barrel
SP - Standard Penetration
ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
CN - Consolidation
DS - Direct Shear Strength
SA - Sieve Analysis
SS - Shrink/Swell
UC - Unconfined Compression

LOG OF BORING

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A4

BORING LOCATION: See Site Plan

DRILLER: JPB Engineering, Inc.

BORING ELEVATION: 469.2 ft.

LOGGED BY: Berwin Chow

DATE DRILLED: April 25, 2017

TYPE DRILL RIG: Dando Terrier/4" dia. solid stem augers

BORING NO. B-3

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
									ML	**SILT**, reddish-orange, very moist, semicompact
AL	81	42.9		4	32	SB-1				
UC	89	34.9	3.22		29	SB-2	5			
									MH	**CLAYEY SILT**, brick red, very moist, soft
	82	40.1			11	SB-3				
UC	84	39.7	0.49		10	SB-4	10			
	72	57.4			9	SB-5				
							15			Bottom of Boring No. B-3 @ 14.5 ft. No free ground water observed.
							20			

SAMPLE TYPE

BK - Bulk
CB - Core Barrel
DN - Denison Sampler
SB - Split Barrel
SP - Standard Penetration
ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
CN - Consolidation
DS - Direct Shear Strength
SA - Sieve Analysis
SS - Shrink/Swell
UC - Unconfined Compression

LOG OF BORING

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A5

BORING LOCATION: See Site Plan

DRILLER: JPB Engineering, Inc.

BORING ELEVATION: 470.5 ft.

LOGGED BY: Berwin Chow

BORING NO. B-4

DATE DRILLED: April 25, 2017

TYPE DRILL RIG: Dando Terrier/4" dia. solid stem augers

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
									ML	**SILT**, reddish-orange, very moist, semicompact
UC	79	44.0	3.60		38	SB-1				
	84	39.5			20	SB-2	5			
UC	81	41.6	1.53		30	SB-3				
									MH	**CLAYEY SILT**, brick red, very moist, soft
	71	53.0			10	SB-4	10			
UC	66	56.3	0.95		11	SB-5				
							15			Bottom of Boring No. B-4 @ 14.5 ft. No free ground water observed.
							20			

SAMPLE TYPE

BK - Bulk
CB - Core Barrel
DN - Denison Sampler
SB - Split Barrel
SP - Standard Penetration
ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
CN - Consolidation
DS - Direct Shear Strength
SA - Sieve Analysis
SS - Shrink/Swell
UC - Unconfined Compression

LOG OF BORING

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A6

BORING LOCATION: See Site Plan

DRILLER: JPB Engineering, Inc.

BORING ELEVATION: 469.0 ft.

LOGGED BY: Berwin Chow

DATE DRILLED: April 24, 2017

TYPE DRILL RIG: Dando Terrier/4" dia. solid stem augers

BORING NO. B-4

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
									ML	**SILT**, reddish-orange, very moist, semicompact
DS	83	39.7			26	SB-1				
	85	39.6			34	SB-2	5			
									MH	**CLAYEY SILT**, brick red, very moist, medium-stiff
UC	74	57.0	1.10		12	SB-3				
	78	50.0			13	SB-4	10			
										SAPROLITE, dusky orange-brown, very moist, medium-stiff
UC	68	55.0	1.48		12	SB-5				
							15			Bottom of Boring No. B-5 @ 14.5 ft. No free ground water observed.
							20			

SAMPLE TYPE

BK - Bulk
CB - Core Barrel
DN - Denison Sampler
SB - Split Barrel
SP - Standard Penetration
ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
CN - Consolidation
DS - Direct Shear Strength
SA - Sieve Analysis
SS - Shrink/Swell
UC - Unconfined Compression

LOG OF BORING

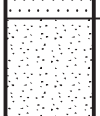
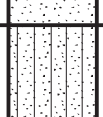
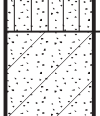
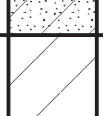
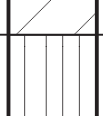
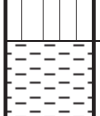
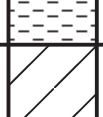
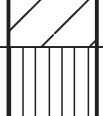
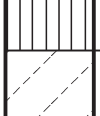
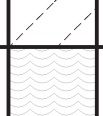
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Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A6

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			ICON	CODE	
COARSE-GRAINED SOILS More than 50% of material is larger than the No. 200 Sieve	**GRAVEL AND GRAVELLY SOILS** Less than 50% of coarse fraction passes the No. 4 Sieve	**CLEAN GRAVELS** Less than 12% of fine fraction passes the No. 200 Sieve		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		SILTY OR CLAYEY GRAVELS At least 12% of fine fraction passes the No. 200 Sieve		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	SAND AND SANDY SOILS At least 50% of coarse fraction passes the No. 4 Sieve	**CLEAN SANDS** Less than 12% of fine fraction passes the No. 200 Sieve		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
		SILTY OR CLAYEY SANDS At least 12% of fine fraction passes the No. 200 Sieve		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than the No. 200 Sieve	**SILTS AND CLAYS** Liquid Limit is less than 50	Plasticity index is above "A" Line		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		Plasticity index is below "A" Line		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or slightly plastic clayey silts
				OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limit is greater than 50	Plasticity index is above "A" Line		CH	Inorganic clays of high plasticity
		Plasticity index is below "A" Line		MH	Inorganic silts, micaceous or diatomaceous fine sands or silty soils
				OH	Organic clays of medium to high plasticity, organic silts
				Pt	Peat, humus, marsh soils with high organic content

UNIFIED SOIL CLASSIFICATION SYSTEM

JPB ENGINEERING, INC.
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GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. A8

APPENDIX B

Laboratory Testing

APPENDIX B

Laboratory Testing

The laboratory testing program included natural moisture content, dry unit weight, plasticity, direct shear, unconfined compressive strength and compressibility determinations.

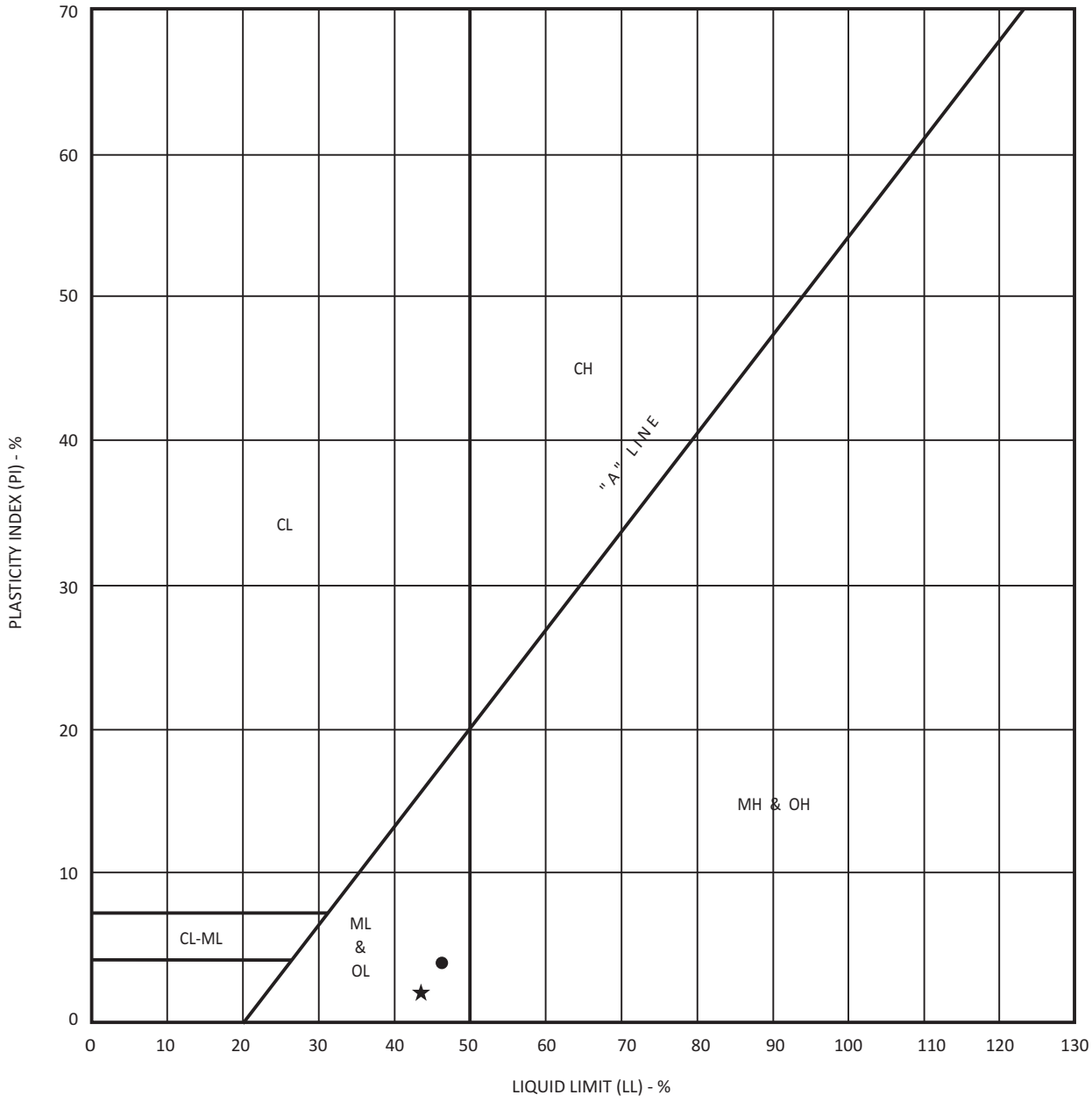
Natural moisture content tests (ASTM Designation D 2216-06) and dry unit weight tests (ASTM Designation D 2937-10) were conducted on selected samples of the earth materials recovered from each test boring. The results are posted on the Logs of Borings, opposite the depth appropriate to each sample.

Atterberg limits tests (ASTM Designation D 4318-05) were performed on selected samples of the surficial soil to evaluate its plasticity characteristics. The results are depicted on Plate No. B1, Atterberg Limits Test Data.

Consolidated, drained direct shear tests (ASTM Designation D 3080-11) were conducted at normal pressures of 1,000, 2000 and 3,000 pounds per square foot on selected samples of the surficial soil to evaluate its internal strength characteristics. The data are summarized on Plates No. B2 and B3, Direct Shear Test Data.

Unconfined compressive strength tests (ASTM Designation D 2166-06) were completed on selected samples of the native soils and underlying saprolite formation to estimate their undrained strength properties. The results are illustrated on Plates No. B4 through B7, Unconfined Compressive Strength Test Data.

A unidimensional consolidation test (ASTM Designation D 2435-04) was completed on a selected sample of the clayey silt deposit at depth to assess its compressibility properties. The results are portrayed on Plate No. B8, Consolidation Test Data.



Point Code	Boring No.	Sample No.	Depth (ft)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Unified Soil Classification
★	B-1	SB-1	1.0	43	41	2	ML
●	B-3	SB-1	1.0	45	41	4	ML

ATTERBERG LIMITS TEST DATA

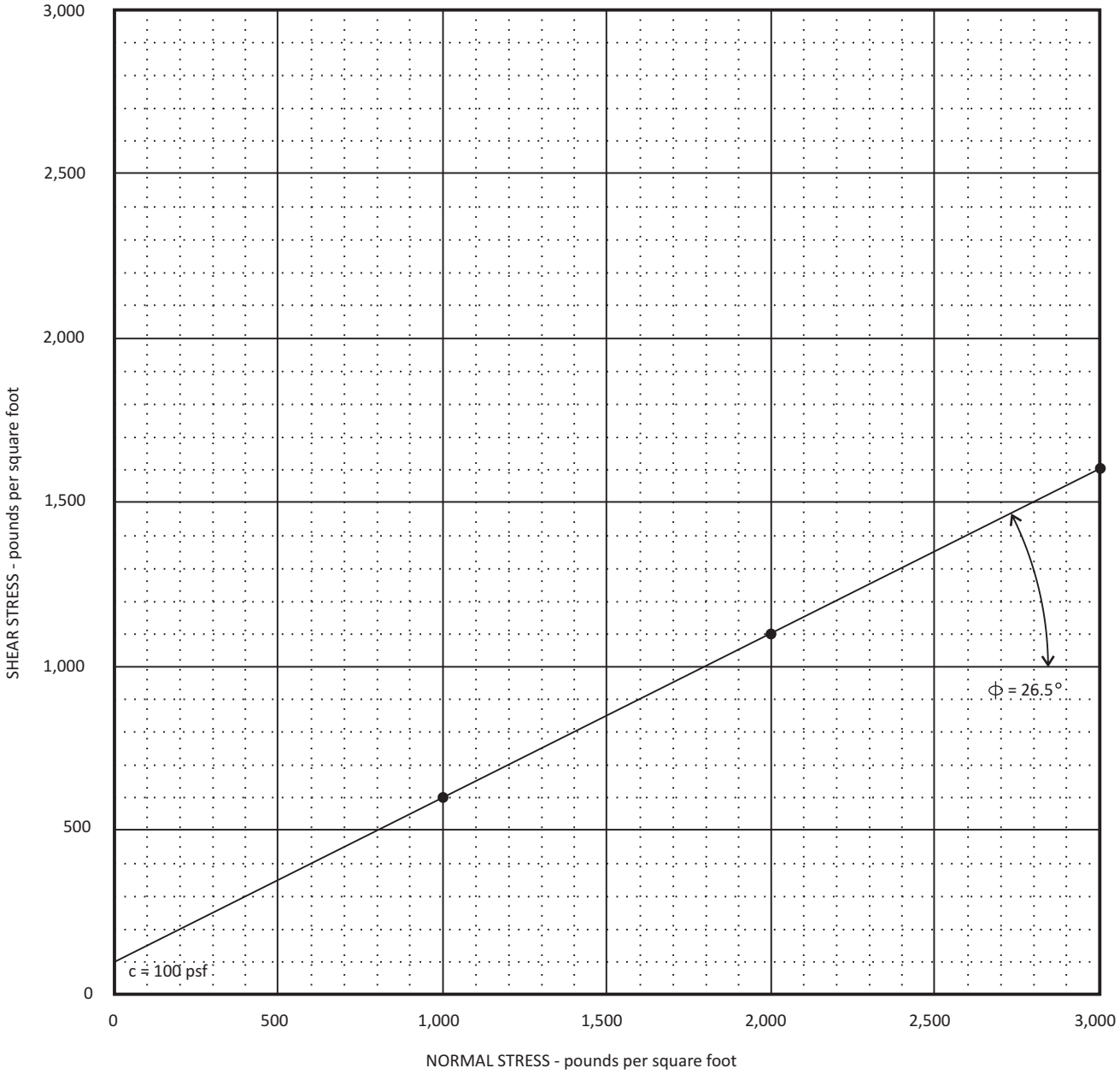
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GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B1



Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Normal Stress (psf)	Shear Stress (psf)
B-2	SB-2	4.0	78	35.7	1,000	600
B-2	SB-2	4.0	76	32.9	2,000	1,100
B-2	SB-2	4.0	79	36.2	3,000	1,595

DIRECT SHEAR TEST DATA

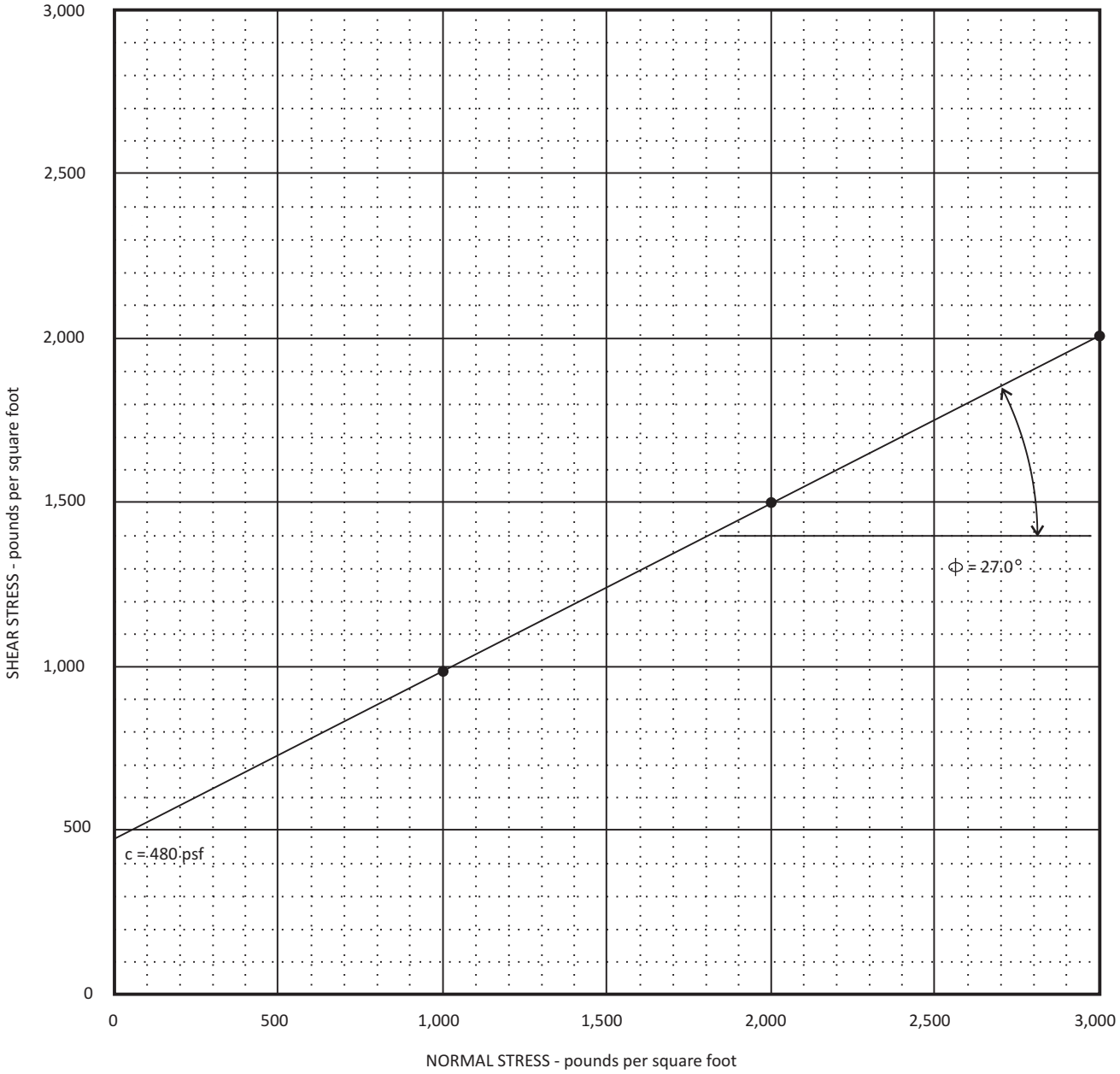
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GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B2



Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Normal Stress (psf)	Shear Stress (psf)
B-5	SB-1	1.0	78	41.7	1,000	990
B-5	SB-1	1.0	76	41.6	2,000	1,500
B-5	SB-2	1.0	79	34.8	3,000	2,010

DIRECT SHEAR TEST DATA

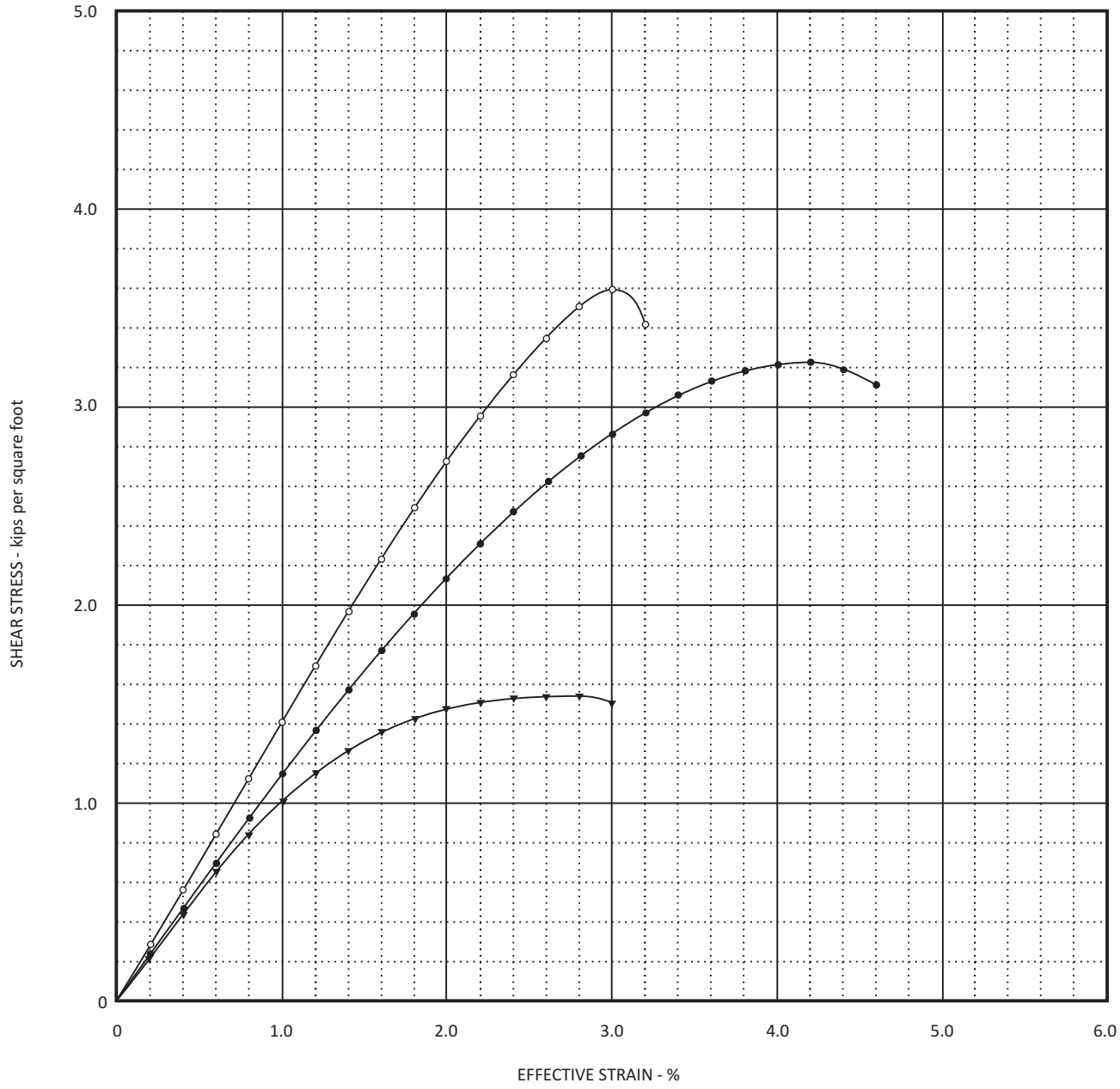
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Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B3



Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
●	B-3	SB-2	4.0	89	34.9	4.2	3,215
○	B-4	SB-1	1.0	79	44.0	3.0	3,595
▼	B-4	SB-3	7.0	81	41.6	2.8	1.525

UNCONFINED COMPRESSIVE STRENGTH TEST DATA

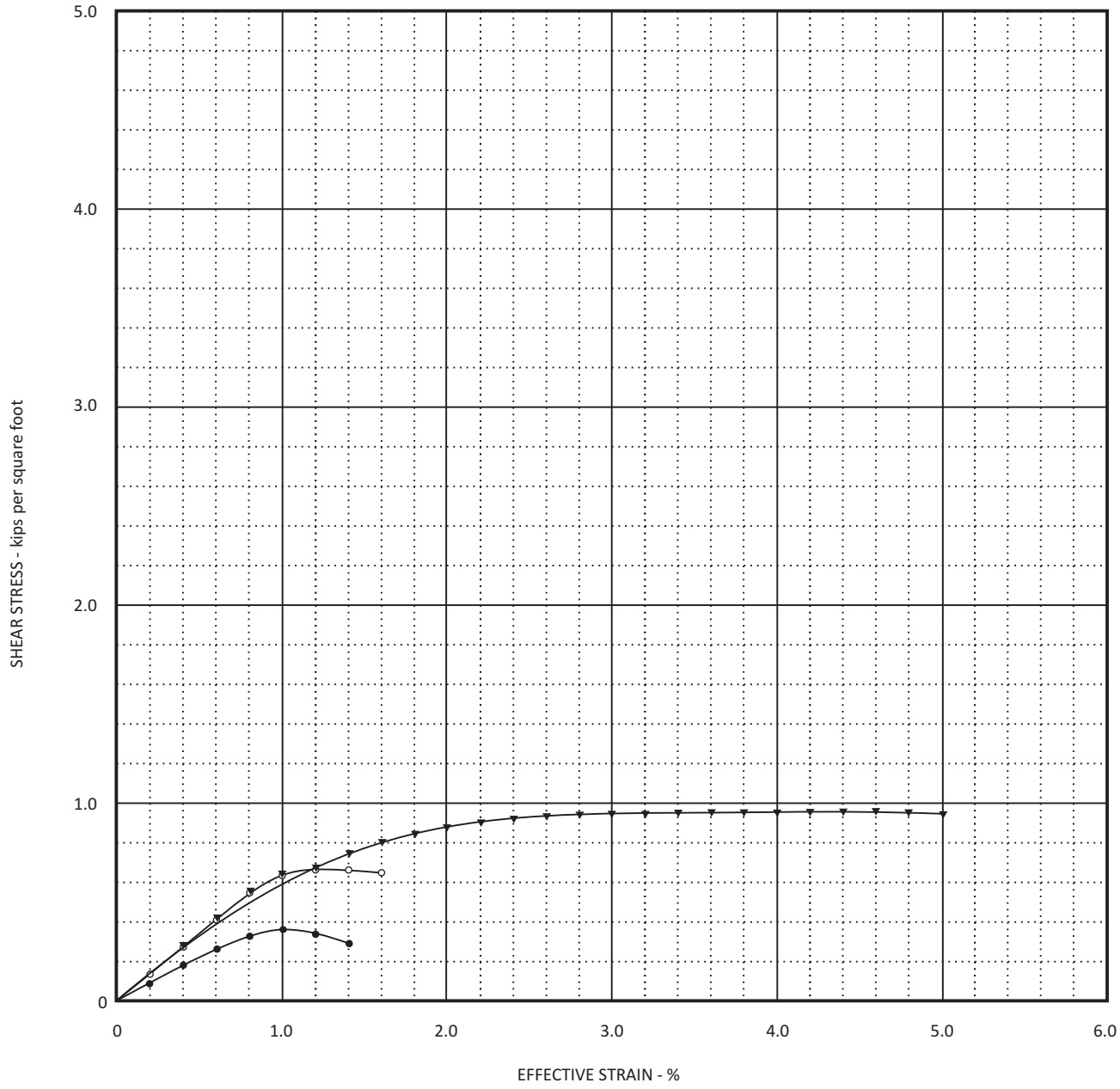
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Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B4



Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
●	B-1	SB-3	7.0	74	52.8	1.0	310
○	B-2	SB-3	7.0	66	40.8	1.2	660
▼	B-2	SB-5	13.0	78	45.9	4.6	985

UNCONFINED COMPRESSIVE STRENGTH TEST DATA

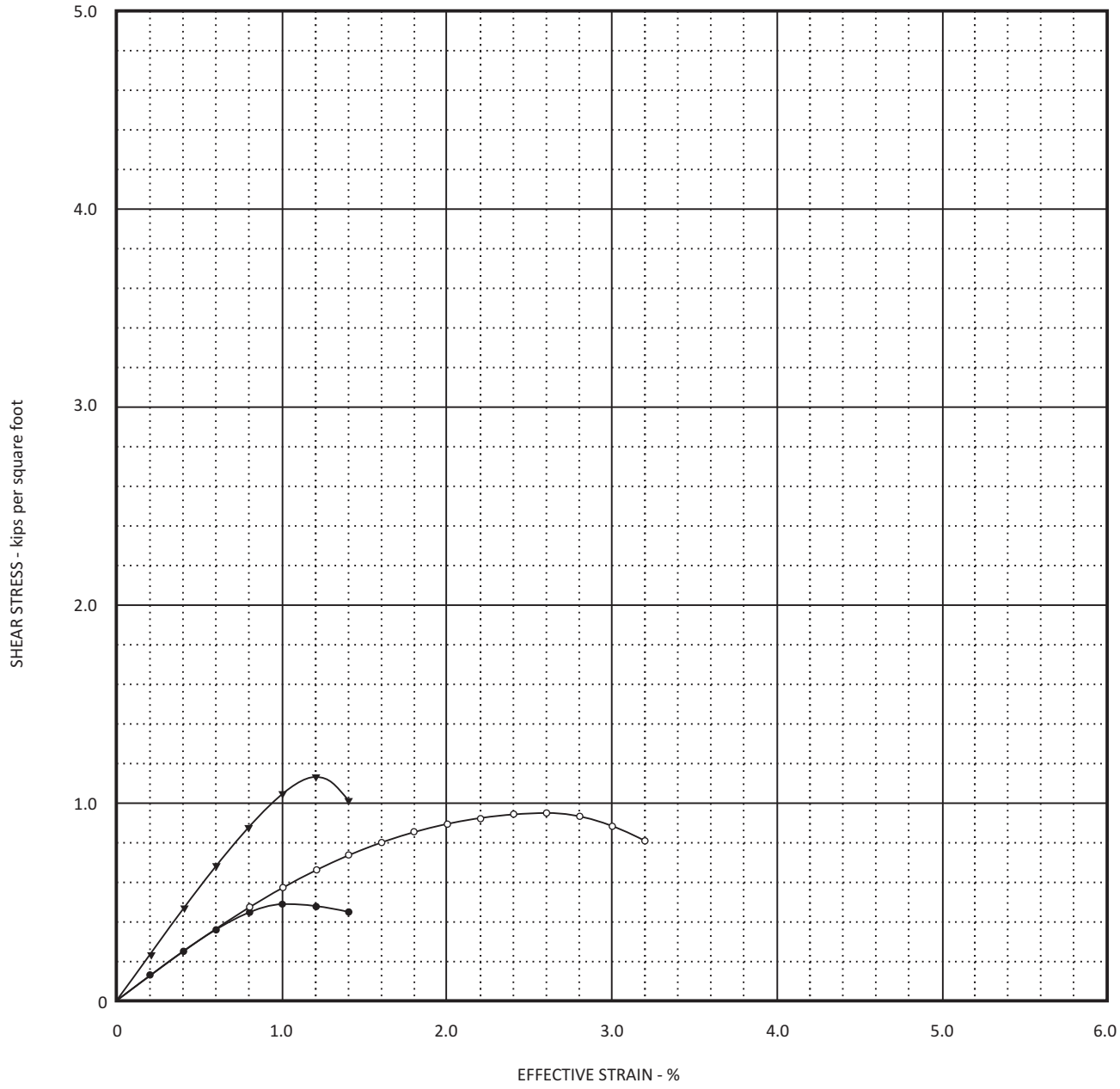
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GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B5



Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
●	B-3	SB-4	10.0	84	39.7	1.0	490
○	B-4	SB-5	13.0	66	56.3	1.2	950
▼	B-5	SB-3	7.0	74	57.0	4.6	1,100

UNCONFINED COMPRESSIVE STRENGTH TEST DATA

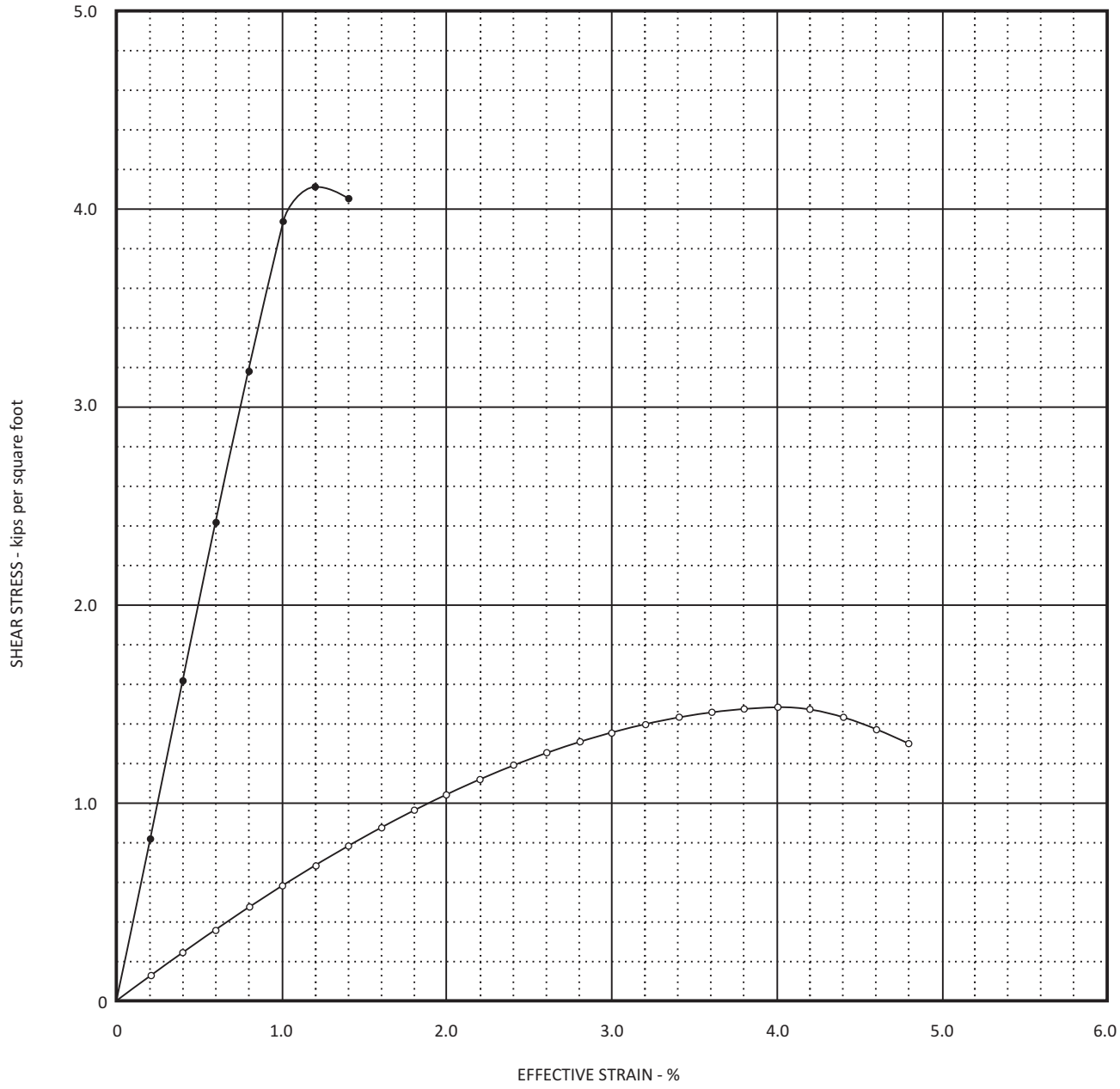
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Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B6



Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
●	B-1	SB-5	13.0	88	32.7	1.2	4,130
○	B-5	SB-5	13.0	68	55.0	4.0	1,475

UNCONFINED COMPRESSIVE STRENGTH TEST DATA

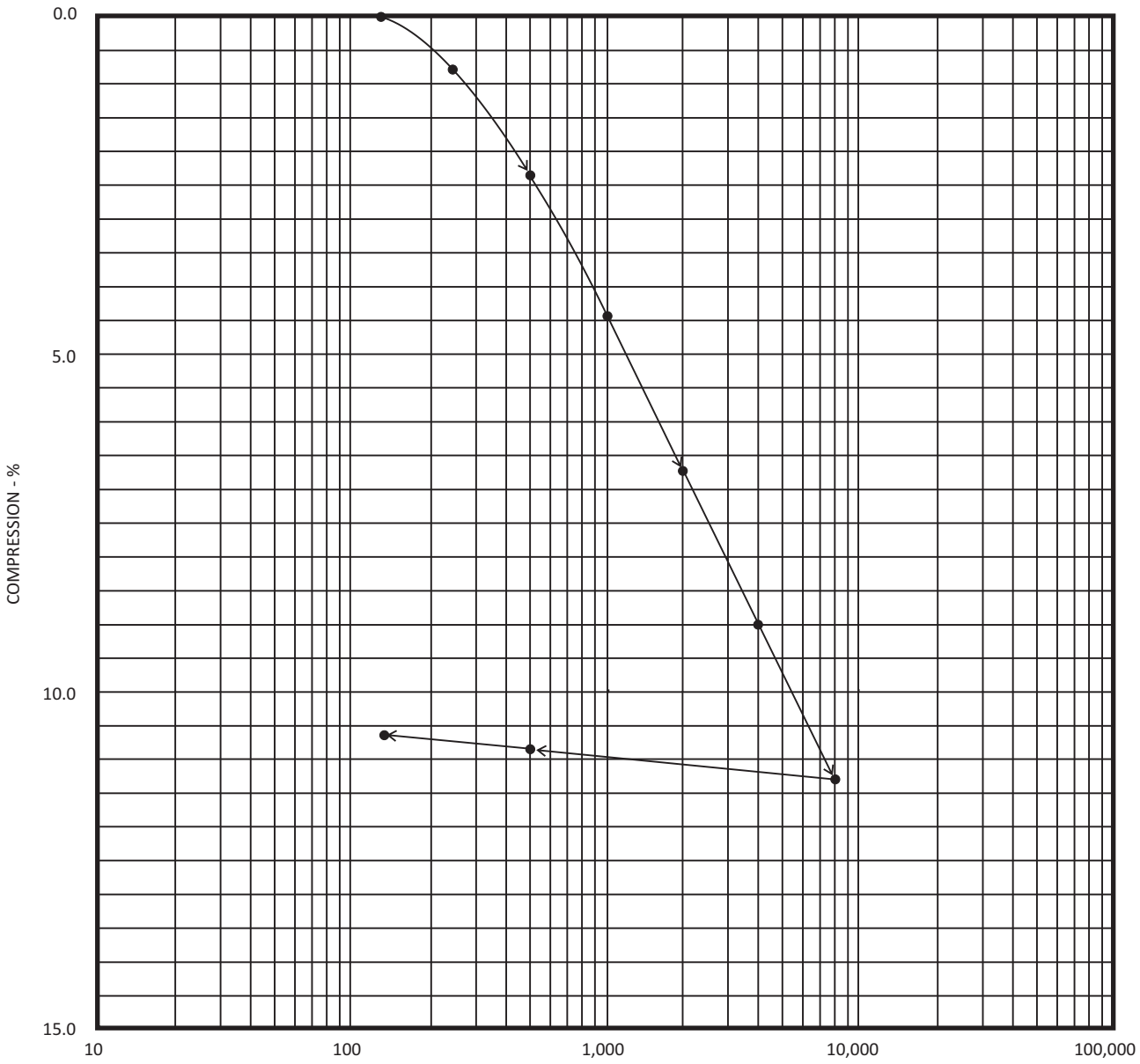
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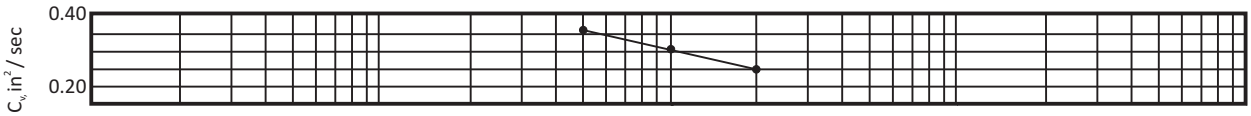
GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B7





Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)		Moisture Content (%)	
			Before Test	After Test	Before Test	After Test
B-1	SB-4	10.0	78	86	49.9	43.9

CONSOLIDATION TEST DATA

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2017

PROJECT NO. 16273.01G

PLATE NO. B8

APPENDIX C

References

APPENDIX C

References

1. Clan Architecture, LLC, 2017, *Gearon Residence* (various scales), seven sheets, dated May 18, 2017.

2. Esaki Surveying & Mapping, Inc., 2016, *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Halelea, Kauaʻi, Hawaiʻi, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016.

3. Foote, D.; Hill, E. L.; Nakamura, S.; and Stephens, F., 1972, S*oil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokaʻi and Lānaʻi, State of Hawaiʻi*, United States Department of Agriculture.

4. Macdonald, G. A., *et al.*, 1960, *Geology and Ground-Water Resources of the Island of Kauaʻi, Hawaiʻi*, United States Geological Survey Bulletin 13.

5. State of Hawaiʻi, Department of Taxation, 1996, *Taxation Maps Bureau Tax Map Key 5-4-4-32* (scale: 1"= 60').

6. United States Geological Survey, 1983, *Anahola Quadrangle, Hawaiʻi - Kauaʻi Co., Island of Kauaʻi, 7.5-Minute Series (Topographic)* (scale: 1:24,000).

DISTRIBUTION

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mgearon@heliosholdings.net

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2484 Keneke Street, Suite 102
Kīlauea, Kauaʻi, Hawaiʻi 96754
santo@dckauai.com

PHASE I - ENVIRONMENTAL SITE ASSESSMENT

Gearon Hanalei Property
Kūhiō Highway near Princeville
Kaua‘i, Hawai‘i 96722
Tax Map Key: (4) 5-4-004:032

July 7, 2017



PREPARED FOR:

Michael Gearon
Helios Hanalei LLC
3350 Riverwood Parkway, Suite 425
Atlanta, Georgia 30339

PREPARED BY:

Pacific Greene Environmental Inc.
5251 Kaapuni Rd.
Kapaa, Hawai‘i 96746
(808) 639-2817

PGE Pacific Greene Environmental Inc.
Environmental, Health and Safety Consulting Services
5251 Kaapuni Road Kapaa, Kaua`i, Hawai'i 96746 tel: (808) 639-2817

July 7, 2017

Michael Gearon
Helios Hanalei LLC
3350 Riverwood Parkway, Suite 425
Atlanta, Georgia 30339

Subject: **Phase I Environmental Site Assessment**
Gearon Hanalei Property
Kūhiō Highway near Princeville
Kaua`i, Hawai`i 96722
Tax Map Key: (4) 5-4-004:032

Dear Mr. Gearon:

Pacific Greene Environmental Inc. (PGE) has performed a Phase I Environmental Site Assessment (ESA) of the subject property, referenced above, here after referred to as subject property or site. The purpose of this assessment was to evaluate potential environmental issues on the subject property as part of due diligence in preparation for development of the property.

The accompanying report summarizes our findings and relates our opinions with respect to the property and potential sources of contamination at the property. Our findings and opinions are based on information that we obtained on given dates through records review, site reconnaissance, interviews, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions we observed to have changed after our observation.

It has been a pleasure conducting this environmental assessment for you. If you have questions regarding this report please contact me at (808) 639-2817.

Respectfully submitted,

Pacific Greene Environmental, Inc.

Howard Greene

Environmental Project Manager

Executive Summary

Pacific Greene Environmental Inc. (PGE) was retained by Michael Gearon of Helios Hanalei LLC, owner of the subject property, to conduct a Phase I Environmental Site Assessment in conformance with ASTM International (ASTM) Practice E 1527-13, Standard Practice for Environmental Site Assessments. The subject property is located in north Kaua`i, near Princeville, Hawai`i 96722. It is designated as Tax Map Key: (4) 5-4-004:032. The property has a combined area of 14.109 acres of land. The property has a gently sloped bluff that is the planned site of a residence. The bluff and drive way entry area are mostly cleared and well maintained. Remainder of property is steeply sloped and forested. Slope stabilization improvements cover about a 3 acre portion of the central part of the property to protect the highway below. There are no structural improvements. The property has no known previously developed or agricultural uses. Surrounding land use includes commercial, residential, and conservation. Surrounding most of the property is Kūhiō Highway 56. The property lies within the State Conservation District.

The purpose of this Phase I ESA was to identify recognized environmental conditions (REC). ASTM guidance defines a REC as the presence or likely presence of any hazardous substances or petroleum products, in, on, or at the property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

PGE conducted a site reconnaissance on May 22, 2017. A rock wall and gate secured access to the bluff of the site. The bluff was generally cleared, free of trash/debris and closely mowed. The slopes are steep and forested. On the steep slopes along Kūhiō Highway, there are slope stabilization anchors, cables and steel netting protecting the highway below. Otherwise the property was not in any particular use. Surrounding properties are in various commercial, residential and agricultural uses. A Kaua`i Island Utility Substation and transmission lines are located near the east side of the property, on the U.S Fish and Wildlife property. No indications of RECs were noted during the site inspection of the subject property.

There are three registered underground storage tank(UST) sites listed in the State of Hawai`i list of registered USTs located within a quarter of a mile radius. These are Princeville Chevron, County of Kaua`i Police/Fire Station and Hawai`ian Tel. The USTs at Princeville Chevron and Hawai`ian Tel are in use. These site's tanks are in good regulatory standing.

There are two leaking underground storage tank (LUST) sites within one-half mile of the property. One is the current Princeville Chevron site. The second is County of Kaua`i Police/Fire Station. The leaking tanks have been removed and cleanup is complete. No further action is being required by the Hawai`i Department of Health. Both sites are slightly up gradient of the subject site however no impacts are expected to the subject property. It is not likely that any of these LUST sites would have negatively impacted the subject property due to their status, distance from, and/or location relative to the subject property.

This assessment has revealed no evidence of RECs associated with the Property.

Based on the research performed in this assessment, the inspection of the property, discussions with persons knowledgeable about the property, and reviews of regulatory agency files, the conclusion reached in this investigation is that there are no significant, recognized environmental conditions that affect the use or regulatory liability associated with the subject property.

PGE Pacific Greene Environmental Inc.
Environmental, Health and Safety Consulting Services
5251 Kaapuni Road Kapaa, Kaua`i, Hawai`i 96746 tel: (808) 639-2817

PACIFIC GREENE ENVIRONMENTAL INC.
ENVIRONMENTAL CERTIFICATION STATEMENT

Report:	Phase I Environmental Site Assessment, ASTM E1527-13
Inspection Date:	May 22, 2017
Weather Conditions:	84° F, Sunny
Report Date:	July 7, 2017
Site:	Gearon Hanalei Property
	Kūhiō Highway near Princeville
	Kaua'i, Hawai`i 96722
	Tax Map Key: (4) 5-4-004:032
Client:	Michael Gearon
	Helios Hanalei LLC
	3350 Riverwood Parkway, Suite 425
	Atlanta, Georgia 30339

Report Prepared By: Howard Greene Date: July 7, 2017

ENVIRONMENTAL PROFESSIONAL CERTIFICATION

I declare that, to the best of my professional knowledge and belief, I meet the definition of *Environmental Professional* as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312. As the Environmental Professional who directed this project I have specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property.

We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Howard Greene Date: July 7, 2017



Environmental Project Manager

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List of Acronyms

ACM	asbestos-containing material
AST	aboveground storage tank
ASTM	ASTM International
c.	circa
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
COC	contaminants of concern
COK	County of Kaua`i
CORRACTS	Corrective Action Sites under RCRA
CREC	controlled recognized environmental condition
CWB	Clean Water Branch
CWRM	Commission on Water Resources Management
DLNR	Department of Land and Natural Resources, State of Hawai`i
EDR	Environmental Data Resources, Inc.
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FINDS	Facility Index System
FPB	Fire Prevention Bureau
HDOH	State of Hawai`i, Department of Health
HEER	Hazard Evaluation and Emergency Response
HREC	historical recognized environmental condition
IEC	Institutional / Engineering Controls
IRHB	Indoor & Radiological Health Branch
IWS	individual wastewater system
KIUC	Kaua`i Island Utility Cooperative
LBP	lead-based paint
LUST	leaking underground storage tank
mg/L	milligrams per liter
msl	mean sea level
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NPL	National Priorities List (Superfund sites)
NRCS	Natural Resources Conservation Service
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
SDWB	Safe Drinking Water Branch
SHWB	Solid and Hazardous Waste Branch
SHWS	State of Hawai`i Hazardous Waste Sites
SQG	small quantity generator
TMK	tax map key
TSD	treatment, storage and disposal (category of RCRA facility)
U.S.	United States of America
U.S.C.	United States Code

List of Acronyms (Continued)

USDA	United States Department of Agriculture
USGS	United States Geological Survey (U.S. Department of the Interior)
UST	underground storage tank
VRP	Voluntary Response Program
WWB	Wastewater Branch

Section 1 Introduction

1.1 Overview

Pacific Greene Environmental Inc. (PGE) was retained was retained by Michael Gearon of Helios Hanalei LLC, Owner of the subject property, to conduct a Phase I Environmental Site Assessment (ESA) in conformance with ASTM International (ASTM) Practice E 1527-13, Standard for Environmental Site Assessments. The subject property is located at Kūhiō Highway at the intersection of Hanalei Plantation Road in Princeville, Island of Kaua`i, Hawai`i. It is designated as Tax Map Key (TMK): (4) 5-4-004:032; hereinafter referred to as "*the site, the subject property and/or the property".* The objective of this assessment was to determine the presence or absence of recognized environmental conditions (REC), as defined in ASTM, International (ASTM) 1527-13. There are no exceptions or deletions from ASTM Practice E 1527-13.

1.2 Purpose

This Phase I ESA was requested by the client, to document the environmental condition of the subject property as part of due diligence for the potential development of a single-family residence on the property. PGE conducted this Phase I ESA to identify RECs associated with the property. The purpose of this practice is to define good commercial and customary practice in the United States of America (U.S.) for conducting an ESA of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S. Code [U.S.C.] §9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs"): that is, the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 U.S.C. §9601(35)(B).

For the purposes of this practice:

- The definition of a release includes contamination in the soil vapor phase, as well as in soil or groundwater.
- "Migrate' and "migration" refer to the movement of hazardous substances or petroleum products in any form, including solid and liquid at the surface or subsurface and vapor in the subsurface.
- Vapor migration/intrusion *does not fall under the category of an Indoor Air Quality concern*, which is not included in the ASTM 1527 scope of work.

ASTM guidance defines a REC as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment (ASTM 2013).

Controlled RECs (CREC) are defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action (NFA) letter

or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls) (ASTM 2013).

Historical RECs (HREC) are defined as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls) (ASTM 2013).

RECs do not include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies (ASTM 2013). Health or environmental *de minimis* conditions will be noted in this report as Potential Environmental Concerns.

1.3 Detailed Scope-of-Services

This Phase I ESA was performed under the conditions of, and in general accordance with PGEs' Proposal, dated May 18, 2017, and with the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Designation E 1527-13). Adherence to the ASTM standard is intended to limit liability of property owners from inherited environmental contamination.

The Phase I ESA included the following tasks:

- **Review of regulatory records.** PGE reviewed standard environmental record sources including the U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) database, U.S. EPA's Resource Conservation and Recovery Act (RCRA) database, U.S. Institutional Controls database, U.S. Engineering Controls database, U.S. EPA's Emergency Response Notification System (ERNS) database, State of Hawai`i Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office site list, HDOH Underground Storage Tank (UST) lists, HDOH list of landfills and other solid waste facilities, HDOH Voluntary Response Program (VRP) sites list, and the HDOH Brownfield sites list.
- **Review of site history.** PGE reviewed reasonably ascertainable standard historical sources including historical maps; aerial photographs; building permits, zoning records, and property tax records available online; various printed publications as well as publications posted on the internet; and documents and/or records provided by the user's/owner's representative.
- **Review of site geology and hydrogeology.** PGE reviewed reasonably ascertainable published information on surface and subsurface conditions at the site and surrounding area. PGE used this information to assess topography, drainage, surface water bodies, anticipated subsurface geology, and groundwater occurrence and usage in the area.
- **Site reconnaissance.** PGE performed a site reconnaissance of the property to note visual signs of contamination, and conducted a limited assessment of portions of the neighboring properties visible from the subject property boundaries. During the site reconnaissance PGE specifically looked for hazardous substances; petroleum products; aboveground storage tanks (AST) and USTs; odors; pools of liquid; drums; electrical and hydraulic equipment;

means of heating and cooling structures; stains or corrosion; drains and sumps; pits, ponds, or lagoons; stained soil or pavement; stressed vegetation; solid waste; wastewater; wells; and septic systems.

- **Interviews**. PGE interviewed available personnel familiar with the site conditions and/or history of site use.
- **Data evaluation and report preparation.** PGE evaluated the information collected and prepared this report that documents our assessment and presents our findings, opinions, and conclusions.

1.4 Significant Assumptions

Significant assumptions include the following:

1) The information provided by the owner/user and the owner/user representatives is complete and accurate;
2) The information provided by the tenants and the tenant representatives is complete and accurate;
3) The information provided by the regulatory database search service is complete and accurate; and
4) The responses of government agencies to public requests for information are complete and accurate.

1.5 Limitations and Exceptions

Phase I ESAs, by their very nature, are limited. PGE has endeavored to meet what it believes is the applicable standard of care and, in so doing is obliged to advise its client of Phase I ESA limitations. This Phase I ESA did not assess environmental issues or conditions at the property that are outside the scope of ASTM Practice E1527-13, including, but not limited to, asbestos-containing material (ACM), biological agents, cultural and historical resources, ecological resources, endangered species, health and safety, indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint (LBP), lead in drinking water, mold, radon, regulatory compliance, and wetlands, nor did it include any sampling or testing for biological agents and mold, radon, methane, ACM, LBP, or other environmental contaminants. Our investigation was limited to the procedures described in the Phase I ESA Standard Practice (ASTM 2013).

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity and our interpretation of the available historical and regulatory information and documents reviewed. They are intended exclusively for the purpose outlined herein and apply only to the site location and project indicated.

The findings and opinions are based on information that PGE obtained on given dates through records review, site reconnaissance, interviews, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions PGE observed to have changed after our observation. For these and associated reasons, PGE and many of its peers routinely advise clients for ESA services that it would be a mistake to place unmerited faith in findings and opinions conveyed via ESA reports. PGE cannot under any circumstances warrant or guarantee that not finding indicators of hazardous substances or

petroleum products means that hazardous substances or petroleum products do not exist on the site.

1.6 Special Terms and Conditions

PGE's services are performed, within the limits prescribed by our clients, with the usual thoroughness and competence of the consulting profession in accordance with the standard for professional services at the time those services are rendered. No warranty or representation, either expressed or implied, is included or intended in the proposals, contracts, or reports.

Findings and opinions presented herein apply to site conditions existing at the time of PGE's investigation and those reasonably foreseeable; they cannot necessarily apply to site changes of which PGE is not aware and has not had the opportunity to evaluate.

1.7 Data Gaps

Based on the information obtained during this ESA, it is the professional opinion of PGE that there are no historical data failures, as defined in the ASTM guidelines, that would affect the ability to identify potential REC(s) associated with the subject property.

1.8 User Reliance

This report is intended for the use of Michael Gearon of Helios Hanalei LLC, (the property owner) and it's designated assignees. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of said user.

Section 2 Site Description

2.1 Location and Legal Description

The subject property is located in the north area of Kaua`i, near Princeville, Hawai`i 96722, as shown on Figure 1, included in Appendix A. The property is located at mauka (inland) of Kūhiō Highway at the intersection of Hanalei Plantation Road. It is designated as Tax Map Key (TMK): (4) 5-4-004:032, as shown on Figure 2, included in Appendix A.

The subject property consists of land area totaling 14.109 acres. There are no building or other structural improvements. The property is not serviced by any utilities.

The approximate coordinates of the subject property is 22° 12' 39.44'' North latitude and 159° 28' 52.31'' West longitude. The property is located approximately 260 feet above mean sea level at it's highest elevation down to about 40 feet above mean sea level at it's lowest elevation.

2.2 Site and Vicinity General Characteristics

The property is located on adjacent to, and mauka of Kūhiō Highway 56, just west of the Hanalei Valley Lookout owned by the US Fish and Wildlife Service. The property includes all of the land within the horseshoe curve of Kūhiō Highway which leads down to Hanalei River and Hanalei town. The upper portion of the property is a gently rolling, somewhat level bluff with exceptional views of Hanalei Valley, Hanalei Bay, the Haena coastline and Pacific Ocean.

Hanalei Valley is largely managed by the US Fish and Wildlife Service as the Hanalei National Wildlife Refuge. Agricultural activities are allowed in the Refuge and include the cultivation of Taro.

The Princeville area to the north of the subject property is in residential, commercial and resort uses. Princeville shopping center, directly northeast of the subject property, is the primary commercial resource center for the Princeville community. Directly across the property to the north are a Fire and Police Station and residences.

According to Federal Emergency Management Agency Flood Plain Panel Number 1500020055E, the property is within Flood Hazard Zone X and is determined to be outside the 500-and 100-year flood plain (EDR, 2017a).

The property zoning and tax classification is Conservation.

2.3 Current Use of the Property

The property is currently vacant land with no improvements. The western end of the property is a relatively flat bluff. It has been generally cleared of woody vegetation. It is grassed and mowed periodically. The property has a rock wall gated entry, with a graveled driveway leading to the bluff area. The remainder of the property to the south and east are steeply sloped. Slope stabilization has occurred in this area to protect the Kūhiō highway below. There are no other particular uses currently on the property.

2.4 Descriptions of Structures, Roads, and Other Improvements on the Site

The County of Kaua'i approved an SMA minor permit for the installation of a gate and a rock wall at the entrance to the parcel on April 20, 2015. A gravel drive leads from the highway to the bluff area. The only other improvements noted was the slope stabilization project. This mainly consists of anchors, cables and steel mesh netting. More information on the slope stabilization project can be found in the Final Environmental Assessment Kūhiō Highway Slope Stabilization January 2009 (See Section 10 References). The general contractor was Earthworks Pacific. No as builts were acquired to verify installation footprint. The property is not currently serviced by any public utilities.

Photographs of the subject property are included in Appendix A, Inspection Photo Documentation.

2.5 Current Uses of the Adjacent Properties

The property is bordered to the north, west and south by Kūhiō Highway 56, also known as Kauia's Belt Road, which is listed a Historic District on the National Register of Historic Places.

The property to the to the west and throughout Hanalei Valley is owned by the US Fish and Wildlife Service and operated as Hanalei National Wildlife Refuge. Its uses are designated as conservation and agricultural with remnant residential uses.

The property to the north is in residential and commercial uses. The County of Kaua`i Hanalei Fire and Police Station is directly across Kūhiō Highway from the subject property. Beyond these properties is the Princeville Resort area. Princeville Corporation operates services and amenities for the Princeville community. These activities include a golf course and tennis facilities, sewer collection system and wastewater treatment plant, and domestic public water system and many activities supporting these operations.

Section 3 User Provided Information

Michael Gearon of Helios Hanalei LLC, completed an ASTM E1527-13 Questionnaire. The ASTM questionnaire is provided in Appendix A, and Mr. Gearon's responses are summarized in the following sections.

3.1 Environmental Liens or Activity and Use Limitations

The user (client) is not aware of any environmental liens, activity and/or use limitations associated with the subject property. Note-There are recorded Right of Entry and Easements for slope stabilization activities.

3.2 Specialized Knowledge

The user (client) indicated no specialized knowledge in connection with the subject property or facility operations.

3.3 Commonly Known or Reasonably Ascertainable Information

The user (client) did not provide information regarding any commonly known or reasonably ascertainable information within the local community that is material to RECs in connection with the property.

3.4 Valuation Reduction for Environmental Issues

PGE was not provided with an appraisal for the subject property. No environmental issues were identified by the user/client that could result in property value reduction.

3.5 Reason for Performing the Phase I ESA

The purpose of the Phase I ESA assessment was to evaluate the potential environmental issues on the subject property as part of due diligence for a potential development of a single-family residence on the property.

Section 4 Records Review

4.1 Standard Environmental Record Sources

4.1.1 Overview

To identify the presence of adverse environmental conditions at the subject property, several published sources of environmental records were reviewed. This section lists the records that were searched and the results of each search.

ASTM E1527-13 specifies search distances for specific environmental record sources. The following record sources were searched for incidents or sites within the listed search distances of the subject property:

Standard Environmental Record Sources	Search Distance (miles)	Number of Sites Identified
Federal NPL site list	1.0	0
Federal Delisted NPL site list	0.5	0
Federal CERCLIS list	0.5	0
Federal CERCLIS NFRAP site list	0.5	0
Federal RCRA CORRACTS facilities list	1.0	0
Federal RCRA Non-CORRACTS TSD facilities list	0.5	0
Federal RCRA generators list	Subject and Adjacent properties	1
Federal IEC registries	Subject property only	0
Federal ERNS list	Subject property only	0
State list of hazardous waste sites identified for investigation or remediation (NPL or CERCLIS equivalents)	1.0	0
State landfill and/or solid waste disposal site lists	0.5	0
State LUST list	0.5	2
State registered UST list	Subject and Adjacent properties	3
State IEC registries	Subject and Adjacent properties	0
State VRP sites	0.5	0
State and U.S Brownfield sites	0.5	0

Note: NPL = National Priorities List
NFRAP = No Further Remedial Action Planned
CORRACTS = facilities subject to Corrective Action under RCRA
TSD = treatment, storage, and disposal
IEC = institutional / engineering controls
LUST = leaking underground storage tank

PGE used an online regulatory database search service, provided by EDR, to review the above Federal and State government databases. A copy of the EDR report is included in Appendix C.

The following sections summarize the findings of the regulatory database search. In reviewing the environmental databases, it should be noted that such databases are not instantaneously updated by the specific regulatory agencies. Depending on the database and the agency, update frequency may be as infrequent as annually. The dates of the most recent updates for the searched environmental databases are listed in the EDR report in Appendix C.

4.1.2 Federal NPL Site List

The Federal NPL is a subset of CERCLIS and identifies over 1,200 sites identified for priority cleanup under the Superfund Program. The ASTM-designated search distance for the Federal NPL is one mile. EDR did not identify Federal NPL sites within one mile of the subject property.

4.1.3 Federal Delisted NPL Site List

The National Oil and Hazardous Substances Pollution Contingency Plan establish the criteria that the U.S. EPA uses to delete sites from the NPL. In accordance with 40 Code of Federal Regulations (CFR) 300.425(e), sites may be deleted from the NPL where no further response is appropriate. The ASTM-designated search distance for Federal delisted NPL sites is one-half mile. EDR did not identify Federal delisted NPL sites within one-half mile of the subject property.

4.1.4 Federal CERCLIS List

The CERCLIS list contains data on potentially hazardous sites that have been reported to the U.S. EPA by states, municipalities, private companies, and private persons pursuant to Section 103 of CERCLA. CERCLIS contains sites which are either proposed to be, or on the NPL and sites which are in the screening and assessment phase for possible inclusion on the NPL. The ASTM-designated search distance for Federal CERCLIS sites is one-half mile. EDR did not identify any Federal CERCLIS site within one-half mile of the subject property.

4.1.5 Federal CERCLIS NFRAP Site List

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of U.S. EPA's knowledge, assessment at a site has been completed and that U.S. EPA has determined no further steps will be taken to list this site on the NPL, unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site. The ASTM-designated search distance for Federal CERCLIS NFRAP sites is one-half mile. EDR did not identify any Federal CERCLIS NFRAP sites within one-half mile of the site.

4.1.6 Federal RCRA CORRACTS Facilities List

U.S. EPA's facilities subject to CORRACTS or Corrective Action Sites database, identifies facilities that generate, treat, store, or dispose of hazardous wastes where RCRA corrective action activity has occurred. These sites have experienced spills or releases of hazardous chemicals prompting the need for corrective action. The ASTM-designated search distance for the Federal RCRA CORRACTS list is one mile. EDR did not locate any CORRACTS sites within one mile of the subject property.

4.1.7 Federal RCRA Non-CORRACTS TSD Facilities List

The Federal RCRA Non-CORRACTS TSD facilities list is the U.S. EPA's list of TSD facilities that are not currently subject to corrective action. The RCRAInfo is U.S. EPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the Hazardous and Solid Waste Amendments of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the RCRA. The RCRAInfo list includes facilities that treat, store, dispose of, or incinerate hazardous waste (TSD facilities). The ASTM-designated search distance for Federal RCRA Non-CORRACTS TSD facilities is one-half mile. EDR did not identify Federal RCRA Non-CORRACTS TSD sites within one-half mile of the subject property.

4.1.8 Federal RCRA Generators List

In addition to TSD facilities discussed above in Section 4.1.7, the RCRAInfo list also includes selective information on sites that generate hazardous waste as defined by the RCRA. Conditionally exempt small quantity generators (CESQG) generate less than 100 kilograms of hazardous waste, or less than one kg of acutely hazardous waste per month. Small quantity generators (SQG) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators generate over 1,000 kg of hazardous waste, or over one kg of acutely hazardous waste per month. The ASTM-designated search distance for Federal RCRA generators is the subject property and adjacent properties. EDR identified one Federal RCRA Generator sites on or adjacent to the subject property. General information on the RCRA site is provided below, and more detailed information is provided in the EDR report in Appendix C.

Federal RCRA Generators Site Name	Location Relative to the Subject Property	Site Status/Comments
Princeville Corporation 4520 Hanalei Plantation rd.	¼ mile NNE (higher elevation / upgradient)	RCRA-Small Quantity Generator for generation of used oil. Violations = Written informal only, case closed.

Although this site is not adjacent to subject site, it's significance to the subject property was evaluated. It is identified as the Princeville Corporation's Makai Equipment Shop. Compliance inspections indicated the handling of used motor oil. Due to it's distance from the subject property it does not pose an environmental liability to the subject property.

4.1.9 Federal Institutional / Engineering Controls Registries

Federal IEC Registries are lists of sites that have institutional and/or engineering controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. The ASTM-designated search distance for Federal IEC Registries is the subject property only. EDR did not identify the subject property as a Federal IEC Registry site.

4.1.10 Federal ERNS List

ERNS is a national database of more than 365,000 records, which contains information on specific notification of releases of oil and hazardous substances to the environment. The ASTM-designated search distance for Federal ERNS incidents is the subject property only. No reported Federal ERNS incidents have occurred on the subject property.

4.1.11 State of Hawai`i Hazardous Waste Sites List

The State of Hawai`i Hazardous Waste Sites (SHWS) list is Hawai`i's equivalent to the NPL or CERCLIS. These sites may or may not already be listed on the federal NPL or CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The HDOH HEER Office maintains a *Sites of Interest Database*, which includes sites that HDOH HEER has an interest in, has investigated, or may investigate under Hawai`i Revised Statute 128D (the State Superfund law). The ASTM-designated search distance for the SHWS List is one mile. EDR did not identify any SHWS sites within one mile of the subject property.

4.1.12 State of Hawai`i Landfill and/or Solid Waste Disposal Site List

HDOH SHWB has a list of permitted solid waste disposal facilities and landfills in the State of Hawai`i. The ASTM-designated search distance for permitted solid waste disposal sites / landfills is one-half mile of the subject property. EDR did not identify permitted landfills or solid waste disposal facility sites within one-half mile of the subject property.

4.1.13 State of Hawai`i LUST List

The State of Hawai`i LUST database, compiled by the HDOH SHWB UST Section, contains an inventory of reported LUST incidents. The ASTM-designated search distance for State of Hawai`i LUST sites is one-half mile. EDR identified two State of Hawai`i LUST sites within one-half mile of the subject property. General information on the State of Hawai`i LUST sites are provided below, and more detailed information is provided in the EDR report in Appendix C.

LUST Site Name	Location Relative to the Subject Property	Site Status/Comments
Kaua`i County Hanalei Police/Fire Station 5-4390 Kuhio Highway	1/4 mile NE (higher elevation / upgradient)	9-701066: NFA-Site Cleanup completed 6/26/2002.
Princeville Chevron 4280 Kuhio Highway	>¼ mile ENE (higher elevation/ upgraidient	9-702798: NFA-Site Cleanup completed 12/28/1995

It is not likely that these LUST sites would negatively impact the subject property due to their regulatory status (i.e., NFA), distance from, and/or location relative to the subject property.

4.1.14 State of Hawai`i Registered UST List

State of Hawai`i Registered USTs are regulated under RCRA and must be registered with the state department responsible for administering the UST program. The list of registered UST sites is compiled by the HDOH SHWB UST Section. The ASTM-designated search distance for State of Hawai`i Registered UST sites is the subject property and adjacent properties. EDR identified three State of Hawai`i Registered UST sites on adjacent properties.

UST Site Name	Location Relative to the Subject Property	Site Status/Comments
Kaua`i County Hanalei Police/Fire Station 5-4390 Kuhio Highway	1/8 mile NE (higher elevation / upgradient)	9-701066: NFA-Site Cleanup completed 6/26/2002
Princeville Chevron Station 4280 Kuhio Highway	>¼ mile NNE (higher elevation / upgraidient)	9-702798: two 6,000-gallon diesel USTs, one 4,000-gallon gasoline UST, one 3000-gallon gasoline UST and one 7,000-gallon gasoline UST. They are reported as currently in use.
Princeville Central Office (Hawaiian Tel Com) 54-378 Kuhio Highway	1/8 mile NE (higher elevation/ upgradient)	9-700612: Currently in use. 600-gallon Diesel. 550-gallon diesel = permanently out of use. Financial Assurance=Insurance

It is not likely that the State of Hawai`i UST sites, listed above, has negatively impacted the subject property due to its distance from and/or location relative to the subject property and their current regulatory status.

4.1.15 State of Hawai`i Institutional / Engineering Controls Registry

The ASTM-designated search distance for State of Hawai`i IEC registries is the subject and adjacent properties. EDR did not identify any State of Hawai`i IEC registries on the subject or adjacent properties.

4.1.16 State of Hawai`i Voluntary Cleanup Sites

The ASTM-designated search distance for State of Hawai`i VRP sites is one-half mile. EDR did not identify any State of Hawai`i VRP sites within one-half mile of the subject property.

4.1.17 State of Hawai`i Brownfield Sites

The ASTM-designated search distance for State of Hawai`i Brownfield sites is one-half mile. EDR did not identify any State of Hawai`i Brownfield site within one-half mile of the subject property.

4.2 Physical Setting Sources

4.2.1 U.S. Geological Survey (USGS) Topographic Map Coverage

Topographic map coverage of the site is included on the USGS 7.5-minute Hanalei quadrangle map, as shown (portion of) on Figure 1.

The approximate coordinates of the subject property is 22° 12' 39.44'' North latitude and 159° 28' 52.31'' West longitude. The property is located approximately 260 feet above mean sea level at it's highest elevation down to about 40 feet above mean sea level at it's lowest elevation.

4.2.2 Geologic Setting

PGE reviewed published geologic reports and maps to obtain information regarding subsurface conditions in the general area of the site and to evaluate potential migration of contaminants.

Kaua`i is the oldest and most complex of the eight major Hawai`ian Islands. It has subsided more than any other island and its original volcanic shield underwent large-scale structural displacement and erosion before much of it was covered by renewed volcanism. The Koloa volcanic series greatly enlarged Kaua`i's land mass, filling deep valleys and covering the irregular topography of the eroded primary volcanic dome in the eastern half of the island (Mink and Lau, 1992).

4.2.3 Hydrogeology

PGE reviewed published hydrogeological reports and maps to obtain information regarding subsurface conditions in the general area of the site and to evaluate potential migration of contaminants.

There are no groundwater wells or injection wells on the subject property.

There is one domestic wells within one half mile of subject property.

The subject property is situated above the underground injection control (UIC) line, according to the Hawai`i Department of Health Safe Drinking Water Branch Island of Kaua`i Underground Injection Control Areas Program Map, November 2014. According to the Map, the property is located in UIC Code 100, which means it is above (mauka) of the UIC line. Generally, this means the underlying aquifer is considered a potential drinking water source aquifer.

Underground Injection Wells are wells used for injecting water or other fluids into a groundwater aquifer. Department of Health Administrative Rules, Title 11, Chapter 23 provides conditions governing the location, construction, and operation of injection wells so that injected fluids do not migrate and pollute underground sources of drinking water.

According to the Hawai`i Department of Health Safe Drinking Water Branch Ground Water Contamination Viewer, Island of Kaua`i Map, 2017, public wells on the north shore of Kaua`i comply with state and federal drinking water standards for contaminants. No regulated contaminants have been found in domestic water wells sources in the Princeville and Hanalei areas.

Present and historical activities on the subject property are unlikely to negatively affect aquifers below the site.

4.2.4 Soils

The soils in the area of the subject property are identified by the United States Department of Agriculture Soil Conservation Service Report as the Kapaa-Pooku-Halii-Makapili association: Deep nearly level to steep, well drained and moderately well drained soils that have a fine textured or moderately fine textured subsoil; on uplands. These soils of this association are historically used for pasture, irrigated sugarcane, pineapple, wildlife habitat, woodland and water supply. (Foote et al., 1972)

The specific soils at the Site are a silty clay that fall within the Makapili Series. The Makapili Series consists of well-drained soils on uplands on the island of Kaua`i. The mean annual soil temperature is 71 degrees Fahrenheit. These soils developed in material weathered from basic indigenous rock. They are nearly level to steep.

Detailed site soil information can be found in Geotechnical Report that was conduct at the site by JPB Engineering, Inc (See Section 10 References).

4.2.5 Surface Water

The site has no surface waters. The closest surface water body to the site is Hanalei River, to the south of the property. Princeville Resort has an irrigation pond associated with the golf course, that is located approximately 1/2 mile north of the subject site.

Overall, there is no evidence of significant surface flows to the subject property originating from neighboring properties. There may be some drainage from the highway on the Northeast side of the property boundary. The Final Environmental Assessment Kūhiō Slope Stabilization describes efforts to grade the area on the north side of the property along Kūhiō highway so that runoff would not go down the hill and create additional erosion.

The property may also have seeps and springs, but none were noted during the site visit.

4.3 Historical Use Information

4.3.1 Standard Historical Sources

Historical use of the subject and adjacent properties was obtained by reviewing the following standard historical sources: aerial photographs; fire insurance maps; real property tax records; recorded land title records; historical topographic maps; other historical maps; local street

directories; various printed publications and publications posted on the internet; documents, maps, and information from interviews.

4.3.2 Aerial Photograph Review

PGE reviewed available historical aerial photographs of the subject property dated 1951, 1959, 1960, 1975, 1978, 1992, 2004, 2006, 2011, 2012, 2013, and 2014 (EDR 2017b, Google Earth 2017 and RM Towill Photogrammetry Collection-Princeville area.). A copy of the EDR historical aerial photographs are included in Appendix C. General observations include:

- 1951 EDR Aerial photo- This good resolution photo shows the present day alignment of Kūhiō Highway surrounding most of the property. To the north, beyond Kūhiō Highway, the property is in pasture. There is only one house evident. On the subject property, there appears to be an unimproved access (very close to the present day access to the bluff) that leads to the westernmost end of the property.

- 1959/1960 EDR Aerial photos- These low resolution photos shows two lots (likely residential) being developed just north of the property near the property's present day entrance.

- 1975 EDR Aerial photo-This low resolution photo shows the Princeville resort area's initial development. More development is occurring just north across the highway.

- 1978 EDR Aerial photo- This good resolution photo shows the property largely overgrown and in not in any particular use. Residential development continues just north of the property.

- 1989 RM Towill Aerial photo- This good resolution photo appears to show the footprint of the present day KIUC substation to the east of the property.

- 1992 EDR Aerial photo- This poor resolution photo shows the significant amount of buildout in the Princeville resort area since the 1978 photo.

RECs and/or environmental concerns were not identified during the review of the aerial photographs.

4.3.3 Sanborn Fire Insurance Maps

There are no historical Sanborn fire insurance maps of the area. This is indicative of the rural area history of Princeville.

4.3.4 Historical Topographic Map Review

PGE reviewed available USGS topographic maps of the area dated 1963, 1983, 2013 (EDR 2017d). A copy of the USGS topographic maps is included in Appendix C. General observations include:

- 1910 topo- This topo shows the original road into Hanalei Valley, some of which may have traversed onto a portion of the west end of the property.

- 1963 topo- This topo shows the present day Kūhiō highway and Hanalei Plantation Road alignments. It shows building footprints of the former Princeville Ranch headquarters at the present day entrance to Princeville.

RECs and/or potential environmental concerns were not identified during review of the historical topographic maps.

4.3.5 Other Historical Maps Review

PGE reviewed various other historical maps of the area available online from University of Hawai`i at Manoa Library. (University of Hawai`i 2017). PGE also reviewed a historical Kaua`i Electric map (c.1960).

RECs and/or potential environmental concerns were not identified during review of these historical maps.

4.3.6 Local Street Directories

PGE reviewed local street directories dated 1992, 1995, 1999, 2003, 2008, and 2013 for Kūhiō Highway and Hanalei Plantation Road. (EDR 2017e).

There were no tenants identified on the subject property. Various commercial tenants were identified in the Princeville shopping center.

RECs and/or potential environmental concerns were not identified during review of the local street directories.

4.3.7 Summary of Historical Land Use

PGE reviewed the historical use of the subject and adjacent properties from readily available standard historical sources. A brief summary of the historical use of the area and subject and adjacent properties is provided below.

Historical prior uses may have include pasture, traditional travel to mauka/makai lands by trail/road (which may have traversed the property), cultural use and other natural resources. Otherwise the property has remained undeveloped. The subject property boundaries were defined by the Kaua`i Belt Road construction, which likely happened in the 1940's.

Each of the documented uses would not be indicative of uses creating RECs and/or environmental concerns.

Section 5 Site Reconnaissance

A site reconnaissance was conducted by Mr. Howard Greene on May 22, 2017. The site reconnaissance included visual surveys of the property and brief surveys of the visible portions of the adjacent parcels. Site photographs are included in Appendix A.

5.1 Site Observations

The entrance is gated and graveled and the bluff closely mowed. Inspection limitations include that much of the slope on the south side of the property was not accessible due to slope and/or vegetation. I could not find definitive property boundary markers on the east property line.

Very little trash was found on the property. This is likely due to cleanup and debris removal during installation of slope stabilization improvements. Among the debris found included a black plastic tarp, shovel, plastic bottles and cans.

Rock slope netting and anchors are evident . Anchors and cables on the north side of the property supporting steel mesh netting on the southern side above the highway.

Piles of topsoil are at various locations around the cleared bluff area. They appear to be topsoil from clearing of the bluff as opposed to imported soil stockpiles.

Recently disturbed trenches from geotech investigations were noted.

On the western point of the property was a cleared area around stone features, reportedly a possible cultural site.

There are no public utilities or improvements other than slope stabilization components on the hill side.

There were no hazardous substances or petroleum products stored on the property. As well, there were no storage tanks or drums present/abandoned on the property. PGE did not observe any stressed vegetation or staining.

5.2 Adjacent Property Observations

The property is surrounded on the north, west and south by Kūhiō Highway. Beyond Kūhiō Highway to the north is residential and commercial uses. There is the County of Kaua`i Fire and Police station. They have a 5,000-gallon double walled above ground tank. To the east of here is more residential and beyond that, the Princeville Shopping center. The east of the property is bordered by the Hanalei National Wildlife Refuge. A lookout is just off Kūhiō Highway and borders the subject property. KIUC has an easement for a substation at the bottom of the hill near Hanalei Bridge and associated transmission lines. Below Kūhiō Highway, north of Hanalei River, the area is in use as a ranch (currently Buffalo).

Each of the uses on adjacent properties did not appear to have uses that would pose environmental concerns to the subject property.

Section 6 Interviews

Information obtained during interviews is included in the pertinent sections of this report. Questionnaires and/or documentation completed/received as a result of the interviews are included in Appendix B.

6.1 Subject Property Owner

Michael Gearon provided answers on the User Questionnaire . A copy of the User Questionnaire is included in Appendix B.

6.2 Local Government Agencies

PGE interviewed the following governmental representatives regarding the site:

- Ray McCormick- State Department of Transportation Highways Division Kaua`i. Ray provided information on rock fall mitigation and Kūhiō Highway maintenance.

6.3 Other Interviews

- KIUC- Brad Rockwell and Cameron Kruse- both were interviewed regarding compliance of the KIUC substation near Hanalei Bridge. Neither reported any current or historical environmental conditions. Both confirmed the non-pcb status dielectric oils present in the transformers at the site.
- Jeff Fisher- Jeff is owner of Earthworks Pacific the General Contractor of the slope stabilization project.
- Nancy McMahon- Nancy is an archeologist with Exploration Associates Ltd., whom is conducting an Archaeological Inventory Survey of the subject property. Nancy provided valuable cultural and historical information about the site.
- Paul Kyno- Paul is a realtor/representative of the Owner and provided a general history of the property and it's limited uses.
- Paul Weidig- Paul is the Geotechnical Engineer with JPB Engineering whom conducted the geotechnical investigation around the proposed house site. Paul provided information on the results of trenching activities.
- Eric Guinther-Eric is with AECOS, Inc. whom conducted the Natural Resource survey of the property.

Section 7 Findings, Opinions, and Conclusions

PGE has conducted a Phase I ESA in conformance with ASTM Practice E 1527-13, Standard Practice for Environmental Site Assessments.

The purpose of this Phase I ESA was to identify recognized environmental conditions (REC). ASTM guidance defines a REC as the presence or likely presence of any hazardous substances or petroleum products, in, on, or at the property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

7.1 Findings

No indications of recognized environmental conditions were noted during the site inspection of the subject property.

Past and present neighboring commercial and residential activities investigated should not be expected to have adverse impact on the subject property. Regulatory status of past and present USTs and LUSTs, and their respective distances away, would be unlikely to create REC affecting the subject property.

Any other de minimus activities on the site likely would not have used hazardous materials in quantities to indicate a recognized environmental condition exists.

Interviews with persons familiar with the site did not reveal any situations that could be construed as a recognized environmental condition. When each was specifically asked if they had any knowledge of current situations or past events that might present environmental liability to the owners or tenants of the subject property, none of these persons indicated that they had any such knowledge.

There have not been any documented agricultural, industrial, military, or other uses documented that would indicate the presence of significant amounts of hazardous materials. There is no historic evidence of any dumping or storage of hazardous materials or significant quantities of petroleum products on the subject property.

7.2 Opinions

None of the activities observed on neighboring properties would be expected to have any significant, adverse environmental conditions that may affect subject property. The inspection and investigation of the property and neighboring properties did not reveal any evidence of significant hazardous materials use, spills or releases.

Current and historic operations and uses at the property would not be likely to create any adverse environmental conditions. In addition, past uses investigated would also not be likely to create any adverse environmental conditions.

Further environmental investigation relating to the presence of recognized environmental conditions affecting the subject property is not warranted.

7.3 Conclusions

Present and past uses of the subject property have no recognized environmental conditions that would have an environmental liability impact to neighboring properties or the subject property.

Based on the research performed in this assessment, the inspection of the property, discussions with persons knowledgeable about the property, and reviews of regulatory agency files, the conclusion reached in this investigation is that there are no significant, recognized environmental conditions that affect the use or regulatory liability associated with the subject property.

Section 8 Deviations

In conducting this Phase I ESA, there were no deletions from the standard practice (ASTM Designation E1527-13 and E2600-10) and no client-imposed constraints.

Section 9 Qualifications of Environmental Professional

HOWARD J. GREENE

Mr. Greene serves Pacific Greene Environmental Inc. (PGE) as an environmental/safety specialist and as a project manager capable of working on variety of projects. PGE is based on the Island of Kaua`i and provides valuable local services to the Island's commercial, real estate development, construction, and agricultural enterprises.

Mr. Greene has extensive experience in numerous areas of the environmental field. PGE is well served by his 22 years of experience with the environmental industries best consulting groups and corporate operations. He has developed, implemented and managed numerous environmental compliance programs. In conjunction with this, he has provided custom training in many safety programs with his specialty being in the hazardous material field. He is experienced in conducting Phase I and II environmental site assessments for real estate property transactions, many of which have been on large commercial and agricultural lands. Specifically, he has done extensive due diligence on many former sugar industry properties and other former agricultural parcels throughout the Island of Kaua`i, Hawai`i. He is vastly knowledgeable in many water quality issues. These include Clean Water Act compliance, NPDES permitting and sampling, domestic and wastewater operations, and regulations under the Army Corp of Engineers. He also has expertise with wastewater treatment operations. Hazardous waste compliance, under the Resource Conservation and Recovery Act, is also an area of expertise with specific work experience focusing on waste reduction, storage, recycling, and sampling. He also conducts the management, permitting and closure of underground storage tanks and contaminated soil sites.

Mr. Greene has a B.A. in Environmental Studies from the *University of California, Santa Barbara*, 1994.

Section 10 References

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Appendix A
Figures, Photographs and Site Documents

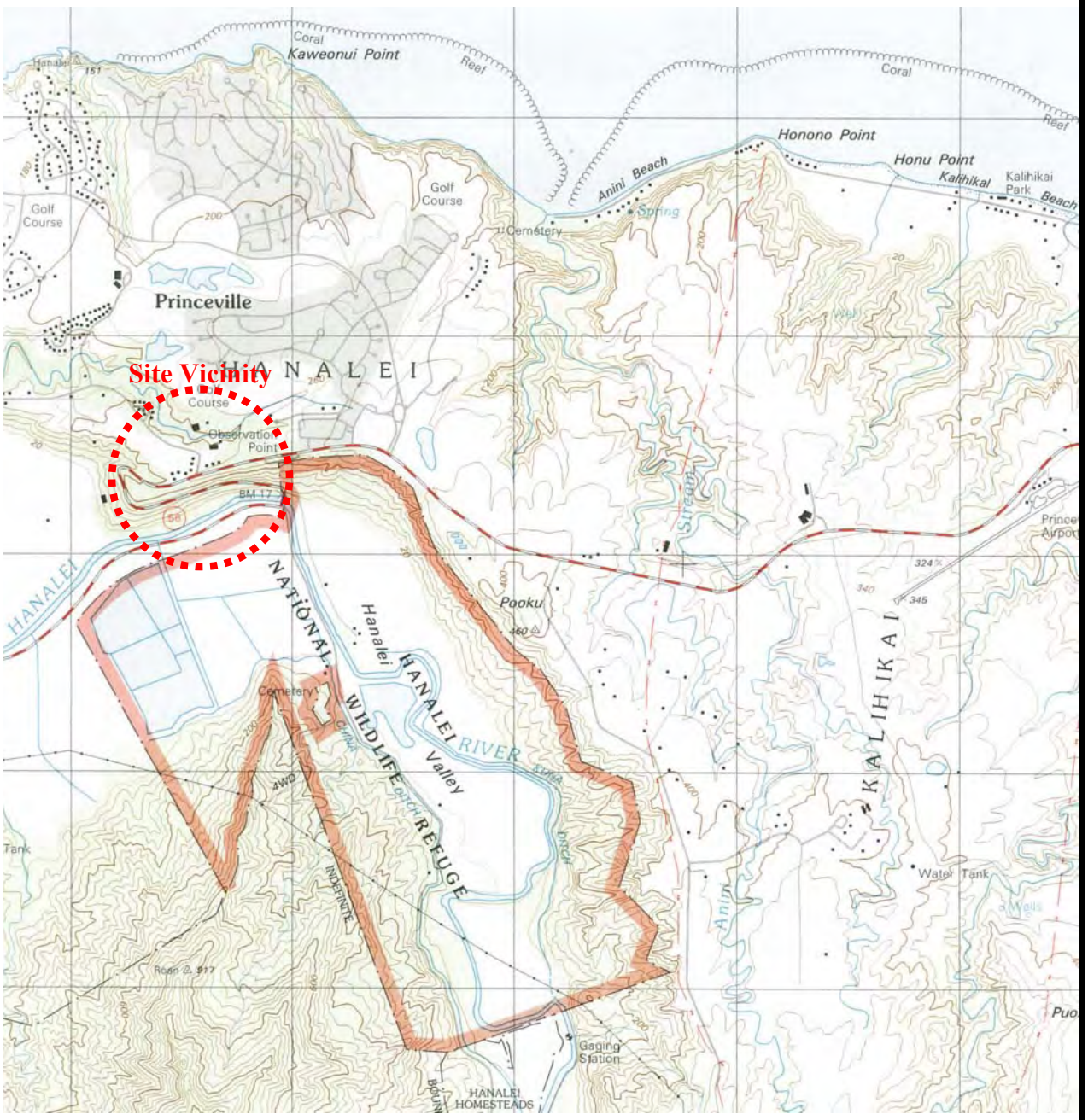


Figure 1 Site Vicinity Map
TMK No. (4)-5-4-004-032
Princeville, Kauai, Hawaii

Source:
United States Department of the Interior
Geological Survey
1996 Topographic, Hanalei Quadrangle,
7.5 Minute Series

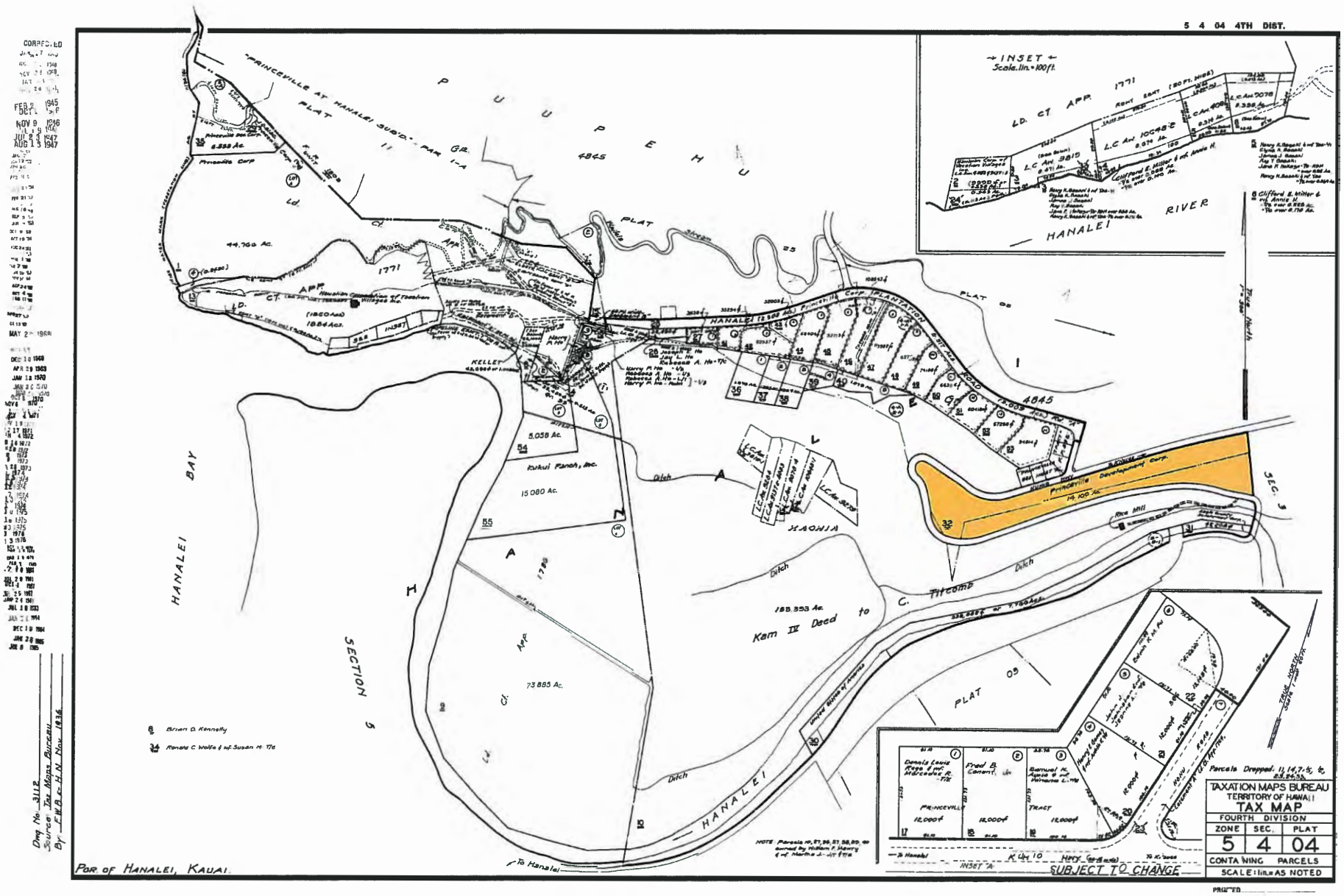
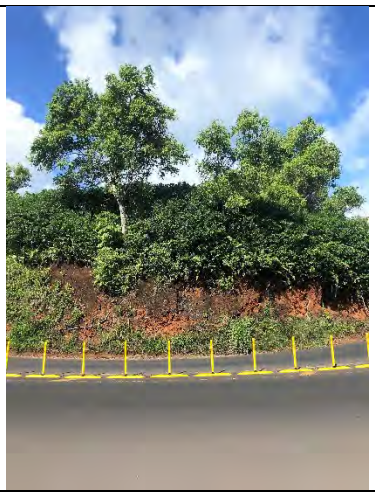


Figure 2 Site TMK Map
(4) 5-4-004:032
Princeville, Kauai, Hawaii

INSPECTION PHOTO DOCUMENTATION

	
View of bluff looking east	View of Hanalei Valley from bluff site, looking south east
	
Entrance drive, geotech test pit, viewed looking west	Hanalei Bay, vie looking west from western end of property
	
Kūhiō Highway at Hanalei Plantation Road. Note Hawaiian Tel underground utility and 5000-gal AST on adjacent site.	Entrance of property looking toward Kūhiō Highway

	
Property on left, Kūhiō Highway going towards Hanalei	Western end of property from Kūhiō Highway
	
Western end of property, Kūhiō Highway leading to Hanalei	Bluff top area viewed towards the West
	
Slope Stabilization Anchor and cables on north side of propety along Kūhiō Highway	Wagon wheel and axel (photo courtesy Nancy McMahon)

Appendix B
Questionnaires

Gearon Hanalei Property
Kuhio Highway, Hanalei, Kauai, Hawaii
TMK (4) 5-4-004:032

USER QUESTIONNAIRE

In order to qualify for one of the Landowner Liability Protections (LLPs)[1] offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001, the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

(1.) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).
Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? NO

(2.) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).
Are you aware of any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

NO

(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28). As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? NO

(4.) Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29). Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

YES

(5.) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30). Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user, NO

[1] *Landowner Liability Protections*, or *LLPs*, is the term used to describe the three types of potential defenses to Superfund liability in EPA's *Interim Guidance Regarding Criteria Landowners Must Meet in Order to Qualify for Bona Fide Prospective Purchaser, Contiguous Property Owner, or Innocent Landowner Limitations on CERCLA Liability* ("*Common Elements*" Guide) issued on March 6, 2003.

