

KŪKULU KUMUHANA O ANAHOLA: ULUPONO ANAHOLA

FINAL ENVIRONMENTAL ASSESSMENT

ANAHOLA, ISLAND OF KAUA'I, HAWAII



KŪKULU KUMUHANA O ANAHOLA
P.O. BOX 30891
ANAHOLA, HAWAII 96703

OCTOBER 2022

ITEM G-1
EXHIBIT A

KŪKULU KUMUHANA O ANAHOLA: ULUPONO ANAHOLA

FINAL ENVIRONMENTAL ASSESSMENT

ANAHOLA, ISLAND OF KAUA'I, HAWAI'I

TMK: (4) 4-8-003:019 (por.)

APPLICANT:



KŪKULU KUMUHANA O ANAHOLA
P.O. BOX 30891
ANAHOLA, HAWAI'I 96703

APPROVING AGENCY:

DEPARTMENT OF HAWAIIAN HOME LANDS/ HAWAIIAN HOMES COMMISSION

The document and all ancillary documents were prepared under my direction and in accordance with the content requirements of Chapter 343, Hawai'i Revised Statutes, and Title 11, Chapter 200, Hawai'i Administrative Rules..

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OCTOBER 2022

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Appendices

- A Preliminary Engineering Report. G70. August 2022.
- B Cultural Impact Assessment for Ulupono Anahola Project. Nohopapa Hawai'i, LLC. May 2022.
- C Literature Review and Field Inspection for the Ulupono Anahola Project. Nohopapa Hawai'i, LLC. April 2022.
- D Transportation Impact Analysis Report. Fehr & Peers. March 2022.
- E Draft Noise Assessment Report. Censeo AV + Acoustics. March 2022.
- F Comment Letters Received

Section 1

Introduction

Chapter 1

Introduction

This Environmental Assessment (EA) has been prepared in accordance with the requirements of Chapter 343, Hawai'i Revised Statutes (HRS) and Hawai'i Administrative Rules (HAR), Title 11, Chapter 200.1, Department of Health, which set requirements for the preparation of environmental assessments. This EA is also prepared to analyze the conceptual master plan to assist KKO in advancing to the next phase of the Ulupono Anahola Project.

1.1 Project Information Summary

Type of Document:	Environmental Assessment (EA)
Project Name:	Kūkulu Kumuhana O Anahola: Ulupono Anahola
Recorded Fee Owner:	Department of Hawaiian Home Lands 91-5420 Kapolei Parkway, Kapolei, HI 96707 Contact: Nancy McPherson, Planner Telephone: (808) 427-3145
Applicant:	Kūkulu Kumuhana O Anahola P.O. Box 30891, Anahola, HI 96703 Contact: Rae Nam, Executive Director Telephone: 808-224-4245
Agent:	G7O 111 S. King Street, Suite 170, Honolulu, HI 96813 Contact: Kawika McKeague, AICP, Principal Telephone: (808) 523-5866
Approving Agency:	Department of Hawaiian Home Lands/ Hawaiian Homes Commission 91-5420 Kapolei Parkway, Kapolei, HI 96707 Contact: Nancy McPherson, Planner Telephone: (808) 427-3145
Ch. 343, HRS Triggers:	Use of State Lands & State Funds
Project Location:	Kukuihale and Pilipoli Roads Anahola, HI 96703 (<i>Figure 1.1</i>)
Tax Map Keys (TMK):	TMK: (4) 4-8-003:019 (por.) (<i>Figure 1.2</i>)
Project Area:	Approx. 10 acres of 50 acres

State Land Use District:	Agriculture (<i>Figure 1.3</i>)
County of Kaua'i Zoning:	Agriculture (<i>Figure 1.4</i>)
DHHL Land Use Designation:	Residential and Community Use (CU) (<i>Figure 1.5</i>) Portion of Project Parcel Within SMA (<i>Figure 1.6</i>)
Special Management Area:	10-Acre Project Area Not Within SMA (<i>Figure 1.6</i>)
Flood Zone:	Zone X (Area of Minimal Flood Hazard) (<i>Figure 1.7</i>)
Anticipated Determination:	Finding of No Significant Impact (FONSI)

1.2 Purpose and Need

According to the American Foundation for Suicide Prevention (AFSP), suicide is the 12th leading cause of death in the United States. There is no single cause for suicide, and suicide “most often occurs when stressors and health issues converge to create an experience of hopelessness and despair.” (AFSP 2020). A number of factors contribute to suicide, such as mental health conditions (e.g. depression, substance abuse problems, anxiety disorders, etc.), poor environmental conditions (access to lethal firearms and drugs, prolonged stress, stressful life events, etc.), poverty, poor housing situations, poor physical health, and lack of access to physical and mental health services (AFSP 2020a).

Youth suicide is the second-leading cause of death in the United States after unintentional injuries. The teen suicide rate is higher in males, among American Indian/Alaskan Native adolescents, and among students who identified as gay, lesbian, or bisexual. (Ivey-Stephenson et al. 2020). Suicidal ideation (contemplation or thoughts about suicide) is on the rise, with 18.8% of students reported having seriously considered suicide. Of this percentage, prevalence estimates are highest among students who identified as lesbian, gay, or bisexual (Miron et al. 2019). From 2009-2019, the prevalence of suicide attempts in those ages 14-18 increased overall and among female, non-Hispanic white, non-Hispanic black, and 12th grade students (Ivey-Stephenson et al. 2020).

In Hawai'i, there were 195 documented suicides in 2021 (Lyte 2022), rendering suicide the 11th leading cause of death overall and the 2nd leading cause of death among those between 10-34 years of age. In 2019, suicide was the leading cause of death for Native Hawaiians and Other Pacific Islanders (NHOPI) ages 15-24. This demographic was also three times less likely to receive mental health services or prescription medications for mental health treatment (HHS 2021).

In general, the NHOPI population has some of the highest rates of smoking, drinking, and obesity among ethnic groups in the United States. Leading causes of death in the NHOPI community include heart disease, cancer, stroke, diabetes, and accidental injuries, partly due to the lack of access to cancer prevention and other health control programs. Furthermore, the Census Bureau reported that 17.6% of the NHOPI community lived below the poverty line, compared to a national poverty rate of 11.7% for Asians and 11.6% for Whites in their 2007-2011 American Community Survey. Factors such as poor physical health, lack of access to healthcare, and poverty, greatly exacerbate stressors that can contribute to suicide intention and action.

In 2015, it was estimated that Native Hawaiians accounted for approximately 6,203 (9.8%) of the 63,000 residents on the island of Kauaʻi. Anahola is home to the largest population of Native Hawaiians residing on Kauaʻi, with approximately 61% of the population identifying as Native Hawaiian.

On the Island of Kauaʻi, suicide rates are slightly higher than the state and national averages and are second only to the island of Hawaiʻi (DOH 2013). The most common negative life events for the victims in Kauaʻi were related to intimate relationship problems (usually a break-up or divorce), or serious illness or medical issues. Over one-third (37%) had a history of substance abuse, 19% had a blood alcohol concentration level over 0.08%, and 34% tested positive for illicit drugs (DOH 2013). In 2016, the Anahola community experienced the passing of Dylan Kawamura, a young, Native Hawaiian, male, LGBT-identifying community member, who struggled with unemployment due to company shutdown and an unstable housing situation (Parachini 2018). In 2020, Kauaʻi experienced a cluster of four suicides in one week, some of which had precipitating factors such as drug use, addiction, depression, relationship conflicts, or financial failures (Lyte 2020).

In 2008, the Anahola community experienced the loss of three teenagers to youth suicide. In October of that year, B. Manulele Clark and Kuʻuleialoha Punua founded Kūkulu Kumuhana O Anahola (KKOA), a non-profit organization devoted to deterring suicide in the Anahola community. Humbly founded at a kitchen table, the two founders believed that suicide in Anahola could be reduced with ʻohana (family) and community support, by reminding youth of cultural values, and in trusting the Paipala Hemolele (Holy Bible).

Suicide is preventable. Prevention should be aimed at all levels of influence: individual, relationship, community, and societal (AHR 2022). Factors for suicide prevention include: knowing the warning signs of suicide, access to mental health care, connecting with family and community support, problem-solving and coping skills, and cultural and religious beliefs that encourage connecting and help-seeking, discourage suicidal behavior, or create a strong sense of purpose or self esteem (AFSP 2020).

1.3 Project Background and Overview

KKOA's mission is to provide safe places and spaces to deter youth suicide by providing opportunities for community members to “huli ka lima i lalo,” to turn the hands downward and work, and engage with the ʻāina (land). KKOA encourages learning and teaching through the entire ʻohana unit, with opportunities for kūpuna (elders) and makua (parents) to teach and learn with their keiki (children). In turn, keiki are nurtured and supported to make change within their own ʻohana. By strengthening one's identity through Hawaiian values, individuals will be empowered to successfully manage their future while supporting a healthy, Hawaiian community. KKOA envisions an economically, emotionally, and spiritually sustainable Hawaiian community in Anahola, one that encourages cultural and modern arts, utilizes new technologies, and allows for the freedom of authentic self-expression.

Since its inception in 2008, KKOA has expanded outreach in the Anahola community through various programs and services (*Table 1-1*).

Table 1-1 KKOA Programming	
PROGRAM	DESCRIPTION
Free Drive-In Movie Nights	Beginning in 2009, KKOA hosts Free Drive-In Movie Nights at the Anahola Clubhouse. At these events, healthy meals are served.
Anahola Ahupua'a Moving Mural	KKOA spearheaded the Anahola Ahupua'a Moving Mural at the Anahola Clubhouse in 2011 and maintained the mural from 2012-2019.
Huaka'i (excursions)	KKOA has conducted huaka'i to various agricultural venues both on and off-island. On-island sites include a tomato farm in Waimea and Waimea Middle School. Off-island visits included huaka'i to Ma'o Farms and Ho'oulu 'Āina on O'ahu.
Afterschool Mentoring Program	Partnering with Lili'uokalani Trust from 2014-2016, KKOA piloted an afterschool mentoring program in reading and math for 2nd, 5th, and 6th graders. Ukulele classes were also provided.
Community Survey	From 2014-2016, KKOA surveyed 518 DHHL Anahola Beneficiaries, who identified education, skill-building, and cultural enrichment as their top three priorities for the community.
Meal and Produce Delivery	Beginning in April 2020 during the COVID-19 pandemic, KKOA partners with grassroots organizations to deliver fresh local produce and meals to underserved children and grandparents in the Anahola community. This partnership strengthens KKOA's Civic Agriculture framework while supporting local ranching, farming, and cottage industries.
Partnership with Kanuikapono Charter School	In August 2021, KKOA formed a partnership with middle school staff by providing students a safe place to learn about 'āina (land) and their future. Hands-on activities included local plant identification, soil testing, and learning the life cycle of kalo. Students provided their vision and input for the Ulupono Anahola Project.
Resilient Leadership/Ho'ohana Program	KKOA is currently piloting a Resilient Leadership/Ho'ohana Program on an acre of Hawaiian Home Land farm lots located on the mauka (upland) side of the highway, approximately three (3) miles from the Project Site. At this location, KKOA conducts trainings in amending soil, and planting, caring, harvesting, and preparing kalo. KKOA has also planted a nursery of fruit trees, medicinal, and essential plants, which will be transferred to the Ulupono Anahola Project Site. This site also contains a community vegetable garden, providing trainers and volunteers an opportunity to understand land conditions, soil care, and successful harvesting.
Light Up the Night: Trunk or Treat	Every year, KKOA hosts a "trunk or treat" for the Anahola community, where families gather and trick or treat together.
Suicide Prevention Training	Through various organizations and partnerships in the Anahola community, suicide prevention training has been offered twice a year in Anahola. KKOA aims to increase these trainings to four times a year. It is KKOAs goal to have one person or one 'ohana unit on every street in Anahola to be trained in suicide prevention. While the KKOA Board has undergone training, there is yet to be a certified trainer within the program.

KKOA submitted a land use request form to DHHL in January 2019 for TMKs (4) 4-8-003:019 (por.) and (4) 4-8-003:021 (por.) to develop the Ulupono Anahola Agricultural Garden Training Site and Youth Center (Ulupono Anahola Project), which aims to develop a youth center, agricultural plots for community gardening, native and medicinal gardens, and install a well for a sustainable on-site water source. Accordingly, KKOA aims to provide families in and around the Anahola Homestead community the opportunity to work together to grow traditional and healthy crops, allowing them to sustain themselves and become stewards of these lands. The Project will ultimately serve as a social deterrent for youth suicide by providing educational and management opportunities in sustainability and traditional practices.

As the proposed project was not a Priority Project in the Anahola Regional Plan, the DHHL Planning Office was required to conduct a Beneficiary Consultation meeting on the land use request. The Beneficiary Consultation was held on August 7, 2019. The report was accepted unanimously by the Hawaiian Homes Commission (HHC) on September 16, 2019. Following approval, the HHC issued a Right of Entry (ROE) permit (ROE No. 698) to TMK (4) 4-8-003:019 (por.) for a two-year due diligence period prior to the issuance of a long-term lease agreement. These due diligence activities help in securing the site, providing opportunities for research, stewardship, and management. Information gathered during this period informs the long-term implementation of the project, which is contingent on the preparation of an EA. Having fulfilled the initial due diligence, KKOA returned to DHHL in September 2021 requesting a 30-year license. However, DHHL recommended no permanent structures be built until an EA was completed.

Under HAR Section 11-200.1-15, certain actions can be declared exempt from the preparation of an EA because they will individually and cumulatively probably have minimal or no significant effects. HAR Section 11-200.1-16 allows agencies to develop their own exemption list consistent with HAR 11-200.1. On September 20, 2021, DHHL provided the Project Due Diligence an exemption from the preparation of an EA, allowing the project to conduct specific agricultural activities that would qualify as “de minimis” and/or would be eligible for an EA exemption under DHHLs exemption list and HAR Section 11-200.1.

In November 2021, KKOA was granted a 5-year license agreement from the HHC for TMK (4) 4-8-003:019 (por.), with the possibility to extend for two additional 10-year periods at the option of the HHC Chair. An EA is required under this license agreement. Until then, all actions on the project site are limited to those listed under DHHLs exemption list and HAR Section 11-200.1. (*Table 1-2*).

Table 1-2 KKOA Exemptions		
EXEMPTION LIST TYPE	ITEM NUMBER	APPLICABLE LANGUAGE
2	3	3. Replacement, reconstruction, alteration, modification (no change in use) or installation of utility services, including, but not limited to: A. Water.
3.c,d	1.b,c	Construction and location of single, new, small facilities or structures and the alteration and modification of the same, including, but not limited to (c) Stores, offices, and restaurants designed for total occupant load of twenty individuals or fewer per structure, inf not in conjunction with the building of two or more such structures; and (d) Water, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities; accessory or appurtenant structures including garages, carports, patios, and fences; and acquisition of utility easements.
4	1, 2, 3, 4	<p>1. Removal and/or cutting of trees that are burned, destroyed or diseased, or otherwise endanger life or property</p> <p>2. Removal of gravel, rocks, trees (non-endangered species) and/or other materials necessary to make agricultural lands more productive and useful for grazing, farming and other related agricultural purposes</p> <p>3. Landscaping along roadways, around buildings, and within existing parks and community use areas, including, but not limited to, planting of groundcover, grass, shrubs, and trees, sodding of bare areas for dust and erosion control, and installation of community gardens, involving minimal or no grading</p> <p>4. Minor vegetation clearing and management, including mowing, pruning, and trimming. Vegetation shall be hauled by truck to an approved sanitary landfill site, or allowed to remain onsite where feasible for use as compost or mulch 6. Minor grading and grubbing of lands not requiring and grading permit.</p>
5	1, 2, 3, 5, 6, 10, 14, 15, 16	<p>1. Surveys, research, and investigations into all aspects of water use, quantity, and quality</p> <p>2. Planning Data Collection</p> <p>3. Studies for the purpose of identifying hazardous conditions</p> <p>5. Drainage Studies</p> <p>7. Site inventories and site assessments</p> <p>10. Archaeological surveys, not to include clearing of vegetation in direct association with site evaluation and mapping</p> <p>14. Ecological and botanical surveys for which no permit is required</p> <p>15. Surveys, research, and investigations into all aspects of natural resource management, including native forest restoration and invasive species removal</p> <p>16. Environmental impact research</p>

The Ulupono Anahola Project is an agricultural site and youth center, located in Anahola, Kaua'i. KKOA plans to utilize this 10-acre portion of the larger parcel for medicinal and community gardens, traditional and sustainable agricultural practices, educational programming, and the processing of agricultural products. Through the Ulupono Anahola Project, the provision of safe places and spaces offer relief, restoration, and healing for families to strengthen and build their relationships. It also allows a space for youth to discern their talents and skills, dream, create, and engage in their culture.

1.4 Purpose of the Environmental Assessment

This EA fulfills the requirements under the State of Hawai‘i’s Environmental Review process, as codified under Hawaii Revised Statutes (HRS) Chapter 343 and Hawaii Administrative Rules, Chapter 11-200.1. An environmental review was triggered as the 10-acre site is leased from the Department of Hawaiian Home Lands (DHHL), which constitutes the use of state or county lands which includes any use (title, lease, permit, easement, license, etc.) or an entitlement to those lands. The purpose of this EA is to provide an analysis of the conceptual site plan.

The State Department of Hawaiian Home Lands/ Hawaiian Homes Commission is the approving agency. The purpose of the EA is to ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations. The EA also seeks agency and public comment on subject areas that should be addressed.

1.5 Agencies, Organizations and Individuals Contacted in Early Consultation

Federal, State, and County Agencies, elected officials, organizations, citizen groups, and members of the community were consulted in the preparation of this EA. As the recorded fee owner, DHHL was also consulted. Parties contacted in early consultation are listed below. Further information as to the extent of comments received is detailed in Chapter 7.

Federal

- U.S. Fish and Wildlife Service
- Department of the Interior, Geological Survey, Pacific Islands Water Science Center

State

- Department of Land and Natural Resources (DLNR)
- Department of Health, Clean Water Branch (DOH-CWB)
- Department of Agriculture
- Department of Education
- Office of Hawaiian Affairs (OHA)
- Senator- District 8 Ron Kouchi
- House Representative - District 14 Nadine Nakamura
- Kauai Cooperative Extension Office, UH Mānoa College of Tropical Agriculture and Human Resources

City and County

- Mayor Derek Kawakami
- County Council (All members)
- Kaula Fire Department

- Department of Planning
- Kauaʻi Police Department
- Department of Public Works
- Transportation Agency
- Department of Water

Organizations and Individuals

- Go Farm Hawaiʻi
- Āina Hoʻokupu O Kīlauea
- Kalalea View Farm
- Limahuli Garden & Preserve
- Kauai Animal Education Center
- The Farm at Hokualea
- Waipā Foundation
- Mālama Kauaʻi
- Kalalea Anehola Farmers Hui, Aggie Marti-Kinney
- Kanuikapono Public Charter School
- Piilani Mai Ke Kai Homeowners Association
- Ka Hale Pono
- Nā Maka Onaona