(a.) Do you know the past uses of the property? NO

(b.) Do you know of specific chemicals that are present or once were present at the property?

NO

(c.) Do you know of spills or other chemical releases that have taken place at the property? NO

(d.) Do you know of any environmental cleanups that have taken place at the property? NO

(6.) The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?

NO

Please provide the following additional information:

(a) The reason why the Phase I environmental site assessment is required. to build a house

(b) The type of property and type of property transaction, for example, sale, purchase, exchange, etc.

Residential

(c) The complete and correct address for the property (a map or other documentation showing property location and boundaries is helpful).

(d) The scope of services desired for the Phase I (including whether any parties to the property transaction may have a required standard scope of services on whether any considerations beyond the requirements of Practice E 1527 are to be considered).

(e) Identification of all parties who will rely on the Phase I report.

Bernie Bays

(f) Identification of the site contact and how the contact can be reached. Michael Geesa

1-678-427-9934

(g) Any special terms and conditions which must be agreed upon by the environmental professional.

NO

(h) A copy of the title report for the property. Paul should have a copy

(i) Any proceedings involving the property, for example:

(1) Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property; NO

(2) Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property; NO

(3) Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products. NO

(j) Any other knowledge or experience with the property that may be pertinent to the environmental professional (for example, copies of any available prior environmental site assessment reports, documents, correspondence, etc., concerning the property and its environmental condition.) Documents that would be helpful include the following:

- Environmental site assessment reports: Not to my knowledge
- Environmental compliance audit reports: Not to my knowledge
- Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits): NO
- Registrations for underground and above-ground storage tanks: NO
- Registrations for underground injection systems: NO
- Material Safety Data Sheets: Don't know
- Community right-to-know plan: Don't know
- Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc: NO
- Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property: NO
- Hazardous waste generator notices or reports: NO

- Geotechnical studies: no
- Risk assessments: no
- Recorded activity and land use limitations:

Form Completed by:

Owner — 6/08/15

Name, Title — Date

Helios Aynalei LLC

Company

Appendix C
EDR Reports

Gearon Hanalei Property
Not Reported
Princeville, HI 96722

Inquiry Number: 4952827.2s
May 31, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NOT REPORTED
PRINCEVILLE, HI 96722

COORDINATES

Latitude (North):	22.2109580 - 22° 12' 39.44''
Longitude (West):	159.4811990 - 159° 28' 52.31''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	450402.8
UTM Y (Meters):	2456112.5
Elevation:	194 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5949364 HANALEI, HI
Version Date:	2013

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
PRINCEVILLE, HI 96722

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	KAUAI COUNTY HANALEI	5-4390 KUHIO HWY	LUST, UST	Higher	807, 0.153, ENE
2	PRINCEVILLE CORP MAK	4520 HANALEI PLANTAT	RCRA-SQG, SPILLS, FINDS, ECHO	Higher	886, 0.168, NNE
3	PRINCEVILLE CENTRAL	54-378 KUHIO HWY	UST, Financial Assurance	Higher	1005, 0.190, ENE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS ---------- Sites List

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Permitted Landfills in the State of Hawaii

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

ENG CONTROLS ---------- Engineering Control Sites
INST CONTROL ---------- Sites with Institutional Controls

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Response Program Sites

State and tribal Brownfields sites

BROWNFIELDS ---------- Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
CDL ---------- Clandestine Drug Lab Listing
US CDL ---------- National Clandestine Laboratory Register

EXECUTIVE SUMMARY

Local Land Records

LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Release Notifications
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
AIRS	List of Permitted Facilities
DRYCLEANERS	Permitted Drycleaner Facility Listing
Financial Assurance	Financial Assurance Information Listing
UIC	Underground Injection Wells Listing

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP---------- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto---------- EDR Exclusive Historic Gas Stations
EDR Hist Cleaner---------- EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS---------- Recovered Government Archive State Hazardous Waste Facilities List
RGA LF---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/12/2016 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRINCEVILLE CORP MAK	***4520 HANALEI PLANTAT***	***NNE 1/8 - 1/4 (0.168 mi.)***	***2***	***8***

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the LUST list, as provided by EDR, and dated 11/18/2016 has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KAUAI COUNTY HANALEI	***5-4390 KUHIO HWY***	***ENE 1/8 - 1/4 (0.153 mi.)***	***1***	***8***
Release ID: 990037 Facility Id: 9-701066 Facility Status: Site Cleanup Completed (NFA)				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the UST list, as provided by EDR, and dated 11/18/2016 has revealed that there are 2 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KAUAI COUNTY HANALEI	***5-4390 KUHIO HWY***	***ENE 1/8 - 1/4 (0.153 mi.)***	***1***	***8***
Tank Status: Permanently Out of Use Facility Id: 9-701066 Date Closed: 10/26/1998				
PRINCEVILLE CENTRAL	***54-378 KUHIO HWY***	***ENE 1/8 - 1/4 (0.190 mi.)***	***3***	***11***
Tank Status: Permanently Out of Use Tank Status: Currently In Use Facility Id: 9-700612 Date Closed: 11/07/1996				

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 4952827.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Gearon Hanalei Property ADDRESS: Not Reported Princeville HI 96722 LAT/LONG: 22.210958 / 159.481199	CLIENT: Pacific Greene Environmental CONTACT: Howard J Greene INQUIRY #: 4952827.2s DATE: May 31, 2017 5:37 pm

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DETAIL MAP - 4952827.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Gearon Hanalei Property	CLIENT: Pacific Greene Environmental
ADDRESS: Not Reported Princeville HI 96722	CONTACT: Howard J Greene
LAT/LONG: 22.210958 / 159.481199	INQUIRY #: 4952827.2s DATE: May 31, 2017 5:38 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	1	NR	NR	NR	1
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	1	0	NR	NR	1
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	2	NR	NR	NR	2
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.500		0	0	0	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	4	0	0	0	4

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
ENE
1/8-1/4
0.153 mi.
807 ft.

KAUAI COUNTY HANALEI POLICE / FIRE STATION
5-4390 KUHIO HWY
HANALEI, HI 96714

LUST **U003403008**
UST **N/A**

Relative:
Higher

Actual:
240 ft.

LUST:

Facility ID:	9-701066
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	06/26/2002
Release ID:	990037
Project Officer:	Jose Ruiz

UST:

Facility ID:	9-701066
Owner:	KAUAI COUNTY - DEPT OF PUBLIC WORKS
Owner Address:	444 RICE ST. , STE 275 MAIKEHA BLDG
Owner City,St,Zip:	Hanalei, 96714 96714
Latitude:	22.212039
Longitude:	-159.479113
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching

Tank ID:	R-1
Date Installed:	05/07/1981
Tank Status:	**Permanently Out of Use**
Date Closed:	10/26/1998
Tank Capacity:	4000
Substance:	Gasoline

Tank ID:	R-3
Date Installed:	06/01/1979
Tank Status:	**Permanently Out of Use**
Date Closed:	10/26/1998
Tank Capacity:	2000
Substance:	Diesel

2
NNE
1/8-1/4
0.168 mi.
886 ft.

PRINCEVILLE CORP MAKAI EQ SHOP
4520 HANALEI PLANTATION RD
PRINCEVILLE, HI 96722

RCRA-SQG **1000601560**
SPILLS **HID984467985**
FINDS
ECHO

Relative:
Higher

Actual:
205 ft.

RCRA-SQG:

Date form received by agency:	03/16/1992
Facility name:	PRINCEVILLE CORP MAKAI EQ SHOP
Facility address:	4520 HANALEI PLANTATION RD PRINCEVILLE, HI 96722
EPA ID:	HID984467985
Mailing address:	P O BOX 3040 PRINCEVILLE, HI 96722
Contact:	YOSHI HARADA
Contact address:	4520 HANALEI PLANTATION RD PRINCEVILLE, HI 96722
Contact country:	US
Contact telephone:	(808) 826-3741
Contact email:	Not reported
EPA Region:	09

PRINCEVILLE CORP MAKAI EQ SHOP (Continued) **1000601560**

Land type: Other land type
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: PRINCEVILLE CORP
Owner/operator address: 5 4280 KUHIO HWY
PRINCEVILLE, HI 96722
Owner/operator country: Not reported
Owner/operator telephone: (808) 826-3040
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Facility Has Received Notices of Violations:
Regulation violated: S - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 07/12/2001
Date achieved compliance: 07/12/2001
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/12/2001
Enf. disposition status: Action Satisfied (Case Closed)
Enf. disp. status date: 07/12/2001
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: S - 279.20-24
Area of violation: Used Oil - Generators
Date violation determined: 07/12/2001
Date achieved compliance: 07/12/2001
Violation lead agency: State

PRINCEVILLE CORP MAKAI EQ SHOP (Continued) **1000601560**

Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/12/2001
Enf. disposition status: Action Satisfied (Case Closed)
Enf. disp. status date: 07/12/2001
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 05/23/2001
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Used Oil - Generators
Date achieved compliance: 07/12/2001
Evaluation lead agency: State

Evaluation date: 05/23/2001
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 07/12/2001
Evaluation lead agency: State

Evaluation date: 04/25/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

HI SPILLS:
Island: Kauai
Supplemental Loc. Text: Not reported
Case Number: 19911121-8
HID Number: Not reported
Facility Registry Id: 110013771533
Lead and Program: HEER EP&R
ER: Not reported
Units: Princeville Construction Site Leaking Drums
Substances: OIL, GAS , PAINT
Less Or Greater Than: Not reported
Numerical Quantity: 250
Units: Gallons
Activity Type: Response
Activity Lead: Not reported
Assignment End Date: Not reported
Result: SOSC NFA
File Under: Princeville Corporation
Latitude: Not reported
Longitude: Not reported

FINDS:

Registry ID: 110013771533

Environmental Interest/Information System
NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in

PRINCEVILLE CORP MAKAI EQ SHOP (Continued) **1000601560**

regions and states with cooperative agreements, enforcement actions, and settlements.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000601560
Registry ID: 110013771533
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110013771533

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3 ENE 1/8-1/4 0.190 mi. 1005 ft.

PRINCEVILLE CENTRAL OFFICE
54-378 KUHIO HWY
PRINCEVILLE, HI 96722

UST **U001237217**
Financial Assurance **N/A**

Relative: Higher

Actual: 242 ft.

UST:
Facility ID: 9-700612
Owner: Hawaiian Telcom
Owner Address: P.O. Box 2200
Owner City,St,Zip: Princeville, 96722 96722
Latitude: 22.212500
Longitude: -159.478760
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: GPS

Tank ID: M-2
Date Installed: 02/01/1997
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 600
Substance: Diesel

Tank ID: R-M-1
Date Installed: 05/07/1984
Tank Status: **Permanently Out of Use**
Date Closed: 11/07/1996
Tank Capacity: 550
Substance: Diesel

HI Financial Assurance:
Alt Facility ID: 9-700612
Tank Id: M-2
Tank Status: Currently In Use
FRTYPE: Other

PRINCEVILLE CENTRAL OFFICE (Continued) **U001237217**

Expiration Date: Not reported

Alt Facility ID: 9-700612
Tank Id: R-M-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-700612
Tank Id: M-2
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 05/02/2015

Alt Facility ID: 9-700612
Tank Id: R-M-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 05/02/2015

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/25/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 93

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 09/23/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 29

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Landfills in the State of Hawaii

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/17/2012
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 12/02/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 19

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 03/17/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Semi-Annually

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 12/02/2016
Date Made Active in Reports: 01/27/2017
Number of Days to Update: 56
Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 03/17/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Control Sites

A listing of sites with engineering controls in place.

Date of Government Version: 09/23/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 29

Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 09/23/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 29

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 09/23/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 29
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 09/23/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 12/21/2016
Number of Days to Update: 29
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/02/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/02/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 12/05/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

SPILLS: Release Notifications

Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 01/14/2016
Date Data Arrived at EDR: 02/24/2016
Date Made Active in Reports: 04/06/2016
Number of Days to Update: 42

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/24/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/26/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57
Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35
Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/09/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/06/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/04/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 35

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/21/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 79

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/08/2017
Number of Days to Update: 63

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/20/2016
Date Made Active in Reports: 01/27/2017
Number of Days to Update: 38

Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Varies

UIC: Underground Injection Wells Listing
A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56

Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

GEARON HANALEI PROPERTY
NOT REPORTED
PRINCEVILLE, HI 96722

TARGET PROPERTY COORDINATES

Latitude (North):	22.210958 - 22° 12' 39.45''
Longitude (West):	159.481199 - 159° 28' 52.32''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	450402.8
UTM Y (Meters):	2456112.5
Elevation:	194 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5949364 HANALEI, HI
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

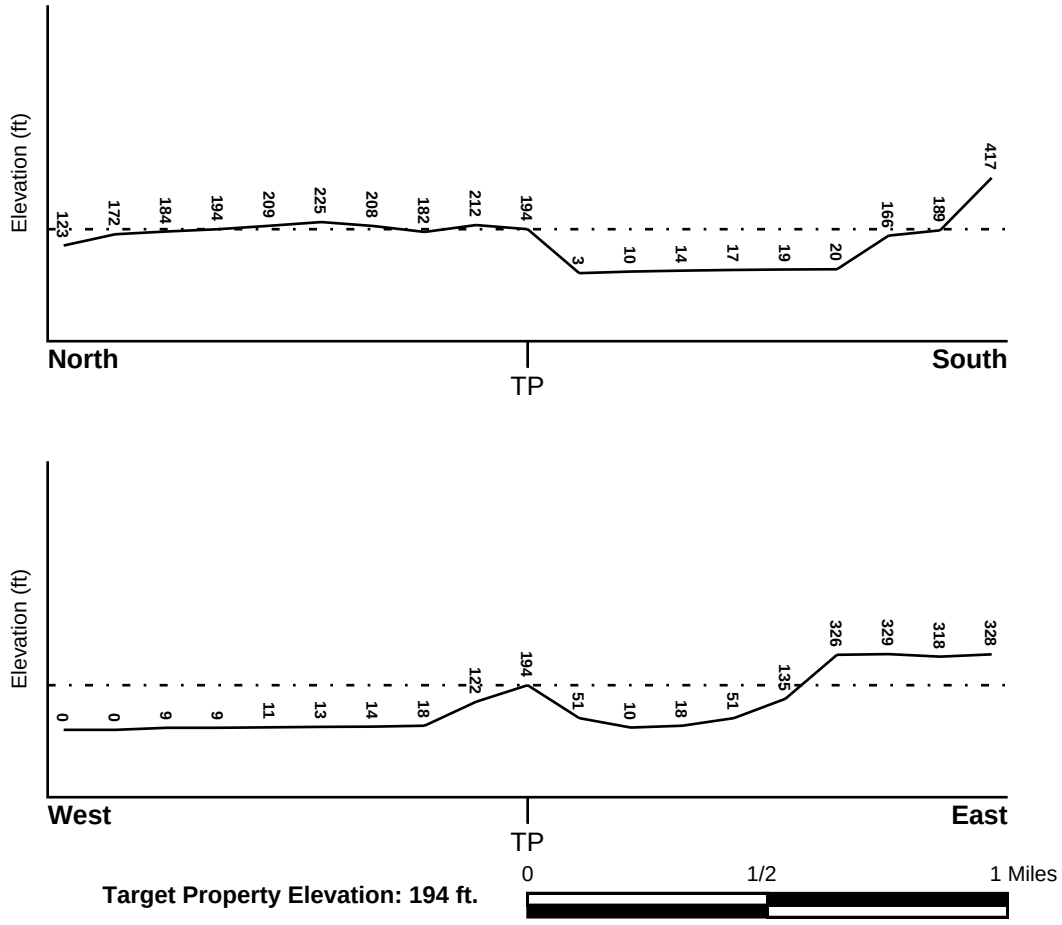
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
1500020055E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
HANALEI	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	-
System:	-
Series:	-
Code:	N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4952827.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Gearon Hanalei Property	CLIENT:	Pacific Greene Environmental
ADDRESS:	Not Reported Princeville HI 96722	CONTACT:	Howard J Greene
LAT/LONG:	22.210958 / 159.481199	INQUIRY #:	4952827.2s
		DATE:	May 31, 2017 5:38 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Makapili

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 4.23	Max: 5.5 Min: 5.1
2	11 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5.5 Min: 4.5
3	27 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5 Min: 4.5

Soil Map ID: 2

Soil Component Name: Rough mountainous land

Soil Surface Texture: silty clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 14	Max: 5 Min: 3.5
2	5 inches	25 inches	very cobbly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 14	Max: 5.5 Min: 4.5
3	25 inches	29 inches	bedrock	Not reported	Not reported	Max: 0.42 Min: 0.02	Max: Min:

Soil Map ID: 3

Soil Component Name: Rough broken land

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14 Min: 4	Max: 6 Min: 5.1
2	7 inches	29 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14 Min: 4	Max: 6 Min: 5.1
3	29 inches	59 inches	bedrock	Not reported	Not reported	Max: 0.42 Min: 0.02	Max: Min:

Soil Map ID: 4

Soil Component Name: Makapili

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 4.23	Max: 5.5 Min: 5.1
2	11 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5.5 Min: 4.5
3	27 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5 Min: 4.5

Soil Map ID: 5

Soil Component Name: Makapili

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 4.23	Max: 5.5 Min: 5.1
2	11 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5.5 Min: 4.5
3	27 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 5 Min: 4.5

Soil Map ID: 6

Soil Component Name: Hanalei

Soil Surface Texture: silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 15 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14.11 Min: 1.41	Max: 6.5 Min: 4.5
2	12 inches	25 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14.11 Min: 4.23	Max: 7.3 Min: 6.1
3	25 inches	35 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14.11 Min: 4.23	Max: 7.3 Min: 6.1

Soil Map ID: 7

Soil Component Name: Water > 40 acres

Soil Surface Texture: silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:
Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 8

Soil Component Name: Hanalei

Soil Surface Texture: silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 1.41	Max: 6.5 Min: 4.5
2	12 inches	25 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 4.23	Max: 7.3 Min: 6.1
3	25 inches	35 inches	stratified clay loam to silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 4.23	Max: 7.3 Min: 6.1

Soil Map ID: 9

Soil Component Name: Hanalei

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 30 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 1.41	Max: 6.5 Min: 4.5
2	12 inches	25 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14.11 Min: 4.23	Max: 7.3 Min: 6.1
3	25 inches	35 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14.11 Min: 4.23	Max: 7.3 Min: 6.1

Soil Map ID: 10

Soil Component Name: Mokuleia variant

Soil Surface Texture: clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4.23	Max: 7.3 Min: 6.6
2	16 inches	50 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Fine Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42.34	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000271738	1/2 - 1 Mile WNW
4	USGS40000271732	1/2 - 1 Mile WSW
B6	USGS40000271739	1/2 - 1 Mile WNW
C7	USGS40000271736	1/2 - 1 Mile West
D9	USGS40000271733	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

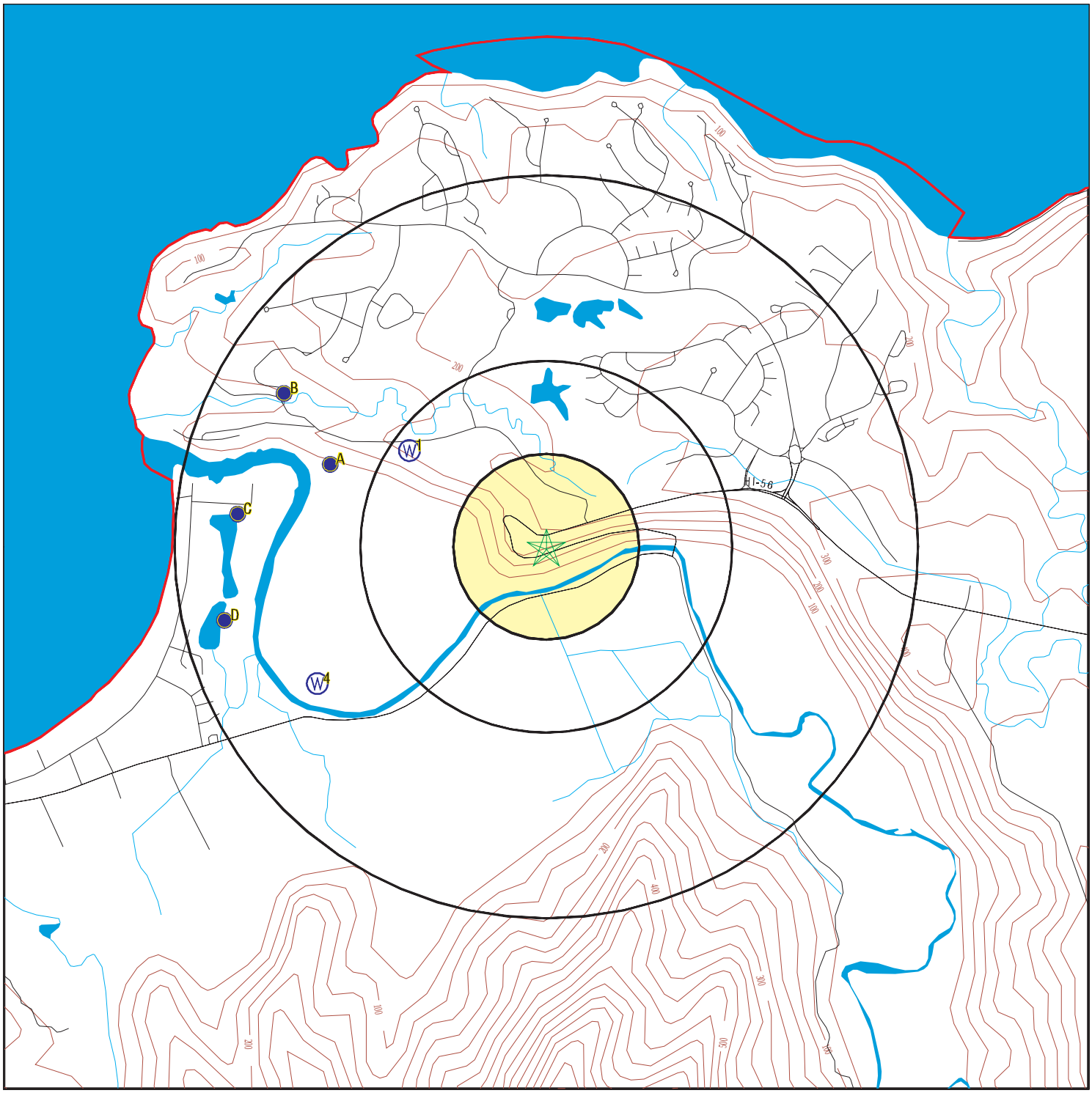
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	HI9000000000327	1/4 - 1/2 Mile NW
A3	HI9000000000346	1/2 - 1 Mile WNW
B5	HI9000000000347	1/2 - 1 Mile WNW
C8	HI9000000000324	1/2 - 1 Mile West
D10	HI9000000000325	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 4952827.2s



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location

N

SITE NAME:	Gearon Hanalei Property	CLIENT:	Pacific Greene Environmental
ADDRESS:	Not Reported Princeville HI 96722	CONTACT:	Howard J Greene
LAT/LONG:	22.210958 / 159.481199	INQUIRY #:	4952827.2s
		DATE:	May 31, 2017 5:38 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
NW
1/4 - 1/2 Mile
Lower

HI WELLS **HI9000000000327**

Wid:	2-1229-004	Island:	Kauai
Well name:	Not Reported	Old name:	Not Reported
Yr drilled:	0		
Driller:	Not Reported		
Quad map:	6		
Long83dd:	-159.486944		
Lat83dd:	22.214722		
Gps:	0	Utm:	0
Owner user:	William Mowry		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	4	Ground el:	20
Well depth:	112		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	DOM - Single and Multi Low-Rise and High-Rise Household		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	F
Pump gpm:	100		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QTkol		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-92
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.144		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	20202		
Latest hd:	Not Reported	Wcr:	26-APR-89
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000327

A2
WNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000271738**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-221303159293501		
Monloc name:	2-1329-01 W72 HANALE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	22.2142068
Longitude:	-159.4902563	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	22.90
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19591119	Welldepth:	229
Welldepth units:	ft	Wellholedepth:	229
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A3
WNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000346**

Wid:	2-1329-001	Island:	Kauai
Well name:	Hanalei	Old name:	Not Reported
Yr drilled:	1959		
Driller:	Goodfellow Construction, Inc. Corporate		
Quad map:	6		
Long83dd:	-159.490278		
Lat83dd:	22.214167		
Gps:	0	Utm:	-1
Owner user:	Land Division Oahu, DLNR-LD		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	8	Ground el:	22
Well depth:	229		
Solid case:	70	Perf case:	Not Reported
Use:	Not Reported		
Use year:	Not Reported		
Init head:	4.8	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	4/14/1960	Test gpm:	80
Test ddown:	42.7	Test chlor:	175
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QTkol		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-207
Bot solid:	-48	Bot perf:	Not Reported
Spec capac:	2		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(4) 5-4-004:001
Aqui code:	20202		
Latest hd:	Not Reported	Wcr:	19-NOV-59
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000346

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

4
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000271732**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-221232159293701		
Monloc name:	2-1229.02		
Monloc type:	Well: Test hole not completed as a well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	22.2056075
Longitude:	-159.4908118	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	8
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19800101	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	800
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B5
WNW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000347**

Wid:	2-1329-002	Island:	Kauai
Well name:	Ecdc Effl T H	Old name:	Not Reported
Yr drilled:	1970		
Driller:	Continental Drilling Hawaii, Inc		
Quad map:	6		
Long83dd:	-159.492222		
Lat83dd:	22.216944		
Gps:	0	Utm:	-1
Owner user:	Princeville Corporation 2		
Land owner:	Ohana Hanalei LLC		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	50
Well depth:	486		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	Not Reported		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QTkol		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-436
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(4) 5-4-004:013
Aqui code:	20202		
Latest hd:	Not Reported	Wcr:	01-JAN-70
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000347

B6
WNW **FED USGS** **USGS40000271739**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-221313159294201		
Monloc name:	2-1329.01 -02		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	22.2169818
Longitude:	-159.4922007	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	50.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19700101	Welldepth:	486
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C7
West **FED USGS** **USGS40000271736**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-221256159294901		
Monloc name:	2-1229-01 W70 HANALE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	22.2122669
Longitude:	-159.494145	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	6.00
Vert measure units:	feet	Vertacc measure val:	1.
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19400401	Welldepth:	175
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C8
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000324**

Wid:	2-1229-001	Island:	Kauai
Well name:	Hanalei Fishpond	Old name:	Not Reported
Yr drilled:	1940		
Driller:	W. Mullin		
Quad map:	6		
Long83dd:	-159.494167		
Lat83dd:	22.212222		
Gps:	0	Utm:	-1
Owner user:	G. Wilcox		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	6	Ground el:	5
Well depth:	175		
Solid case:	170	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	10	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Qa		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-170
Bot solid:	-165	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	20202		
Latest hd:	Not Reported	Wcr:	01-APR-40
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000324

D9
WSW **FED USGS** **USGS40000271733**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-221241159295101		
Monloc name:	2-1229-02 W71 HANALE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	22.208106
Longitude:	-159.4947007	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	1.
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19400101	Welldepth:	170
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

D10
WSW **HI WELLS** **HI9000000000325**
1/2 - 1 Mile
Lower

Wid:	2-1229-002	Island:	Kauai
Well name:	Hanalei Fishpond	Old name:	Not Reported
Yr drilled:	1940		
Driller:	W. Mullin		
Quad map:	6		
Long83dd:	-159.494722		
Lat83dd:	22.208056		
Gps:	0	Utm:	-1
Owner user:	G. Wilcox		
Land owner:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Pump insta:	Not Reported		
Old number:	71	Well type:	PER
Casing dia:	6	Ground el:	7
Well depth:	170		
Solid case:	135	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Qa		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-163
Bot solid:	-128	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	20202		
Latest hd:	Not Reported	Wcr:	01-JAN-40
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000325

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for KAUAI County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96722

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.300 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Well Index Database
Source: Commission on Water Resource Management
Telephone: 808-587-0214
CWRM maintains a Well Index Database to track specific information pertaining to the construction and installation of production wells in Hawaii

OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Gearon Hanalei Property

Not Reported

Princeville, HI 96722

Inquiry Number: 4952827.9

May 31, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com



INQUIRY #: 4952827.9

YEAR: 1992

= 500'

N

EDR


INQUIRY #: 4952827.9
YEAR: 1978
= 500'
N
EDR


INQUIRY #: 4952827.9
YEAR: 1975
= 500'
N
EDR


INQUIRY #: 4952827.9
YEAR: 1960
= 500'
N
EDR



INQUIRY #: 4952827.9

YEAR: 1959

= 500'

N

EDR



INQUIRY #: 4952827.9

YEAR: 1951

= 500'

N

EDR

Gearon Hanalei Property

Not Reported

Princeville, HI 96722

Inquiry Number: 4952827.3

May 31, 2017

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

05/31/17

Site Name:

Gearon Hanalei Property
Not Reported
Princeville, HI 96722
EDR Inquiry # 4952827.3

Client Name:

Pacific Greene Environmental
5251 Kaapuni Road
Kapaa, HI 96746
Contact: Howard J Greene

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Pacific Greene Environmental were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 1725-46C1-A38E

PO # NA

Project Gearon Hanalei Property

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 1725-46C1-A38E

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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EDR Aerial Photo Decade Package

05/31/17

Site Name:

Gearon Hanalei Property
Not Reported
Princeville, HI 96722
EDR Inquiry # 4952827.9

Client Name:

Pacific Greene Environmental
5251 Kaapuni Road
Kapaa, HI 96746
Contact: Howard J Greene

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
1992	1"=500'	Flight Date: October 02, 1992	USGS
1978	1"=500'	Flight Date: January 12, 1978	USGS
1975	1"=500'	Flight Date: July 15, 1975	USGS
1960	1"=500'	Flight Date: December 16, 1960	USGS
1959	1"=500'	Flight Date: January 11, 1959	USGS
1951	1"=500'	Flight Date: January 19, 1951	USGS

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Gearon Hanalei Property

Not Reported

Princeville, HI 96722

Inquiry Number: 4952827.4

May 31, 2017

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

05/31/17

Site Name:

Gearon Hanalei Property
Not Reported
Princeville, HI 96722
EDR Inquiry # 4952827.4

Client Name:

Pacific Greene Environmental
5251 Kaapuni Road
Kapaa, HI 96746
Contact: Howard J Greene

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Pacific Greene Environmental were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: Gearon Hanalei Property

Coordinates:

Latitude:	22.210958 22° 12' 39" North
Longitude:	-159.481199 -159° 28' 52" West
UTM Zone:	Zone 4 North
UTM X Meters:	450403.61
UTM Y Meters:	2456256.08
Elevation:	163.43' above sea level

Maps Provided:

2013
1996
1983
1963
1910

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets



Hanalei
2013
7.5-minute, 24000

1996 Source Sheets



Hanalei
1996
7.5-minute, 24000
Aerial Photo Revised 1996

1983 Source Sheets



Hanalei
1983
7.5-minute, 24000
Aerial Photo Revised 1978

1963 Source Sheets

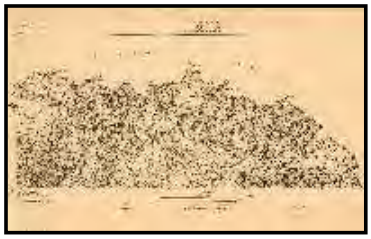


Hanalei
1963
7.5-minute, 24000
Aerial Photo Revised 1960

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

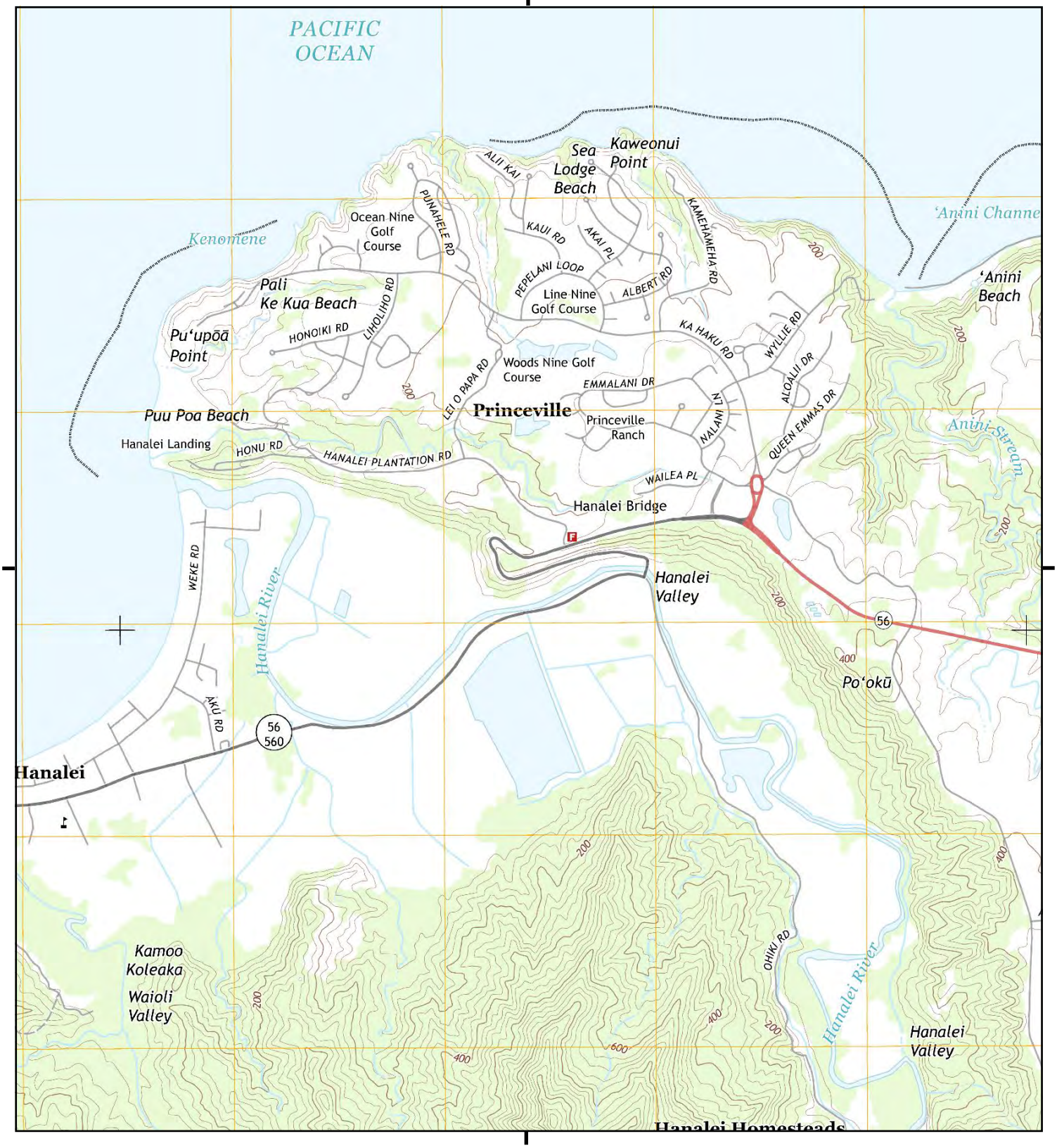
1910 Source Sheets



KILAUEA
1910
7.5-minute, 31680



HANALEI
1910
7.5-minute, 31680



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hanalei, 2013, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N

Historical Topo Map

1996



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hanalei, 1996, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hanalei, 1983, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hanalei, 1963, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, KILAUEA, 1910, 7.5-minute
W, HANALEI, 1910, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N

Gearon Hanalei Property
Not Reported
Princeville, HI 96722

Inquiry Number: 4952827.5
June 01, 2017

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2013	☑	☑	Cole Information Services
2008	☑	☑	Cole Information Services
2003	☑	☑	Cole Information Services
1999	☑	☑	Cole Information Services
1995	☑	☐	Cole Information Services
1992	☐	☐	Cole Information Services

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FINDINGS

TARGET PROPERTY STREET

Not Reported
Princeville, HI 96722

Year	*CD Image*	*Source*	

KUHIO HWY

2013	pg A2	Cole Information Services	
2008	pg A6	Cole Information Services	
2003	pg A8	Cole Information Services	
1999	pg A10	Cole Information Services	
1995	pg A11	Cole Information Services	
1992	-	Cole Information Services	Target and Adjoining not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
HANALEI PLANTATION RD			
2013	pg. A1	Cole Information Services	
2008	pg. A5	Cole Information Services	
2003	pg. A7	Cole Information Services	
1999	pg. A9	Cole Information Services	
1995	-	Cole Information Services	Target and Adjoining not listed in Source
1992	-	Cole Information Services	Target and Adjoining not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	Cole Information Services

HANALEI PLANTATION RD 2013

4481	EDWIN FU
4520	OCCUPANT UNKNOWN
4615	JUSTIN KURTZ
5121	BRENT NAYLOR
5140	LYNN MCCRORY
5146	OCCUPANT UNKNOWN
5150	MARK EYLER
5160	NANCY MERRILL
5174	SEAN MOODY
5181	NEIL CANNON
	OCCUPANT UNKNOWN
5192	KELLY FRANKLIN
5200	STEVEN CHINN
5211	OCCUPANT UNKNOWN
5219	OCCUPANT UNKNOWN
5220	RALPH YOUNG
5225	ED BENDOR
5241	MATT HOIBY

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 2013

5	A CRONSHAW
	ALVIN BLAIR
	BEAU BLAIR
	BRUCE IRONS
	CARL IMPARATO
	CHRISTOPHER CHULACK
	CLAY ABUBO
	CONRAD INANOD
	CONRAD VONBIBRA
	CYRIL MARTIN
	D PRATT
	DAVID HELDER
	DAVID IRONS
	DENNIS SMITH
	DINA GARDNER
	DONALD JOSEPH
	EDITH YOSHIOKA
	EDWARD UNANIAN
	ELSA ALMARAZ
	FRED COLEMAN
	FREDERICK WICHMAN
	GARRET SANTOS
	GORDON HAAS
	HANALEI BOUCHONS
	HOLBROOK GOODALE
	JACK CALDWELL
	JANICE FUKUDA
	JEFFREY BARENS
	JEFFREY FLEMING
	JEFFREY POLLASTRINI
	JOHN CHEW
	K RICHARDSON
	LILLO CRAIN
	LINDSAY FAYE
	LON SPARGUR
	LOUISE CULBERTSON
	MARGARITA DAWA
	MARK GILBERT
	MARY LEDWARD
	MICHAEL CLIFFORD
	MICHAEL SCHMIDT
	MIRIAM CLARKE
	MITCH HAYNIE
	RIKO MIZUNO
	ROBERT COCKE
	RUSS FRANKENFELD
	SAM PRATT
	SANDIE TILLOTSON
	SHARON LETON
	SHERMAN MAKA

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 2013 (Cont'd)

5	STANLEY BENTO
	STEVE SOMMER
	SUZANNE BOLLIN
	T HILL
	THOMAS CHANDLER
	TOM WILLIAMS
	VINOD GUPTA
	YOUNG HAM
54	WILLIAM BRENNAN
55	NICHOLS BECK
	RANDALL POOR
56	GAVIN KENNELLY
	SHAIN YOUNG
57	MAHONNA SHERWOOD
53541	HELI USA AIRWAYS
	PRINCEVILLE AT HANALEI
	PRINCEVILLE AT HANALEI PRINCE & MAKA
53900	PRINCE GOLF & COUNTRY CLUB
	PRINCEVILLE AT HANALEI PRINCE & MAKA
	PRINCEVILLE HEALTH CLUB & SPA
	PRINCEVILLE RESTAURANT & BAR
54280	ALOHA STORAGE & SERVICES
	BANK OF HAWAII
	CHING PATRICK
	FEDERICOS FRESH MEX CUISINE
	FOODLAND
	GRANDES GEMS & GALLERY
	LAPPERTS HAWAII
	MAGIC DRAGON TOY & ART SUPPLY CO
	NANI KAUAI GALLERY
	OCEANFRONT REALTY
	OHANA REAL ESTATE INVESTORS LLC
	PETALS BY EMMA SPENCER STYLE
	PRINCEVILLE CENTER
	PRINCEVILLE CHIROPRACTIC
	PRINCEVILLE RANCH ADVENTURES
	REGENCY PACIFIC REALTY
	RESORT PROPERTIES OF THE PACIFIC LLC
	TITLE GUARANTY ESCROW & TITLE SERVIC
	UHAUL NEIGHBORHOOD DEALER
	VAN BALEN FINE JEWELRY
55016	HALELEA
55080	RICHARD BLAIR
55134	HANALEI BEACH BOYS SURF SHACK
55183	KAL JAVA
55190	HANALEI L&L
	KAUAI NUT ROASTERS
55412	PUALANI HANALEI
56569	GIL IGLEHEART
56618	SENA SERAMUR

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 2013 (Cont'd)

56619 ROBIN SCRIMA-SCOTLAND
56691 JOHN FOSTER
56920 C KROUSE
57030 NICK MICHAELS
57690 SARA THOMPSON
505134 JULIA WHITFORD
573308 LAURA CHECK

Target Street	Cross Street	Source
-	✓	Cole Information Services

HANALEI PLANTATION RD 2008

5140	LYNN MCCRORY
5150	MARK EYLER
5154	JOHN TILLEY
5160	NANCY MERRILL
5181	MARCUS PETTIM
	MARCUS PETTINI
5241	CATHLEEN FLOSI

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 2008

52871	DAVID BAKER
52881	CRAIG MAAS
53000	DAVID ESTRELLA
53541	HELI USA AIRWAYS INC
53900	PRINCE COURSE
	PRINCEVILLE HEALTH CLUB & SPA
54280	74 5620 PALANI ROAD LLC
	BOWEN SALLY CHIROPRACTIC DC
	FIRST HAWAII TITLE CORP
	GLOBAL MORTGAGE GROUP LTD
	NANI KAUAI GALLERY
	OCCUPANT UNKNOWN
	OCEANFRONT REALTY
	PRINCEVILLE CHIROPRACTIC
	PRINCEVILLE REAL ESTATE & VCTN R
	PUUPEHU CORP
	RE MAX KAUAI COM
	TICO TERESA ATTORNEY AT LAW

Target Street	Cross Street	Source
-	✓	Cole Information Services

HANALEI PLANTATION RD 2003

5140 CHARLES PRATUS
5146 MICHAEL BOTTASSO
5160 NANCY MERRILL

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 2003

53541	JOCELYNE TURNER
53900	PRINCEVILLE HEALTH CLUB & SPA
54280	ALOHA INTERNATIONAL
	FIRST HAWAII TITLE CORP
	HNL NORTH SHORE PRPRTY LMTD
	JMS JEWELS
	PRINCEVILLE SHOPPING CTR
	PRINCEVILLE UTILITIES CO
55527	PATTY IRONS
57097	JANNA RAWLINSON

Target Street	Cross Street	Source
-	✓	Cole Information Services

HANALEI PLANTATION RD 1999

4800 CORAL MILES
GARY HENRICKSON
5154 ALAN DRINAN

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 1999

54280 DON SCHULTZ
55527 PATTY IRONS
57097 JANNA RAWLINSON
57608 CHRIS BANE

Target Street	Cross Street	Source
✓	-	Cole Information Services

KUHIO HWY 1995

54280 KAUAI KITE & HOBBY CO
NEZBEDA TILE & INTERIORS
PRINCEVILLE INTERIORS



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	KAUAI
TMK NO:	(4) 5-4-004:032
WATERSHED:	HANALEI
PARCEL ADDRESS:	KUHIO HWY PRINCEVILLE, HI 96722

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 26, 2010
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	1500020055E
PANEL EFFECTIVE DATE:	SEPTEMBER 16, 2005

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 600 1,200 ft

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If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL)*

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

Natural resources surveys for a residence site in Princeville (TMK: (04) 5-4-004:032) on the north shore of Kauaʻi

June 14, 2017 *AECOS* No. 1492

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Introduction

AECOS biologists conducted a survey for a proposed residence to be constructed on a portion of parcel TMK: (4) 5-4-004:032, a 14.109-ac property located along Kūhiō Highway near Princeville (Figure 1). The subject parcel includes all of the land within the upper horseshoe curve of Kūhiō Highway, beginning immediately west of the Hanalei Valley Lookout. Much of the property is moderately to very steep. A single family residence, to include a swimming pool and ancillary improvements, is proposed for the more or less level, western portion of the parcel as indicated in Fig. 1. The land is in the Resource Subzone of the state Conservation District.

Methods

Botanical Survey

A botanical survey was undertaken by E. B. Guinther on May 30, 2017 using a wandering transect that covered the usable parts of the property, including the proposed house site and entrance driveway, and further covered the low- to moderately sloping ground along Kūhiō Highway from the highway bend up to the Hanalei Lookout at the eastern end of the parcel. Much of the remainder of the property is too steep to access safely (ranging in steepness from very steep to nearly vertical cliff, traversing of this area creates a risk to vehicular traffic on the lower portion of the Kūhiō Highway loop from dislodged rocks). The latter area was surveyed by the author in 2008 for a rock-fall mitigation project (*AECOS*, 2008). Because the results of the 2008 survey covered the same

property, concentrating on the steeper slopes and the Kūhiō Highway verge, results from this effort are presented herein as a supplement to our most recent survey.

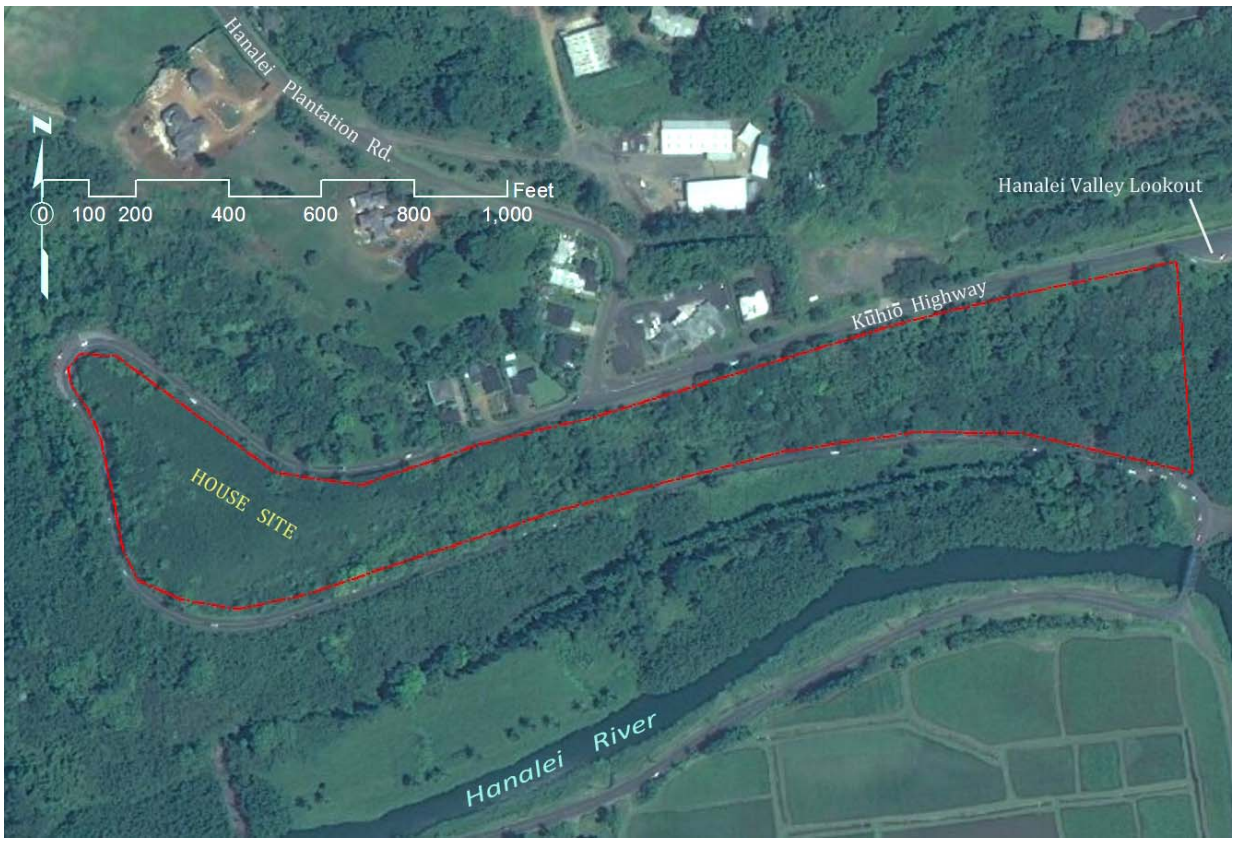


Figure 1. Parcel TMK: 5-4-004: 032 outlined in red. Proposed house site indicated at west end of parcel. Photo-image is dated August 2011.

Plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants, *Hawai'i's Ferns and Fern Allies* (Palmer, 2003) for ferns, and *A Tropical Garden Flora* (Staples & Herbst, 2005) for ornamental plants. More recent name changes for naturalized plant species follow Imada (2012).

Avian Survey

The avian survey included three stationary point-count stations in which all birds observed during an 8-minute period were recorded within a visible radius

of the observer and by listening for vocalizations. Point-count stations were located near the center of the cleared portion of the property ("House Site", Sta. 1), near Kūhiō Hwy across from the Princeville Fire Station (Sta. 2), and near the east end of the property neighboring the Hanalei Valley Lookout (Sta. 3). Additionally, a running tally was kept of all bird species not observed during stationary point counts.

Stationary point counts were conducted between 0930 and 1100 on May 30, 2017. Weather conditions during the survey were ideal, with no rain, unlimited visibility, and calm winds. Species identifications were verified with: *A Photographic Guide to the Birds of Hawaii: the Main Islands and Offshore Waters* (Denny, 2010). Taxonomy follows the Checklist of North and Middle American Birds by American Ornithologists' Union (AOU, 2014).

Terrestrial Mammals Survey

A list of mammal species observed in the project area was noted as biologists conducted botanical and avian surveys. Visual observation for tracks, scat, and other signs of mammalian use of the Project area were undertaken concurrent with our survey. Nomenclature for mammals follows the 3rd edition of *Mammal species of the world: a taxonomic and geographic reference* (Wilson and Reeder, 2005).

Results

Botanical Survey

The vegetation covering the eastern two-thirds of the parcel is mostly mixed, secondary forest with a generally sparse understory. Between the highway verge of the upper arm of the loop and the steep slopes along the lower arm is a closed or nearly closed canopy forest of mostly introduced tree species: mango (*Mangifera indica*), avocado (*Persea americana*), sirus tree (*Albizia lebbeck*), and gunpowder tree (*Trema orientalis*; see Figure 2). Also common in this area are "native"[1] *hala* (*Pandanus tectorius)*, *niu* or coconut (*Cocos nucifera*), and *hau* (*Hibiscus tiliaceus*).

Much of the area proposed for development on the western third of the parcel has been cleared, and is now a close-cropped grassy field with a few scattered trees (Figure 3). It is evident from the 2011 satellite image (Fig. 1) that this

[1] Native broadly defined here as encompassing endemic, indigenous, and early Polynesian introductions (so-called "canoe plants").



[2-22-2008]

Figure 2. Lower part of the subject parcel (steep valley face on left) as viewed from Kūhiō Highway.

area was once covered by strawberry guava (*Psidium cattleianum;* see Figure 4) scrubland. This scrubland extended over much of the western third of the property, and surrounds the now-cleared house site. A portion of the west-facing slope, extending below the house site to the highway supports a mixture of trees and mostly shrubs, with wait-a-bit (*Caesalpinia decapetala*) prominent. Scattered ornamentals are present, planted especially along the residence entrance driveway.

A listing of plant species encountered on the parcel is given as Table 1. This flora listing includes, in separate abundance columns, species noted in 2017 and in the report produced in 2008. A total of 12 species of ferns and 120 taxa of flowering plants are listed, representing all plants identified from the property in 2008 and 2017. As can be seen from Table 2, the two lists appear to differ substantially from each other in that the percent of total species that were observed in both surveys is only around half or less of all species listed. However, of species listed as either common or abundant in one or both



Figure 3. House site on TMK: 5-4-004: 032 looking northeast towards Hanalei Bay is a mowed field of grasses with scattered trees.



Figure 4. Parts of the property bordering the house site are covered by a dense stand of strawberry guava.

Table 1. Listing of plants (flora) for the proposed Gearon residence site, Princeville, Kauaʻi.

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
FERNS and FERN ALLIES					
BLECHNACEAE					
Blechnum appendiculatum Willd.	**---**	Nat	--	Ru	
GLEICHENIACEAE					
Dicranopteris linearis (Burm. f.) Underw.	*uluhe*	**Ind**	--	Ua	
NEPHROLEPIDACEAE					
Nephrolepis exaltata hawaiiensis W.H. Wagner	*niʻaniʻau*	**End**	R	--	
Nephrolepis multiflora (Roxb.) F.M. Jarrett ex C.V. Morton	**---**	Nat	A	C	
POLYPODIACEAE					
Lepisorus thunbergianus (Kaulf.) Ching	*pākahakaha*	**Ind**	R	R	
Phlebodium aureum (L.) J. Sm.	rabbit's-foot fern	Nat	R	U	
Phymatosorus scolopendria (Burm.) Pic.-Ser.	*lauaʻe*	Nat	A	A	
Platycerium bifurcatum (Cav.) C. Chr.	staghorn fern	Nat	R	--	
PSILOTACEAE					
Psilotum nudum (L.) P. Beauv.	*moa*	**Ind**	R	R	
PTERIDACEAE					
Adiantum raddianum C. Presl	maidenhair fern	Nat	--	Uc	<1>
THELYPTERIDACEAE					
Christella dentata (Forssk.) Brownsey & Jermy	*paiʻiʻihā*	Nat	U	O	
Christella parasitica (L.) Lev.	oak fern	Nat	--	O	
FLOWERING PLANTS DICOTYLEDONE					
AMARANTHACEAE					
Amaranthus spinosus L.	spiny amaranth	Nat	--	U	
ANACARDIACEAE					
Mangifera indica L.	mango	Nat	O	O	
Schinus terebinthefolius Raddi	Christmas berry	Nat	--	U	
ARALIACEAE					
Schefflera actinophylla (Endl.) Harms	octopus tree	Nat	O	A	

Table 1 (continued).

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
ASTERACEAE (COMPOSITAE)					
Ageratum conyzoides L.	ageratum	Nat	O	R	
Ageratum houstonianum Mill.	*maile honohono*	Nat	U	U	
Bidens alba (L.) DC.	---	Nat	U	--	
Bidens pilosa L.	---	Nat	R	--	
Conyza bonariensis (L.) Cronq.	hairy horseweed	Nat	R	--	
Crassocephalum crepidioides (Benth.) S. Moore	---	Nat	R	R	
Elephantopus mollis Kunth	---	Nat	O	Oc	
Elephantopus spicatus Jus ex Aubl.	---	Nat	R	Uc	
Pluchea carolinensis (Jacq.) G. Don	sourbush	Nat	O	O	
Emilia fosbergii Nicolson	Flora's paintbrush	Nat	R	--	
Sphagneticola trilobata (L.) Pruski	wedelia	Nat	AA	AA	
Synedrella nodiflora (L.) Gaertn.	nodeweed	Nat	--	U	
Vernonia cinerea (L.) Less.	little ironweed	Nat	R	R	
BIGNONIACEAE					
Spathodea campanulata P. Beauv.	African tulip	Nat	O	O	
CARICACEAE					
Carica papaya L.	papaya	Nat	--	R	
CONVOLVULACEAE					
Ipomoea obscura (L.) Ker-Gawl.	---	Nat.	R	R	
Ipomoea indica (J. Burm.) Merr.	*koali'awa*	**Ind**	O	O	
Ipomoea triloba L.	little bell	Nat	U	--	
CUCURBITACEAE					
Momordica charantia L.	balsam pear	Nat	R	R	
EUPHORBIACEAE					
Aleurites moluccana (L.) Wild.	*kukui*	**Pol**	R	--	
Euphorbia hirta L.	garden spurge	Nat	Uc	U	
Euphorbia hypericifolia L.	graceful spurge	Nat	R	U	
Euphorbia heterophylla L.	*kaliko*	Nat	--	R	
Euphorbia prostrata Aiton	prostrate spurge	Nat	Ua	--	
Macaranga tanarius (L.) Müll. Arg.	---	Nat	O	R	
Phylanthus debilis Klein ex Willd.	niruri	Nat	Ua	U	
Ricinus communis L.	castor bean	Nat	R	--	
FABACEAE					
Acacia confusa Merr.	Formosan *koa*, juv.	Nat	U	--	
Albizia lebbeck (L.) Benth.	siris tree	Nat	O	C	
Alysicarpus vaginalis (L.) DC.	Alyce clover	Nat	R	--	

Table 1 (continued).

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
FABACEAE (continued)					
Caesalpinia decapetala (Roth) Alston	wait-a-bit	Nat	C	C	
Canavalia cathartica Thours	*maunaloa*	Nat	Ca	--	
Chamaecrista nictitans (L.) Moench	partridge pea	Nat	R	R	
Crotalaria pallida Aiton	smooth rattlepod	Nat	R	R	
Delonix regia (Bojer ex Hook.) Raf.	royal poinciana	Nat	R	R	
Desmodium incanum DC.	Spanish clover	Nat	C	Oa	
Indigofera suffruticosa Mill.	indigo	Nat	R	--	
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat	Uc	O	
Macroptilium atropurpureum (DC.) Urb.	---	Nat	--	R	
Macroptilium lathyroides (L.) Urb.	cow pea	Nat	--	R	
Mimosa pudica L.	sensitive plant	Nat	O	U	
Mucuna gigantea (Willd.) DC.	sea bean, *ka'e'e*	**Ind**	--	U	
Neonotonia wightii (Wight & Arnott) Lackey	---	Nat	--	R	
Senna pendula (Humb. & Bonpl. ex Willd.) H. Irwin & Barneby	---	Nat	U	U	<3>
GOODINACEAE					
Scaevola sericcea Vahl	*naupaka kahakai*	**Ind**	R	--	<2>
LAMIACEAE					
Hyptis pectinata (L.) Poir.	comb hyptis	Nat	--	U	
LAURACEAE					
Persea americana Mill.	avocado	Nat	O	O	
MALVACEAE					
Hibiscus tiliaceus L.	*hau*	**Ind**	R	Ua	
Sida rhombifolia L.	Cuba jute	Nat	--	O	
Sida spinosa L.	prickly sida	Nat	U	--	
MELASTOMATACEAE					
Clidemia hirta (L.) D. Don	Koster's curse	Nat	O	C	
Dissotis rotundifolia (Sm.) Triana	---	Nat	R	--	
MORACEAE					
Artocarpus altilis (Z.) Fosberg	*'ulu*, breadfruit	**Pol**	--	R	
Ficus microcarpa L. fil.	Chinese banyan	Nat	R	--	
MYRSINACEAE					
Ardesia elliptica Thunb.	shoebutton ardesia	Nat	R	R	

Table 1 (continued).

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
MYRTACEAE					
Psidium cattleianum Sabine	strawberry guava	Nat	AA	AA	
Psidium cattleianum var. *littorale* (Raddi) Fosb.	*waiawī*	Nat	R	--	
Psidium guajava L.	common guava	Nat	U	O	
Syzygium cumini (L.) Skeels	Java plum	Nat	U	O	
ONAGRACEAE					
Ludwigia octovalvis (Jacq.) Raven.	primrose willow	**Pol**	--	R	<1>
PLANTAGINACEAE					
Plantago major L.	common plantain	Nat	--	A	
Plantago lanceolata L.	nrw-lvd plantain	Nat	Oa	U	
POLYGALACEAE					
Polygala paniculata L.	milkwort, bubblegum plant	Nat	O	R	
PROTEACEAE					
Grevilia robusta A. Cunn. Ex R. Br.	silk oak	Nat	U	U	
RUBIACEAE					
Morinda citrifolia L.	*noni*	**Pol**	--	U	
Spermacoce assurgens Ruiz & Pavon	buttonweed	Nat	A	U	
SAPINDACEAE					
Filicium decipiens (Wight & Arnott) Thwaites ex J.D. Hook.	fern tree	Nat	U	--	
SOLANACEAE					
Capsicum frutescens L.	chili pepper	Nat	--	R	
ULMACEAE					
Trema orientalis (L.) Blume	gunpowder tree	Nat	O	R1	
VERBENACEAE					
Citharexylum caudatum L.	fiddlewood	Nat	R	--	
Lantana camara L.	lantana	Nat	--	U3	
Stachytarpheta cayennensis (Rich.) Vahl	---	Nat	U	O	
Stachytarpheta mutabilis (Jacq.) Vahl	---	Nat	--	R	
MONOCOTYLEDONES					
AGAVACEAE					
Cordyline fruticosa (L.) A. Chev.	*ki*, ti	**Pol**	R	C	
Cordyline fruticosa (L.) A. Chev.	ti	Orn	C	--	

Table 1 (continued).

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
AGAVACEAE (continued)					
Dracaena fragrans (L.) Ker Gawl.	fragrant dracaena	Orn	R	R	
Furcraea foetida (L.) Haw.	Mauritius hemp	Nat	R	--	
ARACEAE					
Alocasia macrorrhizos (L.) G. Don	*'ape*	Nat	--	R	
Epipremnum pinnatum (L.) Engler	pothos	Nat	--	Oc	
Monstera deliciosa Liebm.	ceriman	Orn	R	--	
ARECACEAE					
Cocos nucifera L.	*niu,* coconut	**Pol**	Ua	O	
BROMELIACEAE					
Aechmea cf. *blanchetiana* (J.G. Baker) L.B. Smith	---	Orn	R	--	<3>
Neoregalia carolinae (Beer) L.B. Smith	blushing bromeliad	Orn	Uu	--	
COMMELINACEAE					
Commelina diffusa N.L. Burm.	dayflower	Nat	U	R	<1>
CYPERACEAE					
Cyperus polystachyos Rottb.	---	**Ind**	Oa	--	
Fimbristylis dichotoma (L.) Vahl	---	Nat	Uc	--	
Kylinga brevifolia Rottb.	*kili'o'opu*	Nat	--	U	<1>
HELICONIACEAE					
Heliconia bihai (L.) L.	lobster claw	Orn	Ru	--	
Heliconia cf. *psittacorum* L.	rhizomatosa heliconia	Orn	--	R	<3>
LILIACEAE					
Asparagus densiflorus (Kunth) Jessop	asparagus fern	Nat	R	R	
Crinum asiaticum L.	giant lily	Orn	R	--	
Crinum augustum Roxb.	Queen Emmy lily	Orn	R	--	
PANDANACEAE					
Pandanus tectorius Z	*hala*	**Ind**	Oa	C	
POACEAE (GRAMINEAE)					
Axonopus compressus (Swartz) P. Beauv.	brd-lvd carpet grs	Nat	AA	C	
Axonopus fisifolius (Raddi) Kuhlm.	nrw-lvd carpet grs	Nat	AA	A	
Chloris radiata (L.) Sw.	radiate fingergrass	Nat	--	R	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	--	Oa	
Chloris divaricata R. Br.	star grass	Nat	--	U	
Cynodon dactylon (L.) Pers.	Bermuda grass	Nat	Ca	Oa	

Table 1 (continued).

Species	Common name	Status	Abundance 2017	Abundance 2008	Notes
POACEAE (continued)					
Coix lachryma-jobi L.	Job's tears	Nat	--	R	<1>
Digiteria insularis (L.) Mez ex Ekman	sourgrass	Nat	R	--	
Digitaria violascens Link	violet crabgrass	Nat	Rc	R	
Eleusine indica (L.) Gaertn.	beach wiregrass	Nat	Uu	C	
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	Nat	--	Ca	
Oplismenus hirtellus (L.) P. Beauv.	basket grass	Nat	--	Uc	
Megathyrsus maximus (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	Cc	Ca	
Melinus minutiflora P. Beauv.	molasses grass	Nat	Uc	--	
Paspalum conjugatum Bergius	Hilo grass	Nat	A	--	
Paspalum sp.	---	Nat	--	R	
Sacciolepis indica (L.) Chase	Glenwood grass	Nat	Oc	--	
Schizachyrium condensetum (Kunth) Nees	giant broomsedge	Nat	R	--	
Setaria palmifolia (J. König) Stapf	palm grass	Nat	Ru	C	
Sporobolus africanus (Poir.) Robyns & Tournay	African dropseed	Nat	Oc	Oa	
Urochloa mutica (Forsk.) Webster	California grass	Nat	Uc	Ua	
ZINGIBERACEAE					
Alpinia zerumbet (Pers.) B.L. Burtt & R.M. Smith	shell ginger	Orn	R	--	
Hedychium sp.	ginger	Nat	R	--	<3>

Legend to Table 1

Status = distributional status

End = endemic; native to Hawaii and found naturally nowhere else.

Ind = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.

Nat = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

Orn = exotic, ornamental or cultivated; plant not naturalized (not well-established outside of cultivation).

Pol = Polynesian introduction before 1778.

Abundance = occurrence ratings for plants by area in May 2017 amd February-March, 2008 (Area VE =highway verge; more or less level or low-sloping edges of the highway, maintained (lower verge area was graded clear of all vegetation after the February visit) ; Area FO = steep to cliff slope, mostly forested area that comprises most of the project area.

R – Rare - only one or two plants seen.

U - Uncommon - several to a dozen plants observed.

Table 1 (continued).

O - Occasional - found regularly, but not abundant anywhere.
C - Common - considered an important part of the vegetation and observed numerous times.
A - Abundant - found in large numbers; may be locally dominant.
AA - Abundant - abundant and dominant; a defining vegetation type.

A lower case letter following an abundance rating adjusts the occurrence to account for plants that are more numerous within a small or local area. Thus, Ru reflects a plant species seen in only one or two locations, but each location had several individuals; Oc is a plant seen multiple times, but usually in clusters of many individuals; Ra is a plant seen in perhaps only one localized place, but very abundant at that local.

Notes:

<1> Associated with wet seeps in cliff face.
<2> Planted as an ornamental at this location.
<3> Vegetative tissues only; no flowers or fruit observed.

Table 2. Comparisons of number and percent of species in higher taxa for the 2008 and 2017 surveys.

Higher Taxon	2008	2017	species in common	%*
Ferns	10	8	6	50%
Angiosperms, dicots	58	59	38	18%
Angiosperms, monocots	26	32	14	32%
TOTALS	94	99	58	44%

* Percent in common of total species identified.

surveys, only 4 species (3%) were observed in only one of the two surveys; including occasional species in this tally, the number jumps to 10, so the vast majority (84%) of species recorded in only one survey are rare or uncommon species on the parcel. Any number of factors (elapsed interval of nine years, different conditions with respect to rainfall received, alterations to the area including plantings of ornamentals) could account for shifts in species composition of the lesser species found at any given time in the assemblage.

Four of the 12 species of ferns identified are native species (indigenous or endemic species). Among the flowering plants, 6 indigenous (5%) and no

endemics are listed. Early Polynesian introductions total 5 (4%). None of these species is considered rare in the Islands.

Avian Survey

During stationary point-counts (SPC), nine species totaling 40 individual birds were observed utilizing the property (Table 3). An additional six birds of five different species were encountered while traversing the property between stations. Common Myna (*Acridotheres tristis*), Japanese White-eye (*Zosterops japonicas*), and Scaly-breasted Munia (*Lonchura punctulata*) accounted for 68 % of the birds observed during point-counts. All birds observed are non-native species.

Table 3. List of bird species observed and their relative abundance at the project site during the May 30, 2017 survey.

PHYLUM, CLASS, ORDER, FAMILY *Genus species*	Common name	Status	Station Point Counts (SPC) Sta.1	Sta.2	Sta.3	SPC Relative Abundance (total/3)
CHORDATA, AVES	BIRDS					
COLOMBIFORMES						
COLUMBIDAE						
Streptopelia chinensis Scopoli	Spotted Dove	Nat	--	--	--	Incid (1)
GALLIFORMES						
PHASIANIDAE						
Gallus gallus Linnaeus	Red Junglefowl	Nat	--	--	--	Incid (2)
PASSERIFORMES						
CARDINALIDAE						
Cardinalis cardinalis Linnaeus	Northern Cardinal	Nat	2	--	--	0.67
ESTRILDIDAE						
Lonchura atricapilla Vieillot	Chestnut Munia	Nat	--	--	--	Incid (1)
Lonchura punctulata Linnaeus	Scaly-breasted Munia	Nat	4	--	4	2.67

Table 3 (continued).

PHYLUM, CLASS, ORDER, FAMILY *Genus species*	Common name	Status	Station Point Counts (SPC) Sta.1	Sta.2	Sta.3	SPC Relative Abundance (total/3)
FRINGILIIDAE						
Haemorhous mexicanus P. L. Statius Müller	House Finch	Nat	--	--	3	1.00
ICTERIDAE						
Sturnella neglecta Audubon	Western Meadowlark	Nat	1	--	--	0.33
MIMIDAE						
Mimus polyglottos Linnaeus	Northern Mockingbird	Nat	--	--	--	Incid (1)
MUSCICAPIDAE						
Copsychus malabaricus Scopoli	White-rumped Shama	Nat	1	--	--	0.33
PASSERIDAE						
Passer domesticus Linnaeus	House Sparrow	Nat	--	--	2	0.67
STURNIDAE						
Acridotheres tristis Linnaeus	Common Myna	Nat	--	1	12	4.33
THRAUPIDAE						
Paroaria coronata J.F. Miller	Red-crested Cardinal	Nat	2	--	2	1.33
ZOSTEROPIDAE						
Zosterops japonicus Temminck & Schlegel	Japanese White-eye	Nat	3	--	3	2.00
PELECANIFORMES						
ARDEIDAE						
Bubulcus ibis Linnaeus	Cattle Egret	Nat	--	--	--	Incid (1)

Legend to Table 3

Nat – naturalized or introduced species.
Incid (n) – incidental species (count).

Generally, birds observed at Sta. 1, the location of the proposed residence, were flying between the tree line on the north side of the property along Kūhiō Hwy.

and the forested slope along the southern edge of the property. The two exceptions include a single Northern Cardinal (*Cardinalis cardinalis*) and a Western Meadowlark (*Sturnella neglecta*) that inhabited isolated trees at the residence site. Birds encountered at Stas. 2 and 3 were typically observed flying between the property and undeveloped parcels across Kūhiō Hwy. Though Common Myna was most abundant, House Finch (*Haemorhous mexicanus*), Red-crested Cardinal (*Paroaria coronata*), House Sparrow (*Passer domesticus*), and Chestnut Munia were present, albeit in lesser numbers.

Terrestrial Mammals Survey

No mammals nor signs of their presence were detected on the subject property during the survey. A domestic dog (*Canis l. familiaris*) was heard barking, the sound originating from houses north of the survey area, across Kūhiō Hwy.

Assessment

Botanical Resources

No species that is listed by the state or federal governments endangered species statutes or considered a candidate species, or is rare, or is of any special concern was observed at the site. Therefore, no mitigations measures are proposed based upon specifics of the observed flora. The property does support a number of old *hala* trees that provide an ambiance of a Hawaiian sense of place and these trees should be preserved to the extent possible. These trees are sparsely scattered around the proposed building site, but are prominent in parts of the steep-sloped eastern half of the parcel.

Avian Resources

The subject property had low numbers of birds on the survey date. Also, given the property's northern Kauaʻi location near well-documented populations of native birds, it is a little surprising that no native species were encountered. The Hawaiian Goose or *nēnē* (*Branta sandvicensis*) is common in nearby Hanalei NWR and around the Princeville golf courses[2]. Two seabirds—the Hawaiian Petrel (*Pterodroma sandwichensis*) and the Hawaiian sub-species of Newell's Shearwater (*Puffinus auricularis newelli*)—regularly fly over the region (David & Guinther, 2007; Guinther & David, 2011), but were not observed during our survey.

[2] The archaeology team reported two *nēnē* spending much of the day following our survey at the house site (Nancy McMahon, pers. comm.).

The aforementioned seabirds—Hawaiian Petrel (*Pterodroma sandwichensis*) and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*)—have been documented in the region between April and the end of November each year (David, 1995; Morgan, et al., 2003, 2004; David and Planning Solutions, 2008). Additionally, the Save Our Shearwaters Program has recovered both species from the general area on an annual basis over the past three decades (Morgan, et al., 2003, 2004; David and Planning Solutions, 2008; DOFAW, 2009).

The petrel is listed as endangered, and the shearwater as threatened under both federal and state endangered species statutes. The primary cause of mortality in both Hawaiian Petrel and Newell's Shearwater is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley, et al., 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawaiʻi. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures, and if not killed outright, become easy targets of opportunity for feral mammals (Hadley, 1961; Telfer, 1979; Sincock, 1981; Reed, et al., 1985; Telfer, et al., 1987; Cooper and Day, 1994; Podolsky, et al., 1998; Ainley, et al., 2001).

Mammalian Resources

No mammalian species currently protected or proposed for protection under either the federal or State of Hawaiʻi endangered species programs were detected during the course of this survey (DLNR, 1998; USFWS, 2005, 2017). The findings of the mammalian survey are in keeping with the habitats present and the general nature of the project site. It is likely that one or more of the four Muridae species—European house mouse (*Mus musculus domesticus*), roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), and Polynesian rat (*Rattus exulans hawaiiensis*)—all known to be established on the Island of Kauaʻi, occur on or in the vicinity of the Project on a regular basis. All are introduced species.

Hawaiian hoary bat - The Hawaiian hoary bat (*Lasiurus cinereus semotus*) or *ʻōpeʻapeʻa,* is an endangered species that is fairly common in the lowlands of Kauaʻi (R. David, pers. comm.). Although not detected during the course of our survey, it is likely that this endangered species uses resources in the general Project area. The impact that the Project potentially poses to bats is by expanding clearing and grubbing to presently forested partds of the property.

Hawaiian hoary bats are foliage-roosting, over-dispersed mammals; that is, they roost in low numbers widely separated from one another. Removal of

vegetation within the Project property may temporarily displace bats using trees there for roosting. However, these bats use multiple roosts within their home territories and disturbance from the removal of a roosting tree is likely to be minimal. An exception is removal of trees during the bat pupping season.

Jurisdictional Waters and Critical Habitat

No federal jurisdictional waters (streams or wetlands) occur anywhere on the subject property. No federal Critical Habitat exists for any species on or adjacent to the project area. Thus, modification of habitats on all or any part of the site will not result in an impact to federally designated Critical Habitat. There is no equivalent statute under state law.

The Hanalei National Wildlife Refuge (NWR) lies adjacent at the far east end of the parcel (immediately below the Hanalei Valley Lookout). However, no habitats used by endangered wildlife occur in this area of the steep valley margin and no alterations to the Project parcel landscape are contemplated where the property boundary is congruent with the NWR boundary.

Recommendations

The following recommendations assume future development activities will be limited to a single residence with ancillary improvements as permitted for lots within the Conservation District and suggest minimization measures to ensure that future development not result in deleterious impacts to protected species or natural resources.

- Consideration should be given to preservation of the many old *hala* (*Pandanus*) trees located on the property.

- The location proposed for the residence offers spectacular views of the Hanalei Valley and Hanalei Bay, but this very exposed and prominent location is on one of the more important flyways for endangered Hawaiian Petrel and Newell's Shearwater moving between inland nesting sites and the ocean. Any exterior lighting may prove attractive to nocturnally flying seabirds (Reed et al., 1985; Telfer et al., 1987) resulting in an adverse impact on the species. All exterior lights must be shielded to reduce interactions between these seabirds and the built environment.

- If construction activity is considered after sunset, all associated lights should be well-shielded, and where large flood/work lights are used,

these should be placed on poles that are high enough to allow the lights to be pointed directly downward. Avoiding night-time work during the peak of seabird fallout between September 15 and December 15 can minimize adverse impacts to listed seabird species.

- In the event of a need to clear trees on the property, it is recommended that woody vegetation taller than 4.6 m (15 ft) not be cleared between June 1 and September 15, the Hawaiian hoary bat pupping season.

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Draft Archaeological Inventory Survey for A Single-Family Residence, Hanalei Ahupua‘a, Halele‘a District, Island of Kaua‘i, Hawai‘i TMK: (4) 5-4-004: 032

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August 2107

Management Summary

An archaeological inventory survey was conducted on a 14.109 acres parcel for a single-family residence to include a swimming pool and ancillary improvements at tax map key (TMK) (4) 5-4-004:032. The project area is defined as the single-family residence including the swimming pool and ancillary improvements. Currently, this project area is fairly level and maintained in grass. Subsurface testing (6 backhoe trenches) were placed in the location of the proposed development. No cultural material or historic properties were found during the surface and subsurface work in the project area. Within the parcel, two historic properties were identified: Old Government Road portion (SIHP# 50-30-03-02353) and a pre-contact historic property with an unknown function (SIHP# 50-30-03-02354). The location of these historic properties is well outside of the development area but on the parcel. SIHP# 50-30-03-02353 is documented as significant under criteria d. No further work is recommended for this historic property but because of its location, it is being preserved "as is". SIHP# 50-30-03-02354 is an approximately 15 x 7-meter pre-contact historic property located in a dense area of guava forest. SIHP# 50-30-03-02354 is significant under multiple criteria d and e. Four features have been identified with the historic property. Two mounds, one rock wall and several rough stones outlining a rough boundary of the historic property. This pre-contact historic property was overgrown with guava and all the rock features covered with 4 inches of moss. A preservation plan is recommended for this historic property, with further detailed mapping with appropriate buffers and will be maintained by the owner. It is outside of the single-family residence project area.

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Project Background

The Gearon family is proposing to develop a single-family residence to include a swimming pool and ancillary improvements on tax map key (TMK) (4) 5-4-004:032 (Figure 1). The proposed project site is located approximately 0.5 miles south of Princeville, 1.5 miles northeast of Hanalei, and 1.3 miles from the Pacific Ocean. The project site lies within the Resource Zone of the State Land Use Conservation District and the Special Management Area (SMA) in north-central Kaua'i, near Princeville on the ridge on the east side of Hanalei Valley. Surrounding land use includes commercial and public facilities as well as residential use and surrounding most of the parcel is Highway 560 (Kaua'i Belt Road which is listed on the Historic District on the National and State Register of Historic Places which includes contributing features Hanalei Bridge [already on the National and State Register of Historic Places; Hanalei Valley Scenic Overlook and culvert, 2000).

A driveway/gate and water meter have already been approved and installed to provide access from Kūhiō Highway 560 (2014) by the previous owner the Richard Carlson Trust (SMA(M)-2015-33 under CDUP KA-3729. The SMA permit was approved on April 20, 2015 with seven (7) conditions and later amended to include Condition No. 8. On April 27, 2015, Condition No. 4 was amended to include additional archeological studies. No archaeological studies were conducted for this project. It was the understanding of the Planning Department, which the Kaua'i Archaeologist for the County of Kauai, Mary Jane Naone was going to do her own site inspection. No record of this field check could be found.

Figure 2 is a topographic map of the parcel. Figure 3 is the USGS location map of the parcel. The parcel (4) 5-4-004:032 is a total of 14.109 acres of partially cleared land on the ridge plateau of underdeveloped lands. Figure 4 shows the aerial imagery for the parcel and surrounding area. The western portion of the parcel on the plateau of the ridge is where the single-family residence, to include a swimming pool and ancillary improvements will be located is cleared and fairly level. This location is maintained in short grass, with ornamental plants in a few locations on the borders of the grass. Much of the rest of the parcel is in moderate to steep slopes, especially on the southern portion of the property adjacent to the Highway 560 and US Fish and Wildlife land.

The land title history is it is comprised of a portion of land covered by Land Patent Grant Number 4845 to Albert S. Wilcox; being a portion of Land deeded by Kamehameha IV to Charles Titcomb, Apana 2, February 12, 1856, and being a portion of Parcel 4-A (Princeville Ranch).

Fieldwork was carried out by Exploration Associates Ltd, archaeologists Nancy McMahon, M.A, Linz Armstrong, B.A. and Milton Ching. Dates of fieldwork are October 21, 2016, November 19, 2016, December 1, 2016 and in 2017 on April 19-26, May 30-31, and July 14th. Fieldwork included surface survey of the parcel, subsurface testing of the project area (single family residence) and clearing/sketch mapping rock features of the pre-contact historic property. State Historic Preservation Division staff made

field visits on October 19, 2016 (burial site specialist, Kauanoe Hoomanawanui); May 17, 2017 (Head of the Archaeological Branch, archaeologist, Susan Lebo, PhD) and June 27, 2017 (archaeologists Stephanie Hacker, M.A. and Garnett Clark, B.A.). Kauai/Niihau Burial Council member Barbara Say, and her son Pierre and the neighbor across the street, Donna Gomez-Netzer also visited the property to look for an old Chinese cemetery, which was said to be there on the property.

The project area is surrounded by known historic properties. Registered Historic Places, Kūhiō Highway (Route 560) was placed on the Hawai`i State Register of Historic Places (SRHP) in 2003 and on the National Register of Historic Places (NRHP) in 2004 under the Site Name Kaua`i Belt Road (Site Number 30-03-9396). Under the criteria established by the SRHP and NRHP, the highway is recognized for its association with events that have made a significant contribution to the broad patterns of the island's history. It is also an embodiment of the distinctive type, period, and method of construction for that time in history.

Among the physical, historic, and character-defining qualities of the Highway are the:

- Almost unchanged alignment of the road since its completion in the early 1900s
- Original or historic width and frequent absence of shoulders, as were the conditions in the late 1920s
- Presence of numerous one-lane bridges representing the construction methodology and material type of their original period of construction
- Guardrails and barrier walls that were constructed of timber-beam/concrete-post or masonry rock construction (Belt Collins 2005)

Approximately 20 archaeological historic properties have been recorded in the Hanalei area. Hanalei's archaeological resources include irrigated lo`i or pondfields, habitation sites, other agricultural sites, a'uwai (irrigation ditches), and two pre-contact historic property. While most of the archaeological sites are found near the coast, some have been found four miles up the Hanalei Valley. These inland historic properties include lo`i, habitation sites, and two pre-contact historic property.

The parcel itself, has been undeveloped except for the old government road sections which was identified during this survey.

According to preliminary architectural plans (Design Concepts, 2017), the new residence will consist of a series of contiguous, one-story, Balinese-style modules which together will form an aerial "V" shape. Additional improvements will include an expansion of the existing gravel driveway (which starts at the entrance off Kūhiō Highway offset from Hanalei Plantation Road, on the opposite side of the highway), an aerobic effluent treatment system, and a swimming pool with spa (Figure 5 - 7).

Scope of Work

The purpose of this archaeological investigation is to address any archaeological and/or historical concerns. A Site Plan Approval (KA-17-41) was approved by the Office of Conservation and Coastal Lands (OCCL) on March 13, 2017 for data collection for test trenches and coring for both the archaeological and geological studies. The proposed work includes methods, background research, previous archaeology in the area, a surface survey, subsurface testing, to meet the requirements of an archaeological inventory-

level survey (AIS) per the rules and regulations of (State Historic Preservation Division/Department of Land and Natural Resources) SHPD/DLNR and a finding report with mitigation recommendations. Any property over 50 years of age must be evaluated for historic significance according to the Hawai‘i Revised Statues 6E and Hawai‘i Administrative Rules 13-13-276 and 284.

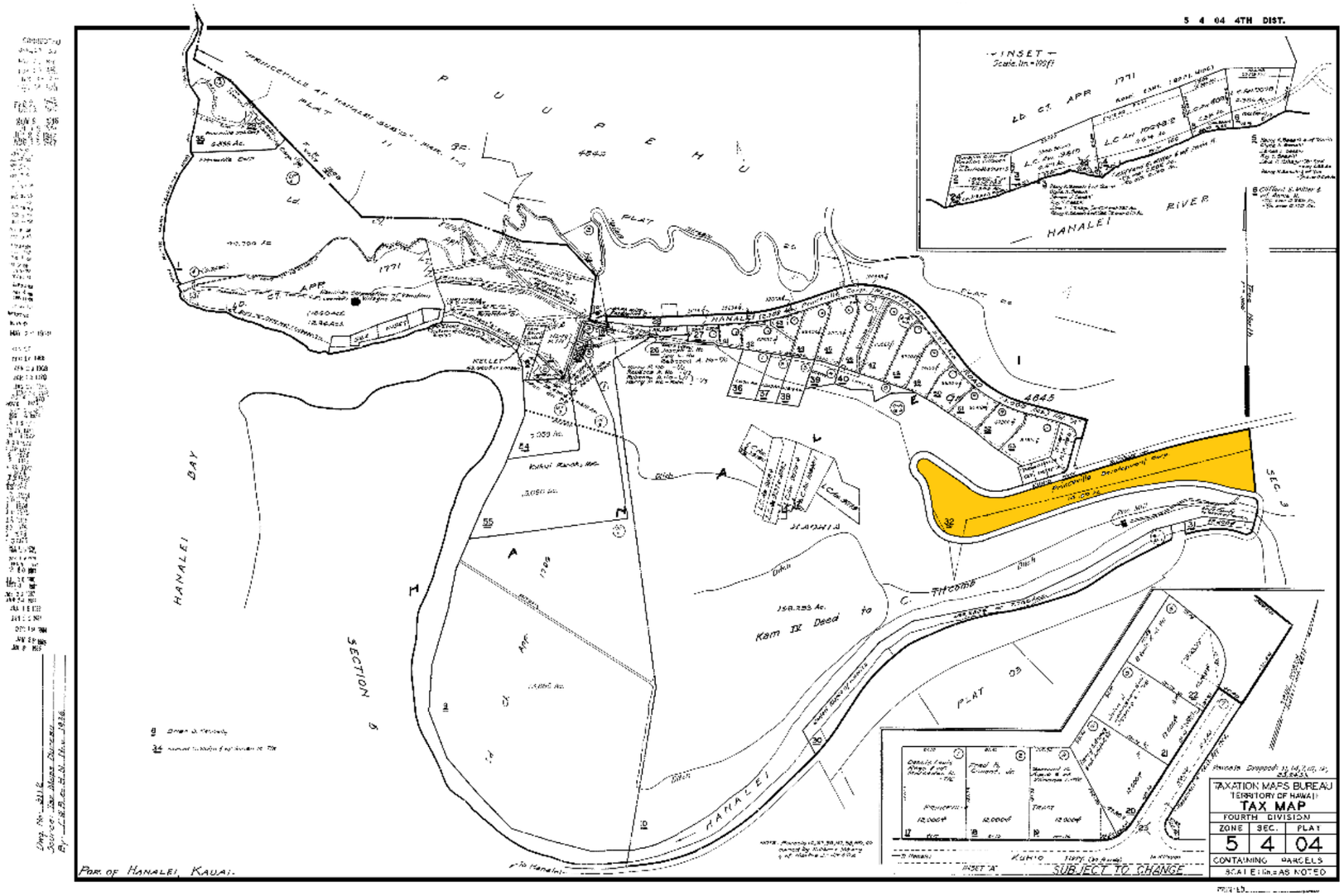


Figure 1. Tax Map Key for the Project Area in yellow ([4]-5-4-04: 032).

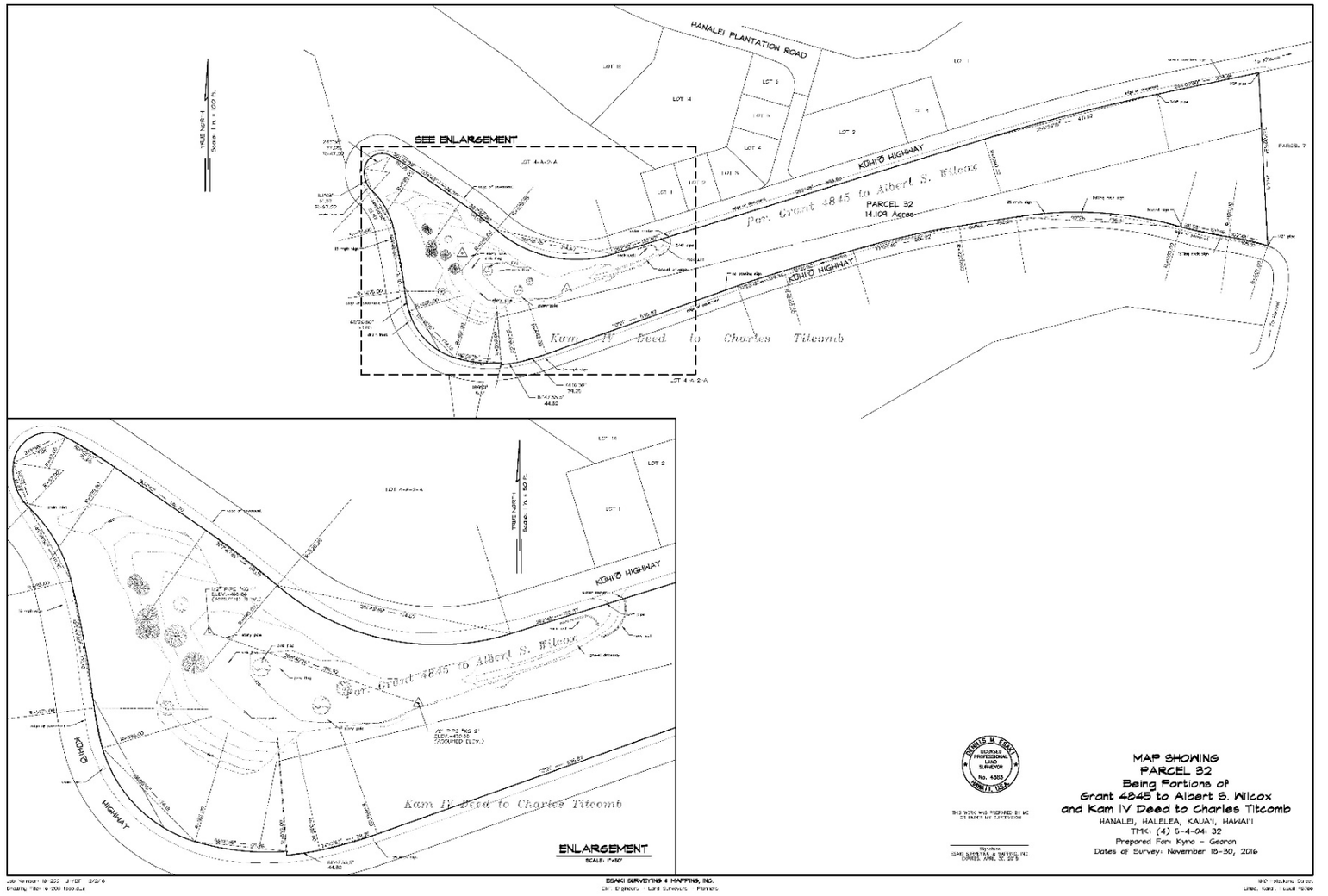


Figure 2. Topography Map of Parcel and House location. Esaki Survey and Mapping Inc. 2016.



Figure 3. USGS 7.5 Minute Series 1996, Map Location Hanalei Quad Showing Parcel Location



Figure 4. Aerial Image showing Project Area (house site) and the entire parcel. (Source: Guinther and Linebaugh, 2017)

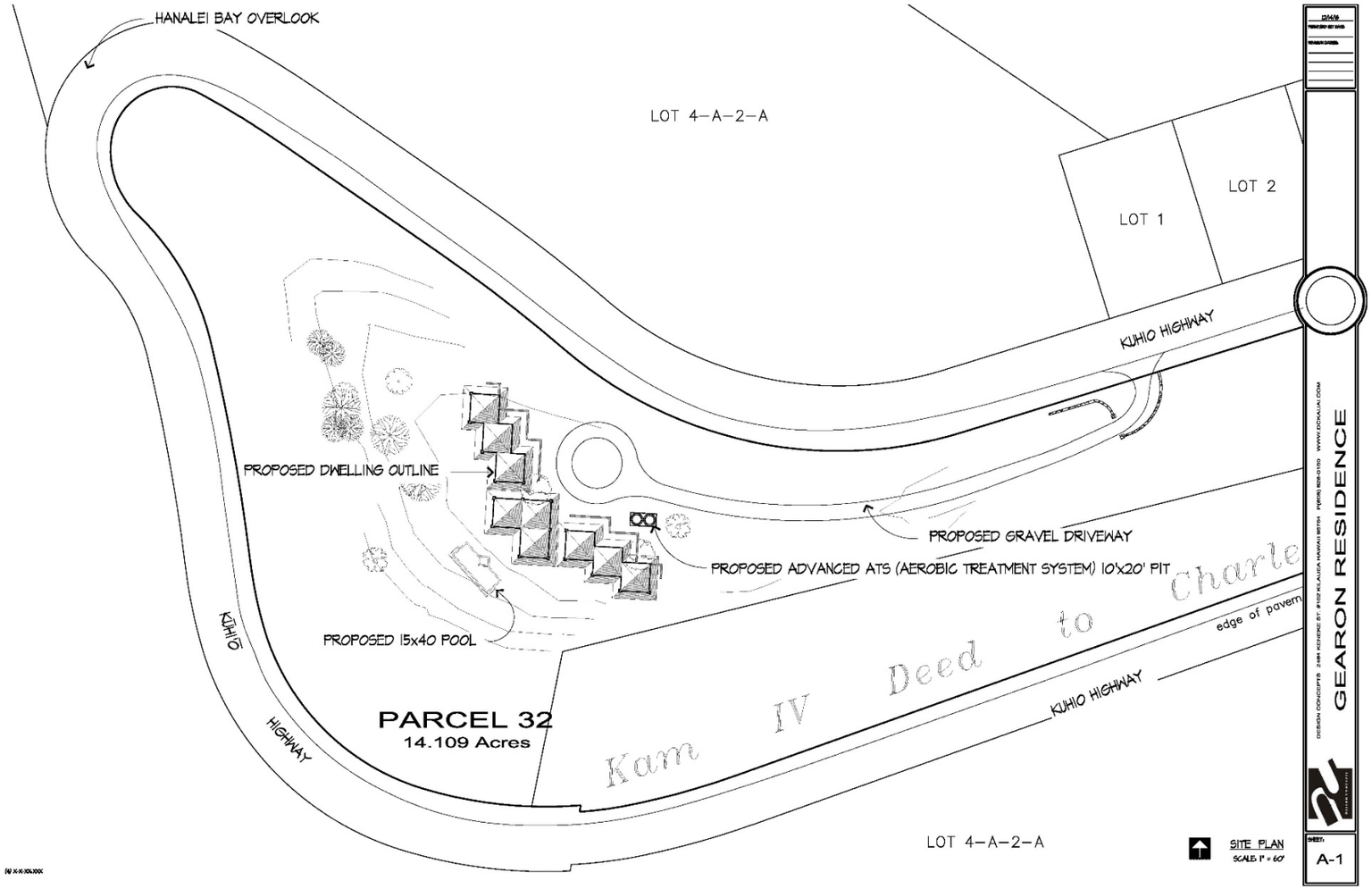


Figure 5. Site Plan on topographic map. (Source: Design Concepts, 2017)



Figure 6. Conceptual plans on imagery (Source: Design Concepts 2017).



Figure 7. Conceptual exterior elevations, entry view. (Source: Design Concepts 2017).

ENVIRONMENTAL SETTING

Natural Environment

The Hawaiian Archipelago is a 1600 miles long groups of islands, reefs and shoals running northwest-southeast in the Pacific Ocean. The major islands, in the southeast part of the archipelago, "are basaltic volcanic domes in various stages of dissection" (Stearns, 1966). The islands have complex geological histories that generally include four stages of volcanism, water and wind, erosion, sea level change, catastrophic landslides and accompanying tsunami and subsidence of the crust due to the loads of the volcanoes. The older volcanoes are experiencing rebound of the crust as they erode and the loads gets lighter.

The four stages of eruption of an idealized Hawaiian volcano are: pre-shield, shield, post shield and rejuvenated. They are distinguished by lava composition, eruption rate and style, and stage of development. The rejuvenated stage occurs after a few million years of volcanic quiescence.

Kauaʻi is one of the most structurally complex islands in Hawaiʻi. It is generally believed to be a single-volcano island, although some isotopic data challenge that interpretation. The strata forming the main mass of the Kauai volcanic complex are assigned to the Waimea Canyon Basalt (Sherrod et. al. 2007). A large caldera (15-20 km across) was at the top of the shield, and a smaller one (about 3 km long) on the southeastern flank. Both filled with lava flows (MacDonald el. al. 1983)

Some of the older rocks of the island are more than 5.7 million years old (Ma), with the youngest lavas of the shield building stage more than 3 Ma (ibid). After a long period of erosion during which no volcanic activity occurred, rejuvenated stage lava flows, known as the Koloa volcanic series, were emplaced mainly between 2.6 and 0.15 Ma (Sherrod et. al. 2007). Eruptions from a series of vents produced lavas, cinder and tuff cones and ash beds. Just before and during the eruption of the Koloa volcanic series, voluminous landslides and mudflows brought down material from slopes to the lowlands. Part of this material was distributed by streams and buried by the Koloa volcanics (MacDonald et. al. 1960.)

The study area is in the ahupuaʻa of Hanalei in the traditional district of Haleleʻa, the modern judicial district is Hanalei. The project site is located on 14.109 acre parcel in Princeville, Kauaʻi, Hawaiʻi at TMK: 4-5-004: 032. The site is bordered by Kūhiō Highway (Route 560) on the north, south and west, on the east by the USFWS lands. The proposed project area has been completely cleared.

Hanalei Ahupuaʻa

Hanalei Ahupuaʻa, encompassing 68.5 sq. kilometers of land and is situated between the latitudes 22°13' north; 22 ° 4'30" south; and longitudes 159 ° 27'30" east and 159 ° 31' west. It is bounded to the west by Waiʻoli Ahupuaʻa and on the east by Kalihikai Ahupuaʻa. The ahupuaʻa is a large amphitheater-shaped valley with well-defined ridges surrounding the Hanalei River. It extends from sea level in the north at Hanalei Bay to the top of Mt. Waiʻaleʻale (5148 ft.) in the south. Three-quarters of the ahupuaʻa lies in the Haleleʻa Forest Reserve. This valley is a typical windward valley bisected by a large perennial stream, Hanalei River, fed by upland tributaries. "Perhaps 9 km inland, the valley widens somewhat and the

stream begins to meander. Here there are considerable alluvial deposits in the bends of the stream" (Earle 1978:34). Alluvial floodplains are located on both sides of the river. Hanalei River is the fourth largest stream in the State based on the amount of water discharged (Stream Assessment Draft Report of 1990, State of Hawaii and National Park Service: 27).

The annual rainfall at Hanalei ranges from 75 in. to as much as 450 in. at the summit of Waiʻaleʻale (considered to be one of the world's rainiest spots) (Foote et al. 1972:6).

The parcel is mapped on the Geologic Map of the State of Hawai'i (Sherrod et. al. 2007) as lava flows of the Koloa Volcanics: Geological symbol QTkol: rock type pahohoe and 'a'a; age range 0.15-3.85 Ma. Geological symbols are presented on Figure ---. Geological Units, which are an older nomenclature than the map symbols, and were formalized in the seminal geologic mapping of the Hawaii Divisions of Hydrography; however, the symbols were later adopted to meet national standards. Standard error of the mapping is 100m (± 50m). The Koloa lavas are rejuvenated–stage volcanics, and were deeply weathered during the Late Pleistocene. The project area is roughly ¼ mile northwest of a vent, known as Pōʻokū, where a large luakini pre-contact historic property is located (State Inventory of Historic Properties [SIHP]# 50-30-03-139). It was placed on the Hawaii Register of Historic Places in 1974 but removed from the Register in 1980 due to land owner notifications.

Soils in the project area were mapped by the United States Department of Agricultural (USDA) Soil Conservation Services (SCS), predecessor to the Natural Resources Conservation Service (NRSC), in cooperation with the University of Hawaii (UH) Agricultural Experiment Station (USDA 1972). Soils in the project area are mapped as Makapili Silty Clay soils. Table 1 is a list of major soils types in the project area from (Foote et. al.1972 and USDA NRCS websoil). Figure 8 is the on-line USDA NRCS soil classification map. The Makapili series consists of very deep, well drained soils that formed in material weathered from basic igneous rock and influenced by tropospheric dust. Makapili soils are on uplands and have slopes of 0 to 40 percent. Elevation ranges from 100 to 350 feet. Most of these soils are in pasture. A small area is in sugarcane and some was formerly used for pineapple. Vegetation of the pasture land is dominantly pangolagrass (Digitaria decumbens) and kikuyugrass (Pennisetum clandestinum); other plants in pastures are kaimi clover (Desmodium canum) and sensitive plant (Mimosa pudica). Brush areas are dominated by guava (Psidium guajava) and java plum (Eugenia cumini). About 2% of the land is rough broken land and rough mountainous land. The A horizon has hue of 2.5Y or 10YR, value of 3 or 4 and chroma of 2 or 3.

The proposed project site is situated on two soil classifications, with the Makapili Series being the most prominent. Soil found at the proposed project location consists of Makapili silty clay (MeB and MeE), and Rough Mountainous Land (rRT) (USDA SCS 1973).

Soils found in the Makapili Series consist of well-drained soils on uplands on the Island of Kaua`i. These soils developed in material weathered from basic igneous rock. They are nearly level to steep. Elevations range from 100 to 350 feet above mean sea level (msl). MeB and MeE are characterized as follows:

> MeB (Makapili silty clay, 0 to 8 percent slopes). MeB is found on broad upland ridges. In a representative profile, the surface layer is brown silty clay about 12 inches thick. The subsoil,

about 48 inches thick, is reddish-brown, and yellowish-red clay loam and silty clay that has a sub-angular blocky structure. The substratum is silty clay. Permeability for this soil is moderately rapid. Runoff is slow and the erosion hazard is slight. MeE (Makapili silty clay, 25 to 40 percent slopes). MeE has a soil profile like that of MeB (0 to 8 percent slopes), except that the surface layer is thinner. Runoff is rapid and the erosion hazard is severe.

Rough Mountainous Land consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. Elevations range from nearly sea level to more than 6,000 feet msl. Over much of the area the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places, the saprolite is relatively soft and permeable to roots and water. The land surface is dominated by deep, V shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridge tops is like that of the Amalu and Oloku`i series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

The slope is presently characterized as having many loose boulders, overhangs, and unstable soil with a high potential for rockfall and landslide.

Table 1. Soil Type in the Project Location

Island of Kauai, Hawaii (HI960)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
MeB	Makapili silty clay, 0 to 8 percent slopes	6.8	44.4%
MeE	Makapili silty clay, 25 to 40 percent slopes	5.8	37.6%
rRR	Rough broken land	0.1	0.5%
rRT	Rough mountainous land	2.7	17.5%
Totals for Area of Interest		**15.4**	**100.0%**

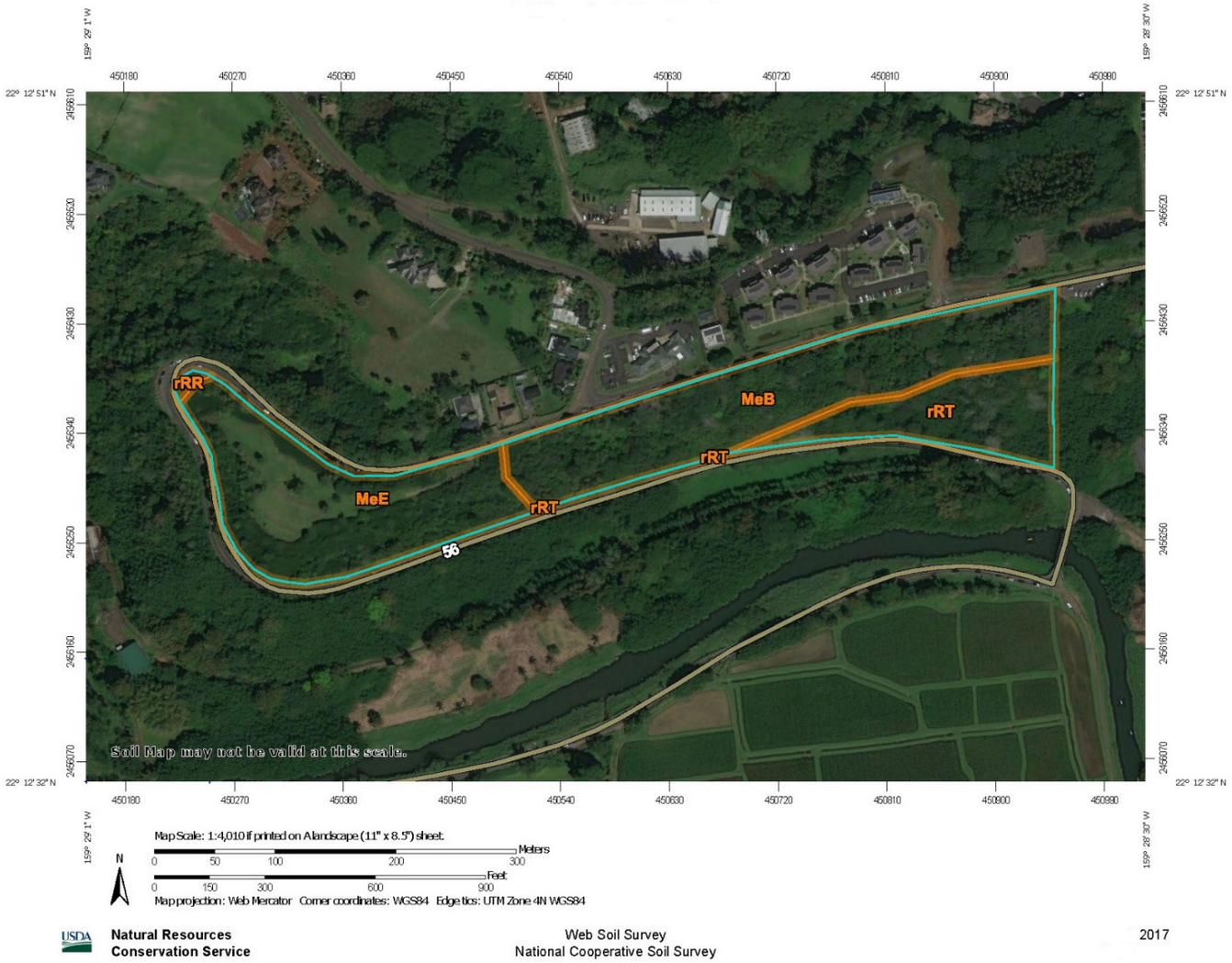


Figure 8. Soils Map from USDA NRCS of the Parcel (Source: NRCS WebSoilSurvey)

Earle (1978:29) classified the vegetation of Hanalei into three communities: " 1) the coastal community, restricted to the sandy soils near the sea, 2) the lowland community, found on alluvial soils along the valley bottoms, and 3) the upland community, located on the rolling, heavily eroded upland soils." Upland community vegetation includes such species as ʻōhiʻa lehua (*Metrosideros polymorpha*) and uluhe (*Dicranopteris linearis*). The current vegetation on the project location is various grasses, tall grasses, Hilo grass (*Paspalum conjugatum),* giant broomsedge (*Schizachyrium condensetum),* ki (*Cordyline fruticose),* laua'e *(Phymatosorus scolopendria),* uluhe (*Dicranopteris linearis*), castor bean *(Ricinus communis),* koa haole (*Leucaena leucocephala), Wedelia trilobata,* hala (*Pandanus tectorius),* niu *or coconut (Cocos nucifera),* mango *(Mangifera indica),* avocado *(Persea americana),* sirus *tree (Albizia lebbeck), octopus tree (Schefflera actinophylla),* Java plum *(Syzygium cumini),* cats -claw, some hau *(Hibiscus tiliaceus*), overwhelming thicket of dense to extreme dense waiawi or strawberry guava (*Psidium cattleianum*). and gunpowder tree (*Trema orientalis*).

The Hanalei River was designated an American Heritage River in 1998 by Executive Order 13061. The American Heritage Rivers initiative has three objectives: 1) natural resource and environmental protection, 2) economic revitalization, and 3) historic and cultural preservation.

BACKGROUND RESEARCH

There are extensive mythological and oral traditions concerning Hanalei proper, but little about the Princeville area and this parcel. This is a selection of accounts for Hanalei which provides a glimpse of what the Princeville area might have been like during the pre-Contact period here. The following background information is abstracted from Hammatt, Shideler and McMahon (2011).

Mythological and Traditional Accounts

ʻŌlelo Noʻeau

It seems likely the most proverbial sayings associated with Hanalei are references to the rains. One is simply Ka ua loku o Hanalei (“The pouring rain of Hanalei”) (Pukui 1983:170). Another is Luʻuluʻu Hanalei i ka ua nui; kaumaha i ka noe o Alakaʻi (“Heavily weighted is Hanalei in the pouring rain; laden down by the mist of Alakaʻi") (Pukui 1983:170). Pukui explains the poetic meaning: “An expression used in dirges and chants of woe to express the burden of sadness, the heaviness of grief, and tears pouring freely like rain. Rains and fogs of other localities may also be used.”

Pukui (1983:50) associates the poetical saying: Haehae ka manu, ke ʻale nei ka wai. (“Tear up the birds, the water is surging”) with Hanalei. She explains:

> Let us hurry, as there is no time for niceties. Kaneʻalohi and his son lived near the lake of Halulu at Waiʻaleʻale, Kauaʻi. They were catchers of ʻuaʻu birds. Someone falsely accused them of poaching on land belonging to the chief of Hanalei, who sent a large company of warriors to destroy them. The son noticed agitation in the water of Halulu and cried out a warning to his father, who tore the birds to hasten cooking.

Another legend regarding Haehae-ka-manu-a-Kāneʻalohi-ke-ʻale-mai-nei-ka-wai, a peak near the summit of Waiʻaleʻale, Wichman (1998:109) relates the following account:

> Kāneʻalohi, a bird catcher, lived in this part of the mountains with his nephew Lauhaka. Their camp was on the cliff side of the Alakaʻi Swamp beside an open bit of water. The water of this pool rippled whenever anyone stepped into the swamp miles away. Inadvertently, they were breaking the new rules of Kalākānehina, the Waimea chief, who had forbidden the catching of ʻuaʻu birds, the dark-rumped petrel, which was good eating. Kalākānehina sent some warriors to kill the two birdcatchers, but they were warned by the rippling water as they broiled a petrel over the fire. Lauhaka called out to his uncle to tear the bird apart so they could eat it before the warriors reached them - hence the name.

A last poetic saying Meʻe uʻi o Hanalei (“The handsome hero of Hanalei”) “said of one who is attractive”) would seem to be a clear reference to Kauahoa (Pukui 1983:234) (reference the Legends of Kawelo below).

The Story of Lonoikamakahiki

In the Story of Lonoikamakahiki, (Fornander 1919 Vol. IV Part II: 284-285, 304-305) the ruling chief Lonokamakahiki and Kaikilani chant similar chants about various places in Hawai'i nei including a reference to the rains of Hanalei:

> O Hanalei kumu a ka ua Hanalei, The source of the rains
> I amo a haahaa Made low from carrying such a burden

Kapaihiahilina also chants of his wanderings at Hanalei with Lonokamakahiki also focusing on the rains:

> My companion of the tall pandanus...He hoa i ka nahele lauhala loloa,
> [That extend] from Kīlauea to Kalihi, Mai Kilauea o Kalihi la,
> The pandanus that had been pecked by birds, O ka hala i 'aina kepa ia e ka manu,
> [The Pandanus] of Pō'okū in Hanalei, O Pō'okū i Hanalei-la
> Thus did we two wander along my companion, Hala ia mao a ka ua, e ke hoa-e
> Through the heavy and wind-blown rain, He ua ka'e'e, ua makani,
> The ceaseless and general rain. Ua ho'okinakina e puni e ka ua.
> We drank of the 'awa of Koukou,Inu aku i ka 'awa o Koukou
> The fragrant leaved 'awa of Māmalahoa. I ka 'awa lau hinano o Mamalahoa
> Say, my companion! E ke hoa-e!
> A companion, a friend of Lono, a man ,He hoa, he ka'upu e Lono, he kanaka
> A companion of the deafening rains, He hoa la ho'i no ka ua, pa'ia,
> As the rain traveled in the uplands at Hele ka ua mauka o
> Hanalei iki, Hanalei-iki
> To Hanalei nui, A Hanalei-nui
> One rain was from the highlands, Mauka mai kekahi ua
> One rain was from the lowlands, Makai mai kekahi ua
> One rain was from the east, Ma na'e mai kekahi ua
> One rain was from the west, Malalo mai kekahi ua
> Along the pandanus cape of Pu'upaoa, Ma ka lae hala o Pu'upaoa
> It was there the rain fell on the sand, Ilaila ka ua ho'owalea i ke one
> The sand, food of the kīna'u, I ke one 'ai a ke kina'u,
> The kīna'u that ate of the ripe pandanus, Ke kina'u 'ai hala pala
> at Hanalei, I Hanalei

There is a reminiscence of when Lonoikamakahiki "ate of the ripe flowers of the pandanus of Pō 'okū" (a 'ai i ka pua pala o ka hala o Po'oku) (Fornander 1919 Vol. IV, Part II, 360-361).

Legend of Kaipalaoa

In the Legend of Kaipalaoa, the "word-smith child", (Fornander 1919 Vol. IV Part III: 576- 577) the boy hero arrives at Hanalei by sea from Pōkaʻī Oʻahu in the retinue of the ruling chief of Kauaʻi, Pueonuiokona. They meet two canoes of the chief returning with fish and the boy requests some fish. He chooses two relatively small insignificant fish, an Oililepa (file-fish) and a Kikakapu (butterfly-fish) which figure later in his contest of wits at Wailua.

Kawelo and Hanalei

In the Legend of Kawelo, (Fornander 1919 Vol. V Part I: 576-577) the Kauaʻi hero was brought up with a certain kinsman, the giant Kauahoa of Hanalei who would become the most noted warrior of the ruling chief ʻAikanaka. In a sidebar, while fishing from a canoe for uhu (parrotfish) at Kaena Oʻahu, Kawelo caught the demi-god Uhumakaikai in his net and was towed close to Hanalei where his companion, Maakuakeke, asked for that land. Kawelo returns to Kauaʻi to fight against the ruling chief ʻAikanaka and the great warrior Kauahoa. The fighting breaks out at Wailua. Aloha for Kauahoa arose within Kawelo and he tries to avoid a fight with his kinsman (hoahanau) from his childhood by trying to win over Kauahoa with a flowery chant, referring to Kauahoa repeatedly as "the pride of Hanalei" (ka ui o Hanalei).

There are several references to Hanalei: "swollen and enlarged is the moss of Hanalei" (Pehu kaha ka limu o Hanalei). "Hanalei, the cold land, the wet land, the land where the end is" (Hanalei aina anuanu, aina koekoe, aina i ka pea i noho ai), and "Hanalei the land of rain" (O Hanalei aina ua).

Kawelo appears to evoke images of the Hanalei landscape:

> For the anger of Honokoa is reviling, Maewa ana ka ukiukiu o Honokoa
> At the cliff of Kalehuawehe, I ka pali o Kalehuawehe
> Where the lama and wiliwili bloom, Pua ka lama me ka wiliwili
> Where the rain sweeps on the outside, O ka ua lele ma waho of MamalahoaO Mamalahoa
> Kauahoa the stalwart youth of Hanalei, O Kauahoa o ka meeui o Hanalei
> (Fornander 1919 Vol. V Part I: 56-57).

Kauahoa rebuffs his overtures of peace and Kawelo then turned to one of his wives, Kanewahineikiaoha and chants:

> Say, Kanewahineikiaoha, E Kanewahineikiaoha e;
> your pikoi (tripping club) throw it up, Ko pakoi hoolei ia i luna
> At Helelua, at Helelua, I Helelua, i Helelua
> At the ridge-pole of Hanalei, I kaupoku o Hanalei la.
> Arise thou, Hanalei, E ala e Hanalei e
> Until Kauahoa thou hast killed, A make o Kauahoa ia oe,

When Hanalei thou shalt possess, Ai ae ia Hanalei,
And the mats of Niʻihau thou shalt wear, Aahu ae i ka pawehe o Niʻihau,
And the birds of Kaula thou shalt eat, Ai la oe i ka manu o Kaula
(Fornander 1919 Vol. V Part I: 56-57).

In another story of Kawelo (Fornander 1919 Vol. V Part III: 694-707) Kauahoa is actually the elder brother of Kawelo, born of the same parents, but adopted by Haulili, the "great one" of Hanalei (Haulii, ka mea nui o Hanalei). Kauahoa comes from Hanalei and is referred to as "The champion of Hanalei' (Ke kamaeu o Hanalei).

In Pukui's (1951:117-118, 122) account, following the killing of Kauahoa, Kawelo lived with his wife in Hanalei "quietly fishing and planting."

Wichman (1998:111) relates the following:

> "Hanalei was the home of Kauahoa, a warrior who lived about 1690. He was the last of the great giant kupua warriors, noted for his strength, size, and because he was handsome. He was born on the same day and in the same place as the future ruling chief, ʻAikanaka, and his cousin Kaweloleimakua. In the war between these two, ʻAikanaka did not immediately call upon Kauahoa, who angrily sat in the headwaters of the Hanalei River and dammed up the water for so long that the fish gasped in the dry bottom....Kauahoa is often referred to as Kameʻeuʻio Hanalei, "handsome hero of Hanalei," and this name was given to a headland in his memory."

Legend of Palila

In the Legend of Palila, (Fornander 1919 Vol. V Part I: 138-141) there is a reference to a club fighting hero of Hanalei named Lupeakawaiowainiha It was said that every time he urinated the land would be flooded.

Legend of Kapunohu

In the Legend of Kapunohu, the Kauaʻi hero became ruling chief of Kauaʻi by throwing his ihe spear from Koloa through the ridge at Anahola leaving a perforation (puka), with it finally slowing as it passed over Kalihikai and falling to earth at Hanalei (Fornander 1919 Vol. V Part I: 224-225).

Legend of Kamapuaʻa

In the Legend of Kamapuaʻa, the pig child delivers a chant in his anger describing the sea of Hanalei as tempestuous (kaikoʻo Hanalei e! Kaikoʻo) (Fornander 1919 Vol. V Part II: 350-351). Westervelt (1915:266) relates an account of Kamapuaʻa at Hanalei as follows:

> "Courage came back to them [the people of Kauaʻi], and at Hanalei the people forced him [Kamapuaʻa] into a corner, and, carrying stones, tried to fence him in, but he broke the walls down, tore his way through the people and fled. The high chief of Hanalei threw his magic spear at him as he sushed past, but missed him. The spear struck the mountainside near the summit and passed through, leaving a great hole through which the sky on the other side of the mountain can still be seen."

Skinner (1900:229) relates the following account of Kamapuaʻa at Hanalei:

> "So ill did he behave in Kauaʻi, assailing innocent people and destroying their taro patches, that they determined to dispatch him, and in order to have him under their advantage it was resolved to fence him in near Hanalei. The wall of mountain now existing there is the fence. Just before it was finished the prince in charge of the work sat to rest in a gap which admits the present road. He heard a harsh laugh, and looking up saw Kamapuaʻa sitting on the top of Hoary Head. A running fight ensued, in which the outlaw escaped across the mountain, and the prince, hurling his spear, but missing his mark, sent the weapon through the crest of the peak, making the remarkable window that is one of the sights of the island."

Story of Halaliʻi

In the Story of Halaliʻi, the king of the ghosts of Oʻahu, there was a time when Oʻahu was inhabited only by ghosts. The sole Kauaʻi survivor of an act of treachery by the Oʻahu ghosts sails to Hanalei and finds the ruling chief of Kauaʻi at that place (Fornander 1919 Vol. V Part II: 432-433). With the aid of his kahuna, Namalokama he devises a plan to defeat the Oʻahu ghosts.

Story of the ʻŌhelo

In the Story of the ʻŌhelo, (Fornander 1919 Vol. V Part III: 580-581) the origin of the ʻŌhelo plant is traced to the daughter of a certain Maunakepa:

> The moss peoples the barren lands Ka limu kaha kanaka of Maunakepao Maunakepa
> Spattering thereon is the rain Kapekupeku i luna ka ua
> from Hanalei, etc. O Hanalei, a pela aku.

Legend of the lovers Paʻalua and Kawelu

In the Legend of the lovers Paʻalua and Kawelu, (Thrum 1923:139) Paʻalua regales the daughter of the ruling chief of Oʻahu with accounts of "the charms of his home in the vale of Hanalei" referring to the home of his father, the ruling chief of Kauaʻi. He makes specific reference to the kamani and olond that grow in the valley of Hanalei (Thrum 1923:140). Pukui's account (1951:175) has Kawelu exclaim "O Paʻalua, take me to Hanalei." They become the rulers of Kauaʻi and Niʻihau.

A Maiden from the Mu

In "A Maiden from the Mu" a young chief of Hanalei organizes a pig-hunt in Wainiha in search of the daughter of a Hawaiian bird catcher and a Mū wahine (Pukui 1951: 72).

Legend of Kalelealuaka

In the Legend of Kalelealuaka (Thrum 1907: 84), the hero of that name goes to Hanalei and defeats a resident chief of great strength in a contest of accuracy in throwing spears at a banana trunk.

Account of Kawelu

In Knudsen's (1956:83) account of Kawelu, the Shark God, the man-eating demi-god of Wailua is said to also frequent Hanalei River.

Village Belle of Pokiʻi

In Knudsen's (1956:93) account of the "Village Belle of Pokiʻi", the beauty is betrothed to a man who lives in Hanalei Valley "and is very rich, with large taro lands and many horses."

Kaʻawakō Pre-contact historic property

Regarding Kaʻawakō Pre-contact historic property at summit of Waialeʻale, Wichman (1998:109) relates the following account:

> "The kilo iʻa (fish watcher) of the Mū would go to Kaʻawakō at the completion of an ʻoʻopu fish trap. Here he would make a shrine, present an offering of ʻawa, bananas and kumu taro. Then he would make a cup of olonā leaves and would chant. This completed the ritual over the fish trap, which he then would close and the fish would be caught."

The Moʻo Kamoʻookamuliwai

Wichman (1998:111) relates an account of the moʻo (fabulous lizard) Kamoʻookamuliwai "lizard of the river," who:

> "…was a moʻo that guarded the river crossing. He refused to let Hiʻiaka cross the river on her way to Hāʻena to get Lohiʻau for her sister Pele, and sent freshets of water to sweep her off her feet. Hiʻiaka struck him dead, and since that time it has not been difficult to cross the river."

Further legends and myths are provided in the Cultural Impact Assessment (McMahon, 2017 in prep).

TRADITIONAL AND HISTORICAL BACKGROUND

Pre-Contact and Early Contact Periods

The project area is in the ahupua‘a of Hanalei, in the present district of Hanalei, in the moku of Halele‘a. The land and waters of Hanalei, at 68.5 km2 the largest ahupua‘a in the moku of Halele‘a, had have long afforded exceptional opportunities for agricultural and cultural development by the Native Hawaiians of Kaua‘i in the centuries before Euro-American contact. E.S. Craighill and Elizabeth Handy present the ahupua‘a resources that pre-Contact Hawaiians utilized and amplified:

> “Hanalei is unique on Kaua‘i in having a broad river flowing into a magnificent level seaward area...The flats had been the taro lo‘i of the Hawaiians, amply irrigated by ditches from the Hanalei River...”

Because of an abundance of a wide variety of foods, Hanalei was, and still is, one of the most attractive dwelling places in the islands. In addition to the rich lands and water resources, and the beautiful beach, Hanalei was close enough to the rich deep-sea fishing grounds off the Napali coast to supply its people with plenty of fish (Handy and Handy 1972: 420-21).

Elsie H. Wilcox, a descendant of missionaries to Kaua‘i, writing in 1917, describes Hawaiian settlement in Hanalei in the early decades of the nineteenth century:

> “The settlement then extended along the beach, where the climate was drier and where fishing was available, and the grass-thatched houses were set in the midst of gardens of fruit-trees, vegetables and flowers. Bananas, breadfruit, coffee, sugar-cane, cocoanuts, sweet-potatoes, yams, squashes, pia and taro were cultivated, and chickens and pigs raised. On account of the sandy soil and lack of water "makai", most of the taro-patches were further up the valley, the farmer going up daily to "mahiai" and returning at night to his home on the beach. The banks of both rivers were lined with taro-patches which, following the watercourses, extended far up into the valleys. Terraced remains of these patches are still to be seen far above present habitations, their extent indicating a goodly population at that time. The stretch of land between the two rivers, now used as rice-land (i.e. 1917), was then an undrained swamp, not available for cultivation” (Wilcox 1991:5).

The Russian Enterprise at Hanalei

The nineteenth century would see the Native Hawaiian landscaped and culture transformed by the interventions of newly-arrived Euro-American missionaries, entrepreneurs, settlers and adventurers.

Alexander Baranov, the Russian-American Company's manager at Sitka, chose Georg Anton Schäffer, a German adventurer, to lead a mission to recover the seal skin cargo of the bark the Behring which had run aground at Waimea, Kaua‘i. Ka‘umuali‘i, the king of Kaua‘i, took possession of the vessel and its cargo, maintaining that anything brought to Kaua‘i became the king's property. Schäffer first arrived on

the island of Hawai‘i in November of 1815. In May 1816, he sailed for Kaua‘i, with an armed crew. Arms, however, were not needed; Schäffer found Ka‘umuali‘i willing to return the Behring's cargo and eager for an alliance with the Russian Empire.

Over the next months a busy Schäffer established the Russian presence on Kaua‘i, intending to make the island a launching point for control of the entire Hawaiian chain. After constructing Fort Elizabeth at Waimea Bay, he ordered two earthwork forts at Hanalei: one named after the General Barclay de Tolly, the other named after the Emperor Alexander, constructed on a plateau overlooking Hanalei Bay on the grounds of the present Princeville Hotel. At the same time, Ka‘umuali‘i deeded Hanalei to Schäffer who renamed the ahupua‘a "Schäfferthal" and the Hanalei River the “Don” (Joesting 1984).

By the spring of 1817 Ka‘umuali‘i had lost confidence in Schäffer, and ordered the Russian emissary and his compatriots to immediately leave the island. The party fled aboard two company ships to Hanalei where Schäffer intended to make a stand. He in his journal:

> “I took possession of the island of Kaua‘i in the name of His Majesty, the Great Emperor of Russia Alexander Pavlovich, ordered the Russian flag raised on Fort Alexander, fired three canon shots, and declared myself chief of Hanalei Valley” (in Pierce 1965:202-203).

But Schäffer and the others soon realized their predicament was hopeless. In June 1817, they sailed away from Hanalei Bay and concluded the Russian venture on Kauai.

Fort Barclay and Russian Enterprise at the Coast

Little is known of the “lost” Russian Fort Barclay and other Russian infrastructure constructed at the coast. On November 15, 1816 Schäffer records that “until now I have worked energetically on Forts Alexander and Barclay.” Platov, Ka‘umuali‘i’s deputy, a Kaua‘i, chief known as Obana Tupigea that Schäffer named after a Russian hero “...works daily with his Indians on constructions of the fortifications” (Pierce 1965: 186). On November 25, 1816 Schäffer wrote to Alexander Baranov that “I now have almost ready here one fortress of stone and two fortifications of earth, with palisades” referencing Forts Alexander and Barclay at Hanalei (cited in Pierce 1965: 82). On April 1, 1817 Schäffer reported “I visited the fortifications and found Forts Alexander and Barclay both nearly finished.” (Pierce 1965:198). Pierce (1965:128) provides the following:

> “Sheffer accepted the province of Hanalei and started to build two fortresses there, one [Fort Barclay] on the right side of the river Hanalei at the mouth of the harbor and another [Fort Elizabeth] on the same side of the river but much higher, at the harbor itself. Both fortresses were built of earth; however both remained unfinished. The work was being done by promyshlenniks [hunter/trappers working for the Russian American Company], with the aid of the in habitants of the province, without any aid from the king.”

Mills (2002:26) comments that:

> "These two forts [Fort Alexander and Fort Barclay], built primarily with Russian-American company labor, had low earthen work walls, possibly with palisades."

In addition to Fort Barclay it appears that there was another a "winery" present at the coast. Referred to in a letter from George Young (and four other Russians) to Schäffer dated December 29, 1816 Young reported the murder of an Aleut working as a watchman for the Russians and the arson of the "winery" at Hanalei:

> "The boat with your messenger Fedor Leshchinskii was ready, as was the boat loaded with chalk and clay. Mr. George Young was then on the beach about to send off a letter to you. The natives left their houses and went somewhere near our buildings, which include a winery, by the lake, with and masses of calabashes. They took two butts of wine and a large quantity of roots used in making alcohol. We, Mr. Young, myself, and Bologov, decided that we needed a watchman so no one, whether an Aleut, a Russian, or a kanaka, would dare to steal or rob [us of] anything. We thought we could avoid trouble that way, but just as we handed the sealed envelope to Leshchinskii, suddenly we heard a gunshot from the guard posted in the kanaka. We – Captain Young, myself, Bologov, and Leshchinskii – rushed from the room. We found two men from Mr. Young's boat whom we sent to inquire as to the cause of the shooting. We followed them ourselves and started to run along the shore; before we had covered half of the distance we met the returning men, who told us that the watchman was dead. As soon as we heard that, we saw the building burning on all sides, although there was not one Sandwich Islander to be seen. In ten minutes this unusual fire was over. The grass was burned out and we could see the dead body. Using water brought from the lake in calabashes, Mr. Young, I and the others put out the rest of the fire. We examined the body of the dead man in the presence of a large crowd. We found the cause of death – a large wound in the chest and two more in… We brought the body to the house..." (Pierce 1965:83-84).

The geography referred to during this incident is uncertain, but it appears that there was a company house quite close to the mouth of Hanalei Stream and that a different structure, the "winery, by the lake" (evidently a thatched structure), was to the north near the present marsh. The assertion that the fire was put out "using water brought from the lake" suggests the "winery" was closer to the lake than to either the coast or the Hanalei River. There is no reference to Fort Barclay in the account.

The 1820s

Into the early 1820s, the Russian episode in Hanalei was apparently forgotten. In 1821 Rev. Hiram Bingham, describing a visit to Hanalei with Ka'umuali'i and King Liholiho, makes no mention of the former Russian presence but gives details of events that repent the on-going Hawaiian culture:

"The people in their original state, treated us with such as they had. One ascended a coca-nut tree and threw down a nut. Another tore off with his teeth, the thick, fibrous husk, then cracked the shell with a stone, to give us a drink. The head man gave us a course dinner. A pig, baked with heated stones covered in the ground, was set before us on a large, shallow, wooden tray. Kalo, baked in the same manner, and beaten, was laid on large green leaves instead of plates, on the ground...Water was given us in a tumbler

consisting of the neck of a gourd-shell, and bananas, ripe, rich, and yellow, were put into our hands singly" (Bingham 1847:143).

In 1824, Bingham witnessed at Hanalei an example of the concerted human effort that could still be evoked by the *ali'i*. Liholiho's yacht, the *Pride of Hawaii* ran aground in Hanalei Bay. Bingham proclaimed the effort by a great crowd of Hawaiians to salvage the disabled yacht "one of the best specimens of the physical force of the people, which I ever had opportunity to observe for more than twenty years among them--indeed the most striking which I ever saw made by unaided human muscles" (Bingham 1847:221).

"The chief Kiaimakani of Waipouli passed up and down through the different ranks, and from place to place, repeatedly sung out with prolonged notes, and trumpet tongue...`be quiet - shut up the voice.' To which the people responded...`say nothing,' as a continuance of the prohibition to which they were ready to assent when they should come to the tug. Between the trumpet notes, the old chieftain, with the natural tones and inflections, instructed them to grasp the ropes firmly, rise together at the signal, and leaning inland, to look and draw straight forward, without looking backwards toward the vessel. They being thus marshalled and instructed, remained quiet for some minutes, upon their hams" (Bingham 1847:221).

The salvage efforts ultimately failed and the yacht was lost. The grounding of the *Pride of Hawaii* at Hanalei Bay would suggest the perils of navigation by western ships attempting to anchor in the bay and along the rest of the northern Kaua'i coast, where wind and sea conditions made it impossible to secure anchorage. During subsequent decades of the nineteenth century, as increasing numbers of traders, ranchers and settlers moved into Hanalei, the bay could serve only as one "among the many outposts (in the Hawaiian Islands) supplying provisions to the whaling fleet" (Thomas 1983:23). "Hanalei was visited by an occasional whaler and by inter-island ships, since there was some cargo to be carried out, but it was a dangerous harbor, especially when winter winds and rain blew down from the north" (Joesting 1984:141).

1830s to 1850

When the *Sulphur*, an English vessel on a chart-making voyage, visited Hanalei in 1838, its Captain, Edward Belcher, noted:

"Hanalae [sic], besides beef and vegetables of the finest quality, furnishes fruits, poultry, turkeys, &c., cheap and in abundance...Our object in coming hither was to embark bullocks, which, we were assured, were better and cheaper than at O'ahu; and we were fully repaid for the trouble; we obtained noble animals, and meat as fine as in England" (Belcher 1843 Vol.1:61).

"Charltons Farm", identified on the map of Hanalei drawn after the expedition, overlooked the northeast side of the valley and provided much of these foodstuffs, along with butter and cheese (Fitzpatrick 1986:68). The British Consul in Honolulu from 1825 to 1846, Richard Charlton, was among the first foreigners to develop new enterprises in Hanalei Valley.

In 1831 Charlton leased a stretch of land at Hanalei to be used as a cattle ranch from Kaikioʻewa then Governor of Kauaʻi. Its extent was not defined by any boundaries, being generally termed Hanalei. The cattle were allowed to range without absolute limit, except that they were not to encroach on the cultivated lands adjacent. The lease was for twenty years from August 27, 1831 (Wilcox 1991:6-7).

In 1834, the same Governor Kaikioʻewa granted Hanalei land to Joel Deadman for the planting of sugar cane. Deadman's later testimony, recorded in 1844 at the time of the Māhele, reveals the precariousness of the early land ventures at Hanalei and the informality of land transactions. Kaikioʻewa "agreed to cause [the Hanalei land] to be cultivated & planted with sugar cane and [to] find the materials for a mill & and labor." In exchange, Kaikioʻewa was to be paid "one half of the sugar & Molasses produced." Deadman "remained there 6 months at considerable loss & expense and had even work made for the mill" but the plantation never materialized. In 1842, Deadman would sell the land to Dr. T.C.B. Rooke, father of the future Queen Emma (Joesting, 1984).

During the 1830s a successful enterprise in Hanalei was silk making. Charles Titcomb, an American sailor, started a silk plantation that by the early 1840s comprised four varieties of mulberry trees and was reported to have been producing excellent silk (Wilcox 1991:7). The Hanalei silk plantation "finally encountered financial and other troubles" and the silk-making enterprise was abandoned in 1844. Titcomb is reported to have lost $15,000 in the venture (Wilcox 1991:183).

Also during the 1830s, the Protestant American Board of Commissioners for Foreign Missions (A.B.C.F.M.) established a mission station at Hanalei Bay in the neighboring ahupuaʻa of Waiʻoli. “The Waiʻoli valley seemed the best place on the north shore of Kauai to build a church, school and the necessary domestic buildings which together made up a mission station. Hawaiians there were enthusiastic” (Riznik 1987:5). In 1834 the first missionary assigned to the Hanalei station was William Patterson Alexander with his wife and son. The Alexanders would remain at Waiʻoli until 1843.

Beginning in 1831 the missionaries performed a census throughout the Hawaiian Islands. The census provides the first record of the native population after the first decades of western contact. According to the 1834-35 census of Kauaʻi, a total of 1505 Hawaiians - adults and children - were then living in the *moku* of Haleleʻa (Schmitt 1973:26). Of that total, 522 Hawaiians, or one-third, resided in Hanalei ahupuaʻa.

During the 1840s, a new agricultural pursuit - coffee growing - would transform Hanalei. Charles Titcomb's silk plantation at Koloa had been wiped out in 1840 by a "drought...bringing in its train insect pests, aphids and spiders" and by heavy winds, "trade and kona, whipping off the mulberry leaves" (Kuykendall 1938:183). The Hanalei plantation escaped this disaster but "finally encountered financial and other troubles" and the silk-making enterprise was abandoned in 1844. Titcomb is reported to have lost $15,000 in the venture (Kuykendall 1938:183). Despite his losses, Titcomb was able to replant his Hanalei fields with seed procured from Kona.

Coffee growing had been introduced to Hanalei in 1842 when John Bernard and Godfrey Rhodes started the Hanalei Coffee Plantation on two pieces of land leased from the Government “one on the east side of the Hanalei River containing ninety acres and one on the west side containing sixty acres" (Wilcox

1991:8) with "plants and seeds...secured from Governor Boki's land in Manoa Valley [on Oʻahu]" (Wilcox 1991:9). While coffee was already being grown on Oʻahu and Hawaiʻi islands, the fields at Hanalei represented the "first extensive coffee plantations" in the Hawaiian Islands (Kuykendall 1938:316). In 1844 the plantations of Titcomb and of Bernard and Rhodes comprised "upward of 100,000 trees" (Wilcox 1991:9).

By mid-century, coffee dominated the Hanalei landscape: "a great part of the whole valley, at least to the extent of 1,000 acres, was under cultivation in coffee at this time" (Wilcox 1991:10). In 1849, six years after his family had left Kaua`i William DeWitt Alexander, son of the former Waiʻoli missionary William P. Alexander, describes a return visit to Hanalei. His first view of the valley is of the "majestic Hanalei River winding its way through coffee plantations, & the graceful curve of the bay, bordered with houses, & groves" (Alexander 1991:125). He later visited the two coffee plantations:

“Capt. Rhodes has a fine coffee plantation. It contains upwards of 100 acres. It is in very fine cultivation. He had also banana, & orange trees, & a very fine grove of bamboo. I was much interested in observing the operation of the coffee mill. As in a sugar mill, a mule turns a perpendicular post. To the top of this is fitted a large horizontal cog wheel. This sets in motion a fly wheel which is connected to the rest of the machinery by bands. There are 3 or 4 mills which perform different stages of the operations. The noise which they made was most deafening” (Alexander 1991:127-128).

The Titcomb coffee plantation is described as "flourishing" though "not as large as Mr. Rhodes', nor is the coffee as luxuriant" (Alexander 1991:128). John Bernard, the partner of Godfrey Rhodes, had died at sea off Hanalei Bay in 1845, however, Rhodes and other investors continued the coffee operation, now renamed the Rhodes & Co. Coffee Plantation. In 1846 the plantation was comprised 750 of the 1000 acres of Hanalei land then under cultivation of coffee (Wilcox 1991:9-10).

Mid-Nineteenth Century: Mahele Documentation

A survey Map of makai Hanalei by W.A. Wall (1893; R.M. 1833) identifies the locations of all but six of the 66 awarded ʻāpana in the Land Commission Awards (LCAs) in Hanalei. No Land Commission Awards lie near the project area. A portion of the Wall map shows the location of this parcel (Figure 18).

Of the 66 claims for Hanalei, only 49 were awarded. In these claims, both awarded and unawarded there are certain land uses claimed by each person, and are designated here as land use components. There are 204 components with percentages of use comprised of 124+ taro patches or moʻo [1 or more taro patches in a moʻo] (61.1%), 44 house lots (21.7%), 18 kula [garden/pasture] (8.9%), 8+ orange and 1+ lemon trees (4.9%), 5 lok*o* [ponds) (2.5%) a noni and banana patch, 400 head of cattle and 160 acres of coffee, a wharf (less than 1%).

In contrast to other ahupuaʻa studied, Hanalei has a larger than normal percentage of house lots in proportion to other land uses. For example, in Hanapepe the house lots were 7% of the total components, and in Wailua 14.5%, and in Waiʻoli 11% while in Hanalei they are 21.7%). This large component of house lots may be explained by 1) the awarding of house lots to aliʻi in a favorite dwelling

place with a good beach, good fishing and good surfing; 2) awards to warriors who were given house lots here as a reward for loyal service to Kamehameha, especially during the 1824 Kaua‘i rebellion and; 3) the practice of having a house in Hanalei while farming in the sister ahupua‘a of Wai‘oli. The settlement of Hanalei appears to be house lots for the ali‘i and for former warriors of Kamehameha II at the shore, with taro patches inland and in the ahupua‘a of Wai‘oli. Other small concentrations of house lots with nearby gardens are scattered along the north shore, just north of Hanalei River inland along the river. The ahupua‘a of Wai‘oli would appear to be closely allied to Hanalei and served as a gardening area for some of the claimants residing in Hanalei. Irrigation water originating in Wai‘oli crossed the *ahupua`a* boundary into Hanalei representing one of the few instances in Hawaii of shared water resources between *ahupua‘a*, also suggesting a close community relationship with reciprocal land use and shared water between the two ahupua‘a. The majority of house lots are located along the shore. Regarding other claims the Wall map shows a Devereux Hotel near the Land for Emma Rooke. The claim is located on the makai side, bounded by the house of Hawaiiloa where the King and other ali‘i stayed when they came to Hanalei. Just inland of this area was Kanoa Pond, and houses are located on the makai and mauka sides of this pond.

According to Wall’s map close to the shoreline on the north side of the river is the ‘ili of Kaunuopua with another smaller concentration of houses and a few lo‘i. Kellett, a foreigner, has a lot on the hill just beyond this area for his houses and those of the natives who lived under him, and another lot on the river for his garden of corn and peas. Within a crook of the Hanalei River, in an area called Kaohia is a concentration of lo‘i lands with a kula on the inland end.

1850s to 1900

According to records of the Royal Hawaiian Agricultural Society "for the twelve months from July 1850, to June, 1851...Hanalei exported (to Honolulu) 21,298 pounds of coffee, 39 barrels of Irish potatoes, and 20 head of cattle, at a total value of $2,744.08" (Damon 1931:334) with coffee agriculture continuing to dominate Hanalei. However, the plantation owners were apprehensive: they foresaw an eventual labor shortage as production increased. They also feared a growing intransigence among the Hawaiian workers. "Mr. Rhodes stated (in an 1851 report) that laborers were demanding one dollar a day...and that some had refused to work even at four dollars a day" (Ibid.:351). Many of the Hawaiian laborers had already left the island to work in the gold mines of California. Thus, the Hanalei planters welcomed the plan of the Agricultural Society to import "Chinese coolie laborers under contracts based on the indentures used in employing seamen" for the various plantations throughout the Hawaiian Islands (Ibid.:351). In 1852 the first Chinese laborers arrived at Hanalei to work on the coffee plantations. By the next year the Chinese were fully integrated in the labor system; Rhodes' 1853 report on Hanalei to the Agricultural Society noted:

“Mr. Titcomb's Coffee Plantation is in fine order, and he expects a large crop, of perhaps 80 to 100 M. lbs. He has lately cleared more land for planting: his plantation is compact, and well managed. I believe he is satisfied with his coolies. He has many natives engaged, but has difficulty in making them fulfill their agreements. Our own plantation is thriving, although many years must elapse before it re-attains the

prosperous state it was in 1849 and 1850, when our natives all left us, smitten with the California fever. I am very well satisfied with the coolies, and much prefer them as laborers" (in Damon 1931:352-353).

Whatever comfort the coffee planters of Hanalei may have obtained from the new labor force, in the 1850s they became vulnerable to natural forces beyond their control. That vulnerability had been foreshadowed earlier, in 1847, when a torrential rain flooded the valley, severely damaging the coffee trees. In 1851 and 1852 the Hawaiian Islands suffered through a severe drought and a subsequent blight ravaged coffee trees at Hanalei and on all the islands. The plantations could continue producing for a few more years but by the end of the 1850s, the Hanalei plantations were devastated. A visitor in 1860 contrasted the current despoliation with the flourishing scene of three years earlier:

> "The coffee blight has entirely covered the two Hanalei plantations which in the spring of 1857 we saw in full and successful culture, yielding 200,000 pounds of excellent coffee. It was sad to witness the contrast. Then scores of women and children were busy picking the ripe berries, and depositing their gatherings at night at the overseer's office, but now all was silent. Not a gatherer was abroad, and we saw laborers bringing in coffee trees upon their shoulders, to heat the fires under the sugar boilers of Mr. Titcomb" (in Damon 1931:351).

The "sugar boilers of Mr. Titcomb" the visitor noted were evidence of an unflagging resilience; for Titcomb, during the latter 1850s, had converted his fields from silk to coffee turning his energies to sugar growing.

Godfrey Rhodes, the other Hanalei coffee grower, had already sold his coffee plantation. On March 14, 1853, the Rhodes Coffee Plantation land was bought from the Government for $1,300 however on Sept. 13, 1855 Rhodes sold out his interest in the plantation for $8,000 (Wilcox 1991:13). The man who purchased the land and plantation was Robert Crichton Wyllie, the Hawaiian Kingdom's Minister of Foreign Affairs.

Wyllie, a Scotsman who had made his fortune as a merchant in South America, arrived in the Hawaiian Islands in 1844. Wyllie had not intended to settle in Hawai'i, but in 1845 he accepted an appointment by King Kamehameha III as Minister of Foreign Affairs. He served in that office until his death twenty years later. As Foreign Minister, Wyllie's great ambition was the recognition of the Hawaiian Kingdom as a sovereign nation by the world's powers. But a more personal aspiration also captivated Wyllie: to build for himself a manor at Hanalei quite as magnificent as any he had known in Scotland. So, in 1853 he began acquiring tracts of Hanalei land beginning with the Rhodes Coffee Plantation. Wyllie attempted to save the coffee plantation:

> "For ten years (Wyllie) doggedly fought against [the] blight which gradually withered the trees. Finally facing reality, he pulled out the dead trees and planted a new crop, sugar" (Hackler 1982:66).

By 1862, Wyllie had "constructed an extensive sugar factory and other infrastructure, along the river, at the eastern end of the valley, importing much of the machinery from Scotland" (Thousand Friends...1987:32) and in 1863 he bought Titcomb's lands, just one piece of the extensive land purchases Wyllie made during the early 1860s:

> "On Feb. 5, 1863, Mr. Titcomb sold out to Mr. Wyllie...In all, four pieces of land passed to Wyllie, 750 acres at Emmasville, 1 acre at the landing, Kanoa Pond, 10 and Kukia on the opposite side of the river. Wyllie had before this, on April 17, 1862, bought the Ahupuaa of Kalihikai, this being the property of A. Keliiahonui, grandfather of Levi Halele'a, given to Keliiahonui by an old ali'i. On Oct. 5, 1862, Wyllie bought at public auction from J.W. Austin and Chas. Kanaina (Guardians of W.C. Lunalilo) the Ahupuaa of Kalihiwai" (Wilcox 1991:14).

Wyllie's land purchases and substantial investment in the development of his sugar operation reflected a brilliant future he envisioned for his estate. He intended to name as heir to his lands the young "Prince of Hawaii" (Ka Haku o Hawaii) Albert Edward Kauikeaouli Leiopapa a Kamehameha, who had been born in 1858, to King Kamehameha IV and Queen Emma. In 1860 after a visit by the royal family to Hanalei. Wyllie named the estate "Princeville". He resolved to petition the king to proclaim the estate the "Barony of Princeville" - making it a fit legacy for the prince - but in 1862 his plans were undone when Albert died at the age of four. Wyllie died three years later. The estate and plantation were now deeply in debt and in 1867 Wyllie's lands were auctioned for $40,051.50 to Elisha Hunt Allen who, like Wyllie, was an official of the Hawaiian government.

The Princeville Plantation continued to operate under changing ownership until the 1890s. In 1872 "the average crop was 400 tons, capacity of the mill, 1,000 tons (Wilcox 1991:18). At the height of sugar cane production, approximately 4,870 acres were planted in cane. Overall production was sub-marginal due to poor soils and less than ideal climatic conditions. By the last decade of the nineteenth century, the difficulties of growing sugar cane at Hanalei were insurmountable:

> "...the cane had never done well in that cool, wet climate. Much of it rotted in the lower fields; the upper fields were, it is said, not plowed deeply enough and at times there was not water enough to flume the cane down to the mill" (Wilcox 1991:18-19).

The company failed and the last crop was harvested in 1893. By 1899, Albert S. Wilcox had secured control of all the plantation: "The lower lands were rented out to Chinese rice-planters, and the upper lands between Hanalei and Kalihiwai were planted to imported grasses and turned into a cattle-ranch" (Wilcox 1991:19). In 1916 Wilcox sold the land to Lihue Plantation Company and W.F. Sanborn (Wilcox 1991:19).

Where William Alexander half a century earlier had viewed the Hanalei Valley dominated by coffee plantations, a visitor in the 1890s would come upon an entirely transformed landscape. Eric A. Knudsen, recounting a trip around Kauai in 1895, presents the view of Hanalei as his party approached from Kalihiwai Ahupua'a:

> "We...were glad when we reached the great valley of Hanalei. The road in those early days almost dived straight down to the bridge. It was steep and in wet weather very slippery...About half way down, the valley began to open up. Rice fields and taro patches covered the flat bottom lands as far as the eye could see...the view to our right, the winding river with a barge loaded with rice slowly drifting down on its placid surface, and beyond the great sweep of sandy beach, were a truly inspiring sight" (Knudsen 1991:153).

Knudsen's account reveals significant features of the Hanalei landscape during the last years of the nineteenth century. The bridge that now spans the Hanalei River on the government road is a recent development. As noted in a tourist guide, until the 1880s there was no bridge over the river. There was "ferry opposite the Princeville Plantation, where passengers, cattle, teams, etc., can pass the river free of charge, the ferry being supported by the Government and the Princeville Plantation, jointly" (Thousand Friends...1987:58-59).

The rice fields of the 1890s expanded through the previous decades as sugar declined. Upon completion of their contracts with the plantation, many the immigrant Chinese laborers remained in Hanalei, many becoming merchants or rice farmers, the existing taro lo‘i providing a ready foundation for conversion to rice paddies.

A market for rice in California had developed in the mid-nineteenth century and Chinese immigration to the islands also provided a domestic market. The Princeville Plantation Company began leasing out their land for rice farming in the 1870s. The plantation ended up leasing 300 acres to Chulan and Company at $20 per acre, per year (Hackler 1982:80). By 1892, 750 acres of Hanalei Valley were under rice cultivation, comprising the largest single rice-producing locality in the Hawaiian Islands (Thousand Friends...1987:116). Maps of the 1890s show six rice mills in the valley.

The transformation of Hanalei Valley from sugar to rice during the second half of the nineteenth century reflected an increasing Chinese population at Hanalei. Government census at Hanalei recorded 164 Chinese in 1866, 132 in 1872, 265 in 1878, 459 in 1884, and 689 in 1896 (Ibid.:116). Government census also documented the declining Native Hawaiian population of Hanalei during the second half of the nineteenth century: there were 1926 Hawaiians in 1853, 1600 in 1860, 1949 in 1866, 1403 in 1872, 578 in 1878, 795 in 1884, 860 in 1890, and 679 in 1896 (in Ibid.:121). Presumably some of the Hawaiians in the 1890s continued to farm the remaining taro lo‘i that Eric Knudsen noticed amidst the rice fields in 1895.

In the late nineteenth century, land use and demographic were changing throughout Kaua‘i. According to Joesting (1984: 249-250):

> “By the 1890, there were villages and hotels where once there had been no inhabitants at all, a reflection of how the centers of populations were shifting. The places that had offered the most to Hawaiians – the sea to fish in, a stream to provide water for taro these things became less important as the new commercial world took increasing control. Although some Hawaiians preferred the old life-style, many moved close to the plantation hub with the nearby company store, and their generally thinning numbers reduced old villages to fragments of what they once had been… Places like Anahola Valley, Moloaa, Kalihiwai and Waipouli had previously been centers of population”.

1900 to the Present

During the first decade of the twentieth century, rice-farming by the Chinese continued to be the focus of large-scale economic activity in Hanalei.

In 1912 two extant historically significant structures were constructed at Hanalei: the pier at the mouth of Hanalei River and the bridge spanning the river. The pier is described, in an application for placement on the National Register of Historic Places, as a "wooden deck...built during a period of economic prosperity in the area, primarily the result of a thriving rice industry" which "replaced an earlier shorter pier and primarily was employed for the shipment of rice."

While the new pier reflected the flourishing rice-based economy of the valley, the construction of the steel bridge replacing the wood bridge Eric Knudsen had crossed in 1895 provided an impetus to further change in Hanalei. An application for placement on the National Register of Historic Places, notes that the construction of such a substantial steel bridge "helped stimulate the economic and social growth of the then relatively isolated North Shore" of Kaua'i. Facilitated access in and out of the valley accelerated development begun in the late 19th including the building of vacation houses along the Hanalei beach that take advantage of the pleasant breezes and spectacular water views.

A 1916 article in the "Garden Island" characterized Hanalei's attractions by the second decade of the twentieth century:

> "Hanalei has been a popular and populous community of late, a sort of suburb of Lihue since there were many Lihue people summering there, the various beach houses being full to overflowing. Morning, noon, and night the wharf has been alive with enthusiastic but "green" fishermen, mostly of a tender age, and the sands dappled with figures in proper costume and the waters flecked with tumbling swimmers who mostly couldn't swim" (Thousand Friends...1987:63).

This clearly foreshadowed the future development of Hanalei and Princeville as a resort destination.

After the first decades of the twentieth century, rice farming declined sharply throughout the Hawaiian Islands as lower-priced rice grown in California inundated the market. Chinese rice planters at Hanalei and elsewhere began selling their fields to immigrant Japanese rice growers. In 1916, 16% of the rice lands in the then Territory of Hawai'i were controlled by Japanese growers. By 1932, a survey indicated that 62% of Hawaii-grown rice was being cultivated by Japanese. At first the Japanese sold their paddy to Chinese owned rice mills; then, gradually, they took over the mills (Glick 1980:59).

As increasing numbers of Japanese moved into Hanalei to own and work the rice fields, the original Chinese rice-growers moved to other commercial pursuits. For example, the Haraguchi family began leasing rice land at Hanalei from the Man Sing family and in 1924 subsequently purchased the Man Sing mill. The family cultivated 75 acres in the valley. When the original Man Sing mill was destroyed by fire in 1930, the Haraguchi family built the still extant mill that is presently listed on the National Register of Historic Places. The documentation for the mill's placement on the Register notes that the Japanese rice growers replaced the Chinese variety of rice with shorter grain rice that the Japanese preferred.

In the 1930s, the Agricultural Extension Service of the University of Hawaii began a program to increase rice production at Hanalei, resulting in a brief "resurgence in rice cultivation"; acreage in Hanalei increased from "759 in 1933 to 1058 in 1934," and by 1936 Hanalei "produced over two-thirds of all rice in Hawaii, almost all of it for consumption within the Territory" (Thousand Friends...1987:117-118). It is this rice-dominated Hanalei landscape that E.S. Craighill Handy, in his 1940 study of planting areas throughout the Hawaiian Islands. Handy describes the valley as it appeared in the 1930s. Handy's account is especially valuable as he notes both 20th century usages based on his field observations, and former usages based on information from native informants:

> "The swampy land below the hills at the west end of Hanalei next to Waiʻoli is unused. The land between the highway and the bay on the west side of the river, much of which used to be terraces, is now given over to pasture and home sites. The land named Paele in the great bend of the river east of the bay, which used to be in rice or taro, is now used for pasture. The broad area inland from the river, named Kahanawai, is now planted with rice, except for the flats adjoining the base of the hill. According to Sheriff Lota, this area was only partly developed in terraces in ancient times. In the 1880's, the land just above the highway was planted in sugar cane, which gradually extended far up Hanalei Valley. Subsequently much of this land, which had not previously been in terraces, was cut up by the Chinese into paddy fields. It was only in the flats of Hanalei Valley proper that terraces were continuous in the old days. At present, rice paddies are continuous for 1.3 miles from the highway bridge where the Hanalei River turns east; another sizable rice patch lies four tenths of a mile beyond, the land between being neglected. Beyond this farthest rice plantation, the Hawaiian homesteads commence. A few Hawaiians and other homesteaders plant a little taro for home consumption. It is said that there are numerous areas of abandoned small terraces farther in the interior" (Handy 1940:72).

Handy's description suggests that by the 1930s, Hanalei Valley comprised a patchwork of shifting fallow and active agricultural fields and pastures reflecting the vagaries of decades of shifting economic pressures.

While Handy asserts that taro farming survived in the 1930s only as a subsistence crop for a "few Hawaiians and other homesteaders" other sources suggest that the taro-growing area at Hanalei was more expansive. In 1939 a U.S. Department of Commerce agricultural census recorded 108 acres in taro at Hanalei, comprising fully one-fifth of the total 529 acres in taro throughout Hawaiʻi (Thousand Friends...1987:118).

In the 1950s and 1960s as Japanese farmers phased out rice production, to taro loʻi. By the late 1980s, taro-growing, which once dominated the traditional Hawaiian landscape, was firmly re-established within Hanalei.

Beginning in the 1960s, the Princeville area began its evolution into a major resort and condominium complex. Development presently continues. At the same time:

> "...the Federal government became a partner in shaping land use in the Hanalei Valley...by working with the Princeville Development Corporation to acquire land for the U.S. Fish and

> Wildlife water bird refuge. The refuge has a supportive policy of continued taro production and the maintenance of the irrigation system and existing houses and farm outbuildings" (Thousand Friends...1987:10).

Established in 1972 the Hanalei National Wildlife Refuge provides feeding and nesting areas for endangered Hawaiian water birds including the coot, stilt, gallinule and duck. It encompasses 917 acres of Hanalei Valley, including 70 acres of ponds, 600 acres of forest and mountain areas, and as of 1993, 125 acres of commercial taro fields.

In 1982 Hurricanes Iwa and in 1992 Iniki demonstrated the precariousness of human development within the Hanalei environment, just as natural disasters thwarted the efforts of newly-arrived nineteenth century entrepreneurs. However, the endurance and flourishing of taro through the changes documented above today may preserve the memory of pre-Contact Hanalei.

LAND USE PATTERNS IN PROJECT AREA AND VICINITY

The project area is located within the Hanalei Ahupua‘a, however Hanalei’s topography correlates with post-Contact land use patterns of Kalihikai and Kalihiwai ahupua‘a. The project area location on the eastern bluff above the river valley, sets it apart from the irrigated lowlands, associated with the agricultural pursuits of both pre- and post-Contact periods. Numerous accounts in the early nineteenth century attest to extensive pandanus groves in the uplands of Hanalei, Kalihikai and Kalihiwai (Alexander 1991; Lydgate 1991; King 1991; Bird 1890). William DeWitt Alexander (1991:124) describes these groves during a trip around the island in 1849, “Five more miles of riding through woods of hala, brought us to the tip of the hill that overlooks Hanalei Valley...”. In 1865 William T. Brigham visited Kaua‘i and also commented on the extensive pandanus. “Vast numbers of pandanus cover the hillsides and grow so luxuriantly as to furnish an admirable shelter from the rain” (Lydgate 1991:139).

Prior to western contact, this area was likely used for gathering as part of the Hanalei Ahupua‘a land open to all ahupua‘a members. Economically viable plants have been identified in association with archaeological remains on the lower slopes at the 25 to 125-ft elevation on the valley ridge just below the project area (see Previous Archaeology Section). These have been associated with dry land or kula lands to supplement crops growing in the lower adjoining terraces (Cleghorn, 1979; Schilt, 1980). Residents would not have to travel to far mauka to find the hala needed for their mats, and other woven products.

The first recorded use of the uplands of Hanalei, Kalihikai and Kalihiwai by a non-Hawaiian was in 1831. The British Consul of the Sandwich Islands, Richard Charlton, was awarded the use of land to feed his livestock at “Hanalei”, Kaua‘i by the Governor of Kaua‘i, Kaikio‘ewa (Wilcox 1991). This agreement set a precedent for all historic land use thereafter in this area in that ahupua‘a boundaries were not recognized. In the agreement, no boundaries were specified and apparently there was no limit to the range of the cattle. The only other stipulation than the conditions of exchange was that the cattle be kept from cultivated lands. Wilcox (1991:7) describes the cattle ranging over the slopes between Hanalei and Kalihiwai. The Charlton Farm was located approximately one-kilometer northwest of the project area. This plateau land would be a favorable place to have the cattle as the topography is uniform, descending gradually mauka-makai and the uplands are generally removed from the cultivated lands found in gulches and alluvial lands associated with more abundant water resources at lower elevations. Besides failing to fulfill his contract with Kaikio‘ewa, Charlton also failed to keep the livestock from encroaching upon cultivated lands. Earle (1978:149) reports on the mid nineteenth century “decline of kula farming due to the destruction of gardens by newly introduced cattle” in the region.

In 1845 Captain Jules Dudoit the French consul of the Sandwich Islands, purchased the lease of the Hanalei uplands from Charlton and continued the cattle operation upon the same Hanalei-Kalihikai-Kalihiwai uplands (Damon 1931). The sale of cattle and salt beef to Honolulu and to whale ships was supplemented with the production of milk. A visitor in 1850 commented on the “1800 head of fine cattle” on Mr. Dudoit’s estate (Damon 1931:335). This was a tremendous growth over the 100 head of cattle

estimated in 1840 and is a logical explanation for the destruction of kula lands reported above, and native landscape in general.

In 1851 at the termination of the lease in 1851, the Dudoit's moved to the Koʻolau District. It is uncertain whether cattle ranching continued in the uplands of Hanalei, Kalihikai and Kalihiwai. There is some mention of sheep in Hanalei although their grazing lands are not identified (Damon 1931). In 1853, subsequently Wyllie, the Minister of Foreign Affairs, began acquiring lands in the Hanalei Valley. He began in 1853 by purchasing the same portion of Hanalei that Charlton had leased. By the time he had acquired the ahupuaʻa of Kalihikai and Kalihiwai in 1862 and consolidated his lands into the Princeville Plantation, sugar cane cultivation had become his primary agricultural pursuit. Although no sugar cane cultivation was recorded in the project area during William Brigham's 1865 visit to Kauaʻi, Brigham did make mention of the pandanus and the grasslands of the Hanalei uplands (Lydgate 1991).

The earliest record of sugar cane cultivation occurring in the uplands appears on a map of Hanalei from 1885. By the end of the nineteenth century cane cultivation in the uplands was abandoned (Wilcox, 1991). The uplands were converted back to pasturelands after the new owner, Albert S. Wilcox purchased the Princeville Plantation in 1899 (Wilcox, 1991: 19).

Lands of the Princeville Plantation were sold again in 1916, this time to the Lihue Plantation (Damon 1931). Lihue Plantation was more interested in the water rights than producing sugar: "The main object, however, was less the lands than the very valuable water rights which accompany them and to which seven miles of open ditches and tunneling under the mountains have given free access. This taps the upper sources of the Hanalei River, the largest stream on any of the islands, and was not begun until 1923" (Damon 1931:918). The cattle ranch operated by Wilcox was maintained by Lihue Plantation until 1969 when Princeville was sold to Consolidated Oil and Gas Corporation of Colorado.

In the 1970s 900 acres of the Princeville Plantation lands on the Hanalei Valley floor were purchased by the Federal Government with the intention of creating a National Wildlife Refuge. The remainder of the Princeville Plantation on the uplands was converted into a resort-residential community with hotels, condominiums, restaurants and golf courses.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Previous Archaeological Studies in the General Vicinity

The following is a summary of archaeological studies in the general vicinity. Most the previous archaeological work has been conducted in the Hanalei Town area, Hanalei Wildlife Refuge, Princeville lands in general and Pōʻokū Pre-contact historic property area. No previous archaeological studies have been conducted in the project area. These studies are summarized in Table 2 and particularly germane studies are discussed in greater detail below. Figure 9 shows a map of the archaeological surveys near the project area which relates to Table 2 listing of studies.

Bennett (1931)

The first comprehensive study of the archaeology of Kauaʻi was undertaken by Wendell C. Bennett (1931) based on field work accomplished in 1928 and 1929. Bennett recorded four historic properties in Hanalei Ahupuaʻa and two in Kalihikai Ahupuaʻa:

> Site 138: Maheu Pre-contact historic property, on Puʻu Maheu, Kalihikai, is a paved platform 18 by 21 feet on top of Maheu peak. There is a fine view of the valley and country all around. River stone as well as local rock is used in its paving.
>
> Site 139: Pōʻokū Pre-contact historic property, on the east bluff of Hanalei valley a short distance from the government road on a knoll marked on the map as "Pooku."Only a few stones remain to mark the location of this pre-contact historic property which Thrum [1906:43] describes as "An unenclosed pre-contact historic property of about two acres in area. Of luakini class, terraced down on all sides from the central platform."
>
> Site 140: Kapaka Pre-contact historic property, on top of Kapaka hill on the east bluff of Hanalei valley just within the forest line. Thrum describes this structure as “A paved open platform pre-contact historic property without walls; stones set edgewise traversing through. Kane its deity. Said to have had connection with Kapinao at Waiakalua in its workings.” This site has had many stones removed, or covered over with vegetation. The river stones seem to cover the top of the hill for a diameter of about 75 feet. The extent of the pre-contact historic property could not be accurately determined. The stones set edgewise traversing through could not be found.
>
> Site 141: Pre-contact historic property and house sites, at Kalama-iki, an old village on the river flats, four miles up Hanalei Valley. There is a stone structure 18 by 20 feet with walls all around 2.5 feet wide and 2 feet high. In front is a paved section extending 5 feet, like a lanai, to a drop of 4 feet to the river terrace. The river is 50 feet out in front. Both river stones and rough rocks were used, but no coral was seen. The wall was chinked with smaller stones in front. Taro terraces and house sites are on the plains along the river.

Site 142: Kaapoku Pre-contact historic property, inland from Site 141 in Hanalei Valley. This small shrine consists of an 18 by 20 foot platform made of rough stones. A village was across the stream.

Site 143: Ditch and house sites, across the river from Site 142 in Hanalei Valley. Site also includes taro terraces and a ditch that runs from 0.5 mile or so up the stream to water this plain. The water comes through a big rock which is conveniently cracked. The legend reads that Pele sent lightning to split the rock so that the people could get the water down to the fields. Upstream from here a large, overhanging rock forms a natural shelter. It has been built up along the front a bit. The house sites of the solidly paved type, as well as those merely outlined with stones, are found (Bennett 1931:134-35).

Table 2. Archaeological Studies Located Near the Current Project Area

Source	Location	Nature of Study	Findings
Bennett (1931)	Hanalei Ahupua‘a	Archaeological Survey	Site 139 Pō‘okū Pre-contact historic property
Cleghorn (1979a)	Hanalei and Kalihikai ahupua‘a	Archaeological Reconnaissance Survey	SIHP# 50-30-03-1702
Cleghorn (1979b)	Hanalei Wildlife Refuge	Archaeological Survey	SIHP# 50-30-03-1007 to - 1016
Hammatt (1980)	Portions of the Kaua‘i Belt Road, Kalihiwai to Princeville, Kaua‘i.	Archaeological Reconnaissance Survey	No significant finds
Schilt (1980)	Hanalei Wildlife Refuge	Archaeological Investigation	SIHP# 50-30-03-1017 to - 1027
Kikuchi (1981)	Hanalei Wildlife Refuge	Archaeological Investigation	SIHP# 50-30-03-604
Athens (1983)	Hanalei Wildlife Refuge	Archaeological Investigation	Subsurface excavations at SIHP# 50-30-03-1007
Thousand Friends (1987)	Hanalei Ahupua‘a	Cultural Landscape Study	81 historic structures, 3 major irrigation systems, 396 taro lo‘i

Source	Location	Nature of Study	Findings
Kikuchi (1988a)	Princeville Corporation's Nursery Staging and Light Equipment Storage Area.	Archaeological Investigation	No significant finds
Kikuchi (1988b)	Church of the Pacific	Archaeological Investigation	No significant finds
Quebral and Cleghorn (1990)	Kūhiō Highway Improvements Project and TMK 5-03-06: 14	Archaeological and Historical Survey	No significant finds
Raymond and Burnside (1991)	Hanalei Wildlife Refuge	Subsurface Excavation	SIHP# 50-30-03-991
McMahon (1993)	Po'okū Pre-contact historic property	Archaeological Field Inspection	Nearby nursery determined to have adversely affected Po'okū Pre-contact historic property
Shapiro (1993)	Hanalei Wildlife Refuge	Archaeological Inventory Survey	SIHP# 50-30-03-0726 to - 0741, -0408, and -9385
McIntosh and Cleghorn (1994)	Hanalei Wildlife Refuge	Archaeological Monitoring	No significant finds
Hammatt et al. (2000)	5- acre Parcel of the Proposed Hanalei Valley Scenic Stop, Kūhiō Highway	Archaeological Inventory Survey	No significant finds
Dega (2003)	'Anini Road	Archaeological Monitoring Report	SIHP# 50-80-03-2080 (human burial remains)
Fong et al. (2006)	A 10-Mile stretch of Kūhiō Highway,	Archaeological Monitoring Report	No significant finds

Source	Location	Nature of Study	Findings
Yucha, and Hammatt (2009a)	Princeville Final Subdivision Project, Hanalei, Kalihiwai, and Kalihikai Ahupua‘a	Archaeological Inventory Survey	11 historic properties identified incl. pre-Contact era irrigation ditches, pre-Contact era habitation/agricultural complex, an historic era bunker, and cemetery, and a pre-Contact habitation/burial/agricultural complex
Yucha, and Hammatt (2009b)	Proposed Agricultural Subdivision, Hanalei Ahupua‘a	Archaeological Assessment	No significant finds
Hammatt, Shideler and McMahon (2011)	Kapaka Ridge Agricultural Condominium Project, Hanalei Ahupua‘a	Archaeological Inventory Survey	SIHP# 50-30-03-0139 (Pō‘okū Pre-contact historic property) and SIHP# 50-30-03-2129 (an unimproved road remnant).
Hammatt, Shideler and McMahon (2012)	Preservation Plan for Pō‘okū Pre-contact historic property State Site #50-30-03-139, Hanalei Ahupua‘a, Halele‘a District	Preservation Plan	SIHP# 50-30-03-0139 (Pō‘okū Pre-contact historic property)
McMahon and Tolleson (2013)	Archaeological Assessment for Kolopua, Princeville Affordable Housing Development, Hanalei Ahupua‘a, Halele‘a District, Island of Kaua‘i, Hawai‘i TMK: (4) 5-4-024: 020	Archaeological Assessment	No findings

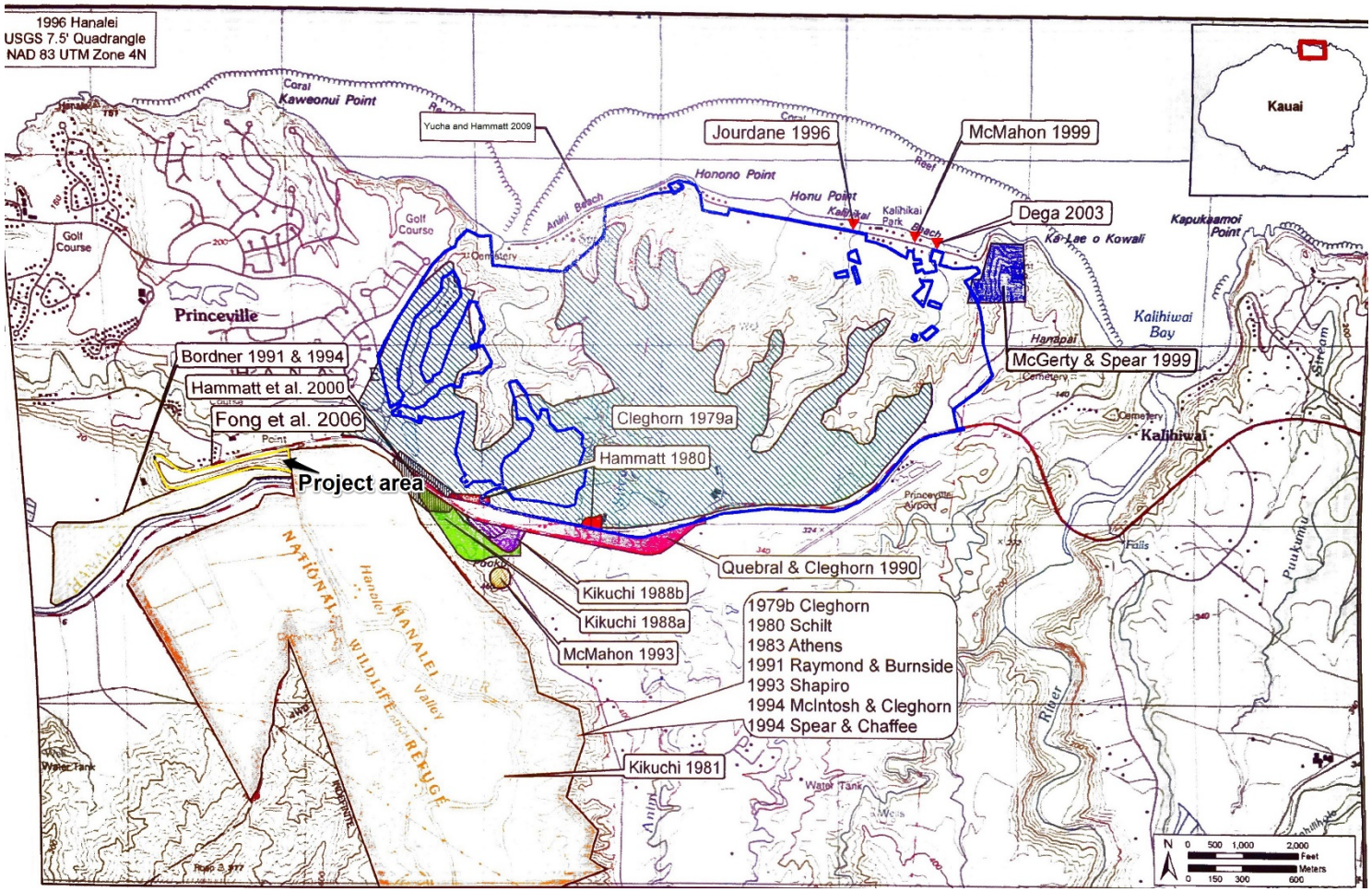


Figure 9. Previous archaeological studies located near the project area. (Adapted from Yucha and Hammatt 2009)

The general location of Bennett sites 138 to 143 is shown in Figure 10.

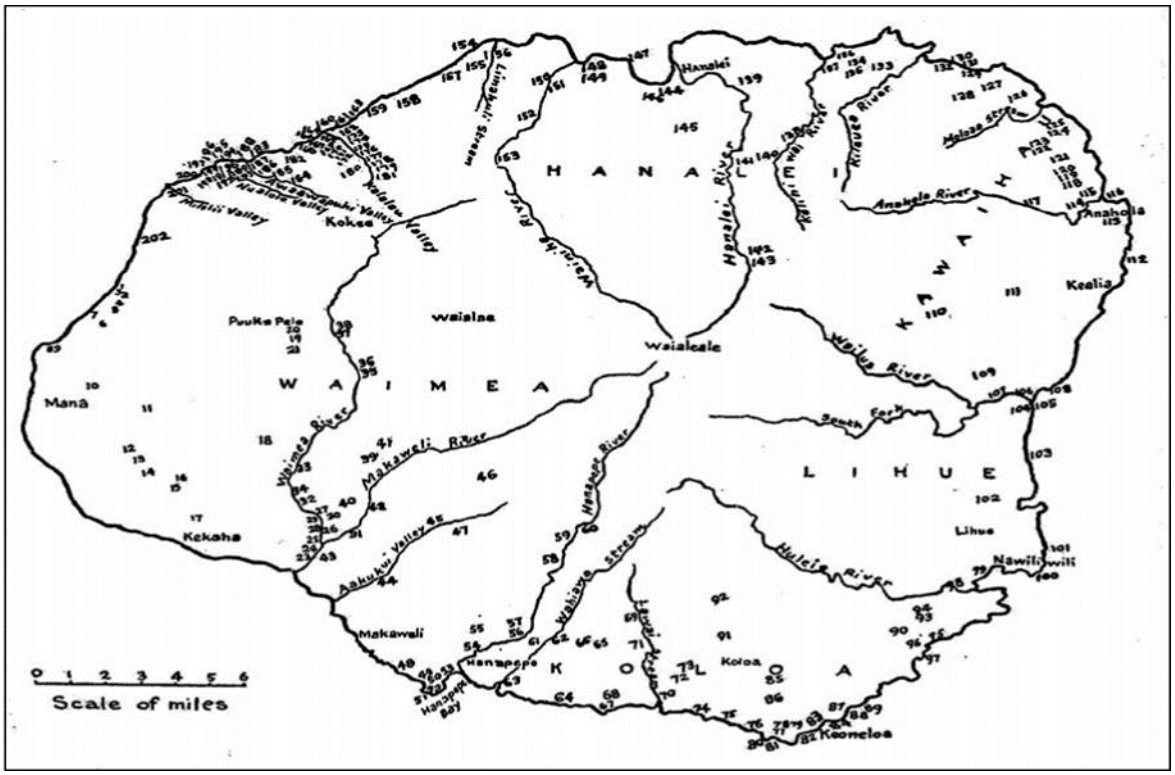


Figure 10. Bennett's Archaeology of Kaua'i Site Map showing the general location of historic properties

Cleghorn (1979)

Cleghorn (1979) conducted an archaeological reconnaissance survey of 620 acres of Princeville Corporation property in the Hanalei and Kalihikai ahupua‘a, including the vicinity of the current project area (see Figure 7 below). A single site recorded approximately 500 meters north of the present project area, encountered consisted of an upright boulder and a semicircular area excavated into a ridge slope directly above ‘Anini Gulch.

Thousand Friends (1987)

In the mid 1980’s, the Land and Community Associates contracted to undertake a “cultural landscape survey” of Hanalei Ahupua‘a. The study, which included fieldwork, historical background research, and oral histories, included documentation of “396 separate taro terraces, 81 historic structures and 3 major irrigation systems” (Thousand Friends…1987:12)

Kikuchi (1988a, 1988b)

In 1988, Kikuchi performed field inspections of two proposed projects situated adjacent to the north boundary of the project area (Kikuchi 1988a, 1988b). The first was for the proposed Princeville Corporation’s Nursery Staging and Light Equipment Storage Area located at TMK 5-3-01:16 Lot 27 on level land north and west of Pō‘okū. Kikuchi reports:

> "The area adjacent to the hillock on which Pōʻokū Pre-contact historic property sit[s] is composed of sloping grassy lands. No features of any kind were recorded. The soil stratigraphy was inspected in several areas where the ground had been excavated for laying out of pipes. Besides a thin upper layer of humus the remaining soil consisted of clayey brown soil devoid of rocks. Similarly, geological coring in the Puʻu Poa ridge indicated a very thick stratum of residual clayey soils resulting from the decomposition of the localized basaltic lava flows. Exposures in the landscape of the intended Nursery area showed nothing of cultural significance."

Surface and subsurface inspection of TMK 5-3-01:16 Lot 27 revealed no historic properties. If there had been any prehistoric or historic features and historic properties present in the area, these were cleared long ago. (Kikuchi 1988a:1).

The second inspection was carried out for the proposed development of the Church of the Pacific property, seemingly a subset of the area studied by Kikuchi (1988a). Kikuchi reports:

> "As in the Nursery area inspection, no historic properties were visible on the surface, and the many trenches for plumbing revealed no subsurface cultural features."

The topography here has been extensively leveled, as evidenced by the lack of a well-developed humus layer. This soil was not noted anywhere in the trenches. Only the lower B-horizon soils existed at the surface. Weathering of the landscape was not responsible in eliminating all the natural rock outcrops, suggesting that this is likely the result of grading or other historic landform changes, or geological processes of eroding colluvium from higher elevations covering the surface with soil.

In summary, no historic properties on the surface or any subsurface cultural features were noted in the area (Kikuchi 1988b:1).

Quebral and Cleghorn (1990)

Pōʻokū Pre-contact historic property was surveyed again in 1990 in conjunction with the proposed Kūhiō Highway Improvements Project (Quebral and Cleghorn, 1990). In addition, the study addressed other portions of land in TMK 5-03-06: 14, with an assessment of the historical significance of four drainage tunnels associated with the proposed corridor. The drainage tunnels were mapped and no archaeological surface features were identified in the realignment corridor and associated lands. The proposed realignment was determined to have no impact on Pōʻokū Pre-contact historic property.

McMahon (1993)

In 1993, McMahon conducted an archaeological field inspection of Pōʻokū Pre-contact historic property to address the adverse impacts of Princeville Corporation's nursery operation on the *pre-contact historic property*. McMahon determined that the nursery had impacted the *pre-contact historic property.*

"In addition to the nursery impacting the *pre-contact historic property*, there are other intrusions. The trig station has been placed directly on the *pre-contact historic property* proper. *Kapaka* Road has also impacted the terraces on the east and south sides. Several vehicle tracks can also be seen with the *pre-contact historic property* and its buffer" (McMahon 1993:6).

Hammatt et al. (2000)

In 2000, Cultural Surveys Hawai'i (Hammatt et al. 2000) conducted an archaeological inventory survey of a 5-acre area proposed for the Hanalei Valley scenic overlook. There were no significant finds.

Hammatt et. al (2011)

Cultural Surveys Hawai'i, Inc. and Nancy McMahon, EAL, archaeologist, conducted an archaeological inventory survey (AIS) of the Kapaka Ridge Agricultural Condominium Project in Hanalei. The 174-acre project parcel, referred to as "Lot 27", extends along the northeast rim of Hanalei Valley for almost three miles and is bordered on the south by Kūhiō Highway and on the west by Kapaka Street.

The AIS survey area was limited to approximately 58 acres of the parcel. The survey area included: (i) the portion of the lot zoned for agriculture in which farm dwellings and agricultural activity are permissible (under HAR Chapter 15-5-24 and the CPR declaration); (ii) the portion of the lot in the conservation district in which a single dwelling may be constructed (under the CPR declaration and subject to approval by the DLNR); and (iii) all of the remaining level land area in the conservation district between Kapaka Street and the Hanalei Valley rim that is pedestrian accessible. The remainder of the parcel (approximately 116 acres) was not surveyed except for a limited pedestrian inspection south and west of the AIS survey area due to dense foliage and/or steep slopes.

The parcel's built environment consists of Kapaka Street, numerous single family dwellings east of Kapaka Street on adjacent parcels, a commercial nursery with several large buildings and sheds, a 60-foot high cellular phone tower on the property, a U.S. Geological Survey triangulation station at Pōʻokū Pre-contact historic property, a Princeville Utilities pumping station on the property, the Kūhiō Highway, the major transportation artery serving the north shore of Kauaʻi, a jeep road on the property along the rim of the valley, and various related infrastructure.

Only two significant historic properties were identified during the AIS, SIHP# 50-30-03-0139 (Pōʻokū Pre-contact historic property) and SIHP# 50-30-03-2129 (an unimproved road remnant).

Hammatt et. al. (2012)

This is a Preservation Plan prepared by Cultural Surveys Hawaii and Nancy McMahon, EAL for SIHP# 50-30-03-0139 (Pōʻokū Pre-contact historic property) as recommended in the AIS (Hammatt et. al. 2010). This plan includes details of the short and long-term preservation measures that will safeguard the historic property during project construction and subsequent use of the project parcel, per the requirements of HAR Chapter 13-277-3.

McMahon and Tolleson (2013)

In 2013, an archaeological inventory survey was conducted on 19.10 acres of partially, across Kūhiō Highway, on Princeville Corp. lands for 44 units for the Kolopua Affordable Housing project. No historic properties were found which turn the inventory into an assessment. Subsurface testing in this location showed similar characteristics as this project. Soils consist of two layers, with a flat boundary delineating the topsoil from the underlying deposit.

METHODS

Field Methods

Much of the property is too steep to nearly vertical cliff to access safely traversing of this area creates a risk to vehicular traffic on the lower portion of the Kūhiō Highway loop from dislodged rocks). On October 21, 2016, archaeologist Nancy McMahon, principle archaeologist for Exploration Associates, Ltd. performed a pedestrian survey utilizing transects oriented north-south and spaced 5 m. apart. Surface survey continued with Linz Armstrong on April 24, 2017. The next day, subsurface survey consisting of the excavation of 6 trenches in the proposed building locations and one which was also still in the building location footing but in the area where presumed mounds once existed that were believed to be possible burial mounds, to examine the soils and determine stratigraphic sequences and record buried cultural deposits. Subsurface testing was conducted using a small backhoe. Field observations were recorded and photographs were taken of the project area and the trenches. Trenches were measured and trench profiles were photographed. Soil identification, color and chroma was obtained using a Munsell color chart.

Document Review

Background research included a review of the files at SHPD/DLNR Kaua'i and the County of Kaua'i, Planning Department. The County of Kaua'i, approved an SMA minor for the installation of a gate and a rock wall at the entrance to the parcel on April 20, 2015. The County of Kaua'i Water Department approved the installation of a water meter, during the review process for the water meter, SHPD archaeologist Mary Jane Naone, recommended an archaeological inventory survey and requested a site inspection. The SMA permit was amended to include the AIS recommendation. The County Planning staff believed that an AIS was conducted or the SHPD did their site own inspection and approved the gate/rock wall and water meter installation. No such report was found in the SHPD files.