Figure 1.1

Project Location



Figure 1.2

County of Kaua'i Property Tax Map Key

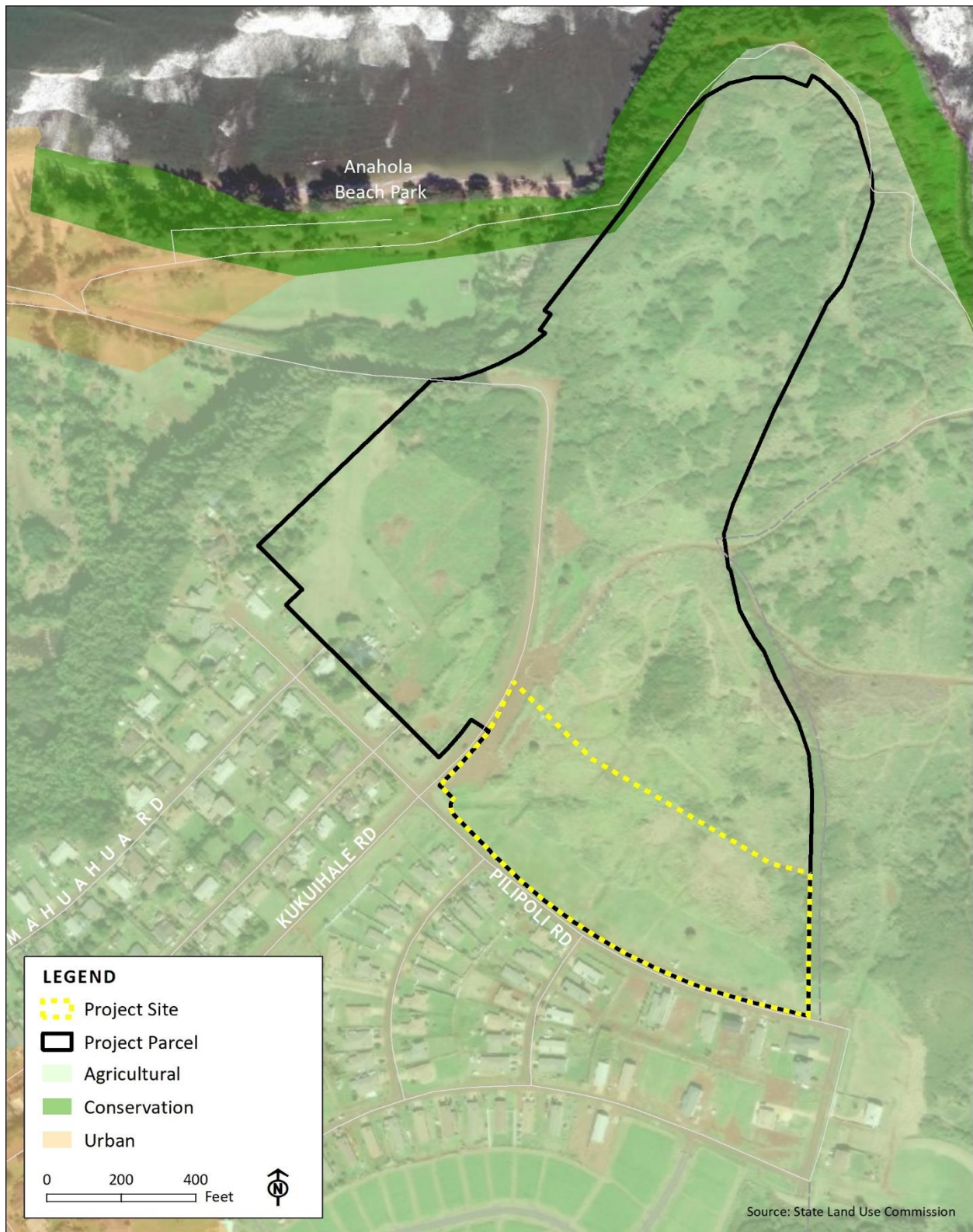


Figure 1.3

State Land Use Classification

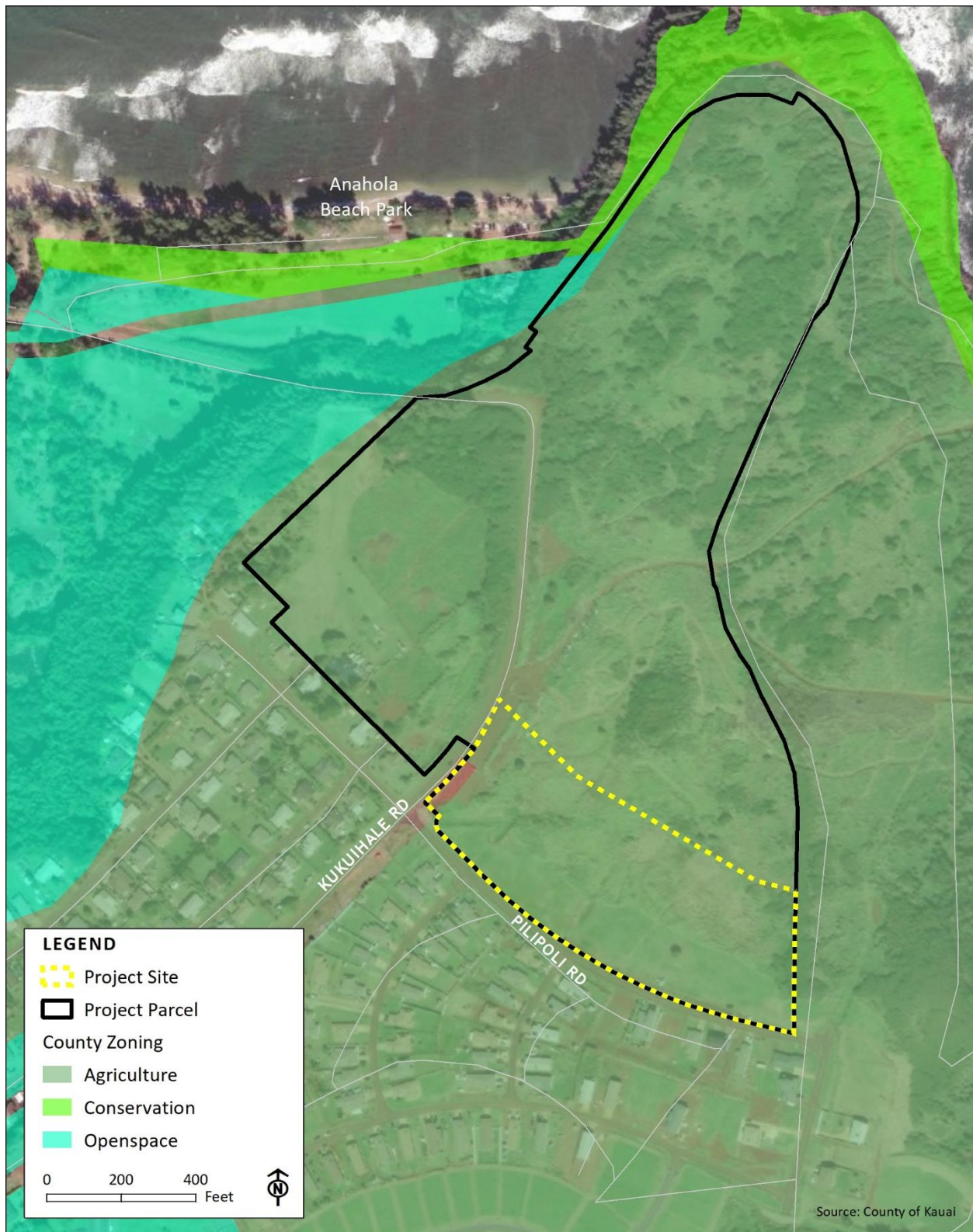


Figure 1.4

County of Kaua'i Zoning Districts

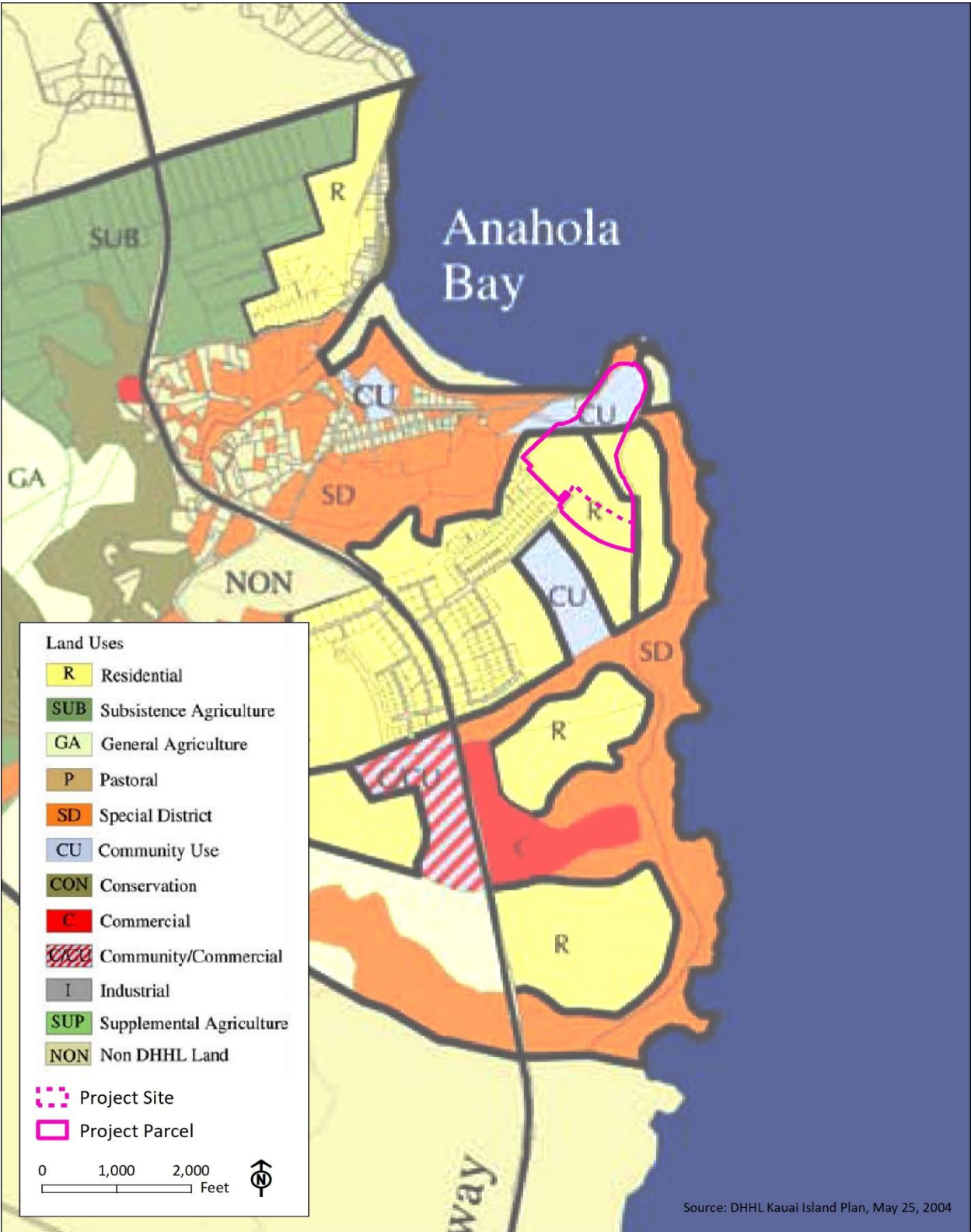


Figure 1.5

DHHL Land Use Designation

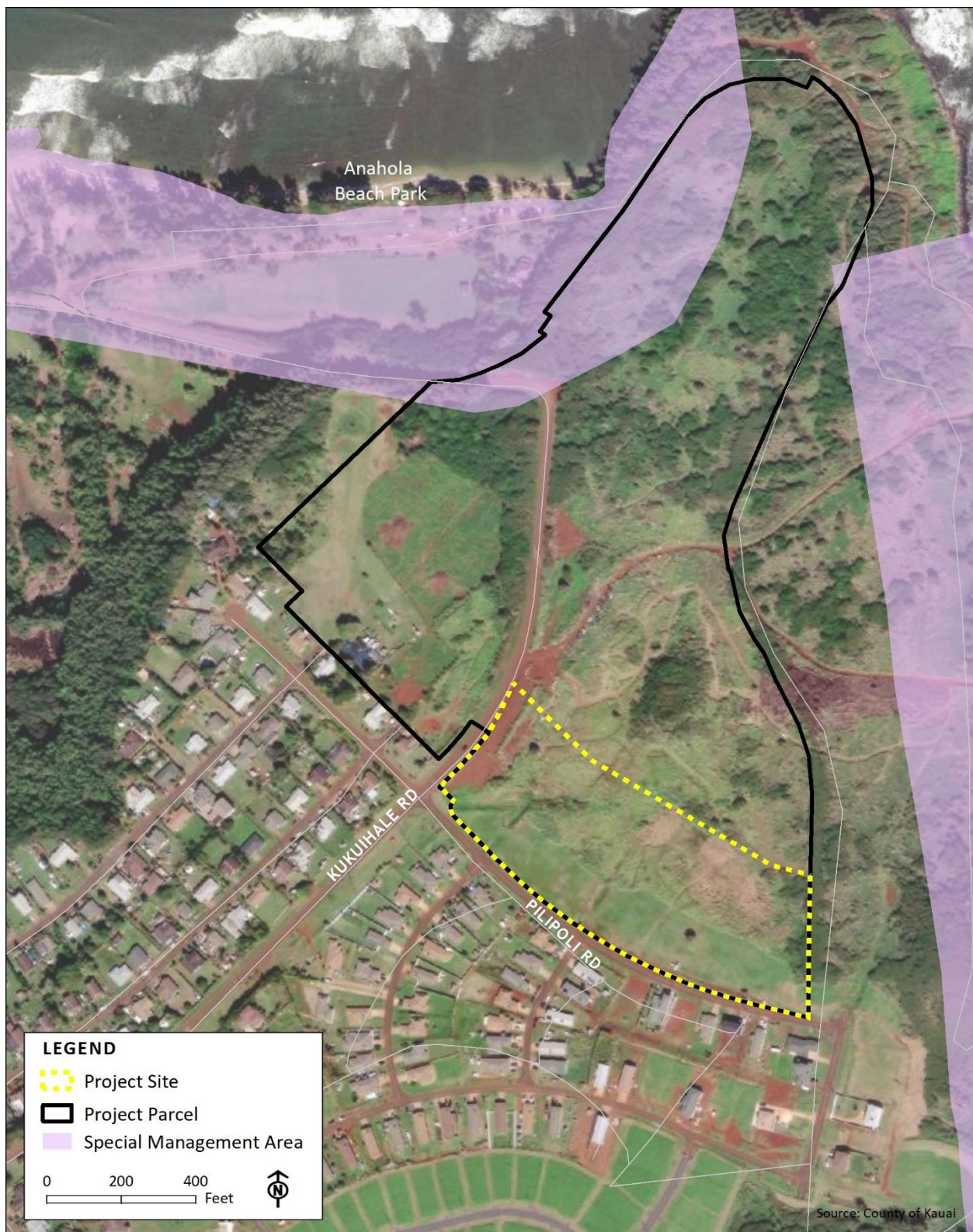


Figure 1.6

Kaua'i County Special Management Area

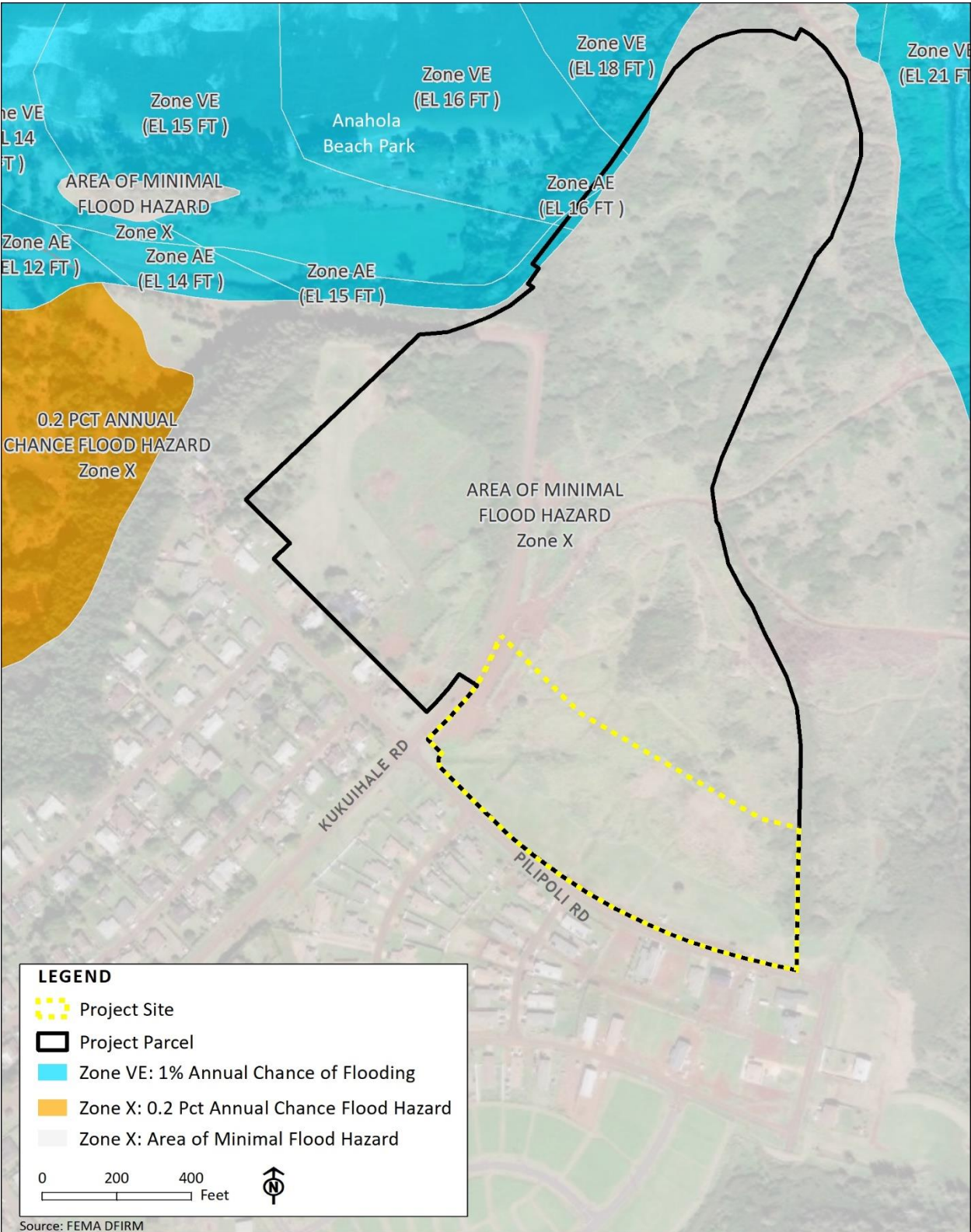


Figure 1.7

FEMA Flood Zones

Section 2

Description of the Proposed Action

Chapter 2

Project Description

This chapter provides the history and existing uses of the property and surrounding areas. An overview of the planned programs and facilities at the Project Site are provided in further detail.

The Ulupono Anahola Project is located within the ahupua‘a of Anahola in the Ko‘olau moku (district) on the Island of Kaua‘i (*Figure 2.1*). The Project Site can be identified by TMK parcel (4) 4-8-003:019 (por.), and is located in the State Agricultural District as well as the County of Kaua‘i Agricultural District (*Figures 1.3 and 1.4*). The Project Site is located at the corner of Kukuihale Road and Pilipoli Road. The Project Parcel is bordered by Anahola Beach Park and the Pacific Ocean to the north, the Pi‘ilani Mai Ke Kai Hawaiian Homesteads to the west and south, and an undeveloped parcel owned by Hawaiian Home lands to the east.

2.1 History of the Area and Project Area Characteristics

Anahola is the largest of 10 ahupua‘a within the moku of Ko‘olau, along the northeast coast of the island of Kaua‘i. Located between the ahupua‘a of ‘Aliomanu to the north and Kamalomalo‘o to the south, Anahola is rich with natural and cultural history and resources.

Natural resources within the ahupua‘a include Anahola stream, two prominent mountain peaks known as Hōkū‘alele peak (lit. “star messenger, shooting star, or comet”) and Kalalea Mountain (lit. “prominent, protruding”), fertile land and abundant ocean resources. Historically, the upper portion of the valley contained taro terraces, but it is the flatlands along the river mouth that were heavily cultivated (Wichman 1998).

In Pukui & Elbert’s, *Hawaiian Dictionary* (1976), no translation is translation for Anahola. Frederick B. Wichman attributes the name Anahola to a legendary mo‘o who had lived in Ko‘olau moku. In Mary Kawena Pukui’s interviews with Anahola kūpuna (from the Bernice Pauahi Bishop Museum archives), many pronounce Anahola as Anehola.

Anahola Ahupua‘a is more well-known than Kamalomalo‘o—given its higher “carrying capacity,” or ability to feed and support more people, its unique geography, surf breaks, large number of historic Māhele claims, and developed modern community, Kamalomalo‘o has a small stream, a rocky reef; and although it stretches far mauka, it is characterized by extensive kula lands.

The project area is on the periphery of Anahola’s primary planting and habitation areas, which would have been along the main stream and at its delta and bay. In traditional Hawaiian terms, the project area would have been part of the wao kānaka, or accessible forested lands where valuable resources (e.g., medicinal plants, trees for wood, etc.) could be easily gathered.

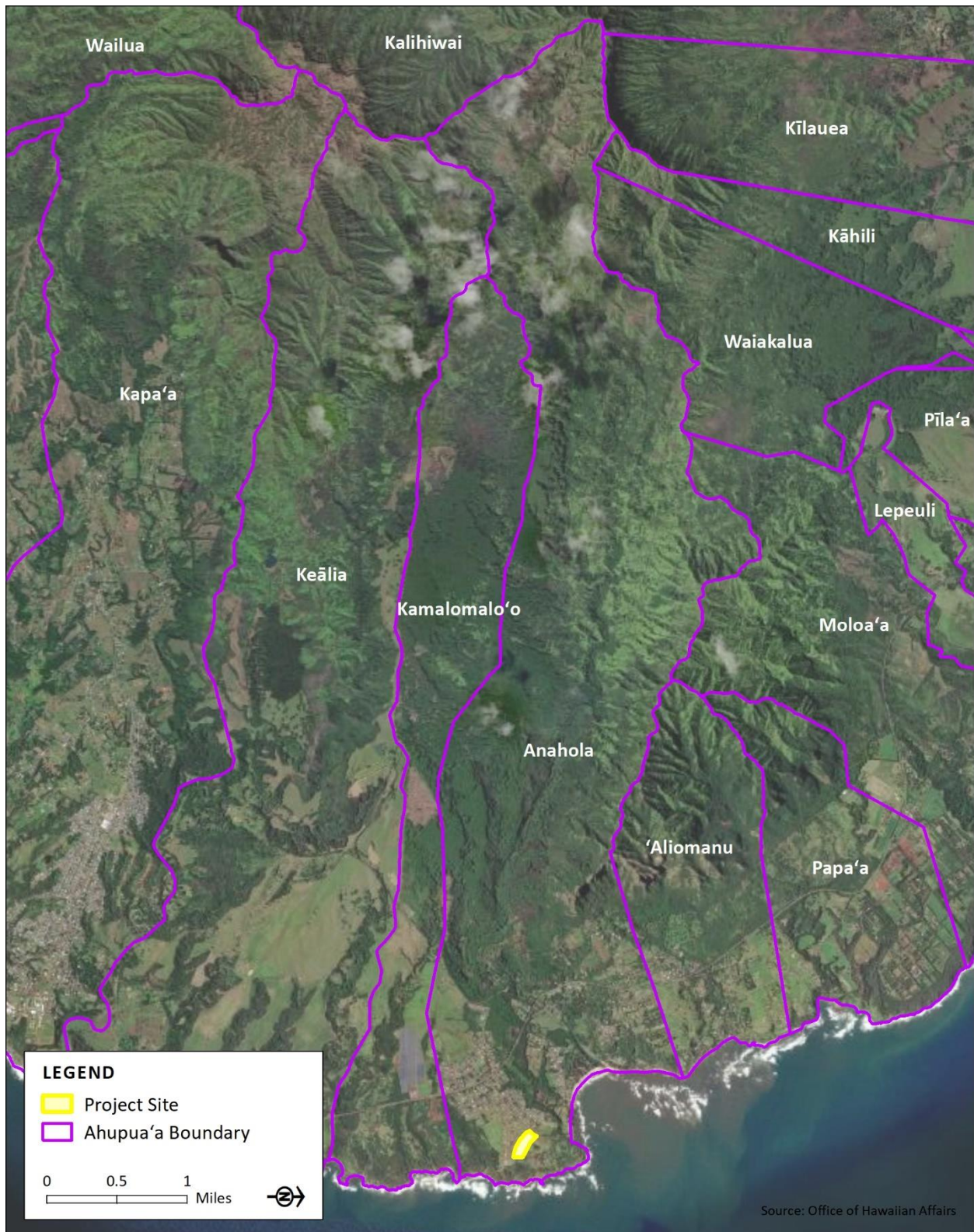


Figure 2.1

Ahupua'a Map

Anahola Ahupua'a was Crown Lands, returned by Lunalilo (6th monarch of the Hawaiian Kingdom), who was the second-largest landowner (trailing only Kamehameha III) at the time of the initiation of the Māhele (middle nineteenth century). In a Crown land inventory, Anahola is stated as:

This land is situated in the district of Koolau and comprises an area of 6237 acres. Nearly all the land in the valley is good rice land, mostly on kuleanas. The Anahola stream furnishes an abundant supply of water. A considerable portion above the valley, about 500 acres is under cultivation of cane by the Makee Sugar Co., the remainder being good pasture and wood land. Good roads connect it with the plantation. (C.P. laukey, Agent of Crown Lands, 1894)

There were 57 Land Commission Award Claims for the ahupua'a of Anahola between 1848 and 1850, however, no individual kuleana Land Commission Awards (LCA) were awarded in the current project area. Most of the awards are in close proximity to the Anahola River with the majority of the ahupua'a held by the crown (Indices 1929).

Following the 1848 Māhele, cash-crop agriculture and cattle ranching gradually replaced traditional subsistence pursuits on the land, and indentured laborers, primarily China, Japan, Pacific Islands, the Philippines, and Portugal, were brought in to work on the sugarcane and pineapple plantations, many of these individuals eventually marrying into local families. Lo'i (or irrigated pond fields) and terraces were converted to rice production in the valley bottom, and kula land once planted in traditional tree crops became the locus of vegetable farming for markets outside the district.

In 1854, German immigrant Ernest Krull purchased a tract of land at Kealia, Kaua'i from the Hawaiian Government for \$200 (about \$5,720 in 2013 dollars). About six years later, Krull began operating a dairy on his land for the purpose of selling visiting whaling ships and Honolulu merchants beef and dairy products – mainly hides, tallow, and butter. He sold firewood to the ships anchored off Anahola as well. In 1876, Krull sold his dairy and ranch lands to Captain James Makee and his son-in-law Col. Z. S. Spalding for the sum of \$30,000 (\$673,000 in today's dollars). These lands would eventually become the Makee Sugar Company. In 1885, Spalding dismantled the Kapa'a mill and moved it to Kealia, where it was combined with the Makee factory. In 1910, Lihue Plantation Company purchased controlling interest in Makee Sugar Co. and by 1933 solely owned the Makee Sugar Co. and associated plantations. In 1934, the Kealia mill (Makee Sugar Co.) was dismantled and combined with the Lihue factory.

In the second half of the 1800s, rice crops began replacing former lo'i kalo as Chinese settlers purchased lands and converted lo'i terraces into rice fields. Rice production co-existed with the nearby sugar plantations until the 1930s. Pineapple production began in the late 1800s but it also slowed in the 1930s, as did sugarcane production. Vegetable farming of the flood plain soils and coastal plain also altered the landscape of Anahola after this period, as did the small-scale cattle grazing (Dixon et. al 2005). The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa'a to Ahukini Landing. In 1934, the Lihue Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company. Shortly after the Lihue Plantation gained ownership of the railroad, passenger cars ran on the tracks. The last railroad tracks were removed in 1959 (Hilton 1990).

Lihue Plantation closed in November 2000. Towns dependent on sugar cultivation and production suffered after the closing of the plantations, however, the growing tourist industry has begun to ease the economic effects. Plantation fields in Anahola that were formerly Government Lands reverted to the Department of Hawaiian Homelands.

2.2 Existing Conditions

The Project Site consists of ten acres of fairly level agricultural land. The parcel was historically cultivated in sugar cane and has been previously tilled and disturbed. The project site has lain fallow since the early 1990s. Since the closure of the Lihu'e Plantation, the land has been plagued by illegal dumping of abandoned cars and household refuse. Overgrown grass in conjunction with illegal dumping has contributed to multiple fires, endangering the residential area of the PMKK Community and the Anahola Community at large.

Since obtaining a ROE to the project location, KKOA has established a positive presence at the site, helping to deter illegal dumping and trespassing and providing a safe and productive environment for current and future beneficiaries. In November 2021, KKOA planted its first bed of kalo for the community garden signifying the plan's implementation towards restoration.

2.3 Description of the Proposed Action

Since becoming a licensee of the 10-acre site, KKOA has served the Anahola community by providing access to a safe environment that perpetuates traditional native Hawaiian and modern farming techniques. Through engagement with the 'āina, volunteers develop a stronger sense of cultural identity and well-being. The proposed action will allow KKOA to maintain and expand its current programming to address social determinants of health and promote suicide prevention.

The plan for development of the area is highlighted in the Conceptual Site Plan (*Figure 2.1*). The Ulupono Anahola Project aims to develop the parcel with the following components:

Table 2-1 Project Components		
COMPONENT	SIZE	PURPOSE
Marae	7,740 sf	Inspired by the Marae, a traditional Maori meeting house, this project component will serve as a gathering space and meeting place for the community. The Anahola Clubhouse, located mauka of the KKOA project site, is the only other available community meeting place in Anahola. KKOA envisions this Marae as a second community gathering place serving the makai portion of Anahola.
Office		Located in close proximity to the Marae, the Office will house administrative operations for KKOA staff members.
Kitchen and Restroom		Located in close proximity to the Marae, the kitchen is designed for KKOA and community use. It will contain two (2) hand/prep sinks and three (3) COMP/MOP sinks. The restroom will serve the Marae, Office, and Kitchen. It contains four stalls, two lavatories, and two fountains.
Co-op Retail	160 sf	One (1) 8' x 20' container used as a place for KKOA and local businesses in the Anahola community to sell value-added products that originate from the project site.
Youth Center	3,168 sf	A Youth Center comprised of three (3) 8' x 40' containers; two for classrooms and one for office space. The Youth Center is a

		space for youth programming such as mentorship trainings, workshops, fun nights, and events. It will also serve as a second gathering place for 'ohana in the community.
Storage	960 sf	One (1) 24' x 40' storage unit to serve the Youth Center and Gardens.
Garage	960 sf	One (1) 24' x 40' garage used for the storage of farming equipment.
Restrooms and Storage	640 sf	One (1) 16' x 40' restroom containing four stalls, one lavatory, and two drinking fountains. Located in close proximity to the Youth Center, it is intended to serve the youth center and youth gardens.
Hale Halawai	1,800 sf	A traditional Hawaiian meeting house (30' x 60') constructed out of traditional materials. The Hale Halawai is a permanent, traditional Hawaiian structure geared towards KKOA programming. Its location near the middle of the project site offers a respite for workers/volunteers in the field. It is designed as a space for education, kūpuna gathering, cultural exchanges, and "talk story" or conversation. Per Appendix X of the Kaua'i County Code, there are provisions for the construction and operation of indigenous Hawaiian architectural structures. A 100 ft setback will be implemented around the Hale Halawai for adequate fire protection.
Restrooms and Storage	640 sf	One (1) 16'x40' restroom containing one lavatory and one drinking fountain. This restroom is intended to serve the Hale Halawai and surrounding gardens.
Processing Center	4,960 sf	A center for the processing (harvesting/washing/cleaning) of agricultural goods from the project site. Includes refrigeration area, and storage for tools, farm equipment, and heavy equipment in three (3) 8' x 40' containers.
Greenhouses (x2)	1,600 sf each	Two (2) 20' x 80' open structures with coverings used for the growing of various crops.
Restrooms and Storage	640 sf	Located on the eastern side of the project site, one (1) 16' x 40' restroom containing one lavatory and one drinking fountain.
Well and Water Storage Tanks		In addition to farm needs, KKOA envisions this well as a backup source of water for the community during periods of disaster/recovery. Water quality, salinity, and other factors will be used to determine if well water is suitable for either potable or non-potable uses. Two 12.5k gallon tanks are included for the storage of water. A booster pump and pressure tank will also be included.
Gravel Parking		Gravel parking on the northwestern side of the project area for approximately 55 stalls.
Grass Parking		Grass parking on the southern side of the project area for approximately 200 vehicles.
Youth Garden	4,800 sf	Forty-eight (48) 10' x 10' plots
Ohana Garden	5,000 sf	Fifty (50) 10' x 10' plots
Mala Lā'au Lapa'au	Various	Gardens for the growing of traditional and native Hawaiian medicinal plants.

Bush Crop	6,400 sf	One (1) 80' x 80' plot for the growing of bush crops. Bush crops are grown to restore nutrients to the soil. Once restored, these beds will be rotated into KKOAs farming rotation.
Root Crop ('Ōlena/Ginger)	8,000 sf	One (1) 80' x 100' plot for the growing of 'ōlena and ginger.
Kalo Beds	6,400 sf	Four (4) 40' x 40' plots for growing kalo.
Kalo Beds	30,000 sf	Twelve (12) 50' x 50' plots for growing kalo.
Niu	4,900 sf	One (1) 70' x 70' plot for growing of niu (coconut).
Mai'a	4,900 sf	One (1) 70' x 70' plot for growing of mai'a (banana).
Papaya	4,900 sf	One (1) 70' x 70' plot for growing of papaya.
Ti	Various	Two groves of ti.
'Ulu	Various	Groves for the growing of 'ulu (breadfruit).

Students and volunteers will continue to utilize the project site for educational and agricultural activities. Future endeavors include the marketing of farm-grown foods to the local community and establishing a weekly Farmer's Market on site. The processing of products would include uncooked kalo, poi, or kulolo, fresh produce (e.g. papaya, niu, 'ulu), medicinal plants (e.g. noni, kukui, 'ōlena), and value-added products (e.g. coconut water, 'ulu hummus, juice, teas).



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2.4 Required Permits and Approvals

Final Environmental Assessment/Finding of No Significant Impact (FONSI), Chapter 343, HRS – The lease of the 10-acre site from the State DHHL has triggered compliance with HRS Chapter 343 with the use of State lands. To assist KKO in fulfilling their license conditions, DHHL and the Hawaiian Homes Commission (HHC) will need to review the environmental assessment for the proposed actions on to the 10-acre site. Upon completion of the HRS, Chapter 343 process and issuance of a FONSI, the EA will be used to support the approval of a long-term license.

DHHL Island Plan Amendment – The Kauaʻi Island Plan (2004) identifies the project area as Residential. The Anahola Regional Plan also identifies the project site as Residential-Proposed. A DHHL Island Plan Amendment will need to be obtained to designate this portion of the site as Community Use. However, because there was a total of 24 acres designated in the Kauaʻi Island Plan for Community Use in this area, during the next Island Plan update, the Land Use Plan will be reevaluated to ensure that there is no net loss of Residential Homestead acreage in the area.

HRS 6E-42 Clearance - Prior to the issuance of a FONSI for the Environmental Assessment, the DHHL will provide the State Historic Preservation Division (SHPD) the opportunity to conduct a historic preservation review of the proposed use and potential impacts to historic properties. The DHHL will initiate the historic review process with SHPD, and follow procedural steps under HAR Chapter 13-284, as deemed appropriate by SHPD.

Other Permits and Approvals - There are other permits and approvals that are categorized as “ministerial” because they do not require approval by the Chairman or Hawaiian Homes Commission. These approvals include a Grading, Grubbing and Stockpiling Permit and Building Permits, which will be obtained in advance of construction. Obtaining a National Pollutant Discharge Elimination System (NPDES) Permit will be completed as necessary.

Project Costs

The project is estimated to cost \$3.75 million.

Section 3

Description of the Environmental Setting, Potential Impacts and Mitigation Measures



Chapter 3

Environmental Setting, Potential Impacts, and Mitigation Measures

The environmental setting, potential impacts, and mitigation measures for the proposed improvements at the project site are discussed in the sections below.