During a project for the State of Hawaii Department of Transportation, Kūhiō Highways had slope stabilization conducted. EarthTech and AECOM did the EA and CDUA for HDOT for slope stabilization. The author of this report did review this project in 2008 as the former SHPD Deputy Administrator and State Archaeologist but this is not the entire land of for this current project. The initial review of the proposed action was initiated a determination from the SHPD dated February 24, 2008 that "no historic properties will be affected". However, SHPD review comments on the Draft EA dated August 31, 2008 recommended an archaeological inventory survey be conducted in the project area for the stabilization not the whole parcel which PCSI was hired and found no historic properties in the slope stabilization area. This report was not found in the SHPD/DLNR library on Kaua'i. There were concerns

about the stabilization project from the community as they are believed the ridge that this parcel is on has a few natural springs, the ridge is called Kaunuhua Ridge. There is one spring that can be found along the Hanalei side of the parcel.

This research provides the environmental, cultural, historic, and archaeological background for the project area. The sources examined are used here to formulate a predictive model regarding expected site types and locations of historic properties in the project area.

Consultation

The author has been to the parcel some 10-20 years ago either at a Planning Commission inspection or an inspection by the Kaua'i Historic Preservation Review Commission, both at the time Kaua'i County Planner Anne Schneider and former VP of Princeville Corp., Michael Loo recalled the site visit with several community members, commissioners, US Fish and Wildlife staff, County, DLNR and Princeville staff. It has been suggested that US Fish and Wildlife use the location to move the Hanalei Valley Overlook to. But there was concern about burials or a cemetery on the parcel, so a site visit was conducted. Some place shortly after the entrance but off the highway, through the thicket of guava, three stone mounds (one large, a second mound which was similar in size to the first mound and a small mound) were identified and pointed out to by the community stating that these were burials. During that field inspection, some community members speculated that those were mounds contained burials. But no one knew who they were nor were any claims made. At that time, SHPD Kauai Archaeologist Nancy McMahon did not write up a field report on this site inspection nor identify any burial sites since this could not be verified and no one came forward to claim the burials. After seeing the mounds US Fish and Wildlife did not pursue buying the parcel from then owner Princeville Corporation. Around 2014, the construction of a rock gate at the entrance to the parcel was being constructed. The author received a call from the Kauai Archaeologist, Mary Jane Naone, asking if I knew about any historic properties on that parcel as she had heard from others in the community about something up there. I told her the story about the three mounds. When I received a call about this property from the realtor of the current owner, I related the same story.

Prior to the archaeological survey, consultation with the current SHPD staff on Kauai, the burials sites specialist was taken out for a site inspection on October 19, 2017. No information was brought forward from this field inspection. No records exist for the Burial Program on this location. The SHPD burial specialist questioned the author as to why they were not recorded as burial sites. The author stated no confirmation existed nor did anyone come forward with a claim. The field inspection revealed that the plateau of the ridge was cleared and grass and some trees existed. The boundary edges had a push pile of dirt and vegetation but no mounds were found.

Exploration Associates Ltd. contacted several members of the Hanalei and Princeville community to ascertain if they had any knowledge of the former uses of this parcel or the immediate area adjacent to the project area. Only one person, Jay Furfaro remembered that the Kellett family (part of his family) might be buried there and provided a headstone plaque. No exact location was known for this family burial location. The Kellett's acquired much of the surrounding lands and possibly this parcel. Jay also mentioned that an ahu existed on the parcel.

In about November 2016, Barbara Say, her son and the neighbor went out to look for the Chinese Cemetery which they thought was in this area but they could not find anything on this parcel.

Another informant, Kaleo Chandler was hired to help clear the parcel by hand with chainsaws by the previous owner. The author met him on the parcel on December 1, 2016 where he recalled that as a boy, he thought there was a Chinese cemetery in this area with urns, flags markers, and stones to mark where they buried the urns a year after the death. He said he stayed away from the side where he believed to be the Cemetery was located during his clearing. He also mentioned a pre-contact historic property where the rock formations are located at the point. He took the author, where rock alignments and then a wall above the Hanalei Bay Overlook were identified. He recalled the area was a party area for the high schoolers, and used by pig hunters and pot growers. He suggested speaking to Michael Olanalan who took care of the parcel when the movie the South Pacific was shot there.

Michael Olanalan was interviewed in February 21, 2017, Michael did not recall a Chinese Cemetery nor a heiau nor ahu in the parcel. He thought the rock wall I saw was maybe from the old highway that was there. He thought I should find remnants of that old highway. He said it was a party place, he hunted there with his father for pigs and recently lots of pot growers were in there. Michael said that when the movie "The South Pacific" was being filmed there, they put the dirt road in on the plateau. He thought it might be possible to find some of the old set props but he could not recall if they left it there or removed things.

The author spoke to Maka`ala Ka`aumoana. She had emailed previously about a pre-contact historic property on the ridge, where she heard it was a heiau. She also mentioned there should be some waterworks on the lower slopes of the parcel, but this appears to be below the Hanalei Overlook and on Hanalei Wildlife Refuge lands and not on this parcel. The Ching Ma Leong store was previously located within 1/4-mile, downslope from the proposed project. This store used water from a pipe that received water from a perennial spring located in the hillside within proximity to this proposed project site. Post hurricanes, the community of this place utilized springs to provide water to its residents. Thus, perennial springs are considered by the community to be an important natural, cultural, and economic resource, but are not located on this parcel.

Barbara Robeson provided some background about the Hanalei Valley area and knew about the old road directly up from the Hanalei Bridge by the power station, where there was a store, Post Office and Plantation Home, which she said she had photos of along the old road up from the Hanalei Bridge. Again, this area in not on the parcel for this project but appears to be on the US Fish and Wildlife Service Lands.

Michael Ching also provided some information about his knowledge regarding Chinese burials. He stated he heard rumors of burials on the ridge but not Chinese. The Chinese cemetery started around 1803 and the Chinese stayed in that area being very good at taking care of their ancestors. Only once did he know of a case in Oahu where they found Chinese urns outside of a cemetery boundary. He did not believe any Chinese were buried on Kaunuhua Ridge. He was also aware of this parcel and helped some physicians look at this parcel to build a joint home there.

A cultural impact assessment will be performed in accordance with Act 50, Session Laws of Hawai`i, 2000, raised a primary concern relative to cultural impacts: it was suggested that a fresh water spring associated with traditional uses is in the vicinity of this parcel. It can be seen from the side of Route 560.

RESULTS OF FIELDWORK

The initial fieldwork on October 21, 2016 by principal investigator and principal archaeologist Nancy McMahon of EAL. After approval of the Site Approval Plan by DLNR, Nancy McMahon, M.A., M.Ed, M.S. and Linz Amstrong, B.A. field archaeologist, completed subsurface testing of six backhoe test trenches April 25 within the project area. Additional field work was conducted on the parcel on the following dates April 24-25, May 20, 27, June 1 and July 14. This field work including a pedestrian inspection of as much as the property that we could walk safely, intensely walking the area where informants stated a Chinese cemetery or Chinese burials located, and where an informant showed me a rock wall which he stated was might be part of a pre-contact historic property. On April 21 and 22, Linz Armstrong and Milton Ching, tried to survey the steep slopes adjacent to Kūhiō Highway but because of the dense vegetation, only along the north and eastern sides at 5 meters abreast that area of the parcel was pedestrian surveyed. Additional field work was conducted for monitoring the geological coring, clearing the pre-contact historic property, and re-walking the property with the biological team. A approximately 80% of the property had a surface survey conducted and recorded at 2 historic properties: old government road and a pre-contact historic property. Figures 11-12 shows the AIS Plan.

The parcel on the south and southwest side was quite steep and cliff like in various portions. A trail was identified but additional survey show that this man-made and pig trail is for southern exposures created for Cannabis cultivation. Go-pots, weed block fabric, a shovel and stone line pits (at least 4 were counted) were observed. These trail leads to all the pits and is directly off Kūhiō Highway on the south side. It appears that shortly before the walled entrance to the property was built in 2014, the activity has been abandoned. Informants also noted, that this was a party area to smoke pot but also it appears to be a small-scale pot production area too.

The subsurface fieldwork component was conducted on April 25, 2017 by archaeologists, Nancy McMahon and Linz Armstrong. Bob Farias Jr. was the backhoe operator with a 15-in. bucket. Every attempt was made to place the trenches in proposed foot print of the building and where the possible mound locations were believed to be. Three trenches were excavated using a backhoe. Figure shows the trench locations, which were in areas to be disturbed by the single-family residence development. This included swimming pool location, anaerobic waste water system and utility location. Each trench evinced the same soil composition.

All six trenches contain the same stratigraphy. Soils in all trenches consisted of two layers, with a flat boundary delineating the topsoil from the underlying deposit. The topsoil is fill mixed with organics from the overlying grasses. The topsoil in each trench was 5 YR 5/4 or 4/4 *reddish* brown from surface to .30 cmbs, and the soil from 0.30 cmbs to the base of excavation a 2.5 YR 4/6 or 5/4 dry, *dark reddish brown or red*; moderate, to coarse, sub-angular blocky structure; hard, firm, with a slightly plastic consistency, small peds, and clear boundary. Figures 13-15 show some photographs of the test trenches. No cultural material was found.

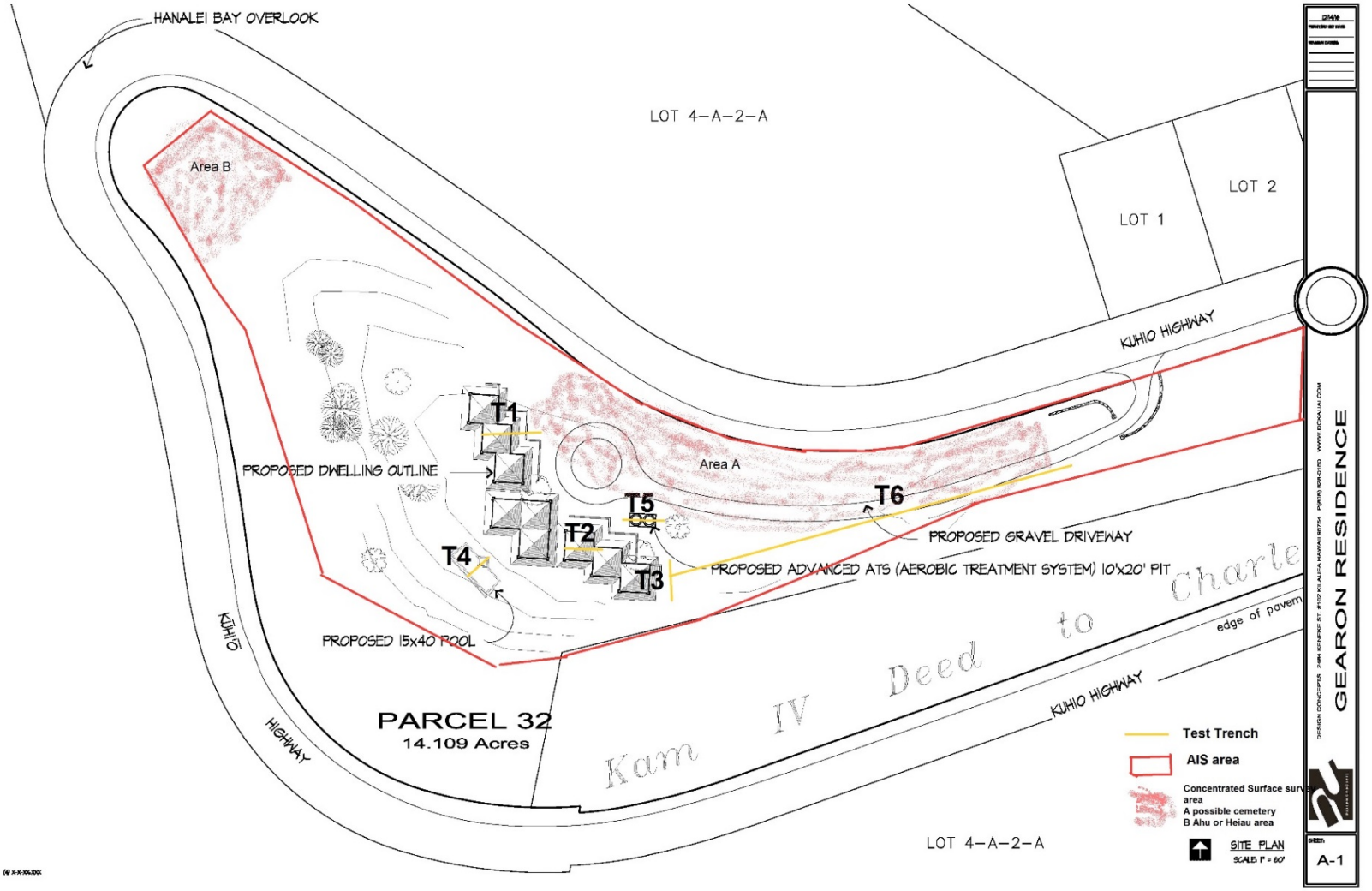


Figure 11. Archaeological Test Locations and areas of concentrated surface survey.

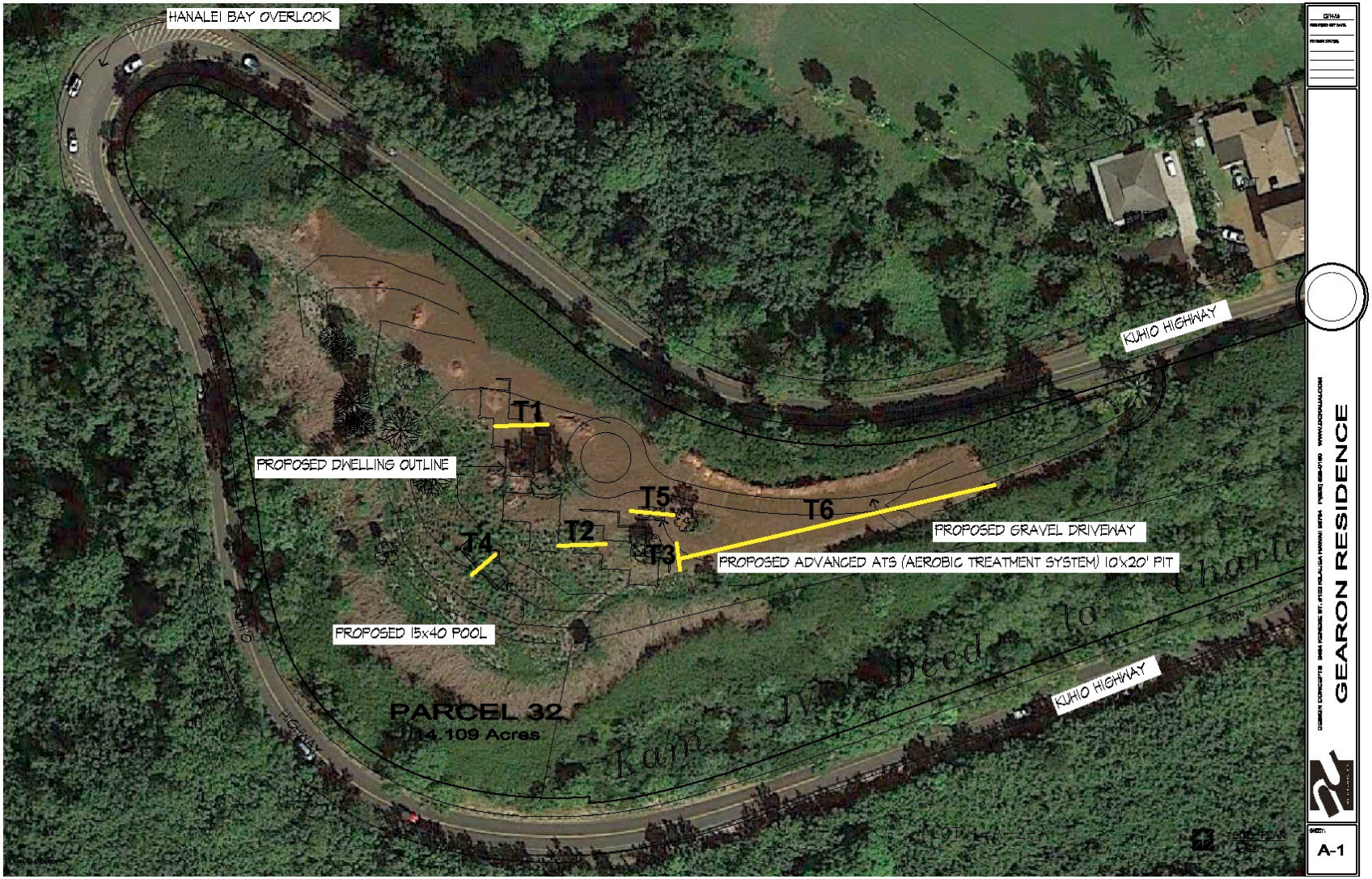


Figure 12. Subsurface testing strategy located within the single-family residence and proposed infrastructure.

Test Trench Profiles and Description

The overall soil homogeneity was high throughout the project area. As noted above, the soils identified during excavations were comparable to the sediments described by Foote et al. (1972): dusky-red silty clay, with subsoil that was red to dark reddish brown, compact silty clay with a sub angular, blocky structure. Excavations ceased at an average 1.30 mbs due to the lack of cultural materials and continuation of the same, sterile soils. The topsoil in each trench was 5 YR 5/4 or 4/4 *reddish* brown from surface to .30 cmbs, and the soil from 0.30 cmbs to the base of excavation a 2.5 YR 4/6 or 5/4 dry, *dark reddish brown or red*; moderate, to coarse, sub-angular blocky structure; hard, firm, with a slightly plastic consistency, small peds, and clear boundary.

Table 3. Summary of Backhoe Trench Stratigraphy

Trench No.	*Length (in meters)*	*Max. Depth (in meters)*	*UTM*	*Cultural Deposit*
1	*7.9248*	*0.90*	*450311mE 2456312mN*	*None*
2	*7.3152*	*1.30*	*450320mE 2456312mN*	*None*
3	*6.7056*	*0.90*	*450329mE 2456284mN*	*None*
4	*4.27*	*1.37*	*450298mE 2456273mN*	*None*
5	*6.1*	*1.83*	*450355mE 2456304mN*	*None*
6	*78.33*	*1.83*	*450433mE 2456294mN*	*None*



Figure 13. Trench 1 Profile.



Figure 14. Trench 6 the utility trench by the drive way looking toward the single-family residence.



Figure 15. Photograph of trench 6 profile.

Surface Survey Results

The surface survey concentrated on locations where oral information was given to EAL that there might be historic properties or a cemetery on this property. One informant did locate a wall where he remembered was a pre-contact historic property and showed the author. Further work in this area lead to the identification of a possible pre-contact historic property which is described below. With regards to the information about a Chinese cemetery on the parcel, no indications could be found. Within Hanalei there are several cemeteries, the Hanalei Chinese cemetery, the Japanese Cemetery in Waioli, the Waioli Mission Church graveyard, and an old cemetery across from the former Hanalei Court House, now a day-care school, and a small private cemetery located on the ridge top just south of hole 7 tee of the Princeville Golf Course that contains 5 grave markers. The Hawaii Chinese History Center in 1979 did survey the Hanalei Chinese Cemetery which is located within the Hanalei Wildlife Refuge (Tin-Yuke and Char 1979:167). An island wide cemetery survey was conducted by Kikuchi and Remoaldo in 1986. Neither one of these studies identified a Chinese cemetery on this parcel. Physical survey did not reveal broken urns or human remain fragments in the area where informants said there could be a Chinese cemetery. Subsurface testing also conducted did not reveal pit features or urns.

Historic Properties

Two historic properties were identified during the archaeological inventory survey of the parcel. The historic properties were given EAL temporary site numbers (EAL #1 and EAL #2) until SIHP numbers were obtained. SIHP# 50-30-03-02353 (EAL #1) is the old government road. SIHP# 50-30-03-02354 (EAL #2) is a pre-contact historic property comprised of basalt features: a wall, two cairns and scattered rock alignments. Each historic property will be discussed below. Figure 16 shows the historic properties location in the plan view relative to the single-family residence. Figures 26 and 27 show the sites location on the USGS map and tax map.

SIHP# 50-30-03-02353

EAL #: EAL# 1
Site Type: Road (Remnant)
No. of Features: 1
Functional Interpretation: Transportation
Probable Age: Post-Contact
Overall Dimensions: Approximately 264.0 m long (NW/SE) by 5.1 m wide
Topography: Level to gently sloping
Elevation: 240 to 160 ft AMSL

SIHP# 50-30-03-02353 is a level road bed about 6-8 ft. wide in most places. A lot of soil slippage is evident by several landslides. The road starts at the top of the property across from the Hanalei Fire station. It continues downhill, a couple of sections are missing due to these landslides and ends at the first highway curve sign. This is just above the spring and pot hole area of the Kuhio Highway. Figure 17 is an aerial showing the road. It is identifiable by the vegetation line.

Kuhio Highway is clearly indicated on several historic maps, as early as 1885, usually as "Government Road." This road was aligned between the river and the extensive agricultural cultivation mauka of the road and retains the alignment to the present day. As late as 1895, Eric Knudesn observed that the wagon road ended at Hanalei and now it was only a trail (Knudsen 1940:3). While the road from Princeville plateau now winds its way down to the Valley floor in a circuitous route, this has not always been so. The present alignment of the roadway has passed through at least two major revisions since the mid nineteenth century. While very early maps of Hanalei indicated the current road locations, the 1893 survey of Hanalei retraced from Walls 1833 map, indicates a new road running from the approximate location of the current Hanalei Overlook, down the hill to the location of the Hanalei Bridge. The road, as it descends the hillside, with 3 S curves, passes the original Hanalei Post Office and the site of the Princeville Plantation House then later called the Princeville Ranch House which was lived in and owned and improved at various times by Wylie, Wundenberg and Sanborn (See Figure 18) (Thousand Friends…1987:58). This home was initially called Kikuila. Figure 18 also shows a butcher shop near where the fire station is located today. Michael Ching in an informal interview stated that it was a slaughter house. He said he remembered when the entrance is today to Princeville (fountain now rock walls) was the Ranch House. Also, visible on this map is the original zig zag trail up the ridge from the Hanalei Bridge. This road is on the National Wildlife Refuge lands. Figure 19 is a photograph of the current condition of this historic property.

By 1904, this new alignment was drawn as the primary route and the current alignment was labeled the “old road”. Many portions of the 1893 roadway were traced from the previous survey. It is not known when the “new road was abandoned in favor of the old alignment. During the survey for the cultural landscape study (Thousand Friends… 1987), they attempted to find this old road bed but could not due to the dense vegetation cover. In reviewing the various historic topographic maps through time, various details get lost (Figures 20-24). Figure 25 is a 1966 map from the electrical systems showing the old road alignment.

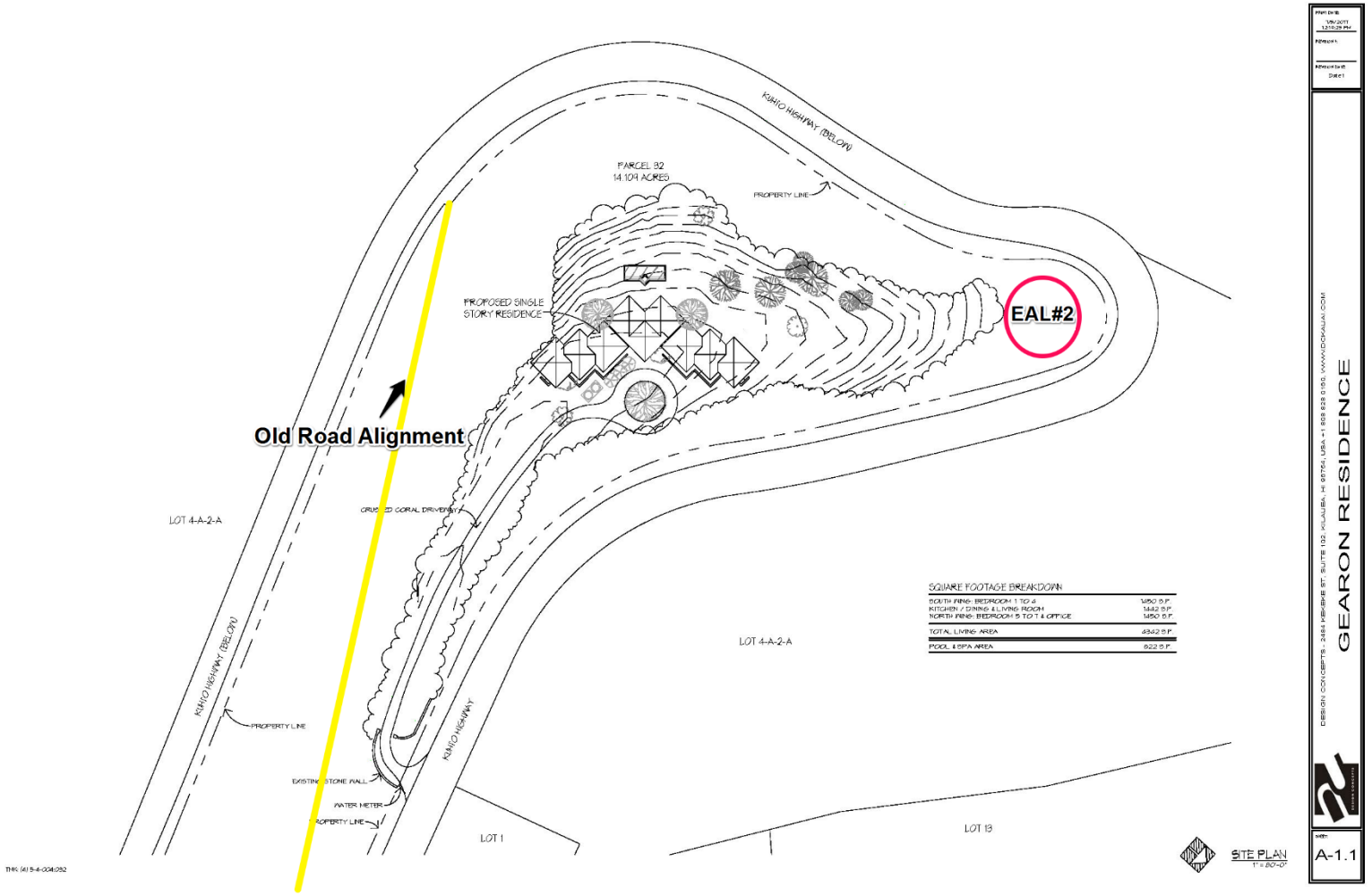


Figure 16. Project Area showing historic properties locations SIHP# 50-30-03-02353 (EAL#1) and SIHP# 50-30-02-02354 (EAL#2).

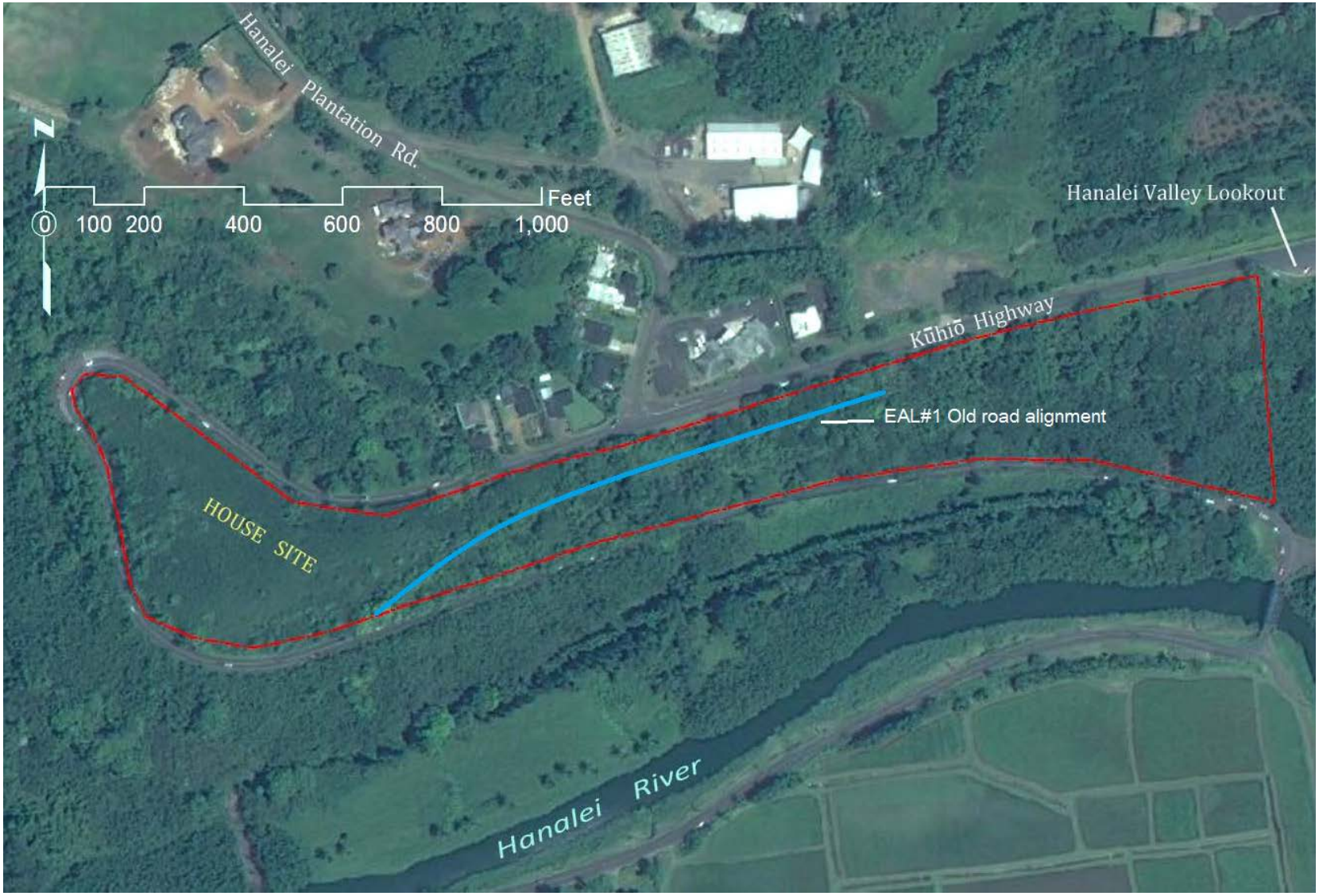


Figure 17. Aerial showing the location of SIHP# 50-30-03-02353 (EAL#1).

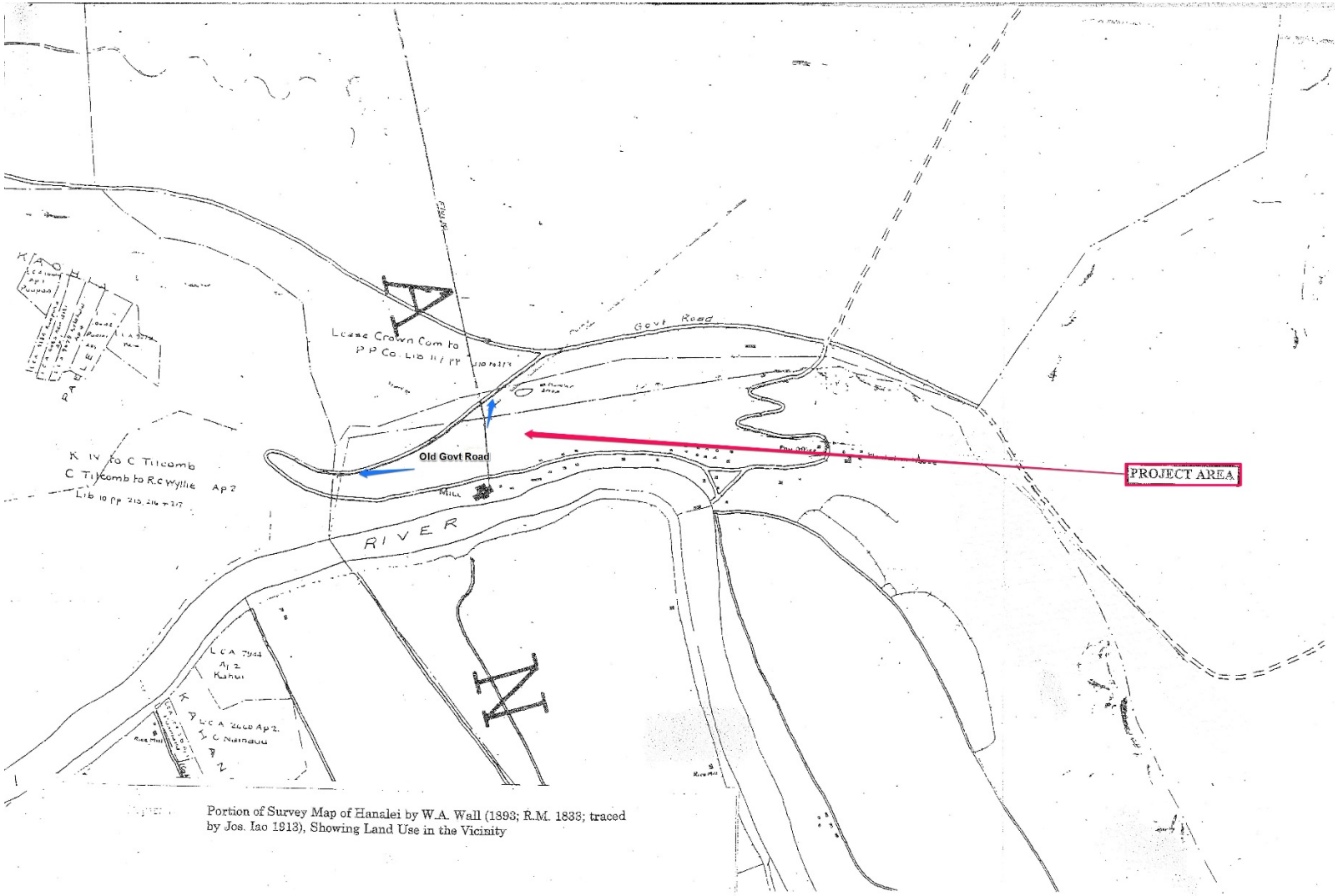


Figure 18. W.A. Wall 1893 survey map.



Figure 19. Old Government Road.

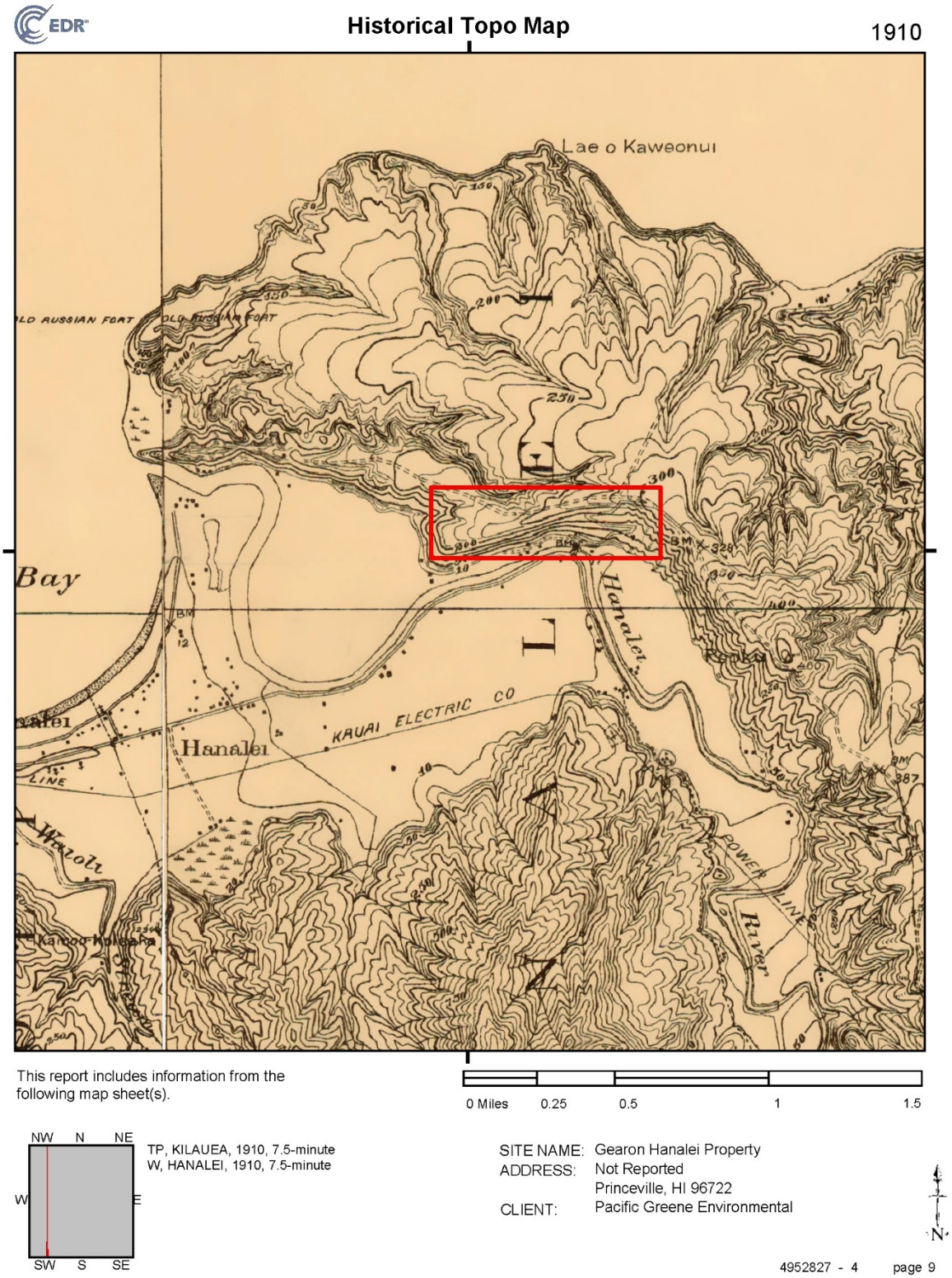


Figure 20. 1910 Topographic Map.

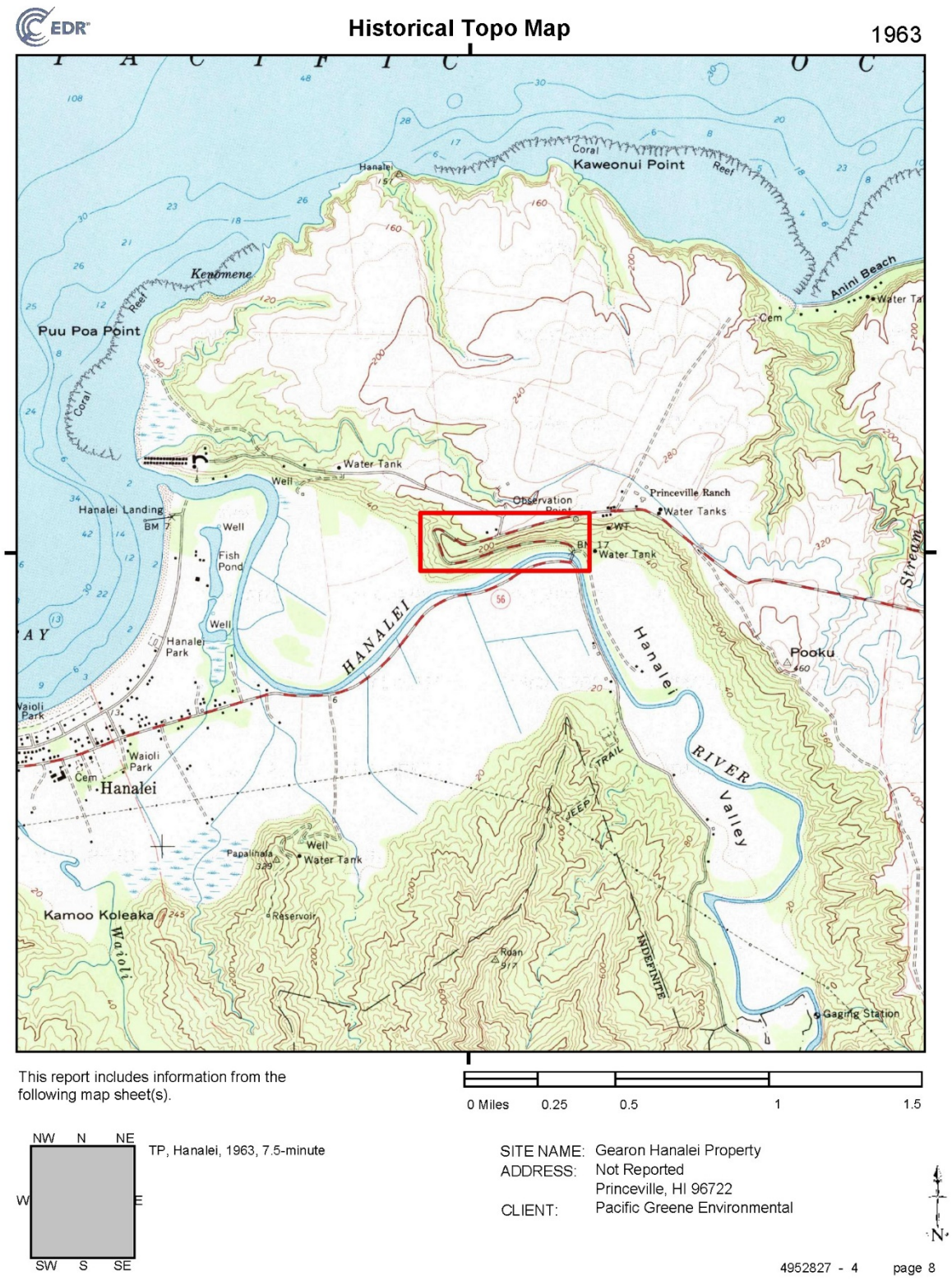


Figure 21. 1963 Topographic Map.

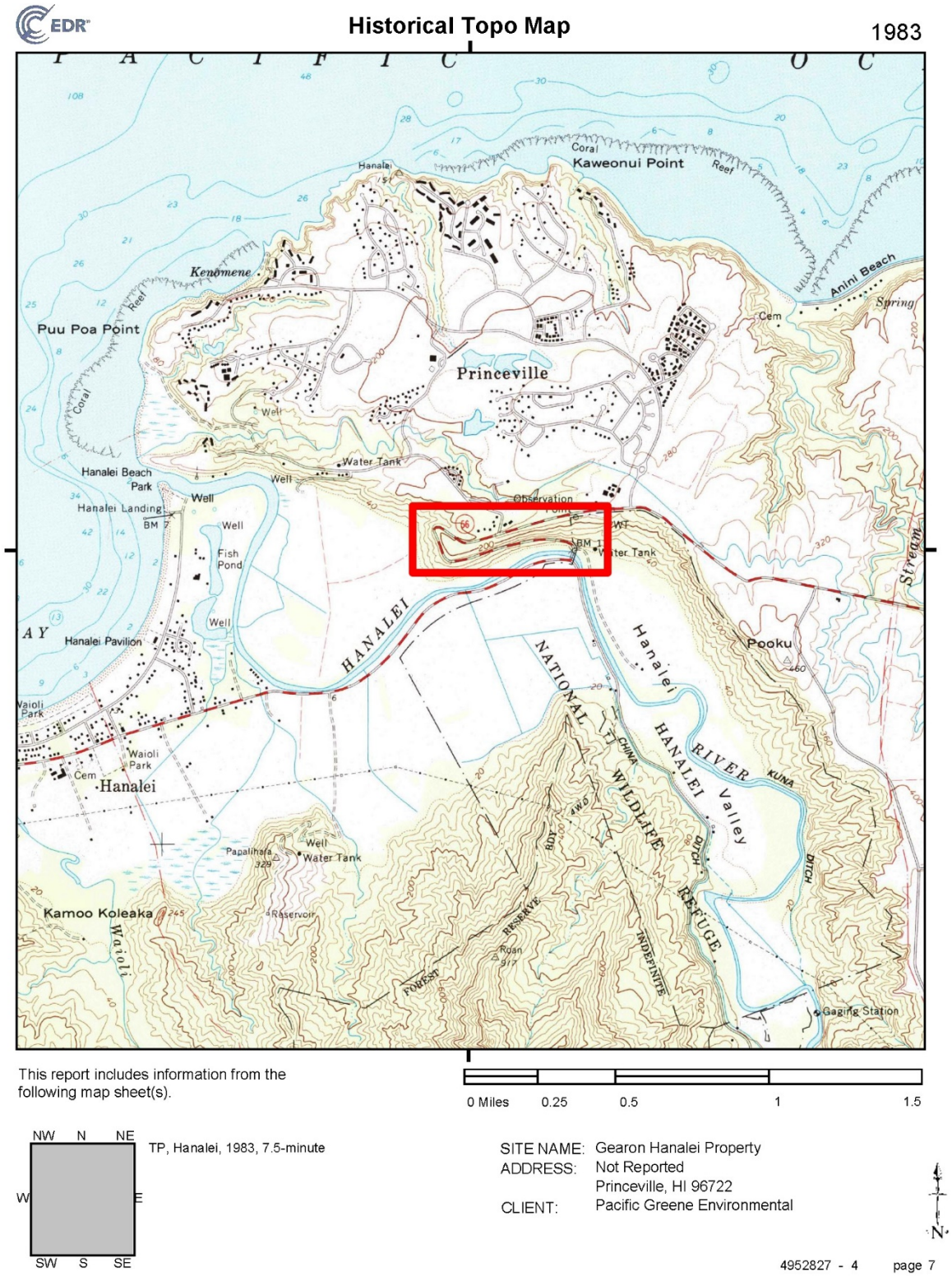


Figure 22. 1983 Topographic Map.

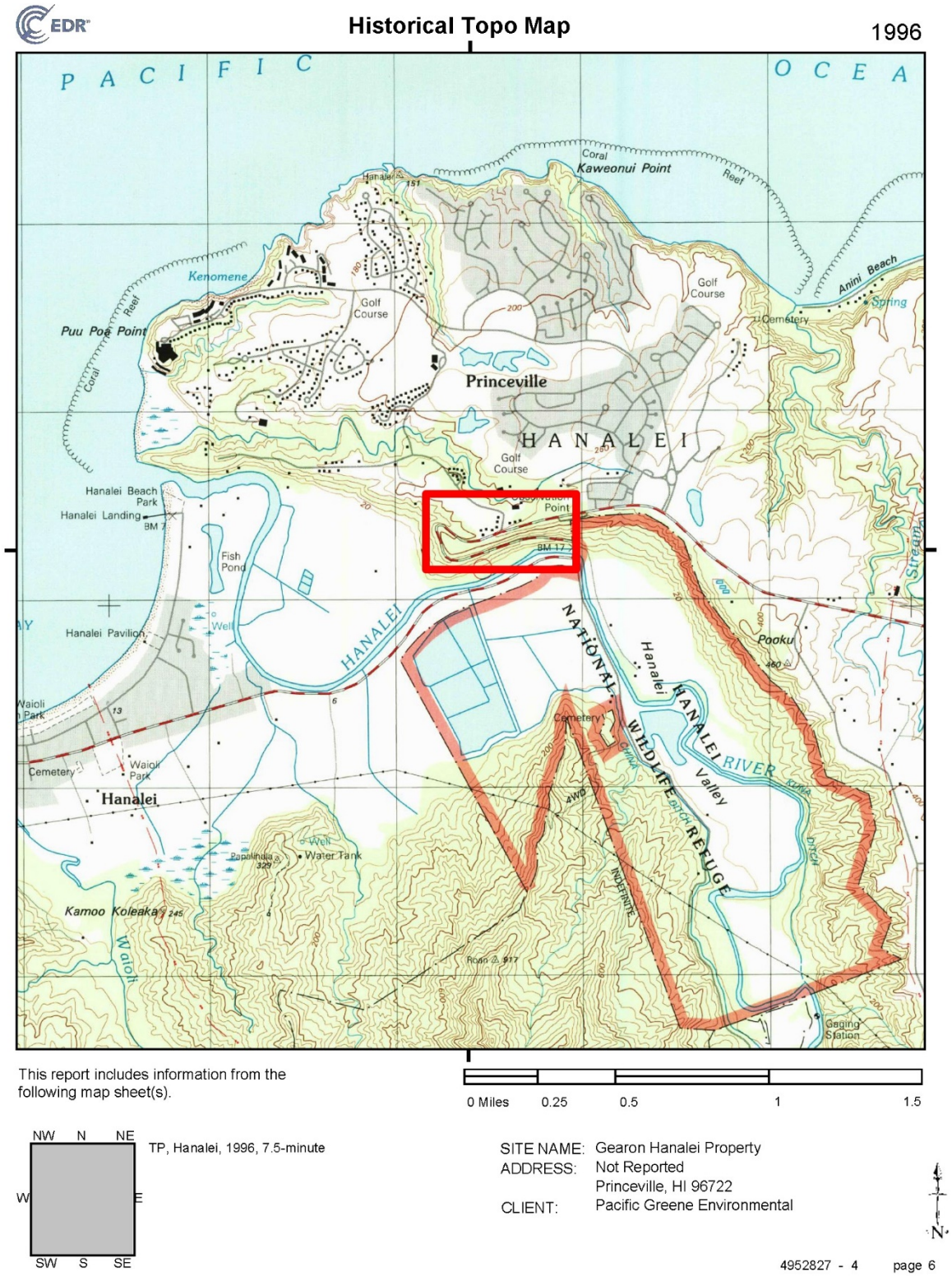


Figure 23. 1996 Topographic Map.

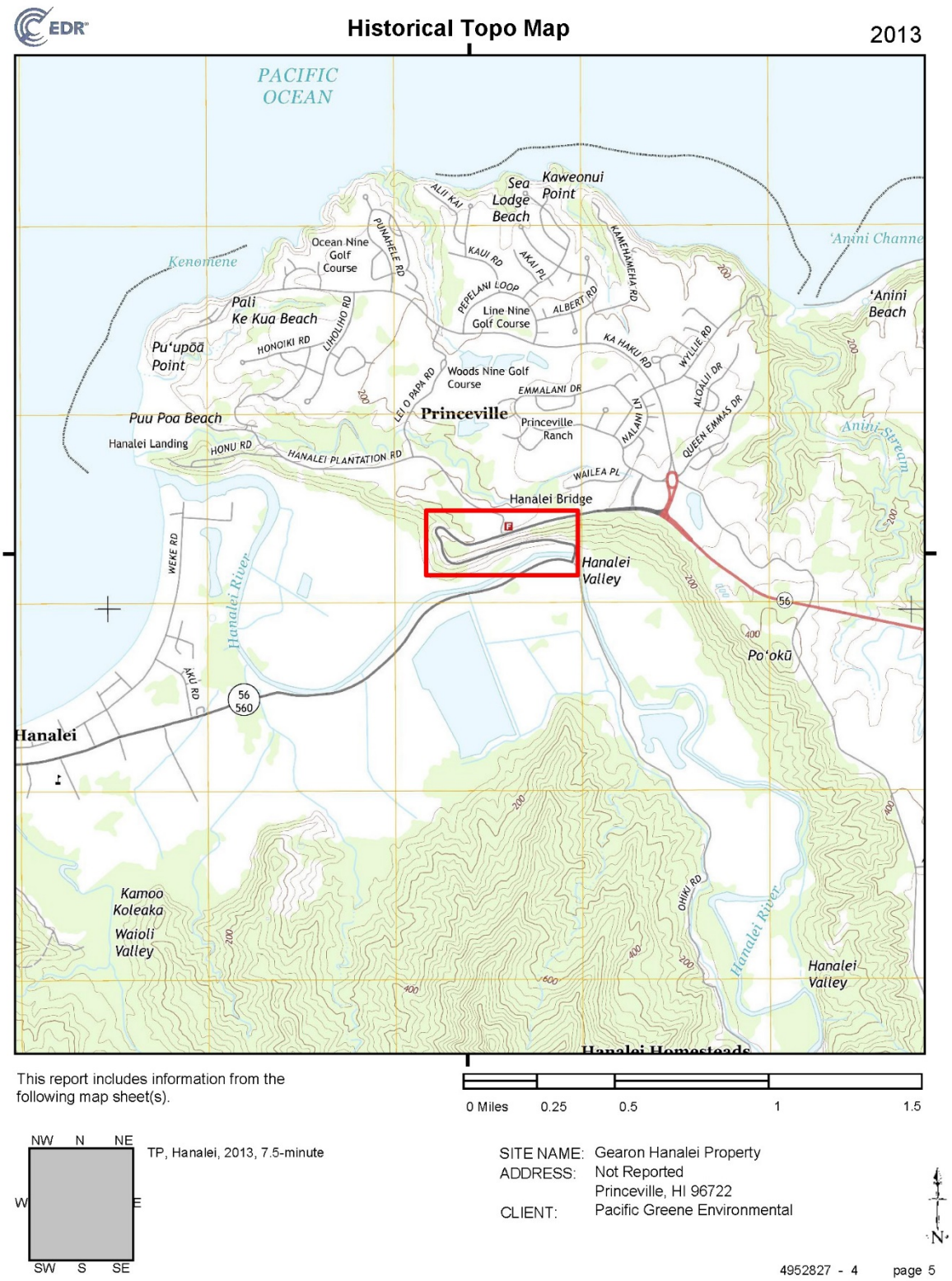


Figure 24. 2013 Topographic Map.

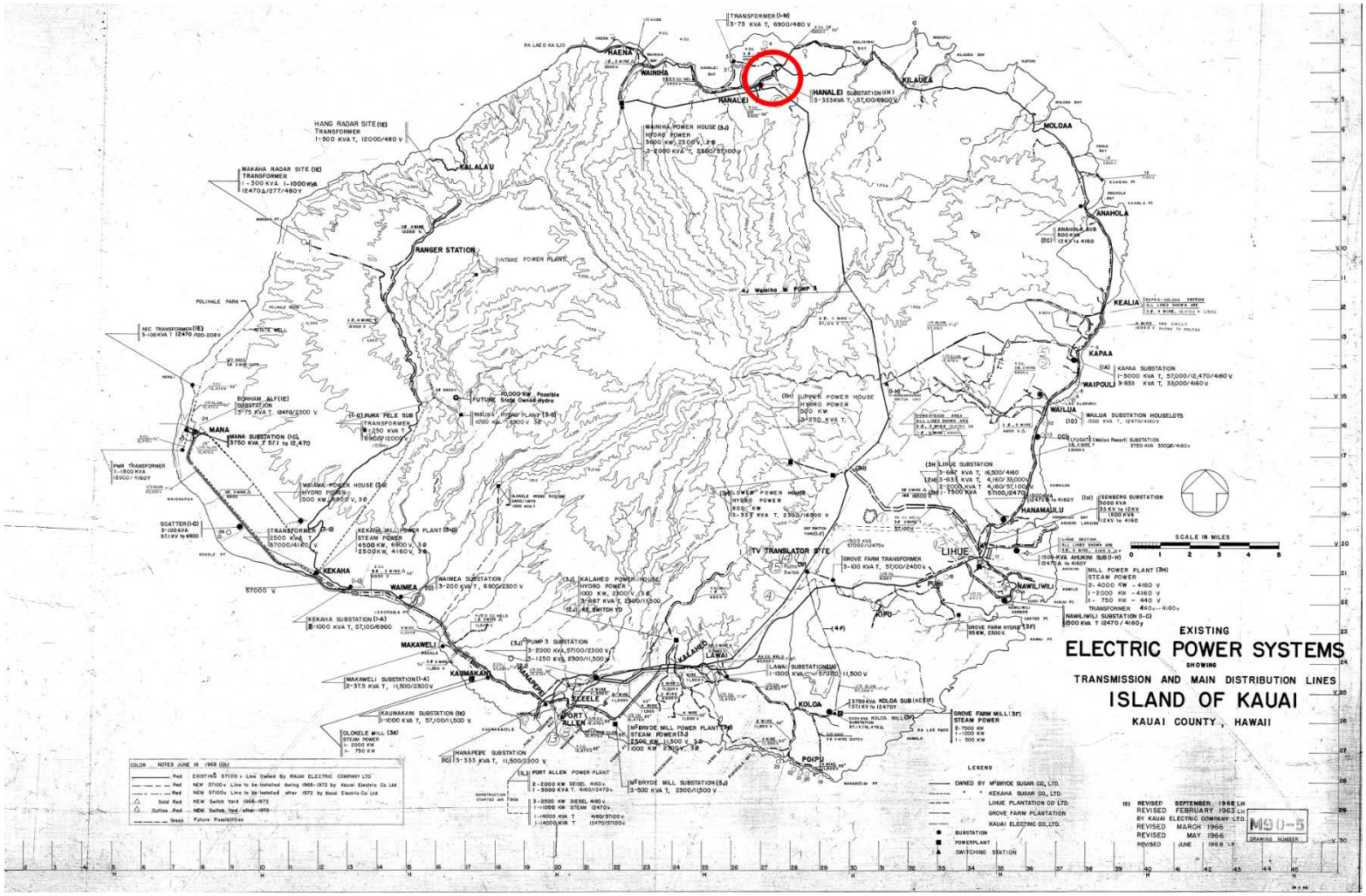
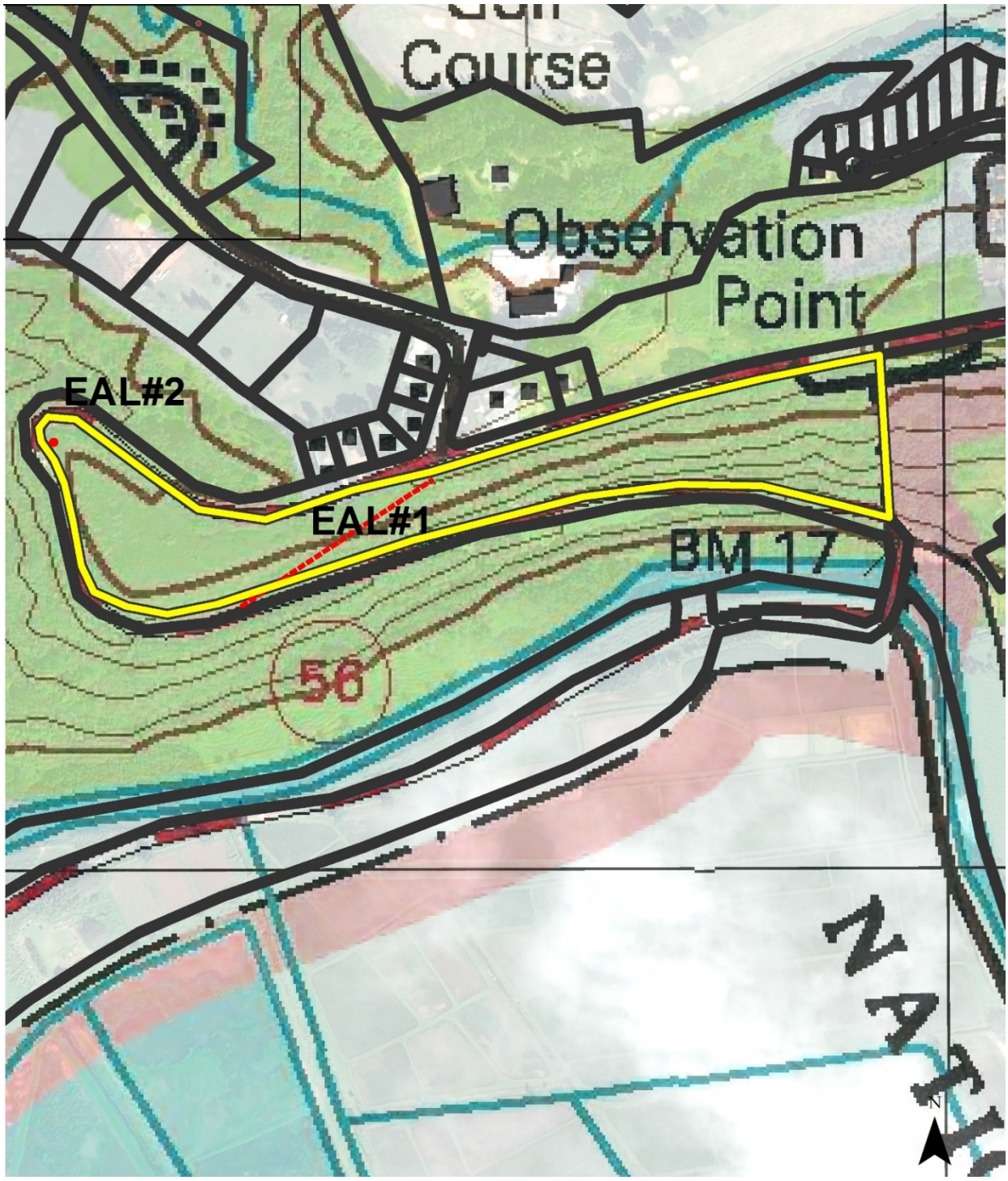


Figure 25. Map of the Electric Power Systems showing the road alignment.



Historic Properties located on Gearon Single Family Resident Project.

USGS 7.5 Quad
1 inch = 66,660 feet
Coordinate System: NAD 1983 StatePlane Hawaii 4 FIPS 5104

McMahon, 2017

Figure 26. USGS Hanalei Quad should locations of SIHP# 50-30-03-02353 (EAL#1) and SIHP# 50-30-02-02354 (EAL#2).

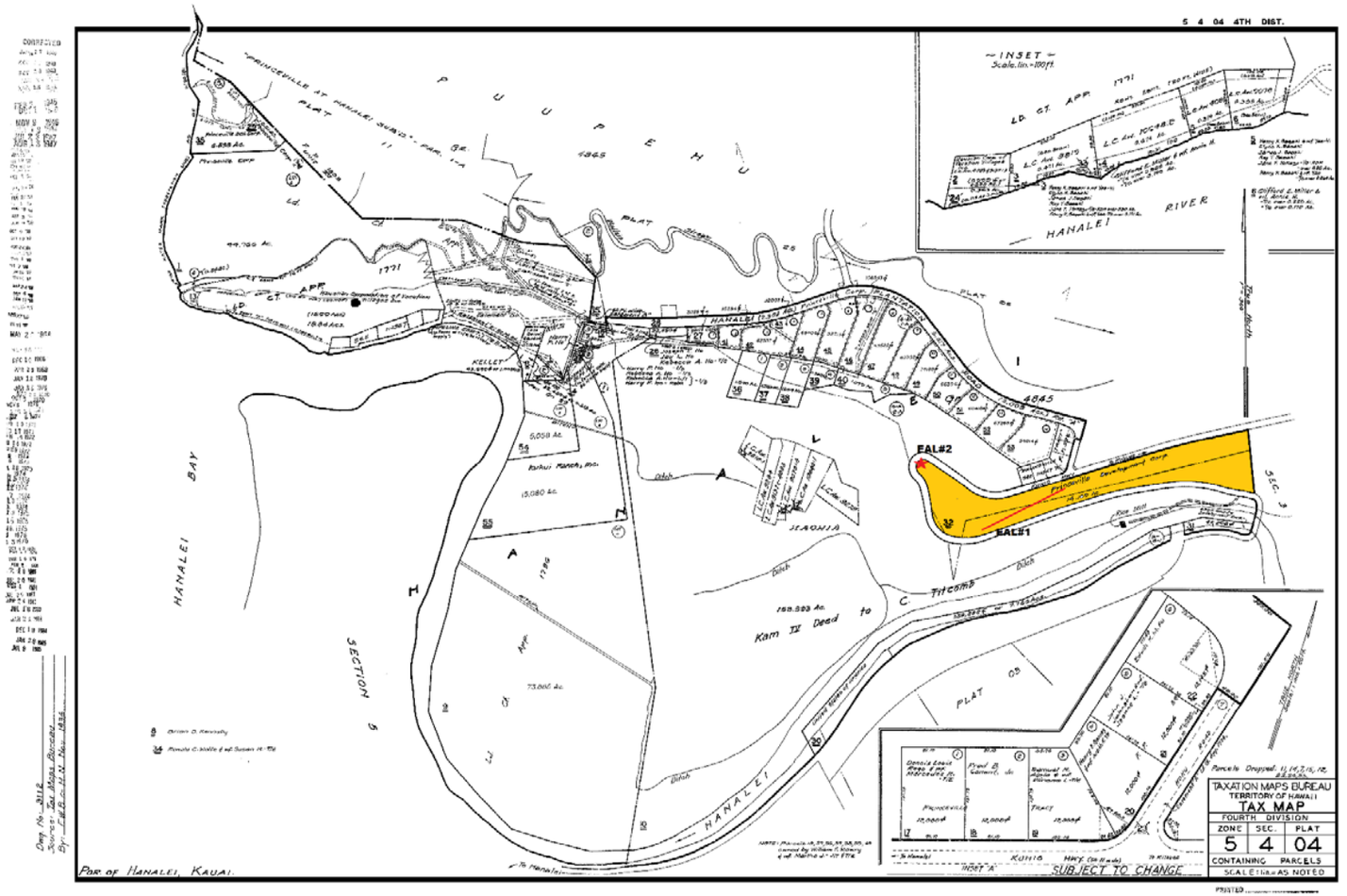


Figure 27. Tax Map and Historic Properties SIHP# 50-30-03-02353 (EAL#1) and SIHP# 50-30-02-02354 (EAL#2) location within the parcel.

SIHP# 50-30-03-02353 [EAL#1]

Site Type: Road

Function: Transportation

Features: None

Dimensions: 240 to 160 ft AMSL, approximately 264.0 m long (NW/SE) by 5.1m wide

GPS: At the western end (downslope side) 22°12'38.88"N 159°28'52.43"W and on the eastern (upslope side) 22°12'42.90"N159°28'43.97"W

Condition: Good, some erosional areas and impacts on pot growing pits.

Probable Age: Post Contact

Site Descriptions: A portion of old government road, constructed around 1833-93.

Significance: SIHP# 50-30-03-02353 is determined under Hawaii Register eligible under criteria d (have yielded or may be likely to yield information important in prehistory or history).

Recommendation: There is no direct impact to this historic property and technically, it will be preserved “as is”, since there are slope erosion issues, no further work is recommended for this historic property.

SIHP# 50-30-03-02353 is a road remnant that is located within the southeastern portion of the project parcel along the slope below the ridge edge overlooking Hanalei Valley. The road remnant measures approximately 264.0 m long (NW/SE) with an average width of 5.1m. The location of the remnant portion of SIHP# -02353 [closely][accurately] corresponds to the road alignment depicted on the 1893 Wall map and labelled as "old gov’t road" but not the 1833 Wall map. The remnant portion documented during the current AIS, is visible on a google orthophoto of Hanalei discernible by a vegetation change (Figure 17). Figure 19is a picture of the road.

There are significant road cuts is present along the length of the road that extends as deep as 3.0 m (10 ft). Loose basalt stone cobbles and small boulders were observed on the road surface which are caused by landslides from the road cuts. The downslope edge of the northwestern portion of SIHP# -02353 ends when it meets Route 560. The southeastern portion of SIHP# -02353 consists of some steep or vertical drops-offs due to landslides where the width of the road is about 2.0 m. Modern disturbances to SIHP# -02353 include some excavated pits in several locations for cannabis growers.

SIHP# -02353is a road remnant with an interpreted function of transportation. A review of historic maps suggests that SIHP# -02353 was constructed between 1833-1893, within the post-contact era. No

artifacts or cultural material was observed within the remnant road alignment. SIHP# 50-30-03-xxxx (road remnant) has been evaluated as significant under criterion d (have yielded, or may be likely to yield information important in prehistory or history).

Above the old government road, a foot trail was also observed, just off the ridge and paralleling the ridge, this trail continues past the Hanalei Scenic Overlook in Kalihiwai Investors LLC, property. It appears that it was created for Cannabis cultivation. In walking this path, grow-pots, black plastic pots, weed block fabric, and a broken shovel were found. This activity was also recorded by Cultural Surveys Hawaii in their survey for the new Hanalei Overlook (Hammatt et. al. 2000).

SIHP# 50-30-03-02354

EAL: EAL# 2
Site Type: Pre-Contact Historic Property
No. of Features: 4
Functional Interpretation: Unknown
Probable Age: Pre-Contact
Overall Dimensions: Approximately 167.0 m (NW/SE) by 60.0 m (NE/SW)
Topography: Moderately level
Elevation: 280 to 290 ft Above Mean Sea Level (AMSL)

SIHP# 50-30-03-02354 was found in the location where an informant stated there was a pre-contact historic property. During the first inspection of the area with the information, some stone alignments were identified as well as the wall. During the reconnaissance of the area, in addition to the wall two rock cairns or alters or mounds were identified. All three features align due north. Initial thoughts were these mounds the ones the author saw several years ago but back then, it was three mounds and no wall. Upon taking Susan Lebo to look at the historic property, she wanted the area which is thick in guava to be cleared. Additional scatter stones can be found on the flat surface behind the two mounds. The area also is thick in moss covering the rocks. Figure 27 is a preliminary plan view map. Figures 28-35 are photographs showing the features and the historic property.

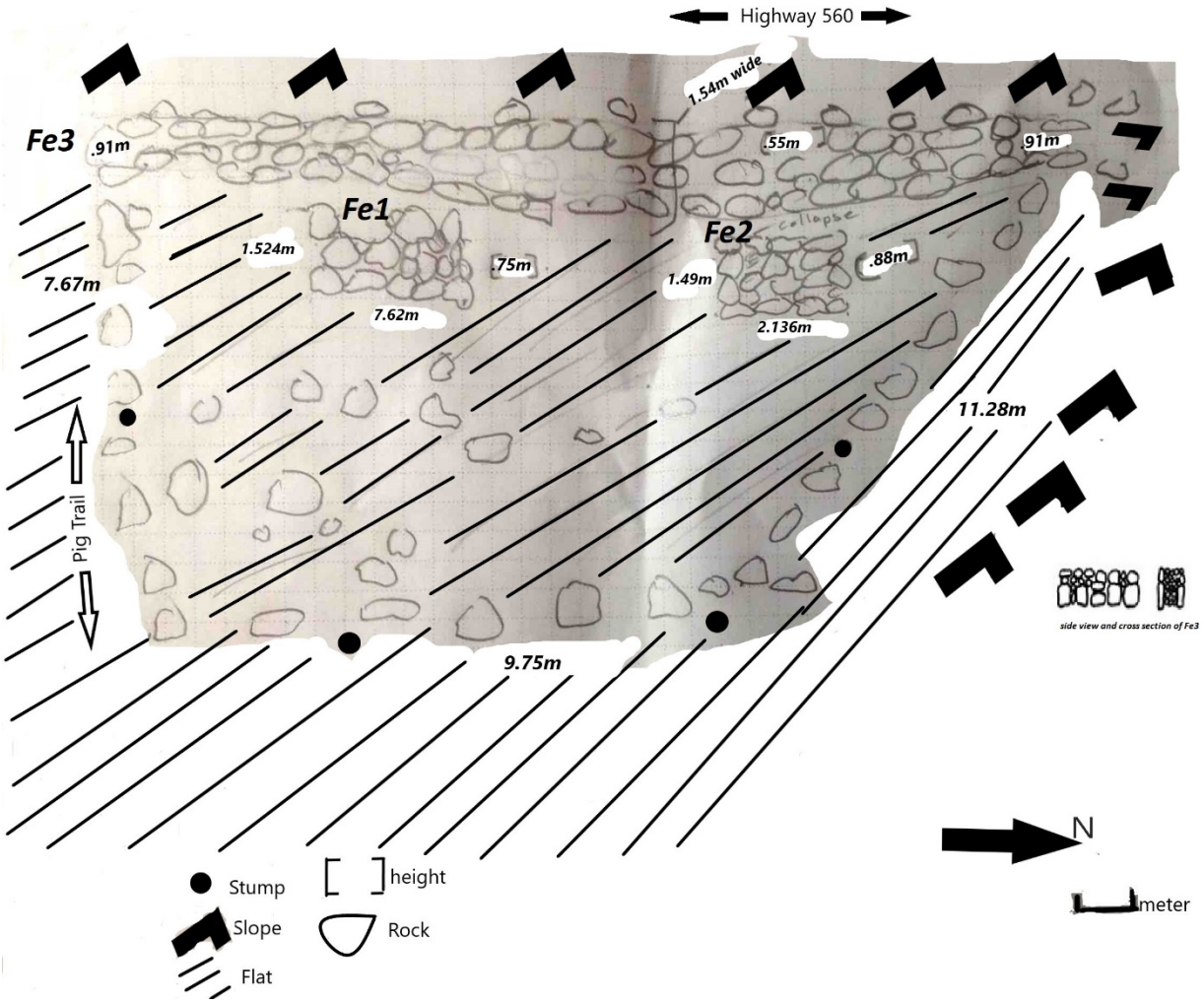


Figure 28. Plan View Map of SIHP# 50-30-03-02354

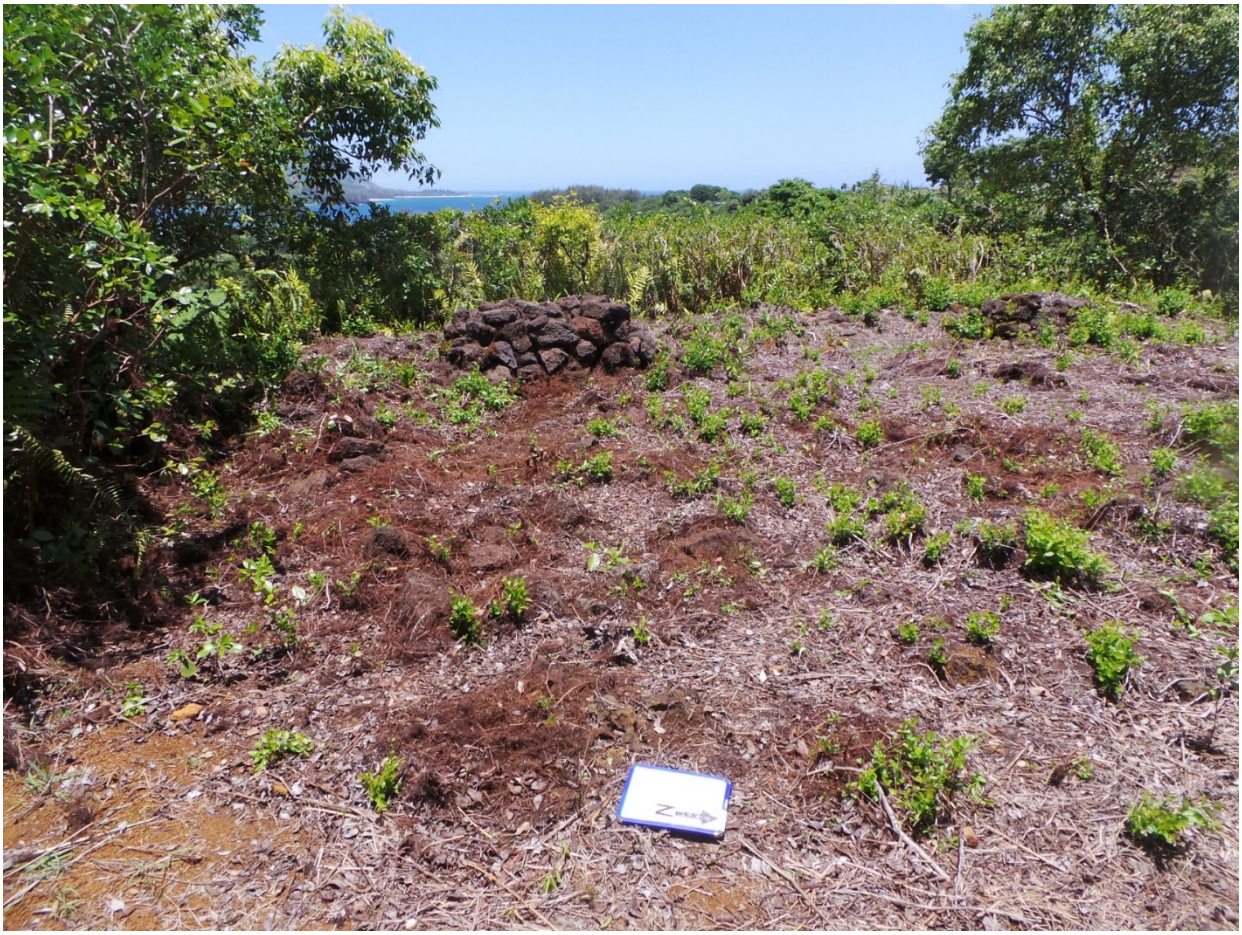


Figure 29. Fe#1 and Fe#2 rock cairns, Fe#4 scattered rocks which form some alignments. View looking west toward Haena Point.



Figure 30. SIHP# 50-30-03-02354 Fe1 South Mound.



Figure 31. SIHP# 50-30-03-02354 Fe4, isolate rough rocks surrounding mounds and wall, covered with moss.



Figure 32. SIHP# 50-30-03-02354 Fe1 Cleared Mound



Figure 33. SIHP# 50-30-03-02354 Fe2 north mound.



Figure 34. SIHP# 50-30-03-02354 Fe3 Wall



Figure 35. Fe#3 Cobble fill rock wall. View looking north.

SIHP# 50-30-03-02354 [EAL#2]

Site Type: sacred place, pre-contact historic property

Function: Unknown

Features and Dimensions: SIHP# 50-30-03-02354 (EAL#2) is located within the northern portion of the project parcel on a prominent point near the edge of the ridge overlooking Hanalei Bay. The parcel and SIHP# -02354 is bounded by the Route 560 to the north, to the east, and to the northwest (Figure 27 and 28). The nature of the site and its position overlooking culturally significant Hanalei Bay with views in the distance to Haena Point.

Currently Site# 02354 was covered in thick vegetation consisting primarily of strawberry guava, cat's claw, and moss. The *guava* trees form a canopy up to 15 feet high. The ground surface is covered with leaf litter from the *guava* and other vegetation, along with moss. The amount of leaf litter on the ground surface makes it difficult to discern. The extent of human modification in this terracing is unclear. The *pre-contact historic property* is on a level area above Route 560. It is in the shape of an elongated square, oriented northwest to southeast. It is approximately 16 m N/S by 8 m S by 10 m E x 12 m NE. There are four (4) distinct features – a rock wall, and two mounds. The rock wall is on the western side fronting the two mounds, located due north. Along the north and northwest sides of the wall the property drops off into the highway. Several concentrations of small basalt stoners were observed scattered beyond the two rock cairns to the east. It could not be discerned whether these were remnants of any kind of structure. After clearing some of the moss, these stones appear to be on the ground surface, some clumped together.

The two-faced mounds on all sides are adjacent to the wall and in line with the wall due north. There is a clear alignment on the sides where these scattered stones are located. The south side is 7.62 meters in length, the east side is 9.75 meters in length and the north side is 11.28 meters in length. The distance between the mounds approximately 15 ft. or 4.52 meters.

Fe#1 South Rock Mound - This is the southern mound, which is a basalt cobble filled platform built on a cobble base above ground. It highest point is .75 meters. It is 15 inches from the wall. The dimensions are 2.25 meters in length, 1.524 meters wide, .60-.75 meters in height.

GPS: 22 12'43"N 159 28'58"W

Fe#2 North Rock Mound – This mound has some collapse on the west side. It appears to be slightly smaller than FE#1 but slightly higher. It is 2.1336 meters in length, 1.4935 meters in wide and .88 meters in height.

GPS: 22 12'43"N 159 28'58"W

Fe#3 A basalt cobble filled wall, with its highest point at 0.48-0.55 meters above the surface. It is 15.54 meters in length. It is 0.91-1.524 meters in width. The extreme corners of the wall align with the shape of the pre-contact historic property.

GPS: 22 12' 43"N 159 28' 58"W

Fe#4 Basalt cobbles forming a kite shape structure. Rocks are covered with about 4 inches of moss. These do not appear to be stack like the mounds but rather scattered in alignments.

GPS: 22 12' 43"N 159 28' 58"W

Condition: Excellent, overgrown with moss.

Probable Age: Pre-Contact

Site Descriptions: A kite shaped rock formation [a pre-contact historic property], with two large mounds at the southern end, fronting that is a rock wall, then the edge of the ridge. Both mounds and wall align due north.

Significance: SIHP# 50-30-03-02354 is determined to be Hawaii Register of Historic Places eligible under multiple criteria. It is significant under criterions: d (have yielded or may be likely to yield information important in prehistory or history) and e (value to the Native Hawaiian people or to another ethic group due to associations with cultural practices).

Recommendation: There is not direct impacts to this historic property. A preservation plan is recommended for this significant historic property. It will be preserved “as is” with no interpretation. It will also be maintained by the owner, so that no damage can be done by the surrounding dense guava vegetation, that had taken over in the past.

ARCHAEOLOGICAL MONITORING OF GEOLOGICAL CORING

As agreed to in the SPA-KA-17-41, archaeological monitoring was conducted on April 24 and 25, 2017 for the geological coring to gather information on the nature, distribution and characteristics of the subsurface earth materials and ground water conditions for recommendations for project design and construction. Maximum depth five bore holes 14.5 feet or 4.4196 meters. Archaeologist, Linz Armstrong, B.A. under the direction of EAL principal archaeologist monitored the borings. Boring auger was 4 inches in diameter. Figure 36, shows the boring location within the footprint of the proposed residence. No cultural material was found during the coring activities. Figures 37 and 38 show the auger equipment. The borings were drilled and sampled with a Dando Terrier drill rig equipped with four-inchdiameter, solid -stem helical flight augers.

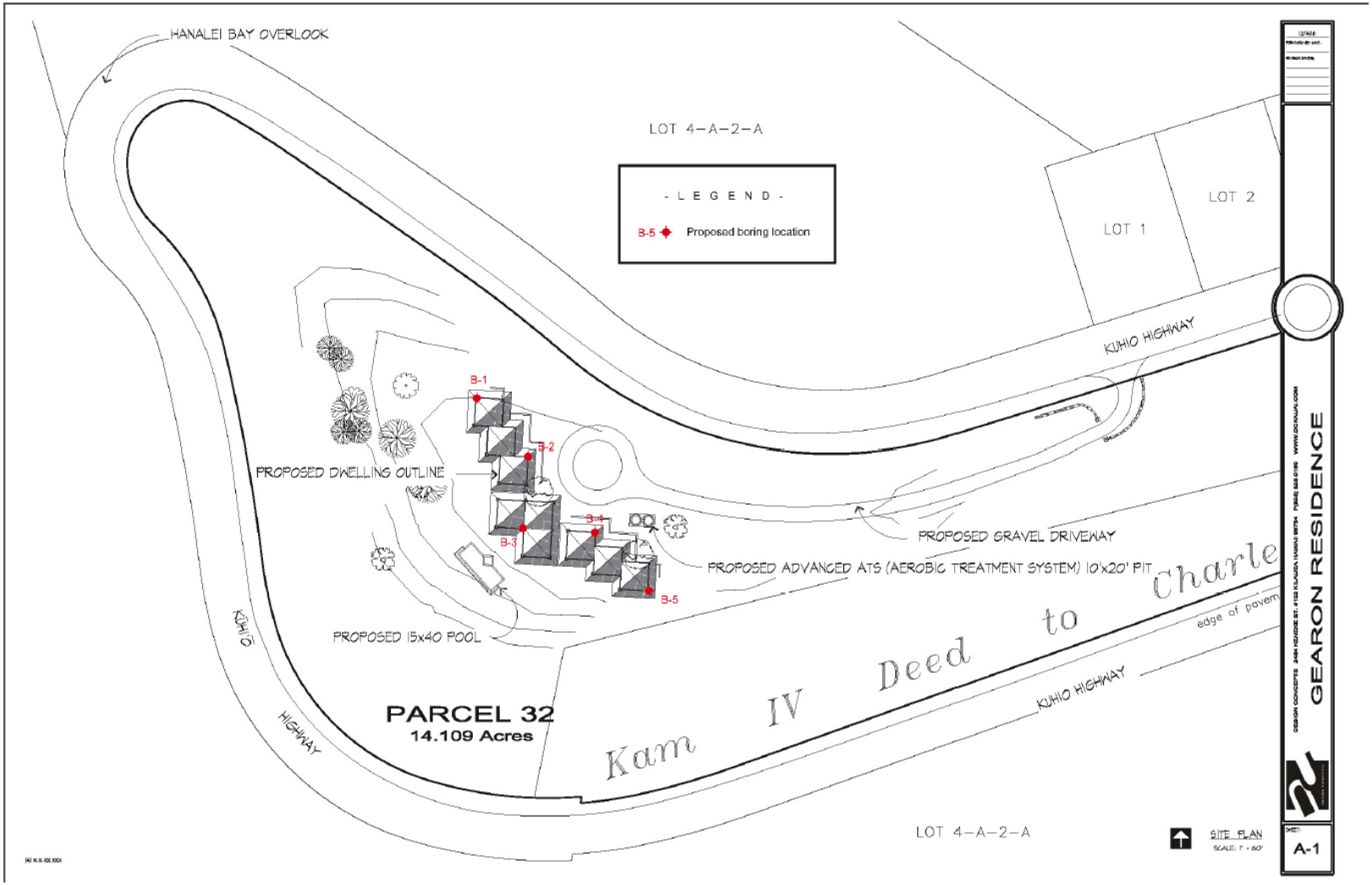


Figure 36. Geological Boring Locations (5).



Figure 37. Boring equipment and crew.

Measurements were taken in feet, per the method of the geologist. We did not get to touch or analyze these coring for detailed soil descriptions. Below are our monitoring logs with the Munsell Soil Color Chart descriptions:

<u>Holes #1, #2</u>

Topsoil – 4 ft. – 5YR ¾ *reddish* brown, reddish-orange, very moist, semicompact
$5^{1/2}$ ft. – 7 ft. - 5YR ¾ *reddish* brown, reddish-orange, very moist, semicompact
8 ½ ft. – 10 ft. – 5YR ¾ silt mixed clay *reddish* brown, brick red, very moist, soft
11 ½ ft. – 13 ft. – 5YR ¾ mix clay dusky orange-brown, very moist, medium-stiff
Finished 14 ½ ft. no change

<u>Hole #3</u>

Topsoil – 4 ft. 5YR ¾ mix clay *reddish* brown, reddish-orange, very moist, semicompact
5 ½ ft. – 7 ft. – 5YR ¾ mix clay *reddish* brown, reddish-orange, very moist, semicompact
8 ½ ft. – 10 ft. – 5YR ¾ wet clay *reddish* brown, clayey silt, brick red, very moist, soft
11 ½ ft. – 13 ft. – 5YR ¾ wet clay *reddish* brown, clayey silt, brick red, very moist, soft

Finished 14 ½ ft. 2.5YR 3/6 color change wet clay *dark reddish brown or red*; clayey silt, brick red, very moist, soft

Hole #4

Topsoil – 4 ft. 5YR ¾ mix clay *reddish* brown, silt, reddish-orange, very moist, semicompact

5 ½ ft. – 7 ft. – 5YR ¾ mix clay *reddish* brown, silt, reddish-orange, very moist, semicompact

8 ½ ft. – 10 ft. – 5YR ¾ wet clay *reddish* brown, clayey silt, brick red, very moist, soft

11 ½ ft. – 13 ft. – 5YR ¾ wet clay *reddish* brown, clayey silt, brick red, very moist, soft

Finished 14 ½ ft. 2.5YR $^{2.5/4}$ color change wet clay *dark reddish brown or red*; saprolite, dusky orange-brown, very moist, medium-stiff

Hole #5

Topsoil – 4 ft. 5YR ¾ silty mix clay *reddish* brown, silt, reddish-orange, very moist, semicompact

5 ½ ft. – 7 ft. – 5YR ¾ silty wet clay *reddish* brown, clayey silt, brick red, very moist, soft

8 ½ ft. – 10 ft. – 5YR ¾ wet clay *reddish* brown, clayey silt, brick red, very moist, soft

11 ½ ft. – 13 ft. – 2.5YR $^{2.5/4}$ color change wet clay *dark reddish brown or red*; saprolite, dusky orange-brown, very moist, medium-stiff

Finished 14 ½ ft. 2.5YR $^{2.5/4}$ color change wet clay *dark reddish brown or red*; saprolite, dusky orange-brown, very moist, medium-stiff

No cultural material was found in the 5 boring holes and was consistent with our trench profiles.



Figure 38. View of the auger.

SUMMARY

Conclusion

The *ahupua'a* of Hanalei has been densely populated and modified by human means during the pre-Contact through the 21st century. Though extensive Native Hawaiian agricultural sites and historic rice and cane agriculture has obliterated many of these historic properties in the valley proper, it was postulated that historic period sites related to ranching might be present in the project area. However, recent utilization of the uplands and the modern use of the subject parcel suggest that any remnant historic properties that may have been present are gone. Overall, subsurface testing predominantly revealed homogenous natural silty clay strata.

Rumors of a Chinese Cemetery could not be verified both archaeological searching through subsurface testing and searching records and through an interview with one of the Hanalei Chinese family. Oral information, and a personal tour, did verify finding the old road bed and a pre-contact historic property on the parcel. Surface and subsurface results for the proposed project area (a single-family residence and its ancillary infrastructure) concluded that no historic properties in this location.

The two historic properties are assessed for their significance based on criteria established and promoted by SHPD and contained in HAR Chapter 13-284-16. This significance evaluation should be considered as preliminary until SHPD provides concurrence. For a resource to be considered significant it must possess integrity of location, design, setting, materials, workmanship, feeling and association and meet one or more of the following criteria:

a associated with events that have made an important contribution to the broad patterns of our history;

b associated with the lives of persons important in our past;

c embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;

d have yielded, or is likely to yield information important for research on prehistory or history;

e have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts - these associations being important to the group's history and cultural identity.

Both historic properties retain sufficient integrity for evaluation and all have been evaluated under each historic property description and summarized in Table 4. Both sites are significant because they yield information important for research on prehistory and history for this area. Site SIHP# 50-30-03-02354 is also significant for its importance to native Hawaiian people.

Table 4. Summary of historic properties

Site No.	Function	Temporal Association	Significance	Recommended Treatment
SIHP# 50-30-03-02353	Road - transportation	Early 20th Century	d	No further work
SIHP# 50-30-03-02354	Unknown	Pre-contact	d, e	Preservation

Recommendations

Two significant historic properties were identified on the parcel. Neither sites are being impacted by the proposed development of this parcel. Preservation is recommended for SIHP# 50-30-03-02354. Recommended preservation treatment is "as is" or passive preservation. A preservation plan is recommended for SIHP# 50-30-03-02354 with a more detailed map of the site should be done, to determine age and function of the historic property. No further work is recommended for SIHP# 50-30-03-02353, although it is also being preserved as is, due to its hazardous location.

Subsurface testing in the house foundation, swimming pool with spa, wastewater system and utility alignment had negative historic properties findings. No further archaeological work is recommended for the proposed construction in the project area. EAL has made a determination effect for this single-family residence including the swimming pool and ancillary improvements: "no effect with agreed upon mitigation commitments". The recommended mitigation is preservation of SIHP# 50-30-03-02354 with an approved preservation plan which includes detailed mapping of SIHP# 50-30-03-02354.

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Cultural Impact Assessment

Native Hawaiian Traditions, Customary Practices and Perspectives of
Hanalei Ahupua`a Moku o Halele'a,
Kaua`i Island
for a

Single Family Residence

at
TMK (4) 5-4-004:032



View of Ridge from the Project Area toward Hanalei Valley.

Prepared for
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Helios Hanalei LLC

Prepared by
Nancy McMahon
Exploration Associates Ltd.

August 2017

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Glossary of Hawaiian Words

ahu.pua‘a
n. 1. Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief. The landlord or owner of an ahupua‘a might be a konohiki. 2. The altar on which the pig was laid as payment to the chief for use of the ahupua‘a land.

`āina
n. Land, earth. Cf. *‘ai*, to eat.

ā.iwaiwa
vs. Inexplicable, mysterious, marvelous, strange, amazing, fantastic, fathomless, incomprehensible, wonderful because of divinity; wonderfully proficient or skilled; weirdly bad, notorious.

‘ā.kia
n. Endemic shrubs and trees (Wikstroemia spp.) with small leaves, tiny yellowish flowers, and yellow to red, small, ovoid one-seeded fruits. The bark yields a fiber; the bark, roots, and leaves (as W. oahuensis) a narcotic used for fish poisoning (Neal 616), and according to Kep., used in ‘anā‘anā sorcery. Varieties are qualified by the terms lau nui. mānalo, and pehu. Also kauhi.

akua
1. vs. God, goddess, spirit, ghost, devil, image, idol, corpse; divine, supernatural, godly.
2. *(Cap.)* n. God (Christian).
3. n. “It” in a game of tag or hide-and-seek.
4. *(Cap.)* Name of the 14th night of the full moon. (PEP ‘Atua.)

akule
n. Big-eyed or goggle-eyed scad fish (Trachurops crumenophthalmus), Stages of growth are pā‘ā‘ā, halalū or hahalalū, and akule.