3.1 Climate

Existing Conditions

Average annual temperatures in Anahola range between approximately 71- and 77-degrees Fahrenheit, depending upon the time of day and the season. The average monthly low temperature is 68°F in February and the average monthly high temperature is 76°F. Precipitation in the area is moderately low, with annual rainfall averaging around 42 inches annually – the majority of which occurs during the months between October and January. Wind conditions in Anahola are predominantly in the form of trade winds from the Northeast.

Anticipated Impacts and Proposed Mitigation

The proposed action will have no effect on climatic conditions; therefore, no mitigation measures are required.

3.2 Topography

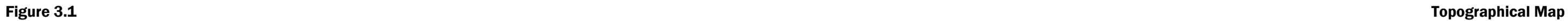
Existing Conditions

The lowest elevation of the project site is recorded at approximately 54 feet above sea level. The project site gently slopes upwards to an elevation of approximately 71 feet above sea level. The project site terrain has relatively flat grades, except where the existing berms and drainage ditches are located (*Figure 3.1*).

Anticipated Impacts and Proposed Mitigation

The proposed action will not have any significant impacts to the overall topography of the 10-acre site. Modifications to site topography are addressed under *Section 3.3 Soils and Grading*.

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3.3 Soils and Grading

Existing Conditions

The Land Study Bureau of the University of Hawaii prepared an inventory and evaluation of the State's land resources during the 1960s and 1970s. Ratings were developed for overall soil productivity, with a rating of "A" very good, to "E" not suitable for agricultural purpose. The majority of the lands comprising the project area are classified as "B" (*Figure 3.2*).

Article XI, Section 3 of the Constitution of the State of Hawai'i requires the State to conserve and protect agricultural lands. Lands can be categorized as "Prime", "Unique", or "Other." The project site is classified as "Prime" (*Figure 3.3*) under the Agricultural Lands of Importance to the State of Hawai'i (ALISH).

Per the U.S. Department of Agriculture, Natural Resources Conservation Service, National Cooperative Soil Survey, the project area is comprised entirely of Lihue silty clay, 0 to 8 percent slopes. (*Figure 3.4*). Lihue silty clay is a dusky-red silty clay that occurs on the tops of broad interfluvies in the uplands. Ruoff is slow and erosion hazard is no more than slight. Permeability is moderately rapid. Natural vegetation on these soils generally consists of lantana, guava, koa haole, joe, kikuyu grass, molasses-grass, guinea grass, bermudagrass, and Java plum. This type of soil is suitable for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.

Anticipated Impacts and Proposed Mitigation

Construction Best Management Practices (BMPs) will be implemented to mitigate potential adverse environmental impacts that may occur as a result of the proposed action. A combination of measures to mitigate potential erosion and sedimentation will be undertaken as appropriate. Primary fugitive dust control methods that will be implemented include the watering of exposed soil areas, grassing, minimizing the amount of disturbed area, and rapidly establishing plant materials. Should dirt be tracked onto the roadway, washdown will be undertaken to prevent fugitive dust formation. Permanent landscaping will help to retain soil throughout the project area and significantly reduce erosion compared to previous agricultural practices. During construction, contractors will utilize erosion control and land-based sources of pollution barrier measures which may include sediment traps, silt fences, dust fences, stabilized construction entrances, and truck wash-down areas, as appropriate to manage sediment discharge.

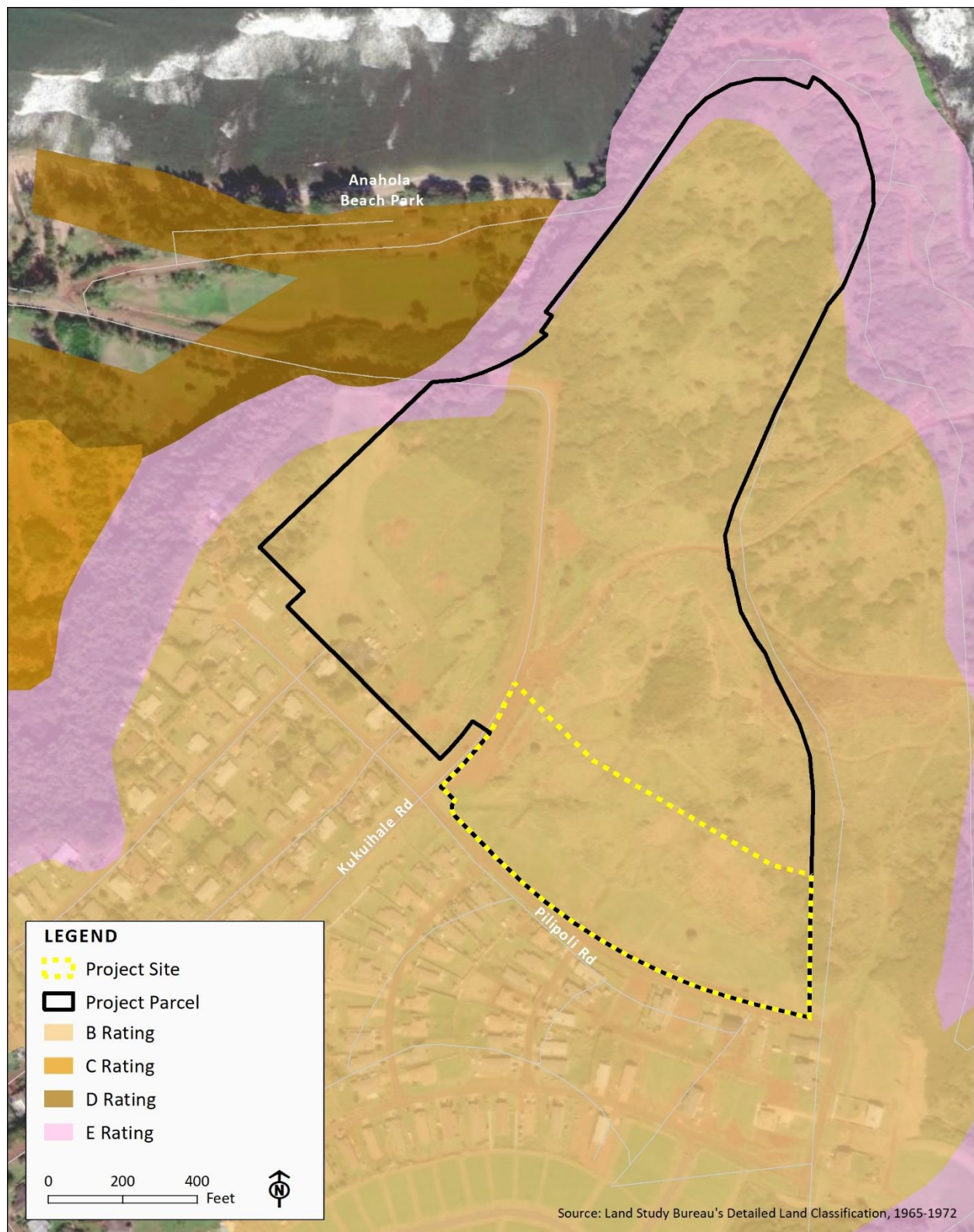


Figure 3.2

Land Study Bureau Overall Agricultural Productivity Rating

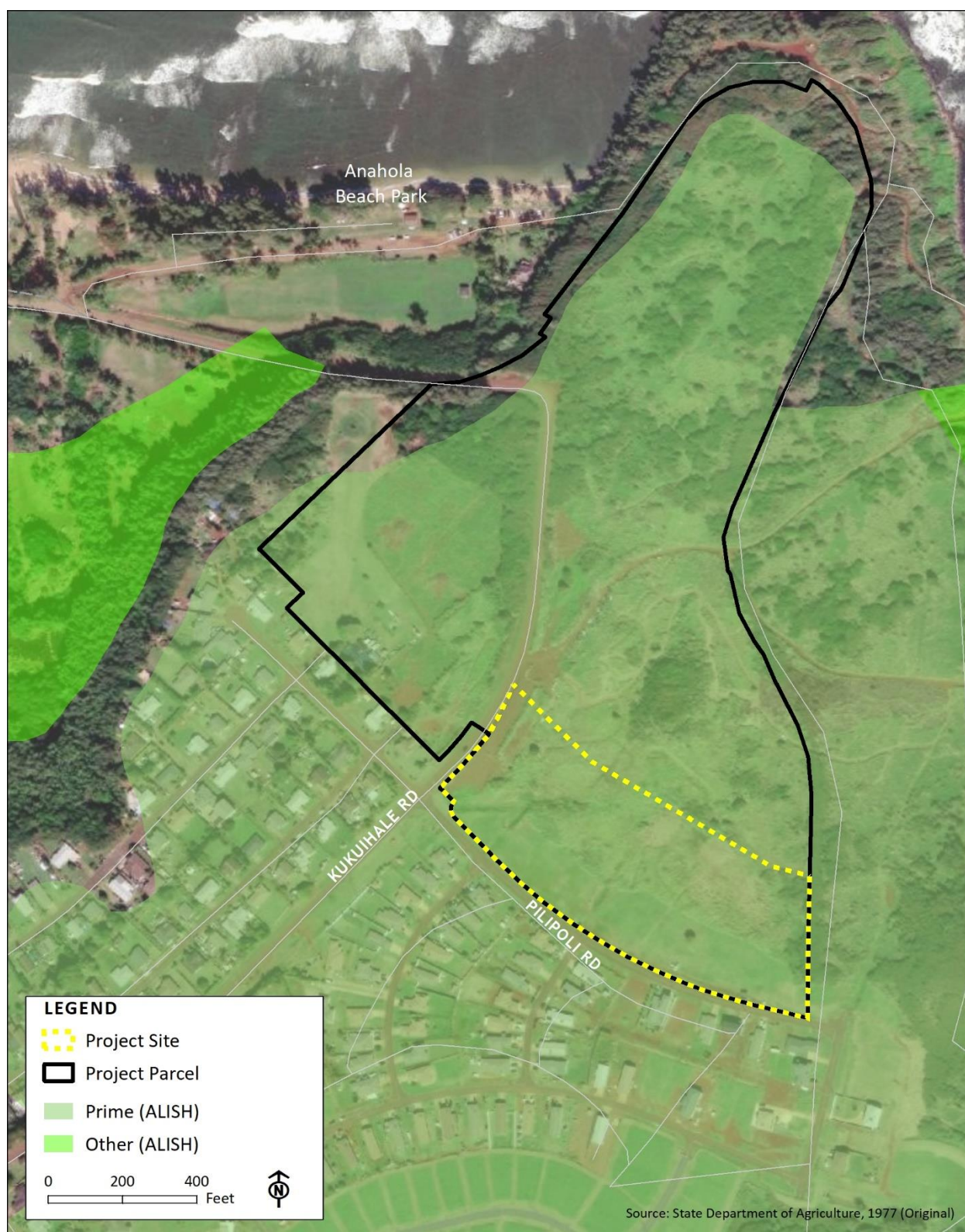


Figure 3.3

Agricultural Lands of Importance to the State of Hawai'i

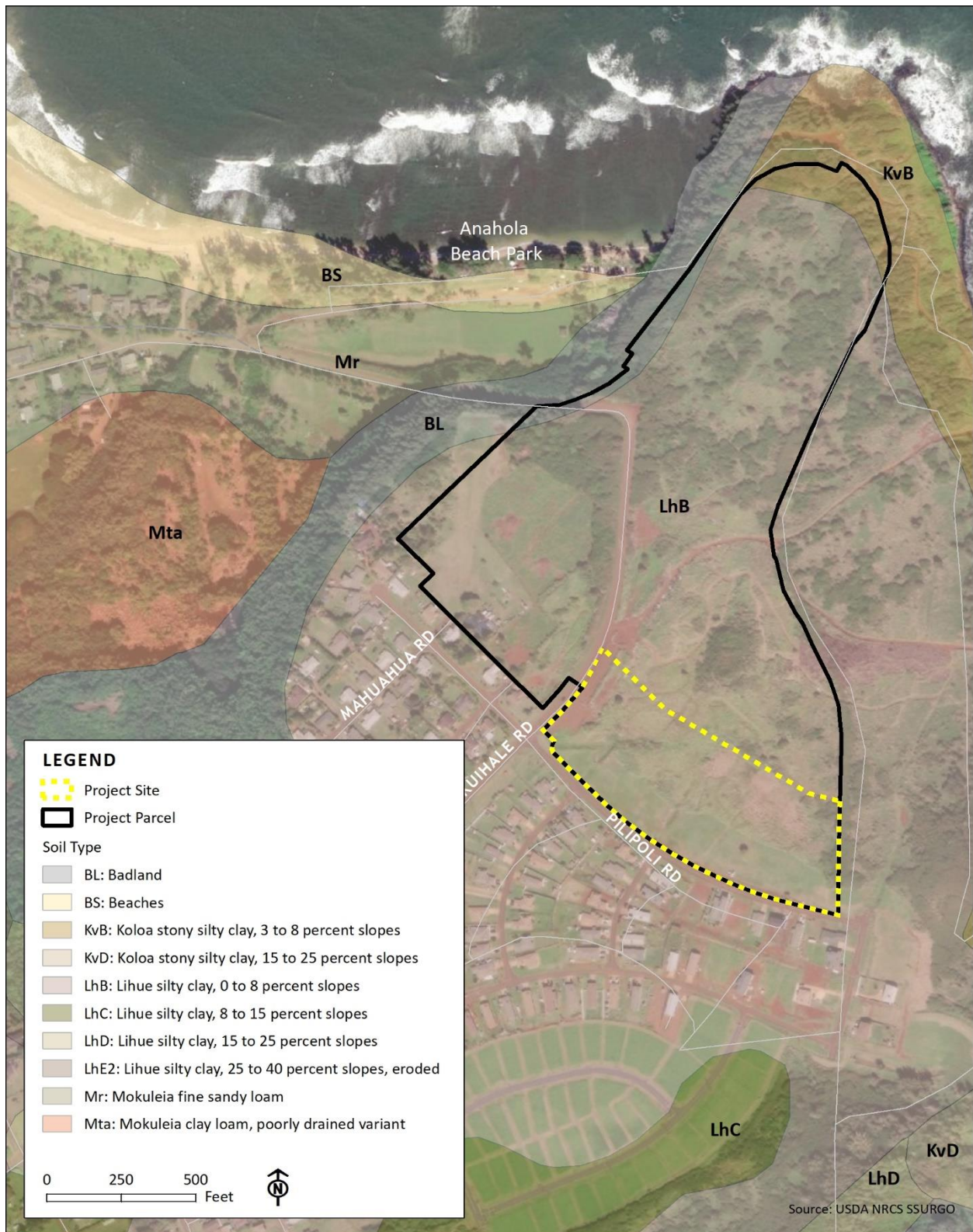


Figure 3.4

Soil Classifications

3.4 Drainage and Hydrology

A *Preliminary Infrastructure Assessment* for Ulupono Anahola was prepared by G70 in July 2022 and is attached in *Appendix A*.

Existing Conditions

DHHL maintains the drainage infrastructure in the project vicinity including one (1) 48-inch culvert and one (1) 24-inch culvert that cross the Pilipoli Road. The culverts discharge runoff generated from the Pi'ilani Mai Ke Kai Subdivision into the drainage ditches on site. These drainage improvements were constructed as part of the subdivision's drainage infrastructure. Offsite runoff collected, conveyed, and discharged onto the site is analyzed in the approved drainage report for the subdivision (Akinaka, 2006). The peak discharge rate Q_2 for the 48-inch culvert is 56.31 CFS, and the peak discharge rate Q_2 for the 24-inch culvert is 11.57 CFS. See *Figure 3.5* for the existing culverts' locations.

Stormwater runoff from offsite is conveyed through the property to downstream in two existing ditches that cross through the property. Runoff generated on the site, flows overland in the makai direction and flows into one of the drainage ways or overland into the property downhill of the site. Existing offsite and onsite drainage basins are listed in the table below.

Table 3-1 Existing Condition Peak Runoff Flow Estimate					
Basin	Description	Weighted "C" Value	Corrected Intensity, in/hr	Lot Area (acres)	Runoff $Q_2 = C*I*A$ cfs
A	Lot left of center swale	0.10	4.26	6.5	2.67
B	Lot right of center swale	0.10	3.84	3.9	1.44

Anticipated Impacts and Proposed Mitigation

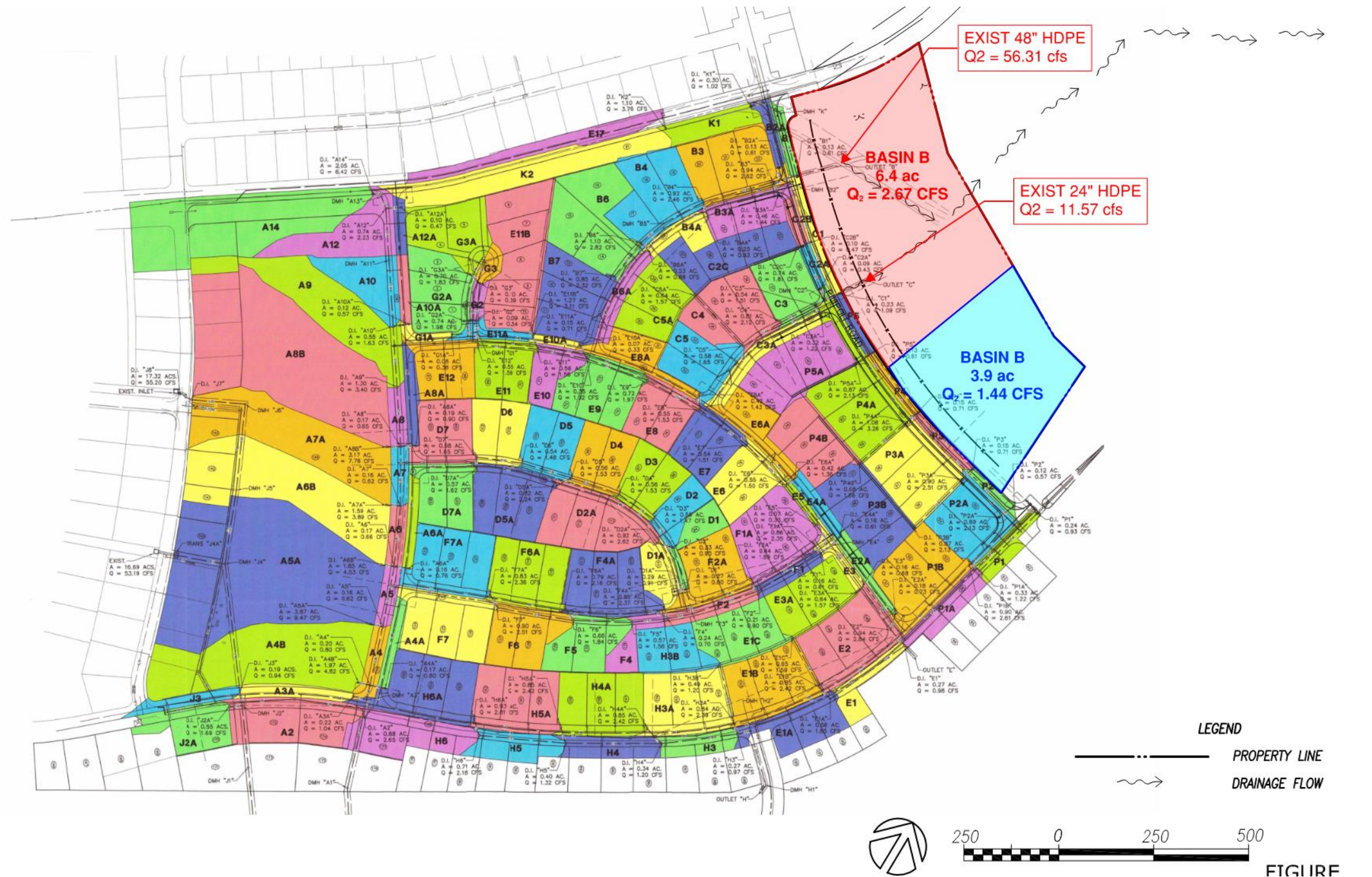
Developed condition hydrology is assessed via the Rational Method as for the existing condition, above. Weighted "C" values accommodate pervious pavement in vehicle accessible areas, roofed areas of proposed structures, and landscaping over remaining area. The proposed drainage basins are shown on *Figure 3.6*.

Site grading will accommodate the proposed development and maintain existing drainage patterns. The existing drainage ditches and culverts will remain and the runoff in the proposed conditions will continue to either sheet flow or drain into the existing ditches. Proposed drainage infrastructure includes three 2-36" culverts and two 5-ft wide, 4-ft deep swales.

The conceptual drainage system and grading are shown in *Figure 3.7*.

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Figure 3.5



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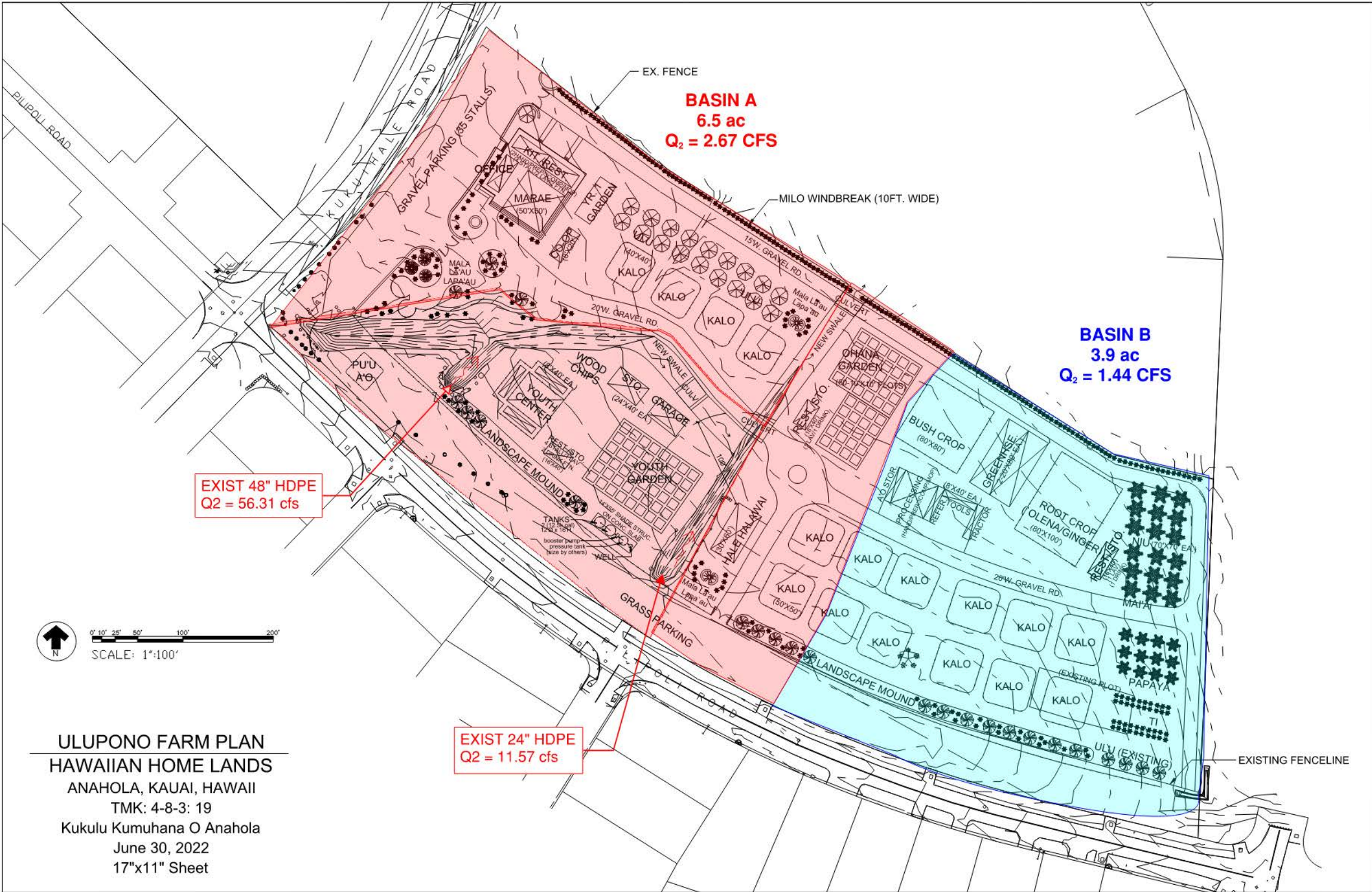


Figure 3.6

Proposed Hydrologic Map

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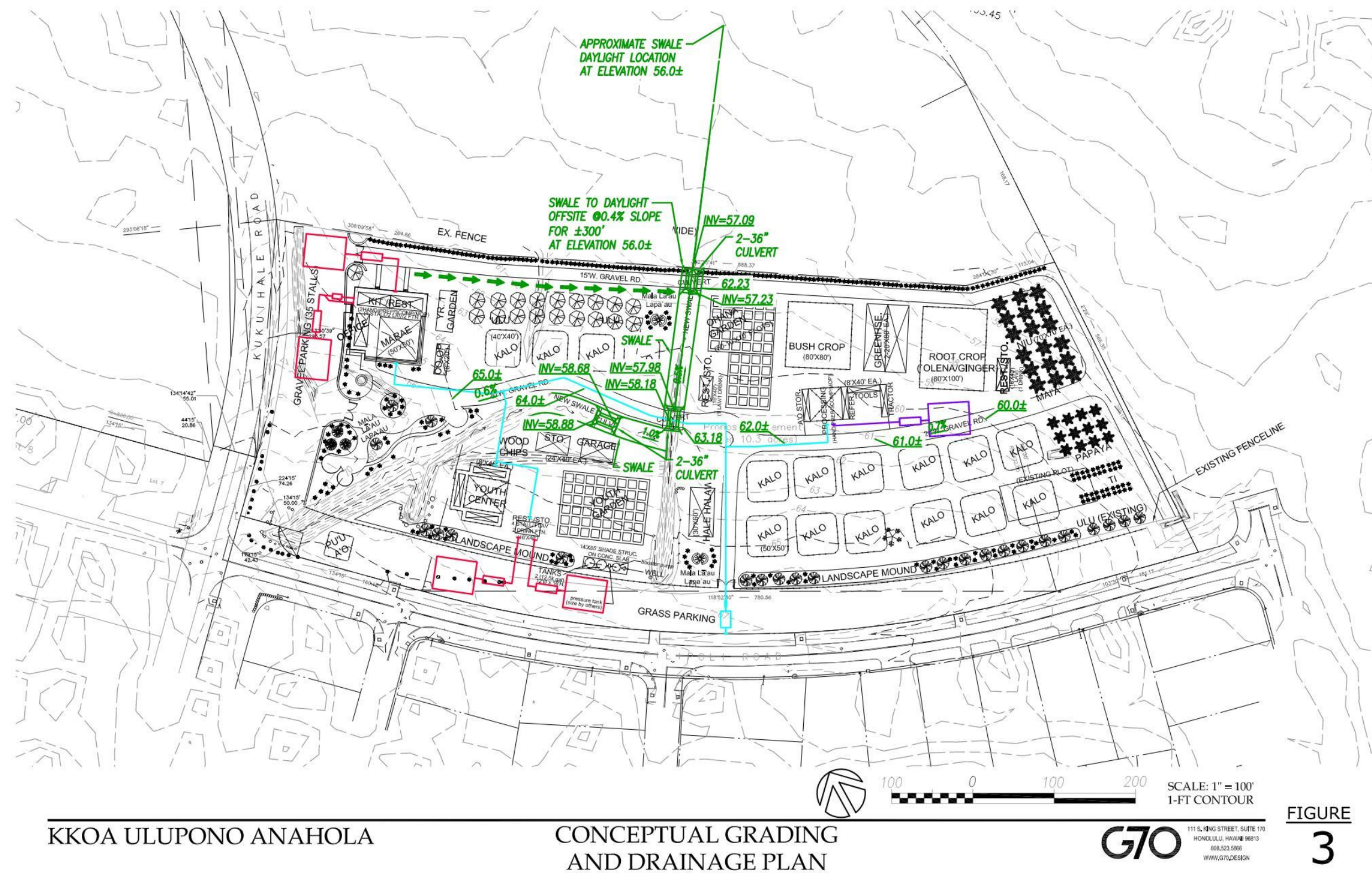


Figure 3.7

Conceptual Grading and Drainage Plan

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3.5 Natural and Manmade Hazards

Existing Conditions

Wildfire

Wildfire is any uncontrolled fire on undeveloped land that requires fire suppression. Wildfires can be ignited by lightning or by human activity such as smoking, campfires, equipment use, and arson. In Hawai'i, 98% of wildfires are caused by people, both accidental and intentional. The potential for significant damage to life and property exists in areas designated as "wildland urban interface (WUI) areas," where development is adjacent to densely vegetated areas. Fires in WUI areas tend to be more damaging than urban structural fires, are often more difficult to control, and behave differently from structural fires. When these fires erupt, people and structures must take priority, often at a devastating expense to natural resources.

Precipitation and vegetative moisture keep wildfire spread and impacts low. However, rainfall patterns across Hawai'i are changing and have led to intense wet and dry pulse events with heavy rains and floods as well as periods of dry and/or drought conditions. During drought conditions, desiccated and dense vegetation can allow fire to spread rapidly. An ignition that occurs during a drier period or drought episode greatly heightens wildfire hazard.

Wildfires are a mauka to makai issue, affecting everything from human safety, infrastructure, drinking water, agricultural production, cultural resources, native forests, watersheds, and coral reefs. Communities can be at high risk of wildfire due to unmitigated fuels, limited community engagement, insufficient water and firefighting resources, and under-addressed pre- and post-fire planning and preparedness.

The Anahola region is a High Risk zone for wildfire (*Figure 3.8*). The project site and adjacent parcels have experienced several historic wildfires, two of which originated from the project site: a 2006 wildfire that burned two (2) acres and a 2008 event that burned 40 acres (*Figure 3.9*).

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COMMUNITIES AT RISK FROM WILDFIRES Island of Kauai

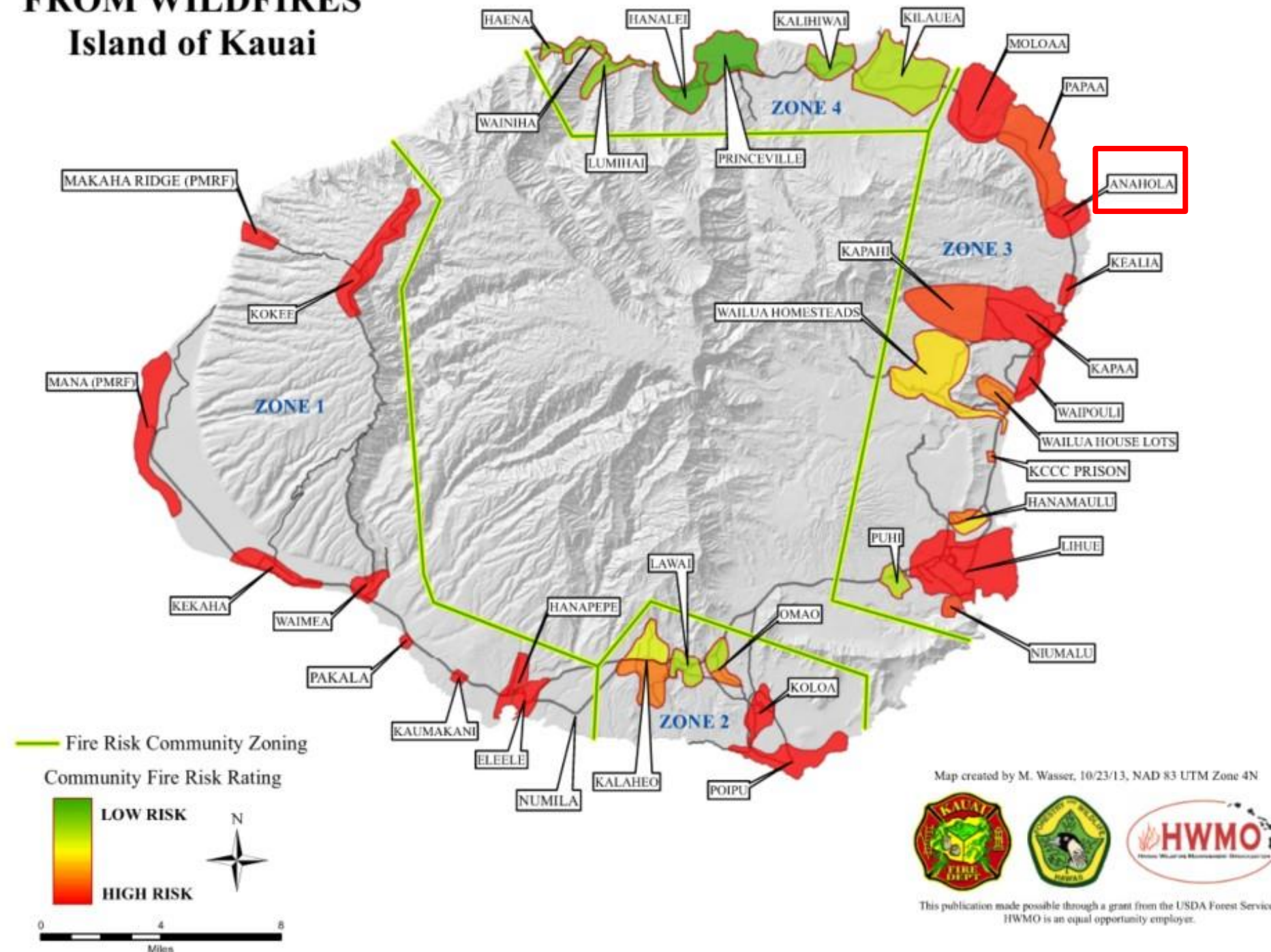


Figure 3.8

Communities at Risk of Wildfires Map (HWMO, 2013)

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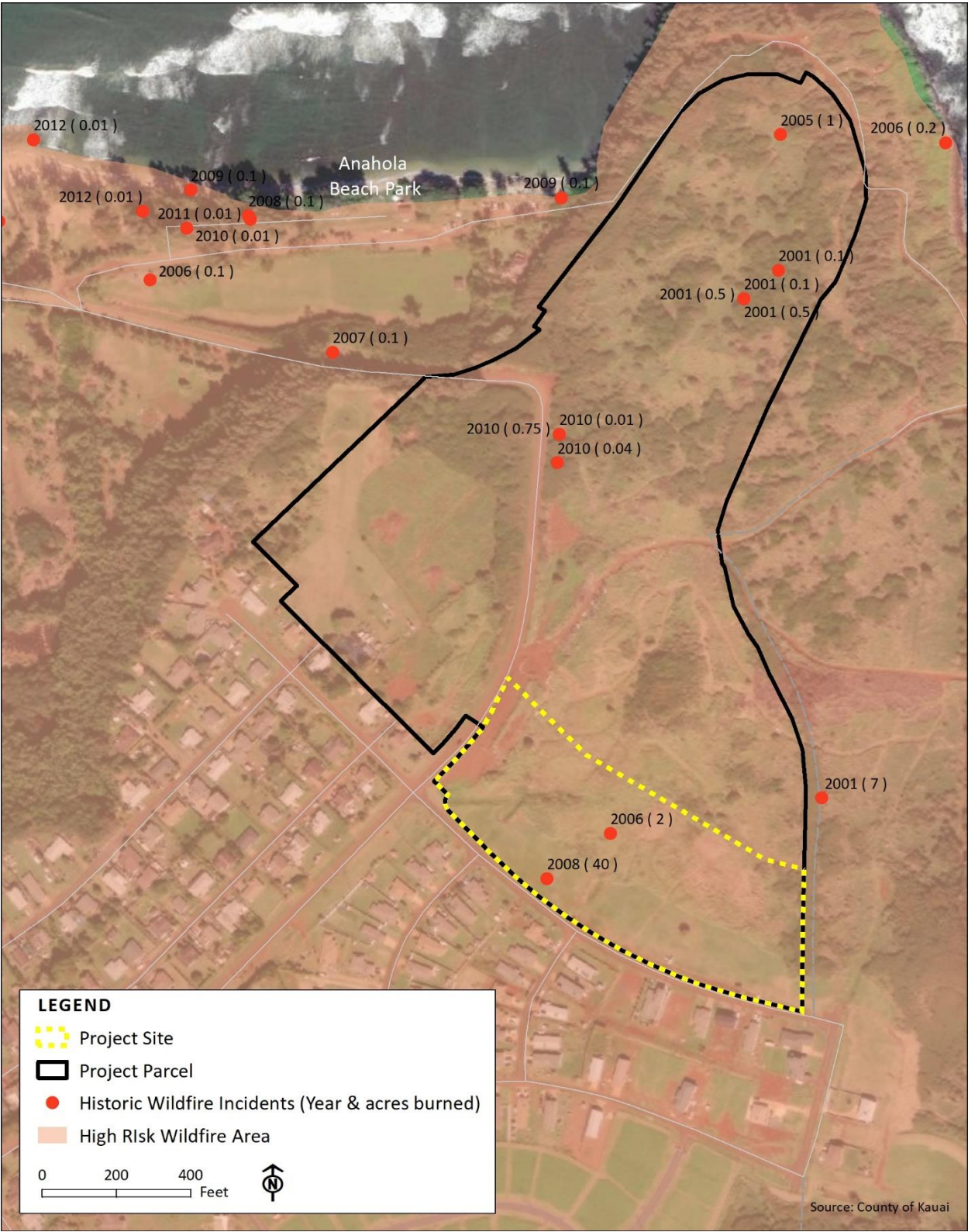


Figure 3.9

Historic Wildfire Incidents

Hurricanes, Tropical Storms, and Other High Winds

The Island of Kauaʻi experiences three types of high winds: trade winds, kona winds, and tropical cyclones. Trade winds are the most common winds over Hawaiian waters, blowing 70 percent of the time from the northeast or east-northeast and generally ranging from 10 to 25 miles per hour. Kona winds are rain-bearing winds that blow over the islands from the southwest or south-southwest. The western sides of the islands become windward during Kona winds, as the trade wind pattern is reversed. Strong Kona winds are most likely when a system with an unusually low pressure is within 500 miles northwest of the islands. Kona storms move erratically with a slow tendency toward the west.

Hurricanes and tropical storms are both categorized as tropical cyclones, which are warm-core storms which originate over tropical waters with well-defined centers of closed surface wind circulation. A hurricane is a tropical cyclone which sustains surface winds of 64 knots (74 mph) or more. Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 39 to 73 mph (National Oceanic and Atmospheric Administration [NOAA], 2015).

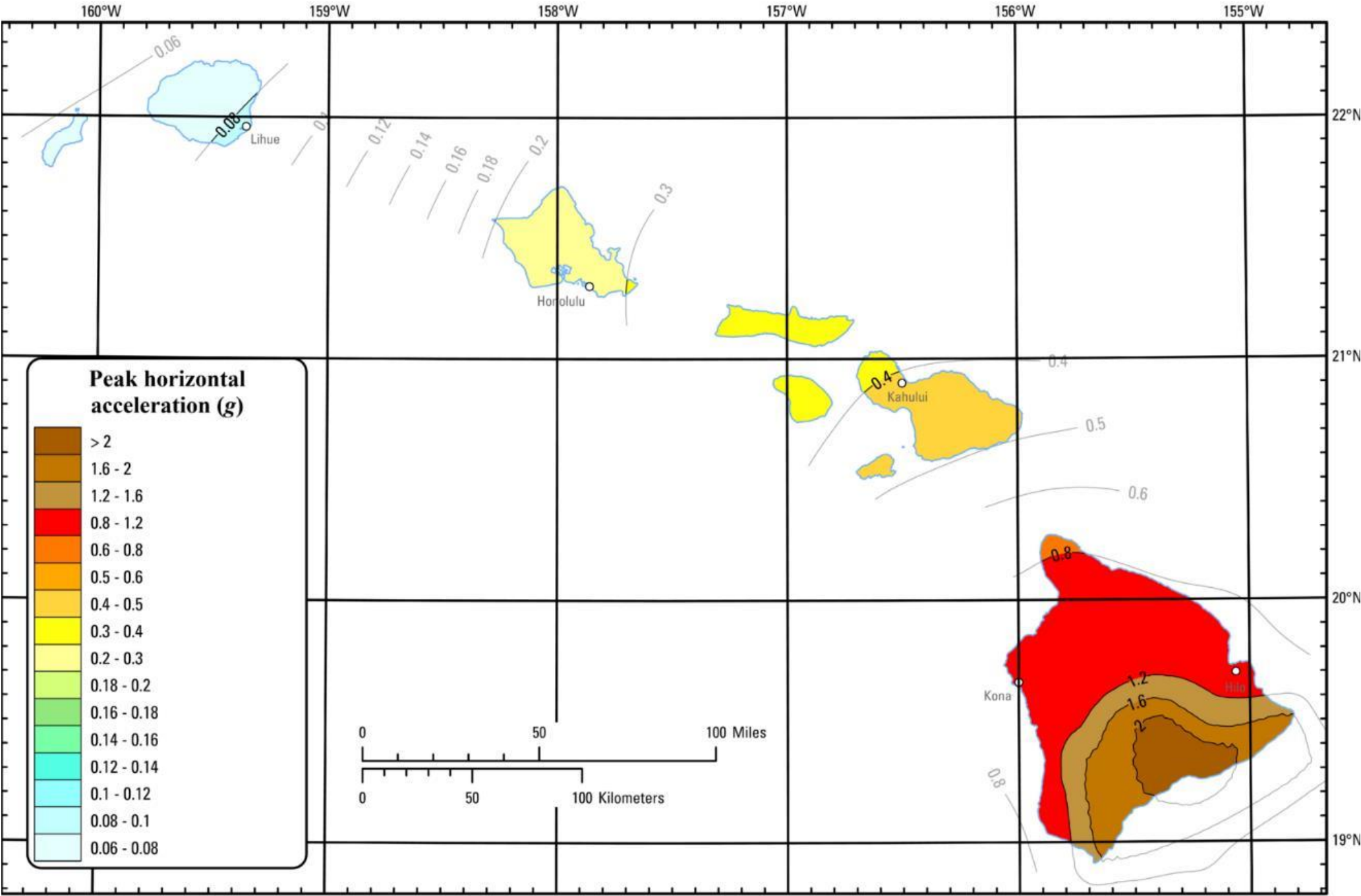
Hurricanes are considered to be relatively rare events in the Hawaiian Islands. Records show that strong wind storms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawaiʻi: Nina (1957), Dot (1959), ʻIwa (1982), Estelle (1986), and ʻIniki (1992). Hurricane ʻIniki was the most destructive hurricane to strike Hawaiʻi in the 20th century, with estimated peak winds over Kauaʻi of between 130-160 miles per hour.

However, with rising global temperatures, Hawaiʻi is expected to experience a higher incidence of tropical storm events. In most recent history, Tropical Storm Olivia made landfall on Maui and Lānaʻi in 2018, causing considerable flooding, power outages, and road and school closures.

Earthquakes

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of the crust, a volcanic eruption, or a volcano mass settling on the ocean floor.

Due to a lack of volcanic activity and historical occurrence of earthquakes, the island of Kauaʻi can expect earthquake activity to be minimal. Based on the 2021 United States Geological Survey (USGS) National Seismic Hazard Model for Hawaii Map, the Project Site could experience up to 0.08 horizontal acceleration (g-force). This represents the higher limits of probable force experienced by the island of Kauaʻi during a seismic event. (*Figure 3.10*).



2021 National Seismic Hazard Model for Hawaii
Peak horizontal acceleration
with a 2% probability of exceedance in 50 years
NEHRP site class B/C ($V_{s30} = 760$ m/s)

Figure 3.10

Seismic Hazard Model for Hawai'i

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Flooding and Tsunami Inundation

The sudden displacement of the ocean floor (earthquakes), landslides, or volcanism can generate tsunamis, which are a series of waves that can reach speeds of up to 600 mph. Upon reaching a coastline, a tsunami can become a wall of water reaching heights of 30 ft or more and capable of moving inland several hundred feet. According to the National Tsunami Hazard Mitigation Program's National Tsunami Hazard Assessment, Hawai'i as a whole is classified as a "high hazard" area for tsunamis. Known major tsunami events on Kaua'i include a 13.7 meter tsunami in 1946 and a 16.2 meter tsunami in 1957. Ports, naval facilities, fishing fleets, and public utilities generally receive the most severe damage in a tsunami. Until debris can be cleared, facilities rebuilt, and utilities restored, communities may find themselves without fuel, food, and employment after a tsunami event.

While the project site is located within the tsunami "Safe Zone", a portion of the project parcel is located within the "Extreme Tsunami Evacuation Zone" (*Figure 3.11*). This designation indicates the Project Site is at least 100 feet away from inland waterways and marinas connected to the ocean. The Project Site is located in Flood Zone X (Area of Minimal Flood Hazard) (*Figure 1.7*).

There are two types of flooding: inland flooding is caused by overflowing rivers and streams or extreme rainfall that causes inundation of urban areas whereas coastal flooding is flooding that results from high surf and storm surge. The County of Kaua'i is susceptible to riverine floods, flash floods, rain bombs, overland sheet flow, and dam failure. The National Climatic Center's Storm Events Database lists 81 flood events for the island of Kaua'i between 2005 and 2020. Major disaster declarations were made for events in 2018 and 2020, where heavy rainfall inundated the north shore of Kauai, causing millions in dollars of damage.

Climate Change and Sea Level Rise

Rapid anthropogenic climate change is a well-established fact within the scientific community. A 2013 study by a University of Hawai'i (UH) team of researchers predicts that tropical regions will experience drastically warmer climates by the year 2047. As a result of climate change, oceans are warming and acidifying, ice sheets and glaciers are melting, and sea levels are rising.

In addition to rising temperatures, sea level rise is a notable concern for coastal communities. Sea level rise has historically driven shoreline changes throughout the Hawaiian Islands. The global annual sea level rise averaged over the last century was roughly two millimeters, with previous studies indicating that this rate is now approaching three millimeters and may accelerate in the coming decades. According to the 2017 Hawai'i Sea Level Rise Vulnerability and Adaptation Report, the sea level in Hawai'i has increased at a rate of 0.6 inches or more each decade over the past century. While predicting future sea level rise is challenging because of unknown parameters, research shows that global mean sea level may rise approximately one foot by mid-century and 2.5 to 3.2 feet by 2100, with some studies showing a possible rise of up to 6 feet. According to recommendations provided in the 2017 report, an appropriate planning target to use in the design of future projects within the exposure area would be 3.2 feet. It is also practical to expect that a hurricane will make direct landfall in Hawai'i under conditions of higher sea levels and that tsunamis will continue to arrive at Hawaiian shores.

According to a 2014 UH Sea Grant College Program report titled, *Climate Change Impacts in Hawai'i – A Summary of Climate Change and its Impacts to Hawai'i's Ecosystem and Communities*, Hawai'i is experiencing climate change impacts in unique ways. It will be increasingly important to focus on the localized impacts of climate change and sea level rise to adequately understand and prepare for the changes to come.

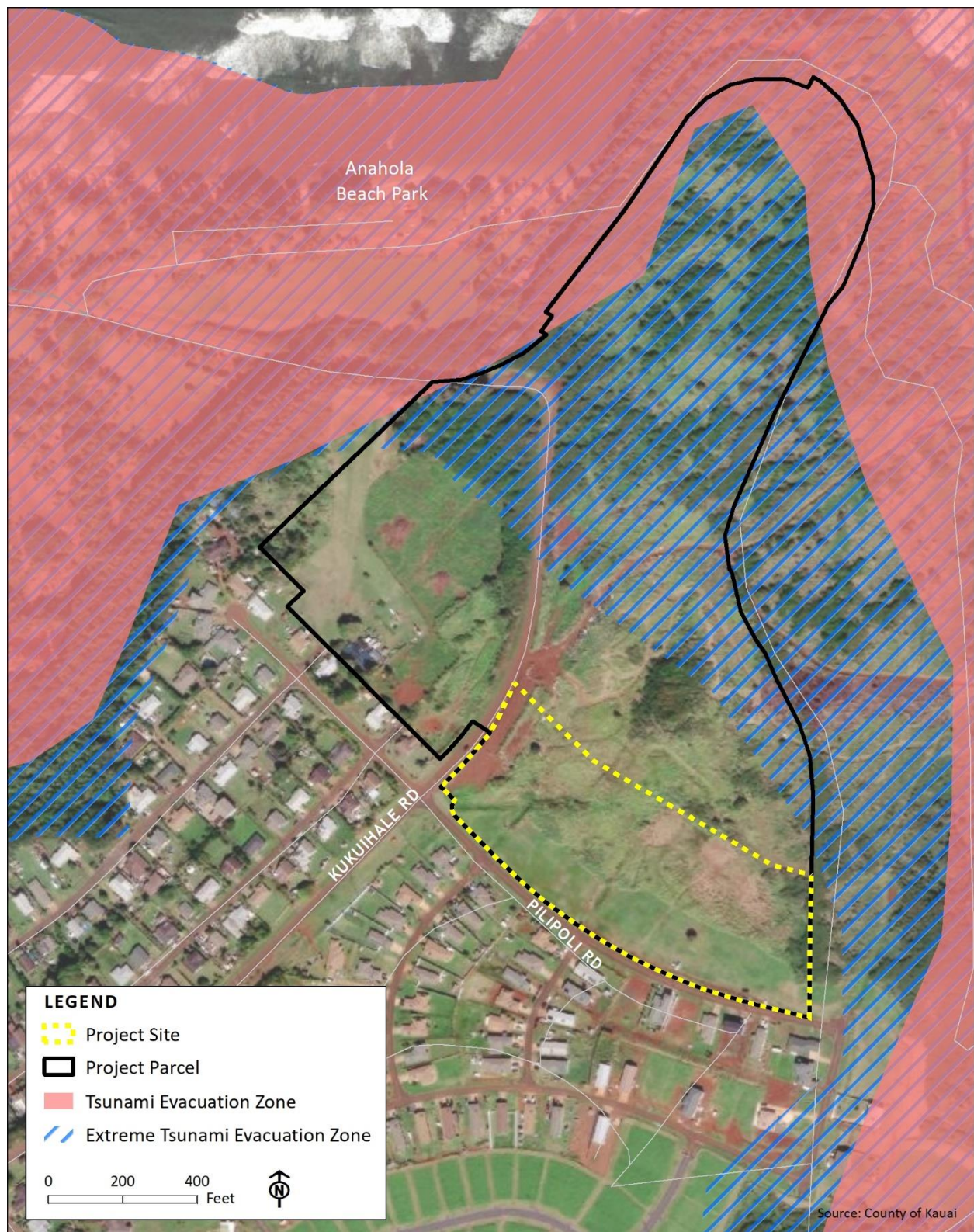


Figure 3.11

Tsunami Evacuation Zones

Anticipated Impacts and Proposed Mitigation

Wildfire

Managing topography, weather, and fuel will dictate the spread and intensity of wildfire. Appropriate best management practices will be implemented to mitigate the increased risk of wildfire ignition. Mitigation measures for wildfire prevention include the minimization of fuel and flammable sources, such as reducing and maintaining flammable materials such as grasses and low-hanging branches.

The creation of multi-use buffers also reduces the spread of wildfire. Buffers can include greenspaces, roads, and hardened surfaces. Kukuihale and Pilipoli roads serve as buffers between the project area and the Pi'ilani Mai Ke Kai homesteads. Certain planned crops, such as banana, are high in water and serve as excellent wildfire buffers. Native plants are typically adapted to their respective environments and will be considered in landscaping.

Firefighting is the last line of defense in wildfire prevention. The project area contains two points of ingress and egress, increasing the effectiveness of evacuation measures and firefighting access. Preparedness, fire-safe design, planning, and education can help a community become fire-resilient with little assistance from firefighters.

Hurricanes and Tropical Storms

The future threat of hurricanes at the site cannot be calculated, although the frequency of hurricane threats may increase with climate change and warming ocean waters.

When a hurricane is approaching a coastal location, early evacuation is usually standard mitigation to address the possibility of accompanying storm surge with high winds. The National Weather Service provides guidance and issues a hurricane watch when a storm is expected to make landfall within 36 hours. The nearest emergency shelter to the project site is Kapa'a High School, located approximately 4.0 miles away. A hurricane warning is issued when landfall is likely within 12 to 24 hours. KKOAA will take cautionary measures in the event a hurricane warning is issued to ensure staff and volunteer members are safe.

Earthquakes

The proposed supporting facilities will be constructed in compliance with regulatory controls to meet County of Kaua'i Building Code requirements as appropriate to IBC seismic probabilities.

Flooding and Tsunami Inundation

While the project site is located within the tsunami "Safe Zone" and within Flood Zone X (Area of Minimal Flood Hazard). A small portion of the project parcel is located within the "Extreme Tsunami Evacuation Zone". In the event of a flood or tsunami, KKOAA will exercise evacuation and safety guidance procedures to ensure the safety of workers and volunteers.

Climate Change and Sea Level Rise

Although the project is not located within an area that is anticipated to be substantially impacted by 3.2 feet of sea level rise, the impacts of climate change may increase the difficulty to cultivate crops. Longer periods of extreme heat and drought could threaten crop yields. Additionally, climate change may increase the prevalence of harmful pests and parasites. Changes in temperature and precipitation may require changing the types of crops planted, dates of planting and harvesting, and pest management practices. The proposed action is not anticipated to contribute to additional greenhouse gas emissions associated with long-term climate change. Rather, the proposed action will continue to allow for sustainable agricultural and farming practices, contributing factors in mitigating climate change.

3.6 Flora and Fauna

Existing Conditions

A biological survey of the project site was completed by G70 staff on January 20, 2022. This survey was intended to identify the botanical, mammalian, and avian species present at the site, characterize, and map the dominant vegetation, identify any the presence of any species listed as threatened or endangered under the federal Endangered Species Act (ESA) of 1973. The results of this survey are summarized below.

Flora

The botanical survey did not identify any species of plants listed as threatened or endangered. Vegetation at the project site was characteristic of a highly disturbed area and consisted almost exclusively of nonnative species, primarily naturalized grasses and groundcovers (*Figure 3.12*). The site can be characterized as a disturbed grassland. Dominant vegetation is comprised of guinea grass (*Urchloa maximus*) with dropseed (*Sporobolus* sp.) occurring periodically throughout. Other vegetation commonly found at the site include bracted fanpetals (*Sida ciliaris*), false ragweed (*Parthenium hysterophorus*), upright indigo (*Indigofera suffruticosa*), creeping indigo (*Indigofera spicata*), partridge pea (*Chamaecrista nictitans*), cow pea (*Macroptilium atropurpureum*), obscure morning glory (*Ipomea obscura*), swollen fingergrass (*Chloris barbata*), crab grass (*Digitaria* sp.) and koa haole (*Leucaena leucocephala*),

A total of 37 species of plants were identified during the survey. Of these, only two are considered native; 35 (94.5%) are naturalized, introduced species. The two identified native plants were 'uhaloa (*Waltheria indica*), an indigenous species which is rare throughout the site, and tī (*Cordyline fruticosa*) a Polynesian-introduced species which is part of the landscaping.

The southern portion of the project site along Pilipoli Road (parking area) contains a mixture of low-growing, herbaceous plants and grasses. Dominant species include bracted fanpetals, false ragweed narrow-leaf plantain (*Plantago lanceolata*) and crab grass. The western side of the project site along Kukuihale Road is primarily dirt with sparse guinea grass and other vegetation. Two earth berms are located in the western half of the site; one running parallel to Kukuihale Road, and the other running parallel to Pilipoli Road. The berms in this area contain the Mexican poppy (*Argemone mexicana*), which is found nowhere else at the site. Also growing on the berms are the obscure morning glory (*Ipomea obscura*), and littlebell (*Ipomea triloba*). The area between the two berms includes a small patch of castor bean (*Ricinus communis*) and a stand of koa haole covered by cow pea vines. Partridge pea (*Chamaecrista nictitans*), upright indigo, and prickly sida (*Sida spinosa*) also populated this area.