‘ala‘ala
n. Ink sac in octopus or squid; after salting, drying, and broiling on the fire, it is mixed with ‘inamona or chili peppers and eaten; mixed with ‘auhuhu juice it is used as bait. **Fig.**, useless.

ali‘i
nvs. Chief, chiefess, officer, ruler, monarch, peer, headman, noble, aristocrat, king, queen, commander; royal, regal, aristocratic, kingly; to rule or act as a chief, govern, reign; to become a chief. *Fig.*, kind

ali‘i ‘ai moku
n. Chief who rules a moku (district)

aloha
nvt., nvs. Aloha, love, affection, compassion, mercy, sympathy, pity, kindness, sentiment, grace, charity; greeting, salutation, regards; sweetheart, lover, loved one; beloved, loving, kind, compassionate, charitable, lovable; to love, be fond of; to show kindness, mercy, pity, charity, affection; to venerate; to remember with affection; to greet, hail. Greetings! Hello! Good-by! Farewell! Alas!

ʻano
n. Kind, variety, nature, character, disposition, bearing, type, brand, likeness, sort, way, manner, shape, tendency, fashion, style, mode, circumstance, condition, resemblance, image, color, moral quality, denomination, meaning.

ao
1. nvi. Light, day, daylight, dawn; to dawn, grow light; enlightened; to regain consciousness.
a. To marry; marriage (old term, probably *lit.*, to stay until daylight).
b. *(Cap.)* Night of the day called Huna, eleventh night of the month, when the hoʻāo nuptials took place. (PPN ʻaho.)
2. n. Any kind of a cloud, including ʻōpua, but specifically, high clouds that when wind-blown scud along (kaʻa).
3. n. World, earth, realm.
4. vt. To be careful, beware, watch out.

ʻau.hola
Same as ʻauhuhu., a shrub.

ʻau.huhu
n. A slender, shrubby legume (Tephrosia purpurea syn. T. piscatoria), 30 to 60 cm high, with small, compound leaves, small white or purplish flowers, and narrow pods, used for poisoning fish. The plant is known from tropical Asia eastward into Polynesia. (Neal 448–9.) Also ʻauhola, hola. Cf. *pōpō ʻauhuhu*.

ʻau.makua
nvt. Family or personal gods, deified ancestors who might assume the shape of sharks, owls, hawks, ʻelepaio, ʻiwi, mudhens, octopuses, eels, mice, rats, dogs, caterpillars, rocks, cowries, clouds, or plants. A symbiotic relationship existed; mortals did not harm or eat ʻaumākua (they fed sharks), and ʻaumākua warned and reprimanded mortals in dreams, visions, and calls. (Beckwith, 1970, pp. 124–43, 559; Nānā 38.) **Fig.**., a trustworthy person. (Probably **lit.**., ʻau 4, group, + makua, parent.) `aumākua is plural.

ʻawa
n. The kava (Piper methysticum), a shrub 1.2 to 3.5 m tall with green jointed stems and heart-shaped leaves, native to Pacific islands, the root being the source of a narcotic drink of the same name used in ceremonies (Neal 291), prepared formerly by chewing, later by pounding. The comminuted particles were mixed with water and strained, When drunk to excess it caused drowsiness and, rarely, scaliness of the skin and bloodshot eyes. Kava was also used medicinally.

awāwa
n. Valley, gulch, ravine.

hā
1. num. Four, fourth (commonly preceded by the numeral-marking prefixes, as ʻehā keiki, four children; Pōʻahā, Thursday; *lit.*, fourth day). Hā and multiples of four are sacred or formulistic numbers
2. nvi. To breathe, exhale; to breathe upon, as kava after praying and before prognosticating; breath, life.
3. nvs. Stalk that supports the leaf and enfolds the stem of certain plants, as taro, sugar cane; layers in a banana stump. Cf. *ʻohana*. (PPN faʻa.)
4. nvi. Trough, ditch, sluice; to form a ditch or trough. Hā wai, water ditch or trough.
5. n. Stick or furrowed stone used as a sinker, with hooks attached. Also hā lawaiʻa.
6. n. A native tree (Eugenia [Syzygium] sandwicensis), with red, edible fruit about 8.5 mm. in diameter, related to the mountain apple, ʻōhiʻa ʻai. The bark was used to color tapa black. Also ʻōhiʻa hā, and pāʻihi (on Maui). (Neal 635.)

haʻa
1. nvs. Low; dwarf; man or animal of short stature. hoʻo.haʻa To lower; humble.
2. n. A dance with bent knees; dancing.

hale
nvi. House, building, institution, lodge, station, hall; to have a house.

hā.loa
1. vs. Far-reaching, long, everlasting, eternal.
2. n. Poetic name for lauloa taro.
3. n. A variety of sweet potato.
4. n. A type of prayer. (For. 6:37) *Lit.*, long breath.

hā.nai
1. nvs. Foster child, adopted child; foster, adopted. Keiki hānai, foster child. Lawe hānai, to adopt a child. Makua hānai, foster parent. Kāna hānai, his adopted child.
2. nvt. To raise, rear, feed, nourish, sustain; provider, caretaker (said affectionately of chiefs by members of the court).
3. n. Body of a kōkō net carrier, and cords attached to it; fish net or trap, as for ʻoʻopu fish; kite.
4. Same as hanahanai.
5. n. Hawaiʻi name for mānai, needle.

hā.nau
nvi. To give birth; to lay (an egg); born; offspring, child, childbirth; productive, fertile. Hānau ʻo Hina, Hina gave birth. Hānau ʻia ʻo Hina , Hina was born. ʻIliʻili hānau, reproducing pebbles. Welo hānau, productive or prolific family.

hanauna
n. Generation; relative whose relationship was established several generations previously; ancestry, birth. Hanauna like, relative of the same generation; of the same generation, contemporary. Makuahine hanauna, aunt, female cousin of one's father or mother. Keiki hanauna, nephew, niece. Kaikuahine hanauna, female cousin of a male. Pili ma ka hanauna, related through having a common ancestor. Nā makua kāne hanauna (For. 4:161), uncles, fathers, brothers and male cousins.

haole
nvs. White person, American, Englishman, Caucasian; American, English; formerly, any foreigner; foreign, introduced, of foreign origin, as plants, pigs, chickens; entirely white, of pigs (Malo 37; perhaps Malo actually means of foreign introduction). See *kolea* 1. References in traditional literature are few, but these have been noted: He haole nui maka ʻālohilohi (FS 201), a big foreigner with bright eyes [referring to Kama-pua'a, the pig demigod]. Hānau ke poʻo haole, he haole kēlā (KL. line 505), born was the stranger's head, that was strange. Hoʻokahi o Tahiti kānaka, he haole (Kua-liʻi chant, For. 4:375) only one people in Tahiti, foreigners. ʻĀina haole, foreign land. ʻŌlelo haole, European language, especially English. hoʻo.haole To act like a white person, to ape the white people, or assume airs of superiority [often said disparagingly, especially of half-whites]. Hoʻohaole ʻia, Americanized, Europeanized; to have become like a white person or have adopted the ways of a white man.

haumana, haumāna
n. Student, pupil, apprentice, recruit, disciple

heiau
n. Pre-Christian place of worship, shrine; some heiau were elaborately constructed stone platforms, others simple earth terraces. Many are preserved today.

hiki
1. nvs. Can, may; to be able; ability; possible. Cf. *hiki nō*, *hikiwale*, *hikiwawe*, Gram. 4.4. Hiki ʻole, impossible, can't do. Pau ka hiki, no longer able to do; impotent. Hiki iāia ke hele mai, he can come; he may [has permission to] come. E hiki ana, when possible. Ka lā e hiki ana, any possible day. Ka manawa e hiki ana, any possible time.
2. interj. All right, O.K. (in sense of "able to do"), certainly, surely (used alone or preceding nō).
3. vi. To get to or reach a place, come, arrive, approach, appear, arise.

hikina
n. East

hina
1. nvs. To fall, tumble, or topple over from an upright position (cf. *hāʻule*, to drop); to be "controlled," as a disease (Kam. 64:102); to fall morally; to throw down.
2. vi. To blow in a straight course, of wind. Ke hina maila ka makani mai uka mai, the wind is now blowing steadily from the uplands.
3. vs. Gray- or white-haired; gray.
4. A goddess. (PPN Sina.)

Hoku
n. Night of the full moon. When this moon set before daylight it was called Hoku Palemo, Hoku that slips away. When it set after daylight it was called Hoku Ili, grounded Hoku.

hō.kū
n. Star.

hola
nvt. Same as hohola, to spread. Cf. *kauhola*, *mahola*, *pāhola*. (PPN fola.) 2. Same as ʻauhuhu; to drug fish with this poison. ʻUpena hola, net used with this poison. Hele nō i ka hola iʻa i ka lā, go to poison fish in the daytime [more efficient to work by day]. Niʻihau.

hua.kaʻi
nvi. Trip, voyage, journey, mission, procession, parade; to travel.

hula
1. nvt. The hula, a hula dancer; to dance the hula.
2. nvt. Song or chant used for the hula; to sing or chant for a hula.
3. vi. To twitch, as a muscle or eyelid; to palpitate, throb. (PCP (f,s)ula.)

huki.lau
nvi. A seine; to fish with the seine. *Lit.*, pull ropes (lau).

iʻa
n. 1. Fish or any marine animal, as eel, oyster, crab, whale.
2. Meat or any flesh food.
3. Any food eaten as a relish with the staple (poi, taro, sweet potato, breadfruit), including meat, vegetable, or even salt. Also ʻīnaʻi.
4. *(Cap.)* Milky Way. Ka Iʻa ui o ka lani, the turning Milky Way of the heavens. Ua huli ka Iʻa, the Milky Way has turned [changed position; it is past midnight].

ʻike
1. nvt. To see, know, feel, greet, recognize, perceive, experience, be aware, understand; to receive revelations from the gods; knowledge, awareness, understanding, recognition, comprehension and hence learning; sense, as of hearing or sight; sensory, perceptive, vision. ʻIke hoʻomaopopo, conscious, consciousness.
a. To show, make known, display, tell, exhibit, reveal, indicate, inform, report, notify, explain, testify, cause to know or seen, discover, announce, allege; acquaint; testimony, notice, information; identifying characteristics, as of land claims; proof, token guide, exhibition.

ʻili
1. n. Skin, complexion, hide, pelt, scalp, bark, rind, peel.
2. Leather. ʻIli lahilahi, thin leather. ʻIli mānoanoa, thick leather.
3. Surface, area. Cf. *ʻili ʻāina*, *ʻilikai*.

ʻili
4. Binding, cover. ʻIli paʻa, hard cover (of a book).
5. Land section, next in importance to ahupuaʻa and usually a subdivision of an ahupuaʻa.
6. Strap of any kind, as reins, harness, fan belt, machine belt; hose. Cf. *alaʻume*.
7. Pebble (less used than ʻiliʻili); kōnane pebble.
8. vs. Square, as in measurements. Ana ʻili, square measurements.

ʻī.naʻi
nvi. Accompaniment to poi, usually meat, fish, or vegetable; to serve as ʻīnaʻi. *Fig.*, to flavor, garnish, spice.

ʻina.mona
n. Relish made of the cooked kernel of candlenut (kukui) mashed with salt (perhaps a contraction of ʻīnaʻi momona, sweet garnish). (Neal 506.) Also ʻakimona.

kaha.wai
n. Stream, creek, river; valley, ravine, gulch, whether wet or dry.

kaha.kai
loc.n. Beach, seashore, seacoast, seaside strand.

kā.heka
n. Pool, especially a rock basin where the sea washes in through an opening and salt forms; salt pan.

kahiki
1. n. Tahiti. Cf. *holokahiki*. Holo i Kahiki, sail to Tahiti. The sky was divided (Malo 10) into five areas beginning with the term Kahiki: Kahiki-moe, horizon; *lit.*, prostrate Kahiki. Kahiki-kū, sky just above the horizon; *lit.*, upright Kahiki. Kahiki-ka-papa-nuʻu, the next layer; *lit.*, Kahiki the elevated stratum. Kahikikapapa-lani, high in the sky, almost directly overhead; *lit.*, Kahiki the sky (or god) stratum. Kahiki-kapu-i-Hōlani-ke-kuʻina, the sky directly overhead; *lit.*, sacred Kahiki at Hōlani the meeting place.
2. *(Not cap.)* nvs. Any foreign country, abroad, foreign. (PCP tafiti.)
3. n. A variety of banana, common wild on Maui. Kinds are kahiki hae, kahiki mauki, and kahiki puhi.

kahiko
nvs. Old, ancient, antique, primitive, long ago, beforehand; to age; old person. Wā kahiko, old times. Wahi a kahiko (Kel. 50), said the old people.

kahuna
nvi. Priest, sorcerer, magician, wizard, minister, expert in any profession (whether male or female).

kalo
n. Taro (Colocasia esculenta), a kind of aroid cultivated since ancient times for food, spreading widely from the tropics of the Old World. In Hawaiʻi, taro has been the staple from earliest times to the present,

and here its culture developed greatly, including more than 300 forms. All parts of the plant are eaten, its starchy root principally as poi, and its leaves as lū‘au. It is a perennial herb consisting of a cluster of long-stemmed, heart-shaped leaves rising 30 cm. or more from underground tubers or corms.

kama.‘āina
nvi. Native-born, one born in a place, host; native plant; acquainted, familiar, *Lit.*, land child.

kanaka
nvs. Human being, man, person, individual, party, mankind, population; subject, as of a chief; laborer, servant, helper; attendant or retainer in a family.

kā.nā.wai
nvs. Law, code, rule, statute, act, regulation, ordinance, decree, edict; legal; to obey a law; to be prohibited; to learn from experience.

kāne
1. n. Male, husband, male sweetheart, man; brother-in-law of a woman; male, masculine; to be a husband or brother-in-law of a woman.
2. *(Cap.)* n. The leading of the four great Hawaiian gods.
3. *(Cap.)* n. Name of the 27th night of the lunar month.
4. *(Cap.)*n. Name of a sacred star.

Kapu
nvs. Taboo, prohibition; special privilege or exemption from ordinary taboo; sacredness; prohibited, forbidden; sacred, holy, consecrated; no trespassing, keep out.

keiki
1. nvi. Child, offspring, descendant, progeny, boy, youngster, son, lad, nephew, son of a dear friend; calf, colt, kid, cub; worker; shoot or sucker, as of taro; to have or obtain a child; to be or become a child. Cf. *keiki kāne*. Kāu keiki, your son. Keiki a ka pueo, child of the owl [one whose father is not known]. Keiki hānau o ka ‘āina, a native son, one born on the land.

kī
1. n. Ti, a woody plant (Cordyline terminalis) in the lily family, native to tropical Asia and Australia. It consists of a branched or unbranched, slender, ringed stem, ending in a cluster of narrow-oblong, leaves 30 to 60 cm long, from among which at times rises a large panicle of small, light-colored flowers. The leaves were put to many uses by the Hawaiians, as for house thatch, food wrappers, hula skirts, sandals; the thick, sweet roots were baked for food or distilled for brandy. (Neal 203-4.) Besides green-leaved tis, which rarely fruit, many ornamental varieties are grown in gardens, having leaves wide to narrow, large to small, the colors purple, crimson, scarlet, rust, pink, or green, striped or plain. Red tis may have red flowers and berries. Green ti leaves are still believed to afford protection from spirits and to purify a menstruating woman.

kilo
nvt. Stargazer, reader of omens, seer, astrologer, necromancer; kind of looking glass **(rare)**; to watch closely, spy, examine, look around, observe, forecast. Kilo i `a, Fish spotter.

kino lau
n. Many forms taken by a supernatural body

ko`i.honua
nvi. Genealogical chant; to sing such chants.

kona
nvs. Leeward sides of the Hawaiian Islands; leeward (PPN Tonga.) 2. nvi. A famous leeward wind; to blow, of this wind. Many names of Kona winds follow. See ex., *Kapakū*. 3. n. Name of a star.

kono.hiki
n. Headman of an ahupua‘a land division under the chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

ko‘o.lau
n. Windward sides of the Hawaiian Islands. 2. *(Not cap.)* Short for ko‘oko‘olau. 3. Wind between Ni‘ihau and Kaua‘i. (For. 5:95.)

kope
1. nvt. Rake, shovel (Nah. 4.14), dredge; to rake, scratch; scoop, as of a canoe paddle (For. 5:557). Fig., to dislike, disregard. Moku kope awa, harbor dredge. (PPN tope.)
2. n. Coffee, coffee beans. *Eng.* Kope lā, sun-dried coffee beans. Kope wai, fresh, undried coffee beans in the hull.
3. nvt. Copy, duplicate; to copy or duplicate. *Eng.* Cf. *ponokope*. Ke‘ena kākau kope, copyright office; office where deeds are copied.

kua.hiwi
n. Mountain, high hill.

kua.lono
1. n. Region near the mountaintop, ridge.
2. vt. To overturn, as an unfinished canoe. *Rare*.

kū.kā
nvi. Consultation, discussion; to consult, confer, discuss, deliberate. Cf. *kūkākūkā*.

kukui
n. 1. Candlenut tree (Aleurites moluccana), a large tree in the spurge family bearing nuts containing while, oily kernels which were formerly used for lights; hence the tree is a symbol of enlightenment. The nuts are

still cooked for a relish (‘inamona). The soft wood was used for canoes, and gum from the bark for painting tapa; black dye was obtained from nut coats and from roots, (Nuts were chewed and spat into the sea by men fishing with nets for parrot fish (kākā uhu) in order to calm the sea (FS 38–9): see ex., *pili* 1). Polished nuts are strung in leis; the silvery leaves and small white flowers are strung in leis as representative of Moloka‘i, as designated in 1923 by the Territorial legislature. The kukui was named the

kukui
official emblem for the State of Hawaii in 1959 because of its many uses and its symbolic value. Kukui is one of the plant forms of Kama-pua‘a that comes to help him (FS 215). Called kuikui on Ni‘ihau. (Neal 504–7.) See *lei kukui*. He ali‘i no ka malu kukui, a chief of the candlenut shade [chief of uncertain genealogy].
2. Lamp, light, torch. Fig., guide, leader.

hale ipu.kukui
n. Lighthouse

kula
1.n. Plain, field, open country, pasture. An act of 1884 distinguished dry or kula land from wet or taro land. 2. n. Source; container. 3. n. Basket-like fish trap. *Rare*. 4. nvi. School, academy; to teach school, go to school; to hold school or class sessions. 5. Also gula nvs. Gold; golden. *Eng.*

kulā.iwi
nvs. Native land, homeland; native. Cf. *iwi*, *‘ōiwi*. Ku‘u home kulāiwi, my own homeland.

kule.ana
nvt. Right, privilege, concern, responsibility, title, business, property, estate, portion, jurisdiction, authority, liability, interest, claim, ownership, tenure, affair, province; reason, cause, function, justification; small piece of property, as within an ahupua‘a; blood relative through whom a relationship to less close relatives is traced, as to in-laws.

kupuna
n. 1. Grandparent, ancestor, relative or close friend of the grandparent's generation, grandaunt, granduncle. ho‘o.kupuna To take a person as a grandparent or grandaunt or granduncle because of affection; an adopted grandparent; to act as a grandparent. (PPN tupuna.)
2. Starting point, source; growing.

kūpuna
Plural of kupuna 1. Mai nā kūpuna mai, from the ancestors, traditional. Pili ma nā kūpuna, related through a common ancestor. (PCP tuupuna.)

kumu
n.1. Bottom, base, foundation, basis, title (as to land), main stalk of a tree, trunk, handle, root (in arithmetic); basic; hereditary, fundamental. Kumupali, base foot of a cliff. ‘Ike kumu, basic, fundamental knowledge. Ali‘i kumu, hereditary chief. Alanui kumu, main street. ‘Auikumu, nominative case. Kumu

kāhili, staff of a kāhili. Kumu nalu, source of waves, as where surfing starts. Mai ke kumu ā ka wēlau, from trunk to tip [all, entirely]. (PPN tumu.)

2. Teacher, tutor, manual, primer, model, pattern. Kumu alakaʻi, guide, model, example. Kaʻu kumu, my teacher. Kumu hoʻohālike, pattern, example, model. Kumu hula, hula teacher. Kumu kuʻi, boxing teacher. 3. Beginning, source, origin; starting point of plaiting. hoʻo.kumu To make a beginning, originate, create, commence, establish, inaugurate, initiate, institute, found, start.

kumu

4. Reason, cause, goal, justification, motive, grounds, purpose, object, why. Kumu no ka ʻoki male, grounds for divorce. Kumu ʻole, without reason or cause.

kuʻuna

1. nvs. Slope of a hill; let down, descended. *Fig.*, traditional, hereditary. Maʻi kuʻuna, inherited disease 2. n. Place where a net is set in the sea; to let down a fish net. 3. vs. Relaxed, relieved. Kuʻuna ka naʻau, the heart is relieved.

lā

1. nvs. Sun, sun heat; sunny, solar. See ex., *lolo*, brain. hoʻo.lā To sun, put out in the sunlight. (PPN ʻlaʻaa.)
2. n. Day, date. Kēia lā, today. Lāpule, Sunday. Ia lā aʻe, ia lā aʻe, from day to day. Ka lā i ala hou ai ka Haku, the day the Lord rose; Easter (Protestant). Poʻe Hoʻāno o nā Lā Hope Nei, Latter-Day Saints; *lit.*, saint people of these last days. Lā kākou i kēia lā, we have much sun today. (PEP laa.)
3. n. A sail. (PPN laa.)
4. n. Fin. Kua lā, dorsal fin. Cf. *lālākea*.
5. n. Each of two cross sticks holding corners of the dip net called ʻupena ʻākiʻikiʻi.
6. Common demon. occurring after both nouns and verbs, and as the last part of the demon. kēlā that (far, see table 12 in Gram. 7.2) and pēlā, like that; following directionals it is usually unstressed and written as the concluding part of the directional (aʻela, akula, ihola, maila). It occurs also in the sequence ua (noun) lā, that aforementioned. A var. is ala 4. (Gram. 7.4.) He kanaka kēlā, that's a human. Maikaʻi pēlā, [it's] good that way. Hele maila ʻoia, he came. Ua kanaka lā, that aforementioned person. (PNP laa.)
7. Part. expressing doubt, uncertainty. See Gram. 7.5. Pehea lā! How, I don't know.
8. n. The letter "l". *Eng.*
9. n. Sixth note on the musical scale, la. *Eng.*
10. interj. Common refrain in songs, as in Elbert and Mahoe 90.

lā.ʻau

nvs. Tree, plant, wood, timber, forest, stick, pole, rod, splinter, thicket, club; blow or stroke of a club; strength, rigidness, hardness; male erection; to have formed mature wood, as of a seedling; wooden, woody; stiff, as wood. Kumulāʻau, tree.

lā.ʻau lapa.ʻau

n. Medicine. *Lit.*, curing medicine

lae
1.n. Forehead, brow. Nalulu ka lae, to have a headache. (PPN laʻe.)
2. Cape, headland, point, promontory. (PEP laʻe.)
3. Wisdom; mental or emotional qualities

lawaiʻa
1. nvi. Fisherman; fishing technique; to fish, to catch fish. ʻO ka hī aku ka lawaiʻa nui a ʻUmi-a-Līloa (FS 173), casting for bonito was ʻUmi-a-Līloa's principal means of fishing. (PCP lawaika).
2. *(Cap.)* n. Name of a group of seven stars.

limu
n. A general name for all kinds of plants living under water, both fresh and salt, also algae growing in any damp place in the air, as on the ground, on rocks, and on other plants; also mosses, liverworts, lichens.

loea
nvs. Skill, ingenuity, cleverness; expert, clever, ingenious, adept, deft, technical, skillful, dexterous, handy, skilled; skilled person. ʻIke loea, technical knowledge, knowledge of skills.

loʻi
n. Irrigated terrace, especially for taro, but also for rice; paddy.

lomi.lomi
Redup. of lomi; masseur, masseuse.

lono
1.n. News, report, tidings, remembrance (Kanl. 32.26), rumor (sometimes formerly preceded by ke). Kuʻi ka lono, the news spread. hoʻo.lono To listen, hear, obey; obedient, attentive. Kuʻi ka lono i Pelekane, hoʻolono ke kuini o Palani (song), the news spread to England, the queen of France heard. (PPN rongo.)
2. *(Cap.)* One of the four major gods brought from Kahiki.
3. *(Cap.)* The 28th day of the lunar month. (PEP Longo.)
4. *(Cap.)* Name of a star.

mahalo
nvt. 1. Thanks, gratitude; to thank. Mahalo nui loa, thanks [you] very much. ʻŌlelo mahalo, compliment. Mahalo ā nui, thanks very much. (PPN masalo.)
2. Admiration, praise, esteem, regards, respects; to admire, praise, appreciate.

māhele
Division, piece, portion, department, category, part, land division; to divide, apportion.

mahi ʻai
nvt. Farmer, planter; to farm, cultivate; agricultural. ʻOihana mahi ʻai, agricultural industry, farming.

mahina
1.n. Moon, month; moonlight.
2.n. Crescent-shaped fishhook.

mai.kaʻi
nvs. Good, fine, all right, well; good-looking; handsome, beautiful; goodness, righteousness, benefit, well-being, morality; good looks, good health.

maka.ʻāi.nana
n. Commoner, populace, people in general; citizen, subject. Cf. lunamaka ʻāinana. *Lit.*, people that attend the land.

makani
nvs. Wind, breeze; gas in the stomach, flatulent wind; windy; to blow. Fig. anger, gossip; to show anger. Cf. *ani*. Makani nui, strong wind, gale. Makani ʻoluʻolu, fair wind.

makua
nvs. Parent, any relative of the parents' generation, as uncle, aunt, cousin; progenitor; Catholic father; main stalk of a plant; adult; full-grown, mature, older, senior. *Fig.*, benefactor, provider, anyone who cares for one. Mākua - plural.

māla
n. Garden, plantation, patch, cultivated field, as māla ʻai, māla kalo, māla kō, māla kūlina.

mā.lama
nvt. To take care of, tend, attend, care for, preserve, protect, beware, save, maintain; to keep or observe, as a taboo; to conduct, as a service; to serve, honor, as God; care, preservation, support, fidelity, loyalty; custodian, caretaker, keeper.

malo
1.n. Male's loincloth
2.n. Leaf sheath that protects the young leaves of the breadfruit tree, sometimes called malo ʻulu.

maloʻo
nvs. Dry, dried up, evaporated, juiceless, desiccated; stale, as bread; drought, dryness. hoʻo.maloʻo To dry out.

mana
nvs. Supernatural or divine power, mana, miraculous power; a powerful nation, authority; to give mana to, to make powerful; to have mana, power, authority; authorization, privilege; miraculous, divinely powerful, spiritual; possessed of mana, power.

māna.leo
n. Native speaker. *Lit.*, voice of authority.

mele
nvt. Song, anthem, or chant of any kind; poem, poetry; to sing, chant (preceded by both ke and ka).

mihi
nvt. Repentance, remorse; to repent, apologize, be sorry, contrite; to regret; to confess, as to a priest.

mina.mina
1. nvt. To regret, be sorry, deplore; to grieve for something that is lost; regret, sorrow.

2. To prize greatly, value greatly, especially of something in danger of being lost; to value, place great value on; value, worth.

moku
1. vs. To be cut, severed, amputated, broken in two, as a rope; broken loose, as a stream after heavy rains, or as a bound person; to punctuate. **2. n. District, island, islet, section,** forest, grove, clump, severed portion, fragment, cut, laceration, scene in a play. Cf. *mokupuni*, *momoku*. Moku lehua, lehua forest. 3. n. Ship, schooner, vessel, boat, said to be so called because the first European ships suggested islands. Many types are listed below. 4. n. A stage of pounded poi (such poi sticks together as a mass and can be separated cleanly (moku) from the pounding board). (Kep. 165.)

moʻo
1. n. Lizard, reptile of any kind, dragon, serpent; water spirit
2. n. Succession, series, especially a genealogical line, lineage.
3. n.Story, tradition, legend (less common than moʻolelo).
4. n. Narrow strip of land, smaller than an ʻili. Also moʻo ʻāina.
5. n. Small fragment, as of tapa, not attached to a large piece. Cf. *moʻomoʻo*.
6. n. Narrow path, track; raised surface extending lengthwise between irrigation streamlets.
7. n. Ridge, as of a mountain. Moʻo muku, ridge that is cut off.
8. n. Young, as of pigs, dogs; grandchild. Kuʻu moʻo lei, my beloved grandchild.

moʻokūʻauhau
kik Genealogy. Dic., sp. var. Moʻolelo moʻokūʻauhau. Genealogical story.

moʻo.lelo
n.. Story, tale, myth, history, tradition, literature, legend, journal, log, yarn, fable, essay, chronicle, record, article; minutes, as of a meeting. (From moʻo ʻōlelo, succession of talk; all stories were oral, not written.)

naʻau.ao
nvs. Learned, enlightened, intelligent, wise; learning, knowledge, wisdom, science. *Lit.*, daylight mind.

nā.nā
vt. To look at, observe, see, notice, inspect; to care for, pay attention to, take care of. Cf. *kūnānā*, *nānā ʻole*. Mai nānā i kānā ʻōlelo, don't pay any attention to what he says. He keiki nānā mākua, a son who cares for his parents.

niu
1. n. The coconut (Cocos nucifera), a common palm in tropical islands of the Pacific and warm parts of eastern Asia; coconut meat or oil. Hawaiians used all parts of the tree. (Neal 119–2l.) Coconut water and coconut cream (the white liquid squeezed front ripegrated coconuts) were both called wai niu and wai o ka niu. In For. 5:596 niu ā wali was translated 'milk of the coconut'.
2. vs. Spinning, whirling, dizzy. Cf. *niniu*, *niua*, *niuniu*, *make ulu niu*.

no'e.au
vs. Clever, skillful, dexterous, wise, artistic, talented, expert, technical. 'Ōlelo no'eau, wise or entertaining proverb, saying. He wahine no'eau i ka haku lei hulu, a woman skillful at making feather leis.

noni
n. The Indian mulberry (Morinda citrifolia), a small tree or shrub in the coffee family, a native of Asia, Australia, and islands of the Pacific. Leaves are large, shiny, deep-veined. Many small flowers are borne on round heads, which become pale-yellow unpleasant-tasting fruits. Formerly Hawaiians obtained dyes and medicine from many parts of the tree.

nuku
n. Beak, snout, tip, end; spout, beak of a pitcher; mouth or entrance, as of a harbor, river, or mountain pass or gap.

'ohana
1. nvs. Family, relative, kin group; related. 'Ohana holo'oko'a, 'ohana nui, extended family, clan.
2. vi. To gather for family prayers (short for pule 'ohana).

'ohe
n. 1. All kinds of bamboo; reed (Mat. 27.48); flute; pipe, hose, tube; bamboo tube for preserving fish.
2. A coarse, jointed, native grass (Isachne distichophylla), to 190 cm high, with stiff, pointed leaves and open flowering panicle.
3. A native bamboo-like plant (Joinvillea ascendens), with stem about 3 m high, 2.5 cm or less in diameter, unbranched; leaf blades 60 to 90 cm by 8 to 13 cm, pointed and plaited; flowering panicle about 30 cm long. (Neal 166.)
4. A native tree (Reynoldsia sandwicesis), an araliad, with leaves about 30 cm long, each leaf with seven to eleven broad leaflets with scalloped edges. (Neal 652.) The wood of this kind of tree growing at Mauna Loa, Moloka'i, was reputed to be poisonous, was used for making poison images, and is the tree form of Kapo, a goddess. See *kālaipāhoa*, *kauila*. This tree growing elsewhere was not considered poisonous and was used for making stilts, hence it was also called 'ohe kukuluae'o or 'ohe-o-kai or 'ohe-ma-kai.
5. A native variety of taro, thriving at altitudes above 450 m; leaf stem light-green, tinged with reddish-brown (perhaps like some variety of bamboo); the corm pink-tinted, making excellent poi. (Whitney 58.) The term may be qualified by the colors 'ele'ele, kea or ke'oke'o, 'ula'ula. Lele nō ka 'ohe i kona lua, the 'ohe leaps into its hole [a legendary reference; each in his own place].
6. Variety of fish (no data).

ʻō.iwi
1. nvs. Native, native son. Cf. *iwi*, bone; kulāiwi. Hui ʻōiwi, society of native sons. ho.ʻō.iwi To pass oneself off as a native son; like a native son. (PCP kooiwi.)
2. nvi. Physique, appearance; to appear. Lamalama ka ʻōiwi, a physique glowing with health. Maikaʻi hoʻi kō ia ala ʻōiwi kino, he certainly has a fine physique.

ola
nvs. Life, health, well-being, living, livelihood, means of support, salvation; alive, living; curable, spared, recovered; healed; to live; to spare, save, heal, grant life, survive, thrive.

ʻō.lelo
nvt. Language, speech, word, quotation, statement, utterance, term, tidings; to speak, say, state, talk, mention, quote, converse, tell; oral, verbatim, verbal, motion.

oli
nvt. Chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill (ʻiʻi) at the end of each phrase; to chant thus.

ʻō.lohe
1. vs. Bare, naked, barren; hairless, as a dog; bald; destitute, needy. Ka lua ʻōlohe o ke ālialia, the barren pit of the salt marsh. ho.ʻō.lohe Caus/sim.
2. nvs. Skilled, especially in lua fighting, so called perhaps because the beards of lua fighters were plucked and their bodies greased; bones of hairless men were desired for fish hooks because such men were thought stronger; also said of hula experts; skilled fighter.

ʻō.pae
n. General name for shrimp. For some persons, ʻōpae were ʻaumakua.

ʻō.pio
nvs. Youth, juvenile; youngster; young, junior.

paea.ea
nvi. 1. To fish with a light pole affshore; polefishing. 2. nvi. A chant of supplication; to chant thus, perhaps so called as a means of "fishing" for something.

pā.ea.ea
1. vs. Smooth, calm, as the sea. 2. n. A variety of fish mentioned as having sharp protuberances (Malo 46).
3. vt. To signal with the arms. *Rare*.

pali
nvs., nvi. Cliff, precipice, steep hill or slope suitable for olonā or wauke; full of cliffs; to be a cliff. *Fig.*, an obstacle, difficulty; haughty or disdainful.

Pele
1. nvs. Lava flow, volcano, eruption; volcanic (named for the volcano goddess, Pele.
2. vs. Soft, swollen, fat; pounded or kneaded soft, as poi or dough.
3. n. Choice Kaua‘i tapa (FS 252–3), scented with maile and kūpaoa, said to be gray and dyed with charcoal made of burned sugar cane mixed with coconut water (preceded by ke). Pele ‘iliahi (GP 8), pele tapa scented with sandalwood and associated with Kahana, Kaua‘i.
4. vs. A term qualifying ko‘i (adze), similar to kūpele.

pili
nvi. To cling, stick, adhere, touch, join, adjoin, cleave to, associate with, be with, be close or adjacent; clinging, sticking; close relationship, relative; thing belonging to.

pō.haku
nvs. Rock, stone, mineral, tablet; sinker; thunder; rocky, stony.

poke
nvt. To slice, cut crosswise into pieces, as fish or wood; to press out, as the core of a boil (Kam. 64:105) or the meat of an ‘opihi shell; section, slice, piece.

pono
nvs. Goodness, uprightness, morality, moral qualities, correct or proper procedure, excellence, well-being, prosperity, welfare, benefit, behalf, equity, sake, true condition or nature, duty; moral, fitting, proper, righteous, right, upright, just, virtuous, fair, beneficial, successful, in perfect order, accurate, correct, eased, relieved; should, ought, must, necessary.

pōpō ‘auhuhu
Term used in the traditional fishing method of hola. Same as `auhuhu. **pō.pō** 1. nvt. Ball, round mass, wad; cluster, bunch, as of flowers; to shape or wad up into a ball or bundle; baskets of ‘ie‘ie vine as used by nehu fishermen to collect nehu (For. 6:481). Cf. *kinipōpō*, *Pōpō-kapa*, *Pōpōua*. ho‘o.pō.pō To shape or wad into a ball. (PCP poopoo.)

pule
nvt. Prayer, magic spell, incantation, blessing, grace, church service, church; to pray, worship, say grace, ask a blessing, cast a spell.

puna
1. n. Spring (of water). Cf. *pūnāwai*. 2. n. Coral, lime, plaster, mortar, whitewash, calcium; coral container, as for dye, coral rubber. 3. n. Section between joints or nodes, as of bamboo or sugar cane. 4. n. Cuttlebone, as of octopus. 5. Short for kupuna as a term of address. 6. Short for punalua. ho‘o.puna Same as ho‘opunalua. 7. vi. To paddle with the hands, as to start a surfboard on its way to catch a wave. *Rare*. 8. n. Spoon (preceded by ke).

Puna is also land term given to a large district generally located on the eastern side of various Hawaiian Islands. Oftentimes, the district is abundant with fresh water springs and resources including vast rivers, streams and tributaries. On Kaua`i, the Puna district formerly included lands from the northside of Hā`upu Mountain all the way to the south border of the ahupua`a of Hanalei.

ʻuala, ʻuwala
n. The sweet potato (Ipomoea batatas), a perennial, wide-spreading vine, with heart-shaped, angled, or lobed leaves and pinkish-lavender flowers. The tuberous roots are a valuable food, and they vary greatly in many ways, as in color and shape.

waʻa
1.n. Canoe, rough-hewn canoe, canoemen, paddlers; a chant in praise of a chief's canoe.
2.n. Trench, furrow, receptacle. *Fig.*, a woman. (PCP waka-.)
3. Moving masses of liquid lava, so called because of similarity to a moving canoe. *Rare*.

waʻa
4. Same as more common waʻawaʻa.

wahi
n. Place, location, position, site, setting.

wahine
nvs. Woman, lady, wife; sister-in-law, female cousin-in-law of a man; queen in a deck of cards; womanliness, female, femininity; feminine; Mrs.; to have or obtain a wahine; to become a woman, as an adolescent. In some chants, as those about Pele, the word wahine has a connotation of goddess.

Wākea or ā.kea
1. nvs. Broad, wide, spacious, open, unobstructed, public, at large; full, as a skirt; breadth, width. *Fig.*, liberal. Piliwaiwai ākea, open gambling. Ākea ka noʻonoʻo, broad-minded. Hōʻike ākea, a public report; to lay before the public. Ke hoʻolaha ʻia aku nei ma ke ākea, there is being widely advertised hereby. hoʻā.kea To widen, broaden, extend, enlarge, make public; broadening, expansion; extension; to escape *(rare)*.
2. *(Cap.)* n. Var. ofWākea

wahi pana
n. Legendary place.

wai
1. nvs. Water, liquid or liquor of any kind other than sea water (see ex., *koni*), juice, sap, honey; liquids discharged from the body, as blood, semen; color, dye, pattern; to flow, like water, fluid.
2. **(Cap.)** n. Place names beginning with Wai-, river, stream. Ka Wai Hālau O Wailua, a poetic name for Wailua, Kaua`i. Wai-lua, Wai-`ale`ale, Wai-koko, Wai-pā, Wai-mea, etc.
3. (Also spelled ai.) interr. pronoun; Who, whom, whose, what (animate antecedents). (Gram. 8.5.) ʻO wai! Who? ʻO wai kou inoa? What is your name? ʻO wai ia? Who is he? (angrily) Who does he think he is? Kō wai, kā wai? Whose? No wai? For or in honor of whom? Na wai? Bywhom?

wai.ū n. Milk; a wet nurse; breast. *Lit.*, breast liquid. Kau ka waiū, breasts filled with milk. Keiki waiū, nursing child. Hoʻokau i ka waiū, to perform ceremonies to make the breasts fill with milk. Lele ka waiū, breast milk has ceased to flow. Hoʻolele i ka waiū, to perform ceremonies to make the breast cease flowing. Kawaiūmakua is a pu`u that is part of the Kalalea mountain range that measures 1,670 feet high.

Wauke n. The paper mulberry (Broussonetia papyrifera), a small tree or shrub, from eastern Asia, known throughout the Pacific for its usefulness. It belongs to the fig or mulberry family. The bark was made into tough tapa used for clothing, bed clothes; it lasted longer than māmaki tapa.

Introduction

At the request of Michael Gearon, Exploration Associates (EAL) conducted a Cultural Impact Assessment (CIA) of a 14.109-acre parcel (TMK (4) 5-4-004:032 which is in the Hanalei Ahupua`a, Hanalei District on Kaua`i Island (Figures 1 - 3). Hereinafter referred to as "*project area and/or the subject property".* The subject property is located at Kūhiō Highway at the intersection of Hanalei Plantation Road in Princeville, Island of Kaua`i, Hawai`i. The subject property is located approximately 280 feet above mean sea level at it's highest elevation down to about 40 feet above mean sea level at it's lowest elevation. The property is located on adjacent to, and mauka of Kūhiō Highway Route 560, just west of the Hanalei Valley Lookout owned by the US Fish and Wildlife Service. The property is bordered to the north, west and south by Kūhiō Highway Route 560, also known as Kauia's Belt Road, which is listed a Historic District on the National Register of Historic Places and includes the Hanalei Overlook, culverts and the Hanalei Bridge which is just below this subject property. The Hanalei Bridge is also on the State and National Register of Historic Places. The property to the to the west and throughout Hanalei Valley is owned by the US Fish and Wildlife Service and operated as Hanalei National Wildlife Refuge (HNWR). The HNWF is also listed as eligible for the National Register of Historic Places. To the north is in residential and commercial uses. The subject property includes all the land above the hairpin curve of Kūhiō Highway which leads down to Hanalei River and Hanalei town. There are no building or other structural improvements. The property is not serviced by any utilities other than a water meter.

The project requires compliance with the State of Hawai`i environmental review process [Hawai`i Revised Statutes (HRS) Chapter 13-343, which mandates consideration of a proposed project's effect on traditional Hawaiian practices and beliefs. This cultural impact assessment provides information pertinent to the evaluation of the proposed project's cultural impacts. Additionally, this CIA report provides documentation of the project's consultation efforts under applicable state historic preservation legislation.

Methodology

Methodologies guided by indigenous Hawaiian cultural perspectives and intellect were used to conduct this study. It is always imperative that traditional values of *aloha* and *hō`ihi* (sincerity, love and respect) are ever present in the actions of the research and investigative team that engages with the natural environments, resources, people and communities from which/whom information will be

gathered for this work. Special focus and attention is given to the examination of the land, water and atmospheric features that are applicable to the study project area and all lands and environments associated with it.

At the onset of this project, EAL entered this work with much enthusiasm and confidence of already "knowing" this place. Even with a limited window of time to conform to, EAL knew that only a little had been documented to bring forth the values and depth of traditional Hawaiian knowledge and customary practices of Hanalei's ancient past. Information and personal experiences that EAL possessed provided an advantage to accomplish the task of completing this cultural impact assessment study.

Much of the effort in conducting studies such as this is to review and evaluate the land allocated for the project area and any possible adverse influences and consequences relating to indigenous Hawaiian beliefs and practices. However, it would be negligent to limit, reduce or exclude a discussion on two of the most prominent components that are necessary and vital to this development project.

In the process of gathering, assembling and documenting information from our research and interviews, EAL realized there was a need to address and include a chronicle of events and cultural impacts associated with native Hawaiian land, resources and its people that dates back more than 192 years of history. Even though this development project did not contribute to any of this history, EAL strongly feel that ramifications and impacts that native Hawaiians face today because of it, are still attached to the land. For these reasons, EAL were pressed by our own conscience and ethics to present this history as part of the study.

Over the years, much has changed as the population has grown and the number of homes developed in Hanalei/Princeville has quadrupled. The winds with their characteristics that were known to our ancestors by specific names, still bring us comfort, rain and even challenges during stormy conditions. Hanalei is still a town community descended from a rich and vibrant Native Hawaiian culture and ancestors who knew this land these islands so intimately. The relationships they held with the natural world as divine and godly, influenced levels of consciousness that dictated every aspect of native Hawaiian life ways and cultural practices.

Scope of Work

1. Conduct in-depth research and examinations of historical documents, maps, archaic and historic period Hawaiian chants, mo`o `ōlelo or oral traditions, and any references related to or associated with the immediate and surrounding areas

2. Conduct field studies of the project area, and surrounding areas *ma uka* and *ma kai* (upland and seaward). This will include, but not be limited to

the ahupua`a or traditional land divisions of Hanalei and Halele'a.

3. Review existing and new archaeological information pertaining to the project site and all related areas will be perused in our quest to identify and describe cultural resources, traditional land use activities, spiritual and religious beliefs and customary practices.

4 Conduct interviews with Native Hawaiian cultural practitioners, elders and families knowledgeable about the historic and traditional practices in the project area and region. Such information may be obtained through individual, group and community meetings, as well as huaka`i or cultural site excursions with selected native Hawaiian kūpuna or elder informants, kumu hula or other experienced and seasoned practitioners and experts who have firsthand knowledge of religious, spiritual, cultural, healing, gathering or subsistence practices.

5. Upon conclusion of tasks 1 - 4, a cultural impact assessment will be prepared to report findings of the collective studies, including narrative summaries relating to Native Hawaiian customary practices, resources and land use. Compose a summary of findings and determination of the extent to which applicable resources, including traditional and customary Native Hawaiian rights and practices that will be affected or impaired by the project.

Environmental Setting

The parcel and project area sits within the Hanalei Ahupua'which is in the traditional district of Halele'a and the judicial district of Hanalei. Hanalei Ahupua'a encompasses 68.5 sq km of land and is present between latitudes 22°13' north and 22°4'30" south and longitudes 159°27'30" east and 159°31' west. It is bounded on the west by Wai`oli Ahupua`a and on the east by Kalihikai Ahupua'a. The ahupua'a is amphitheater-shaped, defined by the ridges surrounding the Hanalei River. Hanalei River is the largest stream system in the state (Federal Register 2002). The ahupua'a extends from sea level, north at Hanalei Bay, to the top of Mt. Wai'ale'ale (5,148 ft) in the south. Three-quarters of the ahupua'a lies in the Halele'a Forest Reserve. This valley is a typical windward valley with one large perennial stream, the Hanalei River, fed by many tributaries. "Perhaps 9 km inland, the valley widens somewhat and the stream begins to meander. Here there are considerable alluvial deposits in the bends of the stream" (Earle 1978:34). Alluvial floodplains are located on both sides of the river as it meanders down to Hanalei Bay. The annual rainfall of Hanalei ranges from 75 inches to as much as 450 inches at the summit of Wai'ale'ale, which is considered one of the world's rainiest areas (Foote et al. 1972:6).

The project area is on an east/west trending ridge known as Kaunu`ōpua or alternatively as Kauakaniunu (Kikuchi 1992:3) that turns toward the mouth of the Hanalei River to the west.

Kaunu`ōpua is a variation of the word kaulu which refers to high places such as a pali or cliff. In this case the word kaunu refers to a place high in the clouds. This would indicate it is one of the places in Papahulilani, where the heavens turn part of the Hawaiian universe. Papahulihonua is a power that turns phenomena associated with the earth, like the currents, volcanic eruptions, rivers, and streams. Therefore, Kaunu'opua translates as that place in the heavens where clouds are formed. It is said that this is the realm of Keaomelemele, the maiden of the golden clouds or the keeper of all cloud forms. Keaomelemele is fascinated with cloud forms and has a deep love for them. Kauakaniunu is the name of a rain and a westerly wind which forms in the cloud space and falls upon this ridge.

The generalization and clustering of traditional places to common districts (i.e. Anahola, Kapa`a, Līhu`e, etc.) has become acceptable, widespread practice in the western framework of identifying and relating to places on Kaua`i. Therein lays an example of how easily a traditional Hawaiian land area or division can be incorrectly identified, misunderstood and misinterpreted as a significant place of its own.

It is important to stress at the onset, that we all have a shared responsibility - for this and any future projects to advocate for the proper use and application of traditional Hawaiian place names and Hawaiian words. The continual use and application of traditional names of places are one of the fundamental ways in which to preserve knowledge and insight of important locations. Within Hawaiian names are contained history, stories, special phenomenon and characteristics about places. They preserve occurrences and observable facts and experiences associated with traditional places known to our kūpuna in times past. Today they are equally, if not more important to the present and future generations of Kaua`i and Hawai`i.

A considerable amount of focus is put toward the research of traditional places, their names and stories when preparing studies such as this. It is *minamina,* a sad and unfortunate loss when valuable information is lost or forgotten. There is an urgent need to preserve and pass on ancestral knowledge that was widely known just a few generations ago. Kaua`i's unique culture and heritage associated with traditional places are key to nurturing a sense of place and connectivity. It is a vital component to the health and wellbeing of native Hawaiians, as well as the perpetuation of native Hawaiian life ways and culture.

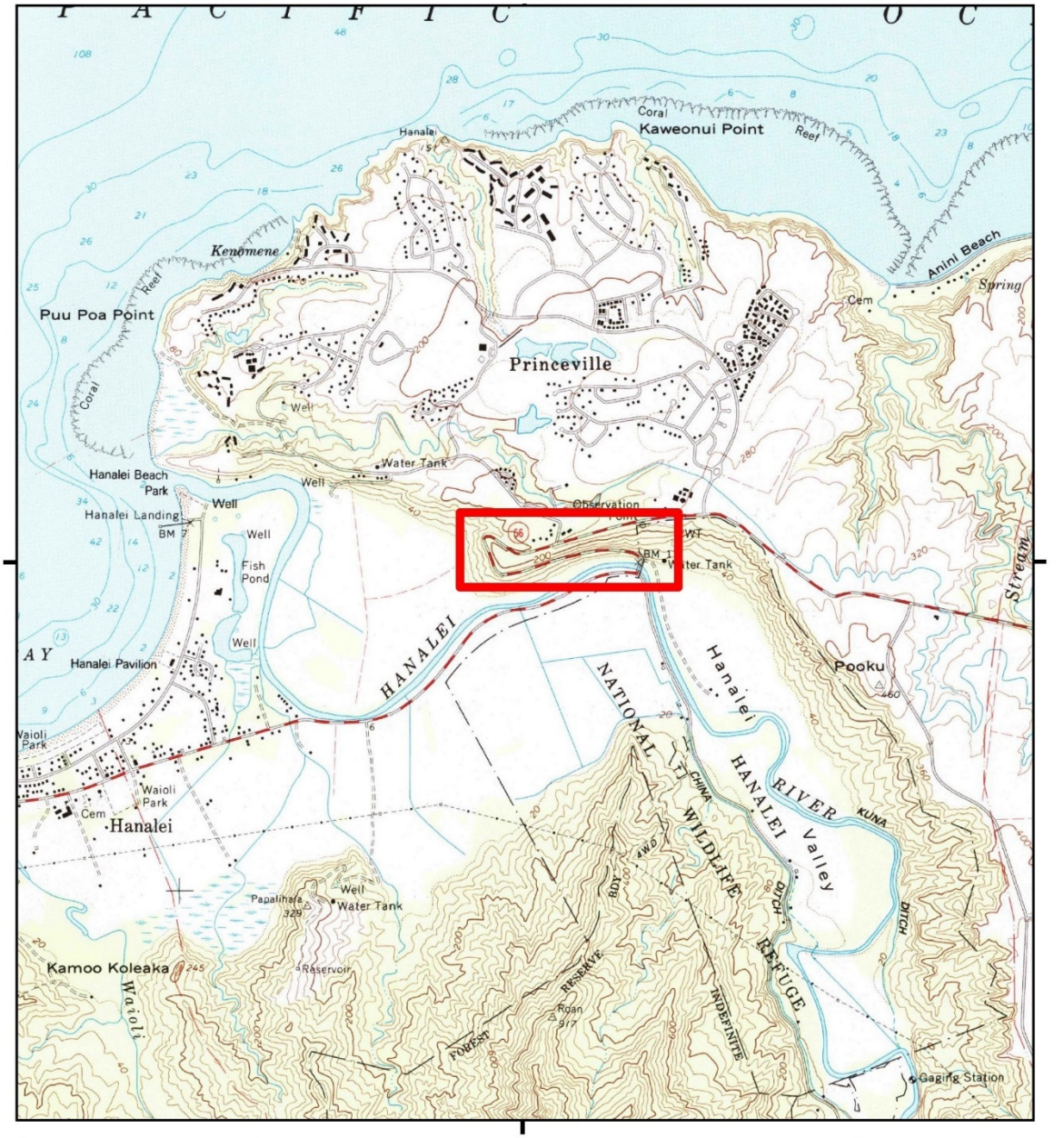
The Hawaiian tradition of name giving is a centuries-old custom that involves

process and purpose. In ancient times, personal possessions were few, but highly valued. A name however, was considered amongst the most prized possessions of all. As with any precious newborn child, names were given only after much careful thought, and observation.

The same is applicable for traditional places as well. Early Hawaiians gave names to mountains, mountain peaks, streams and valleys. They also gave names to forests, plains, taro patches and salt pans, as well as the various winds and rains that were to different locations and regions. Every promontory, reef, fish house and storied place had a name as well. Again, the land and ocean were considered the extended nature family that the Hawaiian people interacted and developed strong bonds with. It is the basis of the expressions - *mālama `āina* and *aloha `āina*, meaning to *"care for and have love for the land".*

It was not uncommon for names to be inspired or received through supernatural advice of departed ancestors, spirit guardians or gods. Prayer, meditation and ceremony were important to the process of name seeking and name giving. For names received in this manner did not only provide a unique individuality and identity for the receiver. It became a mainstay for the health, well-being and prosperity for the individual, home or place. There is a great sense of responsibility attached with a name once it is bestowed upon a person, place, object or project. Names are not simply "labels". Whether it is name for a person or a name for a place, they are honored and treated with aloha and pride.

What may appear as trifling and unimportant on the surface, are oftentimes filled with profound wonder. Halele'a and Hanalei are such places that continue to hold an abundance of history and inspiration.



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Hanalei, 1983, 7.5-minute

SITE NAME: Gearon Hanalei Property
ADDRESS: Not Reported
Princeville, HI 96722
CLIENT: Pacific Greene Environmental

N

Figure 1. USGS Maps of the Project Area



Figure 2. Aerial image indicating location of project area. Google Maps

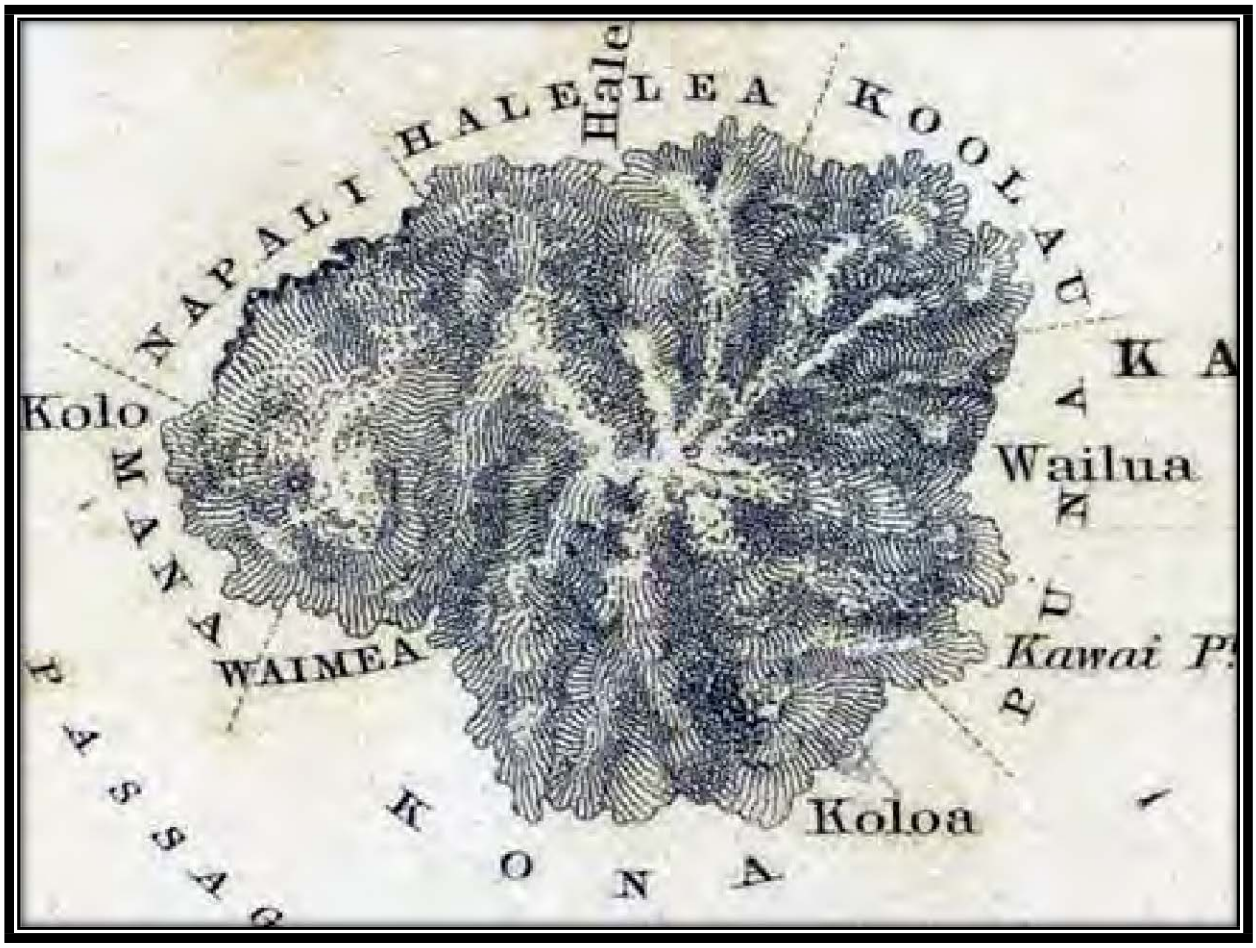


Figure 3. 1845 Map of Kaua`i by Charles Wilkes for U.S. Mapping Expedition. Note that it shows 6 moku or districts including Ko`olau, Halele`a, Nā Pali, Kona and Mānā. Typically, Kaua`i is dividied into 5 moku. Mānā is usually considered as part of the Kona moku.

Geologically, Kaua`i is the oldest of the main inhabited islands in the chain. It is also the northwestern-most island, with O`ahu as its closest volcanic sibling separated by the tempestuous Ka`ie`ie Channel which is more than 72 miles long. In centuries past, Kaua`i's isolation from the other islands kept it safe from outside invasion and unwarranted conflict.

Cultural Overview

Poetically the island is called, *"Manōkalanipō",* or *"Kaua`i a Manō"* after the ancient chief who was largely responsible for elevating Kaua`i's ancient society to sophisticated heights of advancement and productivity. For centuries, from the time of Manōkalanipō's reign, through Kamehameha's unsuccessful attempts to

invade Kaua`i in 1796 and 1804, Kaua`i remained free from warfare.

In 1810, Kaumuali`i accepted Kamehameha as the supreme ali`i by peacefully ceding Kaua`i to the newly United Kingdom of Hawai`i. With honor, Kaumuali`i was encouraged to return to rule on Kaua`i as its tributary chief under Kamehameha I.

In accordance with the ancient land division system, an entire island is referred to as a *mokupuni*. While the word, moku by itself can also mean island, it is a term that is more specifically used to identify a district. Puni means, *controlled, surrounded, to gain control of.* It comes from the word, *aupuni* which is used to describe a government, kingdom, dominion, nation, or population that is governed or under the leadership of a ruler. In ancient times, a mokupuni could include an entire island as well as multiple islands that was ruled by an Ali`i Nui or paramount chief. Historically, the mokupuni of Kaua`i has included the islands of Ni`ihau as well as Lehua.

Kaua`i Island has traditionally been divided into 5 moku including: Ko`olau, Halele`a, Nā Pali, Kona and Puna. The ali`i nui appointed *ali`i `ai moku* or district chiefs to manage the various moku.

Common district names that are universally used across of the Hawaiian archipelago include "Ko`olau" marking the windward sides of the islands; "Kona" - the leeward sides of the islands; and "Puna" - indicating regions where springs and fresh water abound.

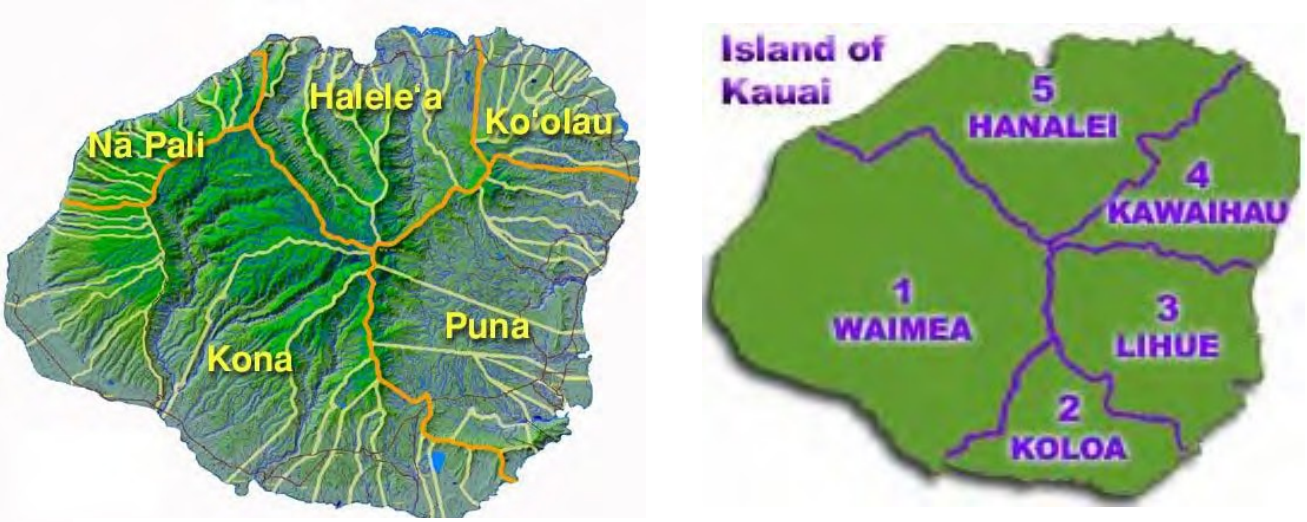


Figure 4 & 5 show Kaua`i Island Districts and Boundaries. Fig 4 on the left show the original moku of Ko`olau, Halele`a, Nā Pali, Kona and Puna. Fig 5 on the right show the revised boundaries and judicial land districts of Kawaihau, Hanalei, Waimea, Kōloa and Līhu`e.

The boundaries of the five moku on Kaua`i were changed in the late 1800s to reflect the present day judicial land districts. The Project Area is located in the Hanalei district upon land within the Hanalei ahupua`a.

Traditionally, the districts were further divided into smaller land divisions known as, *ahupua`a* which included the abundance of land and resources from the mountain to the sea. Under the direction of the ali`i `ai moku, the *ali`i `ai ahupua`a* or land division chief was put in charge of governing the ahupua`a. The ali`i `ai ahupua`a appointed *konohiki* who served as the headman of the ahupua`a land division, and was solely responsible for the management of land, water and fishing rights. An ingenious concept, the ancient design of the ahupua`a system continues to be an excellent model for sustainability and land and natural resource management today.

A major element of focus for this CIA is based on the `āina or land that is the project area, as well as surrounding lands and natural resources that are linked to the project area. It is important to readers of this CIA to have a basic understanding of the ancient land division system and the various words, terms and idioms associated with Hawaiian land designation and Hawaiian land use. This is especially helpful in identifying and relating to specific locations and place names that are pertinent to this study.

Kaua`i or Kau`ai?
Proper Pronunciation of Island

There has been on-going discussions and statements by many historians and long-time kama`āina families about the proper pronunciation of the name of this island. "*Kama`āina families*" is a term that are generally used for families descended from the post-contact missionary ancestors who settled in the Hawaiian Islands in the 1800s.

One of the tasks accomplished by the first company of missionaries that arrived in 1820 was to develop an alphabet and written form of the Hawaiian language using vowels and consonants. Out of necessity, many of them learned the language well enough to understand, speak and communicate with native Hawaiians.

This was a major milestone that quickly won the interest and favor of Kamehameha II and Ka`ahumanu who were the ruling chiefs of the time. They saw great value in education and the opportunity to transition from a century- old oral culture to a society with acquired skills in reading and writing. Not only in *`ōlelo haole* or English, but in *`ōlelo Hawai`i* or the Hawaiian language as well.

Elder non-Hawaiian kama`āina claim that the correct pronunciation for the island name is Kauai (with no diacritical markings). Phonetically, they pronounce the name as, *"Cow-why".* Some pronounced the island as*, Kau`ai (Cow-eye)* with the `okina or glottal stop on the second syllable of the word; reasoning that it means, *"season of food and of plenty*" because people never experienced famine due to the bountiful water resources. Contrary to this claim and the fact that Kaua`i is abundant with annual measures of rainfall and fresh water, there are many accounts of sustainability hardships endured in times past.

In researching many oral history recordings preserved in the Bishop Museum Archives in Honolulu, O`ahu of interviews with native Hawaiian elders on Kaua`i between 1959 - 1968. Led by Bishop Musem's primary interviewer and Hawaiian expert and scholar, Mary Kawena Pukui, majority of the recorded discussions were conducted in Hawaiian. Native Hawaiian interviewees from Kaua`i included all pronounce the island name as Kaua`i.

In another recording of a Bishop Museum Interview, Mary Kawena Pukui poses the same question separately to two different kūpuna if Kaua`i is the correct pronunciation. They confirm that it is.

Translation of traditional Hawaiian place names

For this study, EAL has made special effort to expand upon the various place names associated with the immediate project area as well as the extended land areas that include the ahupua`a of Hanalei. It was important that EAL not only limit ourselves to the written literature and documents available.

EAL made several field visits to various sites to look at land, ocean and atmospheric traits, and spoke with Native Hawaiian kūpuna and informant kama`āina who are intimately familiar with the study locations.

Loosely translating Hawaiian place names from the pages of a dictionary is not good enough. One must go and see the lay of the land, see, touch and feel the textures of the native plants that grow at the different places, study and understand the directions and `*ano* or nature or manner of the wind and rain that are *pili* or connected to certain places, etc. All possible meanings are taken into consideration. In many cases, place names are connected not to just or there other, but to multiple meanings. Understanfing the imperative practice of taking different perspectives and views into account when processing an understanding of Hawaiian words, names and places. Literally, makawalu means, many, much, in great quantities. Sometimes used with implication of chiefly mana or energy. Literally translated it means *"eight eyes".* Makawalu is to take initiative of different

perspectives and approaches. It is to see and observe from different angles. It is also to foster the ability to perceive and articulate on the interrelationships and connectedness of mankind and the natural world.

Ancient Ahupua`a System:
Reciprocal Relationships of Land, Environment and Man



Figure 6.View of Hanalei Valley, View of Hawaiian Ahupua`a System.

One of the most remarkable concepts of ancient Hawaiian culture is the basic self-sustaining structure of the ancient Ahupua`a System. Shaped by the island's geography from the mountain to the sea, each ahupua`a was divided following the natural boundaries of the watershed. Abundant rainfall along with mountain aquifers provided fresh, clean water which flowed naturally and freely through realms designated for gods and man respectively. Nourishing and supporting all life forms, water was a sacred resource and manifestation of the god, Kāne to whom life and health was sanctified. The entire community took part in its proper

care and conservation of it. The ahupua`a contained all the resources that was needed to sustain the human community. There was the abundance of fish and seafood from the ocean, fertile lands for planting and farming upon the plains of kula lands, and timber and other resources from the upland forests for the building of structures and canoes.

The success of the ahupua`a was based on a belief system that emphasized Hawaiian spirituality that was extended to the entirety of the natural world which included the landscapes of land and ocean as well as the atmosphere. Nature forms that supplied nourishment and supplies for survival and existence were viewed as *kinolau* or manifestations of their deities themselves. i.e., specific plants used for healing and subsistence were body forms of certain major and minor gods because of its distinctive quality to cure or sustain.

> **"*Ahupua‘a* is holistic…**In Hawaiian culture, you had *kahuna* who knew the forests, knew the trees, knew the geology. The chiefs could draw upon the collective wisdom of the *kahuna* to help determine what was an appropriate construction project. Today, I see a modern *ahupua‘a*. It means using the knowledge and tools we have today. “
>
> "Some argue that using an *ahupua‘a* system today poses challenges simply because our society is not organized around subsistence, which was the whole premise of the *ahupua‘a* system. Others have said, how can you use an *ahupua‘a* system in modern Hawai‘i when we import 70% of our food? Moreover, the people within the *ahupua‘a* shared common resources, but today so many of these are now either degraded or sequestered in private lands.“
>
> “But if we look at the underlying values, principles, and practices, those have not changed. Certain accepted features are retained, even in Western law: water as a public trust resource, public access rights to forest, to hiking, to gathering. Those are acknowledged even in modern Western laws, especially in the State of Hawai‘i."
>
> Stephen Kubota
> Ahupua`a Action Alliance

Stewardship Versus Ownership

The concept of private land ownership was non-existent in pre-contact Hawai`i. Guided by a holistic worldview, ancient Hawaiian society was based on a subsistence economy that depended on proper stewardship of the land and resources. Tenure upon parcels of land called *kuleana* were extended to the *maka`āinānā* or common people to live and raise their families. Everyone shared in the stewardship of the greater ahupua`a which provided for sustainable

gathering, fishing and hunting purposes. There was often trading and sharing of resources between families and villages located along the coastal areas and those within the upper regions and valleys. Trading also occurred among various ahupua`a as well.

Stewardship practices were formalized through the kapu system which consisted of protocols and laws pertaining to the religious, political and cultural affairs of the chiefs and people. Overseen by konohiki chiefs and kāhuna (priests), regulations held in accordance with seasons and cycles. Spiritual-based kapu and rules not only governed the use of resources, but also for their conservation and restoration as well. Kānāwai (laws of the land) ensured that resources were shielded from squander and exploitation. Although viewed by foreigners and the outside world as excessively complex and restrictive, it is one of the earliest examples of environmental protectionism.

Paramount chiefs and the hierarchy of kāhuna or priests, were the spiritual conduits to the gods and petitioned for their success and wellbeing. Ali`i assigned konohiki to manage the ahupua`a on their behalf. The relationships were reciprocal and based on loyalty to care for, and increase the productivity of the land. Maka`āināna were not indentured to serve under any particular ali`i. If commoners were mistreated unfairly, or if the ali`i was greedy, they were free to move to another ahupua`a and take up residence under another chief.

I ali`i no ke ali`i i ke kānaka

A chief is a chief because of the people who serve him

This was often used as a reminder to a chief to consider his people

#531 `Ōlelo No`eau

An ali`i's success as a leader was dependent on the maka`āināna. Hence, it was important that the ali`i assured their happiness to maintain their loyalty. Ultimately, both commoner and chief held the `āina in deep regard.

He ali`i ka `āina, he kauwā ke kānaka

The land is a chief, man is its servant

Land has no need for man, but man needs the land and works it for a livelihood

#531 `Ōlelo No`eau

Ancient Hawaiians held familial connection with nature and the environment and understood that their relationships were reciprocal. As presented in `ōlelo no`eau #531 above, the land was viewed as chiefly.

Wahi Pana

Wahi pana are celebrated and storied places that illuminate generations of reciprocal connection and relationships between indigenous Hawaiians and the land and seascapes and natural resources that supported their existence. For well over two thousand years, native Hawaiians have held intimate bonds with their islands and special places upon them. Wahi pana continue to be integral, living components of a Hawaiian world view today.

Literally, the word *"wahi"* simple means, *"place or location". Pana* is defined as *"celebrated and storied"*. Another definition of the word, pana is, *"heartbeat or pulse".*

The latter, elevates and distinguishes a place as a wahi pana from any other ordinary location. Nature's forces, combined with the intangible spiritual energy source known to indigenous Hawaiians as mana are prevalent at many wahi pana throughout Hawai`i. Additionally, these wahi have specific stories, purpose and function that have influenced the lives of `ōiwi kānaka or Hawai`i's native people for myriad generations. Transmitted orally from generation to generation, their experiences have been preserved through mo`olelo (legends and stories), mele oli (chants), mele hula (dances) and `oihana Hawai`i (practices), maintaining memory and knowledge of places that should be honored and respected. Wahi pana are excellent teaching tools that continue to be extremely valuable today in its capacity to inform and demonstrate the cultural traditions, practices, values and beliefs of Hawai`i's ancestors and people.

Wahi pana vary. They include, but are not limited to sacred sites such as heiau, and ancient burial caves and burial grounds. Alluvial valley floors which were cleared for the construction of elaborate irrigated systems of lo`i terraces, as well as fishing grounds and surf sites in the ocean are wahi pana as well.
Mountain peaks, cliffs, valleys, rivers and streams too, have emerged over time as places of cultural importance.

All discernible features in every land division, district and island were given specific names that inspired life and meaning to these places as wahi pana. Every stream, spring, beach, fishing hole, reef, promontory, winds and rains, etc. all have names. These elements of nature provided the foundation for the creative and productive industries of the ancient Hawaiians.

The perpetuation of cultural practices and experiences held in close attachment to wahi pana and the reoccurring elemental phenomena specific to places illustrate the unique relationships of stewardship and kinship by native Hawaiians and the natural environment.

As successive generations of Hawaiians empowered these islands and their sacred and storied places with their prayers, ceremonies and labor, they left their indelible and enduring mark on the landscape; both seen and unseen. Tangible and indefinable sources of mana or spiritual power and energy unique to different places are also a result of generations of relationships that were nurtured between mankind and these special wahi or storied places. These are the multi-faceted qualities that have elevated wahi pana to the realms of Hawaiian consciousness. The land, the sea, the atmosphere and all the natural resources and phenomena that were held within each of its boundaries were considered as akua, divine and sacred. All of it was godly. The proverb below, explains the concept that Hawaiians value of the reciprocal relationships of land, environment and man.

E mālama pono i ka ʻāina; nānā mai ke ola.

Take good care of the land; it grants you life.

`Ōlelo Hawai`i - The Hawaiian Language

For generations, Hawai`i was immersed as an oral culture with infinite records of historic events, genealogies, ceremonies, traditions and practices that were preserved in chants, prayers, dances, and stories. Everything was committed to memory and passed on orally. Every fraction of life in ancient Hawaiian society was linked to a pantheon of deities which was accessed through a hierarchy that began with personal family gods or `aumākua, as well as gods that were specific to each vocation.

Prior to the arrival of Captain James Cook and the first westerners in 1778, *`ōlelo Hawai`i* or the Hawaiian language was the only language spoken in the Hawaiian Islands. In the early 1800s, the language flourished in written form as well, after Calvinist missionaries developed a Hawaiian alphabet using Latin characters. With the enthusiastic support of the chiefs, schools were set up to provide instruction in reading and writing for Hawaiian and missionary children, adults and even business people through the medium of Hawaiian language. In less than two generations from the establishment of a written language, the Hawaiian Nation had the highest literacy rate of any country in the world.

Hawaiian Language Newspapers

The first newspaper printed in Hawai`i was a student newspaper at Lahainaluna School, called "Ka Lama Hawai`i" (The Hawaiian Luminary) on February 14, 1834. Shortly after, in that same year, the first regularly published newspaper, "Ke Kumu

Hawai`i" was established. Missionaries saw these smaller newspapers as an excellent vehicle for teaching and to help with the increase of literacy levels, but it was also a perfect tool for promoting Christian principals.

The first regular English language newspaper was founded in 1856, establishing the Pacific Commercial Advertiser as a weekly publication. The Advertiser has published continuously since then, eventually producing a daily edition in 1882. Over the years, the Advertiser has gone through several name changes, including a switch to the Honolulu Advertiser in 1921. Today, the newspaper is known as the Star Advertiser.

In 1861, "Ka Hōkū O Ka Pakipika" (Star of the Pacific) the first Hawaiian language newspaper published by a native Hawaiian by the name of J.K. Kaunamano was established. The press was operated entirely by a staff of native Hawaiian editors and printers who had been educated and trained at Lahainaluna School on Maui, as well as at the Kamehameha Schools for Boys. It was during this period that many articles and mo`olelo in the Hawaiian language flourished.

From 1834 to 1948, more than 100 newspaper publications equaling approximately 125,000 pages of text in the native language were published for Hawai`i's highly literate community. Native Hawaiian authors and historians from throughout the Hawaiian chain contributed multiple genres of mo`olelo, including short stories, genealogies, and lengthy epics such as the mo`olelo of Hi`iakaikapapolopele. The publications served as sources of traditional, cultural, historical and political discussions, including the decline of the native population and the need for Hawaiian sovereignty. Obituaries took the form of extensive kanikau or funerary dirges, which also included tributes of mo`okū`auhau or genealogy chants that honored the deceased. Traditional and introduced fishing practices, marine ecosystem management and changing legal environments, climatic conditions, storms and so much more found their way into the volumes of Hawaiian language newspapers.

Three years after the overthrow of the Hawaiian Monarchy in 1893, `ōlelo Hawai`i was outlawed as a language of education in Hawai`i. English quickly replaced the use of Hawaiian in schools, as well as in all government and business sectors throughout Hawai`i. Those attempting to use or perpetuate the Hawaiian language at home and in public were punished and chastised. This systematic oppression led to a steep decline in the number of native Hawaiian language speakers. For fear of being reprimanded and even ostracized by society and the authorities, parents and grandparents succumbed to the use of the English language in the raising of their children and families. Many forms of Hawaiian expression, practices and custom were heavily prohibited and punishable by law. Many kumu hula, `olohe, kahuna lā`au lapa`au and other masters of traditional schools of knowledge ceased to teach and practice. Several went underground

with their traditions or kept their practices limited to their immediate family members.

By the early 1980s, less than 30 children under the age of 12 could speak Hawaiian. Most were children of parents from Ni`ihau - the only island remaining where Hawaiian language was spoken as the first and preferred language of choice. Parent and grandparent generations elsewhere in Hawai`i had already grown up without knowledge or experience in speaking the Hawaiian language. For majority of the native population in Hawai`i, `ōlelo Hawai`i was as remote and unfamiliar as any other foreign language from another country.

In 1978, the State of Hawai`i Constitution was amended to recognize Hawaiian as an official language of Hawai`i by law. Today, the language is beginning to flourish once again, with Hawaiian charter schools, pre-schools and public schools providing instruction in `ōlelo Hawai`i.

Mo`olelo: Storied Origins & Traditional Places

Mo`o `Ōlelo is the succession of talk; or the continuation and perpetuation of oral histories and traditions that were passed on in story and chant forms. It is from this that the word mo`olelo is derived - stories, tales, myths, legends and chronicles; records of information that was storied in the memories of Hawai`i's ancient people. Another term that is used is kā`ao - oral traditions and myths that represent the cultural truths, wisdom and experiences of our kūpuna.

Throughout the CIA, examples of traditional Hawaiian mo`olelo are presented to link the reader with traditional places, beliefs and practices associated with the ancestral worldview of Hawai`i's indigenous Hawaiian people. Mo`olelo and kā`ao are not viewed as fanciful fairy tales or fictional stories woven to entertain. Laden with skillful use of metaphors and poetic expressions, they are invaluable sources of information that have preserved a sense of consciousness and inner connection of the *kānaka `ōiwi* with his multidimensional world.

It is estimated that the Hawaiian island chain was first settled upon more than 2000 years ago by Polynesians who arrived from Nukuhiwa (also pronounced Nu`uhiwa) or the Marquesas Islands. Early migration chants and oral traditions provide insight to the discovery and settling upon these islands. One story tells of a man named Hawai`iloa who is credited with first discovering Hawai`i when he set out from a land called, "Ka `āina kai melemele a Kāne, (*The land of the yellow sea of Kāne)* on a long fishing expedition. He sails back to his homeland and returns with his wife and followers, including eight navigators. Because his wife is the only female on this return journey, it is said that all Hawaiians are descended

from him. The largest island in the chain - Hawai`i, is named in his honor, while the additional islands of Kaua`i, Maui and O`ahu are named after his children.

From Hawai`iloa, the heritage of long, distant voyaging, non-instrument navigation and way finding is established using phenomenal skills of keen observation and comprehension of stars and constellations in the heavens. He is the primal ancestor of the Hawaiian people who also introduces the astronomical wisdom of the atmosphere and its phenomena, including the weather and climate. He is also an expert of the ancient sciences associated with the physical, geological and biological features of the oceans.

From the union of Papahānaumoku and Wākea - preeminent mākua or parents of the Hawaiian universe is born Hāloa...our very connection to kalo, the sacred staple that has fed and nourished the Hawaiian people since time immemorial.

The genealogical ko`ihonua of Hawai`i's ancestral Earth Mother and Sky Father bring forth the paradigm that bind generations of Native Hawaiian families to this storied progenitor. Through the traditions of Papa and Wākea, the energy of the Hawaiian family system that includes both nuclear and extended `ohana is born. From this legacy comes the skills and intelligence of the mahi`ai - the native planter that tends to Hāloa, the taro plant and elder brother that continues to sustain families today. Indigenous agriculture and cultivation practices are dependent on acquiring intimate knowledge of water cycles, moon phases and weather phenomena. There is a constant nurturing of familial relationships to land, environment and elements of the Hawaiian universe.

The epic saga of Pelehonuamea describe in detail, the journey of the fire clan aboard the mythical wa`a (canoe) named Honuaiākea. Their quest is to search for a new fire source and a home from which to generate sources of life. It too, is a story of genealogy and migration, establishing cyclical movements of life upon these lands. The sun is a fundamental and reoccurring theme of substance that is essential to physical, spiritual and intellectual wellbeing.

The chants of the mo`olelo of Pele and Hi`iaka provide detailed accounts that speak to the importance of relationships that the indigenous Hawaiian hold in high esteem with `ohana or familial relationships; not just with mankind, but with their environment as well as with that of the atmosphere and the elements. This is a profound expression of connection that taps into the inner sources of life and healing. Through this ancient oral tradition, we are provided with formulas and procedures of Hawaiian protocols and ceremonies that are still applicable for the native Hawaiian in the 21st century.

These are just a few examples of the incalculable volumes of "unwritten literature"

- primal sources of Hawaiian chants and the impressive accounts within them chronicle centuries of Hawai`i's fascinating history and culture. Embedded in the narratives of these ancient traditions are valuable details that provide us with a deeper understanding and a closer look at the worldview, life ways and experiences of Hawai`i's people prior to the turbulent changes that unfolded in post-contact times.

The significance and merit of mo`o `ōlelo - what an ingenious tradition of transmitting wisdom, knowledge, history and more through the succession of the voice conveyed through the telling of stories and the perpetuation of the art form of chants and the oral traditions that inspire the essence of indigenous Hawaiian cultural practices and beliefs.

Ancient Chants that Extol the Land & Environment as Relations

References and examples of chants from Hawai`i's ancient repository of oral and literary traditions have been included in this CIA to elaborate upon the traditional beliefs and cultural practices of native Hawaiians. These practices continue to this day. Mele oli, mele pule, mele hula and mo`olelo provide authentic examples of this continuing practices. They also speak to the relationships held between *nā kānaka* - mankind, their environment and their gods.

The ancients viewed facets of nature such as the heavens and earth as a godly and divine pairing of male and female procreative energies. Wākea - the broad, wide expanse of the atmosphere is male. The moisture that gathers and collects in the clouds and sky produces rain, which is also a male force. The earth is female, and is known to Hawaiians as Papahānaumoku, or literally, *Papa that gives birth to islands.*

Adapted from Hawaiian Antiquities by David Malo (p.243) the mele ko`ihonua or genealogical chant on the following page speaks to the birthing of the Hawaiian Islands. Wākea - the male, is embodied in the expanse of the atmosphere and the heavens. Papahānaumoku - the female is Papa who gives birth (hānau) to islands. This ancient chant was revived into modern day cultural practice as a means of expressing native Hawaiians' familial relationship with the natural world and the `āina or land. Papa and Wākea - Sky Father and Earth Mother, along with their offspring, Ho`ohōkūlani are the divine characters and procreative forces that are also revered for the gift and traditions of the sacred kalo or taro plant. They are viewed and respected as ancestral progenitors of native Hawaiians.

`O Wākea noho ia Papahānaumoku

Hānau ‘o Hawai’i, he moku

Hānau ‘o Maui, he moku

Ho’i hou ‘o Wākea noho ia Ho’ohōkūkalani

Hānau ‘o Moloka’i, he moku
Hānau ‘o Lāna’i, Ka ’ula, he moku

Līlī `ōpū punalua ‘o Papa iā Ho’ohōkūlani
ho’i hou ‘o Papa noho iā Wākea

Hānau ‘o O’ahu, he moku
Hānau ‘o Kaua’i, he moku
Hānau ‘o Ni’ihau, he moku
He ‘ula a’o Kaho’olawe!

Translation:

Wākea lived with Papa, begetter of islands

Begotten was Hawai’i, an island
Begotten was Maui, an island

Wakea made a new departure
And lived with Ho’ohōkūkalani

Begotten was Moloka’i, an island
Begotten was Lāna’i, an island

The womb of Papa became jealous at its partnership with Ho’ohōkūkalani
Papa returned and lived with Wākea

Begotten was O’ahu, an island
Begotten was Kaua’i, an island
Begotten was Ni’ihau, an island
A red rock was Kaho’olawe!

The significance and understanding of *mana* as physical, mental and spiritual nourishment is preeminent in the customs of old Hawai`i. It is essential to the health and wellbeing of the family system and community.

Every fragment of Hawaiian history and culture was documented to memory and orally transmitted from one generation to the next via chants. The births of gods, mankind, celebrated chiefs and more were often the subjects of lengthy, detailed chants.

Amongst them were *mele mo`okū`auhau* or genealogy chants, which are still considered to be one of the most prized family possessions of the native Hawaiian people. Kūpuna or elders were careful to designate individuals in the following generations of their families to be groomed as stewards of the `ohana's genealogy. All knowledge was committed to memory, which included the names, unions and offspring in the family's ancestors. Mo`okū`auhau hold us accountable to our ancestors. It strengthens our cultural identity and inspires the mana of our being.

However, mo`okū`auhau were not limited to families of humans only. Literary accounts of mo`okū`auhau also included family lines of many other nature forms as well. This included, mountains, sharks, water sources and elements of the natural world.

The following is short segment from a chant that names the Kaikahinali`i - the female and Kānehoalani - the male, as the elemental parents of their nature offspring.

`O Kaikahinali`i, ka makuahine;
`O Kānehoalani, ka makuakāne

Nā keiki a lāua, ke one hānau

`O Kamohoalai`i ke kāne, ua hānau `ia i Hapakuela
`O Kahuilaokalani ke kāne, ua hānau `ia i Hapakuela
`O Pelehonuamea ka wahine, ua hānau `ia i Hapakuela

The mother was Kaikahinali`i
The father was Kānehoalani
Their children born to them and the sands of their birth
First born was Kamohoali`i - a male, he was born at Hapakuela
Kahuilaokalani - a male was born, he was born at Hapakuela
Pelehonuamea - a female was born, she too was born at Hapakuela

The lines above provide a genealogical introduction associated with a

migration made to the island of Kanaloa (another name for Kaho`olawe). It speaks of natural phenomena and the interrelationships of male and female procreative forces that produce godly offspring.

The mother is Kaikahinali`i who is the originating volcanic source of seismic movements that produces tsunami activity in the ocean. Kānehoalani is the father whose atmospheric form is the sun. Their combined male and female energies give birth to the first three offspring in this genealogy; namely, Kamohoali`i, Kahuilaokalani and Pelehonuamea.

Kamohoali`i *(the supreme principal chief)* is the hiapo - the eldest and the first born who is the leader and principal that guides the migration of the Pele Clan and is responsible for initiating volcanic eruptions. In one of his primordial ocean forms, he is a great shark god. He is the master navigator aboard the Pele Clan's mythical canoe named Honuaiākea *(the expanse of the earth).*

Kahuilaokalani *(the lightning of the heavens)* is also a male who takes on the form of the electrical currents in the atmosphere. Born from the eyes of Haumea, he is manifested through flashing lightning.

Pelehonuamea *(Red-hot magma from the earth)* is female. She is the substance of molten magma and the flow of lava, responsible for the creation of new land.

As the goddess of fire and volcanoes, Pele influences movement upon the earth as well as in the atmosphere. Her discernible attributes include earthquakes, wind, steam, smoke, and fire.

All five of these characters are imperative to the migration of the Pele clan in their quest to search for a new fire source. They all possess mana - physical and spiritual energy to initiate earthquakes, eruptions, lightning, thunder, tsunamis and the flow of magma and lava that eventually cools and hardens. This is the procreative process of male and female nature gods credited with the birthing of new land.

The chant, "*Kū Mākou E Hele*" details the migration journey aboard the canoe, Honuaiākea. Entering from the northwest end of the Hawaiian Island chain, the Fire clan stops at each of the islands with hopes that Pele will be able to establish a home for them.

The chant begins with their first landing at the island of Nīhoa, a land rugged and inhospitable for living. They move on to the island of Lehua, where they discover that they unintentionally left their brother Kāneapua behind at Nīhoa. It is here, that the chant describes the masterful skills of Kamohoali`i as a steersman and navigator who is challenged to maneuver their canoe to return

to Nīhoa where their brother Kāneapua has been left behind. From there they head to Ni`ihau. Kamohoali`i consults Paoa, the divine staff of Ni`ihau's potential for them to build a home there. However, it proves the terrain unfavorable and the fire clan continues to Kaua`i.

Their stay on Kaua`i is brief at the northern tip of Kīlauea where eventually, Pele's volcanic fires are put out by the raging ocean of her rival sibling and older sister, Namakaokaha`i. From Kīlauea, they head to the south end of Kaua`i where Pele makes another attempt to create a home in the moku district of Kona (today known as the Kōloa district). Again, her fires are put out by the goddess of the sea. Situated on Makaokaha`i Point, the ocean-filled spatter cone dug by Pele is called, Nomilu, named for the deity and the realm of the underworld. This is part of the Kōloa eruption series, Kaua`i's last volcanic activity.

Eventually, the fire clan reaches their destination on Hawai`i Island at the cape known as, Kumukahi *(First Beginnings).* Kumukahi is named after an ancient hero of Kahiki who first landed there. Contrary to the common thought that Kahiki is *Tahiti* in the Hawaiian language, it is described in mo`olelo and chants as a far away, distant land from whence the ancient gods originated from. Hiki meaning to get to or to reach a place; arrive, appear and arise.

Kahiki was also the term used to identify the five stratums that divided the sky. The use of these terms is also important in religious ceremonies to establish the perimeters of sacred ceremonial space which extended to, and included the greater atmosphere of the universe. The dome of heaven was a structure, with walls that rested upon the earth. The different kahiki represent the boundaries of this paradigm.

> Kahiki-moe - Horizon. Literally, prostrate Kahiki
> Kahiki-kū - sky just above the horizon. Literally, upright Kahiki.
> Kahiki-ka-papa-nu`u - the next layer. Literally, Kahiki the elevated stratum. Kahiki-kapu-i-Hōlani-ke-kū`ina - the sky directly overhead. Literally, sacred Kahiki at Hōlani the meeting place.

Legend tells of Kumukahi and his wives, represented by volcanic pillars along the coast who tossed the sun back and forth. The mo`olelo describes the fundamental nature of the movement of the sun between the solstices as it moves from one extremity to the other from north to south.

Another account by Martha Beckwith describes a red stone at the extreme end of the cape that represents the Kūmukahi, a god with healing powers who can take the form of a kōlea or plover. Two further stones represent his wives, who "manipulate the seasons by pushing the sun back and forth between them at the two solstices" (Beckwith 1970 [1940], p.119).

It seems likely the most proverbial sayings associated with Hanalei are references to the rains. One is simply Ka ua loku o Hanalei ("The pouring rain of Hanalei") (Pukui 1983:170). Another is Lu'ulu'u Hanalei i ka ua nui; kaumaha i ka noe o Alaka'i ("Heavily weighted is Hanalei in the pouring rain; laden down by the mist of Alaka'i") (Pukui 1983:170). Pukui explains the poetic meaning: "An expression used in dirges and chants of woe to express the burden of sadness, the heaviness of grief, and tears pouring freely like rain. Rains and fogs of other localities may also be used."

Pukui (1983:50) associates the poetical saying: Haehae ka manu, ke 'ale nei ka wai. ("Tear up the birds, the water is surging") with Hanalei. She explains:

> Let us hurry, as there is no time for niceties. Kane'alohi and his son lived near the lake of Halulu at Wai'ale'ale, Kaua'i. They were catchers of 'ua'u birds. Someone falsely accused them of poaching on land belonging to the chief of Hanalei, who sent a large company of warriors to destroy them. The son noticed agitation in the water of Halulu and cried out a warning to his father, who tore the birds to hasten cooking.

Another legend regarding Haehae-ka-manu-a-Kāne'alohi-ke-'ale-mai-nei-ka-wai, a peak near the summit of Wai'ale'ale, Wichman (1998:109) relates the following account:

> Kāne'alohi, a bird catcher, lived in this part of the mountains with his nephew Lauhaka. Their camp was on the cliff side of the Alaka'i Swamp beside an open bit of water. The water of this pool rippled whenever anyone stepped into the swamp miles away. Inadvertently, they were breaking the new rules of Kalākānehina, the Waimea chief, who had forbidden the catching of 'ua'u birds, the dark-rumped petrel, which was good eating. Kalākānehina sent some warriors to kill the two birdcatchers, but they were warned by the rippling water as they broiled a petrel over the fire. Lauhaka called out to his uncle to tear the bird apart so they could eat it before the warriors reached them - hence the name.

A last poetic saying Me'e u'i o Hanalei ("The handsome hero of Hanalei") "said of one who is attractive") would seem to be a clear reference to Kauahoa (Pukui 1983:234) (reference the Legends of Kawelo below).