A dirt area directly south of the berm the runs parallel to Pilipoli Road was sparsely vegetated with upright indigo and obscure morning glory. Behind this berm to the north is a large area dominated by guinea grass. Immediately south of the dirt area the vegetation is a patchy mixture of grasses and herbaceous groundcovers. Species growing in this area include swollen fingergrass (*Chloris barbata*), sensitive plant (*Mimosa pudica*), blue vervain (*Stachytarpheta dichotoma*), obscure morning glory, false ragweed, crab grass, and bracted fan petals.

The eastern half of the site returns to grassland dominated by guinea grass and dropseed. A single mature Java plum tree (*Syzygium cumini*) stands among the grass. A few smaller Java plum trees are located in a small stand along the northern fence and another stand of koa haole borders the eastern boundary and northeastern corner of the project site.

Small improvements to the site include the addition of several young plumeria trees (*Plumeria sp.*), bromeliads (*Vriesea sp.*), tī leaf (*Cordyline fruticosa*), and a patch of Cuban oregano (*Plectranthus amboinicus*) which comprise the landscaping at the southwest corner and along the fence to the south. A large area of the grassland at the southeast end of the project site appears to have been recently mown and a small farming plot has been established with kalo (*Colocasia esculenta*) plantings.

Fauna

No mammalian species were observed during the survey and only a few species of avifauna were present. Species of birds encountered include the introduced cattle egret (*Bulbulcus ibis*), chicken (*Gallus gallus domesticus*), and the native nēnē (*Branta sandvicensis*).

Most notable of the observed avian species was the nēnē, a species of goose found only in Hawai‘i. Fossil evidence suggests that the historical range of the species throughout the island chain was much greater than what was observed after the first European contact in 1778. The severe decline in nēnē populations is believed to be due to early Hawaiians and non-Polynesian settlers who hunted them for food until a ban was passed in 1907.

The US Fish and Wildlife Service listed the nēnē as endangered under the ESA in 1967. Several factors threatening nēnē population levels were later identified in a Recovery Plan for the species. These factors included “predation by introduced mammals, insufficient nutritional resources..., limited availability of suitable habitat, and human-caused disturbance and mortality.” In 2019 its status was officially “downlisted” (reclassified) to threatened after wild populations demonstrated persistent recovery. Kaua‘i is home to one of the strongest self-sustaining populations.

Nēnē are terrestrial birds preferring habitats of dryland forest, scrub, and grassy shrublands such as those existing at the project site. Approximately four individuals were encountered on site, with two believed to be an actively nesting pair. While no nests were detected, the geese believed to be a nesting pair displayed aggressive guarding behavior when surveyors approached an area located at the eastern edge of the uncleared grass field near the location of the large Java plum tree.

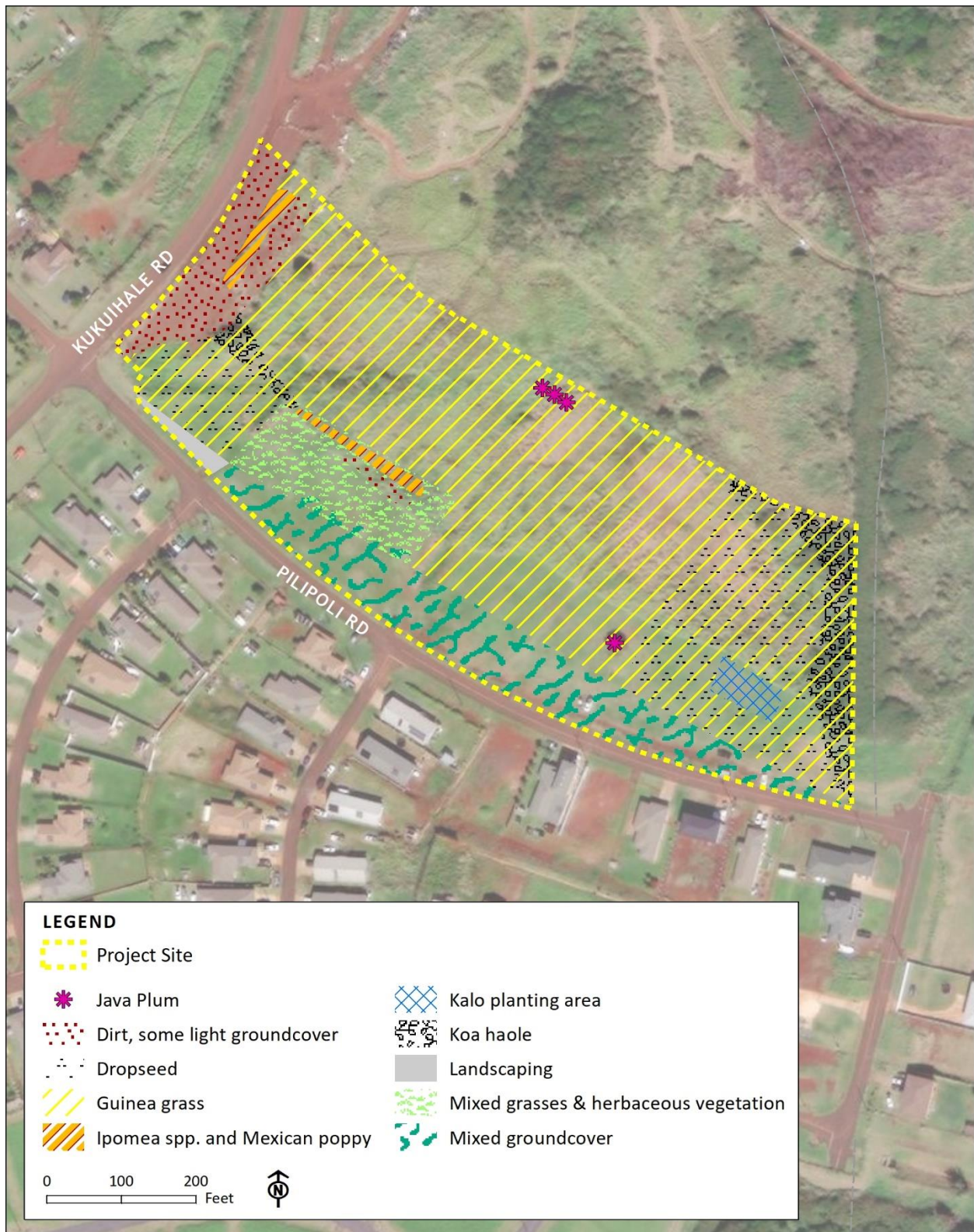


Figure 3.12

Dominant Vegetation Communities

Anticipated Impacts and Proposed Mitigation

The proposed project would require the removal of much of the current vegetation from the project site. However, the site is comprised nearly entirely of non-native species and dominated by introduced invasive grasses. ‘Uhaloa, the only indigenous plant species present on the site, was rarely encountered although it is common on Kaua’i. As no rare or endangered plants were identified from the site, the project activities are not anticipated to constitute a significant adverse effect to the flora.

According to a February 22, 2022 comment letter from the U.S. Fish and Wildlife Service there is potential for the Hawaiian hoary bat, Hawaiian seabirds, and Hawaiian waterbirds to appear in the project area. To avoid and minimize impacts to the Hawaiian hoary bat, woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the birthing and pup rearing season (June 1 through September 15). To avoid and minimize impacts to Hawaiian seabirds, outdoor lighting will be fully shielded. Furthermore, all outdoor lights will be turned off when human activity is not occurring in the lighted area, and/or automatic motion sensor switches and controls will be installed on outdoor lighting. Nighttime construction will be avoided during the seabird fledging period (September 15 through December 15). To avoid and minimize impacts to Hawaiian waterbirds, reduced speed limits will be implemented in areas where waterbirds are known to be present. It is recommended that a biological monitor conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. The surveys should be repeated again within 3 days of project initiation and after any subsequent delay of work of 3 or more days. Appropriate Best Management Practices will be implemented if water resources are located within or adjacent to the project site.

The project site is not located in designated Critical Habitat for the nēnē or any other listed species, however, recognizing the limited availability of suitable habitat, and the nēnēs’ established presence and use of the site as a nesting ground, the project should include a component of habitat preservation and/or improvement (i.e., converting non-native grassland to native species consistent with nēnē preferred habitat). Under the ESA section 4(d) rule pertaining to the downlisting of the nēnē, “range expansion and management flexibility” are to enhance the conservation of the species. Significant disturbances and development of the project site should not take place during the fall and winter months as this is breeding and nesting season for the species.

3.7 Historical and Cultural Resources

A Cultural Impact Assessment (CIA), including archival research and ethnographic surveys of Anahola residents, was conducted by Nohopapa in May 2022. See *Appendix B*.

Existing Conditions

As previously discussed in *Section 2.1*, Anahola is historically known for its natural resources. It was traditionally and historically used as forested and agricultural land. Ranching, rice farming, and sugar production transformed the landscape in Anahola from the 1800-1900s. With the closure of the last plantation in 2000, small towns like Anahola, dependent on plantations, have experienced economic difficulties.

As part of the CIA, individuals with traditional or historical knowledge of Anahola were contacted for interviews to document their historical connections to Anahola and document the visions they have for this place. Generally, the kama’āina that participated in the interviews acquired their knowledge about the Anahola ahupua’a through growing up in the area, personal experience and observations,

and/or knowledge from written sources. Additionally, they acquired their knowledge from older family members who passed on personal, historical, and/or genealogical information about Anahola and/or from other individuals outside their family. Some individuals acquired their knowledge from written sources or from other individuals outside their family. Four individuals were interviewed: John Ka'ohelaui'i, a DHHL Anahola resident and community educator using kōnane; Kevin "Bear" Kaleiohi, a mahi 'ai (farmer), lawai'a (fisherman), lineal descendant, and resident of Anahola; Nalani Kaneakua, a lineal descendant, lifelong resident, lawai'a, and Director of the Ko'olau Limu Project; and Kahanu Keawe, Kumu at Kanuikaponu Charter School.

Most significantly in terms of both mo'olelo and cultural sites, three (3) interviewees mentioned the existence of remnants of a heiau referred to as 'Aikanaka. Particularly, a large stone feature adjacent, across the road (Kukuihale), to the project area that were probably part of the 'Aikanaka complex. Uncle John and Aunt Nalani both mention 'Aikanaka in relation to the famous Kaua'i tale(s) of Kawelo. Aunt Nalani made sure to include mention of 'A'ahoaka, a paramount mo'olelo that carries much of the genealogical knowledge and cosmogonic information about how land features in the Ko'olau moku were conceived and named.

Each interviewee adds their observations made over their lifetime, about the project area historical plantation use and then falling into disarray. Bear recalls, "[the project area was] pretty much just used as one dump, for years people have been dumping cars on this site over there, and in the back roads, and just trash, and not mālama. Everybody was just dumping and not caring about the place. And I'd like to see more, more people taking pride, and taking care of the 'āina." Makai (seaward) of the project area, even during the time that the land was used for sugar, those trails and backroads were access points for fishers. "My father always used to tell me that back roads over there from Kahala Point to the back was always the ice box. That's where all the kūpuna would go. Even in the bay, they all fish all through these backroads over here. Anahola was known as an Akule Bay. Always surround Akule and the community always did get, come and help take out fish and everybody take fish home, you know?", adds Bear. When he first moved to Anahola in 1991, Uncle John says he did a lot of fishing when he first moved to Anahola, using backroads to Kahala, he says "I did a lot of fishing in that area. That was one of the ways that I would feed my family was fishing and picking limu." Bear considers Anahola to be a fishing and farming "village", and the farming of kalo in the Anahola river valley contrasts the bounty of Anahola's fishery. "We would know the direction like, oh, the winds are coming from Malanai, or the winds are coming from Ko'olau or the winds are coming from Kona. You know, just the general wind direction." Interviewees list common fish and limu species known to be in the makai area of Ulupono Project Area: Kala, Āholehole, Uhu, Uouoa, Manini, Akule, Limu Kohu, Limu Kala, Limu Lipoa, Limu Kahili, Limu Pepeiao, among others. As far as known water resources / sources are concerned, all three interviewees noted that if there were historical 'auwai or springs in the project area that it would have been destroyed by the plantation(s). To their knowledge there are no water resources, springs, streams in that project area that would be impacted by development.

The effects of sugar-use had left the project area degraded, as Aunt Nalani states: "The land was pretty much bulldozed and left barren from the farming [of the plantation]." But, she is sure that natives did once flourish in that area as evident from the shorelines still boast "'ākulikuli, koali; the morning glory, and the naupaka," amongst the introduced trees and plants like pine (Ironwood) "that was introduced because it would be for wind break.

Uncle John specifically points out the presence of Nēnē and Pueo which he has seen in the project area and the surrounding area. However, he is not concerned with the development. In fact, he believes that the clearing and cleaning of the project area, and subsequent farming, will possibly provide an improvement to the quality habitat and safety of Pueo – in comparison to illegal dump sites

and surrounding community. Uncle John has a suspicion that human impacts pose a more dangerous threat to native wildlife, such as Pueo (e.g. mouse/rat poisons and brush fires).

Anticipated Impacts and Proposed Mitigation

From previous documentation, we know there have been over 100 years of modification to the landscape from plantation from both sugar and pineapple within the project area. According to Hammatt (2005:2) ‘Aikanaka Heiau, recorded by Bennett as destroyed and marked by a large boulder, is located approximately 2000 feet north of the project area. As ‘Aikanaka Heiau lies outside the boundaries of the current project area, no efforts were made to relocate or document it. Any future action near this heritage landscape outside the parameters of the study area should be considered.

Interviewees believe that mitigating impacts to the project area and areas adjacent require continuous effort to gather and implement the knowledge and wisdom of the kūpuna, the kupa‘āina, and folks who are willing to provide feedback from their lived experiences of the area. In terms of potential impacts to cultural resources and practices in the project area, interviewees do not believe significant impacts will occur – with the knowledge they have that if there were landscapes and uses occurring there at one time that plantation agriculture would have been destroyed completely. All interviewees express their support of the Ulupono Project, they also believe that a concerted effort should be made to mitigate run-off and environmental impacts of the construction of the site on nearby resources – especially the marine resources spatially connected to the project area.

Bear recommends, “I would like to see the land be utilized more for like cultural practice, like farming taro. Maybe farming ‘awa you know. Stuff that can be utilized for the people, you know, maybe some lā‘au, native Hawaiian plants that are used for medicine.” Kahanu mentions that there may be some concerns within the community about access, especially to the shoreline, as the “backroads” of Anahola are somewhat connected and used by fisherman. Three interviewees mentioned that they don’t know of any oli, mele, hula connected to the project area, specifically, but express the potentiality of uncovering more tied to the general area – along with forgotten inoa wahi – as an added benefit of building community around spaces like Ulupono and Kanuikapono Charter School.

Uncle John knows that Ulupono can be a space if the community works on it collaboratively, that will incubate ideas and practices for sustainability. He says, “we are gonna move to, this type of economy, a different type of world. And so we need to be more self-sufficient as much as possible and better to be self-sufficient with, with and amongst ourselves, rather than having people coming in with different ideas that may not be culturally appropriate, or may, may not culturally mesh well, what we have what our resources in. He uses kōnane as a way to explain this: he says that kōnane is a game of resources. In kōnane you identify and then manage resources responsibly, that is the goal. On a map, he says, Ulupono may just be a TMK number but as it gets developed Ulupono can be that viable resource and make positive impacts. Kahanu says the Anahola community can be diverse, and disagreement between individuals and groups will be commonplace. She recommends engaging and informing the community about what’s happening.

Considerations within the parameters of this study include the management of water that comes from culvert and ditch. Based on material, condition, and location, a culvert located on the mauka west corner of the property is likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s. A ditch with the swale is likely the wastewater from the plantation that dumped into the property. From previous interviews, we learn about noted practices outside the current project area, specifically in Anahola Bay, such as akule fishing and shark/‘aumakua feeding. Current interviews also share the value of the marine resources in Anahola Bay such as limu. As expressed by interviewees, a concerted effort should be made to mitigate run-off

and environmental impacts of the construction of the site on nearby resources – especially the marine resources spatially connected to the project area.

3.8 Archaeological Resources

A Literature Review and Field Inspection for the KKOA Ulupono Anahola Project was completed in May 2022 by Nohopapa Hawai'i, LLC. See *Appendix C*.

Existing Conditions

There are no previous archaeological studies associated with the project area, however, there are a few archaeological studies in the project vicinity. Bennett (1931) noted Aikanaka Heiau at Anahola point as destroyed with Ota (1985) finding no evidence of heiau, confirming their destruction. Rechtman & Dougherty (2001) found one pre-contact agricultural soil layer in subsurface context, and no above-ground historic properties were identified. No historic properties or cultural materials were identified by Hammatt (2005).

Based on all available background research evidence, the project area has been completely transformed by mechanized plantation agriculture: both sugar cane and pineapple operations took place during the Historic period, and well into the middle-late twentieth century. Previous archaeological studies indicate there are unlikely to be any undisturbed ground surfaces or subsurface deposits dating from the pre-Contact or historical eras in the project area. One indication of this comprehensive transformation of the entire landscape is the near-complete absence of any rocks on the ground surface: clearing and removal of rocks was one of the first tasks that would have been carried out by plantation workers in order to maximize planting and harvesting activities, while also gathering raw material for building and construction projects (e.g., irrigation ditches, sluice gates and culverts).

Nohopapa Hawai'i, LLC completed the fieldwork component of this study under Archaeological Permit 18-22, issued by the SHPD pursuant to HAR §13-13-282. Field survey consisted of a surface pedestrian survey to assess if historic properties were located within or in the immediate vicinity of the project area, and if present if they might be impacted by the proposed project.

Two field crew members used approximately 20 foot transects starting from the northern makai edge of the property. Due to thick tall grass and some trees the remaining 5% of the project area was visually inspected from close proximity and 100% photo documented in order to record current conditions and assess the presence of historic properties. Open subsurface excavations for irrigation ditches were inspected and documented during the field inspection and a uniform, singular sedimentary deposit typical of sugar cane cultivation noted (Figure 22-23). No historic properties were identified.

Anticipated Impacts and Proposed Mitigation

Per Hawai'i Revised Statutes (HRS) 6E, "Historic Preservation" and Hawai'i Administrative Rules Title 13 Subtitle 13 Chapter 300, "Rules of Practice and Procedure Relating to Burial Sites and Human Remains" as well as the National Graves Protection and Repatriation Act (NAGPRA) it is important to note that the project proponent is legally obligated to stop work immediately and report to SHPD and DHHL any historic properties, including iwi kūpuna (Native Hawaiian ancestral remains) and human remains from other ethnic groups, located during construction/ground disturbing activities associated with the proposed project. Shall any historic properties or iwi kūpuna are found, construction and ground disturbing activities will be halted immediately and the SHPD and DHHL contacted.

3.9 Socioeconomic Characteristics

Existing Conditions

The Project Site is located within Census Tract 9400. Data taken from the 2020 Census reports that Census Tract 9400 has a population of approximately 4,163, approximately 5.67% of the population of Kaua'i County. Approximately 1,042 individuals within Census Tract 9400 identify as Native Hawaiian or Pacific Islander alone, comprising 14.3% of those who identified as such in Kaua'i County. A total of approximately 1,444 households have been identified within Census Tract 9400, approximately 4.7% of the households in Kaua'i County. An estimated 13% of those in Census Tract 9400 speak a language other than English, with Asian and Pacific Island languages most prevalent among this group. The median household income for Census Tract 9400 is \$69,135 and an estimated 13.7% of the population is below the poverty line.

Anticipated Impacts and Proposed Mitigation

The Proposed Action supports restorative operations and is not anticipated to adversely affect the residential population of the area. The proposed facilities to support program operations are not expected to adversely affect the natural character of Anahola. There are no permanent residential units being developed in conjunction with the proposed facilities to support program operations, therefore the planned improvements will not affect land and housing speculation, property values of area homes, or affordable housing in the area.

3.10 Visual Resources

Existing Conditions

The project site is located in Anahola. The area boasts unique scenery and outstanding natural beauty. From the corner of Pilipoli and Kukuihale Roads, Kalalea Peak can be seen to the northwest, with views of the Pi'ilani Mai Ke Kai homestead to the west, and vistas of the Pacific Ocean to the south and east (*Figure 3.13a to 3.13c*).



Figure 3.13a

View of Kalalea to the Northwest



Figure 3.13b

View of Project Site and Pacific Ocean to the West



Figure 3.13c

View of Pi'ilani Mai Ke Kai Homestead, Looking South

The 10-acre site is notable for its rural characteristics and for maintaining natural resources and open space in Anahola. Local planning guidelines and objectives uphold the importance of maintaining the character of the area, as well as protecting open space while supporting new development that reinforces the local culture and community.

Anticipated Impacts and Proposed Mitigation

The proposed facilities to support operations will be compatible with the natural landscape and the area's existing visual qualities. The proposed facilities will not alter the existing characteristics of the area, nor will they further reduce the visual quality of the area. Views of Kalalea will not be adversely altered by the proposed action.

3.11 Utilities

Existing Conditions

Water

An 8-inch diameter potable water main (owned by the Kaua'i Department of Water) runs along Pilipoli Road. There are two Type "B" water meter boxes sized for 5/8-inch and 3/4-inch fronting the site on Pilipoli Road. These two meters had been conditionally approved by DHHL in 2021, to supply demand for the development of the site.

Wastewater

There is no municipal wastewater service to the project site or to the adjacent subdivision (Pi'ilani Mai Ke Kai Subdivision). The subdivision currently operates on IWS (Individual Wastewater System) with septic systems. There is no wastewater treatment facility within the vicinity of the site.

Fire Protection

There is currently no fire protection for the project site.

Anticipated Impacts and Proposed Mitigation

Water

Potable water peak demand and irrigation non-potable water peak demand were estimated using plumbing fixtures specified in the “2012 Uniform Plumbing Code”. For potable water needs, the total fixture units are 52.5 with demand of 30 gpm. The proposed water meter size for the potable water demand is 3/4-inch with maximum capacity of 30 gpm.

For non-potable water needs, hose bibbs are provided:

- Hose Bibb: Fixture Units of 2.5 x Proposed Quantity of 1 = Total of 2.5 Fixture Units
- Hose Bibb, EA Additional: Fixture Unit of 1.0 x Proposed Quantity of 43 = Total of 43.0 Fixture Units

The total fixture units are 45.5 with demand of 27 gpm. The proposed water meter size for the non-potable water demand is 3/4-inch with maximum capacity of 30 gpm.

The total planting area will be 2.5 acres. The recommended planning irrigation is 16,000 gal/acre/day, which totals to be 40,000 GPD. The non-potable water information was provided by Kaua‘i Irrigation Supply.

Two (2) 3/4-inch water laterals will be installed and connected to the existing 8-inch water main to supply the water demand for the proposed development. Two 3/4-inch water meters will be installed for both potable and non-potable water uses (*Figure 3.14*).

Wastewater

Wastewater flow is estimated using rates from the Hawaii Administrative Rules Chapter 62 of Title 11 (HAR 11-62) Appendix D, Table I, dated July 1, 2014. On a regular weekly basis, the projected average daily flow is anticipated to be 3,100 GPD. In the scenario where special events occur simultaneously with the weekly programs, the maximum average daily use will be 4,700 GPD. The proposed wastewater system is designed to serve this demand with composting toilets and four IWSs, with each IWS designed to receive and dispose of no more than 1,000 GPD of domestic wastewater (*Figure 3.15*).

Since there is not any wastewater treatment facility in the vicinity, two alternatives were proposed to serve the project – Alternative 1: Individual Wastewater Systems and Alternative 2 (Optional): Wastewater Treatment Works. The design of the proposed wastewater system is based on HAR 11-62.

Alternative 1: Individual Wastewater Systems (IWSs)

Four IWSs will be constructed near heavily-used facilities with high traffic and sized to handle maximum of 1,000 GPD:

- IWS #1 will be serving the kitchen with average daily use of 1,000 GPD.

- IWS #2 will be serving the Office, Marae, Co-op, Garden, and Farm with average daily use of 633 GPD.
- IWS #3 will be serving the Youth Center, Youth Garden, and Farm with average daily use of 508 GPD.
- IWS #4 will be serving the Youth Center, Youth Garden, and Farm with average daily use of 633 GPD.

When there are special events occurring, composting toilets and portable toilets will be implemented to limit the use of the IWSs, ensuring that the average daily use will stay within 1,000 GPD for each IWS. An additional gray water IWS will be installed for the processing center if needed.

Alternative 2 (Optional): Wastewater Treatment Works

Alternative 2 will implement Aerobic Treatment Unit (ATU) with disposal to absorption bed. Following pre-treatment in grease interceptor and pre-loaders, wastewater will be pumped to an 8,500 GPD ATU for primary treatment. The ATU will be located at the southern corner of the property. The treated effluent will be discharged into a dosing tank, then into the absorption bed disposal system.

The absorption beds will be located the proposed grassed parking area to maximize the vertical distance from ground water and maintain accessibility by maintenance vehicles. The absorption bed disposal system (inclusive of 100% backup) will be consisted of four equally sized absorption beds at approximately 48' x 100' long, which equates to 19,200 SF of absorption area, meeting the 16,500 SF minimum area requirement as calculated from HAR 11-62. The dosing pumps will be controlled such that flow will be equally distributed to each absorption bed.

Fire Protection

Fire protection water supply will be provided off of the existing public water main in Pilipoli Road. Each building will be provided with an approved automatic fire sprinkler system and a new fire service connection will be installed.

Fire apparatus access will be provided along Pilipoli Road and Kukuihale Road. Since the buildings will be protected with approved automatic system, the maximum distance from fire apparatus access to buildings is 450 ft (NFPA 2012, 18.2.3.2.2.1), which is complied by the site layout.

Fire hydrants will be provided along Pilipoli Road and Kukuihale Road within 12' of the distance from the fire apparatus access. The maximum distance to a fire hydrant from the closest point of building will not exceed 400'.

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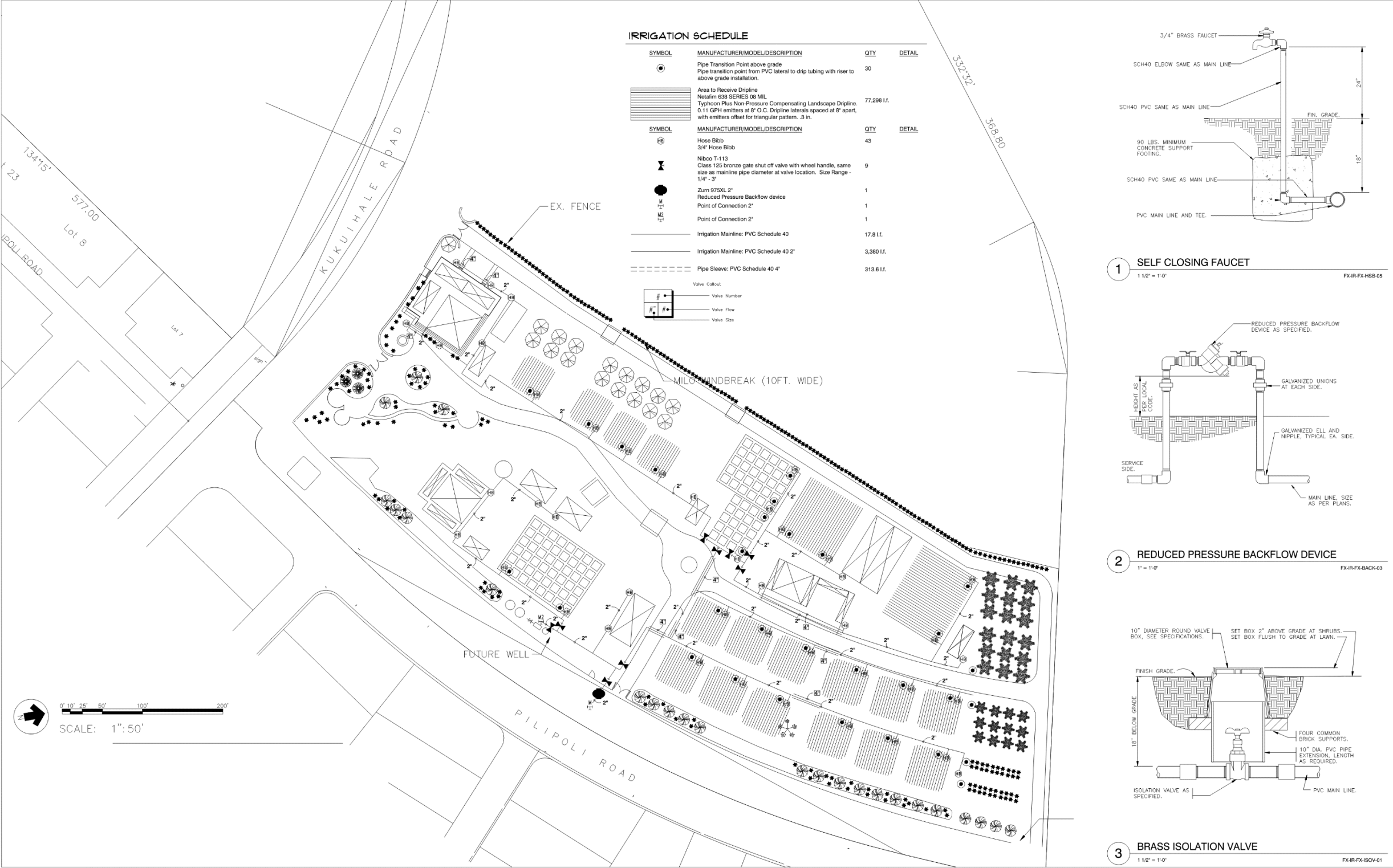


Figure 3.14

Irrigation Schedule

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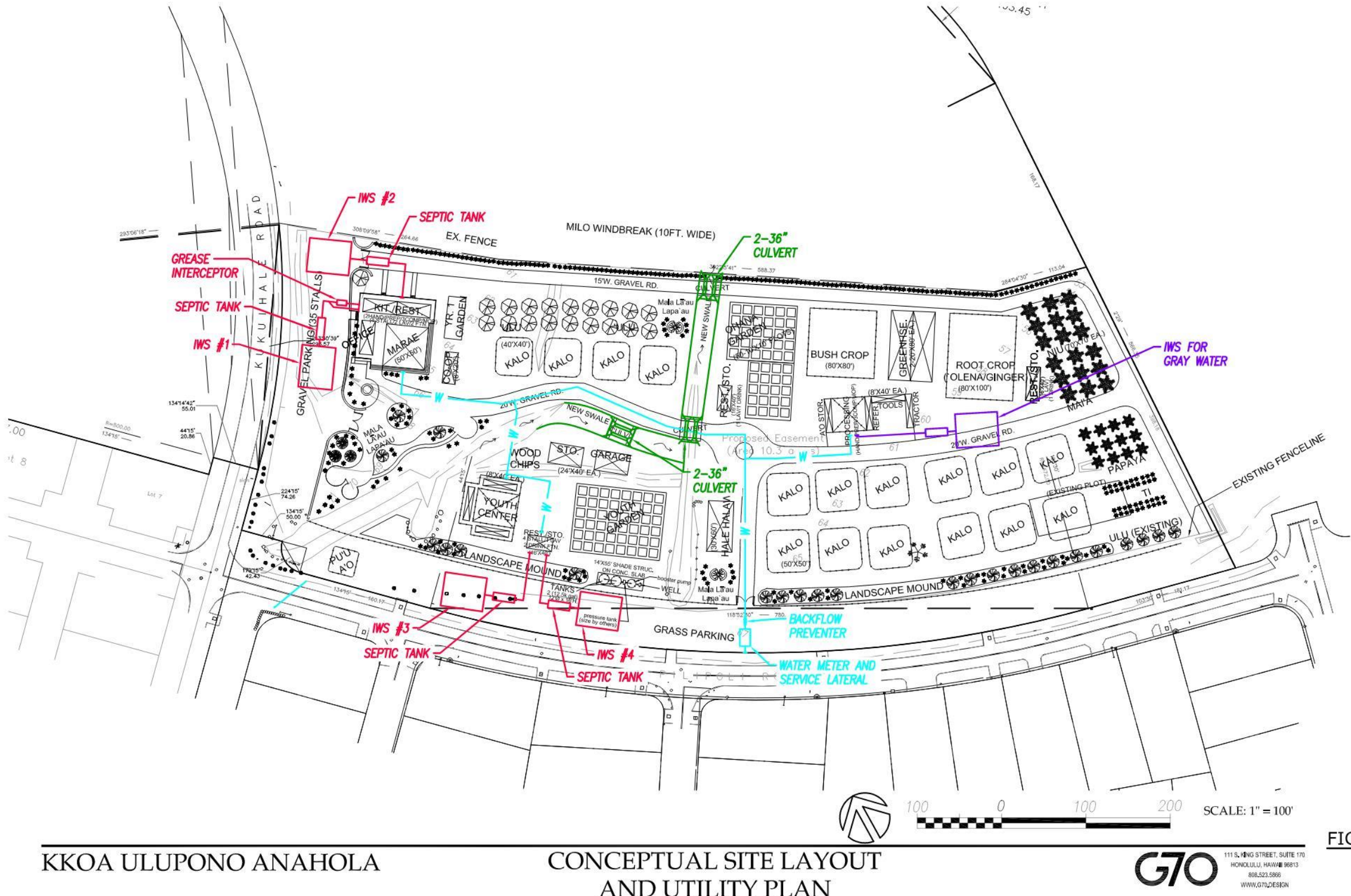


Figure 3.15

Conceptual Site Layout and Utility Plan

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3.12 Roadways, Access and Traffic Conditions

A *Transportation Impact Analysis Report* (TIAR) for KKO A Ulupono Anahola was prepared by Fehr and Peers in March 2022 and is attached in *Appendix D*. The following section provides key highlights and assesses potential impacts on roadways, access, and traffic.

Existing Conditions

The Project Site is located at the intersection of Kukuihale Road and Pilipoli Road. Kukuihale Road is a two-lane roadway between Kūhio Highway and Mana I Road and Anahola Beach Park. It is one of the primary connections between the Anahola community and Kūhio Highway, the primary two-lane highway between Lihue and Hanalei. Pilipoli Road is a two-lane roadway extending from Ehukai Road to a cul-de-sac just north of Mahuahua Road. It experiences low vehicular volumes. The Project Site can be accessed via a locked gate off of Pilipoli Road.

Two study intersections were studied: Kukuihale Road/Kūhio Highway and Kukuihale Road/Pilipoli Road. The Kukuihale Road/Kūhio Highway operates LOS C in the AM and PM peak hours, respectively, where the reported LOS is for the westbound left-turn movement. All other movements experience little or no delay. The Kukuihale Road and Pilipoli Road intersection was not analyzed due to very low existing weekday peak hour volumes at this intersection.

The westbound left and right turning movements from Kukuihale Road experience some delay as Kūhio Highway volumes are substantial and movements are free-flow (i.e., uncontrolled). The worst delay observed occurred during AM observations and included a queue of eight (8) vehicles in the westbound left-turn lane. Vehicles making this movement were delayed for an average of approximately 60 seconds during the busiest time in the AM peak hour, but this occurred for only a short 10- to 15-minute period prior to the beginning of classes at the Kanuikapono Public Charter School & Learning Center. Otherwise, delays were very short (i.e., less than 20 seconds) for turning vehicles.

All vehicles at the Kukuihale Road/Pilipoli Road experienced little or no delay during both the AM and PM peak periods. Visibility of traffic approaching the intersection appears to be sufficient in all directions based on the posted travel speeds and stop-sign control.

There are no formal or paved sidewalks within the study area and the area experiences minimal pedestrian activity. However, residential setbacks and grass shoulders along the roadway serve as informal paths. Pedestrian activity increased during morning drop-off and Kanuikapono Public Charter School & Learning Center on Kukuihale Road.

The nearest transit stop is located 0.5 miles away on Kūhio Highway, just north of the Kukuihale Road intersection. It is served by Kauai Bus Route 400, which provides service between Hanalei Neighborhood Center and Lihue. There are no formal bicycle facilities present in the Anahola community.

Anticipated Impacts and Proposed Mitigation

The report analyzed two future scenarios: conditions in 2026 with no project, and conditions in 2026 with the project. In both scenarios, it was found that the Kukuihale/Pilipoli road intersection will still operate at LOS C, essentially the same as existing conditions.

The Ulupono Anahola site is expected to generally operate on weekdays, Monday through Friday, with some special events occurring on select weekend days during the year. Anticipated regular activities include community garden visitors, and education/cultural programs occurring Monday through Friday throughout the year. These regularly scheduled activities are expected to generate a total of fewer than 20 peak hour trips during each of the AM and PM peak hours. Nearly all of the trips were assumed to be directional where most are inbound in the morning and outbound in the late afternoon/early evening.

Some other activities are planned such as after school programs or educational collaborations, but they will generate additional traffic during the middle of the day and outside the typical commute peak hours. The volumes for these events are expected to be similar in magnitude to the regular activities.

During the summer months, additional education and recreation activities are anticipated including a summer intersession education program and a sports camp. For June and July only, these additional activities will increase the regular weekday trip generation described above by approximately 80 trips in the AM peak hour Monday through Friday, and roughly 30 trips during the Wednesday PM peak hour only. Because the special events are expected to occur on days that total less than 20% of all days over the course of the year, the traffic volumes generated by the regular activities were used to perform the impact analysis.

The mobility analysis determined that the project will have no significant impacts to any roadways, intersections, pedestrian facilities, bicycle facilities, and transit facilities. The proposed project is expected to generate a limited number of pedestrian trips from the surrounding neighborhood. No modifications to the existing transportation system is needed to accommodate new project-generated bicycle trips. Accessing the project site by transit is considered a viable option in lieu of driving to the site due to the proximity of the existing bus stops. Some site visitors are expected to use transit, and the additional demand should be readily accommodated by existing bus service.

There are two recommended actions for the Project. First, unpaved shoulders on the streets fronting the project site (Kukuihale and Pilipoli Roads) should be graded and smoothed, and a minimum 6-foot setback from the edge of the pavement should be provided. This will help to provide a dedicated space for people to walk without having to encroach into the adjacent roadway. Second, to stripe two new crosswalks at the Kūhio Highway/Kukuihale Road intersection to enhance pedestrian safety and encourage people to take bus transit to access the site.

The second recommended action is to coordinate with the State of Hawaii Department of Transportation to stripe two new crosswalks at the Kūhio Highway/Kukuihale Road intersection to guide pedestrians to the east side of Kukuihale Road (with a more clear pedestrian path). Second, to grade the roadway shoulders fronting the site on Kukuihale and Pilipoli Roads to provide a clear and level walking path.

3.13 Air Quality

Existing Conditions

Air quality of the project area is primarily affected by air pollutants from natural and/or vehicular sources. Natural sources of air pollution that may affect the air quality of the study area include aero-allergens from plants, and wind-blown dust from bare soil areas.

The U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O₃), particulate matter smaller than 10 microns (PM₁₀), particulate matter smaller than 2.5 microns (PM_{2.5}), sulfur oxides (SO_x), and lead. DOH, Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than NAAQS. Hawai'i also has a stringent standard for hydrogen sulfide, which is a common odorous pollutant associated with wastewater treatment facilities. DOH, CAB regularly samples ambient air quality at monitoring stations throughout the State and annually publishes this information. There is one monitoring station on Kaua'i, the Niumalu Station, located approximately 16 miles from the project site. This station is mainly to measure air quality impacts from cruise ships. On average, the air quality at this station is "good".

Anticipated Impacts and Proposed Mitigation

Construction related activities for the proposed master plan update is not expected to generate significant air quality impacts. There will be limited grading required and long-term operation of such facilities will be small with little impact to the environment. Effective air pollution control measures will need to be provided to prevent or minimize any fugitive dust emissions caused by construction work from affecting the surrounding areas. BMPs will be implemented during construction of the project to minimize potential impacts and may include job site watering to minimize dust loss during construction, and proper maintenance of construction equipment and vehicles to minimize emissions.

Operations at the project site will not generate adverse air quality impacts. Vehicles traveling to and from the area will generate emissions; however, this traffic will be minimal.

3.14 Noise

A *Draft Noise Assessment Report* for KKOA Ulupono Anahola was prepared by Censeo AV + Acoustics in March 2022 and is attached in *Appendix E*. The following section provides key highlights and assesses potential noise impacts from construction and programming operations.

Existing Conditions

Title 11, Chapter 46, of the Hawai'i Administrative Rules defines maximum permissible sound levels which are intended to protect, control, and abate noise pollution from stationary sources and construction, industrial, and agricultural equipment. As detailed below, maximum permissible sound levels in various zoning districts are set for excessive noise sources during the day (7 a.m. to 10 p.m.) and night (10 p.m. to 7 a.m.) at the property line where the activity occurs.

- Class A – Residential, conservation, preservation, public space, open space, or similar type zones – 55 decibel (dBA) (day) and 45 dBA (night)
- Class B – Multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type zones – 60 dBA (day) and 50 dBA (night)
- Class C – Agriculture, country, industrial, or similar type zones – 70 dBA (day) and 70 dBA (night)

For this noise assessment, the project property is considered Class C and adjacent residential properties are considered Class A. Since the project site is currently vacant, the current ambient noise environment is assumed to be dominated by environmental noise sources such as birds and wind. Traffic noise is likely low since the project site is far from Kūhio Highway and the closest roadways, Kukuihale Road and Pilipoli Road, have low traffic volumes. Based on the location of the project site and the current land use, the estimated daytime average equivalent noise levels to be in the range of 45 to 55 dBA. This is typical of rural environments.

Anticipated Impacts and Proposed Mitigation

A general assessment of construction noise to the nearby residential properties was conducted. Most of the on-site construction work consists of excavation and general earthwork. The equipment used for excavating and grading will be the major noise sources used during the earthwork phase and the installation of the gravel parking and interior roads. The actual noise levels produced by construction equipment will be a function of the type, location, and quantity of equipment employed during each stage of the construction process. As not every type of equipment will be used at a given time and the equipment will be moving throughout the 10-acre site, noise levels will vary over the duration of the construction phase. See *Table 3-2*.

Table 3-2. Predicted Construction Noise Levels at Nearby Residences					
Noise-Sensitive Receiver	Distance from receiver to Construction	Construction Equipment			
		Auger Drill	Dozer/Excavator/ Dump Truck	Backhoe/Loader	Generator
R1-R7	110-430 ft	63 – 77 dBA	63 – 77 dBA	58 – 72 dBA	48 – 62 dBA
R8	160-590 ft	59 – 73 dBA	59 – 73 dBA	54 – 68 dBA	44 -58 dBA

Based on the construction noise assessment, noise levels at the residences closest to the project site are predicted to range from 54 to 77 dBA. The existing daytime ambient environment is estimated to range from 45 to 55 dBA. Residents closest to the project site may experience short temporary noise effects during construction along Pilipoli Road. Efforts will be made to notify residents during the process of construction as to when certain activities will be occurring in near proximity that may generate these short term impacts.

Construction noise in excess of the State of Hawaii Community Noise Rule will be permitted by the Hawaii Department of Health (HDOH): Monday-Friday from 7 a.m. to 6 p.m. and Saturday from 9 a.m. to 6 p.m. for normal construction equipment and Monday-Friday from 9 a.m. to 5:30 p.m. for impulsive construction equipment. It is unlikely that the Hawai'i Department of Health (HDOH) would consider the project construction activities to cause adverse noise impacts and construction noise mitigation measures are unlikely to be necessary. However, noise mitigation measures such as community engagement, work sequencing, project layout, and obtaining of a community noise permit will be considered.

Post-construction day-to-day uses are not expected to generate significant noise levels. Occasional use of agricultural equipment such as mowers and tractors are expected to be the noisiest activities

that occur on-site. These noise events are expected to be short term in nature and will occur on an occasional basis. The predicted agricultural equipment noise at the property line may occasionally exceed the HDOH maximum permissible noise limit of 70 dBA if a tractor or mower is in use near the property line. However, these noise events are expected to be short term in nature and will occur occasionally. Noise complaints from the agricultural activities is not expected and it is unlikely that they would cause adverse noise impacts.

3.15 Public Services

Existing Conditions and Anticipated Impacts

Medical Facilities

The closest hospital is approximately 4.7 miles away from the project site at the Samuel Mahelona Memorial Medical Center. Staff members and community volunteers may infrequently require service from local medical facilities, although this will not affect the service capacity of these medical facilities. While KKOAA does not require staff to be CPR trained, it is highly encouraged. CERT training is also highly encouraged by KKOAA.

Educational Facilities

The closest educational facility to the project site is the Kanuikapono Charter School, a public Hawaiian immersion school for grades K-12. Located at 4333 Kukuihale Road, it is approximately 0.4 miles away from the project site. The Kamehameha Schools Anahola Preschool is located approximately 1.2 miles from the project site. The closest elementary school is Kapa'a Elementary School, located approximately 4.5 miles from the project site. Kapaa Middle School is located approximately 5.9 miles from the site, while Kapa'a High School is approximately 4.1 miles from the site.

The proposed action will support the terms of the license and increase opportunities for KKOAA to provide educational opportunities to local schools.

Recreational Facilities

There are four public parks located in Anahola: The Anahola Hawaiian Homes Park, Village Park, Anahola Beach Park, and Lae Lipoa Beach. Anahola Hawaiian Homes Park has a community pavillion, playing courts, playing field, comfort stations, and the Anahola Club House. The nearest recreational area is the Anahola Beach Park, located approximately 0.7 miles from the project area and accomodates beach activities inclusive of swimming, paddling, surfing, and fishing. The Anahola Village Park is located approximately 0.8 miles from the project area. These public recreational facilities will not be affected by the proposed action.

Police

The Anahola area is served by the Kaua'i Police Department. The Lihue station is located approximately 13.7 miles from the project site. The project will not impact the Police Departments operations or ability to provide adequate services to the surrounding community. No adverse impact are anticipated and no mitigation measures are proposed.

Fire Services

The Kaua'i Fire Department (KFD) has two fire stations within a 10 mile radius of the project area. The Kaua'i Fire Station 8 is located approximately 3.9 miles south of the project site. The Kapa'a Fire Station is located approximately 6.4 miles south of the project site.

KFD works with the Emergency Medical Services (EMS), who dispatches the closest available unit. During an emergency, this may either be an EMS ambulance or a fire company depending on the type of emergency and location. The proposed action is not expected to impact the Fire Department's operations or ability to provide fire protection services to the surrounding Anahola community.

3.16 Potential Cumulative and Secondary Impacts

Cumulative impacts are the result of incremental effects of an activity when combined with other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. The cumulative impacts of KKO's proposed action will be positive. With the ability to engage in 'āina-based agriculture and programming, participants will be afforded an environment that cultivates a native Hawaiian sense of identity and addresses social determinants of health, primarily suicide prevention. The proposed action will restore the integrity of the land while protecting cultural, historical, and archaeological resources.

Secondary effects are impacts that are associated with an activity but do not result directly from the activity. No secondary adverse impacts are anticipated with the proposed action.

Section 4

Alternatives to the Proposed Project



Chapter 4

Alternatives to the Proposed Project

The following presents an analysis of the alternatives to the proposed project.

4.1 Alternative A – No-Action Alternative

The “No-Action” alternative is the baseline against which all other alternatives are measured. “No-action” refers to the future site conditions that would result should the project not proceed.

The No-Action Alternative would involve not proceeding with the proposed plan. There would be no improvements made to the site and proposed facilities would not be constructed. Illegal dumping of abandoned vehicles would continue and the field would remain fallow and overgrown, posing a fire hazard to the Anahola community. Trespassing and illegal dumping of cars and household refuse would likely continue.

KKOA recognizes that the health and productivity of the ‘āina is directly tied to the health of the community. Since becoming a lessee of the site, KKOA has provided opportunities for the Anahola community to access an environment to engage in traditional ‘āina-based practices. Under the license agreement, there is no other available parcel for KKOA’s use, and a No-Action Alternative will cease many of KKOA’s initiatives. A No-Action Alternative will not support KKOA’s community engagement efforts or programming.

4.2 Alternative B – Delayed Action

A Delayed Action alternative refers to a delay in the proposed action. Similar to the No Action alternative, delaying any sort of action would delay support needed to aid operations and may put the license at risk. There are no other alternative parcels for KKOA to access and conduct operations through the license. Should the license expire without fulfillment of the terms, the site is at risk of reverting to an illegal dumping ground covered with invasive plant species, posing wildfire and trespassing threats to the Anahola community. For these reasons, a Delayed Action alternative was not considered a viable alternative.

4.3 Alternative C – Alternative Location

An alternative location alternative examines the feasibility of conducting the project at another location. Following the approval of a Beneficiary Consultation held on August 7, 2019, KKOA was issued a ROE to TMK (4) 4-8-003:019 (por). The ROE does not include alternative parcels or locations for the project. Furthermore, KKOA was granted a 5-year lease for the project area in November 2021, with allowing exemptible activities on the project site. Since then, KKOA has begun minor agricultural activities. Finding a new location would cause KKOA to lose the existing parcel and due diligence work, and cause significant delays in KKOA programming and activities. The selection of an alternative

location would leave the current site in its unused and fallow form, posing wildfire and trespassing risks to the neighboring communities.

Section 5

Plans and Policies

Chapter 5

Plans and Policies

The consistency of the Ulupono Anahola project with applicable State of Hawai'i and County of Kaua'i planning and land use objectives, policies, principles and guidelines are discussed below.

5.1 Hawai'i State Plan

The Hawai'i State Plan establishes a statewide planning system that provides goals, objectives, and policies that detail priority directions and concerns of the State of Hawai'i; these will be discussed as they relate to the planned improvements.

It is the goal of the State, under the Hawai'i State Planning Act (Chapter 226, HRS), to achieve the following:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i present and future generations.
- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Specific objectives and policies of the State Plan that pertain to the planned improvements are as follows:

Section 226- Objectives and Policies for the economy–in general:

(b) To achieve the general economic objectives, it shall be the policy of this State to:

- (19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.*

Discussion: *The proposed plan is complementary to the State's objectives for the general economy. The proposed facilities will provide the additional support that is needed to carry out program operations, allowing community volunteers to engage in traditional 'āina-based agricultural activities. Providing such opportunities allows volunteer members to deepen their knowledge of Native Hawaiian farming practices, cultural and historic resources identified within Anahola, and the health benefits of traditional Hawaiian crops. These factors will contribute positively to suicide prevention within the Anahola community.*

Section 226-7 Objectives and policies for the economy – agriculture.

(a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:

- (1) Growth and development of diversified agriculture throughout the State.
 - (2) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.
- (b) To achieve the agriculture objectives, it shall be the policy of this State to:
- (2) Encourage agriculture by making the best use of natural resources.
 - (11) Increase the attractiveness and opportunities for an agricultural education and livelihood.
 - (16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.
 - (17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māla. And irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu
 - (18) Increase and develop small scale farms.

Discussion: The proposed plan supports the State's policies and objectives for the economy in regard to agriculture. Proposed facilities will aid farming and agricultural production, while community agricultural plots and gardens provide opportunities for the Anahola community to deepen their knowledge of Native Hawaiian farming practices and the usage of traditional Hawaiian crops. The proposed action will support the requirements of the license agreement.

Section 226-11 Objectives and policies for the physical environment—land-based, shoreline, and marine resources:

- (a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:
- (1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.
 - (2) Effective protection of Hawai'i's unique and fragile environmental resources.
- (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:
- (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
 - (3) Take into account the physical attributes of areas when planning and designing activities and facilities.
 - (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
 - (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
 - (8) Pursue compatible relationships among activities, facilities, and natural resources.
 - (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion: The proposed action is consistent with the State's objectives and policies regarding land based, shoreline, and marine resources. Since obtaining a ROE to the 10-acre site, KKO engaged in

efforts to establish a secure presence, deter illegal dumping and trespassing, and develop kalo beds, allowing for prudent and consistent use of the land.

Section 226-12 Objectives and policies for the physical environment—scenic, natural beauty, and historic resources:

- (a) *Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.*
- (b) *To achieve the scenic, natural beauty, and historic resources objectives, it shall be the policy of this State to:*
 - (1) *Promote the preservation and restoration of significant natural and historic resources.*
 - (3) *Promote the preservation of views and vistas to enhance the landscapes, and other natural features.*
 - (4) *Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage*
 - (5) *Encourage the design of developments and activities that complement the natural beauty of the islands.*

Discussion: *The proposed action supports the State's objectives and policies to preserve and protect natural and historic resources. While there are no historic properties located within the project site, appropriate action will be taken in the event iwi kūpuna are found and the appropriate parties consulted. The project will provide opportunities for volunteers and staff to develop and maintain and thriving agricultural space rooted in traditional native Hawaiian culture.*

Section 226-13 Objectives and policies for the physical environment—land, air, and water quality:

- (a) *Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:*
 - (1) *Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.*
 - (2) *Greater public awareness and appreciation of Hawai'i's environmental resources.*
- (b) *To achieve the land, air, and water quality objectives, it shall be the policy of this State to:*
 - (1) *Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.*
 - (2) *Promote the proper management of Hawai'i's land and water resources.*
 - (3) *Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.*
 - (4) *Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.*
 - (6) *Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.*
 - (8) *Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.*

Discussion: *The proposed improvements support the State's policies with regard to land, air, and water quality. KKOA provides opportunities for the Anahola community to engage in sustainable and native Hawaiian farming practices that ultimately contribute to a healthier environment and individual self-worth through physical engagement and education.*

Section 226-16 Objectives and policies for facility systems–water:

- (a) *Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.*
- (b) *To achieve the facility systems water objective, it shall be the policy of this State to:*
 - (1) *Coordinate development of land use activities with existing and potential water supply.*
 - (2) *Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.*
 - (3) *Reclaim and encourage the productive use of runoff water and wastewater discharges.*
 - (4) *Assist in improving water quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.*

Discussion: *The proposed action supports the State's policies and objectives with regard to water. Proposed water laterals will connect to the existing 8-inch water main on Pilipoli Road. In addition to new connections to existing utility lines, a well is planned for the project area to supplement water supply. Vegetative plantings and swales will help to capture and reduce runoff.*

Section 226-20 Objectives and policies for socio-cultural advancement–health:

- (a) *Planning for the State's socio-cultural advancement with regard to health shall be directed towards the achievement of the following objective:*
 - (3) *Elimination of health disparities by identifying and addressing social determinants of health.*
- (b) *To achieve the education objective, it shall be the policy of this State to:*
 - (1) *Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.*
 - (4) *Foster an awareness of the need for personal health maintenance and preventative health care through education and other measures.*
 - (5) *Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.*
 - (7) *Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve the native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data.*

Discussion: *The Project supports the State's policies and objectives regarding the socio-cultural advancement of health. KKO's mission is to provide suicide prevention through educational and hands-on programming in an agricultural setting. Through 'ohana and community engagement, the Ulupono Anahola Project addresses the mental, spiritual, and physical health of the individual within the context of the larger Anahola community, to provide safe places and spaces for self-expression. The Ulupono Anahola Project works directly with the native Hawaiian and greater Anahola community, to address physical, mental, and social health disparities that may lead to suicide ideation.*

Section 226-21 Objectives and policies for socio-cultural advancement–education:

- (a) *Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.*
- (b) *To achieve the education objective, it shall be the policy of this State to:*
 - (1) *Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.*
 - (2) *Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.*
 - (4) *Promote educational programs which enhance understanding of Hawai'i's cultural heritage.*

Discussion: *The proposed action supports the State's objective for socio-cultural advancement with regard to education. The project provides the Anahola community an area to deepen their knowledge of traditional Hawaiian farming practices while addressing underlying determinants of suicide. Partnership with the Kanuikapono Charter School has provided students the opportunity to engage in cultural and educational subsistence practices. The proposed action will support the terms of the 5-year license and continue to provide educational opportunities for the community at large.*

Section 226-25 Objectives and policies for socio-cultural advancement–culture:

- (a) *Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.*
- (b) *To achieve the culture objective, it shall be the policy of this State to:*
 - (1) *Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.*
 - (2) *Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.*
 - (3) *Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.*
 - (4) *Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.*

Discussion: *The proposed action supports the State's socio-cultural advancement objective – culture, to provide opportunities that enhance and promote Hawaiian cultural identities, traditions, values,*

customs, and arts. KKOA has conducted a variety of efforts to engage the Anahola community and native Hawaiian youth.