The Story of Lonoikamakahiki

In the Story of Lonoikamakahiki, (Fornander 1919 Vol. IV Part II: 284-285, 304-305) the ruling chief Lonokamakahiki and Kaikilani chant similar chants about various places in Hawai'i nei including a reference to the rains of Hanalei:

> O Hanalei kumu a ka ua Hanalei, The source of the rains
> I amo a haahaa Made low from carrying such a burden

Kapaihiahilina also chants of his wanderings at Hanalei with Lonokamakahiki

also focusing on the rains:

My companion of the tall pandanus...He hoa i ka nahele lauhala loloa,
[That extend] from Kīlauea to Kalihi, Mai Kilauea o Kalihi la,
The pandanus that had been pecked by birds, O ka hala i ʻaina kepa ia e ka manu,
[The Pandanus] of Pōʻokū in Hanalei, O Pōʻokū i Hanalei-la
Thus did we two wander along my companion, Hala ia mao a ka ua, e ke hoa-e
Through the heavy and wind-blown rain, He ua kaʻeʻe, ua makani,
The ceaseless and general rain. Ua hoʻokinakina e puni e ka ua.
We drank of the ʻawa of Koukou, Inu aku i ka ʻawa o Koukou
The fragrant leaved ʻawa of Māmalahoa. I ka ʻawa lau hinano o Mamalahoa
Say, my companion! E ke hoa-e!
A companion, a friend of Lono, a man, He hoa, he kaʻupu e Lono, he kanaka
A companion of the deafening rains, He hoa la hoʻi no ka ua, paʻia,
As the rain traveled in the uplands at Hele ka ua mauka o Hanalei iki, Hanalei-iki
To Hanalei nui, A Hanalei-nui
One rain was from the highlands, Mauka mai kekahi ua
One rain was from the lowlands, Makai mai kekahi ua
One rain was from the east, Ma naʻe mai kekahi ua
One rain was from the west, Malalo mai kekahi ua
Along the pandanus cape of Puʻupaoa, Ma ka lae hala o Puʻupaoa
It was there the rain fell on the sand, Ilaila ka ua hoʻowalea i ke one
The sand, food of the kīnaʻu, I ke one ʻai a ke kinaʻu,
The kīnaʻu that ate of the ripe pandanus, Ke kinaʻu ʻai hala pala at Hanalei, I Hanalei

There is a reminiscence of when Lonoikamakahiki "ate of the ripe flowers of the pandanus of Pō ʻokū" (a ʻai i ka pua pala o ka hala o Poʻoku) (Fornander 1919 Vol. IV, Part II, 360-361).

The following is a list of legends about the area condensed from Hammatt, Hallett H., David W. Shideler and Nancy A. McMahon (2011).

Legend of Kaipalaoa

In the Legend of Kaipalaoa, the "word-smith child", (Fornander 1919 Vol. IV Part III: 576- 577) the boy hero arrives at Hanalei by sea from Pōkaʻī Oʻahu in the retinue of the ruling chief of Kauaʻi, Pueonuiokona. They meet two canoes of the chief returning with fish and the boy requests some fish. He chooses two relatively small insignificant fish, an Oililepa (file-fish) and a Kikakapu (butterfly-fish) which figure later in his contest of wits at Wailua.

Kawelo and Hanalei

In the Legend of Kawelo, (Fornander 1919 Vol. V Part I: 576-577) the Kaua'i hero was brought up with a certain kinsman, the giant Kauahoa of Hanalei who would become the most noted warrior of the ruling chief 'Aikanaka. In a sidebar, while fishing from a canoe for uhu (parrotfish) at Kaena O'ahu, Kawelo caught the demi-god Uhumakaikai in his net and was towed close to Hanalei where his companion, Maakuakeke, asked for that land. Kawelo returns to Kaua'i to fight against the ruling chief 'Aikanaka and the great warrior Kauahoa. The fighting breaks out at Wailua. Aloha for Kauahoa arose within Kawelo and he tries to avoid a fight with his kinsman (hoahanau) from his childhood by trying to win over Kauahoa with a flowery chant, referring to Kauahoa repeatedly as "the pride of Hanalei" (ka ui o Hanalei).

There are several references to Hanalei: "swollen and enlarged is the moss of Hanalei" (Pehu kaha ka limu o Hanalei). "Hanalei, the cold land, the wet land, the land where the end is" (Hanalei aina anuanu, aina koekoe, aina i ka pea i noho ai), and "Hanalei the land of rain" (O Hanalei aina ua).
Kawelo appears to evoke images of the Hanalei landscape:

For the anger of Honokoa is reviling, Maewa ana ka ukiukiu o Honokoa
At the cliff of Kalehuawehe, I ka pali o Kalehuawehe
Where the lama and wiliwili bloom, Pua ka lama me ka wiliwili
Where the rain sweeps on the outside, O ka ua lele ma waho of MamalahoaO Mamalahoa
Kauahoa the stalwart youth of Hanalei, O Kauahoa o ka meeui o Hanalei
(Fornander 1919 Vol. V Part I: 56-57).

Kauahoa rebuffs his overtures of peace and Kawelo then turned to one of his wives, Kanewahineikiaoha and chants:

Say, Kanewahineikiaoha, E Kanewahineikiaoha e;
your pikoi (tripping club) throw it up, Ko pakoi hoolei ia i luna
At Helelua, at Helelua, I Helelua, i Helelua
At the ridge-pole of Hanalei, I kaupoku o Hanalei la.
Arise thou, Hanalei, E ala e Hanalei e
Until Kauahoa thou hast killed, A make o Kauahoa ia oe,
When Hanalei thou shalt possess, Ai ae ia Hanalei,
And the mats of Ni'ihau thou shalt wear, Aahu ae i ka pawehe o Ni'ihau,
And the birds of Kaula thou shalt eat, Ai la oe i ka manu o Kaula
(Fornander 1919 Vol. V Part I: 56-57).

In another story of Kawelo (Fornander 1919 Vol. V Part III: 694-707) Kauahoa is actually the elder brother of Kawelo, born of the same parents, but adopted by Haulili, the "great one" of Hanalei (Haulii, ka mea nui o Hanalei). Kauahoa comes from Hanalei and is referred to as "The champion of Hanalei' (Ke

kamaeu o Hanalei).

In Pukui's (1951:117-118, 122) account, following the killing of Kauahoa, Kawelo lived with his wife in Hanalei "quietly fishing and planting."

Wichman (1998:111) relates the following:

> "Hanalei was the home of Kauahoa, a warrior who lived about 1690. He was the last of the great giant kupua warriors, noted for his strength, size, and because he was handsome. He was born on the same day and in the same place as the future ruling chief, 'Aikanaka, and his cousin Kaweloleimakua. In the war between these two, 'Aikanaka did not immediately call upon Kauahoa, who angrily sat in the headwaters of the Hanalei River and dammed up the water for so long that the fish gasped in the dry bottom....Kauahoa is often referred to as Kame'eu'io Hanalei, "handsome hero of Hanalei," and this name was given to a headland in his memory."

Legend of Palila

In the Legend of Palila, (Fornander 1919 Vol. V Part I: 138-141) there is a reference to a club fighting hero of Hanalei named Lupeakawaiowainiha It was said that every time he urinated the land would be flooded.

Legend of Kapunohu

In the Legend of Kapunohu, the Kaua'i hero became ruling chief of Kaua'i by throwing his ihe spear from Koloa through the ridge at Anahola leaving a perforation (puka), with it finally slowing as it passed over Kalihikai and falling to earth at Hanalei (Fornander 1919 Vol. V Part I: 224-225).

Legend of Kamapua'a

In the Legend of Kamapua'a, the pig child delivers a chant in his anger describing the sea of Hanalei as tempestuous (kaiko'o Hanalei e! Kaiko'o) (Fornander 1919 Vol. V Part II: 350-351). Westervelt (1915:266) relates an account of Kamapua'a at Hanalei as follows:

> "Courage came back to them [the people of Kaua'i], and at Hanalei the people forced him [Kamapua'a] into a corner, and, carrying stones, tried to fence him in, but he broke the walls down, tore his way through the people and fled. The high chief of Hanalei threw his magic spear at him as he sushed past, but missed him. The spear struck the mountainside near the summit and passed through, leaving a great hole through which the sky on the other side of the mountain can still be seen."

Skinner (1900:229) relates the following account of Kamapua'a at Hanalei:

> "So ill did he behave in Kaua'i, assailing innocent people and destroying their taro patches, that they determined to dispatch him, and in order to

have him under their advantage it was resolved to fence him in near Hanalei. The wall of mountain now existing there is the fence. Just before it was finished the prince in charge of the work sat to rest in a gap which admits the present road. He heard a harsh laugh, and looking up saw Kamapua‘a sitting on the top of Hoary Head. A running fight ensued, in which the outlaw escaped across the mountain, and the prince, hurling his spear, but missing his mark, sent the weapon through the crest of the peak, making the remarkable window that is one of the sights of the island.”

Story of Halali‘i

In the Story of Halali‘i, the king of the ghosts of O‘ahu, there was a time when O‘ahu was inhabited only by ghosts. The sole Kaua‘i survivor of an act of treachery by the O‘ahu ghosts sails to Hanalei and finds the ruling chief of Kaua‘i at that place (Fornander 1919 Vol. V Part II: 432-433). With the aid of his kahuna, Namalokama he devises a plan to defeat the O‘ahu ghosts.

Story of the ‘Ōhelo

In the Story of the ‘Ōhelo, (Fornander 1919 Vol. V Part III: 580-581) the origin of the ‘Ōhelo plant is traced to the daughter of a certain Maunakepa:

The moss peoples the barren lands Ka limu kaha kanaka of Maunakepao Maunakepa
Spattering thereon is the rain Kapekupeku i luna ka ua
from Hanalei, etc. O Hanalei, a pela aku.

Legend of the lovers Pa‘alua and Kawelu

In the Legend of the lovers Pa‘alua and Kawelu, (Thrum 1923:139) Pa‘alua regales the daughter of the ruling chief of O‘ahu with accounts of “the charms of his home in the vale of Hanalei” referring to the home of his father, the ruling chief of Kaua‘i. He makes specific reference to the kamani and olond that grow in the valley of Hanalei (Thrum 1923:140). Pukui’s account (1951:175) has Kawelu exclaim “O Pa‘alua, take me to Hanalei.” They become the rulers of Kaua‘i and Ni‘ihau.

A Maiden from the Mu

In “A Maiden from the Mu” a young chief of Hanalei organizes a pig-hunt in Wainiha in search of the daughter of a Hawaiian bird catcher and a Mū wahine (Pukui 1951: 72).

Legend of Kalelealuaka

In the Legend of Kalelealuaka (Thrum 1907: 84), the hero of that name goes to Hanalei and defeats a resident chief of great strength in a contest of accuracy in throwing spears at a banana trunk.

Account of Kawelu

In Knudsen's (1956:83) account of Kawelu, the Shark God, the man-eating demi-god of Wailua is said to also frequent Hanalei River.

Village Belle of Poki'i

In Knudsen's (1956:93) account of the "Village Belle of Poki'i", the beauty is betrothed to a man who lives in Hanalei Valley "and is very rich, with large taro lands and many horses."

Ka'awakō Heiau

Regarding Ka'awakō Heiau at summit of Waiale'ale, Wichman (1998:109) relates the following account:

> "The kilo i'a (fish watcher) of the Mū would go to Ka'awakō at the completion of an 'o'opu fish trap. Here he would make a shrine, present an offering of 'awa, bananas and kumu taro. Then he would make a cup of olonā leaves and would chant. This completed the ritual over the fish trap, which he then would close and the fish would be caught."

MELE HO`ĀLA are chants that are used for pre-dawn preparations and ceremonies. It provides for proper address of the elements, the cardinal points and boundaries of the greater universe. Most importantly, it is a chant that is offered in greeting. It is also a chant that was used to gently awaken a chief or chiefess from his or her slumber. It was commonplace to initiate the start of the day in prayer, meditation and chant.

Chanting continues to be a primary course of communicating with the natural world and elements such as the sun. The thought and intention embedded in the poetry of the chant/prayer, coupled with the energy and vibration of the chanters' voice is at the very basis of the simplest expression of worship. `Āpapa is also used to denote rank and status of gods and chiefs; thus, exalting the sun and the elements of the heavens as the epitome of divine order.

The Project Area and Hanalei Ahupua`a

No previous archaeological studies have been conducted in the subject property. There are over twenty studies in the great Hanalei area. These studies are summarized in McMahon (2017). Bennett's records of 1931 described several heiau around Hanalei. However, he did not identify a heiau within the vicinity of the project area. The first comprehensive study of the archaeology of Kaua'i was undertaken by Wendell C. Bennett (1931) based on field work accomplished in

1928 and 1929. Bennett recorded four sites in Hanalei Ahupua‘a and two in Kalihikai Ahupua‘a:

Site 138: Maheu Heiau, on Pu‘u Maheu, Kalihikai, is a paved platform 18 by 21 feet on top of Maheu peak. There is a fine view of the valley and country all around. River stone as well as local rock is used in its paving.

Site 139: Pō‘okū Heiau, on the east bluff of Hanalei valley a short distance from the government road on a knoll marked on the map as "Po‘oku."Only a few stones remain to mark the location of this heiau which Thrum [1906:43] describes as "An unenclosed heiau of about two acres in area. Of luakini class, terraced down on all sides from the central platform."

Site 140: Kapaka Heiau, on top of Kapaka hill on the east bluff of Hanalei valley just within the forest line. Thrum describes this structure as “A paved open platform heiau without walls; stones set edgewise traversing through. Kane its deity. Said to have had connection with Kapinao at Waiakalua in its workings.” This site has had many stones removed, or covered over with vegetation. The river stones seem to cover the top of the hill for a diameter of about 75 feet. The extent of the heiau could not be accurately determined. The stones set edgewise traversing through could not be found.

Site 141: Heiau and house sites, at Kalama-iki, an old village on the river flats, four miles up Hanalei Valley. There is a stone structure 18 by 20 foot with walls all around 2.5 feet wide and 2 feet high. In front is a paved section extending 5 feet, like a lanai, to a drop of 4 feet to the river terrace. The river is 50 feet out in front. Both river stones and rough rocks were used, but no coral was seen. The wall was chinked with smaller stones in front. Taro terraces and house sites are on the plains along the river.

Site 142: Kaapoku Heiau, inland from Site 141 in Hanalei Valley. This small shrine consists of a 18 by 20 foot platform made of rough stones. A village was across the stream.

Site 143: Ditch and house sites, across the river from Site 142 in Hanalei Valley. Site also includes taro terraces and a ditch that runs from 0.5 mile or so up the stream to water this plain. The water comes through a big rock which is conveniently cracked. The legend reads that Pele sent lightning to split the rock so that the people could get the water down to the fields. Upstream from here a large, overhanging rock forms a natural shelter. It has been built up along the front a bit. The house sites of the solidly paved type, as well as those merely outlined with stones, are found (Bennett 1931:134-35).

Field investigations of the Project Area

Hawaiian Religious & Cultural Practices, Gathering Rights

Field investigations of the project area resulted in no evidence or findings of significant plants or natural resources that are associated with Hawaiian gathering rights for subsistence, cultural or religious practices. The project area is overgrown with many non-native vegetation. One historic property was found, after one informant stated that at the point above Route 560 there is a heiau and he pointed out a wall and some other scattered stones. During the archaeologica field work, a pre-contact historic property which included a wall, two stone mounds and a scattered of stones surrounding the mounds were found (EAL #2, McMahon 2017). EAL is still uncertain of the function of this pre-contact historic property. Informants have stated a heiau. Another informant stated it was an ahu. One informant suggested could this have to do with the Russian Fort, Fort Barclay that has never been located. Couple of informants stated that they were told by their parents to stay away from this property. So, their assumption is the land was sacred. Another informant said her husband also said to stay away from this parcel. So, the function and use of this historic property is not very clear.

State Inventory of Historic Properties (SIHP)# 50-30-03-02354 will not be affected by the development of the single-family residence and will be preserved. Perhaps here the cultural definition is more appropriate as wahi kapu (sacred place). It gives you that sense of a sacred place with its views reaching out across the Hanalei Bay to Haena Point to looking back at Po‘oku.

In postulating the purpose of SIHP# 50-30-03-02354, alignments are a possibily. Stone markers or altars are used to track the movement of the sun and its entry point upon the horizon throughout the year. They are especially significant during the vernal and autumnal equinoxes as well as the summer and winter solstices. They are used in the same capacity of measuring time and sun observations. Research on sun chants and mo‘olelo are abundant, but none were found for this ridge in Hanalei. Maybe in pre-contact times, this location had another name, but was forgotten or forbidden to use and now not know. SIHP# 50-30-03-02354 does align with Po‘oku Heaiu which is to the southeast. Perhaps when the sun set between the two cairns, it is signifying some important time frame like the makahiki season? These are areas where further rearch is needed.

Native Hawaiian informants that were interviewed for this study indicated that the project area was unsuitable for subsistence gathering purposes in its present state (thick non-Native vegetation) and perhaps with a business highway (Route 560) surrounding most of the parcel. There is also the long history of large-scale commercial cultivation, roads, electric power transfer station and clusters of homes and office buildings that could easily have obliterated any cultural or

religious sites that may have previously existed in the area.

Much of the project area was covered by strawberry guava (*Psidium cattleianum*) scrubland. Between the highway and the steep slopes is a closed or nearly closed canopy forest of mostly introduced tree species: mango (*Mangifera indica*), avocado (*Persea Americana*), sirus tree (*Albizia lebbeck*), and gunpowder tree (*Trema orientalis*). Also, common in this area are "native"1. EAL's field inspections resulted in the findings of only three native Hawaiian plant species. The plants recorded include: *hala* (*Pandanus tectorius)*, *niu* or coconut (*Cocos nucifera*), and *hau* (*Hibiscus tiliaceus*). In May 2017, a botantical survey was conducted by Guinter and 2017 which stated four of the 12 species of ferns identified are native species (indigenous or endemic species).

Among the flowering plants, 6 indigenous (5%) and no endemics are listed. Early Polynesian introductions total 5 (4%). The property does support many old
Hala trees that provide an ambiance of a Hawaiian sense of place, but the entire ridge has also several Hala trees. Making the ridge itself in its entirety a sacred place.

Below is a listing of the native pants found on the property and possible cultural uses:

> **Uluhe** (*Dicranopteris linearis* (Burm. f.) is the false stghorn fern. An early pioneer species on landslides and eroded areas (Valier 1995:26). It is used in lei (McDonald 1989:26).



Figure 7. Uluhe fern.

Moa (*Psilotum nudum* (L.) P. Beauv) is the upright whisk fern, Native Hawaiians used the branched stem in children's game called 'moa nahele' (cock fighting), winner would announce victory by crowing like a rooster (Krauss 1993:88). Spores used like talcum powder (Valier 1995:4).



Figure 8. Moa fern

Koali‘awa *(Ipomoea indica* (J. Burm.) Merr.) is a vine**.** *All parts used as purgative; stems/leaves crushed as a poultice for wounds and sores. Juice of roots, leaves, stem and flowers used as a laxative, and in treating broken bones, used along with a kī (ti, Cordyline fruticosa) leaf to protect the skin (Abbott 1992:100).*



Figure 9. Koali‘awa

Kukui (*Aleurites moluccana* (L.) Wild.), called the candlenut tree. The entire tree had many nonmedical usesin everyday life. The *kukui* tree’s most prominent use in ancient awaii was as a source of light. The oil within each nut provided at least 3 minutes of light. The *kukui* tree also had a myriad of other uses: Canoes were made from the trunk; various dyes were obtained from the root, bark, and burned nut; polish, paints, and varnishes were made from the oil; food and condiments were provided by the roasted nut; ornaments (leis) and entertainment (spinning tops) were created from the fruit; and medicines were derived from the leaves, flowers, bark, and nut. Medicinal uses include chewed *kukui* flowers, would heal thrush (candidiasis), and the edible raw nut was used as a laxative. *Kukui* was used to treat constipation, wounds, infections, asthma, sore throat, arthritis, and numerous skin disorders, and other conditions.



Figure 10. Kukui

Ka'e'e (*Mucuna gigantea (*Willd.) DC.) sea bean. The meat of the seed is used as a laxative.

'Ulu (*Artocarpus altilis* (Z.) Fosberg), is called breadfruit. It was used to treat koko'ino (bad blood), one can combine the bark of 'ulu with that of 'ahakea (*Bobea* spp.), 'ohi'a (*Metrosideros* spp.), 'uhaloa (*Waltheria indica*), 'auko'i (*Senna occidentalis*) and kō kea (white sugarcane, *Saccharum officinarum*) along with the flowers and leaves of ko'oko'olau (*Bidens* spp.); these items are mixed into a liquid form and to be taken three times daily (Chun 1992:38–39). 'Ulu, especially the sap, is used as a secondary ingredient in numerous other remedies. Large fruit eaten and made into poi (Abbott 1992:35: Malo 1951:21); sweet dish made from ulu and and coconut (niu) cream (Krauss 1993:11). It is said that the original ulu maika was disk cut from immature breadfruit (Krauss 1993:94). The lightweight wood used for drums (pahu) (Abbott 1992:119), surfboards

(papa he‘enalu) (Krauss 1993:96); house doors and canoes (Kamakau 1976:103, 118; Malo 1951:21). Trunks used to make poi boards (papa ku‘i ‘ai) (Krauss 1993:18). Inner bark fibers for a low–grade kapa (Abbott 1992:51; Malo 1951:48). A yellow-brown dye is made from male flowers (Krauss 1993:67); sap for birdlime and leaves as sandpaper (Handy *et al.* 192:154); used on hula altars (kuahu) (Emerson 1909:20). Sap as gum from stem chewed by children, and also used as glue to join gourds to make ipu heke (Handy *et al.* 1972:154).

Pākahakaha (*Lepisorus thunbergianus* (Kaulf.) Ching) is a fern.

Kī (*Cordyline fruticosa* (L.) A. Chev.) is commonly called ti. Kī has many medicinal uses. For treatment of i‘aku o ka ihu (nasal growth) kī flowers are combined with rhizomes (underground stems) of ‘ōolena (*Cucurma longa*), ‘awapuhi kuahiwi (*Zingiber zerumbet*), and ‘awapuhi lei (Hedychium coronarium), as well as powdered ‘iliahi (*Santalum* spp.) and naio (*Myoporum sandwicense*). For hano (ho) maka‘u i ke kanaka, kī flowers are added to pith of the ‘ama‘uma‘u fern (*Sadleria cyatheoides*) and ‘ōkaha (birdsnest fern, *Asplenium nidus*), and taken internally with poi and other foods. Treatment for shortness of breath/asthma (nae, nae‘oiku, nae hokale ‘ano ohaohao) kī flowers and leaf buds are mixed with ‘uhaloa root bark (*Waltheria indica*), ‘ala‘ala wai nui pehu (*Peperomia* spp.), noni fruit (*Morinda citrifolia*), ‘uala huamoa (sweet potato, *Ipomoea batatas*), possibly pu (squash, Cucurbita spp.), and kō kea (white sugarcane, *Saccharum officinarum*). For phlegm in the chest, umauma hihia pa‘akiki i ka male, leaves and leaf buds of the kī is mixed with ‘uala, to cause vomiting. For the illness wela hou ‘ole o ke kino (absence of perspiration), kī leaves are wrapped about the head and chest. For illnesses such as hinanawe, hopilo, wai‘opua, (classes of kohepopo?), the leaves are stripped and worn as a lei. The treatment for nae‘oiku and wai‘opua and similar classes of kohepopo illnesses, the leaf buds of the kī are combined with ‘ala‘ala wai nui pehu, the aerial roots of the hala (*Pandanus tectorius*), leaf buds from pōpolo (*Solanum americanum*), noni fruit, and kō kea. Many uses, including leaves as food wrappers in imu and for footwear; the sweet roots baked as a "treat or famine food"; in historic period distilled into alcoholic beverage, ‘okolehao (Handy *et al.* 1972:222–225). The earliest account of kī use come from the late eighteenth century (Cpt. Portlock 1789), who says that sweet potatoes, taro, sugarcane, yams and "tee" were "met in great abundance". Abbott suggests that the term "famine food" for kī may be inappropriate, and says perhaps it was more commonly consumed (1992:41–42). Commonly cooked and eaten in many other island groups, such as New Zealand, Samoa, Society Islands (Pollock 1992). It is of note that Portlock made beer from the boiled roots for curing scurvy,

> it is possible that this was a forerunner of ʻokolehau, which is distilled in iron pots, hence the name "iron bottom". Degener says that the Hawaiians brewed beverages of low alcoholic content from kī, ʻuala, & kō prior to haole arrival, and that before 1800 they were taught to distill kī by some convicts from Botany Bay, Australia (1930:97). Hillebrand (1888:442) may be the source of this idea--he notes that the natives understood how to make a kind of beer, and later learned to distill it. The leaves are used as thatch, rain capes, symbols of status, plates, instruments, & cups; the stem is used in divining (Handy *et al.* 1972:222–225). Used on hula altars (kuahu) (Emerson 1909:20). Leaves used as healing apparatus, not as medicines themselves: they were wrapped around warm stones to serve as hot packs, used in poultices, and applied to fevered brows (Abbott 1992:101).

> **Primrose willow** (*Ludwigia octovalvis* (Jacq.) Raven. No Hawaiian name is yet known for this plant.

Non-native plants contribute to the heavy overgrowth of vegetation throughout the project site; all of which are not associated with any traditional or contemporary Hawaiian cultural practices.

All birds observed are non-native species. The Hawaiian Goose or nēnē (Branta sandvicensis) is common in nearby Hanalei NWR. One day two nene were found in the project area.

No mammals nor signs of their presence were detected on the subject property during the survey. Wild pigs have been observed to wander and forage in the area in the past. Two informants stated that the area was known for pig hunting. One had actually hunted there with his father. While there are other sites and hunting grounds elsewhere that are considered more favorable, local hunters have pursued wild pigs to support their cultural subsistence practices which help to feed their families.

According to researchers, Charles Burrows, President of ʻAhahui Mālama I Ka Lōkahi, Charles Isaacs Jr., Treasurer of ʻAhahui Mālama I Ka Lōkahi, and Kepā Maly, Cultural Historian & Resource Specialist, Kumo Pono Associates (2007), it is well documented that feral pigs ranging through Hawaiʻi's upland forests today bear little physical or cultural resemblance to the smaller, domesticated pigs brought to the islands by voyaging Polynesians. It remains a popular misconception that pigs are native to Hawaiian forests and that pig hunting was a common practice in ancient Hawaiʻi. The article completed by the researchers mentioned above titled, *Puaʻa (pigs) in Hawaiʻi, from Traditional to Modern* compares the traditional role of pigs in Hawaiian culture:

> Pigs are not native to Hawaiʻi. The first pigs were brought to the Hawaiian Islands by Polynesians as early as the fourth century A.D. Skeletal remains of pigs and recorded traditional knowledge sources indicate that *puaʻa* (the

> Polyesian pig) was a much smaller animal than the feral pigs of today. Originally, *pua'a* enjoyed a close relationship with their human families and rarely strayed far from the *kauhale* (family compound).
>
> Well developed taro and sweet potato agriculture in ancient Hawai'i was incompatible with uncontrolled pigs, and there is every indication that pigs were both highly valued and carefully managed sources of protein. *Pua'a* were an integrated part of Hawaiian households, and the common presence of *pa pua'a* (pig pens) reflects the controlled, physically compartmentalized nature of pig management in traditional Hawai'i.
>
> In contrast, today`s feral pigs are largely derived from animals introduced after western contact. Cook, for example, brought European pigs during his first voyage to Hawai'i, and many other introductions of European and Asian swine followed.
>
> Clearly, domesticated *pua`a* carried strong cultural value in traditional Hawai'i. Aside from being an important possession and source of food, oral tradition describes the adventures of *Kamapua'a (the pig child),* a powerful demi-god who ranged over the islands and into the sea.
>
> However, pigs were never hunted game for ancient Hawaiians. The Polynesian interaction with these animals was one of near-complete domestication. Despite reference to hunting rats with bow and arrow, no historic or traditional knowledge sources describe ancient Hawaiians hunting pigs for either food or recreation. *[Burrows, Isacc, Maly 2007: 1-3]*

The article mentions that most modern hunting practices are of a recreational nature incorporating western traditions:

> The custom of recreational hunting evolved as Native Hawaiians assimilated western traditions in the context of these introduced game animals. The earliest description of western-style hunting occurs in the opening decades of the 19th century, when outings were organized to control wild herds of cattle that threatened agriculture, residences, and forest resources. The practice increased in frequency and in popularity, with island hunters playing a key role in the state's response to the watershed crises of the late 19th century. These state-sponsored control efforts resulted in the removal of over 170,000 introduced mammals in the first half of the 20th century [xxii].
>
> Pig hunting is a cherished modern practice for island sportsmen, including some whose subsistence depends to greater or lesser extent on wild game. Pig hunting in heavy cover is usually accomplished with the use of dogs, and the required training, feeding, and care for these animals can be a difficult and expensive task. The dogs locate, chase, grab, or bay the game, which is then typically dispatched by the hunter with a gun or knife [xxiii]. These techniques are derived directly from western and European pig hunting practices, incorporated over the last 150 years in Hawai`i, and passed down through family generations [xxiv]. *[Burrows, Isaccs, and Maly 2007: 4-5]*

Formerly, Hanalei was part of the moku or district of Halelea. Within the Halelea district were the ahupua`a of: Hā‘ena, Hanalei, Kalihikai, Kalihiwai, Lumaha‘i, Waikoko, Wainiha, Wai‘oli and Waipā. Hanalei being the largest of the 9 ahupua`a that stretched along the northeast end of Kaua`i.

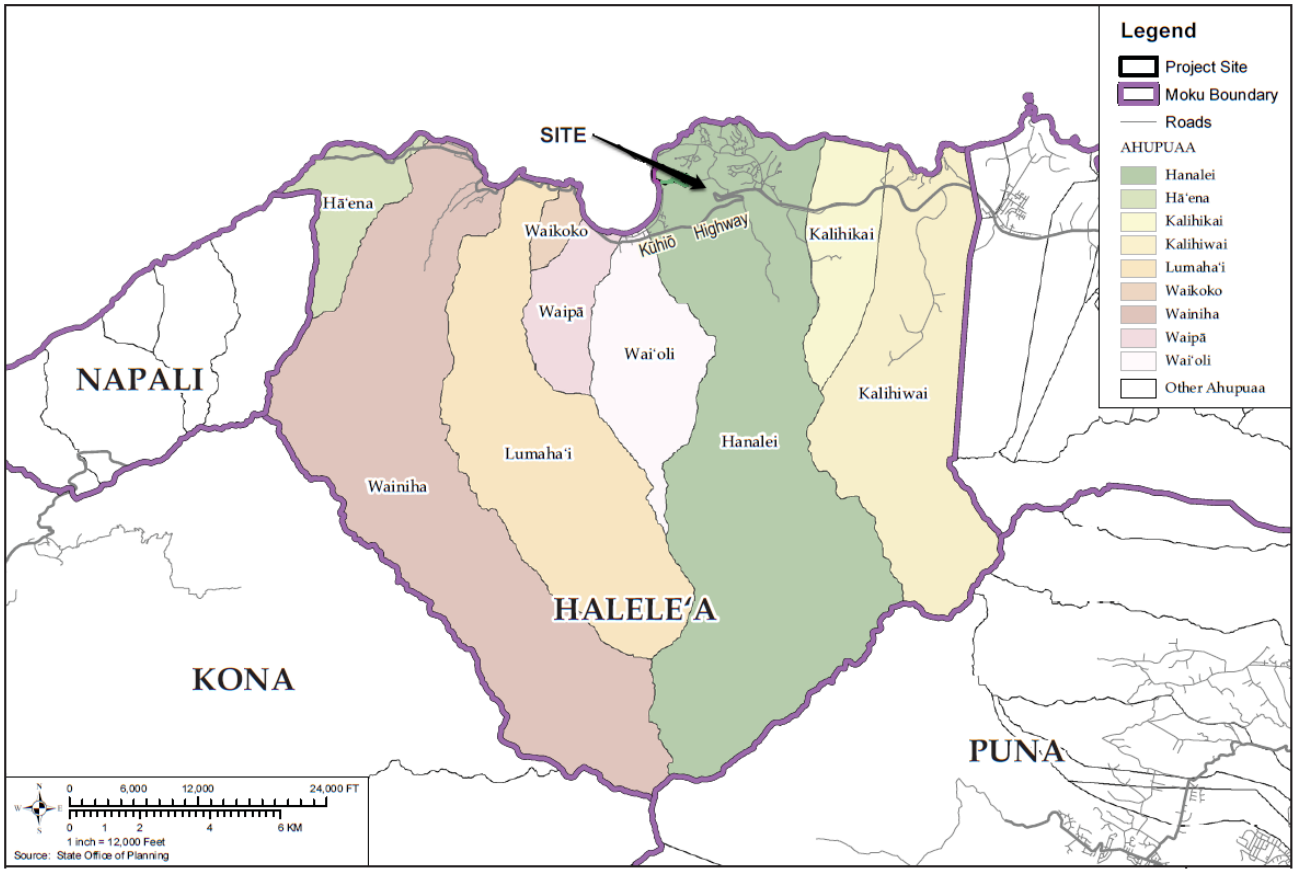


Figure 11. Showing Hanalei District, North Kaua`i and ahupua`a land division including Hanalei ahupua`a - location of the project area. Taxation Map Bureau Territory of Hawai`i.

Ahupua`a Place Names, Descriptions, etc.

The following descriptions of the project area ahupua`a begin with identification of the *ma kai* or ocean ward boundary points to the north and south. The boundary lines of the ahupua`a are referenced by specific landmarks that lead to the apex of the land division's high point *ma uka* to the west.

The common description that ahupua`a are "pie-shaped" is inaccurate. However, it is a general practice to apply triangulation of the 3-main boundary points of the ahupua`a when identifying its respective division lines. Additionally, ahupua`a do not terminate at the ocean ward boundary points. The boundary lines are purposely extended into the ocean so that it also includes the resources and

minerals of the reef and ocean as well.

The Hawaiian Legislature created the Office of Commissioner of Boundaries in 1862 to determine exact boundaries of previously un-surveyed *ahupua`a*. In July 14, 1873, the boundary commission met to identify the Hanalei boundaries through native Hawaiian references and landmarks. All persons who had received LCA awards for their lands by names only were mandated to appear before the BC to have their boundaries identified and determined.

On 14 July 1873, Kealohanui—a Hawaiian living in Hanalei "since I was very little"—testified before the Commission of Boundaries for the Island of Kaua'i on the boundaries of the ahupua'a. As transcribed in the commission's proceedings, notable among the place names and landmarks along the western boundary of the ahupua'a that Kealohanui recalled are the following:

Kaunaapi	residing place of chiefs Kauanohi & Hula house
Kaunuaholea	a starting place for races to the beach
Kapaka	stone place of worship (Heau [sic])

The following is the narrative, describing boundaries of the lands of Hanalei:

No. 18
Boundary of the Ahupuaa of Hanalei
1873 July 14

Received the following petition
Honorable Duncan McBryde
Commissioner of Boundaries for island of Kauai
Sir: I am instructed by the Commissioners of Crown Lands to make application to you to define and settle the boundaries of the following lands on the Island of Kauai viz
The *Ahupuaa* of Waimea
" Hanapepe
" Anahola
" Hanalei

I am sir
Your Obedient Servant
Jno. O. Dominis
Crown Commissioner & Land agent.
Thereupon appointed the 23rd day of May 1874 for the hearing of said petition and caused notice to be served on the owners of the adjoining lands of the time and place of hearing.

Kealohanui Sworn
My name is Kealohanui live in Hanalei was born in Koolau, lived at Hanalei since I was very little. Know boundary. Kaluahi, a *Konohiki*, told me where it was; it commenced at an opening in the reef ½ of which belongs to Hanalei ½ to Kalahi[k]ai it is called Holokoa thence straight to sand beach, thence along sand beach to a rocky point, Kalaihonu and thence *mauka* to Kakahewa, a broad *kula* and thence to Nakoahale " " Kamoolehua a ridge and thence to Kawa, a broad ridge with stones at boundary Kaulaokakea, a rocky ledge above government road and thence to Kapuakekua, a small mound and thence to
Kapukaili, *Kula* land and thence to Kaunaapi, residing place of chiefs Kauonohi & *Hula* house [page 84]
Kaunuakolea, a starting place for races to beach thence to Kapualeoanini, sharp narrow ridge between two gulches thence to

Kapualiohaohi, " " "
Kahekawai, a small stream, "
Mahani, flat ridge with banana bushes "
Kapaka, stone place of worship (*Heau*) [*Heiau*] "
end of Kalihikai and junction with Kalihiwai

Kawaipulea, ridge and small stream runs to Kalihiwai river.

I do not know further names but can point out the boundary till it joins with Waialeale, from Waialeale it comes down Kona or Waimea till it joins Wainiha and Lumahai thence down Lumahai boundary till Junction with Waioli and down Waioli boundary to the sea.

Manoha Sworn
I live in Hanalei was born at Poapoa, came here when young. Know boundary of Hanalei. Kalauakea pointed it out to me also Kauiki, Kalauakeoa belonged to Kalihikai. Kauiki to Anini. I was a *kanaka* of Kaumualii. The boundary commences at Holokoa a ledge outside of break in reef, thence straight through harbour to sand beach thence along sand beach to a rocky point called Kalaihonu, thence to Kahahewa, a level grassy plan thence to Nahoahaele " " "thence along the different places as given by the two former witnesses to Kawaipulea.

From the above and the evidence of two other additional witnesses the Commissioner of Boundaries rendered the following decision.

Decision Commences at an opening in the Reef one half of which opening

belongs to Hanalei and one half to Kalihikai and called Holokoa, and thence straight to sand beach [page 85]

Thence along sand beach to a rocky point called Kalaihonu thence *mauka* on ridge to Kakahewa on broad *kula* thence continuing on *kula* to Nahoahaele. Thence through *kula* land to Kamoole-hua a ridge, and thence to a broad ridge with stones at boundary called Kawa and thence to a rocky ledge above Government Road called Kaulaahakea thence to a small mound called Kapuakekua. Thence through *kula* land to Kapuhaili thenceto residing place and *hula* house of chief Kauonohi, thence to a place where natives used to start from when racing to the beach and called Kaunuakolea thence up a sharp narrow ridge between two gulches called Kapualioanini. Thence continuing up side ridge to Kapualiokaohi. Thence to a small stream, Kahekawai, thence up a flat ridge Mahani with banana trees. Thence to a large and peculiarly shaped stone at an old place of worship (*Heau*) [*Heiau*] called Kapaka here ends Kalihikai and commencement of Kalihiwai with Hanalei the boundary, then crosses a small stream which runs into Kalihiwai river called Kawaipulea, and thence to Waialeale between the two last named stations none of the witnesses ex- amined could give any names of stations, from Waialeale the boundary runs down that of Waimea till it joins Wainiha i and then down Lumahai boundary till junction with Waioli and thence down Waiole to the sea.

Duncan McBryde
Commissioner of Boundaries
Kauai

Notes of Survey of *Ahupuaa* of Hanalei
The N West corner of this land commences on the sea beach at a
place called Manolau where a tall stone is let into the ground
with broken bottle beneath and from whence the following places
bear an orange tree on the ridge at the head of Waikoko and
called Kaooa, S 70º 47’ West true* [*coordinates given in space between lines, above preceding coordinates are given] S 61º 45’ W Mag; Peapea Peak on west boundary of Waioli, S 39º 55’ W true * S 30º 58’ West Mag, a tall stone on point of spur below [page 86]
Peapea S 58º 22’ W true * S 49º 25 W Mag, from thence the western boundary of this runs as follows Bearings Links true
S 6º 44’ E 1010 along through guava bushes and crossing Government Road to a
S 20º 7’ E 1045 long stone set in Johnsons paddock through paddock to old *Kuaauna*
S 23º 44’ E 1560 following old *Kuaauna* & *hau* tree fence to *kalo* patches
S 9º 21’ E 1700 crossing through *kalo* patches to foot of spur and then up said

spur to the top. Said spur is called Hulumanu
S 24º 29' W 531 up spur
S 27º 1' E 1360 up ridge
S 30º 27' E 1604 "
S 60º 1' E 779 "
S 23º 58' E 576 "
S 6º 31' E 274 "
S. 40º 26' E 280 "
S. 66º 17' E 256 "
S 84º 25' E 579 "
S 86º 25' E 316 "to mark thus [diagram - sketch] and stones & bottle
Thence the Boundary follows along the Mooleaka ridge on the following bearings and distances
S 23º 15' E 2400 up water shed of ridge
S 44º 30' E 1240 up ridge through woods to junction with main range leading down from Hoaeleele
S 6º 30' W 2320 up watershed of ridge to Hoaeleele peak
S 36º 30' W 1500 up ridge to sharp peak Hihimanu
South 1100 to sharp peak called Puukii
S 26º 30' 3140 " " Puukokala.
Thence following round water shed of range passing the lands of Waioli, Lumahai, and Wainiha, to the top of Waialeale.

The Eastern boundary of this Land commences on the sea beach at an opening in the reef and called Holokoa and runs thence in through reef S 3º 30' E to a stone or rock projecting through sand and from which the following places [page 87]
bear a large stone on reef below point called Haweanui,
N 77º 50' W true, 87º 50' mag
N 57º 44' E 321 links along sea beach
S 70º 41' E 500 " to Kalaehohonu point
S 16º 4' W 850 " up ridge from Kalaehohonu to Puueokau S 36º 37' or 57 W 836 " to Kakahewa
S 1º 25' W 1540 links along " S 14º 15' W 2185 " to Nakoahaili
S 16º 30' W 2350 " crossing several gullies and on to Kamoolehua; S 3º 21' E 753 " along Kamoolehua ridge to stone
S 29º 1' W 647 " " " below road S 14º 22' W 211 " crossing government road to stone S 7º 13' W 585 " up ridge
S 7º 5' W 1493 " " S 5º 37' W 1014 " "
S 0º 22'; E 1247 " to stone
S 12º 50' E 3000 " by mountain roadway S 2º 52' E 1400 " " "
S 2º 19' W 1165 " up ridge to edge of terrace & clump trees (*hau*) S 21º 24' E 1872 " by road through woods
S 38 46' E 494 " " " "

S 20º 49’ W 380 “ “ “ “
S 8º 48’ W 805 “ “ “ “
S 14º 24’ W 812 “ “ “ “
S 15º 52’ W 504 “ “ “ “
S 42º 36’ W 662 “ “ “ “
S 15º 18’ W 648 “ “ “ “
S 51º 23’ W 338 “ “ “ “
S 2º 29’ E 458 “ “ “ “
S 27º 23’ W 512 “ “ “ “
S 45º 15’ W 594 “ “ “ “
S 13º 14’ W 893 “ “ “ “
S 5º 40’ E 817 “ “ “ “
S 14º 46’ E 939 “ crossing gully by road through woods; S 5º 31’ W 548 “
S 46º 38’ E 595 “ “ “
S 7º 54’ E 1031 “ up ridge “ [page 88] S 35º 38’ E 205 “
S 27º 54’ E 463 “
S 7º 15’ E 167 “
S 47º 37’ E 167 “
S 20º 0’ E 500 “
S 31º 23’ E 239 “
S 54º 15’ E 213 “
S 25º 56’ E 83 “
S 76º 14’ E 239 “
S 44º 13’ E 139 “
S 4º 13’ W 147 “
S 20º 38’ E 367 “
S 41º 50’ E 200 “to a large peculiarly shaped rock with hollows in it and called Kapaka.
This is as far as the boundary can be defined but if continued further at any future period lines will have to be cut and the water shed of the ridge surveyed as far as Waialeale. The area 5922 acres.

The quantities computed is that within the lines surveyed.
The bearings herein noted are true taken from Meridian at N W corner of this land.

At nearly all stations there have been trenches cut [diagram – sketch] or stones put into the ground.

I hereby certify that this is a correct
survey of the boundaries of this land as decided by Duncan McBryde commissioner of Boundaries for the Island of Kauai.

James W. Gay Surveyor May 1875

Approved 30 June 1875 Duncan McBryde Commissioner of Boundaries Island of Kauai. [page 89]

Anini

ʻili ʻaina, LCAw 8224 to Iikuwa. "Maloko Anini, ahupuaa o Hanalei...Apana 1. Eiwa loi..." TMK 5307:3. Formerly called Wanini. (PEM: 228)

Lexicology: ʻanini. PEM: dwarfish, stunted.

Hanalei

The ahupuaa was returned by Haalilio, retained by Crown at the Mahele. The district was created in 1859 by merging the ancient Halelea and Na Pali districts, and now extends from Lepeuli to Awaawapuhi.

Lexicology: hana-lei. PEM: crescent bay.

Haluaalo

ʻili ʻaina Claim no. 2660 & 10313 by Namauu: "No. 1 is some kula embracing a houselot in Haluaalo..."

Hanaleiiki

Features: ʻili ʻaina, LCAw 4081 to Kalawakea. "Maloko o ka ili o Hanaleiiki..." Misspelt "Hanaleiki" in Indices.

Lexicology: hanalei-iki. PE: small Hanalei.

Haulepe

Features: moʻo, Claim no. 9078 & 4073 by Kalakala: "No. 4 is 2 moos called Haulepe and Kanaele."

Kaapiki

Features: moʻo, Claim no. 9078 & 4073 by Kalakala: "No. 1 is a houselot in Kaapiki...in the midst of land lately give to Mr. J. Kellitt by an Allodial Title [RPG 100; TMK 5405:6]

Lexicology: ka-ʻāpiki. PE: the rogue, rascal.

Kahalike

Features: moʻo, Claim no. 8125 by Hanaimoa: "No. 3 is a loi in Kahalike, Hanalei."

Lexicology: kaha-like.

Kahe

Features: ʻili ʻaina, Claim no. 10855 by Wahineiki: "No. 2 is 1 loi in the ili Kahe."
Lexicology: kahe. PEM: flow.

Kaina

Features: ʻili ʻaina, LCAw 10594 to Papa. "[Apana] 1. Pahale maloko o ka ili o Kaina..." Misspelt "Haina" in Indices. TMK 5502:106. Also LCAw 3663 to Makole.
Lexicology: ka-ʻina. PEM: the sea urchin.

Kaluaalo

Features: ʻili ʻaina, LCAw 10313 & 2660 to O. Namauu. "Apana 1. Pahale maloko o ke ahupuaa o Hanalei ili o Kaluaalo..."

Kaluakanaka

Features: loʻi, LCAw 9078 & 4073 to Kalakala. "[Apana] 3. Akahi loi, Kaluakanaka ka inoa..."
Lexicology: kālua-kanaka. PEM: oven-baking man.

Kaluanui

Features: loʻi, LCAw 8125 to Hanaimoa. "Apana 1. Akahi loi, Kaluanui ka inoa..."
Lexicology: ka-lua-nui. PEM: the big pit.

Kama

Features: ʻili ʻaina, LCAw 10325 to Nunu. "Apana 2. Pahale maloko o ka ili o Kama..." TMK 5502:por.6.
Lexicology: kama. PEM: child.

Kanaele

Features: moʻo, LCAw 9078 & 4073 to Kalakala. "[Apana] 4. Alua moo kalo, Kaulipi me Kanaele ka inoa..." TMK 5404:14x.
Lexicology: ka-naele. PEM: the bog.

Kanoa

Features: loko, ʻili ʻaina, LCAw 7642 to Kahanuala. "Pahale maloko o Kanoa, ahupuaa o Hanalei, Halelea, Kauai." The name is also applied to a loko and a brook. (FT 12:51, claim 4076.) Also LCAw 4076, 3664.
Lexicology: kānoa. PEM: bowl (as for kava).

Kanoaiki

Features: ʻili ʻaina, LCAw 10954 to Waiahu. "Pahale maloko o ka ili o Kanoaiki..."
Lexicology: kānoa-iki. PE: little kānoa [bowl].

Kaohia
Features: moʻo, LCAw 4083 & 9137 to Kealaiki. "Apana 1. Aina kalo maloko o ka moo o Kaohia..." TMK 5404:14x or 11x.
Lexicology: ka-ʻōhiʻa. PE: the ʻōhiʻa tree.

Kapukawai
Features: ʻili ʻaina, LCAw 10954-B to Puamana. "Maloko o ka ili o Kapukawai...[Apana] 1. Loi..."
Lexicology: ka-puka-wai. PE: the water outlet; eye of a coconut.

Kaulipi
Features: moʻo, LCAw 9078 & 4073 to Kalakala. "[Apana] 4. Alua moo kalo, Kaulipi me Kanaele ka inoa..." TMK 5404:14x.

Kauloko
Features: loʻi, Claim no. 9147 by Kamakaulii: "No. 3 is 2 lois called Kauloko & Kuhaimoana."

Kauloulu
Features: ʻaina kalo, LCAw 3819 & 10646 to Puupoa. "Apana 2. Aina kalo ʻKauloulu' ka inoa..." TMK 5404:11x. [Erroneously numbered apana 1 on Tax Map.]

Kaunuopua
Features: ʻili ʻaina, LCAw 4083 & 9137 to Kealaiki. "Apana 3. Pahale maloko o ka ili o Kaunuopua..." TMK 5404:2,3,4.
Lexicology: ka-unu-o-pua.

Kenomene
Features: place, The feature named is uncertain, perhaps a reef.

Keokea
Features: moʻo, Claim no. 10720 by Pukaiki: "in Anini, Hanalei. It is all in one piece, containing house lot, 1 large loko & 5 small lois called Keokea & a small piece of kula."
Lexicology: ke-ō-kea. PEM: the white sand (ō is short

for one).

Kiloa
Features: ‘ili ‘aina, Claim no. 4076 by Kamakaiwa: "No. 3 is 1 loi nui, ili Kiloa. No. 4 is 1 smaller loi, ili Kiloa."
Lexicology: kī-loa. PEM: long ti plant.

Kuhaimoana
Features: loʻi, Claim no. 9147 by Kamakaulii: "No. 3 is 2 lois called Kauloko & Kuhaimoana."

Kukui
Features: ‘ili ‘aina, RPG 99 & 100 to J. Kellitt. TMK 5404:9,13.
Lexicology: kukui. PEM: candlenut lamp, light of any kind. PE:

Kulima
Features: loʻi, Bounds east side of claim no. 8268, 8263 & 9264 by Jeremia.

Kuloa
Features: ‘ili ‘aina, LCAw 4076 to Kamakaiwa. "Apana 3. Aina kalo, aha loi maloko o ka ili o Kuloa..."
Lexicology: kū-loa. PEM: long Kū.

Kumuohia
Features: ‘ili ‘aina, LCAw 10081& 3663 to Makole. "Apana 1. Aha loi maloko o Kumohia [sic]. E hoomaka ana i ka pali o Kumuohia ma ka palena o Waioli..." TMK 5403:por.1
Lexicology: kumu-ʻōhiʻa. PE: ʻōhiʻa tree.

Limunui
Features: ‘ili ‘aina, Claim no. 11066 & 3753 by Apolo: "a mookalo in Limunui, Hanalei... on west side of Loko Kanoa."
Lexicology: limu-nui.

Lohililoli
Features: loʻi, Adjoins west side of claim no. 4080 by Kahilina in Moaala.
Lexicology: lohi-lolilili.

Mahaaua
Features: ʻili ʻaina, LCAw 10325 to Nunu. "Aina kalo me ke kula maloko o ka ili o Mahaaua..." Probably māhā-ʻauʻa, net for ʻauʻa fish. Misspelt "Maahana" on TM 5500 and "Hana" on RM 1833. TMK 5403:por.1.

Mahahaualihi
Features: loʻi, Claim no. 10855 by Wahineiki: "No. 1 is 6 lois in ili Mahaaua called Mahahaualihi."

Moaala
Features: moʻo, Claim no. 4080 by Kahilina: "No. 2 is 4 lois & some kula in the ili Limanui, Hanalei, called Moaala."

Moolulu
Features: moʻo, Claim no. 8268, 8263 & 9264 by Jeremia: "3 lois & some kula adjoining called Moolulu in Hanalei..."

Nahuhuluia*
Features: ʻili ʻaina, Misspelt. LCAw 9147 to Kamakaulii. "Pahale maloko o ka ili o Nahuhuluia..." Written "Nukuhuluia" on RM 1833. TMK 5403:10. Properly "Nukuhuluii" (q.v.).
Lexicology: nā-huhulu-ʻia.

Nehu
Features: moʻo, LCAw 10648 & 3816 to Paaiki. "Apana 1. Aina kalo, alua moo, Paele me Nehu ka inoa..." TMK 5404:12x.
Lexicology: nehu. PEM: anchovy.

Nounou
Features: ʻili ʻaina, LCAw 10915 to Uloa. "[Apana] 2. Pahale maloko o Nounou..."
Lexicology: nounou. PEM: throwing.

Opukahi
Features: ʻili ʻaina, LCAw 52 to John Brosseau. "John Brosseau's lot in Opukahi, Hanalei..." TMK 5501:33,5.

Paauki
Features: moʻo, A moo kalo on the mauka side of claim no. 10648 & 3816 by Paaiki. Perhaps pā-ʻaukī?

Paele
Features: mo‘o, LCAw 10648 & 3816 to Paaiki. "Apana 1. Aina kalo alua moo, Paele me Nehu ka inoa..." TMK 5404:12x.
Lexicology: pā‘ele. PE: dark, black; also a variety of sweet potato

Puapuahoi
Features: ‘ili ‘aina, LCAw 8521 & 9663 to Kaialaweikeau. "Pahale ma ka ili o Puapuahoi..." TMK 5403:por.7.

Puu Poa
Features: mo‘o, Claim no. 4085 for a houselot in Puupoa, Hanalei, was given up by Kekauanui.

Wanini
Features: ‘ili ‘aina, Old name for ‘Anini.

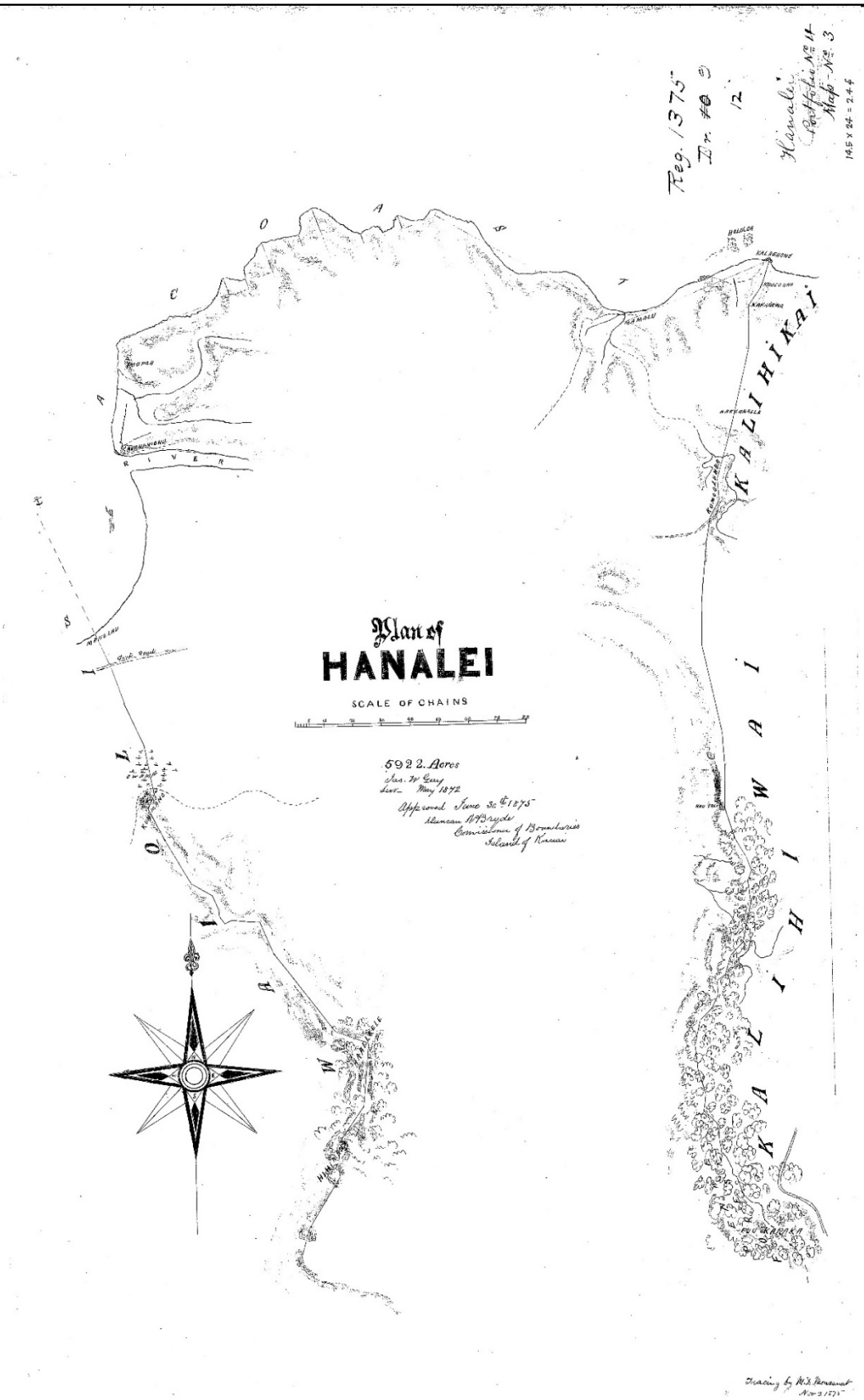


Figure 12. Boundary Map of Hanalei.

A Connection and Understanding of Place
Traditional Wisdom & Knowledge

Mo`olelo such as those presented here provide insight to the life ways, practices and beliefs of the ancient Hawaiians. EAL has included this example of a story to share of the kuleana or responsibility that ali`i (or in today's time - government and community leaders) should have to the land and the people that they manage and oversee.

There are several definitions to consider when looking at this place name. A *lae* is a promontory or point. It is common throughout the Hawaiian archipelago to see traditional place names attached to them - especially along coastal areas. Lae are seaward boundary points for ahupua`a as well.

The details given in this portion of the mo`olelo is a crucial link to understanding the significance of a place - not only as a wahi pana, but as a wahi kapu or sacred place. This was realized only after rounds of research and lengthy discussions regarding traditional cultural practices and protocols associated with ali`i. Repeated field observations to consider alignment of celestial bodies such as the rising sun and moon were prompted by nuances within the mo`olelo that were initiated by the expertise and skill of the kahuna.

Other Hanalei Place Names

Hawaiiloa
Features: surf, Unlocated surf in Hanalei district. Quad uncertain.
Lexicology: hawai‘i-loa. PEM: long (or distant) Hawai‘i.,

Hoopea
Features: surf, Unlocated surf in Hanalei district. Quad uncertain.
Lexicology: ho‘ope‘a. PEM: probably, to cross.

Kaapoku
Features: heiau, Bennett's site 142. "...inland from Site 141 in Hanalei Valley. This small shrine consists of a paved platform 18 by 20 foot made of rough stones. A village was across the stream." Probably misspelt. Cf. Kaapoko.

Kamoomaikai
Features: pā hale, "Commencing at lime tree, at southeast corner of Kamoomaikai, J. Kellitt's dwelling houselot..." TMK 5404:por.9; perhaps parcel 8?
Lexicology: ka-mo‘o-maika‘i.

Kipapaaola
Features: trail, "Trail above Hanalei, Kauaʻi. See Kīkī-a-Ola."
Lexicology: kīpapa-a-ola. PEM: roadway [made] by Ola (a Kauaʻi chief).

Kuakahiunu
Features: surf, Unlocated surf in Hanalei district. Quad uncertain.
Lexicology: kū-a-kahi-unu. PEM: standing like a fishing shrine.

Makawa
Features: surf, Unlocated surf in Hanalei district. Quad uncertain.
Lexicology: makawa. PEM: not translated.

Nalowale
Features: heiau, Bennett's site 141. "Heiau and house sites, at Kalama-iki, an old village on the river flats, four miles up Hanalei Valley. There is a stone structure 18 by 20 foot with walls all around 2.5 feet wide and 2 feet high..." The name is forgotten.
Lexicology: nalowale. PE: forgotten.

Poʻoku
Features: heiau, puʻu, vent: "Only a few stones remain to mark the location of this heiau which Thrum describes as ʻAn unenclosed heiau of about two acres in area. Of luakini class, terraced down on all sides from the central platform. ʻ" In 1887 the Hawaiian Government Survey establishd the Hanalei Latitude Station near the south end of the site. The hill is a vent in the Koloa Volcanic Series. Elev. 460 ft.
Lexicology: poʻo-kū. PEM: upright head.

Puʻu Lena
Features: surf, Unlocated surf in Hanalei district. Quad uncertain.
Lexicology: puʻu lena. PEM: yellow hill.

Hanalei Mountain Peaks & Landmarks

One of the most important topics of research for this study was the identification of Hanalei's mountain peaks and landmarks. When asked about the names of the individual peaks, a few recognized its most prominent peak as Hihimanu, Puukii, Puukokaki, Puukau, Kapaka, and Haelele.

Hanalei
boundary point
Comments: The southeast corner of Hanalei, so named by surveyors. (BC 31)

Between Keahua and Kualapa on the Wailua/Hanalei bdry, on Makaleha Mountain. Elev. 2240+ft.
Lexicology: hana-lei. PEM: crescent bay.

Haeleele
boundary point, pu‘u, "little green hill" between Mookoleaka and Puu Ki on the Hanalei/Waioli bdry.
Lexicology: hā‘ele‘ele. PEM: blackish.

Hihimanu
Features: boundary point, ridge, triangulation station, On USGS 1963, a peak between Puu Ki and Waiopa on the Hanalei/Waioli bdry. Elev. 2360+ ft. "Hihimanu Ridge" extends below Puu Ki on RM 1833. Hihimanu trig. station is located on the hill called "Kaukaopua" (q.v.) along the Hihimanu Ridge.
Lexicology: hīhīmanu. PEM: beautiful.

Kaliko
Features: pu‘u, Between Waiopa and head of Waioli on the Hanalei/Waioli bdry. Elev. 4200+ ft.
Lexicology: ka-liko.

Kamoo Koleaka
Features: boundary point, pu‘u, A hill between Manolau and Puu Ki on the Hanalei/Waioli bdry. Elev. 245 ft. Also written "Mookoleaka" (BCT) and "Mokoleaka Ridge" (RM 1833, TM 5600). Cf. Moakoleaka.

Kaoloolo
Features: pali, Claim no. 8125 by Hanaimoa: "No. 4 is some kula on the pali called Kaoloolo..."

Kaumanalehua
Features: pu‘u, Elev. 2266 ft.

Kaukaopua
Features: pu‘u, triangulation station, Site of Hihimanu trig. station. Elev. 1272 ft.
Lexicology: kau-ka-‘ōpua. PEM: the horizon clouds alight.

Kaupulehu
Features: pali, Bounds makai side of claims no. 9284 by Kuapuka and 10648 & 3816 part 2 by Paaiki; Koolau side of

claim no. 9078 & 4073 part 4 by Kalakala, 3819 & 10646 part 2 by Puupoa but spelt "Kupulehu".
Lexicology: ka-ʻū-pūlehu. PEM: the roasted breadfruit.

Kawailewa
Features: puʻu, Elev. 3300 ft.
Lexicology: ka-wai-lewa. PEM: the suspended water.

Kaweonui Point
Features: point, Spelt "Haweanui" in Boundary Certificates 18 (1:88) and 31 (1:156).
Lexicology: ka-weo-nui. PEM: the large redness.

Keanaawi Ridge
Features: ridge, A ridge dividing the headwaters of Kaapoko Stream and Hanalei River.
Lexicology: keanaʻāwī. PEM: not translated.

Kiloa
Features: puʻu, Elev. 2390 ft.
Lexicology: kī-loa. PEM: long ti plant.

Kuakea
Features: pali, Bounds east side of claim no. 9279 by Koa in the ili Hanaleiiki.
Lexicology: kuakea. PEM: faded, light colored.

Kaumaka
Features: place, "Land division near Hanalei, Kauaʻi."
Lexicology: kaʻu-maka. PEM: give me eye (referring to the cry of two boys who were fond of fish eyes and were killed by a shark sent by a sorcerer.).

Kuhimana
Features: boundary point, place, flat kalo land" at foot of Mookoleaka ridge, between Kamookoleaka and Naoneana on the Hanalei/Waioli bdry.

Lae Hanaike
Features: boundary point, "...following along right on north foot of pali to large rock at Lae Hanaike, the makai north corner of this land, then following along sea to mouth of Hanalei River..." Coordinates estimated. Perhaps lae-hana-iki?

Manolau
Features: boundary point, place, "The Northwest corner of [Hanalei] commences on the sea beach at a place called Manolau..."

Mokoleaka Ridge
Features: ridge, Same as Kamoo Koleaka.

Nakaloaola
Features: place, "Small mountain area above Hanalei, Kauaʻi."
Lexicology: nā-kalo-a-ola. PEM: the taros of [chief] Ola.

Naoneana
Features: boundary point, place, "place on Government road" between Manolau and Kuhimana on the Hanalei/Waioli bdry.

Poomau
Features: pali, Pali called Poomau bounds claim no. 10691:2 by Naiwi in ili Mahaaua.
Lexicology: poʻo-mau. PEM: constant source or constant head.

Puu Ki
Features: boundary point, puʻu, Between Kamoo Koleaka and Hihimanu on the Hanalei/Waioli bdry. Written "Puu Kii" in BCT.
Lexicology: puʻu kī. PEM: ti plant hill.

Puu Kokala
Features: boundary point, puʻu, The Hanalei/Waioli bdry passes "round head of [Waioli] valley to commencement of Eastern boundary at a place on high hill called Puu Kokala..." Perhaps the same as or near Kaliko.
Lexicology: puʻu kōkala.

Puu o Miki
Features: puʻu, A hill on the Halelea Forest Reserve boundary. Elev. 480+ ft.
Lexicology: puʻu-o-miki. PE: Miki's hill.

Puu Pehu
Features: place, A broad area west of Anini Stream, makai of Hwy 56, mostly occupied by Princeville Ranch.
Lexicology: puʻu pehu.

Waiopa
Features: place, The feature named is uncertain.
Lexicology: wai-ʻopa. PEM: crippled water.

Waipuni
Features: boundary point, puʻu, A hill on the Forest Reserve and Homestead boundary. Elev. 400+ ft.
Lexicology: wai-puni.

Over the years, residents have lost touch with the place names and their meanings for this mountain range. The habit of identifying traditional landmarks whether they are mountains, beaches, etc. by generalization is common. A greater misfortune is the more popular trend and use of nicknames created by recent generations of transient and kama`āina residents. Disappointedly, this has resulted in the greater loss of knowledge and awareness of traditional Hawaiian places and wahi pana.

Knowledge of wahi pana and their place names for both subject ahupua`a of this CIA are on the verge of being forgotten and lost altogether. There is a sense of urgency to bring this to the forefront of our collective attention and create learning opportunities for the native Hawaiian community.

Several map sources referenced for clarification of place names and peaks produced conflicting information and statistical data as well. Further research, including examination of oral histories and other sources for accurate identification is of great importance and priority.

Fresh Water Sources of Hanalei

- Kaapahu Stream Rises at 1960 ft. elev., enters Hanalei River at about 390 ft. elev. Lexicology: ka-ʻāpahu. PEM: the truncation.

- Kaapoko Stream Rises at about 2450 ft., enters Hanalei River at about 645 ft. elev. Lexicology: ka-ʻā-poko. PEM: the short stone.

- Kaiwa Stream The north fork rises at 2000 ft. elev., enters Hanalei River at about 510 ft. elev. Lexicology: ka-ʻiwa. PEM: the frigate bird.

- Pekoa Stream Rises at about 1500 ft. elev., enters Hanalei River at about 260 ft. elev. A waterfall at 800 ft. may carry the same name.

- Waileia Stream “Commencing at stake at bend of Waileia Stream on north edge..." Lexicology: wai-lēʻia. PE: abundant water.

- Waipunaea Stream Rises at about 1900 ft., enters Hanalei River at about 725 ft. elev.

- Hakanawaliwali ʻauwai, ʻili ʻaina LCAw 2660 & 10313 to O. Namauu. "Apana 2. Aina kalo me kula ma ka ili o Hakanawaliwali..." Misspelt "Kahanawai" on RM 1833, which shows "Kakonawaliwali auwai" along west side of LCAw 10954-

B:2. TMK 5-4-03: por.7.

- Nukuhuluii ʻili ʻaina, Claim no. 9147 by Kamakaulii: "No. 1 is houselot in Nukuhuluii." A small stream or brook with a large name, variously written "Nukuhuluia" (on RM 1833), "Nahuhuluia" (IN 505). Lexicology: nuku-hulu-ʻiʻi.

- Waiaula moʻo, stream, Claim no. 4080 by Kahilinui: "No. 1 is houselot in Waiaula" bounded on the east by the brook Waiaula. Also, claims 7944 and 2660.

- Waihi ʻaina kalo, LCAw 9078 & 4073 to Kalakala. [Apana] 2. Aina kalo, Waihi ka inoa..." Lexicology: wai-hī. PEM: trickling water

- Hanalei River river, Rises at 4340 ft. elev., enters Hanalei Bay. Lexicology: hanalei. PEM: crescent bay. The Hanalei River is a large (16.2 miles long) and dynamic river on Kauai's north shore, with headwaters in the 'Alaka'i with over 450 inches of rain, and with river flows ranging from20-50 million gallons per day (mgd) to over 6 billion mgd. Because of its hydrogeographic features, Hanalei River has a large floodplain. It is also one of the 10 "National Heritage Rivers" in the United States, and has a relative abundance of all of the native Hawaiian amphidromous species of 'o'opu, 'opae and hihiwai or wi. The culturally and economically important 'o'opu nakea spawns on basalt boulders and large cobble stones within the Hanalei River estuary. Oʻopu (gobies), which utilize this portion Hanalei River, have cultural significance as well as being a food source. Oʻopu nōpili were traditionally used in certain ceremonies such as the weaning ceremony for first-born children and house warming feasts. Oʻopu alamoʻo were considered kapu (sacred) and believed to be related to the moʻo gods and bad luck if caught.

Land Commission Award Claims Hanalei Ahupua`a

With the Hanalei River as its main source, generations of native Hawaiians thrived in the ahupua`a of Hanalei inhabiting mostly the valley and nearby coastal areas. In pre-contact times, prior to transformation of ancient Hawaiian religious and political systems, Hanalei's population was comprised of ali`i, kahuna and maka`āinana that were experts in the professions of planting and farming, fishing, healing and kapa making.

Land Commission Awards and Mahele Awards are Sources of Title adjudicated by the Land Commissioners to claimants. Mahele Awards are Sources of Title specifically issued to those chiefs who received their lands from the king but failed to present their claims before the Land Commission and thus received titles to their lands from the Minister of the Interior. Kamehameha Deeds are Sources of Title to Crown Lands that Kamehameha III, IV and V conveyed. Minister of Interior Deeds were Sources of Titles that conveyed lands from the government to private individuals by the Minister of the Interior during the Kingdom of the Monarchy. Patents - both Royal and Land were issued on the awards as evidence that the Government's right to commutation therein was satisfied. An award together with a patent perfected the awardee's title to the property. Grants by Royal Patent and Land Patent were Sources of Title deriving from the sales of government lands. The term "Royal" indicates that the document was issued during the Hawaiian Monarchy (up to 1893). The Land Patent or Land Patent Grant thus means the document was issued subsequent to the monarchy.

The Kuleana Act of 1850 allowed maka'āinana (Native Hawaiian commoners), in principle, to own land parcels at which they were currently and actively cultivating and/or residing. As a result of the Māhele, Land Commission Awards (LCA) were claimed in five distinct clusters within Hanalei Ahupua'a: the shoreline, the Maha'ana (taro fields adjacent to Waioli Ahupua'a), Puapuahoi-Limanui (the bottom lands of the Hanalei River), 'Anini (on the coast northeast of Hanalei Bay), and Kīloa (inland and adjacent to Limanui).

A total of 74 claims for kuleana lands were brought before the Land Commission by native Hawaiians residing in the ahupua`a of Hanalei in 1846-48. Of the 74 listed, 22 claims were not awarded LCAs. It is also known that many native Hawaiians did not appear to petition for their kuleana before the Land Commission. These claims, both awarded and not awarded, detail land usage referred to here as land use components. These components (204) comprise more than 124 taro patches or mo'o (one or more taro patches in a mo'o) (61.1%), 44 house lots (21.7%), 18 kula (garden/pasture) (8.9%), more than eight orange and more than one lemon trees (4.9%), five loko (ponds) (2.5%) a noni and banana patch, 400 head of cattle and

160 acres of coffee, and a wharf (misc. 1%). No LCAs claims are in the parcel or project area.

Land Commission Award Claims
Ahupua`a of Hanalei
District of Halelea

(Listed in alphabetical order of Claimant's name)

Lands at Hanalei				
Claim Number	**Claimant**	**`Ili/Ahupua`a**	**Kuleana**	**Designation**
00387	ABCFM	Hanalei, Waoili	4-5 acres houses and yard	1 ap.; 9.76 Acs
03753	Apolo	Kanoa, Liminui	2 house lots	2 ap.; 3 roods 38 rods
11066	Apolo, F.K.	Hanalei	2 house lots and moo kalo	Not awarded
00596	Bateman, Thomas for Rhodes & Co	Hanalei	5 acres	Not awarded
00052	Brousseau, John	Opukahai	lot	1 ap.;1 Ac 3 roods 18 rods
00027	Dudoit, Jules	Hanalei	unknown	1 ap.; no amount of land indicated
08125	Hanaimoa	Kaluanui, Mahaana, Kaahalike, Kaoloolo, Paoama	House site, lo'is and kula	Kaluanui Hanalei Halelea; 1 ap.; 35 rods; Maheana Hanalei Halelea; 1 ap.; 1 Ac 2 roods 14 rods
08263	Ieremia, Pepee or Jeremia	Koolulu, Mahaana	House lot, loi and kula	Mahaaua Hanalei Halelea; 1 ap. 1 Ac 17 rods
08224	Ikua	Anini	House lot and loi	3 ap.; 1 Ac 2 roods 12 rods
07642	Kahanuala	Hanoa/Kanoa	Kula and house lot	Kanoa 1 ap. 1 rood 24 rods
04080	Kahilina	Waiaula, Limanui	Kula and house lot	2 ap.; 1 Ac 27 roods

09671	Kahio	Hanalei		Wrong number
07671	Keahi	Anini	House loy, 6 loi, and kula	1 ap.; 1 rood 37 rods
07944	Kahue, former Konohiki	Hanalei	4 loi and kula	2 ap.; 4 Acs 14 rods
09963	Kaialawaikeau	Hanalei		Wrong number
08521	Kaialawaikeau, K.	Puahuahoi	House and kula	1 ap.; 59 rods
04073	Kalakala	Kaapiki	House site, 4 loi, 2 moo loi, Kaluakunaha loi	R.P. 2919; no testimony or description (four ʻāpana; 2 acres 37 rods). However, LCA 4073 provides details—ʻāpana 1 "is a house lot in ʻKaapikiʼ with two orange trees"
04081	Kalawakea	Hanaleiiki	House lot	1 ʻāpana; 1 rod
09264	Kalei	Hanalei	2 loi and pond	Not awarded
04076	Kamakaiwa	Kanoa, Mahaana, Kiloa	House lot and 3 loi	Kanoa Hanalei Halelea; 1 ap.; 2 roods 13 rods; Kiloa Hanalei Halelea; 1 ap.; 1 Ac. 2 roods 32 rods; Mahaana Hanalei Halelea; 1 ap.; 1 rood
09147	Kamakaulii, Simona	Nuhuhuluii, Uhikiko	House lot	Nahuhuluia Hanalei Halelea; 1 ap.; 1 rood 25 rods
09261	Kaniela or Daniela	Kaina, Kaaihoonuu, Kuaikale	House lot, kula and 10 loi	Kaaihoonuu Waioli Halelea; 1 ap.; 1 rood; Kuaikale Waioli Halelea; 3 ap.; 2 roods 3 rods
07921	Kapaleho	Kaauwaikahi	House lot, loi and kula	Not Awarded
04109	Kaunahi	Kanoa, Waioli	House lot, kula, taro moo	Hanalei Halelea; 1 ap.; 2 roods 25

				rods; Waioli Halelea; 1 ap.; 2 roods 16 rods
09139	Kaunahi	Kanoa, Waioli		Not awarded
04025	Kawainui, Samuela or Silomona	Hanalei, Waioli	House lot, kula, 4 kula	Not awarded
09280	Kawainui, Samuela	Hanalei, Kumuulu, Kaopai, Koele, Ahau	House lot, kula, 4 kula	Hanalei Halelea; 1 ap.; 1 Ac; Waioli Halelea; 4 ap.; 2 Acs 32 rods; Ahau Waioli; 1 ap.; 1 rood 26 rods
09137	Kealaiki	Limaanui		Not awarded
04083	Kealaiki, E	Kaluaalo, Kaunuopua, Kaohia	2 House lots, 5 loi,	Kaohia Hanalei Halelea; 2 ap.; 1 Ac. 2 roods 38 rods; Kaunopua Hanalei Halelea; 1 ap.; 37 rods
04085	Kekauanui	Puupoa at Hanaleikai		Not awarded
1027 (also referenced as Grant 100)	Kellett, John	Hanaleiiki	Awarded "Kamomailai"; five houses, some enclosed—four native houses and Kellet's home; six kalo patches	one ʻāpana; 1 acre 6 rods
09276	Kiolea	Hanalei, Kuhimana	House lot, 4 loi, pasture	Hanalei Halelea; 1 ap.; 1 rood; Kuhimana Waioli Halelea; 1 ap.; 2 roods 6 rods
09279	Koa	Hanaleiiki	2 moo, kula	Hanaleiiki Hanalei Halelea; 1 ap. 1.50 Ac 37 rods
09275	Koenapuu	Papiopio, Luha, Kuhimana	House lot, and loi	Hanalei Halelea; 1 ap.; 1 rood 19 rods; Luha Waioli Halelea; 2 ap.; 12 rods; Papiopio Waioli Halelea; 1 ap.; 2 roods
09281	Kuapuka	Hanaleiiki	5 loi	Hanaleiiki Halalei Halelea; 1 ap.; 2

				roods 38 rods]
09278	Kuaua	Hanalei, Luha, Kamaunui	House lot and 2 loi	Hanalei Halelea; 1 ap.; 1 rood 3 rods; Waioli Halelea; 1 ap.; 13 rods]
09274	Kuheleloa	Hanalei, Kaohi	House lot, kula and pond	Hanalei 1 ap. 1 rood 17 rods; Kaohi Waioli 1 ap. 1 Ac 33 rods]
01001B	Levi	Hanalei	House lot, 3 loi and kula	Waioli Halelea; 3 ap.; 1 Ac
010011	Levi	Hanalei		Erroneous number
03664	Mahuahua	Manoa/Kanoa	House lot	Kanoa Hanalei Halelea; 1 ap.; 1 rood
03663	Makole	Kaina, Kumuohia	House lot, 4 loi, noni pasture	Kama Hanalei Halelea; 1 ap.; 1 rood 13 rods; Kumuohioo Hanalei Halelea; 1 ap.; 3 roods 2 rods
10081	Makole	Hanalei, Kumuohia		Wrong Number
10089	Makole	Hanalei		Wrong Number, not awarded
10328	Nainoaakua	Anini	House lot, 5 loi and kula	1 ap.; 1 Ac 1 rood 7 rods
10691	Naiwi and Puunonea	Hanalei	6 loi, kula	Mahaaua Hanalei Halelea; 1 ap.; 1 Ac 3 roods 12 rods; Nounou Hanalei Halelea; 1 ap. 1 rood
10691B	Naiwi and Puunonea	Hanalei	House lot, 9 loi and kula	Not awarded
02260B	Namauu	Hanalei		Not awarded
10813	Namauu	Hanalei		Should be 10335
02660	Namauu, O	Halualao, Hakanwali	House Lot and kula	Hanalei 1 ap. 9 Acs 2 roods 15 rods; Kaluaalo 1 ap. 2 roods 18 rods
10313	Namauu, O	Hanalei, Kaluaalo		Hanalei Halelea; 1 ap.; 9 Acs 2 roods 15 rods; Kaluaalo

				Hanalei Halelea; 1 ap.; 2 roods 18 rods
10325	Nunu	Kama/Kaina, Mahaana	House lot, 4 loi and kula	Kama Hanalei Halelea; 1 ap.; 1 rood; Mahaana Hanalei Halelea; 1 ap.; 3 Acs 3 roods 12 rods
03816	Paaiki	Kaunaopua, Hanaleiiki	House lot, moo kalo Two taro moos named Paeli and Nihu in Hanaleiiki.	one ʻāpana 2 roods 4 rods
10648	Paaiki	Kaunaopua	House lot	Not awarded
10594	Papa	Kaina/Haina, Waioli	House lot, 3 loi	Hanalei 1 ap. 30 rods; Waioli 2 ap. 2 roods 25 rods
10009B	Pilinahe	Hanalei		Not awarded
10593	Pipiwai	Hanalei, Waioli, Oniki	House lot, kalo moo "Halii" Waioli	3 ap.; 1.75 Ac
10954B	Puamana	Kapukaia	7 loi and kula	Hanalei 1 ap. 3 roods 5 rods; Kapukawai 1 ap. 1 Ac 3 roods 13 rods
10717	Puhipuhi	Limanui		Not awarded
10720	Pukiki	Anini	House lot, Loko, 5 loi and kula	1 ap. 1 Ac 16 rods
10676	Puumanienie, Lila	Mahaana, Oheiki	6 loi	1 ap.; 1 rood 31 rods
10691	Puunonea	Hanalei		Wrong number
10646	Puupoa	Hanalei		Not awarded
03819	Puupoa	Kaunuopua, Hanaleiiki	House lot and moo Kalo called "Kauloulu	2 ʻāpana; 1 acre 1 rood 28 rods
00044	Rhodes & Co., G	Hanalei		1 ap.; 2.5 Acs
0597	Rooke, T.C.B.	Hanalei		1 ap.; 106 Acs 2 roods
11059	Timoteo	Hanalei, Halu	House lot and 4 loi	Hanalei Halelea; 1 ap.; 2 roods 26 rods; Waioli Halelea; 1 ap.; 3 roods 27 rods
08509	Titcomb, Charles	Hanalei		not awarded; Land shown

				granted to Titcomb on Jos. Iao 1913 map of Hanalei
10915	Uloa, I.E.	Nounou	House lot and 3 loi	Nounou Hanalei Halelea; 1 ap. 1 rood; Waioli Halelea; 1 ap. 2 roods 16 rods
10955	Wahineiki	Mahaana, Kahe	7 loi	1 ap.; 2 Acs 2 roods 19 rods]
10954	Waiahu	Kanoaiki	House lot	1 ap. 1 rood 13 rods
10956	Wana	Kaumaikahiki, Kaupana	House lot and loi	2 ap.; 2 roods 10 rods

The Hawaiian Legacy of Mo`o

From a Hawaiian perspective, hō`ailona are signs, portents and manifestations in nature that symbolize purpose and connection to place, relationships and responsibilities. Hō`ailona associated with chiefly births are thunder, lightning, earthquakes and heavy rains. Extreme weather conditions that bring rain are symbols of health and prosperity. Large volumes of rain fill the streams and rivers. It also saturates the ground and fill aquifers that will provide long term supplies of fresh water. The rains also nourish crops and the earth as well.

In post-contact times, these types of hō`ailona and severe weather conditions are inconvenient and burdensome by the general populace, including many native Hawaiians today. With influential seeds planted by the introduction of western and puritan ideals since the arrival of Captain Cook (1778) and Calvinist missionaries (1820), a great divide between the Native Hawaiian and his environment and culture has continued to grow. The following is taken from an article titled, *"Earth's Weather Changed by Degeneration and Catastrophe"* published by Eden Communications with content adapted from the book, "Weather and the Bible".

> *"A serious flaw in secular environmentalism is that it sees nature as inherently good and normal. The biblical view is that creation and the weather were originally "very good" When God created the world and until the first man sinned. Due to man's sinfulness, the world did not stay "very good." Not long after creation, all of nature was affected by man's fall to sin and God's curse. The pain and sorrow of this present world, along with severe weather, demonstrate an imperfect world. Furthermore, the worldwide flood of Noah's time would clearly have caused radical changes in our environment. Before the flood, the weather was evidently very mild and different from today; it did not even rain (Genesis 2:5-6, 7:11-12). Thankfully, a new world is coming, when God will burn up this universe and create a new heavens and new Earth (II Peter 3:10-13, Isaiah 65:17, Revelation 21). Paradise will be restored. Once again, deadly storms will not be a part of our world."*

This is just one of myriad examples that show how the worldview of indigenous Hawaiians and western perceptions of nature are opposite poles apart. In a short period of only 2 centuries - 234 years since the arrival of Captain Cook and 192 years since the first ali`i converted to Christianity, a very high percentage of the Native Hawaiian population have become disconnected with the rich history, wisdom and traditions of their fore bearers. This has contributed to the loss of traditional cultural knowledge and the values of not only stewardship, but kinship

with the land and environments of Hawai`i Nei.

Ka Mo`olelo O Keaomele The Story of Keaomelemele

This once-famous story of Keaomelemele was told by Moses Manu in 1884. His version was printed in the newspaper *Ka Nupepa Kuʻokoʻa*, and ran 31 consecutive weeks. The mo`olelo of Keaomelemele tells of the origins of the *moʻo* as a class of spiritual beings in the islands. It also provides insight to the earliest sources of Hawaiian cultural practices and beliefs. Presented here, through this story are the traditions of hānai and mo`o.

In this story, there are five children who are born to the gods. The eldest is Kahānaiakeakua *(The one nurtured by the gods),* who is raised by Keānuenue *(the rainbow goddess)* at Waolani. And then Paliuli *(The dark verdant cliffs)*, who is raised by Waka in the forests of `Ola`a on Hawai'i Island. Although Keaomelemele *(The golden cloud)* is the third child born, she is the heroine of the story. She is raised by Mo`oinanea, the highly revered mo`o or lizard goddess in a house made of clouds in the heavens. The other two siblings are Kaumaili`ulā *(Twilight resting in the sky)* who too is hānai by Mo`oinanea; and the youngest, Kaulanaikapōki`i *(Beautiful daughter of the sunset)* who is raised by the god Kū and goddess Hi`ilei in the mythical island of Kū`aihelani.

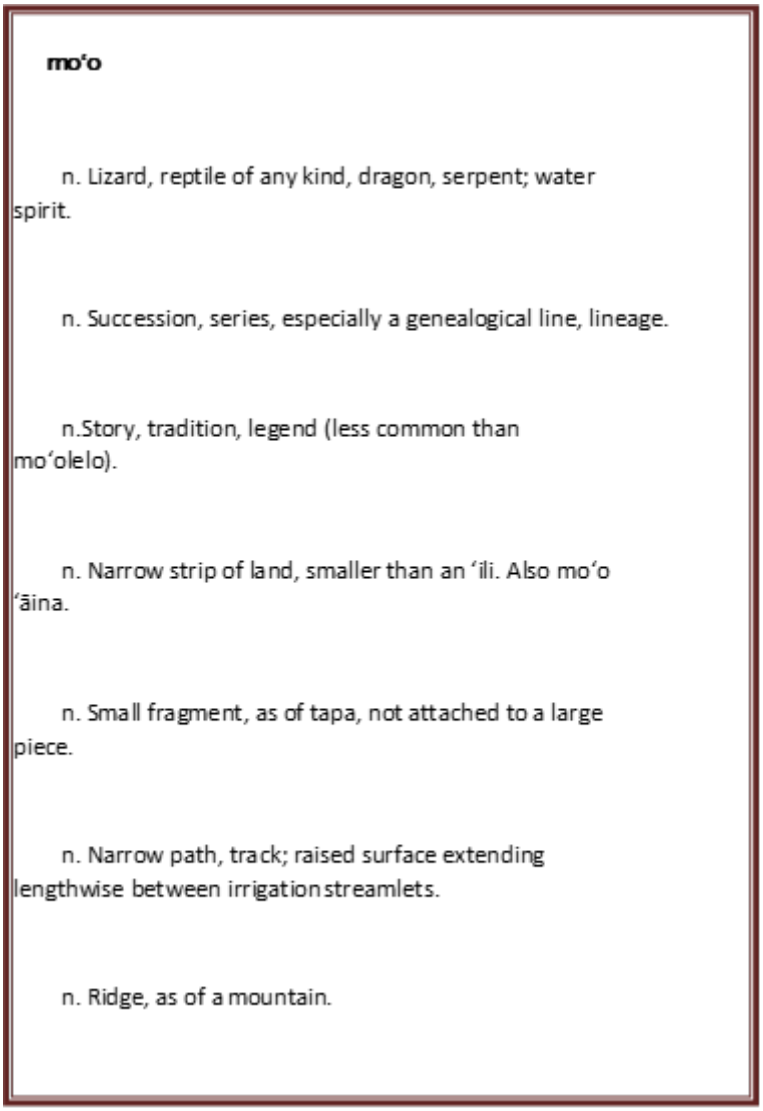
All five of them are taken from their birth parents and placed with their `aumākua or spirit/god parents who hānai and raise them as their own. They are reared to understand all that there is to know about the land and sacred resources that bring life and health to the people and all living forms. Each of them are groomed to become kāhuna or priestly experts in the cultural and spiritual practices of Hawai`i. In time, they are given respective roles and responsibilities and they are imparted special mana and divine ranks as well.

Kaulanaikapōki`i was given the domain of speech and healing and also becomes a master of the hula arts. She is given the ability to call upon the magic trees known as Makalei and Maku`ukao who bring and prepare fish and food to feed the masses of people.

Kahānaiakeakua learns the responsibilities of the priesthood and becomes a master of navigation and the fishing arts. He is the first to show the Hawaiian people this knowledge, along with the arts of omen reading and astronomy, architecture and oratory. Keaomelemele possesses the sacred nature of a deity and the power of extrasensory perception. Along with Kaumaili`ulā, she is given power over all the lands and the people. Paliulli remains with her guardian Waka.

Upon completion of their training and rites of passage, they are given the kuleana or responsibility as akua and `aumākua (Hawaiian deities). They are now

obligated to oversee, guide and inspire nourishment for the land, ocean, creatures and people.



mo'o

n. Lizard, reptile of any kind, dragon, serpent; water spirit.

n. Succession, series, especially a genealogical line, lineage.

n.Story, tradition, legend (less common than mo'olelo).

n. Narrow strip of land, smaller than an 'ili. Also mo'o 'āina.

n. Small fragment, as of tapa, not attached to a large piece.

n. Narrow path, track; raised surface extending lengthwise between irrigation streamlets.

n. Ridge, as of a mountain.

Mo`oinanea:
The Nurturing of Mo`o

The goddess, Mo`oinanea appears in many mo`olelo, chants and oral traditions. Mo'oinanea is said to have first arrived on O'ahu from Ku`aihelani and Kealohilani, the lands in the clouds. She settles at Kūkaniloko, a celebrated place well known as one of two of Hawai`i's most sacred birthplaces of ancient chiefs. (The other being Wailuanuiaho`ano here on Kaua`i) With her, she brings the mo`o and the expertise and traditions of the mo`o. A procession of *mo'o* starts out in Waialua, and they march into Waolani. By the time the first ones

reach Nu'uanu valley, the end of the procession is still at Waialua.

Kua mo`o, the spine or backbone of supernatural lizards (mo`o) are seen in the natural landscape and succession of peaks and ridges of mountain ranges.

Within the story, other of origins of traditions are mentioned:

Keānuenue is the sister who's going to raise Kahānaiakeakua. But she has borne no children. So when this baby is brought to her and needs to be breast-fed, she has no milk to offer. So she goes to the brothers, Kāne and Kanaloa, and says, *"I need milk for the baby."* And they tell her, take these herbs, and some of them you rub on the breast, some of them you eat, and put this together, and you tweak the nipple of the breast and it will start to produce *waiu*, mother's milk. This is one of the *lā'au lapa'au* (Hawaiian medicine) traditions.

Ho'okau i ka waiū, is a ceremony that is performed to make the breasts fill with milk. Ho'olele i ka waiū is a ceremony that is performed to make the breast cease flowing.

The following is a prayer chant that was offered in the ceremony called, "*Ho`olele I Ka Waiū*". Directed to the gods Lono, Kāne and Nuakea who is said to be a part of the goddess Haumea who oversees all female functions and responsibilities. Also known as Keakea or Keakealani, Nuakea became the patron of nursing mothers and is prayed to when an increase or decrease in the flow of milk is desired. The prayer chant was offered when a nursing mother is ready to wean the child. It was also offered when a male child was about 4 to 6 years old, as he prepared to transition from the women's house to the hale mua or the men's house. This was for the ritual of separation. At that time it was asked that the child be given prosperity and to guard against the malice of sorcery

.