Section 226-102 Overall Direction

The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.

Discussion: *The proposed action supports the overall direction of the State of Hawai'i in the areas of land resource management, sustainability, and community engagement. The proposed action will support the license agreement and provide the additional support for the next phase of program operations. The project will provide opportunities to deepen knowledge of native Hawaiian farming and subsistence practices. By deepening this knowledge of Native Hawaiian culture and 'āina-based management, the health of the environment will continue to improve along with the physical, mental, and spiritual health of the community.*

5.2 Hawai'i 2050 Sustainability Plan

The long-term strategy of the Hawai'i 2050 Sustainability Plan is supported by its main goals and objectives of respect for culture, character, beauty, and history of the State's island communities; balance among economic, community, and environmental priorities; and an effort to meet the needs of the present without compromising the ability of future generations to meet their own needs. To continue coordination and implementation of Hawai'i's sustainability and climate adaptation goals, principles, and policies, pursuant to HRS §226-65, the Hawai'i 2050 Sustainability Plan has been updated to align the state's goals, policies, and actions in accordance with the United Nations Sustainability Development Goals and recommend sustainability and climate change actions for the 2020-2030 decade. The updated plan identified eight (8) focus areas that will help Hawai'i become more equitable, climate resilient, and sustainable during this decade of action. The focus areas that are pertinent to the proposed action for the 10-acre site are as follows:

Focus Area 1: *Promote a Sustainable Economic Recovery through strategies that support local agriculture, green workforce development and education, and sustainable and regenerative tourism.*

Focus Area 4: *Advance sustainable communities through strategies that improve land use and access to green space, advance sustainable practices in schools, and encourage sustainable buildings and infrastructure.*

Focus Area 8: *Perpetuate traditional ecological knowledge and values as Hawai'i collectively tackles these sustainability and climate changes.*

Discussion: *The proposed action will support action items of the Hawai'i 2050 Sustainability Plan and is in alignment with the identified focus areas. The proposed action will support agricultural and subsistence activities, providing the Anahola community opportunities to deepen their knowledge of native Hawaiian practices. School groups are invited to learn more about agriculture, sustainability, and Native Hawaiian crops, allowing them to develop their own future for themselves and for their community.*

5.3 Hawai'i State Land Use District Guidelines

Under HRS §205, all lands of the State are to be classified in one of four categories: urban, rural, agricultural, and conservation lands. The State Land Use Commission (LUC), an agency of the State Department of Business, Economic Development, and Tourism (DBEDT), is responsible for each district's standards and for determining the boundaries of each district (HRS §205-2(a)). The LUC is also responsible for administering all requests for district reclassifications and/or amendments to district boundaries, pursuant to HRS §205-4, and HAR §15-15 as amended. Under this Chapter, all lands in Hawai'i are classified into four land use districts: (1) Conservation, (2) Agricultural; (3) Urban, and (4) Rural.

Discussion: *As classified by the State of Hawai'i LUC, the project site is located within the State Land Use Agricultural District (Figure 1.3). The proposed action is consistent with the permitted uses for the Agricultural District. In addition, per the Hawaiian Homes Commission Act of 1920, as amended, the Hawaiian Homes Commission has sole land use and zoning authority over Hawaiian Home Lands.*

5.4 Hawai'i Coastal Zone Management Program

The Coastal Zone Management Act of 1972 (16 USC Section 1451), as amended through Public Law 104-150, created the coastal management program and the National Estuarine Research Reserve system. The coastal states are authorized to develop and implement a state coastal zone management program. Hawai'i Coastal Zone Management (CZM) Program received federal approval in the late 1970's. The objectives of the State's Hawai'i CZM Program, HRS §205A-2, are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic and cultural values and recreational opportunities. The objectives and policies of the program addresses measures to reduce coastal hazards and to improve the review process for activities proposed within the coastal zone.

The State's CZM Program charges each County with designating and administering Special Management Areas (SMA) within the State's coastal areas to implement guidelines for potential development impacts on the shoreline, near shore, and ocean area environments. Any "development" means any of the uses activities, or operations on land or in or under water within a special management area that includes:

- (1) Placement or erection of any solid material or any gaseous, liquid, solid, or thermal waste;
- (2) Grading, removing, dredging, mining, or extraction of any materials;
- (3) Change in the density or intensity of use of land, including but not limited to the division or subdivision of land;
- (4) Change in the intensity of use of water, ecology related thereto, or of access thereto; and
- (5) Construction, reconstruction, or alteration of the size of any structure

Most recently, amendments made to HRS §205A-2 were adopted on September 15, 2020 through Act 16 (SB 2060, SD2, HD, 2). Although the project site is located outside of the SMA as delineated by the County of Kaua'i, HRS §205A requires all state and county agencies to enforce CZM objectives and policies as set forth in HRS §205A-2. The following section examines the project's conformance with the objectives of the Hawai'i CZM Law.

PART I. COASTAL ZONE MANAGEMENT

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public.

- (A) Provide Coastal Recreational Opportunities Accessible to the Public.*
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*
 - i. Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
 - ii. Requiring restoration of coastal resources that have significant recreational value and ecosystem value, including but not limited to coral reefs, surfing sites, sandy beaches, and coastal dunes when these resources will be unavoidable damaged by development; or requiring monetary compensation to the State for recreation when restoration is not feasible or desirable;*
 - iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
 - iv. Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
 - v. Encouraging expanded public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value;*
 - vi. Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;*
 - vii. Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, artificial reefs for surfing and fishing; and*
 - viii. Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use Commissions, board of land and natural resources, county planning commissions, and crediting that dedication against the requirements of Section 46-6.*

Discussion: *The project site is not located along the shoreline and will not affect existing public access to coastal recreational resources.*

HISTORIC RESOURCES

Objective: Protect, preserve and, where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawai'i and American history and culture.

- (A) Identify and analyze significant archaeological resources;*
- (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and*
- (C) Support state goals for protection, restoration, interpretation and display of historic resources.*

Discussion: *The Project supports the preservation of historic resources within the coastal zone area, however, the Project is not located within the Coastal Zone Management Area. Should any historic resources be discovered, construction will halt and the appropriate parties consulted. For more information, see Section 3.7 Historical and Cultural Resources.*

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.

- (A) Identify valued scenic resources in the coastal zone management area;*
- (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
- (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- (D) Encourage those developments which are not coastal dependent to locate in inland areas.*

Discussion: *As discussed in Section 3.10, the proposed improvements are not expected to adversely affect vistas or scenic resources. The design of facilities will be reflective of the natural environment and the area's existing visual qualities. The proposed facilities are not anticipated to alter the existing characteristics of the area, nor will they further reduce the visual quality of the area.*

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.

- (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
- (B) Improve the technical basis for natural resource management;*
- (C) Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes;*
- (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
- (E) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.*

Discussion: *Although the project area is not located along the shoreline, the proposed action continue to support appropriate useage of the land and the growth of native plants, which will gradually improve the ecological integrity of the area. Construction BMPs will be implemented to mitigate potential adverse environmental impacts that may occur as a result of the planned improvements. During construction, contractors will utilize erosion control and land-based sources of pollution barrier measures such as sediment traps, silt fences, dust fences, stabilized construction entrances, and truck wash-down areas, as appropriate to manage sediment discharge.*

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

- (A) Concentrate coastal dependent development in appropriate areas;*
- (B) Ensure that coastal dependent development, and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and*
- (C) Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at such areas, and permit coastal development outside of designated areas when:*
 - (i) Use of presently designated locations is not feasible;*
 - (ii) Adverse environmental effects and risks from coastal hazards are minimized; and*
 - (iii) The development is important to the State's economy.*

Discussion: *The proposed action does not propose development along the coast. No impacts to economic uses of the coast are anticipated.*

COASTAL HAZARDS

Objective: Reduce hazard to life and property from coastal hazards.

- (A) Develop and communicate adequate information about the risks of coastal hazards;*
- (B) Control development, including planning and zoning control in areas subject to coastal hazards;*
- (C) Ensure that developments comply with requirements of the National Flood Insurance Program; and*
- (D) Prevent coastal flooding from inland projects.*

Discussion: *The project area is located slightly inland from the coast. The proposed action does not proposed development along the coast and will not exacerbate coastal hazards. As discussed in Section 3.5, KKOA is located in Flood Zone X. In the event of a tsunami or flood, KKOA will exercise evacuation and safety guidance procedures.*

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*
- (B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and*
- (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

Discussion: *The proposed action does not propose development along the coast. This EA is prepared in accordance with HRS, Chapter 343 and HAR, Chapter 11-200.1 and complies with the requirements for assessing and communicating the potential short and long-term impacts.*

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

- (A) Promote public involvement in coastal zone management processes;*
- (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*
- (C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

Discussion: *Although the project site is not located within the coastal zone, public participation is a requirement of HRS, Chapter 343. The OEQC is the governing agency of EA publications, and makes available all EAs for public review and comment. The public is provided 30 days to submit comments on the EA. Information regarding the coastal issues and processes is publicly provided in the EA, along with proposed mitigation measures for coastal concerns. Consulted parties in the process are also encouraged to provide input regarding the project prior to publication of the Draft EA and during the 30-day Draft EA comment period.*

BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

- (A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;*
- (B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;*
- (C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;*
- (D) Minimize grading of and damage to coastal dunes;*
- (E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and*
- (F) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.*

Discussion: *The proposed action does not propose development along the coast and will therefore not impact beach and coastal dune protection.*

MARINE AND COASTAL RESOURCES

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

- (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*
- (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;*
- (C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*
- (D) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources; and*
- (E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

Discussion: *The proposed action is not anticipated to adversely affect marine resources. Appropriate BMPs, as discussed throughout this EA, will be used during construction to prevent the release of materials that have the potential to affect marine and coastal resources.*

5.5 Hawai'i Water Quality Standards

The State of Hawai'i Department of Health, Clean Water Branch Hawai'i Water Quality Standards HAR §11-54 were more recently revised in 2014. Updating the master plan for the 100-acre site is consistent with the applicable objectives and policies for state water quality standards as described below.

General Policy of Water Quality Antidegradation

- (a) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*
- (b) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the director shall assure water quality adequate to protect existing uses fully. Further, the director shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.*

Discussion: *Removal of invasive species along with construction activity for the proposed facilities may result in temporary soil and sediment erosion. Environmental and construction BMPs will be implemented to control water quality and prevent soil and sediment runoff. The proposed action is not anticipated to have long-term impacts to water quality.*

5.6 Hawaiian Homes Commission Act

The purpose of the Hawaiian Homes Commission, enacted by Congress in 1920 through the HHCA, is to “provide for the rehabilitation of the native Hawaiian people through a government-sponsored homesteading program.” Responsibility of administration of the Hawaiian Home Lands trust was transferred to the State in 1959, when the HHCA was incorporated as a provision in the State Constitution. Today, the State’s DHHL manages and administers the Hawaiian Home Lands trust, which provides homestead leases and loans for residential, agricultural, and pastoral purposes. The specific goals and objectives of the HHCA as administered through DHHL are laid out in the DHHL General Plan.

***Discussion:** The Project is consistent with the applicable objectives and policies of the HHCA.*

5.7 DHHL General Plan

DHHL has developed a three-tiered planning system to guide planning of its land holdings and policies for resource management, and for the benefit of current and future beneficiaries. The planning system includes an over-arching General Plan, followed by Strategic Program Plans and Island Plans in the second tier, and Regional and Development Plans in the third tier.

The General Plan, approved by the HHC in February 2002, is a statewide plan with a long-term perspective that established seven categories of goals and objectives to meet DHHL’s mission. The seven categories are: Land Use Planning, Residential Uses, Agricultural and Pastoral Uses, Water Resource, Land Resource Management; Economic Development; and Building Healthy Communities. The following goals and objectives relevant to the Project are as follows:

Land Use Planning

Goals:

- Utilize Hawaiian Home Lands for uses most appropriate to meet the needs and desires of the beneficiary population.
- Develop livable, sustainable communities that provide space for or access to the amenities that serve the daily needs of its residents.

Land and Resource Management

Goal:

- Be responsible, long-term stewards of the Trust’s lands and the natural, historic and community resources located on these lands.

Objective:

- Allow native Hawaiian use of natural resources on Trust lands for traditional and cultural purposes.

Economic Development

Goal:

- Provide economic opportunities for beneficiaries within areas designated for their use.

Objective:

- Assist native Hawaiian entrepreneurs by supporting opportunities for business education, training, financing, planning and leasing.

Building Healthy Communities

Goal:

- Establish self-sufficient and healthy communities on Trust lands.

Discussion: The proposed action is consistent with the DHHL General Plan.

5.8 DHHL Kaua‘i Island Plan

The project area is located on Hawaiian Home Lands on Kaua‘i Island and therefore must adhere to guidelines provided in the DHHL Kaua‘i Island Plan. The proposed action was determined to be consistent with the “Community Use” designation. Allowable land uses within this designation include “...space for parks & recreation, cultural activities, CBED, & other public amenities.”

There are ten acres of Community Use land designated adjacent to the Pi‘ilani Mai Ke Kai subdivision. During the master planning process for that subdivision, the location of the Community Use area was adjusted makai of where it is shown on the Kaua‘i Island Plan Land Use Plan Map for Anahola. The adjusted location is where the Ulupono Project is to be located. Because there was a total of 24 acres designated in the Kaua‘i Island Plan for Community Use in this area, during the next Island Plan update, the Land Use Plan will be reevaluated to ensure that there is no net loss of Residential Homestead acreage in the area.

Discussion: Historically, Anahola lands were used for agricultural activities, such as sugar cultivation. Anahola has also been recognized as the largest residential homestead area on Kaua‘i in the DHHL Kaua‘i Island Plan. The proposed project would provide homesteaders and community individuals access to land for community agriculture and youth training activities.

5.9 DHHL Anahola (Kamalomalo‘o, Anahola, Moloa‘a) Regional Plan

DHHL Regional Plans build a sense of community and capacity, stimulate partnerships for development and improvements, and give beneficiaries within the region an opportunity to have a voice in planning for their future.

Discussion: The existing Anahola Regional Plan dates from 2010 and is in the process of being updated. During that planning process, the Project has been consistently supported and is in alignment with the priorities identified by the community.

5.10 Kaua‘i County General Plan

The Kaua‘i Kākou, the 2018 Kaua‘i County General Plan, establishes priorities for managing growth and community development over a 20-year planning timeframe. The plan guides future action concerning land use and development regulations, urban renewal programs, and expenditures for capital improvements. Nineteen policies address the issues most important to Kaua‘i residents in the face of existing issues and future growth. Policies applicable to the Settlement Plan Area include, but are not limited to, the following:

- Manage Growth to Preserve Rural Character
- Provide Local Housing

- Recognize the Identity of Kauai's Individual Towns and Districts
- Help Agricultural Lands be Productive
- Respect Native Hawaiian Rights and Wahi Pana

Community Planning guidance is also provided for East Kaua'i. Applicable goals include:

- Accommodate East Kaua'i's projected housing needs
- Ensure that East Kaua'i is resilient to Climate Change and coastal hazards
- Support DHHL's Island General Plan and Anahola Plan
- Support DHHL in their mission to provide housing to their beneficiaries.

Within the Opportunity & Health for All Sector, Community access is addressed in the "Increasing Access to Privately Owned Recreational Space" subsection. The subsection's objective is to actively protect, restore, and increase access to the places where recreational and subsistence activity occur.

***Discussion:** DHHL will work with the County of Kaua'i to ensure the Anahola Plan is compatible with the area's Community Plan. However, pursuant to the HHCA §206, Hawaiian home lands are not subject to zoning or other land use controls by the County.*

5.11 East Kaua'i Community Plan

There is no current East Kaua'i Community Plan which covers the Settlement Plan Area. Community Plans are public documents that provide specific guidance and actions for future land uses, developments, and public improvements in a community within the County of Kaua'i. Community plans are intended to be region specific and capture the community's vision for the area. The County is in the process of updating its 1973 Kapa'a-Wailua Development Plan and will include the Anahola area as part of its planning effort.

5.12 County of Kaua'i Comprehensive Zoning Ordinance

The County of Kaua'i's Comprehensive Zoning Ordinance (CZO) provides regulations and standards for land development and the construction of buildings and other structures in the County of Kaua'i. These regulations and standards are intended to regulate development to ensure its compatibility with the overall character of the island. The CZO was initially adopted in 1972. Since that time, there have been several amendments to specific provisions. The County concluded the first of two phases of an effort to update the CZO with amendments adopted on December 3, 2012 (Ordinance No. 935). Ordinance No. 935 is the newly adopted zoning code for the County of Kaua'i and will serve as the official zoning code until the County completes the second phase of the project.

***Discussion:** The Project Site is zoned Agriculture by the County of Kaua'i. This zoning is consistent with the State Land Use designation of Agricultural. While County Zoning is not applicable to DHHL lands, the proposed uses are consistent with the zoning. The CZO defines agriculture as the breeding, planting, nourishing, caring for, gathering and processing of any animal or plant organism for the purpose of nourishing people or any other plant or animal organism; or for the purpose of providing the raw material for non-food products.*

Section 6

Findings Supporting the Anticipated Determination

Chapter 6

Findings Supporting the Anticipated Determination

6.1 Anticipated Determination

Based on a review of the significance criteria outlined in Chapter 343, HRS, and Section 11-200.1-13, HAR, the conceptual plan for the 10-acre site is not anticipated to result in significant adverse effects on the natural or human environment. A Finding of No Significant Impact (FONSI) is anticipated.

6.2 Reasons Supporting the Anticipated Determination

The potential impacts with the update to the master plan have been fully examined and discussed in this Environmental Assessment (EA). As stated earlier, there are no significant environmental impacts expected to result from the planned improvements. This determination is based on the assessments as presented below for criterion (1) to (13).

(1) Irrevocably commit a natural, cultural or historic resource.

The proposed action will not irrevocably commit a natural, cultural or historic resource, as there are no identified historical or archaeological sites in the project area. There is unknown potential for the inadvertent discovery of subsurface historical or cultural resources, including the unknown possibility of iwi kūpuna (ancestral remains). Per HRS 6E and NAGPRA, SHPD and DHHL will be notified for inadvertent discoveries. The treatment of these resources will be conducted in strict compliance with the applicable historic preservation and burial laws.

(2) Curtail the range of beneficial uses of the environment.

The proposed action will not curtail the range of beneficial uses of the environment. The proposed action will support the lease and provide a unique environment within the Anahola community. The proposed action will provide a beneficial effect, improving the health of the environment and the health of the community.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law.

The proposed action will not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

(4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.

The proposed action will provide educational opportunities to deepen knowledge of traditional native Hawaiian farming practices. The Ulupono Anahola Project addresses social determinants of health through its unique community programming and outdoor learning environment.

(5) *Have a substantial adverse effect on public health.*

The Ulupono Anahola Project provides an innovative method through the use of community agriculture as a space to address health disparities deter social determinants of health. The proposed action will continue to provide a space for agricultural and community programming.

(6) *Involve adverse secondary impacts, such as population changes or effects on public facilities.*

There will be no adverse secondary impacts such as population change or effects on public facilities as a result of an update to the master plan. As discussed in Section 3.15, the proposed master plan is not anticipated to adversely affect public or recreational facilities within the nearby vicinity.

(7) *Involve a substantial degradation of environmental quality.*

The proposed action will not involve a substantial degradation of environmental quality and will in fact lead to improvements in environmental quality. Traditional and modern farming techniques will restore the health and fertility of soils, prevent erosion, reduce risk of wildfire and invasive species cover, and overall, improve the environmental integrity of Anahola. Long-term impacts to air and water quality, noise, and natural resources are not anticipated. The use of standard construction and erosion control best management practices will minimize the anticipated construction-related short-term impacts.

(8) *Be individually limited but cumulatively have substantial adverse effect upon the environment or involved a commitment for larger actions.*

The proposed action will not have substantial negative effects upon the environment and will in fact have a positive impact. Providing a space for traditional native Hawaiian agricultural practices will allow KKOA to further its vision of a sustainable environment and community.

(9) *Have a substantial adverse effect on a rare, threatened or endangered species, or its habitat.*

The proposed action will not have a substantial adverse effect on rare, threatened or endangered species or their habitat. The project site is not located in a designated Critical Habitat for any listed species. There is a possibility for nēnē, the Hawaiian hoary bat, Hawaiian waterbirds, and Hawaiian seabirds to traverse the area. If any of these species are encountered, Best Management Practices will be implemented. See Section 3.6.

(10) *Have a substantial adverse effect on air or water quality or ambient noise levels.*

General temporary impacts associated with construction are identified in Section 3.0 of this EA. Although construction is not anticipated to be of large scale and operation, mitigation measures are outlined in this EA will be applied during the short-term construction period. No detrimental long-term impacts to air, water, or acoustic quality are anticipated with the update to the master plan. The improvements are not anticipated to detrimentally affect air or water quality or ambient noise levels.

(11) *Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.*

The Ulupono Anahola Project is located in Anahola and lies within Flood Zone X (Area of Minimal Flood Hazard). While flooding is unlikely in this area, KKO will exercise proper mitigation measures including evacuation and safety guidance procedures in the event of flooding. The project site is within the tsunami “Safe Zone” and appropriate evacuation and safety guidance procedures will be observed in the event of a tsunami. The project site is not within the SMA and is located outside of the sea level rise exposure area. No impacts are anticipated.

(12) Have a substantial adverse effect on scenic vistas and viewplanes, during day or night, identified in county or state plans or studies.

The project site at current is overgrown and unsightly, and further presence at the site through the Ulupono Anahola Project will aid in reversing undesirable views. Views of Kalalea Peak will not be disturbed. The Project is not expected to have a substantial adverse effect on scenic vistas and viewplanes.

(13) Require substantial energy consumption or emit substantial greenhouse gases.

Construction of the supporting facilities is not anticipated to be of large scale and operation and will not require substantial energy consumption or emit substantial greenhouse gases relative to other similar sized projects.

6.3 Summary

The proposed improvements are not anticipated to result in significant adverse environmental effects to the site and surrounding area. The EA recommends mitigation measures to alleviate impacts when such impacts are identified. A Finding of No Significant Impact (FONSI) is anticipated.

The proposed improvements are consistent with the Hawai‘i State Land Use District Boundaries, Hawai‘i State Plan, 2050 Sustainable Plan, Hawai‘i State Land Use District Guidelines, Hawai‘i Water Quality Standards, Hawaiian Homes Commission Act, DHHL General Plan, DHHL Kaua‘i Island Plan, DHHL Regional Plan, and County of Kaua‘i General Plan. The proposed improvements will support the terms of a license between DHHL and KKO to implement agricultural and educational programming on TMK (4) 4-8-003:019 (por.). The proposed improvements will allow KKO to provide a gathering place for youth and community, a place for sustainable and native Hawaiian agricultural practices, and produce healthy, traditional foods, benefitting the Anahola community. By providing a safe place for learning and identity development, KKO can further its mission of youth engagement and suicide prevention.

Section 7

List of Agencies, Organizations and Individuals Receiving Copies of the EA

Chapter 7

List of Agencies, Organizations and Individuals Receiving Copies of the EA

7.1 Consultation List

Early consultation on the proposed master plan update has been carried out with various agencies and stakeholders as part of the scoping process for this Project. Parties contacted in preparation of the Draft Environmental Assessment (EA) process, those that were provided an opportunity to review the Draft EA, and Draft EA comments received are identified below.

Table 7-1 Agencies, Organizations and Individuals Receiving Copies of the EA			
Respondents and Distribution	Early Consultation	Receiving Draft EA	Draft EA Comments Received
Federal Agencies			
NOAA Daniel K. Inouye Regional Center		X	
USDA Natural Resource Conservation Service		X	
U.S. Department of the Interior, Geological Survey	X	X	
U.S. Department of the Interior, U.S. Fish and Wildlife Service	X	X	
National Park Service		X	
State of Hawai'i Agencies			
Department of Accounting and General Services		X	
Department of Business, Economic Development, and Tourism		X	
Department of Agriculture	X	X	
Department of Education	X	X	
Department of Hawaiian Home Lands (DHHL)	X	X	
Department of Health, Clean Air Branch (DOH-CAB)		X	X
Department of Health, Clean Water Branch (DOH-CWB)	X	X	
Department of Health, Environmental Health Administration		X	
Department of Health, Wastewater Branch		X	

Table 7-1 Agencies, Organizations and Individuals Receiving Copies of the EA			
Respondents and Distribution	Early Consultation	Receiving Draft EA	Draft EA Comments Received
Department of Land and Natural Resources (DLNR)	X	X	
Department of Transportation		X	
Office of Hawaiian Affairs (OHA)	X	X	
Office of Planning and Sustainable Development		X	X
UH Mānoa College of Tropical Agriculture and Human Resources – Kauaʻi Cooperative Extension Office	X	X	X
County of Kauaʻi Agencies			
Department of Planning	X	X	
Department of Public Works	X	X	
Department of Water	X	X	
Kauaʻi Fire Department	X	X	
Kauaʻi Police Department	X	X	
Transportation Agency	X	X	
Elected Officials			
County Council (all members)	X	X	X
Mayor Derek Kawakami	X	X	
House Representative Nadine Nakamura – District 14	X	X	
Senator Ron Kouchi – District 8	X	X	
Community Groups, Individuals, and Consulted Parties			
ʻĀina Hoʻokupu O Kīlauea	X	X	X
Go Farm Hawaiʻi	X	X	
Ka Hale Pono	X	X	
Kalalea Anehola Farmers Hui – Aggie Marti-Kinney	X	X	
Kalalea View Farm	X	X	
Kanuikapono Public Charter School	X	X	
Kauai Animal Education Farm	X	X	X
Limahuli Garden & Preserve	X	X	
Mālama Kauaʻi	X	X	

Table 7-1 Agencies, Organizations and Individuals Receiving Copies of the EA			
Respondents and Distribution	Early Consultation	Receiving Draft EA	Draft EA Comments Received
Nā Maka Onaona	X	X	
Piilani Mai Ke Kai Homeowners Association	X	X	
The Farm at Hokuāla	X	X	
Waipā Foundation	X	X	

7.2 Early Consultation Summary

A summary of comments received during the early consultation period by major topics and associated responses is provided in *Table 7-2* below.

Table 7-2 Summary of Early Consultation Comments and Responses

Comment	Commentor	Response
Based upon the information provided, the proposed Project will not impact Department facilities.	Department of Education	Thank you for your response. More information can be found in <i>Section 3.15 Public Services</i> .
<p>I am happy to see that KKOA has obtained a 5 year lease. This group has been able to be a positive influence in an area that has had many problems with fires and criminal activity. In my experience as Fire Captain, the 10 acre lot provides a buffer zone from the housing area during brush fires. Having this area used as an agricultural gardening and training site will provide activities for the community. Team members from KKOA have also been instrumental in coordinating clean up events in the nearby beach and vacant land from being used as a chronic dump site.</p> <p>I support this group both as a Native Hawaiian resident in Anahola, and as the Authority Having Jurisdiction for Fire Prevention in my role as Fire Captain of the Kauai Fire Department, Prevention Bureau.</p>	Jeremie Makepa, Kaua'i Fire Department, Prevention Bureau (HFD)	Thank you for your response and testimony. More information can be found in <i>Section 3.5 Natural and Manmade Hazards</i> .
We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species and designated critical habitat in accordance with section 7 of the ESA. There is no federally designated critical habitat within the immediate vicinity of the proposed project. Our data indicate the following federally listed species may occur or transit through the vicinity of the proposed project area: the endangered Hawaiian hoary bat (<i>Lasiurus cinereus semotus</i>); and the endangered Hawaiian stilt (<i>Himantopus mexicanus knudseni</i>), endangered Hawaiian coot (<i>Fulica alai</i>), endangered Hawaiian gallinule (<i>Gallinula galeata sandwicensis</i>) and endangered Hawaiian duck (<i>Anas wyvilliana</i>) (hereafter collectively referred to as Hawaiian waterbirds), and the endangered Hawaiian petrel (<i>Pterodroma sandwichensis</i>), endangered Hawaii distinct population segment (DPS) of band-rumped storm-petrel (<i>Oceanodroma castro</i>), and threatened Newell's shearwater (<i>Puffinus auricularis newelli</i>) (hereafter collectively referred to as Hawaiian seabirds).	US Fish and Wildlife Service	Thank you for your response. Recommended Best Management Practices will be implemented should these species be encountered. For more information, see <i>Section 3.6 Flora and Fauna</i> .