E Lono, e Kāne, e Nuakea, ka wahine iaia ka poli waiu o ke keiki
Eia ka ukuhi nei o (name)
E lawe aku `oe i ka waiu o ka makuahine.
Ia `oe e ka lā, ke mahina, ka hōkū;
E lawe `oe a kukulu o Kahiki!
Ha`alele aku i ka omino, ka `uwe wale o (name)
A e hānai `oe i ka `ia kapu a Kāne,
`Oia ka hili, ka noho mālie,
Ke ola ia `oe e Kāne!
Amama. Ua noa.

Translation:
O Lono, O Kāne, O Nuakea the woman with breast of mik for the child
We are about to wean (name).

Staunch the flow of milk in his mother.
Yours are the sun, the moon, the stars;
Carry away to the pillars of Kahiki
And there leave the emaciation, peevishness and wailing of the child.
Feed him with the sacred fish of Kāne.
That is the repose and quiet,
This is your blessing, O Kāne!
Amama. The pray is ended and is set free.

In Moses Manu's articles that appear in the Hawaiian language newspaper, *Ka Nupepa Ku`oko`a* in 1884, the Hawaiian historian/writer of Keaomelemele goes into an explanation that this is how different traditions, art forms and practices began and was handed down from that time.

In his writings, he says:

> "*Compare this, to the foreign nations, who of course take milk from other animals, rather than produce their own. So they take the milk of the cow, or the milk of the goat, to feed the children, whereas the Hawaiians were very innovative."*

The kinolau or one of the plant body forms of the god, Lono is the `uala - the sweet potato. Nutritious young `uala or sweet potato leaves were fed to invalids and pregnant women to invigorate them. A broken sweet potato vine could be worn as a lei to induce the flow of milk in a nursing mother. This practice of herbal healing known as, lā`au lapa`au hints to Lono's role in the forementioned chant as a means to aid and stimulate a source of breast milk through his plant forms.

There are many other native Hawaiian plants that are kinolau forms associated with pregnancy and child bearing traditions. Strips of wauke (paper mulberry) - a Kāne kinolau were also worn around the neck to induce the flow of breast milk. The hau tree sap, along with the base of its blossoms without its petals were mo`o kinolau that were important treatments for the pregnant woman preparing to go into labor. The slimy sap of the hau is said to reduce complications during delivery and child birth.

There are many stories and places that are directly connected to mo`o presence. Mo`o are both male and female...some are generous and compassionate and caring; some are malevolent. In most cases, mo`o are revered as guardians and protectors of land and water sources that provide subsistence for the people. Different mo'o took up residence in different places, mostly watery spaces and land areas that are host to major and minor water sources.

What are the mo‘o, exactly?

"There are mo'o that are simply lizards -- the mo'o of the house, that's a little wall lizard. And the term is used for lizards, but it doesn't tell you that these were necessarily lizard formed. It's hard to say that mo'o are crocodilians or some kind of serpentine creatures. They are entities that are associated with the wet places; they have to reside in the wet. Whether they take the form of a lizard -- because there are mo'o that are simply lizards, like the mo'o of the house: that's a little wall lizard. And the term in general is used for lizards. But this doesn't tell you that these mo'o were necessarily lizard formed. There just isn't a reliable sense of what they look like. We have two accounts, two stories of people who saw mo'o, and dealt with them, and it looked like people to them. Both of the accounts use the same description, in which the whole structure of the face is fluid and keeps moving, so that there's no way to grasp features. But not that they were shaped or formed like a lizard. " *-- Puakea Nogelmeir, Editor of Keaomelemele*

The story of Keaomelemele implies that all of the *mo'o* were in effect the descendants of Mo`oinanea. She is reputed to be the grand dame of her descendents, her offspring and all aspects of mo`o-responsibilities that are associated with her. The story identifies some of these *mo'o* individually and where they lived.

In the mo`olelo of Keaomelemele, there are 12 noted mo`o who inhabit Kaua`i as large hills and mountains. The mo`o ali`i or royal chief of all of Kaua`i's mo`o was named Keolewa (also appears as Keaolewa). This mo`o resides at the summit of mount Ha`upu where it lives amongst the clouds. It is said that from Hāupu, Keolewa had a full view of all Kaua`i. The famous freshwater spring and pool named Kemamo belonged to her as well.

The following is an excerpt from the mo`olelo of Keaomelemele:

> Eia nā mo`o ma Kaua`i, O Keaolewa ka mo`o ali`i o Kaua`i, aia kona wahi noho ma luna pono o ka pu`u o Ha`upu i ke ao, ma laila `oia i noho ai e nānā i nā wahi a pau; a no kēia mo`o ho`i ka wai kaulana o Kemamo.
>
> O Pu`umo`o ma uka o Lihu`e, o Kawelowai ma uka o Wailua, o Kalalea ma Anahola, o Kikiula ma Hanalei, nona ka muliwai o Wai`oli, o Kilioe a me Ke`e ma Ha`ena. No laila, e ho`omana`o ka mea e heluhelu ana i ka mo`olelo o Hi`iakaikapoliopele, o keia ka mo`o nana i lawe o Lohiau e huna i luna o ka pu`u o Makana, no laila, ma ka ho`omaopopo ana i keia mo`olelo, ua mua loa aku ka noho ana mai o keia po`e mo`o a me Kamo`oinanea ma keia pae aina, a he hope mai na mo`olelo e ae a pau i ho`olilo ia e na kanaka i mau mo`olelo kaao. O Kili`oe me Ke`e a me Miloli`i na mo`o no lakou na pali o Kalalau a hiki i Polihale, o Kawaili`ula ka mea nona o Mana a me Kekaha, a o Makaweli ka mo`o ma Waimea nona ka Waiulailiahi ma laila.
>
> O Papai ka mo`o ma Hanapepe, he mo`o noho kula pili keia, a ua olelo ia ma keia mo`olelo, o keia mo`o ka mea nana i huna kekahi wai ma ke kula ma kahi i kappa ia ma ka inoa o keia mo`o a hiki i keia wa, oia ho`i o Pu`uopapai; a mai Wahiawa a hiki i Koloa, o Po`ipu ko laila mo`o, puni o Kaua`i aia no kona kowai nui ke waiho la ma laila a hiki i keia la, aia wale no lakou a pau

ma lalo aku o ka mo`o ia ia o Ha`upu ka pu`u Ki`eki`e; o Lehuakona ko Ni`ihau mo`o nona ka wai a ka pao`o ma Lehua. O ko Maui mo`o ali`i, oia ho`i o Kihawahine, o keia ka mo`o i like pu aku me Kamo`oinanea ka mana, a o keia ka mo`o i oi aku ka nui o nakahu nana oia i malama a me ka nui o ka po`e nana i ho`omana aki ia ia i akua; ua ho`omana na ali`i a me na maka`ainana ia ia a puni o Maui a me Moloka`i a me Lana`i i ka wa kahiko, a no keia mo`o ka lua ma ka loko o Mokuhinia ma Lahaina. E nana i ka mo`olelo o Kihapi`ilani, a malalo aku o keia mo`o o Kalamainu`u a me Klioeikapua, he mau mo`o ino laua. Ua olelo ia ma keia mo`olelo, ua ka`apuni o Kihawahine ia Maui a puni, a pela no ma Hawai`i, O`ahu a me Kaua`i; a ma ia hele ana ona, ua nui wale ka po`e nana i ho`omana aku ia ia mai Hawai`i a Ni`ihau, a oia ka mo`o ho`okahi nana i poai puni keia mau pae moku, a penei ka mo`olelo e pili ana in a kanaka no keia mo`o no Kihawahine.

Keoilii aku nei o Keaomelemele me kona mau hiohiona nani, a o ka nohea ho`i nana e ho`oni na pu`uwai o na tausani hoa kaunu o keia nanea, a kono ae i ka mana`o e hele kino e ike in a wahi a na mo`o a ua kupueu la i luakaha ai.

The mountain of Kikiula in Hanalei is one of the named mo`o in the story that falls under the leadership of Keolewa. Kalalea oversees all the fresh water sources of Hanalei and the moku or district of Halelea. While there are other mo`o guardians who take up residence in fresh water pools, fish ponds and smaller streams, they too are part of the hierarchy that is accountable to the authority of Kalalea as well.

Here is the translation:

These were the lizards of Kauai, Keoloewa, a royal lizard whose home was on the summit of Haupu, among the clouds, where it remained and could see in every direction. To this lizard belonged the famous pool of Kemamo.

Pu`umo`o lived above Lihu`e, Kawelowai, above Wailua; Kalalea at Anahola; Kikiula at Hanalei, and to it belonged the Waioli river; Kili`oe and Ke`e lived at Ha`ena. Let the reader recall the story of Hi`iakaikapoliopele. Kili`oe was the lizard that took the body of Lohiau and hid it on Makana. In considering this tale, these lizards lived on these islands with Mo`oinanea long before the other characters of the legends told by the people. Kili`oe, Ke`e and Miloli`i were the lizards of the cliffs of Kalalau and on to Polihale. Kawaili`ula was the lizard that owned Mana and Kekaha, and Makaweli was the lizard of Waimea and it was the owner of the reddish water that flowed there.

Papai was the lizard at Hanapepe, a lizard that lived on the plain where the pili grass grew. It was said in this legend that this was the lizard that hid a spring on the plain that bears its name to this day, that is, Pu`uopapai. From Wahiawa to Koloa the lizard was Po`ipu. Its large pool still lies there to this day. These take in all of Kaua`i. All of them served under the lizard of the tall hill, Ha`upu. Lehuakona was the lizard at Ni`ihau and it owned the “pool of the pao`o fish” on Lehua. Maui’s royal lizard was Kihawahine and it had mana like Mo`oinanea. This was the lizard that had the greatest number of

> caretakers and many worshippers to deify it. Chiefs and commoners worshipped it all over Maui, Moloka`i and Lana`i in ancient times and to it belonged the pit in the pond of Mokuhinia in Lahaina. Look at the story of Kihaapi`ilani. Under this lizard were Kalamainu`u and Kilioeikapua, both were bad lizards. It was said in this legend that Kihawahine made a circuit of Maui and also of Hawai`i, O`ahu and Kaua`i. In this journey there were many worshippers from Hawai`i to Ni`ihau. It was the only lizard that went around the islands of the group and this is the tale concerning the people of this lizard, Kihawahine.

The mo`o that are mentioned in Keaomelemele are forested regions that contribute greatly to maintaining Kaua`i's major watersheds on Kaua`i.

The word and idea of mo`o has to do with continuity and succession. One of the primary reasons behind the ancient Hawaiian tradition of hānai for the hiapo or first-born was to ensure the transference of ancestral knowledge and wisdom from the elder kūpuna to the mo`opuna or grandchild.

The word, puna meaning "*freshwater spring*" appears in both Hawaiian words for grandparent or elder (kūpuna) and grandchild (mo`opuna). Kū means to stop or halt. Mo`o means to continue, succession or series. Especially so in a genealogical line; lineage. The fundamental source of a puna (freshwater spring) is to give, nourish and produce life.

Hence, the kūpuna is one who has had his/her children; and in turn, their offspring have reproduced offspring of their own. The kūpuna is one whose reproductive spring (puna) has stopped flowing (kū). The mo`opuna or grandchild is the succeeding spring, who too will grow and mature to produce offspring of their own. This repetition of life cycle from one generation to the next is essential to the continuation of family genealogies and connection to birth lands of Hawai`i.

The Moʻo Kamoʻookamuliwai

Wichman (1998:111) relates an account of the moʻo (fabulous lizard) Kamoʻookamuliwai "lizard of the river," who:

> "…was a moʻo that guarded the river crossing. He refused to let Hiʻiaka cross the river on her way to Hāʻena to get Lohiʻau for her sister Pele, and sent freshets of water to sweep her off her feet. Hiʻiaka struck him dead, and since that time it has not been difficult to cross the river."

Variations of Mo`o:

The following is a list of "Mo`o" words that illustrate the purpose of preservation, perpetuation and continuity of traditions.

Mo`o	Lizard, reptile of any kind, dragon, serpent; water spirit. Succession, series, especially genealogical line, lineage.
Mo`o `Ōlelo	Story, tale, myth, history, tradition, literature, legend, journal, chronicle, record.
Mo`okū`auhau	Genealogy
Mo`omeheu	Culture; cultural
Mo`o Ali`i	Succession of Chiefs
Mo`opuna	Grandchild; great-niece or -nephew; relatives two generations later, whether blood or adopted; descendant; posterity.
Mo`o Lono	Priests of the lineage of Lono, devoted to the worship of Lono.
Mo`omo`o	Ridges (plural of mo‘o). Rare. Also, young as of animals
Kuamo`o	Backbone, spine; road, trail, path

Mo`o are symbols of protection, regeneration and succession of lineages for humans as well as that in the environment. They are also spiritual icons associated with forested regions and fresh water resources.

Early Lesson in Acquiring Land Wisdom

Transference of knowledge and skills in Hawaiian customs, beliefs and skills begin at a very young age. In the traditional Hawaiian family system, this on-going process is passed on from kūpuna (grandparents) to mo`opuna (grandchild/children). In the extended family as well as within the community, this exchange and transmission was shared from loea and kumu (masters and teachers) to haumāna who are disciples, students and apprentices.

Kūpuna, loea, `ōlohe, kāhuna and kumu are traditional titles and stations that were, and are still held by accomplished elders, masters and teachers. They are the repositories of extensive knowledge, experience and skills, having endured many years of formal training in various practices and specialized areas of discipline. A customary belief shared by most masters and teachers is that the primary source for all Hawaiian knowledge are inspired and held by our ancient kūpuna. Maintaining a relationship with ancestors through the practices of mo`okū`auhau, pule and ceremony are essential to receiving continued guidance

and inspiration by ancestral sources. Equally important is the commitment to responsibly care for, and perpetuate Hawaiian ancestral knowledge by sharing and teaching others.

E lawe i ke a`o a mālama a e `oi mau ka na`auao.

He who takes his teachings and applies them increases his knowledge.

`Ōlelo No`eau #328

Origins of Change & Cultural Impacts

Captain Cook's "discovery" of the Hawaiian Islands in 1778 marked the beginning of catastrophic changes to the physical, spiritual and cultural landscape of Hawai`i. Native Hawaiians first came in to contact with foreign diseases brought by Cook's crew, and then by other ships of explorers and tradesmen that followed in his wake. Introduced species of animals brought by the expeditions of Cook and Vancouver in the 1700s included sheep, cattle and goats that quickly began to have negative effects on native species of plants, birds, and habitats. Converse to accounts that describe these were "gifts" to the ali`i, they were purposely imported by captains for future food sources for their expedition crews. Along with new efforts to cultivate potatoes, the animals were specifically introduced to replace the fish and poi options that were foreigners were averse to.

When King Kamehameha the Great unified all of the Hawaiian Islands into one kingdom under his rule in 1810, he kept the traditional land and kapu systems in place. However, 32 years had already passed since Captain Cook introduced Hawai`i to the Western World. From this, a market economy rapidly emerged attracting explorers, merchants, fur and sandalwood traders as well as whalers to Hawai`i. With this influx of newcomers to Hawai`i, the fabric of Hawai`i's ancient society quickly began to unravel. Different perspectives, beliefs and values began to mount in conflict with laws that had governed native Hawaiians for centuries. A gigantic shift prompted by a new emerging capital economy and the pressures of purchase power of goods and supplies removed the maka`āinana from the balance of a communal, sustainable lifestyle and into laborious conditions.

Although the sandalwood trade had found its way into the Hawaiian Islands around 1790, it wasn't until 1814 that the industry escalated. With Kamehameha I still in control of the sandalwood, he placed a kapu on young trees to allow for regeneration of forest supplies. He was adamant that no transaction was ever done on credit.

Year of Critical Change

1819 was a year of critical change. Upon Kamehameha the Great's passing, his eldest son, Alexander Liholiho ascended to the throne as ali`i nui at the age of 22. However, he was no match for the political power and experience of Kamehameha I's favorite wife, Ka`ahumanu who insisted that she rule alongside him as Kuhina Nui or Queen Regent. Liholiho became the figurehead of the Hawaiian Kingdom, but it was Ka`ahumanu who took hold of the administrative power.

The vice to usurp power and capitalize from the resources of the land and people, was fueled by greedy foreigners and the ruling chiefs alike. With the social order falling into disarray, Kamehameha II succumbed to the pressures of Ka`ahumanu and Keōpuolani to declare an end to the kapu system. Contrary to claims that the Hawaiians had grown increasingly dissatisfied with the ancient system, this was purely a political move that went beyond spiritual consciousness and integrity.

Foreigners introduced Hawaiians to the concept of "easy credit" by using the persuasion of liquor, military uniforms, silks, guns, leather and silver mirrors that were purchased against future sandalwood income. The Hawaiian economy became overextended and Kamehameha II and the chiefs fell deeply into debt.

The sandalwood trade exacted a heavy price in human life and health and in ecological damage. In 1823 the Reverend William Ellis described the transport of sandalwood from the adjacent mountains to the beach at Kawaihae by "between two and three thousand men, carrying each from one to six pieces of sandalwood, according to their size and weight. It was generally tied on their backs by bands made of ti leaves."

As the sandalwood forests began to disappear, the north-central Pacific whaling industry arrived to make its base in Hawai`i. The first whaling ship visited the Hawaiian Islands in 1820, marking the beginning of a 50-year presence in Hawai`i's economy. Within a span of 30 years, the whaling industry expanded with more than 500 whaling ships visiting Hawai`i annually. By 1870, the petroleum industry had overcome the need for whale oil and the number of ships visiting Hawai`i began to spiral down.

Funded by the American Board of Commissioners for Foreign Missions, the first missionaries arrived in the Hawaiian Islands on March 30, 1820 upon the *Thaddeus*. Much had already taken place while they were en route to Hawai`i; including the death of Kamehameha I, and the abolishment of the ancient kapu system by his son and successor - Kamehameha II, Liholiho. Theoretically, there was no alternate belief system in place. However, not all Native Hawaiians entirely relinquished their beliefs or cultural practices.

Winning over the support of the ali`i, the missionaries set out to convert native Hawaiians to Christianity. With the advent of a written form of the Hawaiian language, the missionaries set out to fill the religious void throughout Hawai`i. Over the next two decades as attendance to their churches escalated, they became involved with developments in education and instructed the ali`i in the economy of western politics.

By 1826, American Traders were complaining about outstanding debts owed to them by the king and chiefs and a general tax was imposed upon the people. Ultimately, greed exhausted the forest mountains of sandalwood and the maka`āināna were driven into poverty. The grueling labor of pillaging the mountains of sandalwood led to the degradation and compromise of traditional values and beliefs of the Hawaiian people.

Rising Tides of Political Change

The Hawaiian Kingdom continued to be governed as a sovereign nation until 1838 without legal enactments. It was based upon a system of common law, which consisted partly of the ancient kapu system and the practices of celebrated chiefs that had been passed down by tradition. Advised by foreigners and recognizing Western forms as a useful model, Kamehameha III established the Hawaiian Bill of Rights, also known as the 1839 Constitution of Hawai`i. This was the first crucial departure from the ancient ways - an attempt by Kamehameha III and his chiefs to guarantee that the Hawaiian people wouldn't lose their tenured land.

Kuleana Act-August 6, 1850

One of the notable provisions of the Great Mahele was the Kuleana Act (1850). Under this provision, maka`āināna - common people could petition for title to kuleana lands that they cultivated and lived on. With no concept of land ownership, Native Hawaiians did not understand the process, nor the need to make a claim for land that they already had been given tenure to live and work on.

The only means of learning about the new Kuleana Act solely depended on word-of-mouth communication, or through printed announcements that required the ability to read and write. There was a fee for a required pre-claim land survey as well. Native Hawaiian claimants petitioning for their kuleana lands were also required to appear with two witnesses to back their claims. In many cases, commoners confused or uninformed of the requirements of this new law, were displaced from their lands.

In the following years, judicial and executive branches of government would be formed along with a system of land ownership under the Great Mahele of 1848.

Despite its own political and structural growth, Hawai`i remained in a vulnerable position internationally. The Islands' economy, meanwhile, totally moved toward capitalism under the influence of foreign trade.

A New Industry in Sugar Arrives in Hawai`i

In 1835, three New Englanders - William Ladd, Peter a. Brinsmade and William Northey Hooper, signed a lease with Kamehameha III for 980 acres of land to start the first large-scale commercial sugar plantation in Kōloa on Kaua`i. This endeavor would open the floodgates to another chapter of change and impacts upon Hawai`i and its people.

Contrary to what is viewed as Hawai`i's most historical, influential and successful industry of all time the development of the sugar in Hawai`i was largely responsible for the demise of Hawai`i's sovereign independence and the overthrow of Hawai`i's Kingdom. With this came foreign power and control of Hawai`i's land, water, and natural resources.

Having access and control of lands in 1887, the struggle for control of Hawaii was at its height as David Kalākaua was elected to the Hawaiian throne.
King Kalākaua signed a reciprocity treaty with the United States making it possible for sugar to be sold to the U.S. market tax-free, but the foreign American businessmen were still distrustful of him. They criticized his ties to men they believed to be corrupt, for his revival of Hawaiian sciences and traditions, and encouragement of hula and oral traditions. Kalākaua's creation and funding of a board of genealogy, and the revival of the Hale Naua that promoted the esoteric, spritual and symbolic significance and connection to Hawaiian genealogy, history and law was met disapprovingly as well. They were also greatly opposed to Kalākaua's building of the royal `Iolani Palace.

However, it was the King's advocacy for native Hawaiian rights that posed the greatest threat for foreign and American businessmen. Many of his ministerial appointments went to native Hawaiians which reflected the king's consistent loyalty to his core constituency.

The opposition was led by Lorrin Thurston, a grandson of missionaries who played a prominent role in the overthrow of the Hawaiian monarchy. He formed the semi-secret Hawaiian League made up of a group of planters and businessmen who were anxious to control the kingdom of Hawai`i - both economically and politically. Accompanied by members of the Hawaiian League, Thurston coerced

a new cabinet on King Kalākaua and used the threat of violence to press the King into accepting a new constitution that he had written, eliminating the King of his executive powers.

The 1887 Constitution of the Kingdom of Hawai'i became known as the Bayonet Constitution for the use of intimidation by the armed militia which forced King Kalākaua to sign it or be deposed. The document created a constitutional monarchy like that of the United Kingdom, stripping the King of most of his personal authority, empowering the legislature and cabinet of the government. By 1890, the industry was tightly controlled by former missionary families and foreigners who owned 75% of all privately held lands in Hawai`i. Known as, "The Big Five" these included Alexander & Baldwin, C. Brewer & Co., Castle & Cooke, Theo H. Davies & Co., and American Factors which later became known as Amfac. Additionally, they eventually gained a monopoly over other economic aspects in Hawai`i manipulating banking, shipping, importing and exporting of goods, and warehouse commerce activities. Having corporate control over commodity distribution burdened Hawaiians and Hawai`i's wage-earning labor forces with high prices and a diminished quality of life. To survive Kānaka `Ōiwi had to become "contract laborers and serve people like slaves" (Kamakau 1992:403). They were anxious to obtain cheap labor to transform thousands of acres of land into sugarcane fields to secure their profits. This resulted in a Hawaiian population left in impoverished living conditions and eventually, loss of their native lands.

Rise of Sugar, Overthrow of Hawaiian Monarchy

Within decades, title to thousands of acres had fallen into the control of non-Hawaiians. Even Crown Lands that had been owned by the King and his successors, were used to pay for delinquent debts that had been exchanged for foreign goods and supplies.

With close ties as missionaries to the Hawaiian monarchy along with capital investments, cheap labor and land, and increased global trade enabled them to prosper. In 1893, it was the businessmen of missionary families who were directly linked to the overthrow of the Kingdom of Hawai`i. Queen Lili`uokalani was forced into imprisonment and the monarchy illegally overthrown. The new, self-proclaimed provisional government confiscated the remaining Crown Lands.

In 1898 they were instrumental in lobbying for the annexation of Hawai`i by the United States to become the Territory of Hawai`i. In a short span of only 83 years from Kamehameha I's unification of the Hawaiian Islands in 1810 to the illegal overthrow of the Hawaiian monarchy in 1893, Hawai`i would go through a series of catastrophic changes. The commerce developments of sandalwood, whaling and subsequent industries that followed yielded a heavy price on human life and health, as well.

Native Hawaiian Cultural Consultation

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert developers and decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making. Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

One of the most important parts of conducting a cultural Impact assessment and study is to hold consultation with Native Hawaiian kūpuna or elders, Hawaiian cultural organizations, cultural practitioners and individuals from the community who potentially have knowledge of traditional Hawaiian sites, resources and cultural practices that are related to the project area as well as to the adjacent and extended land areas of the Hanalei ahupua`a. Ultimately, the goal as preparers of this CIA is to produce a document that can be used to protect and preserve the valuable knowledge and traditional practices of nā `ōiwi kānaka, the Native Hawaiian people of these places.

EAL's goal was to meet with and interview a cross-section of indigenous Hawaiian people from the community; first and foremost, with kūpuna or elders that have memories and personal experiences of the project area and the surrounding lands in Hanalei ahupua`a. In addition, EAL was hopeful to receive their `ike or insight and knowledge about customary practices and traditional places associated with or relating to the project area.

EAL also aimed to seek out and speak with those of the mākua or parent generation who had potential knowledge, ties and experiences linked to the

project area and Hanalei. Ages of interviewees varied from individuals in their early 20s to 86.

In the window allocated to complete this cultural impact assessment study, EAL has interviewed a total of 3 indigenous Hawaiians. Majority are residents of Hanalei lands. Two individuals live outside of Hanalei. Some of the interviewees and informants are Kūpuna or elders, educators, activists and cultural practitioners. Some of them fall into 2 or more categories. All are of Native Hawaiian ancestry with personal ties and connection to Hanalei.

In this endeavor to "interview" Native Hawaiians, EAL chose to do so in a Hawaiian manner of kukākukā or through "talk-story". In speaking with interviewees without being nīele or as a prying meddler by being annoyingly inquisitive was the approach. While there are specific points of interest for questions that lead the discussions, it is important that with each person engage in a manner that is respectful and without imposing pressure. To the Native Hawaiian, a nīele person will never get anywhere by being bold, blunt and direct. However, he or she can be successful by leading up to a subject through indirection and a more `olu`olu or gracious approach. Every attempt to avoid being maha`oi or presumptuous, brazen and insensitively forward was used. In the traditional Hawaiian household that was led by kūpuna and mākua who were adamant that the values of aloha (love), ha`aha`a (humility), ahonui (patience) and hō`ihi (respect) apply to the way that one behaves and interact with others. This is especially so when talking and meeting with kūpuna, for with the slightest tone of pejorative stance or speech, they will cease to share their valuable insight and experiences. It helps tremendously to have some sort of association with individuals as well, for more is shared when there is a level of comfort, trust and familiarity.

Thus, excessive note-taking and the use of recording devices such as video cameras and tape recorders are not utilized. Downside consequences were avoided by having a Hawaiian face; choosing to utilize colloquial jargons and speaking in the vernacular; making links through genealogy; by not having a tape recorder; being understanding and empathetic; using kama`āina as interviewers; judicious note-taking when necessary; by keeping our promise not to divulge any interview comments if requested by the subject; and of course, by not being nīele or maha`oi.

If the interviews had been conducted using a Western format these questions would be asked straight forwardly:

1. What type of cultural practices and cultural beliefs do/did your family practice?

2. Where do/did these cultural practices occur?

3. How do/did the area's sites features or land affect you or your family's cultural practices and beliefs?

4. How would the plans to develop single family residence affect you or your family's cultural beliefs and cultural practices?

Instead, talk-story sessions with interviewees in individual and semi-group settings that were comfortable for the participants was used. Oftentimes our discussion took place in their yard, or at their home. Already well-aware of the extra-sensitivity of asking such questions would be a rude approach of nīele and maha`oi, EAL allowed the conversations to flow and be directed in ways that were most appropriate and pono for those who were kind to extend us their time, energy and mana`o.

The interviewees that EAL engaged with for this CIA are:

1.	Kaunanoe Hoomanawanui	Burial Sites Specialist, SHPD
2.	Barbara Say	Kūpuna, KNIBC Member, Former Hanalei Resident
3.	Jay Furaro	Kūpuna, Former Princeville Resident
4.	Donna Gomez	Kūpuna, Neighbor, Hanalei Resident
5.	Kaleo Chandler	Haena Resident
6.	Michael Olanalan	Haena Resident
7.	Michael Ching	Hanalei Resident
8.	Maakala Kaaumoan	Executive Director of Hanalei Watershed Hui, Hanalei Resident
9.	Barbara Robeson	Wainiha Resident
10.	Anne Schneider	Princeville Resident
11.	Michael Loo	Oahu Resident, Former VP at Princeville Corp.
12.	Chipper Wickman	Haena Resident
13.	Charlie Spencer	Hanalei Resident, Taro Farmer
14.	Rodney Haraguichi	Farmer and Fisherman, Hanalei Resident
15.	Chris Kobayashi	Hanalei Resident
16.	Dick Sloggett	Hanalei Resident
17.	Glen Kobayashi	Hanalei Resident

18.	Hobey Beck	Hanalei Resident
19.	Keola Sheehan	Hanalei Resident
20.	Lynnette White	Anahola Resident
21.	Christian Marsden	Hanalei Resident
22.	Avery Youn	Wailua Resident
23.	Michael Schmidt	Hanalei Resident

Not reached but attempted to contact

1. Gaylord Wilcox
2. Mesberg Family
3. Mala and Ka'ui Fu
4. Naomi Yokotake
5. Gladys Tasaka
6. Nancy Pfleuger

All interviews were conducted by Nancy McMahon between October 2016 and August 2017. Subsequently, EAL found that just about most of the interviewees were interested in learning about the project itself but no that concerned except for a few informants. It is not known why the uncontacted informants did not return calls, perhaps they were cautious to share their mana`o or thoughts and knowledge.

As such, the priority topics needed to conduct this CIA of cultural resources and impacts were overshadowed. It was a challenge to steer conversations into that direction without appearing to be presumptuous and insensitive to the needs of the interviewers to be informed of the project. EAL spent a considerable amount of time attempting to provide an overview of the project.

In addition to the 23 individuals listed above that graciously participated as interviewees for this CIA. Mahalo a nui loa iā `oukou for your generous support to contribute and collaborate to this success of this cultural impact assessment and study.

Interviews with Indigenous Hawaiians

Guidelines for Assessing Cultural Impacts

Number	*Requirement*	*Discussion*
1	A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.	Consultation Methodology & Results
2	Descriptions of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.	Selection of Interview Subjects
3	Ethnographic and oral history interview procedures, including the circumstances which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.	Ethnographi-Oral History Methodology
4	Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.	Biographical Information of Interviewees
5	A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations, or biases.	Historical & Archival Research
6	A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.	Cultural Resources & Practices Identified
7	A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.	Cultural Resources & Practices Identified
8	A discussion of confidential information that has been withheld from public disclosure in the assessment.	Confidential Information
9	A discussion concerning any conflicting information in regard to identified cultural resources, practices, and beliefs.	Confidential Information

Number	Requirement	Discussion
10	An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.	Analysis of Impacts
11	A bibliography of references, and attached records of interviews which were allowed to be disclosed.	Bibliography
Source: State of Hawai'i Environmental Council, *Guidelines for Assessing Cultural Impacts* (1997)		

The remainder of this section summarizes with respect to each of the required topics. Each informational requirement identified in the above table is discussed in its own subsection, with a summary of findings and conclusions and, where appropriate, relates the requirement to other sections of the document.

Consultation Methodology & Results

As with the composition of the CIA document, EAL employed interview methods consistent with indigenous Hawaiian values. Specific values and methods applied to the interview process included:

Kukākukā, also known among locals as "talking story", is a quintessentially Hawaiian approach to sharing information intended to avoid being seen as *nīele* (i.e., nosy or meddling) and instead being perceived as *'olu'olu*—gracious—in conduct. By approaching the specific interview topics in an indirect manner, EAL interviewers communicated a level of sincerity and respect for the interviewee and subject matter and so avoided their curiosity being interpreted as *maha'oi*, i.e., brazen and forward.

Aloha, or love and abiding regard for the Hawaiian landscape and culture formed the basis for the interview process, communicating deep affection for the subject matter and individuals involved.

Ha'aha'a, or a sense of humility, particularly when speaking with *kūpuna*, where a single pejorative act or statement could create a sense of offense in the interview subject which would lead them to withhold their insight and experience.

Ahonui, or patience, and a measured tempo to the contact and interview process which allows for a sense of comfort, familiarity, and trust to emerge.

Hō'ihi, respect, both for the interviewee and for the subject matter were kept at the very heart of the interview process and shaped the methods employed by EAL.

To these ends, the use of recording devices and a standardized questionnaire were not employed unless requested to do so. Interviews were conducted in individual and small-group settings in homes and back yards. Conversations could flow toward, and at times away from, the specific subject of the project as the interview subjects deemed appropriate.

Selection of Interview Subjects

As noted on pg. 82 *Native Hawaiian Cultural Consultation*, an assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to HRS Chapter 343, and promotes responsible decision-making. This process is informed by meeting and talking with members of the indigenous Hawaiian community in the area affected by the proposed action. In the preparation of this CIA, representatives of EAL identified certain criteria which guided the process of identifying individual's familiar with cultural practices and features in, or near, Hanalei ahupua'a. Factors which were considered in the evaluation of potential informants were:

- Was the candidate an Indigenous Hawaiian?
- Was the candidate from the Hanalei area?
- Was the candidate a *kūpuna* or elder, with memories and personal experiences of the project area?
- Was the candidate a *mākua*, or member of the parent generation, with potential knowledge, ties, or experiences of the project area and the Hanalei or Halelea region?
- Was the candidate familiar with, or possessing insight into, the customary practices and traditional places in or near to the project area?

If a candidate met one or more of the above criteria and was willing to share his or her perspective, the person was considered an appropriate candidate for the interview process. In the timeframe available for the preparation of the CIA, representatives of EAL spoke with 13 native Hawaiians all with personal ties to Hanalei; EAL also spoke with 10 additional non-Hawaiian interview subjects possessed of unique knowledge relevant to the assessment. All interviews were conducts between October 2016 and August 2017. Most interviewees were residents of Hanalei. The age of interviewees ranged from 20 to 86.

Kūpuna Recollections

In summary only a few informants had direct contact with the property. One walked the road [SIHP#50-30+03-02353] gathering sisal. Another when he was young went there to collect guava. Another had hunting pigs with his father. Another was told there was a Chinese Cemetery there. Many were told to stay away from the property. Their assumptions are that the area is sacred. A few were told there is a heiau or ahu up there on the parcel. No one mentioned any fresh water spring or traditions related to the hala trees. Only one knew exactly where site SIHP# 50-30-03-02354. They did not the function of the site.

Consultation during the AIS

In the following section is the documentation on interviews "talk story" with informants about the project area and parcel as to their knowledge of any concerns regarding historical properties. This section was included in the AIS (McMahon, 2017)

EAL has been to the parcel some 10-20 years ago either at a Planning Commission inspection or an inspection by the Kaua'i Historic Preservation Review Commission, both at the time Kaua'i County Planner Anne Schneider and former VP of Princeville Corp., Michael Loo recalled the site visit with several community members, commissioners, US Fish and Wildlife staff, County, DLNR and Princeville staff. It has been suggested that US Fish and Wildlife use the location to move the Hanalei Valley Overlook to. But there was concern about burials or a cemetery on the parcel, so a site visit was conducted. Some place shortly after the entrance but off the highway, through the thicket of guava, three stone mounds (one large, a second mound which was similar in size to the first mound and a small mound) were identified and pointed out to by the community stating that these were burials. During that field inspection, some community members speculated that those were mounds contained burials. But no one knew who they were nor were any claims made. At that time, SHPD Kauai Archaeologist Nancy McMahon did not write up a field report on this site inspection nor identify any burial sites since this could not be verified and no one came forward to claim the burials. After seeing the mounds US Fish and Wildlife did not pursue buying the parcel from then owner Princeville Corporation. Around 2014, the construction of a rock gate at the entrance to the parcel was being constructed. The author received a call from the Kauai Archaeologist, Mary Jane Naone, asking if I knew about any historic properties on that parcel as she had heard from others in the community about something up there. I told her the story about the three mounds. When I received a call about this property from the realtor of the current owner, I related the same story.

Prior to the archaeological survey, consultation with the current SHPD staff on Kauai, the burials sites specialist was taken out for a site inspection on October 19, 2017. No information was brought forward from this field inspection. No records exist for the Burial Program on this location. The burial specialist questioned the author as to why they were not recorded as burial sites. The author stated no confirmation existed nor did anyone come forward with a claim. The mounds could have been possible burial mounds or ahu. The field inspection revealed that the plateau of the ridge was cleared and grass and some trees existed. The boundary edges had a push pile of dirt and vegetation but no mounds were found.

Exploration Associates Ltd. contacted several members of the Hanalei and Princeville community to ascertain if they had any knowledge of the former uses of this parcel or the immediate area adjacent to the project area. Only one person, Jay Furfaro remembered that the Kellett family (part of his family) might be buried there and provided a headstone plaque. No exact location was known for this family burial location. The Kellett's acquired much of the surrounding lands and possibly this parcel. Jay also mentioned that an ahu existed on the parcel.

In about November 2016, Barbara Say, her son and the neighbor went out to look for the Chinese Cemetery which they thought was in this area but they could not find anything on this parcel.

Another informant, Kaleo Chandler was hired to help clear the parcel by hand with chainsaws by the previous owner. The author met him on the parcel on December 1, 2016 where he recalled that as a boy, he thought there was a Chinese cemetery in this area with urns, flags markers, and stones to mark where they buried the urns a year after the death. He said he stayed away from the side where he believed to be the Cemetery was located during his clearing. He also mentioned a heiau where the rock formations are located at the point. He took the author, where rock alignments and then a wall above the Hanalei Bay Overlook were identified. He recalled the area was a party area for the high schoolers, and used by pig hunters and pot growers. He suggested speaking to Michael Olanalan who took care of the parcel when the movie the South Pacific was shot there.

Michael Olanalan was interviewed in February 21, 2017, Michael did not recall a Chinese Cemetery nor a heiau in the parcel. He thought the rock wall I saw was maybe from the old highway that was there. He thought I should find remnants of that old highway. He said it was a party place, he hunted there with his father for pigs and recently lots of pot growers were in there. Michael said that when the movie "The South Pacific" was being filmed there, they put the dirt road in on the

plateau. He thought it might be possible to find some of the old set props but he could not recall if they left it there or removed things.

The author spoke to Maka`ala Ka`aumoana. She had emailed previously about a heiau on the ridge. She also mentioned there should be some waterworks on the lower slopes of the parcel, but this appears to be below the Hanalei Overlook and on Hanalei Wildlife Refuge lands and not on this parcel. The Ching Ma Leong store was previously located within 1/4-mile, downslope from the proposed project. This store used water from a pipe that received water from a perennial spring located in the hillside within proximity to this proposed project site. Post hurricanes, the community of this place utilized springs to provide water to its residents. Thus, perennial springs are considered by the community to be an important natural, cultural, and economic resource, but are not located on this parcel.

Barbara Robeson provided some background about the Hanalei Valley area and knew about the old road directly up from the Hanalei Bridge by the power station, where there was a store, Post Office and Plantation Home, which she said she had photos of along the old road up from the Hanalei Bridge. Again, this area in not on the parcel for this project but appears to be on the US Fish and Wildlife Service Lands.

Michael Ching also provided some information about his knowledge regarding Chinese burials. He stated he heard rumors of burials on the ridge but not Chinese. The Chinese cemetery started around 1803 and the Chinese stayed in that area being very good at taking care of their ancestors. Only once did he know of a case in Oahu where they found Chinese urns outside of a cemetery boundary. He did not believe any Chinese were buried on Kaunuhua Ridge. He was also aware of this parcel and helped some physicians look at this parcel to build a joint home there.

A primary concern relative to cultural impacts: it was suggested that a fresh water spring associated with traditional uses is on this parcel. It can be seen from the side of Route 560. There has been no verification of Hawaiian place names for springs along the ridge or at this location. It is a seep and not a spring. Its source is unknown. There are two aquifiers in this area. According to one information, his recollection, which was that this water was coming from some drainage pipe. EAL was not able to reach that original informant that stated this.

Ethnographic-Oral History Methodology

As noted previously under Consultation Methodology & Results, the interview

procedures employed were specifically chosen to be consistent with native Hawaiian concepts of propriety. Interviewers avoided use of electronic recording devices such as cassette tape or digital voice recorders, cameras, or video cameras.

If, as the CIA notes the interviews had been conducted in a standardized Western scholarly format without reference to Hawaiian cultural values, the questions might have been uniformly presented and limited to the topics most relevant to the project, such as:

- What type of cultural practices and cultural beliefs do/did your family practice?
- Where do/did these cultural practices occur?
- How do/did the area's sites, features, or land affect your or your family's cultural practices and beliefs?
- How would the plans to develop a single-family residence affect you or your family's cultural beliefs and cultural practices?

However, this approach was considered inappropriate for the reasons discussed in Consultation Methodology & Results. It was recognized the challenge of gently steering conversations towards topics of project relevance without being presumptuous or insensitive to the needs of the interviewees, but believes that the benefits of its approach outweigh any possible drawbacks.

Historical & Archival Research

Primary research references used in this study include, but are not limited to—land use records, including those obtained from an extensive review of Hawaiian Land Commission Awards (LCA) records from the 1848 Great Māhele, territorial land patent grants, oral history interviews preserved in the Bishop Museum Archive, and an extensive review of historical texts authored or compiled by D. Malo (1951), M.K. Pukui (1972), Handy and Handy with Pukui (1972), and Marti-Kini (2009). The study also relied on accounts from Hawaiian language newspapers such as *Ka Na'i Aupuni* and *Ka Nupepa Ku'oko'a* (translated by P. Nogelmeir and M.K. Pukui). Other sources examined and incorporated include regional planning documents, modern English language newspapers, travel writers' familiar with the Hanalei region, and important testimony of elder kama'āina of the lands of the Halelea-Hanalei region.

Researchers also took full advantage of historical and archival resources from the collections of the Bishop Museum, Kaua`i Museum, and Kaua`i Historical

Society. Research of published and unpublished written literature, as well as Hawaiian language documents, maps and photographs found in public and private collections for references and other relevant information were explored. Additionally, the examination of indigenous Hawaiian chants and interviews conducted with kūpuna or Native Hawaiian elders were extraordinarily revealing and valuable to producing this cultural study.

Homes for the cowboys, who were mostly Hawaiian, were built on both sides of the highway near the current site of the Princeville Shopping Center. During the 80 years that the Princeville Ranch House (Kikiula) was used as a dwelling, it was home to many different Princeville Plantation and Ranch managers, including the Wundenberg, Low, Conradt, Koelling, Willis, and Sanborn families. The Sanborns also had a house on the shoreline of Hanalei Bay, which they built in 1910 and referred to as the Mauka (Mountain) House.

Fred Conant was instrumental in the creation of the Hanalei Valley Lookout. Also under Conant's direction, a new home for the Princeville Ranch manager was built in Hanalei on Weke Road. The Princeville Ranch Manager's House later became the home of Larry and Jeanie Ching (this is Michael Ching's parents). The lands of the Princeville Ranch continued to be used for cattle in the 1930s, and an area of the upper slopes was planted with pineapples.

Cultural Resources & Practices Identified

Neither the literature sources consulted nor the interviews conducted identified any ongoing native Hawaiian cultural resources or practices located on the Gearon single family residence project. As indicated by background research and many of the interviewees, the broad Halelea-Hanalei region has a rich history replete with *mo'olelo* (legends) and *wahi pana* (traditional place names and their stories) however none of these have any significant direct or indirect connection to the project site. In addition, the long history of ranching and some cultivation in this area has likely destroyed any cultural materials and since the land has been overgrown and private prevented in cultural practices which might have been present in the past. This is confirmed by the Archaeological Inventory Survey prepare by Exploration Associates Ltd. for the Gearon single-family residence.

Analysis of Impacts

The Hanalei-Halelea region, which includes the area proposed for the single-family residence, is a place of prehistoric and historic significance in the Hawaiian

civilization. Oral histories and written records tell of the continuing traditions, beliefs, and cultural practices of the region. However, none of the background research, archaeological evidence, or interviews conducted in the preparation of this Cultural Impact Assessment indicates that the cultural practices, resources, or beliefs are tied to the proposed project site. This longstanding pasture for aniamals use by Princeville Ranch of the area may be one reason for the absence of cultural properties and resources in a region which has seen many centuries of habitation by native Hawaiians. The site has been significantly graded in the recent past. The land was not accessible.

The information summarized in this report indicates that there are no known extant historic cultural resources within the immediate vicinity of the project site that may be impacted because of the proposed project. Conclusions from the recent Archaeological Inventory Survey prepared for this project by Exploration Associates Ltd. (McMahon, 2017) suggest that historic-era alterations involved large-scale ground disturbance for the old roadway and one archaeological resource (SIHP# 50-30-03-02354).

Traditional Hawaiian uses of the lands in the Hanalei ahupua'a are known from prehistoric times. Such uses, including habitation, agriculture, and gathering continues throughout the region, but none is known to exist within the project area. Access to sensitive *wahi pana*, streams, the shoreline, or the mountains will not be compromised by this project

Native Hawaiian beliefs and traditions associated with the Hanalei *ahupua'a* persist but these are general associations not specific to the project site. No *kūpuna* (elders) or *mākua* (parents) could be located that had knowledge of traditional beliefs or practices specific to the project site.

This CIA has been prepared in accordance with the guidelines set forth by the State of Hawai'i Environmental Council for the completion of Cultural Impact Assessments and the requirements of HRS Chapter 343 and HAR §11-200. There are no known cultural resources or practices with the potential to be negatively impacted because of the proposed project.

Closing

Cultural impacts upon Native Hawaiian people, customary practices and religious beliefs have infiltrated the history of Hawai`i Nei for more than 200 years since the arrival of Captain James Cook in 1778. Within a period of 40 short years, the Kapu system was abolished by Kamehameha II - Alexander Liholiho and the Queen Regent, Ka`ahumanu bringing an end to the strength of the closely-knit

Hawaiian religion and political system of Hawai`i. With the arrival of Calvinist missionaries in 1820 came a new god and religion which leveraged the beginnings of severing the native Hawaiians' veneration of the natural world.

By the 1890s, subsistence lifestyles, agriculture and rural communalism had entirely been replaced by commercialism, urbanization and individualism as key features of life in the Hawaiian Islands. Foreign sugar plantation moguls usurped control of Hawai`i's prime agricultural lands and fresh water sources to sustain their crops. Miles and miles of irrigation ditches were engineered to redirect the natural flow of water out of the ahupua`a; forever changing the balance of environments and lifestyles of generations of native Hawaiian families.

By and large, the issues of cultural impacts in Hawai`i are rooted in the loss of access and use of Hawai`i's land and natural resources as formerly practiced in pre-contact Hawai`i. It is a deep-seated dilemma caused by the intrusion of forced principles brought on by Westernization and the rise of a monetary economy.

Included are in this CIA are the kūpuna's names and descriptions of their kuleana land claims presented to the Land Commission following the Great Mahele in 1848. Many of these families still exist and inhabit the lands of Hanalei today.

However, the lasting affects upon native Hawaiian people that have resulted in their disconnect to traditional practices, beliefs and knowledge of place goes back further to the introduction of Christian tenets that prohibits veneration and expression of nature or ancestor worship in any way, shape or form. There is great anxiety amongst contemporary Hawaiians to embrace the values and ideologies of their ancient ancestors out of fear instilled by the doctrines of the dominant western religion which most have adopted. This alone, largely contributed to the depreciation of interest to learn and maintain family genealogies, enroll to formal training in cultural practices that engage in ceremony and spiritual processes, etc.

All forms of traditional Hawaiian cultural practice included religious and spiritual processes of protocols, ceremonies, prayers and prescribed tabus and restrictions. The removal of this crucial part of Hawaiian cultural expression separated and dissolved the sacred and profound of the practice itself. It also eliminates the individual's conscious connection to the environment which is also considered as a sacred and profound aspect of the practice itself.

One of the primary goals was to complete a comprehensive CIA study that would satisfy the requirements of HRS Chapter 343 and HAR §11- 200 by following the guideline established by the State of Hawai`i Environmental Council for the

completion of Cultural Impact Assessments. As developments continue to occur throughout Kaua`i and Hawai`i, the required processes of conducting environmental reviews and cultural impact assessments such as this, will continue to seek out indigenous Hawaiian informants who possess the expertise and knowledge about their cultural practices, religious beliefs and storied places. While it is great that researchers and authors of CIAs have the potential to produce documents with invaluable information, it is no longer uncommon to find end results of studies determine no known cultural resources or practices are occurring today.

There is a sense of urgency for native Hawaiians to rejuvenate themselves in the cultural practices, teachings and knowledge of the ancients of these islands. There will continue to be findings of "no negative cultural impacts" if cultural practices are no longer occurring. And precious lands of their ancestors will be surrendered future developments that may ultimately erase every bit of cultural value. Perhaps it may be that many contemporary indigenous Hawaiians have forgotten or have never received transmission from elders of the previous generations of mo`olelo, mo`okū`auhau, wahi pana and other `ike or knowledge that are pertinent to Hawaiian cultural practices. However, it is never too late to learn and embrace the teachings of ancestral intelligence that is the birthright of every living and yet to be born Hawaiian. Native Hawaiians have the mana and the ability to participate and articulate upon the intricacies of Hawaiian knowledge and intelligence. Not only were they expert fishermen and planters, but they were priests and master genealogists, navigators, biologists, geologists, artists, craftsmen, astronomers and more whose scholarship of the land, environment and atmosphere was insightful and profound in ways unimaginable today.

To reiterate the use of the word, *minamina* on page 4: A considerable amount of focus was put toward the research of traditional places, their names and stories when preparing this study. It is *minamina,* a sad and unfortunate loss when valuable information is lost or forgotten. There is an urgent need to preserve and pass on ancestral knowledge that was widely known just a few generations ago. Kaua`i's unique culture and heritage associated with traditional places are key to nurturing a sense of place and connectivity. It is a vital component to the health and wellbeing of native Hawaiians, as well as the perpetuation of native Hawaiian life ways and culture.

In closing, another translation of minamina as:

> To prize greatly, value greatly, especially of something in danger of being lost; to value, place great value on; value, worth.

Culturl Impact Assessments present an exceptional opportunity for its

development partners to join to support the revival and rejuvenation of traditional Hawaiian cultural education.

Ho`i hou i ka `iwi kuamo`o

Return to the backbone

An `ōlelo no`eau or ancient Hawaiian proverb and poetical saying to return to the homeland or family after being away. This doesn't only pertain to a physical departure or absence from the `āina hānau (birth lands) or `ohana (family). It especially speaks to the importance of immersing oneself in his or her cultural practices, traditions and values. It is a reminder of the fundamental relationships and inherent connections Native Hawaiians have to their ancestral homelands that are based on environmental kinship and land wisdom.

Na wai ho`i ka `ole o ke akamai,

He ala nui i ma`a i ka hele `ia e o`u mau kupuna?

Why shouldn't we know this, when it was a road often traveled by our ancestors?

I ka wā mamua, ka wā mahope

The future is in the past

Hawaiian ancestral knowledge and culture is the umbilicus that connects Hawaiian people to the `āina upon which they are born or where they will choose to live and raise their `ohana. Acquiring a deeper understanding of the past is an essential component to arriving at the right decisions for creating a culturally prosperous future that is vital in the evolution of a prideful, flourishing society.

> *It is interesting to note that in Hawaiian, the past is referred to as ka wa mamua, or "the time in front or before." Whereas the future, when thought of at all, is Ka wa mahope, or "the time which comes after or behind." It is as if the Hawaiian stands firmly in the present, with his back to the future, and his eyes fixed upon the past, seeking historical answers for present-day dilemmas. Such an orientation is to the Hawaiian an eminently practical one, for the future is always unknown, whereas the past is rich in glory and knowledge.*
>
> *Lilikala Kame'eleihiwa, Native Land, Foreign Desires*

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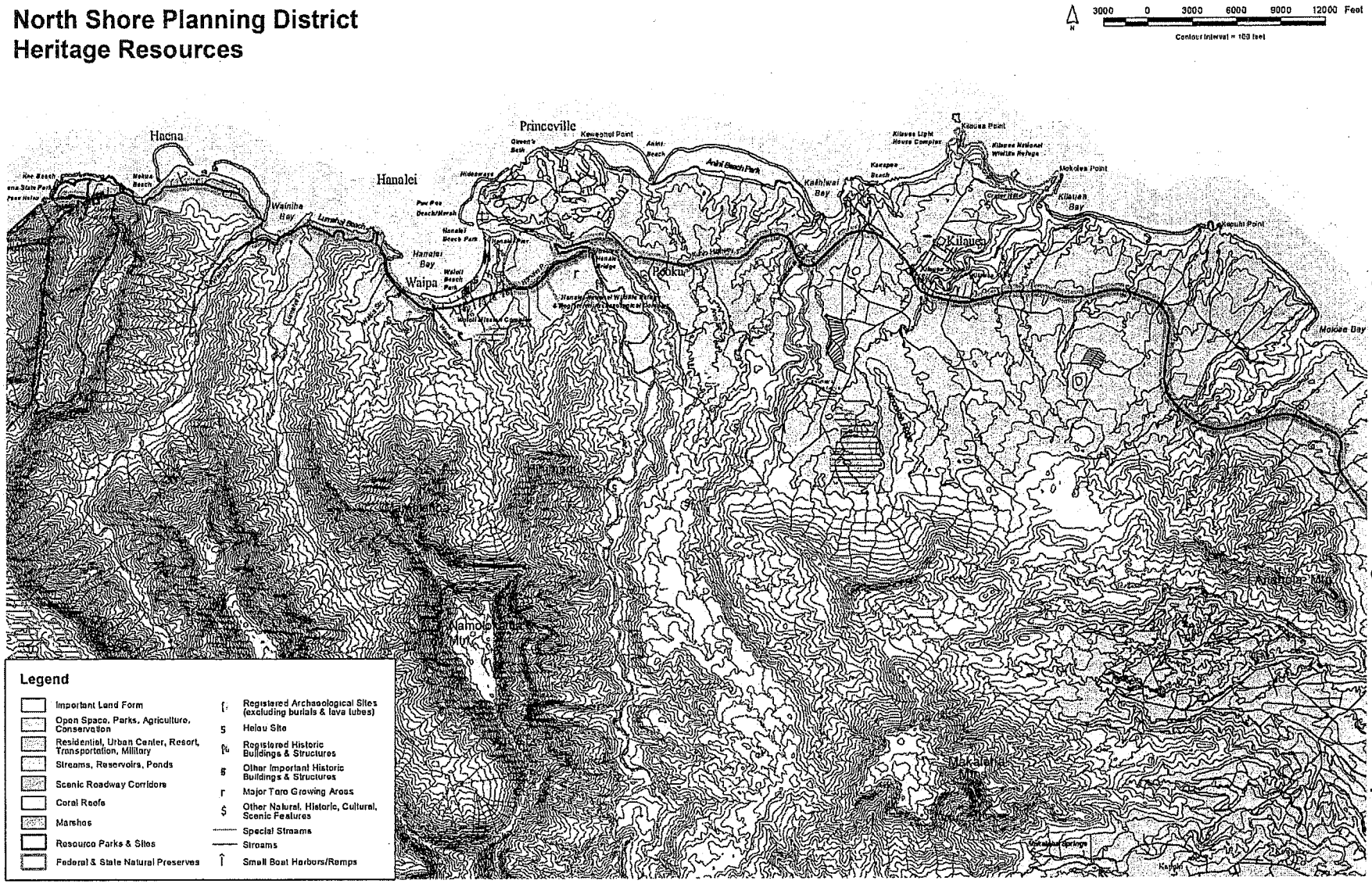
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North Shore Planning District
Heritage Resources



County General Plan - Heritage Resources Map

September 20, 2017

Dear Consulted Party:

Subject: Pre-Assessment Consultation Regarding Single-Family Dwelling in the Conservation District, Tax Map Key (4) 5-4-004:032, Princeville, Hawaii

Helios Hanalei LLC (Helios) is the landowner of a 14.109 acre parcel in Princeville, Hawaii. Please see the enclosed location map. The lot is located within the Conservation District as designated by the State Land Use Commission. Helios is proposing to build a single-family residence on the Lot (under Hawaii Administrative Rules §13-5-41, only one residence is permitted). The proposed residence is a one-story structure to be located within a relatively level cleared area near the center of the western end of the lot. Please see the enclosed site plan.

On behalf of the landowner, we are preparing a Hawaii Revised Statutes Chapter 343 Environmental Assessment of the landowner's proposed single-family residence. The Department of Land and Natural Resources Office of Conservation and Coastal Lands (OCCL) is the approving agency for the Environmental Assessment. If OCCL finds that the proposed single-family residence would not result in any significant environmental or cultural impact, a Conservation District Use Permit (CDUP) would then be requested from OCCL.

To date, an archaeological inventory survey and a cultural impact assessment have been completed. One possible pre-contact historic property, located within a dense guava grove outside the potential residence location, will be preserved within a buffer zone.

Based upon numerous community interviews and the studies that have been conducted, we believe the enclosed draft Environmental Assessment is accurate and complete, however, we are seeking any additional input you may have in identifying potential environmental and cultural impacts associated with the proposed residence. The proposed single-family residence would be designed and limited in size and design in accordance with the standards set forth in Title 13, Hawaii Administrative Rules pertaining to the Conservation District for single-family residences (§13-5-41).

In conjunction with this work, we are requesting any written comments and/or information with respect to your area(s) of concern, if any. Please send your written comments to the following by October 20, 2017:

Jean Campbell
Bays Lung Rose & Holma
700 Bishop Street, Suite 900
Honolulu, Hawaii 96813

Please send a copy of your comments to:

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
State of Hawaii Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

Thank you for participating in the planning stages of this project. Your input is important to us. If you have any questions or need clarification, please contact me at (808) 523-9000.

Sincerely,

Bernie Bays

A. Bernard Bays, Esq.

Enclosures: Environmental Assessment

Cc: Mr. Samuel J. Lemmo

Draft Environmental Assessment

TMK: (4) 5-4-004:032

Submitted To: Office of Conservation and Coastal Land

Applicant: Helios Hanalei LLC

September 20, 2017

Project Information

Project Name:	Draft Environmental Assessment Single-Family Dwelling Princeville, Kaua'i, Hawai'i
Applicant:	Helios Hanalei LLC 3350 Riverwood Parkway, Suite 425 Atlanta, Georgia 30339 Phone: (678) 564-2210 Email: mgearon@heliosholdings.net
Accepting Authority:	Office of Conservation & Coastal Lands Department of Land and Natural Resources State of Hawaii P.O. Box 629 Honolulu, Hawai'i 96809
Project Location:	Princeville, Island of Kaua'i, Hawai'i
Lot Tax Map Key No.:	(4) 5-4-004:032
Lot's Size:	14.109 acres
Existing Land Use:	Cleared field, remainder forested slopes and bluff Conservation:
State Land Use District:	Resource Subzone
County Zoning Designation:	Conservation
Project Description:	Proposed construction of a single-family residence and related improvements in the Conservation District under Hawaii Administrative Rules §§13-5-24(c) R-7 and 13-5-41.

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EXECUTIVE SUMMARY

The subject property is a Lot (TMK No. (4) 5-4-004:032) located in Princeville, Kauai, Hawaii, on a ridge on the eastern side of Hanalei Valley approximately 1.5 miles northeast of Hanalei, 0.5 miles south of Princeville and 1.3 miles from the Pacific Ocean. The Lot encompasses approximately 14.109 acres bordered on the north, west and south sides by Kuhio Highway and on the east by a portion of the Hanalei National Wildlife Refuge. The Lot was purchased by Helios Hanalei LLC ("Helios"), the applicant here, from the Richard Carlson Living Trust in November 2016.

The Lot is located in the State Conservation District, Resource Subzone and the Special Management Area ("SMA") as defined within Hawaii Revised Statutes ("HRS") Chapter 205A. The parcel is undeveloped, except for an entrance gate and a rock wall along a small portion of the perimeter abutting Kuhio Highway.

HELIOS intends to apply to the Board of Land and Natural Resources for a Conservation District Use Permit (the "CDUP") to construct a single-family residence and related improvements on the Lot (the "proposed project") under Hawaii Administrative Rules ("HAR") §§13-5-24(c) R-7 and 13-5-41.

At present, there are no dwellings on the lot. Accordingly, a single-family dwelling is permissible under HAR §§13-5-41(b) and (c).

As part of the approval process for the single-family residence, HAR §13-5-31(a)(l) requires submission of a HRS Chapter 343 draft Environmental Assessment ("EA"). The Department of Land and Natural Resources Office of Conservation and Coastal Lands is the approving agency for the EA and the CDUP.

The proposed Conservation District single-family dwelling would be located on a cleared and relatively flat area (the "proposed site" or "project site") near the center of the western portion of the Lot. Historically, the Lot has been unused. Today, the built environment surrounding the Lot includes commercial and public facilities as well as residential uses.

Features of the proposed single-family dwelling are designed to minimize its visual impact from the neighboring area and the Hanalei Valley floor. The proposed dwelling:

(i) Is one story with a maximum height of 18 feet 1.5 inches above existing grade (less than the maximum of 25 feet prescribed in HAR §13-5);

(ii) Has 4,342 square feet of living space, and a 622 square foot pool and spa for a total "maximum developable area" of 4,964 square feet (within the maximum of 5,000 square feet prescribed in HAR §13-5);

(iii) Is set back between 5 and 100 feet from the sloped areas overlooking Hanalei Valley;

(iv) Is finished with materials which conform to the surrounding environment, including cedar shake roofing and exterior walls finished in teak siding, and lava rock privacy garden walls; and

(v) Includes a landscape plan which replaces the invasive species present within the

project site with large canopy trees and maintains all densely vegetated areas bordering Kuhio Highway, further allowing the structure to blend in with its surrounding environment.

This draft EA proposes a finding of no significant impact. The key elements of this finding are as follows.

Utilities, Infrastructure and Air Quality. Utilities, infrastructure and air quality are not materially impacted by the proposed dwelling, as the proposed improvement represents a small percentage of activity on this portion of Kuhio Highway and the broader Princeville area. Wastewater will be accommodated by an under ground, self-contained, extended aeration wastewater treatment system consistent with State Health Department requirements. Kuhio Highway is a paved road serving multiple residences and businesses.

Drainage. The site appears to drain uniformly with no apparent ravines, defiles, indentations or drainages. There is no observable erosion occurring. The existing contours of the site will be maintained. Therefore, rainfall will generally be absorbed on the site and storm water flow will continue as under existing conditions. The Lot is located within Flood Zone X, an area determined to be outside the 0.2% annual chance floodplain.

Historic and Cultural Sites. The proposed project will have no significant impact on historic or cultural sites. The Lot has been undeveloped except for old government road sections and includes an unidentified pre-contact rock formation located in a dense guava forest located on the ridge overlooking the Hanalei Valley. The Lot was checked for an old Chinese cemetery, which was said to be located on or near the Lot, but Kauai/Niihau Burial Council members and others who visited the Lot did not locate burials of any sort. HELIOS will be submitting to the State Historic Preservation Division ("SHPD") its Draft Archaeological Inventory Survey ("AIS") reviewing historic/cultural sites within the Lot concurrently with this EA will address the pre-contact historic property located in a dense guava grove on the Lot. Components of the Final Preservation Plan may include designating the area surrounding the pre-contact historic property as a buffer zone. The proposed home site is more than 200 feet from the perimeter of the buffer zone. The AIS and Final Preservation Plan explicitly contemplate the construction of single-family dwellings on the project site.

The AIS included a survey of the Lot, subsurface testing of the project site and clearing/sketch mapping of the pre-contact historic property and found no additional evidence of historic or archeologically significant structures in the project site area.

Flora and Fauna. There will be a positive impact on flora and fauna in the project site and surrounding area. The project site is almost exclusively covered with invasive vegetation and there is no evidence of native animal species residing within the site. The proposed project's landscape plan calls for elimination of the invasive species in portions of the site, including the removal of strawberry guava, java plum and silver oak.

Cliffside areas will remain densely forested to prevent erosion and sediment runoff and to reduce impacts to existing plants and animals.

Visual and Aesthetic Resources. There will be minimal negative impact upon visual or aesthetic resources. Potentially impacted parties in this regard include residents of Hanalei Town and travelers and residents along Kuhio Highway. However, the choice of a site setback from the sloped edge of the Lot, the limitation of the dwelling to a single story, the choice of the dwelling's materials and colors and the plan for the surrounding foliage eliminate or adequately mitigate these potential impacts.

SECTION 1 BACKGROUND

1.1 INTRODUCTION

Helios Hanalei LLC ("HELIOS") purchased the Lot (TMK No. (4) 5-4-004:032), in Princeville, Kauai, Hawaii from the Richard Carlson Living Trust in November 2016. The 14.109 acre Lot sits on a ridge on the east side of Hanalei Valley and is bordered on the north, west and south sides by Kuhio Highway (the principal transportation artery on the north and east shores of the island), on the east by the Hanalei National Wildlife Refuge. The Lot is located in the State Conservation District, Resource Subzone and within the Special Management Area (the "SMA").

For at least the last 50 years, the Lot has remained undeveloped and devoid of structures or improvements.

HELIOS intends to apply to the Board of Land and Natural Resources for a Conservation District Use Permit (the "CDUP") (i) to construct a single-family residence in the Conservation District under Hawaii Administrative Rules ("HAR") §§13-5-24(c) R-7 and 13-5-41 and (ii) to remove invasive species and in their place to plant native and endemic plants and trees in the project site pursuant to HAR §13-5-22(b) P-4 (B-1), HAR §13-5-22(b) P-13 (B-2) and HAR §13-5-22(b) P-11 (B-1) (alternatively, this process would constitute Landscaping pursuant to HAR§ 13-5-23(c) L-2 (D-1)) (collectively, the "proposed project"). As part of the approval process for the single-family residence, HAR §13-5-31(a) requires submission of a Hawaii Revised Statutes ("HRS") Chapter 343 draft Environmental Assessment ("EA"). The Department of Land and Natural Resources Office of Conservation and Coastal Lands is the approving agency for the EA and the CDUP.

The proposed Conservation District single-family dwelling would be located on a gently sloping bluff (the "proposed site" or "project site") in the center of the western end of the Lot. Historically, the Lot has been left unused and with the relatively flat center portion where the house is to be located cleared and the balance densely vegetated predominately with invasive species. Presently, the built environment surrounding the proposed site includes a considerable amount of residential and other development, including the Princeville Shopping Center on the opposite (northeast) side of Kuhio Highway.

1.2 PROPERTY LEGAL BACKGROUND

The Lot is comprised of a portion of land covered by Land Patent Grant Number 4845 to Albert S. Wilcox; being a portion of the land deeded by Kamehameha IC to Charles Titcomb, Apana 2, February 12, 1856, and being a portion of Parcel 4-A. Historical uses of the Lot may have included pasture on the cleared portion, traditional travel to mauka/makai lands by trail or road (which may have traversed the Lot). Otherwise, the Lot has remained undeveloped and unused. The Lot boundaries were defined by the Kuhio Highway construction which likely happened in the 1940s. On November 1, 2016, HELIOS purchased the Lot from the Richard Carlson

Revocable Trust dated December 14, 2004.

The County of Kauai approved an SMA minor permit for the installation of a gate and rock wall at the entrance to the Lot on April 10, 2015. SMA(M)-2015-33 and CDUP KA-3729. The County of Kauai Water Department approved the installation of a water meter to serve the Lot and a Conveyance of Water Facility dated May 21, 2015 was recorded against the Lot in the Bureau of Conveyances as Document No. A-56870489.

1.3 SURROUNDING BUILT ENVIRONMENT

The built environment immediately surrounding the proposed site includes residential and commercial development, as well as community services providers.

Hanalei Farms and Homesteads

Directly across Kuhio Highway and surrounding the majority of the Lot are the Hanalei Garden Farms condominium and various homestead properties accessed from Kuhio Highway and Hanalei Plantation Road. These properties include homes, farm dwellings, other farm structures and agricultural activities.

Hanalei Fire and Police Station

The Hanalei Fire and Police Station, also known as Station 1, is located approximately 0.1 mile from the Lot. The County of Kauai Fire Department, Fire/Rescue/HazMat/Medical Response Operations program, provides fire protection and suppression, rescue (ocean and land), hazmat and emergency medical services (basic life support) as well as pre-fire planning and inspection.

Princeville Shopping Center and Princeville Resort

The Princeville Shopping Center is located approximately 0.5 mile to the northeast of the Lot on Kuhio Highway. The Princeville Shopping Center includes a United States Post Office, Foodland grocery store, gasoline station and other shops and restaurants.

Less than 1 mile east from the Lot is the entrance to the Princeville Resort, which includes the St. Regis Princeville Resort, various condominium and subdivision homes and the Makai Golf Course.

Hanalei National Wildlife Refuge and Hanalei Scenic Overlook

Established in 1972, Hanalei National Wildlife Refuge ("Refuge") is the oldest of Kaua'i's three national wildlife refuges and is owned and maintained by the United States Fish and Wildlife Service ("USFWS"). The 917-acre Refuge is located mainly in the Hanalei River Valley and extends upslope to abut the eastern end of the Lot. The Refuge was established under the Endangered Species Act to conserve five endangered water birds that rely on the Hanalei Valley for nesting and feeding habitat: the koloa maoli (Hawaiian duck), the 'alae ke'oke'o (Hawaiian coot), the 'alae'ula (Hawaiian moorhen), the ae'o (Hawaiian stilt), and the

nēnē (Hawaiian goose). Forty-five other species of birds (18 of which are introduced species) also utilize refuge habitat at some point throughout the year. The Refuge is not open for public access.

Across Kuhio Highway from the Princeville Shopping Center, the scenic overlook of the Hanalei Valley provides public viewing of the Refuge and the valley. According to a draft 2002 Environmental Assessment of the a proposed relocation and expansion of the overlook, approximately 350 vehicles and four to ten tour busses were expected on the site daily (an estimated 900 visitors per day). A Kauai Island Utility Substation and transmission lines are located on the Refuge property near the eastern boundary of the Lot.

Princeville Airport

The Princeville Airport runway is approximately 2.5 miles east of the Lot. Although at present there are no regular commercial flights using the airport, there was regular commercial service in the past, which could be reintroduced. In addition, the airport is open to use by private aircraft and is regularly used by tour helicopters.

SECTION 2 PROPOSED PROJECT AND NO ACTION ALTERNATIVE

2.1 THE PROPOSED PROJECT

Helios is proposing to construct a single-family dwelling on the Lot which is located in the State Conservation District (Resource Subzone). The dwelling would be located on a gently sloping bluff (the "proposed site" or "project site") in the center of the western end of the Lot. The proposed site is relatively flat *(see* topographic map included in Exhibit 1) and is covered with grasses and weeds with limited to no presence of native plant species. The site has been unused for at least the past 50 years.

The Proposed Dwelling. The proposed single-family dwelling would be located at the western end of the Lot. The proposed dwelling would be a single-story structure with maximum height of 18 feet 1.5 inches above existing grade. The structure would have a finished living space under roof of 4,342 square feet and a pool and spa of 622 square feet, resulting in a "total maximum developable area" of 4,964 square feet (as reflected in Exhibit 1).[1]

The Topographic Map, the relevant Tax Map, Site Plans (including Landscape Plan) and Floor Plan for the residence are attached as Exhibit 1. Elevations showing the exterior of the dwelling, together with photographs of the project site with 20 foot story poles are included as Exhibit 1. In addition, photographs from the perspective of various locations around Hanalei, including Waikoko, the Hanalei Pier, Hanalei Park and certain roads, are included in Exhibit 2 These photographs depict how the dwelling site would appear to the naked eye when viewed from the various points on the Hanalei Valley floor.

Dwelling Exterior Finishes. The exterior walls of the dwelling are finished with teak siding (as

[1] This total includes the footprint of the home (whether or not living space), as well as, the pool, but excludes the driveway.

shown in the elevations included in the Exhibit 1). Exterior windows and doors will be bronze tinted glass (as shown in Exhibit 1). Exterior columns are concrete and privacy garden walls are lava rock. The roof is cedar shake, as shown in Exhibit 1. The driveway will be crushed coral at the existing grade.

The Landscape Plan. The Landscape Plan (included in Exhibit 1) calls for removal of a portion of the existing invasive species within the project site, the preservation of existing *hala* trees, and the planting of large canopy trees and other plants.

(i) The project site would be planted with Royal Poinciana trees for large canopy, including within the circular driveway. Existing Strawberry guava, Silver oak and Java plum, all invasive species, will be removed. *Hala* trees within the project site will be maintained to preserve the Hawaiian sense of place. The existing pasture area will be maintained in its current closely mowed condition.

(ii) The residence would have groupings of native *loulu* palms.

(iii) Areas outside the project site (all areas bounding the Kuhio Highway) will remain as currently densely vegetated to maintain privacy and to prevent erosion of sloped areas.

Wastewater. Wastewater from the dwelling will be addressed using an underground, self-contained, extended aeration wastewater treatment system which processes all wastewater This system is summarized in Exhibit 3. The wastewater system will comply with Department of Health requirements for wastewater disposal.

Site Development - Excavation. The contours of the proposed site will not be altered, other than excavation of the area immediately beneath the proposed dwelling to accommodate its foundation and excavation of the pool.

2.2 NO ACTION ALTERNATIVE

The No Action Alternative is included in the environmental analysis to provide a basis to compare the proposed project. In the No Action Alternative, there would be no disturbance of the existing environment. At present, many of the invasive species on the proposed site have been cut and grasses mowed. The No Action Alternative would permit invasive species existing on the site to once again spread on the site.

2.3 PROJECT LEGAL FRAMEWORK AND COMPLIANCE ANALYSIS

Under HAR §§13-5-24(c) and HAR 13-5-41, one single-family dwelling may be constructed upon land in the Conservation District with the approval of the BLNR. The dwelling may not be allowed, "where there is an existing residence in a different state land use district zoned for residential, rural or agricultural use on another portion of the same legal lot of record" (HAR §13-5-41(c)). The residence must meet design standards contained in HAR §13-5 (HAR §13-5-41(a)). The design standards, among other things,

limit the "maximum developable area" to 5,000 square feet for lots larger than one acre and limit the height of any part of the structure (with certain exceptions) to the "maximum allowable building envelope", which is 25 feet above the existing grade.

A single-family dwelling must receive a Board Permit (HAR §13-5-24(c)). A Board Permit, among other things, requires submittal of a draft or final EA (HAR §13-5-31(a)(l)). The Board Permit for a single- family dwelling in the Resource Subzone does not require a Public Hearing (HAR §13-5-40(a)).

There are no existing dwellings or structures, other than a rock wall and driveway gate, on the Lot. Accordingly, since there is no existing residence on portion of the Lot, the proposed single-family residence satisfies the requirements of HAR §13-5-41(b) and (c).

The proposed dwelling complies with the "compatibility provisions" of HAR §13-5. In particular:

(i) landscaping will screen much of the structure from the perspective of Kuhio Highway, the dwelling will not be visible from Hanalei Town and, to the extent the dwelling would be visible from beaches, parks and roads within Hanalei Valley, the combination of foliage about the structure, setback from the sloped edges of the Lot, single story construction, and choice of materials for the roof and exterior walls will obscure the dwelling such that it will not be readily discernible to the naked eye from its surroundings;

(ii) the roof will be cedar shake and the exterior walls teak paneling sufficient to blend with the environment;

(iii) the waste water system will comply with and be approved by the Department of Health;

(iv) the general contours of the proposed site will not be altered (except for the construction within the area of the dwelling itself, the pool and spa;

(v) only one dwelling will be constructed;

(vi) all building and grading code requirements will be followed; and

(vii) there will be only one kitchen.

SECTION 3 PHYSICAL ENVIRONMENTAL SETTING, IMPACTS AND PROPOSED MITIGATION

3.1 TOPOGRAPHY, SOILS, GEOLOGY, RAINFALL

Existing Condition

Like many other valleys on Kauai, Hanalei Valley was created largely by stream erosion. It stretches from Hanalei Bay to Mount Waialeale, a distance of approximately ten miles. The valley is widest at the bay, narrowing inland. Alluvial deposits, and the effects of sea level changes helped form the valley's flat floor. Because of this flat terrain, and wetland conditions, the valley floor is presently used primarily for endangered water bird management by the US

Fish and Wildlife Service as the Hanalei National Wildlife Refuge and wetland taro cultivation. The valley floor was also used to cultivate sugarcane, coffee and rice from the early 1800s through the 20th century.

The Hanalei River, which meanders through the Hanalei Valley floor, is located approximately 150 feet from the southeastern corner of the Lot. The Hanalei River is the fourth largest stream in the State based upon the amount of water discharged (Stream Assessment Draft Report of 1990, State of Hawaii and National Park Service: 27) and, in 1998, was designated as one of seven American Heritage Rivers by Executive Order 13061.

The Princeville area to the north of the Lot is in residential, commercial and resort uses. Princeville Shopping Center, directly to the northeast of the Lot, is the primary commercial resource center for the Princeville community.

The Lot, located west of the Hanalei Valley Lookout, includes all of the land within the horseshoe curve of Kuhio Highway which leads down to the Hanalei River and Hanalei town. The Lot is currently vacant land with no improvements. The western end of the Lot is a gently sloping bluff. It has been cleared of woody vegetation and is maintained as a periodically mowed grass field. The Lot has a rock wall gated entry with a gravel driveway leading to the bluff area.

Topography, Soils and Geology. The majority of the Lot is gently sloping terrain falling from approximately 471 feet of elevation to about 460 feet of elevation resulting in an overall maximum gradient of seven percent (7%). This gently sloping bluff area is the planned site of the residence. The remainder of the Lot is steeply sloped and heavily forested. The Lot is located on an ancient wave-cut terrace underlain by lava flows associated with Mount Namahana, an extinct, secondary volcanic vent structurally connected to Mount Wai'ale'ale, the principal volcano that created the island of Kauai. The volcanic rocks have been altered by chemical processes to form thick zones of saprolite. The soil mantle overlying the saprolite formation is composed of a silty clay or silt assigned to the Makapili series. This soil is characterized by a low shrink/swell potential but high corrosion potentials with respect to uncoated steel and concrete. The erosion hazard is considered slight to moderate on slopes of the inclination typical of the bluff portion of the Lot.

A Geotechnical Report dated May 22, 2017 was prepared by JPB Engineering, Inc. and is attached as Exhibit 4. A Phase I Environmental Assessment dated July 7, 2017 was prepared by Pacific Greene Environmental Inc and is attached as Exhibit 5.

Slope mitigation work covering approximately 3 acres of the Lot was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 2006-085546. This Right of Entry granted the State temporary use of a portion of the Lot for slope mitigation work along Kuhio Highway for protection of the highway. A Grant of Easement to the State of Hawaii granted Slope Easement 1 for the maintenance of the slope mitigation work and recorded as Document No. 2010-000301. The physical improvements of this mitigation work consist mainly of anchors, cables and steel mesh netting. More information on the slope stabilization work can be for in the Final Environmental

Assessment Kuhio Highway Slope Stabilization January 2009.

Rainfall; Ground Water. The parcel receives approximately 78 inches of annual rainfall (University of Hawaii Rainfall Atlas). There is no evidence of significant surface flows to the Lot originating from neighboring properties. There may be some drainage from Kuhio Highway on the northeast side of the Lot. Test borings on the Lot showed no free ground water. The Lot may have seeps and springs but none have been observed.

The project site is rated Flood Zone X. Zone X is a Special Flood Hazard Area determined to be outside the 500-year floodplain as shown on the FIRM Map attached hereto as Exhibit 6. Flood insurance purchases are not required. The nearest floodplain is within Hanalei Valley.

Potential Impacts and Mitigation

The Proposed Project

Topography. The dwelling and surrounding landscaping will be designed to conform to the existing contours of the project site and not materially alter the existing topography. The only permanent alteration of the site's contours will be for the foundation of the dwelling itself and for the pool and spa. The Landscape Plan will not require any material modification of the existing terrain or excavation.

Soils and Geology. The proposed dwelling will not change the soils of the project site or the surrounding areas.

Rainfall, Drainage and Natural Hazards. The existing contours of the site will be maintained. Therefore, rainfall will generally be absorbed on the site and storm water in extreme conditions will flow direction discharging to Kuhio Highway, as under the existing circumstances. Slope mitigation work covering approximately 3 acres of the Lot within the drainage area was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 2006-085546.

The proposed project will not increase the risk of natural hazards (i.e., landslides) due to the very limited alteration of site drainage, location of the dwelling on the level portion of the Lot and the existing slope stabilization improvements which will remain in place.

No Action

The No Action Alternative would not change the existing topography, soils, drainage or natural hazards of the project site.

3.2 WATER RESOURCES

Existing Condition

The project site contains no surface water bodies or wetlands. A botanical survey of the site

found no evidence of wetland vegetation.

The surface water bodies nearest to the project site are Hanalei River, which meanders along the valley floor to the south of the Lot, and the river's adjacent wetlands. The river is designated a National Heritage River. The Hawaii Stream Assessment (1990) evaluated Hanalei River as having outstanding aquatic natural resources. The valley wetlands are used to cultivate taro and provide habitat for endangered water birds. The nearest coastline, Hanalei Bay, is approximately 1.3 miles distant. Princeville Resort has an irrigation pond associated with the golf course that is located approximately 0.5 mile from the Lot.

The County of Kauai Water Department approved the installation of a water meter to serve the Lot and á Conveyance of Water Facility dated May 21, 2015 was recorded against the Lot in the Bureau of Conveyances as Document No. A-56870489. There are no groundwater wells or injection wells on the Lot.

Potential Impacts and Mitigation

Proposed Project

The proposed project will have no significant direct or indirect impact on the Hanalei River, the adjacent valley wetlands or the coastal waters (including Hanalei Bay).

Potable water will be supplied to the Lot by a County of Kauai Water Department approved water meter.

No Action

The No Action Alternative would not impact the Hanalei River, the Hanalei Valley wetlands or the coastal waters because this alternative would propose no construction.

3.3 FLORA

Existing Condition

The vegetation covering the eastern two-thirds of the Lot is mostly mixed, secondary forest with a generally sparse understory. Between the Kuhio highway verge of the upper arm of the loop and the steep slopes along the lower arm is a closed or nearly closed canopy forest of mostly introduced tree species: mango (*Mangifera indica*), avocado, (*Persea americana*), sirus tree (*Albezia lebbeck*), and gunpowder tree (*Terma orientalis*). Also common in this area are native or Polynesian-introduced ("canoe plants") *hala* (*Pandanus tectorius*), *niu* or coconut (*Cocos nucifera*) and *hau* (*hibiscus tilaceus*).

Much of the project area on the western third of the Lot has been cleared and is close-cropped grassy field with a few scattered trees. This area was once covered in strawberry guava (*Psidium cattleianum*) scrubland. This scrubland extended over much of the western third of

the Lot and surrounds the project area. A portion of the west-facing slope, extending below the project area to the highway, supports a mixture of trees and mostly shrubs, with wait-a-bit (*Caesalpinia decapetala*) prominent. Scattered ornamentals are present, planted especially along the residence entrance driveway.

A Natural Resources Surveys report, dated June 14, 2017, was prepared by AECOS, Inc. It is attached as Exhibit 7. Between surveys conducted in 2008 and 2017, 12 species of ferns and 120 taxa of flowering plants were identified on the Lot, representing all plants identified in both surveys. Four of the 12 species of ferns identified are native species (indigenous or endemic). Among the flowering plants, 6 indigenous and no endemics are listed. Early Polynesian introductions total 5 flowering plants. None of these species is considered rare in the Hawaiian Islands.

Potential Impacts and Mitigation

Proposed Project

The proposed project's Landscape Plan would positively impact the project site flora. No species that is listed by the state or federal governments endangered species statutes or considered a candidate species, or is rare, or is of any special concern was observed at the Lot. Therefore, no mitigation measures are proposed based on specifics of the observed flora. The Lot does support a number of old *hala* trees that provide an ambiance of a Hawaiian sense of place and these trees will be preserved to the extent possible. These trees are sparsely scattered around the project area and are prominent in parts of the steep-sloped eastern half of the Lot away from the project area. The plan proposes continued control of invasive plant species covering the project site and the reintroduction of some native species.

No Action

The property remains dominated by invasive grasses, shrubs and trees which will be permitted to spread throughout the Lot.

3.4 FAUNA

Existing Condition

During stationary point-counts, nine species were observed utilizing the Lot and an additional five species were encountered while traversing the Lot between count stations: Spotted Dove (*Streptopelia chinensis*); Red Junglefowl (*Gallus gallus*); Northern Cardinal (*Cardinalis cardinalis*); Chestnut Munia (*lonchura atricapilla*); Scaley-breasted Munia (*Lonchura punctulata*); House Finch (*Haemorhous mexicanus*); Western Meadowlark (*Sturnella neglecta*); White-rumped Shama (*Copsychus malabaricus*); House Sparrow (*Passer domesticus*); Common Myna Bird (*acridotheres tristis*); Red-crested Cardinal (*Paroaria coronate*) Japanese White-eye (*Zosteropos japonicas*); and Cattle Egret

(*Bubulcus Ibis*).

The Hawaiian Goose or *nene* (*Branta sandvicensis*) is common in nearby Hanalei National Wildlife Refuge and around the Princeville golf courses. Two seabirds – the Hawaiian Petrel (*Pterodroma sandwichensis*) and the Hawaiian sub-species of Newell's Shearwater (*Puffinus auricularis newelli*) – regularly fly over the region but were not observed during the survey.

No mammals nor signs of their presence were detected on the Lot during the survey. A domestic dog (*Canis l. familiaris*) was heard barking, the sound originating from houses north of the Lot, across Kuhio Highway. The Hawaiian hoary bat (*Lasiurus cinerius semotus*) is an endangered species that is fairly common in the lowlands of Kauai. Although not detected during the course of surveying the Lot, it is likely that this endangered species uses resources in the general area. Hawaiian hoary bats are foliage-roosting, over-disbursed mammals; that is, they roost in low numbers widely separated from one another.

A Natural Resources Surveys report, dated June 14, 2017, was prepared by AECOS, Inc. It is attached as Exhibit 7.

Potential Impacts and Mitigation

Proposed Project

The proposed project will not adversely impact fauna in the area of the project site. To the contrary, the introduction of large blooming canopy trees may provide harborage and forage for native forest bird species. Also, maintenance of the project area in short grass will provide harborage for native birds, including the Koloa, and Nene, both common in the Princeville and Hanalei area.

The proposed project is also not anticipated to adversely impact threatened or endangered species. Removal of vegetation within the Lot may temporarily displace bats using trees for roosting. However, these bats use multiple roosts within their home territories and disturbance from the removal of a roosting tree is likely to be minimal. An exception is the removal of trees during the bat pupping season.

The following recommendations are planned for the project:

- Exterior lighting will be shielded to reduce interactions with Hawaiian petrels and Newell's shearwaters moving between inland nesting sites and the ocean.
- To the extent that trees taller than 15 feet will be removed, which trees may provide roosting sites for Hawaiian hoary bats, this action will be scheduled for periods not within the Hawaiian hoary bat pupping season of June 1 through September 15.

No Action Alternative

Under the No Action Alternative, the project site would repopulate with invasive species with limited harborage and forage for native species, including the regrowth of dense vegetation within the currently mowed areas.

3.5 AIR QUALITY AND NOISE

Existing Condition

HELIOS is not aware of any air quality issues concerning the proposed site. Additionally, there are no industrial sources of noise near the project site, other than periodic construction activity.

Potential Impacts and Mitigation

Proposed Project

During construction, noise at the proposed site will be the typical levels associated with construction of a single-family dwelling and related improvements and HELIOS will comply with all applicable legal and regulatory requirements related to noise levels. Once the dwelling is completed, noise emissions will be minimal and impacts to neighboring properties will not be significant. Once constructed, the types of noise that will be generated at the dwelling would include cars moving in and out of the site and the periodic operation of landscaping maintenance equipment, such as lawnmowers, blowers, etc. Periodic use of such equipment is common within the project neighborhood.

During construction of the proposed dwelling, BMPs will be used to minimize any dust or similar air borne material and HELIOS will comply with all applicable legal and regulatory requirements related to air pollution control and fugitive dust emissions. Once the proposed dwelling is completed, the dwelling and vehicles entering and exiting the dwelling will have no significant impact on pollutant air emissions.

No Action

The No Action Alternative would not change existing noise levels or pollutant air emissions.

3.6 UTILITIES AND ROADS

Existing Condition

There is no sewer service along this portion of Kuhio Highway. State Health Department regulations require that a septic system may not be located within 1,000 feet of a public potable water well.

Potable water for residences along this portion of Kuhio Highway is provided by the Kauai

County Department of Water. Installation of water meter facilities has been approved by the Department of Water and a Conveyance of Water Facility was recorded in the Bureau of Conveyances as Document No. A-56870489 on July 28, 2015.

Kauai Island Utility Cooperative ("KIUC") provides electric power service to this area of Kuhio Highway. Kuhio Highway is a public road owned by the State of Hawaii.

Potential Impacts and Mitigation

Proposed Project

The proposed dwelling does not materially impact utilities and roads.

The County of Kauai does not provide wastewater treatment services to this area. Domestic waste water from the proposed dwelling would be processed by an underground, self-contained, extended aeration wastewater treatment system. The system will be in compliance with State Department of Health and County requirements.

Installation of water meter facilities has been approved by the Department of Water and a Conveyance of Water Facility was recorded in the Bureau of Conveyances as Document No. A-56870489 on July 28, 2015.

KIUC has approved plans for electrical service to the proposed dwelling.

The addition of the residence should have no material impact on wear of or traffic on Kuhio Highway.

No Action

The No Action Alternative would not change the existing use of utilities and roads.

SECTION 4 SOCIAL ENVIRONMENTAL SETTING, IMPACTS AND PROPOSED MITIGATION

4.1 POPULATION CHARACTERISTICS

Existing Condition

The town of Princeville was developed starting in the late 1960s. It includes two major hotels (the St. Regis Princeville and the Westin), over 1,500 time-share and condominium properties, and over 700 single- family residences. Princeville's population in 2010 was 2,158. Princeville includes a commercial area, the 74,000 square foot Princeville Shopping Center, which includes a 24,666 square foot Foodland supermarket, an ACE Hardware store and numerous other small businesses and restaurants.

Hanalei is a much older community. The community had approximately 300 residences in 2010. The area often referred to as Hanalei Town supports a small commercial district with shops, restaurants and other businesses. The remainder of the Hanalei Valley is very rural and scenic and includes a National Wildlife Refuge, some residences and taro farms.

The County of Kaua'i General Plan projects a resident population ranging from between 65,300 to 82,800 for the year 2020 based on data from the 1990s (section 1.6.2.2 County of Kauai General Plan). The U.S. Census Bureau for 2010 estimates the population for 2020 to be 75,640 residents, which is slightly more than the maximum projection from 1997 (Table 2-1).

Potential Impacts and Mitigation Proposed Project

The addition of a single-family residence in Princeville will have no material impact on population metrics of the area.

No Action

The No Action Alternative does not impact population metrics.

4.2 TRAFFIC CONDITIONS

Existing Condition

The Lot and the project site are located on Kuhio, a State-owned, paved road. Kuhio Highway in this vicinity has numerous commercial structures, residential dwellings and other structures, located along it, including the Princeville Shopping Center and Hanalei Fire and Police Station. Hanalei Plantation Road intersects with Kuhio Highway opposite from the northern boundary of the Lot and adjacent to the Hanalei Fire and Police Station. The Lot has a long used State approved driveway entrance onto Kuhio Highway.

Potential Impacts and Mitigation Proposed Project

The introduction of one single family dwelling to the community will have no significant impact on existing traffic conditions on Kuhio Highway. The incremental use associated with the proposed single-family dwelling is not consequential.

No Action

The No Action Alternative will not alter existing use of Kuhio Highway.

4.3 HISTORIC AND CULTURAL PROPERTIES

Existing Condition

The adjacent Kuhio Highway, also known as the Kauai Belt Road, is on the National Register of Historic Places, as is the nearby Hanalei Bridge. Their applicable criteria include A (property associated with events that have made a significant contribution to the broad pattern of our history) and C (property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction) with significance for engineering, social history, transportation and commerce. The Kuhio Highway between Princeville and Ha'ena is part of the original belt road system and retains its historic significance and character in its location, alignment, design, setting and association. The project will not affect the location, alignment, design, setting or association of the historic roadway as the improvements on the Lot will be minimally visible from the roadway and no alterations will be made to the Kuhio Highway.

An Archaeological Inventory Survey ("AIS") covering the Lot, was completed in July 2017 by Exploration Associates, Ltd and is attached as Exhibit 8. No cultural materials or historic properties were found during the surface and subsurface work in the project area.

The AIS noted -

> The project area is defined as the single-family residence including the swimming pool and ancillary improvements. Currently the project area is fairly level and maintained in grass. Subsurface testing (6 backhoe trenches) were placed in the location of the proposed development. No cultural material or historic properties were found during the surface and subsurface work in the project area. Within the parcel, two historic properties were identified: Old Government Road portion (50-30-03-02353) and a pre-contact historic structure comprised of a rock formation (50-30-03-02354). The location of these historic properties is well outside of the development area but on the Lot.
>
> SIHP# 50-30-03-2353 is an old road documented as significant under criteria D (for its information content. From the historic documentation, this road appears to be built before 1833. Its use was mostly abandoned when the new Kauai Belt Road was constructed. Occasionally it was used as an emergency route. No further work is recommended for this historic property but because of its location, it is being indirectly being preserved "as is".
>
> SIHP# 50-30-03-02354 is an approximately 15 x 7-meter pre-contact historic property located in a dense area of guava forest near the northern point of the property. SIHP# 50-30-03-02354 is significant under multiple criteria D and E (E being significant to the Native Hawaiian culture). Four features have been identified with that historic property. Two mounds, one rock wall and several rough stones outline

a rough boundary of the historic property. A preservation plan is recommended for this historic property, with further detailed mapping with appropriate buffers and will be maintained by the owner.

The State Historic Preservation Division has recommended a preservation plan including a buffer zone to safeguard the pre-contact historic property from future adverse activities in the surrounding area, which Helios has agreed to implement. In setting the buffer zone, the AIS and preservation plan expressly considered planned residential dwelling.

An cultural impact assessment was also conducted for this parcel. No traditional cultural practices have been documented for this property. Interviews with informants stated that in modern times the area did have some occasional pig hunting, guava and sisal collecting and cannabis growing. It was a heavily overgrown area and most informants did not recall much about the area and had little access nor reason to frequent that parcel. A few informants mentioned they thought there was a Chinese cemetery and other informants stated there was an ahu or heiau on this parcel. The cultural impact assessment can be found in Exhibit 9.

Potential Impacts and Mitigation

Proposed Project

There should be no significant impact on historic or cultural sites. As mentioned, the AIS identified no historic properties or structures on the project site.

The buffer zone around the pre-contact historic structure safeguards the historic preserve from uses of the Lot, including construction activities.

No Action

The No Action Alternative would not impact historic properties and would leave the pre-contact historic property overgrown and undistinguishable.

4.4 VISUAL AND AESTHETIC RESOURCES: IMPACT ON THE AREA

Existing Condition

Kuhio Highway borders three sides of the Lot. There are currently no dwellings on the Lot.

Extensive residential, community and commercial development on Kuhio Highway exists to the northeast of the Lot, including:

(i) the Princeville Shopping Center;
(ii) the Hanalei Fire and Police Station; and
(iii) multiple farms and residences on Hanalei Plantation Road which runs perpendicular to Kuhio Highway.

One residence is planned for the Lot. The residence will be only minimally visible from Kuhio Highway, including the nearby Hanalei Valley lookout.

Analysis/Mitigation

Proposed Project

The proposed project will have no significant impact on the neighborhood in this area of Kuhio Highway. One residence is planned for the Lot. Accordingly, there will be no further residential development within the 14.109 acres comprising the Lot.

The proposed dwelling is only one story with a maximum height of 18 feet 1.5 inches. The home will be set within the dense vegetation bordering Kuhio Highway, which will remain undisturbed. Given the vegetation along Kuhio Highway and around the residence and the roofing and exterior materials used, the proposed residence will blend into its surroundings and will be largely obscured to passing vehicle and pedestrian traffic on Kuhio Highway.

Given the proximity to the busy Princeville Shopping Center, Hanalei Fire and Police Station and multiple other residences, this portion of Kuhio Highway is not a pristine, natural preserve; it is a developed residential and commercial area. The proposed home is also at the far end of the Lot from the boundary of the Hanalei National Wildlife Refuge. As a result, the proposed single-family dwelling will have no material impact on the overall visual appearance of the area in terms of its existing "natural" condition. With respect to natural foliage, the area has been largely overtaken by invasive vegetation.

No Action

The No Action Alternative would not change the existing state of the area. Invasive vegetation would continue to populate and spread in and around the proposed site.

4.5 VISUAL AND AESTHETIC RESOURCES: IMPACT ON IMMEDIATELY ADJACENT PARCELS

Existing Condition

There are no dwellings or businesses immediately across Kuhio Highway from the proposed site in any direction. There are three (3) residences, the Hanalei Fire and Police Station and other undeveloped parcels immediately across Kuhio Highway from other portions of the Lot.

Analysis/ Mitigation

Proposed Project

Due to the dense vegetation abutting Kuhio Highway, the proposed dwelling will not be visible

from the three (3) residences, the Hanalei Fire and Police Station across the street. The dwelling will be partially visible, although mostly obscured by vegetation from undeveloped parcels below Kuhio Highway in Hanalei Valley. The impact on these undeveloped parcels depends in part on their future use, if any, but would be minimal in any event.

No Action

The No Action Alternative would not change the existing state of the area. Invasive vegetation would continue to populate and spread in and around the proposed site.

4.6 VISUAL AND AESTHETIC RESOURCES: IMPACT ON VIEWS FROM THE HANALEI VALLEY FLOOR

Existing Condition

There are several taro farms on the Hanalei Valley floor below the Lot. The Kuhio Highway runs east-west across the valley floor from Princeville to Hanalei. Ohiki Road runs south from the highway up the valley, providing access to the taro farms and USFWS property in the valley, including the Hanalei National Wildlife Refuge.

Analysis/Mitigation

Proposed Project

Given the location of the project site along the Hanalei Valley rim, there are limited locations within the valley floor, Hanalei Town or its nearby beaches which could potentially see the proposed dwelling. By limiting the dwelling to one story (with a maximum height of 18 feet 1.5 inches) and by setting back the structure 5 to 100 feet from the sloped portion of the Lot, the dwelling's visibility from these locations on the valley floor is substantially mitigated if not eliminated.

In addition, even if a portion of the dwelling or its roof could be observed from valley farms or roadways, the dwelling's impact is further mitigated by using cedar shake roofing, teak siding on the walls, lava rock privacy garden walls and foliage around the dwelling which breaks the dwelling's roof lines. These mitigating measures prevent any visible portion of the structure from standing out from its natural surroundings.

The mitigating effect of these design features is demonstrated by the photographs of the proposed site from various locations around Hanalei, including Waikoko, the Hanalei Pier, Hanalei Park and certain roads, are included in Exhibit 2. Each photograph is marked with the dwelling location and some have a rendering of the proposed dwelling superimposed on the site. The photographs depict how the proposed dwelling would appear to the naked eye from these points on the valley floor. These photographs include the existing dense vegetation surrounding the project area but do not include the large canopy trees which will be planted pursuant to the Landscape Plan.

For purposes of comparison, it should be noted that there are numerous dwellings along Hanalei Plantation Road, particularly in the Hanalei Garden Farms development which includes 22 home sites. Several of these dwellings are readily visible from the Hanalei Valley floor and Hanalei Town. There is further development planned at the northernmost end of the Hanalei Valley rim overlooking Hanalei Bay including more than 30 dwellings and a new hotel proposed to be constructed on the former Club Med site.

At night, it is possible the proposed dwelling's lights could be seen from parts of the Hanalei Valley floor (note, hundreds of lights in Hanalei are visible from the eastern valley rim). This impact would be mitigated by the surrounding vegetation, the residence's setback within the Lot, compliance with down lighting requirements for all exterior lights and the Landscape Plan's use of foliage.

No Action

The No Action Alternative would not change the appearance of the project site.

SECTION 5 CUMULATIVE IMPACTS

Cumulative impacts are two or more individual effect's which, when considered together, compound or increase the overall impact. The cumulative impacts of implementing the proposed project along with past and reasonably foreseeable future projects on the Lot are assessed based upon current available information.

There are no construction projects planned for the Lot, other than the proposed single-family dwelling project. Accordingly, there are no cumulative impacts to be considered.

SECTION 6 CONSISTENCY WITH GOVERNMENTAL PLANS, POLICIES AND CONTROLS

This section summarizes the relationship of governmental plans and policies to the proposed project.

6.1 HAWAII STATE PLANNING ACT

The Hawai'i State Planning Act, HRS Chapter 226 (the "State Plan"), was developed as a guideline for the future growth of the State of Hawai'i. The State Plan identifies goals, objectives, policies, and priorities for the development and growth of the State. It provides a basis for prioritizing and allocating limited resources such as public funds, services, human resources, land, energy, and water.

The State Plan establishes a system for the formulation and program coordination of State

and County plans, policies, programs, projects, and regulatory activities. The State Plan also facilitates the integration of all major State and County activities.

The proposed project is consistent with the following objectives and policies of the State Plan:

> HRS §226-13 Objectives and policies for the physical environment - land, air, and water quality.
>
> ***
>
> (b) To achieve the land, air, and water quality objectives, it shall be the policy of this State
> to:
>
> ***
>
> (7) Encourage urban developments in close proximity to existing services and facilities.

The County of Kauai General Plan (2000) recognizes the Princeville community as "the only North Shore community that provides the full range of urban-level services, including wastewater treatment."[2] The proposed project would be developed within close proximity to urban services of the Princeville area, including potable water and electric service, and would therefore be consistent with the policy of encouraging urban development within the meaning of HRS 226-13(b)(7).[3]

6.2 HAWAII STATE LAND USE LAW

HRS Chapter 205 articulates the Hawaii State Land Use Law. This law is intended to preserve, protect, and encourage the development of lands in the State of Hawai'i for uses that are best suited to the public health and welfare of its people, and classifies all land into four districts: Urban, Conservation, Agriculture, and Rural. The Conservation district has five subzones: Protective, Limited, Resource, General and Special. These subzones define a set of identified land uses which may be allowed by a discretionary permit. The proposed project is situated in the Resource subzone of the Conservation District.

> ***Hawai'i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 1 Administration, Chapter 5, Conservation District, Subchapter 2, Subzones*** states in relevant part:
>
> *§13-5-13 Resource (R) subzone.*
> *(a) The objective of this subzone is to ensure, with proper management, the sustainable use of the natural resources of those areas.*
> *(b) The(R) subzone shall encompass:*
> *(1) Lands necessary for providing future parkland and lands presently used for national, state, county, or private parks;*

[2] Section 6.1.4.3, *Kauai General Plan.*

[3] The proposed project is outside of the Princeville Utilities and County of Kauai sewerage service area; as such, the project will use an underground, self-contained, extended aeration wastewater treatment system (this system is summarized in Exhibit 1). This system will comply with applicable State Department of Health requirements for individual wastewater systems

(2) Lands suitable for growing and harvesting of commercial timber or other forest products;
(3) Lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking;
(4) Offshore islands of the State of Hawai 'i, unless placed in a (P) or (L) subzone;
(5) Lands and state marine waters seaward of the upper reaches of the wash of waves, usually evidenced by the edge or vegetation or by the debris left by the wash of waves on shore to the extent of the State's jurisdiction, unless placed in a (P) or (L) subzone.

(c) Identified land uses in the resource (R) subzone are restricted to those listed in section 13-5-24.

§13-5-24 Identified land uses in the resource subzone.

(c) Identified land uses in the resource subzone and their required permits (if applicable), are listed below:

R-7 SINGLE FAMILY RESIDENCE

(D-1) A single family residence that conforms to design standards as outlined in this chapter.

Analysis. The construction of one single-family dwelling, conforming with the applicable design standards referenced in HAR §13-5-41, on the Lot is a reasonable and beneficial use of the project site, consistent with the objectives of the Conservation District and the Resource subzone.

The development of a single dwelling on the Lot is consistent with the development in the surrounding neighborhood (see the detailed discussion in sections 4.4 and 4.5 of this document).

The Landscape Plan improves the condition of the proposed site by preventing the spread of invasive species, as well as, promoting harborage and forage for native bird species.

Currently, the proposed site is dominated by invasive species which are spreading throughout the site. The proposed project's Landscape Plan would remove invasive plants, add large canopy trees, preserve existing *hala* trees and maintain the mowed grass pasture areas.

The maintenance of open and mowed grass areas will provide harborage and forage for native bird species, including the Kolea and Nene. These native birds are currently found in the surrounding areas and are likely to utilize the Lot.

If the proposed project is not undertaken, the proposed site remains degraded forest dominated by invasive grasses, shrubs and trees, which will continue to slowly spread throughout the project site, eventually filling in the mowed areas and eliminating the open fields potentially useful to Kolea and Nene.

C) After development of the proposed site, no further dwellings are permissible in the Conservation District. Accordingly, the remaining

portions of the Lot will remain open, consistent with the Conservation District's overall goal of conservation and preservation.

HELIOS's long-term plans for the remaining acreage in Lot includes various remedial efforts, such as preservation of specified areas for (i) hiking, (ii) planting of native foliage, and (iii) recreational space. These improvements would be in furtherance of the specific objectives of HAR §13-5-13(b)(l) and (b)(3).

D) In sum, the proposed use is consistent with the overall goal of preservation. No long-term negative impacts to the physical or social environment are anticipated as a result of the proposed project. No significant change to the topography of the site will occur. No valuable natural or cultural resource would be adversely affected or lost. No native ecosystems are present.

6.3 COUNTY OF KAUAI GENERAL PLAN

The County of Kauai General Plan (the "General Plan") presents the County's vision for Kauai and establishes strategies for achieving that vision. The strategies are expressed in terms of policies and implementing actions.

Chapter 2 of the General Plan, Vision for Kauai 2020, at section 2.1 describes various community values, including the following:

- Protection, management, and enjoyment of our open spaces, unique natural beauty, rural lifestyle, outdoor recreation and parks.
- Balanced management of our built environment, clustering new development around existing communities and maintaining the four-story height limit.

Chapter 6 of the General Plan, Enhancing Towns & Communities and Providing for Growth, addresses, among other things, the "location and character of future residential and commercial growth" (page 6-1, Chapter 6 General Plan).

Section 6.1.4.2 Policies states in part:

> (a) The North Shore shall remain primarily a rural, agricultural area, with resort use and other urban development concentrated in Princeville. The towns of Hanalei and Kilauea shall also provide for housing and other urban uses.
> . . .
>
> (c) Princeville Mauka. The intent is to provide an urban village to consist primarily of affordable housing, with a commercial area for resident shopping and services and sites for a new elementary school and/or a middle school. A site near the airport will provide for light industrial use.

Section 6.1.4.3 Rationale for Map and Text Policies of the General Plan states in relevant part:

> Princeville. The Princeville re-designation continues the longstanding strategy of concentrating North Shore development at Princeville. It is the only North Shore community that provides the full range of urban-level services, including wastewater treatment. . . . . Mauka of the highway, the light industrial site will provide space for North Shore businesses and fulfill a prior condition of zoning. Princeville Corporation intends the "Mauka Village" to provide affordable housing to satisfy County and State housing requirements . . . . . Unlike the makai resort/residential community, the Mauka Village will be oriented to local residents. . . . Princeville will serve the village with its privately-operated water and wastewater treatment systems.

Analysis. The proposed construction of one dwelling on this otherwise unimproved 14 acre lot will maintain and preserve the rural character of the North Shore community which the General Plan seeks to maintain. At the same time, it is consistent with the General Plan's strategy of concentrating further North Shore development at Princeville, given Princeville is the only North Shore community providing a full range of urban-level services. The proposed project's specific location places it in a largely-residential and commercial community along this portion of Kuhio Highway. Therefore, the proposed project is consistent with the community value of clustering new development around existing communities described in Chapter 2 of the General Plan, Vision for Kauai 2020.

Chapter 3 of the General Plan, Caring for the Land, Water and Culture, sets policies relating to "Heritage Resources" including resources connected to "the visual experience of the environment" (section 3.1, General Plan).

Section 3.1.1 Heritage Resources Map describes "Heritage Resource Maps" appended to the General Plan which "document important natural, scenic and historic features" of the island. The Heritage Resources Map for the North Shore of Kauai identifies scenic roadway corridors along Kuhio Highway. See Exhibit 10.

Section 3.2.1 Policy provides in part:

> (a) In developing public facilities and in administering land use regulations, the County shall seek to preserve scenic resources and public views. Public views are those from a public place, such as a park, highway or along the shoreline.
>
> (b) The County shall observe the following general principles in maintaining scenic resources:
>
> (1) Preserve public views that exhibit a high degree of intactness or vividness.
>
> - "Intactness" refers to both the integrity of visual patterns and

to the extent to which the landscape is free from structures or other visually encroaching features.

- "Vividness" relates to the memorability of a view, caused by contrasting landforms which create striking and distinctive patterns. (Examples are the silhouette of Mt. Ha'upu against the horizon, views of Nonou Mountain from the valley and the coast, and the view of Hanalei Valley from the overlook.)

(2) Preserve the scenic qualities of mountains, hills and other elevated landforms, qualities such as the silhouette against the horizon and the mass and shape of the landform.

(3) Structures should not impede or intrude upon public views of the feature and should not alter the character of the immediate area around the land feature.

Section 3.2.2 Rationale provides in part:

> As discussed herein, the intent is to preserve public views - i.e., views seen from a park, the beach, a road or some other public place. The term does not include private views - i.e., views from one's residence or other private property. (emphasis in original).
>
> As an example, consider a hill which is an important landmark for residents in the surrounding community ... If a person purchased the land and built a house high up on that hill, he would have a dominating view. But the owner's private view would be achieved at the expense of many other residents' and visitors' enjoyment and appreciation of the landscape. Of course, the owner should be able to build a house on property he purchased for that purpose. But he should not be allowed to site his house so that it interferes with an important local landmark. Instead, the County should provide clearly-stated land use regulations that require a formal view analysis and placement of structures in locations that do not have a significant impact on public views.

Analysis. The proposed project sits within the roadway view corridor of the Kuhio Highway identified in the Heritage Resources Map and but is not visible from Kuhio Highway and does not impact the views from Kuhio Highway because the Lot is located above Kuhio Highway and not below it. As discussed in sections 4.4, 4.5 and 4.6, the project does not substantially impede or intrude upon public views of the valley rim and does not impact the views of the Hanalei Valley from the rim. Finally, if the proposed project impacted the views of residential homeowners across Kuhio Highway (which it does not), such impacts would be to private views as defined under the General Plan and therefore not be within the scope of chapter 3 of the General Plan.

6.4 NORTH SHORE DEVELOPMENT PLAN UPDATE (1980)

The North Shore Development Plan Update (1980) (the "North Shore Plan") identifies land suitable for residential expansion as those lands which are not included in tsunami inundation and flood hazard areas; are not considered prime or productive ag lands; do not adversely affect coastal or ground water quality; do not affect important wildlife habitats; do not adversely affect scenic, historic, or recreational resources; and are serviceable by existing utilities and public services (Section LC., Summary of Findings and Recommendations - Growth, North Shore Plan, page 4). The North Shore Plan's "Recommendations" (pages 43-44), state in relevant part, that:

1. Scenic views should not be adversely affected by man-made improvements.
2. Scenic views from Kuhio Highway should be protected and enhanced.

(Section IV. C.1. *Scenic/Historic,* North Shore Plan, page 44)

Section IV. C.l. Scenic/Historic (page 43) refers to a map of "Historic, Scenic & Recreational Resources" appended to the North Shore Plan. The map identifies numerous scenic view planes most of which are along Kuhio Highway and almost all of which are *makai-facing.* Those view planes which do face *mauka* are distant from the proposed site. Section IV (page 43) also references an additional list of historic and scenic features contained in the North Shore Special Planning Area Report, 1972. This report's list of outstanding scenic features includes the "magnificent mountains in the background of the Hanalei Valley."

Various other narrative sections of the North Shore Plan affirm that scenic views should not be adversely affected by man-made improvements, that scenic views from Kuhio Highway should be protected and enhanced, and state that residences should be constructed away from Kuhio Highway, and landscaped to minimize their visual impact.

Analysis. The proposed project will not impact any view planes specifically identified in the North Shore Plan including views from the Kuhio Highway corridor, views identified in the "Historic, Scenic & Recreational Resources" map (appended to the North Shore Plan) and views identified in the North Shore Special Planning Area Report, 1972. Additionally, as discussed in sections 4.4, 4.5 and 4.6 of this document, the proposed project will have no significant adverse impact on views of the Hanalei Valley rim.

6.5 KAUA'I COUNTY CODE, COMPREHENSIVE ZONING ORDINANCE

The purpose of the County's Comprehensive Zoning Ordinance ("CZO") is to regulate and provide standards for land development and the construction of buildings and other structures in the County of Kaua'i. The regulations and standards prescribed in the CZO are intended to regulate development to ensure its compatibility with the overall character of the island.

As the proposed project is located within the State's Conservation District: *Resource*

Subzone, the State, not the County, has jurisdiction and authority over approval of permits for residential uses within the district; therefore, the CZO does not address development of the proposed project.

SECTION 7 PERMITS AND APPROVALS

The following permits are required to develop a single-family dwelling on the Lot:

- Conservation District Use Permit ("CDUP") from the State DLNR Office of Conservation and Coastal Lands;
- Building Permit from the County of Kauai ("County");
- Grubbing permit from the County for clearing the footprint area of the home;
- Driveway Approach Permit from the County for a driveway connection with Kuhio Highway;
- County Department of Public Works ("DPW") permit to bring electric conduit from KIUC line across Kuhio Highway; and
- County permit for any work requiring traffic management on Kuhio Highway during construction of the proposed dwelling (none expected to be required).

SECTION 8 COMMENTS AND COORDINATION

Community meetings and consultation concerning the proposed project began in 2016 and will continue through the Environmental Assessment, Conservation District Use Permit and construction periods. Updates will be provided to neighbors and others, as requested. HELIOS and its representatives discussed proposals for uses of Lot, including the single-family residence, with numerous individuals and groups island-wide in connection with the consultation process associated with the AIS, including with the U.S. Fish and Wildlife Service, the Hanalei Community Association President and a Board Member who were given a presentation, the State of Hawaii Department of Land and Natural Resources ("DLNR"), and the State of Hawaii Historic Preservation Division.

8.1 PRE-ASSESSMENT AND AGENCY CONSULTATION

A Pre-Assessment Letter was mailed on September 20, 2017 to a total of 13 interested parties, including government agencies, utilities, neighboring landowners and neighboring business such as:

DLNR, Office of Conservation & Coastal Lands
State of Hawaii Department of Transportation, Kauai District
County of Kauai, Planning Department
U.S. Fish and Wildlife Service
The Hanalei-Ha`ena Community Association
The Princeville Community Association
Neighboring property owners

Comments and responses were requested with a October 20, 2017 deadline. The Pre-Assessment Letter is included in Exhibit 11 to this EA. All responses will be incorporated following the conclusion of the 30-day comment period.

SECTION 9 FINDINGS AND IMPACTS

The availability of the draft EA will be announced in the State of Hawaii Office of Environmental Quality Control bi-monthly *Environmental Notice* publication during the mandatory 30-day public review period. In accordance with the provisions of HRS Chapter 343, the draft EA has concluded that the proposed project will not have significant adverse impacts on the environmental quality of the area. As such, it is respectfully suggested that a FONSI be issued for the proposed project. Therefore, an EIS is not required.

A review of the 13 "Significance Criteria" used as a basis for the above determination is presented below.

Involves an irrevocable commitment to loss or destruction of any natural or cultural resources. The proposed project will not use or destroy any natural resources on the proposed site; in fact, natural resources will be enhanced by the removal and control of invasive species and the preservation of *hala* trees and maintenance of mowed grass areas which provide forage for native birds. With regard to cultural resources, the AIS identified no historic properties on the proposed site; further, the proposed site is located well outside the buffer zone planned for the pre-contact historic property located on the Lot. Accordingly, the proposed project would not involve an irrevocable commitment to loss or the destruction of any natural or cultural resources.

Curtails the range of beneficial uses of the environment. The proposed project will not curtail the range of beneficial uses of the environment. The project site is currently overgrown dense vegetation populated with invasive plant species. The dwelling represents 0.8% of the 14.109 acres of Conservation District land included in Lot, which (other than the project site) will remain undeveloped open space. Moreover, the proposed construction of one single-family home is a reasonable and beneficial use of the site, and the proposed control of invasive plant species will serve to actually enhance and protect the environment. Further, no long-term negative environmental impacts are anticipated as a result of the proposed project.

Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in HRS Chapter 343; and any revisions thereof and amendments thereto, court decisions, or executive orders. The proposed project does not conflict with the State's long-term environmental policies, goals, and guidelines. In fact, the removal of invasive species will enhance, conserve, and protect the natural resources of the Conservation District. The proposed project will not result in any adverse effects to the public health, safety and welfare.

Substantially affects the community. The proposed project will not substantially impact the community, and will not negatively affect the economic or social welfare of the community. As set forth in sections 3, 4 and 5 of this document, the project will result in no significant negative impact on infrastructure, flora, fauna, cultural or historic properties, or visual or aesthetic resources. The project would, however, generate short-term employment and long-term real property tax revenues.

Substantially affects public health. The proposed project will have no negative impact on public health.

Involves substantial secondary impacts, such as population changes or effects on public facilities. The proposed project will not cause substantial secondary impacts. The development of a single-family residence in an area already characterized by similar residential development will not create additional pressures of a substantial nature. Population changes and effects on public facilities (such as roads, park use, potable water usage, electricity usage, etc.) will be minimal.

Involves a substantial degradation of environmental quality. The proposed project will not result in a substantial degradation of environmental quality; in fact, the removal and control of invasive species will actually improve and enhance environmental quality. Further, as discussed in sections 3, 4 and 5 of this document, the proposed project will have no significant negative impact on the physical or social environment. All construction activities will be implemented using best management practices ("BMPs").

Is individually limited, but cumulatively has considerable effect on the environment, or involves a commitment for larger actions. Cumulatively, the proposed project will have no considerable negative effect on the environment, nor will the project create a commitment for larger actions. Regarding environmental effects, inasmuch as the project proposes to control invasive species and enhance potential forage and harborage habitat for native birds, the project will actually have a positive effect on the environment. Regarding a commitment for additional or larger actions, the project creates no such commitment inasmuch as the proposed action is a stand-alone proposal for the construction of one single-family residence; other than the proposed dwelling, no further residential development would be permitted in the Lot.

Substantially affects a rare, threatened, or endangered species or its habitat. The proposed project will not substantially affect any rare, threatened, or endangered species, or its habitat. As discussed in sections 3.3 and 3.4 of this document, no known endangered species or their habitat exists at the project site. Measures to mitigate any potential harm to any native Hawaiian species will be employed during construction of the project. Further, the removal of invasive species and should create additional forage and harborage for native birds, some of which are threatened.

Detrimentally affects air or water quality or ambient noise levels. No long-term negative impacts to air and water quality or ambient noise levels will result from the proposed project. A temporary increase in ambient noise levels could occur during construction of the dwelling. Nevertheless, best management practices (BMPs) will be employed where possible to mitigate

any such impacts, as well as any short-term impacts on air quality from dust or similar construction effects. Refer to sections 3.2 and 3.5 of this document for a further discussion of the proposed project's impact on, respectively, water and air quality/noise.

Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters. The proposed project would not affect environmentally sensitive areas, such as a floodplain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters, as the project site is not situated in any of these areas.

Substantially affects scenic vistas and view planes identified in County or State plans or studies. The proposed project would not substantially affect scenic vistas and view planes identified in County or State plans or studies.

The "Historic, Scenic & Recreational Resources" map appended to the *North Shore Development Plan Update (1980)* ("North Shore Development Plan") identifies numerous scenic view planes, many of which are along Kuhio Highway. The proposed dwelling will not impact view planes identified in the "Historic, Scenic & Recreational Resources" map of the North Shore Development Plan given that almost all such planes are *makai-facing;* any planes that face *mauka* are distant from the proposed project. The *North Shore Planning District Heritage Resources Map* ("Heritage Resources Map") appended to the *Kauai General Plan (2000)* ("General Plan") also identifies scenic roadway corridors along Kuhio Highway. The proposed project will be virtually invisible from the roadway view corridor identified in the Heritage Resources Map. Both documents express a concern for preserving scenic resources generally; as discussed in section 4.6 of this document, the proposed dwelling would not be visible from Hanalei Town and, to the extent the dwelling's roof might be visible from certain areas on the Hanalei Valley floor, the choice of building materials and surrounding large canopy tree plantings would result in the dwelling largely blending into its surrounding environment. A detailed discussion of the visual impacts of the proposed project, along with corresponding mitigation measures, is discussed in sections 4.4, 4.5 and 4.6 of this document.

Requires substantial energy consumption. The proposed single-family residence will not consume substantial or undue amounts of energy.

Gearon Pre-Assessment Letter Mailing List

Princeville Community Association
Gary Rexrode, President
P.O. Box 223277
Princeville, Hawaii 96722

Hanalei-Ha'ena Community Association
POB 1072
Hanalei, HI 96714

Kauai County Planning Department
Michael A. Dahilig, Director
4444 Rice Street, Ste A473
Lihue, Hawaii 96766

Kauaʻi National Wildlife Refuge Complex
Attn: Michael Mitchell
P.O. Box 1128
Kīlauea, Hawaiʻi 96754

Hanalei Garden Farms Condominium
William Mowry
PO Box 929
Hanalei, Hawaii 96714

SFLP Princeville Center Owner LLC
3536 Harding Avenue, Ste. 500
Honolulu, Hawaii 96816

Hawaiian Telcom Inc.
PO Box 152206 MC-HQCO2G08
Irving, Texas 75015

Kaua'i Fire Department
Piʻikoi Building
4444 Rice Street
Suite 315
Lihue, Hawaii 96766

Donna Gomez-Netzer & Marilyn Wong
C/O John F Powers III
PO Box 223502
Princeville, Hawaii 96722

David & Goldie Stewart
PO Box 90
Hanalei, Hawaii 96714

Bruno Ewald Living Trust
PO Box 1341
Hanalei, Hawaii 96714

Jane Helmich Living Trust & S.W. Bunyan
PO Box 9008
Auburn, California 95604

Mr. Larry Dill
Hawaii Department of Transportation
Kauai District
1720 Haleukana Street
Lihue, HI 96766

Samuel J. Lemmo, Administrator
Office of Conservation & Coastal Lands; DLNR
Kalanimoku Building
1151 Punchbowl Street, Rm 131
Honolulu, HI 96813

September 25, 2017

Dear Consulted Party:

Subject: Pre-Assessment Consultation Regarding Single-Family Dwelling in the Conservation District, Tax Map Key (4) 5-4-004:032, Princeville, Hawaii

You received our letter providing a copy of the draft Environmental Assessment describing the Helios Hanalei LLC plans for a single-family residence proposed for a 14.109 acre parcel in Princeville, Hawaii. We inadvertently neglected to include the location map site plan. Please find both enclosed for your reference.

We are requesting any written comments and/or information with respect to your area(s) of concern, if any. Please send your written comments to the following by October 20, 2017:

Jean Campbell
Bays Lung Rose & Holma
700 Bishop Street, Suite 900
Honolulu, Hawaii 96813

Please send a copy of your comments to:

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
State of Hawaii Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

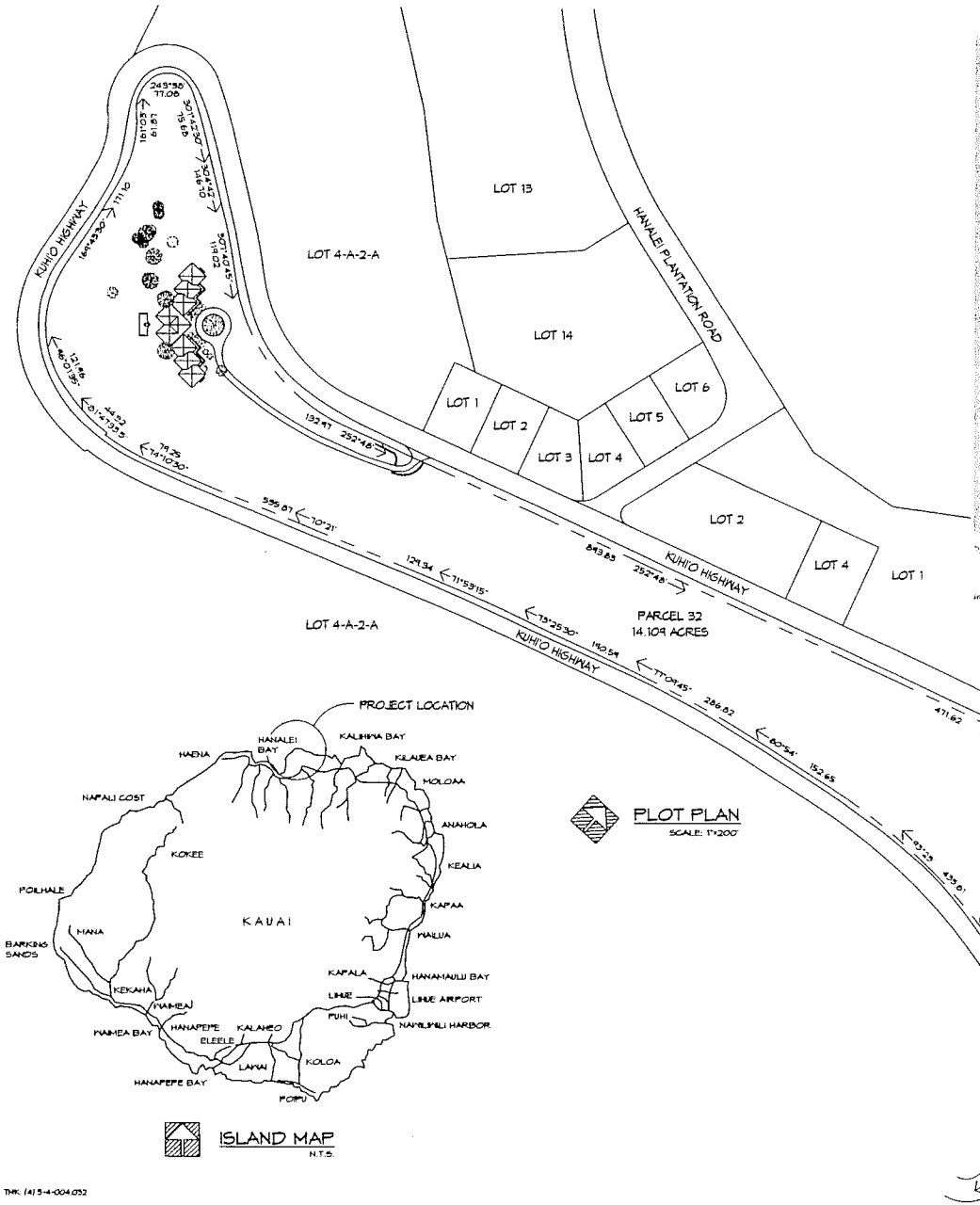
Thank you for participating in the planning stages of this project. Your input is important to us. If you have any questions or need clarification, please contact me at (808) 523-9000.

Sincerely,

Bernie Bays

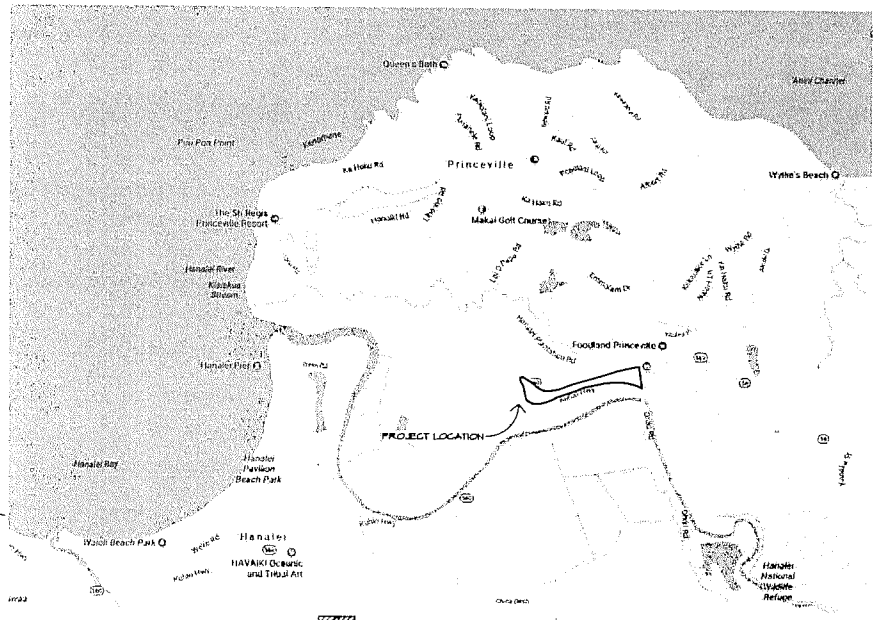
A. Bernard Bays, Esq.

Enclosures: location map
site plan
Cc: Mr. Samuel J. Lemmo



PLOT PLAN
SCALE: 1"=200'

ISLAND MAP
N.T.S.



VICINITY MAP
N.T.S.

DRAWING INDEX		
SHEET #	SHEET NAME	SCALE
A-0	COVER SHEET	N.T.S.
A-1	PLOT PLAN	AS NOTED
A-1.1	SITE PLAN	1"=60'-0"
A-2	FLOOR PLAN	1/16"=1'0"
A-2.1	ROOF PLAN	1/16"=1'0"
A-3	EXTERIOR ELEVATIONS	1/16"=1'0"
C-1	CONCEPTUAL GRADING PLAN	1"=20'-0"
L-1	CONCEPTUAL LANDSCAPE PLAN	1"=40'-0"

TMK: (4) 5-4-004:052

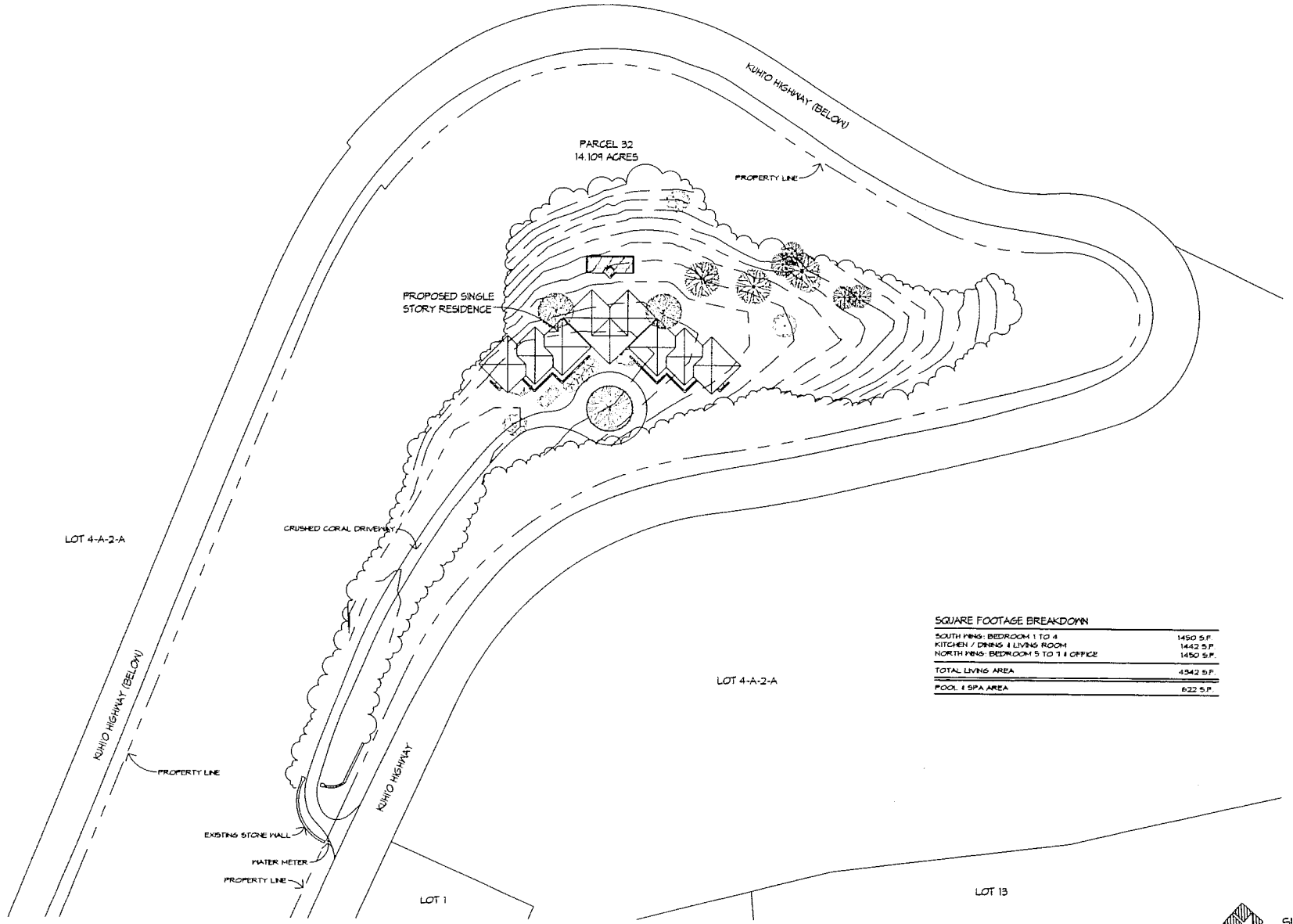
PLOT PLAN
As indicated

PRINT DATE
7/10/2017
12:45:01 PM
REVISION #
REVISION DATE

DESIGN CONCEPTS - 2484 KEKEKE ST, SUITE 102, KILAUEA, HI 96754, USA +1 808 828 0169, WWW.DCKAUAI.COM

GEARON RESIDENCE

SHEET
A-1



SQUARE FOOTAGE BREAKDOWN

SOUTH WING: BEDROOM 1 TO 4	1450 S.F.
KITCHEN / DINING & LIVING ROOM	1442 S.F.
NORTH WING: BEDROOM 5 TO 7 & OFFICE	1450 S.F.
TOTAL LIVING AREA	4342 S.F.
POOL & SPA AREA	622 S.F.

SITE PLAN
1" = 60'-0"

TMK: (4) 5-4-004:032

PRINT DATE:
7/5/2017
12:14:28 PM

REVISION:

REVISION DATE:
DATE

DESIGN CONCEPTS - 2484 KEKEKE ST. SUITE 102, KILAUEA, HI 96754, USA • +1 808 828 0160. WWW.DCKAUAI.COM

GEARON RESIDENCE

SHEET
A-1.1

Bernard P. Carvalho, Jr.
Mayor

Michael A. Dahilig
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Deputy Director of Planning

PLANNING DEPARTMENT
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite A-473, Līhu'e, Hawai'i 96766
TEL (808) 241-4050 FAX (808) 241-6699

OCT 0 2 2017

SEP 2 9 2017

Jean Campbell
Bays Lung Rose & Holma
700 Bishop Street, Suite 900
Honolulu, HI 96813

RE: Pre-Assessment Consultation
Helios Hanalei LLC
SMA "Development" Interpretation
TMK: (4) 5-4-004:032
Hanalei, Kaua'i

The department has received your correspondence requesting for an interpretation of Section 1.4 H of the County's Special Management Area (SMA) Rules and Regulations, regarding the definition of "Development" as it relates to the proposed project on the subject parcel.

As represented, the project involves construction of a new single family residence. Based on the plot plan provided, the department is unable to make a determination without additional information. The department has previously issued a Special Management Area Minor Permit (SMA(M)-2015-33) for construction of a wall, gate and landscaping.

It would be the department's preference that a completed SMA Assessment form and accompanying plans be submitted for review. At that point, the department will be able to determine whether an SMA Permit is applicable. Also, it would be prudent to schedule a pre-submittal meeting with a Planner prior to submittal of this project as additional applications may be required.

Sincerely,

MICHAEL A. DAHILIG
Director of Planning

cc: Sam Lemmo, DLNR, OCCL

Rec'd OCT 26 2017

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF: OCCL: AJR

COR: KA-18-60

OCT 25 2017

Jean Campbell
c/o Bays Lung Rose & Holma
700 Bishop Street, Ste. 900
Honolulu, HI 96813

SUBJECT: **PRE-ASSESSMENT CONSULTATION REGARDING SINGLE FAMILY RESIDENCE IN THE STATE LAND USE (SLU) CONSERVATION DISTRICT**
Hanalei District, Island of Kauai
TMK: (4) 5-4-004:032

Dear Jean Campbell,

The Office of Conservation and Coastal Lands (OCCL) is in receipt of your letter regarding a Pre-Assessment Consultation for a future proposed Single Family Residence (SFR) to be located on the subject parcel. For reference the subject parcel is located entirely within the SLU Conservation District *Resource* Subzone; proposed land uses on this parcel are under the regulatory authority of this office.

Staff has reviewed the submitted information regarding the proposed project and offers the following comments/concerns. For ease of review the comments will correspond to a section in the submitted material:

Executive Summary
Applicant stated that "*there is no observable erosion occurring*" – there has been significant erosion on the parcel that required rock fall mitigation. The applicant should bolster the discussion on potential drainage and erosion issues;

The applicant states that the proposed project will have no significant impact on Historic or Cultural sites. As stated in the "State of Hawaii Land Use Districts and Regulations Review":

> *The scenic significance of this area, in conjunction with Hanalei Valley, is of such grandeur that the conservation values clearly dominate.*

Staff would like a more detailed discussion on how the project will not substantially impact the scenic nature of Hanalei Valley and the overlook area. Discussion should focus on the vegetation surrounding the proposed project site, any viewplane "windows" being proposed, and the future

landscaping that could expose the proposed SFR to the entire Hanalei Valley area due to its location on a prominent site. Staff believes the subject parcel represents one of the most prominent landforms between Hanalei Bay and Hanalei Valley.

Property Legal Background
The applicant states "*The County of Kauai approved an SMA minor permit for the installation of a gate and rock wall at the entrance to the Lot on April 10, 2015. SMA(M)-2015-53 and CDUP KA-3729*". The County of Kauai did not approve of the Wall and Gate, that project application was approved by the Board of Land and Natural Resources, not the County of Kauai. We request that you clarify that the DLNR has regulatory authority over this parcel and all land use activities;

Surrounding Built Environment
Staff believes the prominent features in this area are the National Wildlife Refuge of Hanalei Valley and the existing and proposed Hanalei Valley overlook. Development in this area is primarily up hill and across the street from the subject parcel – well away from the subject parcel;

The applicant states "*Directly across Kūhiō Highway and surrounding the majority of the lot are the Hanalei Garden Farms condominiums and various homestead properties*", the property has no bordering development besides the Kūhiō Highway. The property is bounded on two (2) sides by a National Wildlife Refuge, and no development is located directly adjacent to the proposed project site, this should be stated in the Environmental Assessment and CDUA.

The Proposed Project
Applicant provided only one alternative to the proposed structure, the OCCL requires that the applicant complete an *Alternatives Analysis* that discusses other potential designs for the proposed structure such as a smaller SFR, or an alternative location for the SFR on the 14-acre parcel. Please note that the alternative analysis should cover more than the "preferred alternative" and a "no-action alternative";

Applicant states "*Under HAR 13-5-24(c) and HAR §13-5-41, one SFR may be constructed upon land in the Conservation District with the approval of the BLNR*". HAR §13-5-24 indicates the required permits for identified land uses in the Resource subzone, please update that section. Additionally, please understand that HAR §13-5 allows the landowner <u>to apply</u> for land uses in the Conservation District; permits and approvals are discretionary and therefore not automatic. Please change the language of this section to reflect that;

Applicant states "*The Board Permit for a single family residence in the Resource Subzone does not require a public hearing*". Pursuant to HAR §13-5-40(a)(4) *Public hearings shall be held: On all applications determined by the chairperson that the scope of proposed use, <u>or the public interest requires a public hearing on the application</u>*. Staff would like to inform you that this office has already received a number of inquiries concerning this proposed project, therefore the Chairperson may require a public hearing for this project *if* the application is accepted for processing.

The applicant states: *The proposed dwelling complies with the "compatibility provisions" of HAR 13-5. In particular*:

i. *landscaping will screen much of the structure from the perspective of Kūhiō highway, the dwelling will not be visible from Hanalei Town and, to the extent he dwelling would be visible from beaches, parks and roads within Hanalei Valley, the combination of foliage about the structure, setback from the slowed edges of the lot, single story construction, and choice of materials for the roof and exterior walls will obscure the dwelling such that it will not be readily discernable to the naked eye from its surroundings.*

Staff has concerns that the entire viewplane impact mitigation relies on the vegetation surrounding the parcel. Staff would like to see a discussion on how the residents of this area can be assured that the vegetation will be in place in perpetuity, and will not be removed in the future. If the vegetation is removed the structure and subsequent development will be glaringly visible from Hanalei Valley, Hanalei Bay, and Hanalei Town.

Flora

The applicant states: "*The proposed projects landscape plan would positively impact the project sites flora*", OCCL staff asks that the applicant clarify this statement, especially since the applicant is proposing to utilize non-native and potentially invasive tree for landscaping (i.e., Royal Poinciana). Pursuant to HAR §13-5-23, L-2, *Any replanting shall be appropriate to the site location and shall give preference to plant material that are endemic or indigenous to Hawaii. The introduction of invasive plant species is prohibited.* The OCCL request that the applicant includes endemic or indigenous planting for landscaping purposes as required by HAR §13-5;

Based on the submitted information it appears the applicant will be conducting landscaping over a large portion of the project area. The removal of invasive species and the planting of vegetation is also planned; the CDUA should discuss these land uses in detail.

Fauna

The applicant stated: *The Hawaiian Goose or Nene is common in nearby Hanalei National Wildlife Refuge and around the Princeville golf courses.* The OCCL has directly observed *Nene* on open gassy areas at the project site, and surrounding development along Hanalei Valley Ridge. The applicant must discuss the possibility of *Nene* visiting open grassy areas of the project site, and the mitigation or protection strategies that will be put in place to protect this native Hawaiian species.

Utilities and Roads and Traffic Conditions

The applicant should discuss the "flood gate" (i.e., gate used to close road to Hanalei) located immediately adjacent to the property entrance. Staff has concerns that when flooding occurs in Hanalei valley which causes the roadway to close, the location of the entrance to the applicant's property and proposed development could be determinantal to public health and safety. The OCCL requests a discussion on any traffic impacts this project may have on Kūhiō Highway.

Applicant should also discuss traffic impacts associated with the vehicles turning into the parcel, or waiting to turn into the parcel.

Visual and Aesthetic Resources: Impact on the Area

The Applicant states: *Extensive residential, community, and commercial development on Kūhiō Highway exists to the northeast of the lot*". Staff believes the site is surrounded by a highway, a

Wildlife Preserve, and an empty parcel – not extensive development. Staff considers this area to be undeveloped, and in some instances pristine and/or natural, please update this section to reflect that.

Visual and Aesthetic resources: Impact on Immediately Adjacent Parcels
The applicant states: There are no dwellings or businesses immediately across Kūhiō Highway from the proposed site in any direction. Staff is confused as the applicant stated previously "*Kūhiō Highway is not a pristine natural preserve; it is a developed residential and commercial area*". The OCCL requests the applicant clarifies the statements to be consistent throughout the entire EA and subsequent application.

The applicant states: *The dwelling will be partially visible, although mostly obscured by vegetation from undeveloped parcels below Kūhiō Highway in Hanalei Valley.* The OCCL would like a discussion on the viewplane impacts this project will have on the citizens of Hawaii, the visitors to this area, and local residents of Hanalei Valley, Beach, Bay, and Town.

Hawaii State Land Use Law
OCCL staff requests a discussion on how this project "*ensures the sustainable use of the natural resources of the area*". Staff reminds the applicant that the natural resources the Conservation District protects in this area is the Scenic Significance.

Section 9 Findings and Impacts
The applicant discusses throughout the submitted material that the removal of invasive species will enhance the project sits conservation value. Staff would like to see a plan for the removal of the invasive species and how the removal of invasive species will not futher impact the viewplanes and Scenic Significance of this area.

GENERAL COMMENTS ON PROPOSED CDUA
Staff would like to reiterate the requirements set forth in Hawaii Administrative Rules (HAR) §13-5, *Exhibit 4*, with regards to the **Maximum Developable Area** (MDA). Please note that the MDA consists of all areas under roof, including, but not limited to: 1st, 2nd, 3rd floors, decks, lanais, carports, pools, decking around the pool, sheds, storage buildings, and other development structures such as outdoor showers. Please note that the applicant should clearly outline the total MDA, and the MDA calculations. Additionally, the OCCL requests that all measurements, area calculations, dimensions, and descriptions of each proposed structure should be included.

A Single Family Residence (SFR) is an identified land use to which you may apply for in the SLU Conservation District *Resource* Subzone, pursuant to HAR §13-5-24, R-7 **SINGLE FAMILY RESIDENCE** (D-1) *A single Family Residence that conforms to design standards as outlined in this chapter*. In order to apply for this land use, the applicant will be required to submit to this office a completed Conservation District Use Application (CDUA) for review and processing. Please note that the final decision to approve or deny this application will rest with the Board of Land and Natural Resources (BLNR).

Landscaping, as described in the submitted letter, is considered an identified land use to which you may apply for in the SLU Conservation District *Resource* Subzone, pursuant to HAR §13-5-23,

L-2 **LANDSCAPING** (D-1) *Landscaping (including clearing, grubbing, grading and tree removal), including chemical and mechanical control methods, in accordance with state and federal laws and regulations, in an area of or more than 10,000 square feet. Any replanting shall be appropriate to the site location and shall give preference to plant material that are endemic or indigenous to Hawaii. The introduction of invasive plant species is prohibited.* In order to apply for this use the applicant will be required to submit to this office a completed CDUA for review and processing. Please note that the final decision to approve or deny this land use will rest with the BLNR.

OCCL recognizes that each of the proposed land uses will require submittal of a board permit application (i.e., CDUA), however, we will accept one CDUA for the entire project. Please note that each CDUA section should differentiate between the proposed uses, and discussions should be very specific to the uses proposed. Additionally, the CDUA is a stand-alone document; each question should be answered fully and completely with specific information related to the uses described.

If you have questions regarding this correspondence, please contact Alex J. Roy, M.Sc. of our Conservation and Coastal Lands staff at 808-587-0316 or via email at alex.j.roy@hawaii.gov

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

CC: *Chairperson*
Kauai Board Member
KDLO
Kauai County Dept. of Planning
Princeville Community Association
Hanalei to Hā'ena Community Association

OCT 23 2017

Hanalei to Hā'ena Community Association

Post Office Box 1072

Hanalei, HI 96714

October 20, 2017

Jean Campbell
Bays Lung Rose & Holma
700 Bishop Street, Suite 900
Honolulu, HI 96813

RE: HHCA Pre-Consultation Comments regarding Single-Family Dwelling in the Conservation District on TMK (4) 5-4-004:032

Dear Ms. Campbell,

The Hanalei to Hā'ena Community Association ("HHCA") appreciates the opportunity for this Pre Assessment Consultation on the proposed Helios Project. The HHCA Board of Directors and the Zoning and Development Committee send the following comments and questions regarding the draft EA.

HHCA Primary Comments and Concerns include:

- Adverse impacts to the view plain: the large multi pod hillside structure may negatively impact views from the Hanalei Valley area and the Hanalei Bay area (Hanalei River to the Waikoko area and lookout). The sprawl of the development will adversely impact the views from the Hanalei Valley area. Especially at night, the light that the property produces clearly will have significant impacts to endangered seabirds as well as negative view plan/ visual impacts.

- The design of the structures and high number of rooms in the proposed structure implies commercial or multifamily not residential use of property (proposal of 6-11 bedrooms is more like a Hotel).
- Conditions be imposed consistent with the Conservation District Rules, DEPARTMENT OF LAND AND NATURAL RESOURCES, Chapter 13-5 Hawaii Administrative Rules §13-5-42, *the single family residence shall not be used for rental or any other commercial purposes unless approved by the board. Transient rentals are prohibited, with the exception of wilderness camps approved by the board;*
- Conditions imposed that the proposed "SFR" shall be prohibited from illegal activities such as a Transient Vacation Rental or a Bed and Breakfast as the parcel is not located in the Princeville Visitor Destination Area (VDA).
- Please provide the missing Exhibit documents so we can properly evaluate the project. Many of the documents mentioned in the DEA were not provided such as Exhibits 1-9.
- The pool and spa lack any construction information.
- The 5 foot setback is completely insufficient information.
- Impacts to two species of Hawaiian endangered seabirds; the Hawaiian Petrel (Pterodroma sandwichensis) and the Hawaiian sub-species of Newell's Shearwater (Puffinus auricularis newelli) and the Hawaiian Hoary bat, Lasirus cinereus semotus / 'ope'ape'a and endangered sub species of the hoary bat, endemic to the Hawaiian islands, were not adequately disclosed.
- Lack of Natural Hazard Assessment including descriptive information of erosion, flooding, slope, tsunami.
- Please disclose if there will be gas-line torches or other lighting on the perimeter of the property.
- Please provide a daytime and nighttime rendering of the entire proposed project for true perspective and opportunity to make informed comments.
- Please disclose if motion sensor lights or motion sensor sprayers will be used on the property.
- The structures should NOT BE VISIBLE from below and the portions of the parcel that abut Kūhiō Highway should remain wild to prevent the entire entrance into the Hanalei Bridge looking manicured, the area should remain natural.
- The ingress/egress to the property from Kūhiō Highway is potentially unsafe given the location of the current driveway. Westbound, the traffic comes over the rise at the top of the hill, potentially a blind spot for accidents with vehicles turning left in to the property.

Summary of Recommendations

DEA – At this time, HHCA disagrees with the finding of no significant impacts within the Conservation District unless:

- The structure is redesigned as a single family residence, rather than 7-9 pods (individual structures stuck together) and the 6 to 11 bedrooms reduced to a normal family size.
- Setback information from sloped area is amended to an actual number not "**5 to 100 feet**"
- Pool is withdrawn from the proposal or the issue of where the pool wastewater will go is resolved and slope stability studies for the location of the proposed structures and pool are included.

The following contains sections of the proposed draft EA and the HHCA Comments:

EXECUTIVE SUMMARY

The Executive Summary states that: *"the proposed dwelling has 4,342 sq. feet of living space, and a 622 sq. foot pool and spa"*

> **HHCA Comments:**
> The project should be limited to 1 structure, the design looks like 7-9 structures stuck together. It is unclear if the spa is yet another separate structure. The pool may impact the Hanalei River or Kūhiō Highway as there is no information in the document that talks about the pool wastewater, impacts or stability.

The Executive Summary states that:
"Features of the proposed single-family dwelling re designed to minimize its visual impact from the neighboring area and the Hanalei Valley floor."

> **HHCA Comments:**
> There should be no visual impact along all portions of the entire Hanalei Bay area, from east to west, including the along Kūhiō Highway and the Hanalei Lookout, not only the Hanalei Valley and Town area.

The Executive Summary also states that:
*"The proposed dwelling is set back between **5** and 100 feet from the sloped areas overlooking Hanalei Valley;"*

HHCA Comments:

There should be a definitive setback. To properly gauge the Impact; the setback must be an exact number, with the proposed location defined, not approximate. It is unclear as written and designed with an insufficient setback.

Utilities, Infrastructure and Air quality states that:
"Wastewater will be accommodated by an underground, self-contained, extended aeration wastewater treatment system consistent with State Health Department requirements."

HHCA Comments:

It is unclear where the pool water will be disposed of. Will it be accommodated by this proposed wastewater system or will it flow onto Kūhiō Highway or downstream? How will the pool water be prevented from ending up in the Hanalei River and ocean?

Historic and Cultural Sites: "The AIS and Final Preservation Plan explicitly contemplate the construction of Single-family dwellings on the project site."

HHCA Comments:

Conservation District only allows 1 house, this proposed design looks like many pods stuck together. The above statement the AIS and Final Preservation Plan contemplated the construction of dwellings on the project site is inaccurate and misleading, as Conservation District rules only allow 1 dwelling.

SECTION 1 BACKGROUND
1.2 PROPERTY LEGAL BACKGROUND

"Historical uses of the Lot may have included pasture on the cleared portion traditional travel to mauka/makai lands by trail or road (which may have traversed the Lot)."

HHCA Comments:

Any traditional mauka/makai access must be preserved in perpetuity and should be a condition of the permit.

1.3 SURROUNDING BUILT ENVIRONMENT
"Across Kūhiō Highway from the Princeville Shopping Center, the scenic overlook of the Hanalei Valley provides public view· of the Refuge and the valley. According to a draft 2002 Environmental Assessment of the proposed relocation and expansion of the overlook,

approximately 350 vehicles and four to ten tour busses were expected on the site daily (an estimated 900 visitors per day)."

HHCA Comments:

This section is outdated. The 2002 EA is no longer the FWS's currently proposed project. The FWS will be preparing a new EA for a different proposal. So the above info cannot be referenced here.

SECTION 2 PROPOSED PROJECT AND NO ACTION ALTERNATIVE

2.1 THE PROPOSED PROJECT

The proposed project is located in the State Conservation District (Resource Subzone).[1]

§13-5-13 Resource (R) subzone. (a) The objective of this subzone is to ensure, with proper management, the sustainable use of the natural resources of the area.

(b) The (R) subzone shall encompass:

(1) Lands necessary for providing future parkland and lands presently used for national, state, county, or private parks;

(2) Lands suitable for growing and harvesting of commercial timber or other forest products;

(3) Lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking;

..... [HHCA underlined above]

(c) *Identified land uses in the resource (R) subzone are restricted to those listed in section 13-5-24*

HHCA Comments:

Based on the above information the proposed project is not consistent with the above definition of a Resource Subzone.

Throughout the document, the Alternatives presented for this proposed project failed to include uses more suited to the Resource Subzone including those alluded to in Section 6.2.

The project as currently designed should be rejected by OCCL as it is inconsistent with the intent of the Subzone. The multi-unit structures, pool and spa are not compatible with the Resource Subzone; this proposal

[1] The above lists items related to this project.

downplays the potential impacts from its multiple structures, 622 sq. foot pool and spa on the same land where slope stabilization was just needed.

Three acres of this parcel needed slope stabilization to keep from impacting the state highway from falling rocks. The Draft EA failed to include slope stability studies despite the need for public funds to stabilize the parcel. In addition, there was no information about the stability of the proposed pool area or the potential impacts to slope stability and Kūhiō Highway from the drainage of the pool water or the impacts to the Hanalei River from the pool.

Dwelling Exterior Finishes. Exhibit 1 was not included in the received document but referenced on page 7.

Wastewater
"Wastewater from the dwelling will be addressed using an underground, self-contained, extended aeration wastewater treatment system which processes all wastewater".

HHCA Comments:

Wastewater in this section only provides information for the "dwelling" and the wastewater from the proposed 622 sq. foot pool is not mentioned in this section (page 7). Does the proposed pool empty into the wastewater system? Where will the pool water go? Will the pool water drain towards Kūhiō Highway or the Hanalei River 150 feet away?

Exhibit 3 is referred to but not included in the received document.

2.3 PROJECT LEGAL FRAMEWORK AND COMPLIANCE ANALYSIS

Under HAR §§13-5-24(c) and HAR 13-5-41, one single-family dwelling may be constructed upon land in the Conservation District with the approval of the BLNR.

This section references the proposed *dwelling* compliance, but on page 8, item (iv) includes the dwelling unit, plus the proposed pool and spa .Is the spa a separate building?
"The proposed dwelling complies with the "compatibility provisions" of HAR §13-5. In particular:"

(v) only one dwelling will be constructed;
(vi) all building and grading code requirements will be followed; and
(vii) there will be only one kitchen.

HHCA Comments:

The disclosed structure looks like a multi-family or transient rental type rather than a SFR. Single family is defined in the HAR 13-5 as:

> *"Single family residence" means a building or structure used or designated and intended to be used as a home or dwelling place for a family.*

The County of Kaua'i CZO defines hotel as:

> *"Hotel" means any building containing six (6) or more rooms intended or designed to be used, or which are used, rented or hired out to be occupied for sleeping purposes by guests when the rooms are open to the occupancy by the general public on a commercial basis whether the establishment is called a hotel, resort hotel, inn, lodge or otherwise which rooms do not constitute dwelling units.*

HHCA Questions:

In HAR 13-5-13, pool and spa are not listed as permitted uses within the Resource Subzone. In addition, what is the size of the proposed spa? What would the spa include: e.g., bathrooms, kitchen?

SECTION 3 PHYSICAL ENVIRONMENTAL SETTING, IMPACTS AND PROPOSED MITIGATION

3.1 TOPOGRAPHY, SOILS, GEOLOFY, RAINFALL

Existing Condition... *"The Hanalei River, which meanders through the Hanalei Valley floor, is located approximately 150 feet from the southeastern corner of the Lot. The Hanalei River is the fourth largest stream in the State based upon the amount of water discharged (Stream Assessment Draft Report of 1990, State of Hawaii and National Park Service: 27) and, in 1998, was designated as one of seven American Heritage Rivers by Executive Order 13061."*

HHCA Comments & Questions:

Will the proposed 622 sq. foot pool flow into the Hanalei River or Kūhiō Highway? Please explain where the pool wastewater will go.

Topography, Soils and Geology. ... "The erosion hazard is considered slight to moderate on slopes of the inclination typical of the bluff portion of the Lot."

HHCA Comments:

The slope map exhibit was not included, so it is not possible to make informed comments regarding the potential impacts in the slope areas. In the DEA it is stated that the setback is proposed to be between 5 and 100 feet from the slopped areas (page 1). A map exhibit is needed to make comments on this issue. The proposal needs to clearly identify the setback.

Rainfall, Drainage and Natural Hazards. ... "The existing contours of the site will be maintained. Therefore, rainfall will generally be absorbed on the site and storm water in extreme conditions will flow direction discharging to Kuhio Highway, as under the existing circumstances. Slope mitigation work covering approximately 3 acres of the Lot within the drainage area was done by the State of Hawaii pursuant to a Right of Entry Agreement dated August 16, 2004 recorded against the Lot as Document No. 200 -085546.

The proposed project will not increase the risk of natural hazards (i.e., landslides) due to the very limited alteration of site drainage, location of the dwelling on the level portion of the Lot and the existing slope stabilization improvements which will remain in place."

HHCA Comments & Questions:

In what location and proximity to the proposed building site was the slope stabilization "improvements" done? This parcel was eroding into the public highway necessitating the slope stabilization, what studies have been done to show the pool and or structures will not exacerbate the problems?

What is the direction of the pool drainage? How will the proposed pool affect storm discharge onto Kūhiō Highway? See pages 9 & 10.

Potential Impacts and Mitigation
Proposed Project
"The proposed project will have no significant direct or indirect impact on the Hanalei River, the adjacent valley wetlands or the coastal waters (including Hanalei Bay)."

HHCA Comments:

Absent any details on the pool wastewater, we disagree with this statement and have no way to evaluate the impacts of the pool wastewater on Hanalei Valley wetlands, Hanalei River or "*coastal waters (including Hanalei Bay)*." Any drainage of pool water, whether chlorinated or not, will impact the environment, destabilize the hillside and pollute the Hanalei River.

3.4 FAUNA

..."Two seabirds - the Hawaiian Petrel (Pterodroma sandwichensis) and the Hawaiian sub-species of Newell's Shearwater (Puffinus auricularis newelli) - regularly fly over the region but were not observed during the survey"

HHCA Comments:

The proposed project is located on a prominent point of land that protrudes into the Hanalei watershed flyway commonly used by two species of Hawaiian endangered seabirds; the Hawaiian Petrel (Pterodroma sandwichensis) and the Hawaiian sub-species of Newell's Shearwater (Puffinus auricularis newelli) . Both of these native birds are ground nesting and their limited habitat includes the upper watershed of Hanalei. These seabirds fly to and from their breeding colonies only at night. Human light pollution can confuse this behavior, particularly in fledglings during the very first journey from the colony to the sea. These fledglings become disoriented by bright lights and fly into buildings or become exhausted and land on the ground in a phenomenon known as 'fall-out'.

The specific location of this project presents a direct danger to these protected native birds from both exterior and interior lights as well as the difficulty in rescuing any downed birds because of the adjacent terrain. Once on the ground, these exhausted and confused birds cannot fly again and either die from exposure and starvation or are eaten by feral cats and dogs.

The proposed project is also located in the known habitat range of the Hawaii State Mammal, the Hawaiian Hoary bat, Lasirus cinereus semotus / 'ope'ape'a and endangered sub species of the hoary bat and endemic to the Hawaiian islands.

To avoid impacts of the protected Hawaiian Hoary bat, any cutting of trees above fifteen feet during breeding and pupping season (June 1 through September 15) should be avoided and any construction should be limited to daytime only to avoid disturbance. Monitoring of bat activity should be conducted prior to and during any construction on this site.

3.6 UTILITIES AND ROADS and 4.2 TRAFFIC CONDITIONS

Sections 3.6 and 4.2 state:

"The addition of the residence should have no material impact on wear of or traffic on Kuhio Highway."

HHCA Comments:

The ingress/egress to the property from Kūhiō Highway is potentially dangerous given the location of the current driveway. Westbound, the traffic comes over the rise at the top of the hill, potentially a blind spot for accidents with vehicles turning left in to the property.

The proposed residence may have an impact on traffic in the area as access to the parcel would entail crossing Kūhiō Highway. According to one of the attached maps the number of bedrooms could be from 6 to 11. With this high number of those occupying the so-called residence, there could be a traffic impact on the historic roadway.

In order to not dramatically increase the traffic in and out of the parcel on this portion of the highway, there should be a condition to restrict construction workers vehicles from directly accessing the parcel, with a shuttle for workers utilized during the construction timeline.

4.3 HISTORIC AND CULTURAL PROPERTIES

... *"An cultural impact assessment was also conducted for this parcel."*

HHCA Comments:

The cultural impact assessment Exhibit 9 was not included in the document, thus HHCA has no way to evaluate the assessment.

4.4 VISUAL AND AESTHETIC RESOURCES: IMPACT ON THE AREA

... *"Given the proximity to the busy Princeville Shopping Center, Hanalei Fire and Police Station and multiple other residences, this portion of Kuhio Highway is not a pristine, natural preserve; it is a developed residential and commercial area."*

HHCA Comments:

This section references in detail the development on the opposite side of the historic Kūhiō Highway, but fails to disclose and document the complete lack of any development on the side of the highway of the proposed project.

4.6 VISUAL AND AESTHETIC RESOURCES: IMPACT ON VIEWS FROM THE HANALEI VALLEY FLOOR

..."By limiting the dwelling to one story (with a maximum height of 18 feet 1.5 inches) and by setting back the structure 5 to 100 feet from the sloped portion of the Lot, the dwelling's visibility from these locations on the valley floor is substantially mitigated if not eliminated."

HHCA Comments:

With the setback proposed at "5 - 100 feet" it is impossible to know what the impacts will be. The proposed project needs to disclose and provide a map that identifies the definitive setback distance.

For purposes of comparison, it should be noted that there are numerous dwellings along Hanalei Plantation Road...new hotel...former Club Med site.

..."There is further development planned at the northernmost end of the Hanalei Valley rim overlooking Hanalei Bay including more than 30 dwellings and a new hotel proposed to be constructed on the former Club Med site."

HHCA Comments:

This referenced project has been withdrawn and it is inaccurate to cite this and should be removed from the DEA.

"At night, it is possible the proposed dwelling's lights could be seen from parts of the Hanalei Valley floor (note, hundreds of lights in Hanalei are visible from the eastern valley rim). This impact would be mitigated by the surrounding vegetation, the residence's setback within the Lot, compliance with down lighting requirements for all exterior lights and the Landscape Plan's use of foliage."

HHCA Comments:

See comments in 3.4 Fauna above.

SECTION 5 CUMULATIVE IMPACTS

"Cumulative impacts are two or more individual effect's which, when considered together, compound or increase the overall impact. The cumulative impacts of implementing the proposed project along with past and reasonably foreseeable future projects on the Lot are assessed based upon current available information.

There are no construction projects planned for the Lot, other than the proposed single-family dwelling project. Accordingly, there are no cumulative impacts to be considered."

HHCA Comments:
This statement conflicts with Section 6.2 and sounds like the project is being segmented. Section 6.2 states:

"*HELIOS's long-term plans for the remaining acreage in Lot includes various remedial efforts, such as preservation of specified areas for (i) hiking, (ii) planting of native foliage, and (iii) recreational space. These improvements would be in furtherance of the specific objectives of HAR §13-5-13(b)(l) and (b)(3).*"

6.1 HAWAI'I STATE PLANNNG ACT

..."*The County of Kaua'i General Plan (2000) recognizes the Princeville community as "the only North Shore community that provides the full range of urban-level services, including wastewater treatment* [see footnote 2 in document].*The proposed project would be developed within close proximity to urban services of the Princeville area, including potable water and electric service, and would therefore be consistent with the policy of encouraging urban development within the meaning of HRS 226-13(b)(7)*[also see footnote 3]."

HHCA Comments:
This parcel is not "urban" as it is in the Conservation District. It also is not part of the Princeville area and it is not served by the Princeville wastewater/ sewer system, nor its water or electric service, it is outside of the Princeville community and not consistent with HRS 226-13(b)(7) .

6.2 HAWAI'I STATE LAND USE LAW

..." *HELIOS's long-term plans for the remaining acreage in Lot includes various remedial efforts, such as preservation of specified areas for (i) hiking, (ii) planting of native foliage, and (iii) recreational space. These improvements would be in furtherance of the specific objectives of HAR §13-5-13(b)(l) and (b)(3).*"

HHCA Comments:
These proposals should be included and disclosed in this DEA. They should also be used as a viable Alternative rather than the "nothing" sited as alternatives throughout the document, but most importantly development should not be allowed to be segmented.

..." The proposed project will not impact any view planes specifically identified in the North Shore Plan including views from the Kūhiō Highway corridor, view identified in the "Historic, Scenic & Recreational Resources" map (appended to the North Shore Plan) and views identified in the North Shore Special Planning Area Report, 1972. Additionally, as discussed in sections 4.4, 4.5 and 4.6 of this document, the proposed project will have no significant adverse impact on views of the Hanalei Valley rim."

HHCA Comments:

The potential construction of the "living areas" of 4342 sq. ft., pool and spa could have a significant adverse impact on the views from the Hanalei Valley area. The project feels like "the rich looking down on the peons". The structures should NOT BE VISIBLE from below. HHCA believes the sprawl of the development will adversely impact the views from Hanalei Valley area. Especially in the night, the light that the property produces clearly will have significant impact on the views and night sky.

SECTION 7 PERMITS AND APPROVALS

..."• County Department of Public Works ("DPW") permit to bring electric conduit from KIUC line across Kuhio Highway; and"...

HHCA Comments:

There has been no disclosure in the DEA about electric lines, will the electric lines go overhead and if so, what impact will the new electric lines have on the Shearwater flyway?

SECTION 9 FINDINGS AND IMPACTS

*"**Substantially affects a rare, threatened, or endangered species or its habitat**. The proposed project will not substantially affect any rare, threatened, or endangered species, or its habitat. As discussed in sections 3 .3 and 3 .4 of this document, no known endangered species or their habitat exists at the project site. Measures to mitigate any potential harm to any native Hawaiian species will be employed during construction of the project."*

HHCA Comments:

We disagree with this finding. The proposed project is located on a prominent point of land that protrudes into the Hanalei watershed flyway commonly used by two species of Hawaiian endangered seabirds; the

Hawaiian Petrel (Pterodroma sandwichensis) and the Hawaiian sub-species of Newell's Shearwater (Puffinus auricularis newelli) .

*"**Affects or is likely to suffer damage...**The proposed project would not affect environmentally sensitive areas, such as a floodplain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters, as the project site is not situated in any of these areas."*

HHCA Comments:
We disagree with this finding as the pool drainage has not been disclosed and likely will affect freshwater and/or coastal waters.

*"**Substantially affects scenic vistas and view planes identified in County or State plans or studies.** The proposed project would not substantially affect scenic vistas and view planes identified in County or State plans or studies."*

HHCA Comments:
We disagree with this finding as the 5-foot setback would be totally unsuitable for the unspoiled area and likely would impact public views and scenic vistas. The ingress/egress to the property from Kūhiō Highway is potentially dangerous given the location of the current driveway. Westbound, the traffic comes over the rise at the top of the hill, potentially a blind spot for accidents with vehicles turning left in to the property.

Carl Imparato
HHCA President

Barbara Robeson
HHCA Zoning & Development Committee

cc: Mr. Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
State of Hawai'i Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street, Room 131
Honolulu, HI 96813

JPB ENGINEERING, INC.
Structural & Geotechnical Engineering

May 9, 2018

Project No. 16273.02G

To: Michael Gearon
3350 Riverwood Parkway, Suite 425
Atlanta, Georgia 30339

Subject: Supplementary Slope Stability and Hydrogeology Report
Gearon Residence
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

Introduction

In response to your request, we have completed a slope stability analysis and hydrogeologic evaluation of your property. On May 22, 2017, we issued a geotechnical report for the proposed project, which includes a private residence and a swimming pool.

As shown on attached Plate No. 1, your property is an irregularly-shaped parcel encompassing approximately 14.109 acres of gently sloping terrain bordered by Kūhiō Highway. The property margins are marked by stands of indigenous trees and the interior, although mostly cleared, contains a dozen others. Ground surface within the proposed home site falls from approximate elevation 471 feet mauka to about elevation 460 feet at the makai limit of the proposed construction area, resulting in an overall maximum gradient approaching seven percent. Below the construction limit, ground surface steepens slightly to a slope approximating 17 percent until elevation 440 feet is reached at the lower branch of Kūhiō Highway.

Land Stability

A series of limit equilibrium slope stability analyses were conducted for the slope subjacent to the proposed home and swimming pool. The analyses are based on the results of laboratory tests, stratigraphic relationships implied by the previous test boring and topographic information. The slope stability analyses incorporate saturated subsurface soil parameters. The analytical results, therefore, take into account irrigation effects and effluent discharge influences which could produce an elevated phreatic surface. Each series of analyses is predicated upon Bishop's Method, in which the potential failure surfaces are rotational and arcuate; therefore, these surfaces are called "slip circles."

A safety factor, defined as the ratio of driving forces to resisting forces, is computed for each trial slip circle. Driving forces include foundation surcharges, soil weight, earthquake effects and hydrostatic pressures due to ground water. Resisting forces, acting along the potential slip circles, primarily consist of the strength properties of the soils.

If the sum of the resisting forces is greater than the sum of the driving forces, a safety factor greater than unity results. Conversely, a safety factor less than unity is computed when the sum of the driving forces is greater than that of the resisting forces. Ratios greater than unity represent relative states of stability, while those less than unity represent relative states of instability. The slip circle associated with the minimum safety factor is called the "critical circle."

Through the assistance of appropriate computer programs, we completed numerous analytical trials to search for the minimum theoretical safety factor at the slope section whose position and orientation are depicted on Plate No. 1. Incorporating the soil strength values determined by laboratory tests conducted on the samples from the test borings, the computations converged on safety factors of 7.28 under static conditions and 5.21 under seismic conditions. The minimum acceptable safety factors in conventional engineering practice are 1.50 under static conditions and 1.25 under seismic conditions. The arc of the corresponding critical circle is shown on Plate No. 2.

A series of computations also was completed to assess the susceptibility of the slope to soil creep. Even gentle slopes that are underlain by clayey soils are susceptible to soil creep, which is caused by the slow, downward movement of earth under the influences of gravity and moisture changes. Clayey soils tend to expand in a direction at right angles to the slope when they absorb moisture, but tend to shrink in a vertical direction due to the influence of gravity when they lose moisture. The cumulative effect, or creep, is a continuing pattern of downslope soil displacement in minute, stepwise increments. Foundations and slabs based in or on such soils are susceptible to the same downslope displacements. The horizontal components of creep movement are reflected as stretching displacements, while the vertical components appear as settlements. For this set of analyses, the cohesion values were set to zero, while retaining the friction angle values. The results converged on a minimum safety factor of 2.29, well above the acceptable thresholds.

We have concluded, therefore, that the slope below the proposed development will remain stable under all foreseeable conditions.

Hydrogeologic Character

Both the surficial deposit of silt and the substrate of clayey silt are assigned to the Makapili soil series. These soils are characterized by a ground water transmissivity of up to 2.0 inches per hour and a storage capacity of about 7.8 inches.

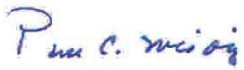
No ground water was intercepted in any of the test borings drilled on the property. Nonetheless, the porous soil deposits overlying the nearly impermeable saprolite formation are capable of transmitting ground water, however ephemeral. When the slope of the ground surface exceeds that of the phreatic surface, springs will emerge at or near the contact between the permeable soil zones (aquifers) and the underlying comparatively impermeable saprolite or volcanic rock zones (aquitards). This relationship is shown schematically on Plate No. 2.

The proposed residence and swimming pool will have no appreciable effect on this process.

If you have any questions regarding the foregoing, or if we may be of assistance to you in any other way, please do not hesitate to contact us.

Mahalo for this opportunity to be of service.

Respectfully submitted,

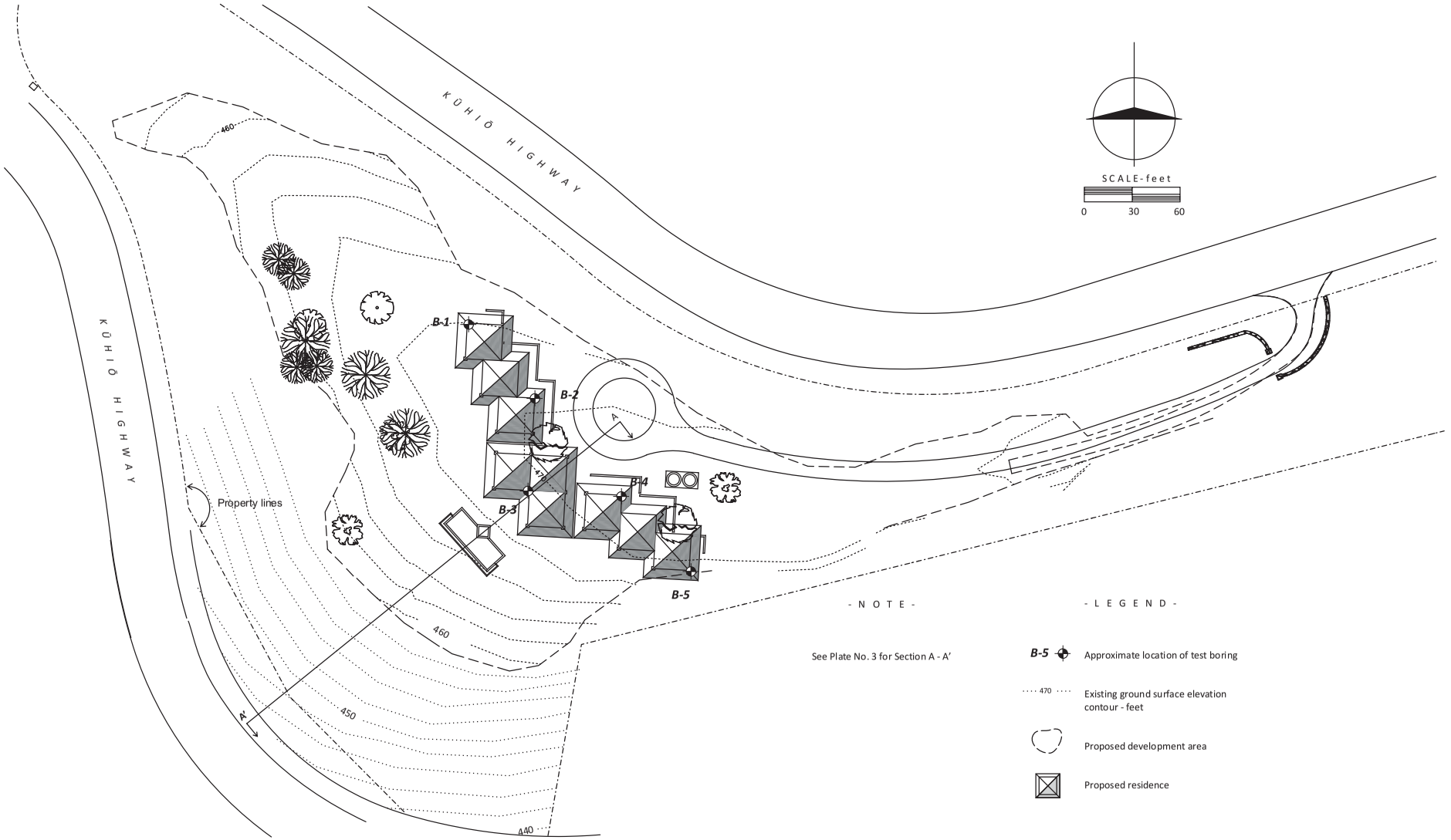




Paul C. Weidig, P.E.
Senior Geotechnical Engineer

PCW/sr/16273.02G

Attachments: Plate 1 – Extended Site Plan
Plate 2 – Section A – A'



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Bases: 1. Esaki Surveying & Mapping, Inc., 2016, *Map Showing Parcel 32 Being Potions of Grant 4845 to Albert S. Wilcox and Kam IV Deed to Charles Titcomb, Hanalei, Halelea, Kaua'i, Hawai'i, TMK: (4) 5-4-04:32* (scale: 1" = 60'), dated December 2, 2016.

2. Design Concepts, 2016, *Site Plan, Gearon Residence* (scale: 1" = 60'), Sheet A-1, dated December 14, 2016.

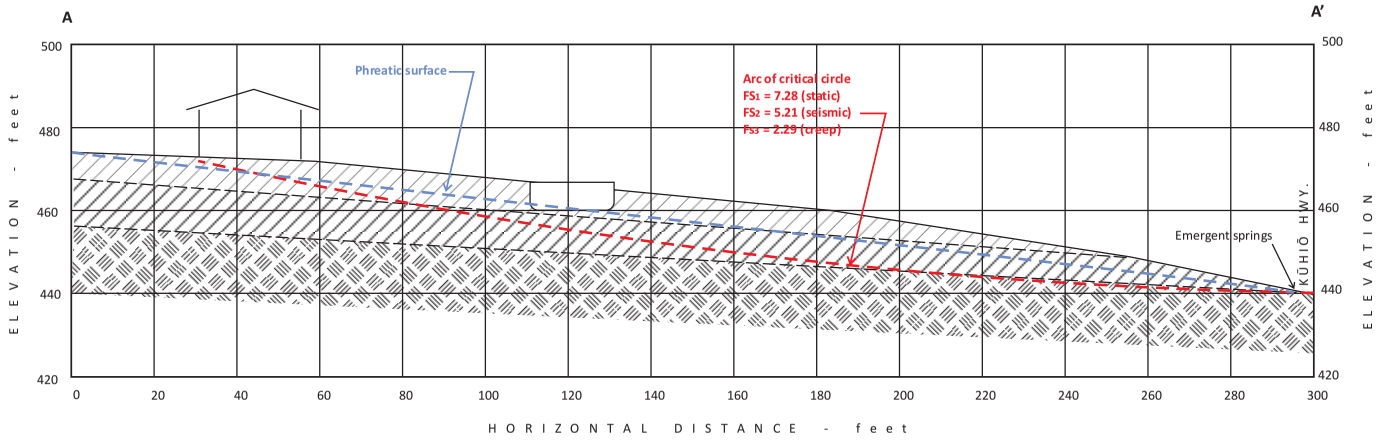
EXTENDED SITE PLAN

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2018

PROJECT NO. 16273.02G

PLATE NO. 1



		Geotechnical Parameters		
Earth Material	Symbol	γ_e (pcf)	ϕ (deg.)	c (psf)
Silt		111	27	480
Clayey silt		113	21	455
Saprolite		116	0	2,070

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SECTION A - A'

GEARON RESIDENCE
Kūhiō Highway at Hanalei Plantation Road
Princeville, Kaua'i, Hawai'i

DATE: May, 2018

PROJECT NO. 16273.02G

PLATE NO. 2

John P. Mueller

Mueller Custom Pools

Lic C-29901

5063 Kahana St. # B

Kapaa, Hi 96746

muellercustompoolskauai@gmail.com

808-822-1214

To Whom it may Concern,

May 2, 2018

I was approached by Santo Giorgio of Design Concepts with a request to explain our process of draining pools, with particular attention to the proposed pool at Mr. Gearon's property above Hanalei.

In our professional experience the draining of swimming pools is quite rare. The only reason to drain a pool would be to repair a leak or repair a failure in the finish. We do have some clients that prefer to drain their pools every two or three years for hygenic purposes, although we do not recommend this as a practice and consider it unnecessary. For example, with a well built and properly maintained pool draining the pool completely would not happen, most of the large commercial pools on Kauai are never drained for the life of the pool.

Santo provided us a site plan and we have studied the pool layout, location and size and made some redline notes and if this pool were in need of being drained we recommend the following procedure:

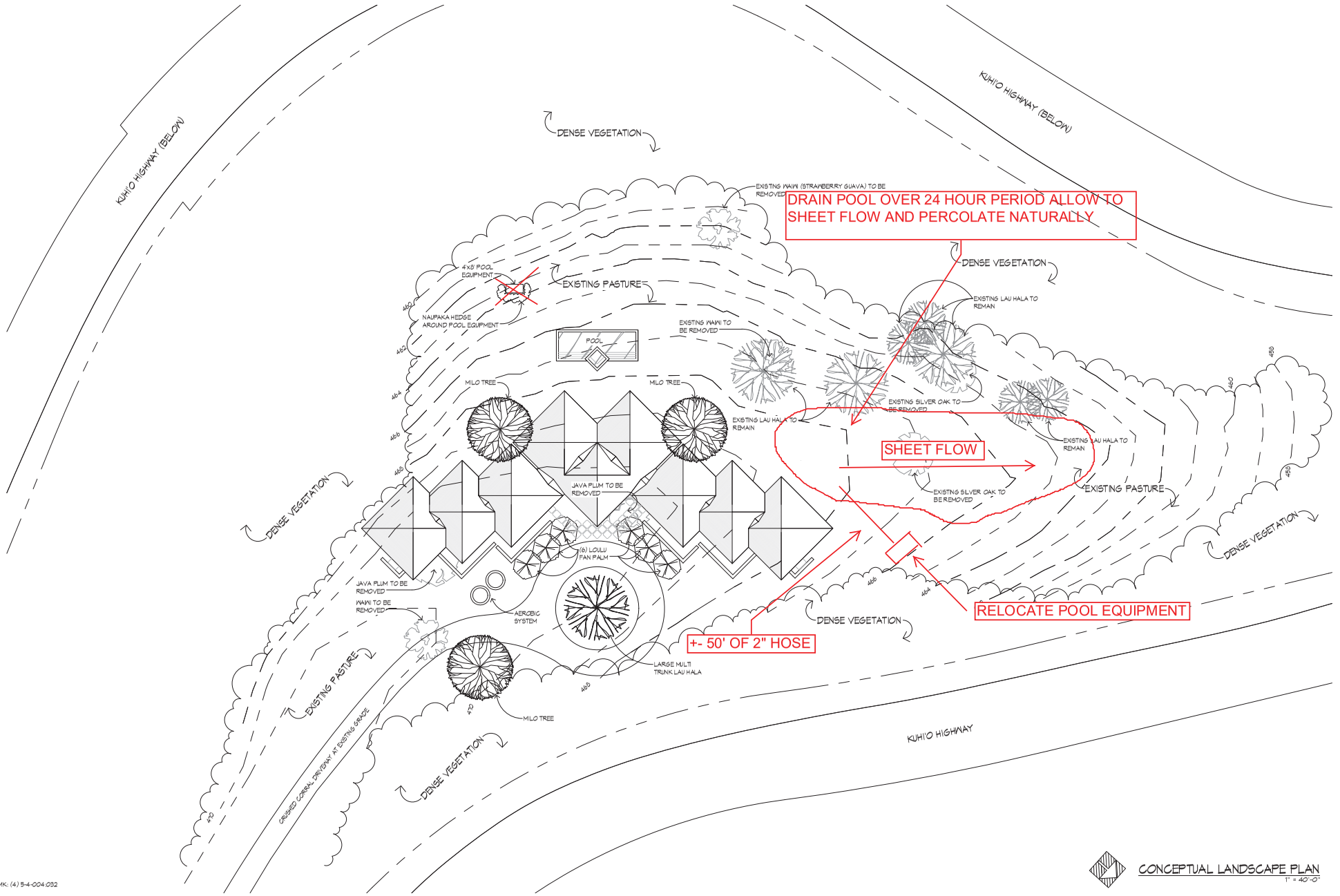
I would relocate the pool equipment to the north approximately 175'. From there I would run a 50 feet of 2" hose to a relative flat spot on pasture. The size of this pool is a little less than 15,000 gallons, much smaller than the average pool we build of +-40,000 gallons. At a medium flow it would take about 24 hours to drain this pool which would mimic a typical heavy rain for a day. It would also be possible to extend the draining process to 36 or 48 hours in order to reduce sheet flow to a negligible amount of water. Although salt water pools do create chlorine thru a natural process the amount would be so diluted that it would not have any negative impact to surrounding plants, trees, or lawns.

I hope this info is useful and answers your questions. Please feel free to contact me if you have any further questions.

John P. Mueller

Mueller Custom Pools

808-822-1214



TMK: (4) 5-4-004:032

CONCEPTUAL LANDSCAPE PLAN
1" = 40'-0"

PRINT DATE
1/8/2018
8:22:16 PM

REVISION #:

REVISION DATE
Date 1

DESIGN CONCEPTS - 2484 KEKEKE ST. SUITE 102, KILAUEA, HI 96754, USA +1 808 828 0160, WWW.DCKAUAI.COM

GEARON RESIDENCE

SHEET:
L-1