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7.3 Draft EA Comment Summary

Comments received during the Draft EA comment period are included in *Table 7-3* below. Please see *Appendix F* for comment letters. The table also includes responses to comments received during the Draft EA comment period.

Table 7-3 Summary of Draft EA Comments and Responses

Comment	Commentor	Response
<p>This is a letter in support for the Ulupono Anahola Project that Kūkulu Kumuhana o Anahola has been working on.</p> <p>Aina Hookupu o Kilauea has been partnering up with KKO A for many years now and our goals and projects are very much aligned. AHK is developing a 75 acre parcel to create the first AG center to demonstrate and promote the viability of our local food system through small and medium farms. Our center allows interns the ability to have access to land, expertise, equipment, and infrastructure. Our common vision is to connect people to Aina through food. KKO A is inspired by our successes and can count on our full support in creating their vision. They wish to provide similar opportunities as AHK to the Anahola Community through the creation of the Ulupono Anahola Project.</p> <p>Please support this project as it enforces self-determination, self-worth, and hope for the future of our local youth.</p>	Yoshito Lhote, Aina Hookupu O Kilauea	Response received. Thank you for your support and testimony. KKO A will continue to partner with AHK to further increase the viability of local food systems, and to promote self-determination, self-worth, and hope for the future.
<p>Thank you for the opportunity to review the subject project. Please see our standard comments at: https://health.hawaii.gov/cab/files/2022/05/Standard-Comments-for-Land-Use-Reviews-Clean-Air-Branch-2022-1.pdf</p>	Department of Health, Clean Air Branch	The Project will not require an air pollution permit, nor does it include construction or demolition activities that involve asbestos. More information on mitigation measures for impacts to the surrounding areas can be found in <i>Chapter 3</i> .
<p>This letter is to affirm my support for the Kūkulu Kumuhana O Anahola (KKO A) Ulupono Anahola project that will provide training opportunities for youth, Native Hawaiians, and the Anahola community in civic agriculture, thereby increasing culturally-relevant mentorship and resilience for local young people as well as contributing to local food security.</p> <p>I am an extension agent with the University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources (CTAHR) based on the island of Kauai. In my role with CTAHR Extension working closely with the community here since 2017, I have observed time and again the acute need for engaging more local youth in agriculture. KKO A is uniquely situated to be the catalyst for this engagement as they are well supported and respected in the community, and they have the clear vision to make a significant positive impact in the lives of local youth.</p> <p>I fully support this project to create new opportunities to engage local youth in agriculture and will support it in any way possible, including sharing the technical resources and expertise of the CTAHR Kauai Extension team.</p>	Emilie Kirk, Assistant Extension Agent, College of Tropical Agriculture and Human Resources	Response received. Thank you for your support and testimony. KKO A will continue to strive to provide training opportunities for youth, Native Hawaiians, and the Anahola community in civic agriculture.

<p>I am pleased to be writing a letter in support of the Kūkulu Kumuhana O Anahola (KKOA) proposal for the Ulupono Anahola project. I strongly support this initiative as it furthers KKOAs mission and vision by having a positive impact on the lives of those in our community. KAEF has partnered with KKOAs for seven years as we work to address the needs of our community. We have seen their work transforming the land that now provides food to feed multiple programs and the changing of lives of those that are participating. We see the growth, health, happiness, pride for their community and the engagement in their culture with families learning sustainable practices.</p> <p>KKOA proposal to develop the Ulupono Anahola Agricultural Garden Training Site and Youth Center (Ulupono Anahola Project), which aims to develop a youth center, agricultural plots for community gardening, native and medicinal gardens, and install a well for a sustainable on-site water source. Accordingly, KKOAs aims to provide families in and around the Anahola Homestead community the opportunity to work together to grow traditional and healthy crops, allowing them to sustain themselves and become stewards of these lands. The Project will ultimately serve as a social deterrent for youth suicide by providing educational and management opportunities in sustainability and traditional practices.</p>	<p>Christy Wong, Kauai Animal Education Farm</p>	<p>Response received. Thank you for your testimony and support. KKOAs will continue to strive to support the Anahola community through agricultural and youth programming.</p>
<p>I am writing this letter in my individual capacity as a Councilmember and Planning Committee Chair of the Kaua'i County Council in support of Kūkulu Kumuhana O Anahola's (KKOA) Ulupono Anahola Project, which will develop an agricultural garden and youth training center in Anahola, Kaua'i.</p> <p>Kūkulu Kumuhana O Anahola has been a longstanding partner of the Kaua'i Resilience Project, which is a bold community initiative to build our young people's ability to overcome adversity and successfully navigate life's challenges so they can lead enriched, fulfilled, and purposeful lives. This project and organization will provide practices and programs that support traditional and sustainable farming practice, community-building, and the development of self-identity, all of which are key components in enriching the lives of our youth, while also maintaining the cultural identity that is so unique in our islands. This program will create a space that is safe and nurturing, and one that will empower our keiki to further connect with their kūpuna and culture, to strengthen our island's resiliency and ensure food security for this community. Many of these practices are proven to deter suicide and will further the bond between keiki and their families.</p> <p>I truly believe this program will be a positive and beneficial part of the Kaua'i community and I thank you in advance for your continued support.</p>	<p>Vice-Chair Mason K. Chock, Kaua'i County Council</p>	<p>Response received. Thank you for your testimony and support regarding the Kūkulu Kumuhana O Anahola Ulupono Anahola Project. The project will continue to provide practices and programs that support traditional and sustainable farming practices, community-building, and the development of self-identity in effort to reduce youth suicide.</p>
<p>Thank you for the opportunity to comment. Office of Planning and Sustainable Development has no comments at this time for the subject matter.</p>	<p>Office of Planning and Sustainable Development</p>	<p>Response received. Thank you for your comment.</p>

References

Chapter 8

List of References

- American Foundation for Suicide Prevention. 2020. "Risk Factors, Protective Factors, and Warning Signs." *American Foundation for Suicide Prevention*. Retrieved June 1, 2022. (<https://www.afsp.org/risk-factors-protective-factors-and-warning-signs#warning-signs>)
- American Foundation for Suicide Prevention. 2020a. "Suicide Data: Hawaii." *American Foundation for Suicide Prevention*. Retrieved June 1, 2022. ([https:// https://aws-fetch.s3.us-east-1.amazonaws.com/state-fact-sheets/2022/2022-state-fact-sheets-hawaii.pdf](https://aws-fetch.s3.us-east-1.amazonaws.com/state-fact-sheets/2022/2022-state-fact-sheets-hawaii.pdf))
- American Foundation for Suicide Prevention. 2020b. "Suicide Statistics." *American Foundation for Suicide Prevention*. Retrieved June 1, 2020. <https://www.afsp.org/suicide-statistics>.
- American Health Rankings. 2022. "Teen Suicide". *America's Health Rankings analysis of CDC WONDER, Multiple Cause of Death Files, United Health Foundation*. Retrieved June 1, 2022. (https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/teen_suicide/state/ALL).
- Censeo AV + Acoustics. 2022. "Draft Noise Assessment Report: Ulupono Anahola Project."
- City and County of Honolulu, Climate Change Commission. 2018. "Sea Level Rise Guidance." Accessed May 1, 2022. [Available URL: <https://www.resilientoahu.org/guidance-and-publications>]
- Codiga, Douglas and Kylie Wager. 2011. "Sea-Level Rise and Coastal Land Use in Hawai'i: A Policy Tool Kit for State and Local Governments." *Center for Island Climate Adaptation and Policy*. [Available URL: <http://icap.seagrant.soest.hawaii.edu/icap-publications>]
- Dixon, Boyd, Patty J. Conte, Valerie Curtis, and W. Koa Hodgins. 2005. "A Late Pre-Contact Domestic Habitation Area and Garden in Anahola Ahupua'a, Ko'olau District Kaua'i. Na Mea Kahiko o Kaua'i: Archaeological Studies in Kaua'i. *Society for Hawaiian Archaeology* (2). Honolulu.
- Fher & Peers. 2022. "KKOA Ulupono Anahola: Transportation Impact Analysis Report."
- Fletcher, Chip. 2010. "Hawaii's Changing Climate". *Department of Geology and Geophysics, School of Ocean and Earth Science Technology*. University of Hawai'i at Mānoa.
- Giambelluca, Thomas W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte. 2013. "Online Rainfall Atlas of Hawai'i". *Bull. Amer. Meteor. Soc* 94:313-316.
- Hawai'i Climate Change Mitigation and Adaptation Commission. 2017. "Hawai'i Sea Level Rise Vulnerability and Adaptation Report." Prepared by Tetra Tech, Inc. and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawai'i Department of Land and Natural Resources Contract No: 64064.

- Hawaii State Department of Health. 2013. "Suicides and suicide attempts." *Hawaii State Department of Health*. Retrieved June 1, 2022. (https://health.hawaii.gov/injuryprevention/files/2013/09/suicide_Data-Summary0812a.pdf)
- Hilton, George Woodman. 1990. "American Narrow Gauge Railroads." *Stanford University Press*. Stranford, CA.
- Ivey-Stephenson, Asha Z., Zewditu Demissie, Alexander E. Crosby, Deborah M. Stone, Elizabeth Gaylor, Natalie Wilkins, Richard Lowry, and Margaret Brown. 2020. "Suicidal Ideation and Behaviors Among High School Students – Youth Risk Behavior Survey, United States, 2019." *MMWR Supplements* 69(1):47-55.
- Leong, Joanne, John Marra, Melissa Finucane, Thomas Giambelluca, Mark Merrifield, Stephen E. Miller, Jeffery Polovina, Eileen Shes, Maxine Burkett, John Campbell, Penehuro Lefale, Fred Lupschultz, Lloyd Loope, Deanna Spooner, Bin Wang. 2014. Chapter 23 in "Hawai'i and U.S.Affiliated Pacific Islands." *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program.
- Lyte, Brittany. 2020. "Suicides Of 4 Young Men In A Week Raise Alarm On Kauai." *Civilbeat*. Retrieved June 1, 2022. (<https://www.civilbeat.org/2020/05/suicides-of-4-young-men-in-a-week-raise-alarm-on-kauai>).
- Lyte, Brittany. 2022. "New Data Shows No Sign Of Pandemic-Related Suicide Spike In Hawaii." *Civilbeat*. Retrieved June 1, 2022. (<https://www.civilbeat.org/2022/05/new-data-shows-no-sign-of-pandemic-related-suicide-spike-in-hawaii>).
- Miron, Oren, Kun-Hsing Yu, Rachel Wilf-Miron. 2019. "Suicide Rates Among Adolescents and Young Adults in the United States, 2000-2017." *Jama* 321(23).
- National Oceanic and Atmospheric Administration (NOAA). 2015. "Glossary of NHC Terms." *National Hurricane Center*. Accessed May 1, 2022. [Available URL: <https://www.nhc.noaa.gov/aboutgloss.shtml>]
- NOAA. "Tsunami Vocabulary and Terminology." Accessed June 1, 2022. [Available URL: <https://www.tsunami.noaa.gov/terminology.html>]
- Nohopapa Hawai'i LLC. 2022. "Cultural Impact Assessment for Ulupono Anahola Project."
- Pacific Islands Ocean Observing System. 2020. "Sea Level Rise: Hawai'i Sea Level Rise Viewer." Accessed May 1, 2022. [Available URL: <https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/>]
- Parachini, Allan. 2018. "Kauai: This Drag Revue Goes On After Star Performer's Suicide." *Civilbeat*. Retrieved June 1, 2022. (<https://www.civilbeat.org/2018/09/kauai-this-drag-revue-goes-on-after-star-performers-suicide>).
- Puku'i, Mary Kawena and Samuel H. Elbert. 1986. "Hawaiian-English Dictionary." *University of Hawaii Press*. Honolulu.

- State of Hawai‘i, Department of Hawaiian Home Lands. 2004. “Kaua‘i Island Plan.” Prepared by Group 70 International.
- State of Hawai‘i, Department of Hawaiian Home Lands. 2009. “Anahola Town Center.” Prepared by PBR Hawaii & Associates, Inc
- State of Hawai‘i, Department of Hawaiian Home Lands. 2010. “Anahola Regional Plan.”
- State of Hawai‘i, Department of Health. 2016. Annual Summary 2016 Air Quality Data. Accessed online: https://health.hawaii.gov/cab/files/2022/02/aqbook_2020_.pdf
- TetraTech. 2021. “County of Kaua‘i Multi-Hazard Mitigation and Resilience Plan.”
- U.S. Census Bureau. 2010. “Data for Census Tract 9400.” *American FactFinder*. August 13, 2018. [Available URL: <https://factfinder.census.gov>]
- U.S. Department of Agriculture, Soil Conservation Service. 1972. “Soil Surey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.” U.S. Department of Agriculture, Soil Conservation Service in cooperation with the University of Hawaii Agricultural Experiment Station.
- U.S. Department of Health and Human Services Office of Minority Health. 2021. “Mental and Behavioral Health - Native Hawaiians/Pacific Islanders.” U.S. *Department of Health and Human Services Office of Minority Health*. Retrieved June 1, 2022. (<https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=172>).
- U.S. Geological Survey (USGS). 2015. “Seismic Design Maps for International Building Code.”
- University of Hawai‘i at Mānoa Sea Grant College Program. June 2014. “Climate Change Impacts in Hawai‘i - A summary of climate change and its impacts to Hawai‘i’s ecosystems and communities.” Accessed May 1, 2022. [Available URL: <http://seagrantsoest.hawaii.edu/wp-content/uploads/2018/05/smFINAL-HawaiiClimateChange.pdf>]
- University of Hawai‘i at Mānoa Geography Department. “Climate of Hawai‘i.” Accessed online: <http://climate.geography.hawaii.edu/interactivemap.html>
- University of Hawai‘i at Mānoa Geography Department. “Rainfall Atlas of Hawai‘i.” Accessed online: <http://rainfall.geography.hawaii.edu/interactivemap.html>
- Wichman, Fedrick B. 1998. “Kaua‘i: Ancient Place-Names and Their Stories.”

Appendices

Appendix A

Preliminary Engineering Report

KKOA Ulupono Anahola

TMK (4) 4-8-003:019 (por.)
Anahola, HI 96703-0891

Preliminary Engineering Report

Prepared for:

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August 2022

G70 Project 221114-01

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1 INTRODUCTION

1.1 PROJECT DESCRIPTION

The “KKOA Ulupono Anahola” (“Project”) site is a proposed agricultural garden training site and youth center located east of Pilipoi Road, makai of the Pi’ilani Mai Ke Kai Association in Anahola, on the island of Kaua’i, Hawai’i, see attached *Figure 1: Project Location*. The Project will include the development of an agricultural garden training site and youth center, consisting of community agricultural plots, native gardens, a well, and a youth center.

In 2021, Kūkulu Kumuhana o Anahola (KKOA) was granted a 5-year lease from the Department of Hawaiian Home Lands (DHHL) Hawaiian Homes Commission (HHC) for TMK (4) 4-8-003:019 (por.), which encompasses approximately 10 acres in Anahola.

The site is within the Open District, which is to comply with Sec. 8-9.2 Open District Development Standards in the Kaua’i County Code.

The purpose of this report is to investigate existing infrastructure including roadway, water, wastewater, and drainage systems and provide a conceptual plan for site development. The conceptual site layout is presented in *Figure 2*.

1.2 EXISTING CONDITIONS

1.2.1 CLIMATE

The project site is located in Anahola of Kaua’i. Anahola is the largest 10 ahupua’a within the moku of Ko’olau, along the northeast coast of the island of Kaua’i. Anahola is located between the ahupua’a of ‘Aliomanu to the north and Kamalomalo’o to the south. In general, the climate of Anahola is mild. Temperature near the shoreline average a high of 87 degrees Fahrenheit and an average low of 60 degrees Fahrenheit. The average annual rainfall is about 42 inches at the site (Online Rainfall Atlas of Hawai’i, 2013). The prevailing wind is offshore from northeast.

1.2.2 TOPOGRAPHY

The site terrain generally has flat grades, except where the existing berm and drainage ditches are located. The site is situated at elevations ranging from approximately 50 - 70 feet above mean sea level (msl).

1.2.3 SOILS

Soils on site consist of LhB (Lihue silty clay soils, with 0 to 8 percent slopes), classified by Natural Resources Conservation Service (NRCS) Soil Survey. The permeability is moderately rapid. Runoff is slow and the erosion hazard is no more than slight. The available water capacity is about 1.5 inches per foot of soil. This soil was used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.

See *Figure 4* for the Soils Map.

1.3 EXISTING USE

The site is currently undeveloped with a mixture of native and introduced plant species. There are two ditches and two culvert outlets serving as stormwater discharge conveyance for the Pi’ilani Mai Ke Kai Subdivision. A fence line runs along Pilipoli Road to the intersection of Pilipoli and Kukuihale Road, then

continues along Kukuihale Road for the extent of the project area. A concern with trespassing onto the property exists and a berm was constructed on site by Kaua'i Fire Department to keep trespassers from driving into the property.

1.4 PROPOSED USE

The plan for development of the area is highlighted in the Conceptual Site and Utility Plan (*Figure 2*). The Ulupono Anahola Project aims to develop the parcel with the following components:

Table 2-1 Project Components		
COMPONENT	SIZE	PURPOSE
Marae	7,740 sf	Inspired by the Maraе, a traditional Maori meeting house, this project component will serve as a gathering space and meeting place for the community. The Anahola Clubhouse, located mauka of the KKOA project site, is the only other available community meeting place in Anahola. KKOA envisions this Maraе as a second community gathering place serving the makai portion of Anahola.
Office	640 sf	Located in close proximity to the Maraе, the Office will house administrative operations for KKOA staff members.
Kitchen and Restroom	960 sf	Located in close proximity to the Maraе, the kitchen is designed for KKOA and community use. It will contain two (2) hand/prep sinks and three (3) COMP/MOP sinks. The restroom will serve the Maraе, Office, and Kitchen. It contains four stalls, two lavatories, and two fountains.
Co-op Retail	160 sf	One (1) 8' x 20' container used as a place for KKOA and local businesses in the Anahola community to sell value-added products that originate from the project site.
Youth Center	3,168 sf	A Youth Center comprised of three (3) 8' x 40' containers; two for classrooms and one for office space. The Youth Center is a space for youth programming such as mentorship trainings, workshops, fun nights, and events. It will also serve as a second gathering place for 'ohana in the community.
Storage	960 sf	One (1) 24' x 40' storage unit to serve the Youth Center and Gardens.
Garage	960 sf	One (1) 24' x 40' garage used for the storage of farming equipment.
Restrooms and Storage	640 sf	One (1) 16' x 40' restroom containing four stalls, one lavatory, and two drinking fountains. Located in close proximity to the Youth Center, it is intended to serve the youth center and youth gardens.
Hale Halawai	1,800 sf	A traditional Hawaiian meeting house (30' x 60') constructed out of traditional materials. The Hale Halawai is a permanent, traditional Hawaiian structure geared towards KKOA programming. Its location near the middle of the project site offers a respite for workers/volunteers in the field. It is designed as a space for education, kūpuna gathering, cultural exchanges, and "talk story" or conversation. Per Appendix X of the Kaua'i County Code, there are provisions for the construction and operation of indigenous Hawaiian architectural structures. A 100 ft setback will be implemented around the Hale Halawai for adequate fire protection.

Restrooms and Storage	640 sf	One (1) 16'x40' restroom containing one lavatory and one drinking fountain. This restroom is intended to serve the Hale Halawai and surrounding gardens.
Processing Center	4,960 sf	A center for the processing (harvesting/washing/cleaning) of agricultural goods from the project site. Includes refrigeration area, and storage for tools, farm equipment, and heavy equipment in three (3) 8' x 40' containers.
Greenhouses (x2)	1,600 sf each	Two (2) 20' x 80' open structures with coverings used for the growing of various crops.
Restrooms and Storage	640 sf	Located on the eastern side of the project site, one (1) 16' x 40' restroom containing one lavatory and one drinking fountain.
Well and Water Storage Tanks	770 sf	In addition to farm needs, KKOAs envisions this well as a backup source of water for the community during periods of disaster/recovery. Water quality, salinity, and other factors will be used to determine if well water is suitable for either potable or non-potable uses. Two 12.5k gallon tanks are included for the storage of water. A booster pump and pressure tank will also be included.
Gravel Parking	23,125 sf	Gravel parking on the northwestern side of the project area for approximately 55 stalls.
Grass Parking	59,159 sf	Grass parking on the southern side of the project area for approximately 200 vehicles.
Youth Garden	4,800 sf	Forty-eight (48) 10' x 10' plots
Ohana Garden	5,000 sf	Fifty (50) 10' x 10' plots
Mala Lā'au Lapa'au	Various	Gardens for the growing of traditional and native Hawaiian medicinal plants.
Bush Crop	6,400 sf	One (1) 80' x 80' plot for the growing of bush crops. Bush crops are grown to restore nutrients to the soil. Once restored, these beds will be rotated into KKOAs farming rotation.
Root Crop ('Ōlena/Ginger)	8,000 sf	One (1) 80' x 100' plot for the growing of 'ōlena and ginger.
Kalo Beds	6,400 sf	Four (4) 40' x 40' plots for growing kalo.
Kalo Beds	30,000 sf	Twelve (12) 50' x 50' plots for growing kalo.
Niu	4,900 sf	One (1) 70' x 70' plot for growing of niu (coconut).
Mai'a	4,900 sf	One (1) 70' x 70' plot for growing of mai'a (banana).
Papaya	4,900 sf	One (1) 70' x 70' plot for growing of papaya.
Ti	Various	Two groves of ti.
'Ulu	Various	Groves for the growing of 'ulu (breadfruit).

Since becoming a lessee of the 10-acre site, KKOAs has served the Anahola community by providing access to a safe environment that perpetuates traditional native Hawaiian and modern farming techniques. The proposed action will allow KKOAs to maintain and expand its current programming to address social determinants of suicide and health. Students and volunteers will continue to utilize the project site for educational activities. Future endeavors include the marketing of farm-grown foods to the local community and establishing a weekly Farmer's Market on site. Products would include uncooked kalo, poi or kulolo, fresh produce (e.g. papaya, niu, 'ulu), medicinal plants (e.g. noni, kukui, 'ōlena), and value-added products (e.g. coconut water, 'ulu hummus, juice, teas).

2 SITE ACCESS

2.1 EXISTING CONDITIONS

Main vehicular access to the property is off of Pilipoli Road. There are no existing driveway aprons on Pilipoli Road as the project site was intended to be part of a future phase of the Piilani Mai Ke Kai Subdivision.

2.2 PROPOSED CONDITIONS

The main vehicular access to the site will be provided via a full access driveway on Kukuihale Road makai of Pilipoli Road serving a 35-stall parking lot. There will also be a secondary vehicular access from Pilipoli Road for a limited of special events. Both Kukuihale Road and Pilipoli Road are owned by DHHL.

3 DRAINAGE INFRASTRUCTURE

3.1 EXISTING CONDITIONS

3.1.1 COUNTY OF KAUA'I DRAINAGE STANDARDS

The project hydrology is evaluated in accordance with County of Kaua'i "Storm Water Runoff System Manual, July 2001", hereinafter referred to as the "Manual" (using NOAA Atlas 14 Volume 4 Version 2.1 in lieu of Plates 3 and 4 "Intensity of 1-hr Rainfall for 2- and 100-year Return Periods"). Plates 3 and 4 of the County Drainage Standards are based on the U.S. Department of Commerce Technical Paper 43, Rainfall Frequency Atlas of the Hawaiian Islands (TP-43) published in 1962. Rainfall intensity maps in NOAA Atlas 14 Volume 4 Version 2.1 are the result of interpolation of frequency estimates of a larger sample of rain stations with longer years of record than TP-43, thus the NOAA Atlas maps portray a more accurate representation of the rainfall intensity.

For drainage areas of 100 acres or less, the "Manual" stipulates that the drainage system to be designed for a 2-year recurrence interval. The rational method is based on the drainage area, runoff coefficient (ground cover conditions), and the rainfall intensity for duration equal to the time of concentration.

3.1.2 EXISTING DRAINAGE INFRASTRUCTURE AND HYDROLOGY

DHHL maintains the drainage infrastructure in the project vicinity including one (1) 48-inch culvert and one (1) 24-inch culvert that cross the Pilipoli Road. The culverts discharge runoff generated from the Pi'ilani Mai Ke Kai Subdivision into the drainage ditches on site. These drainage improvements were constructed as part of the subdivision's drainage infrastructure. Offsite runoff collected, conveyed, and discharged onto the site is analyzed in the approved drainage report for the subdivision (Akinaka, 2006). The peak discharge rate Q_2 for the 48-inch culvert is 56.31 CFS, and the peak discharge rate Q_2 for the 24-inch culvert is 11.57 CFS. See *Figure 5* for the existing culverts' locations.

Stormwater runoff from offsite is conveyed through the property to downstream in two existing ditches that cross through the property. Runoff generated on the site, flows overland in the makai direction and flows into one of the drainage ways or overland into the property downhill of the site. Existing offsite and onsite drainage basins are shown on *Figure 5* and are listed in the table below.

Table 2: Existing Condition Peak Runoff Flow Estimate

Basin	Description	Weighted “C” Value	Corrected Intensity, in/hr	Lot Area (acres)	Runoff $Q_2 = C \cdot I \cdot A$ cfs
A	Lot left of center swale	0.10	4.26	6.5	2.67
B	Lot right of center swale	0.10	3.84	3.9	1.44

3.2 PROPOSED CONDITIONS

3.2.1 HYDROLOGY AND PROPOSED DRAINAGE INFRASTRUCTURE

Developed condition hydrology is assessed via the Rational Method as for the existing condition, above. Weighted “C” values accommodate pervious pavement in vehicle accessible areas, roofed areas of proposed structures, and landscaping over remaining area. The proposed drainage basins are shown on *Figure 6*.

Site grading will accommodate the proposed development and maintain existing drainage patterns. The existing drainage ditches and culverts will remain, and the runoff in the proposed conditions will continue to either sheet flow or drain into the existing ditches. Proposed drainage infrastructure includes three 2-36” culverts and two 5-ft wide, 4-ft deep swales.

The conceptual drainage system and grading are shown in *Figure 3*.

Table 3: Proposed Condition Peak Runoff Flow Estimate

Basin	Description	Weighted “C” Value	Corrected Intensity, in/hr	Lot Area (acres)	Runoff $Q_2 = C \cdot I \cdot A$ cfs
A	Lot left of center swale	0.10	4.26	6.5	2.67
B	Lot right of center swale	0.10	3.84	3.9	1.44

3.2.2 STORM WATER QUALITY REQUIREMENTS

The “Manual” stipulates that permanent erosion and sediment control to be required for developments greater than 2 acres. Permanent sediment basin(s) or other erosion and sediment control facilities will be required to store 0.5 inch of sediment per acre of impervious surfaces, per storm event. These facilities must be maintained after storm events so that the required erosion and sediment control capacity is available for the next storm event.

Potential permanent erosion and sediment control Best Management Practices (BMPs) may include vegetated swales and storm water quality basins.

4 WATER INFRASTRUCTURE

4.1 EXISTING CONDITIONS

An 8-inch diameter potable water main (owned by the Kaua’i Department of Water) runs along Pilipoli Road. There are two Type “B” water meter boxes sized for 5/8-inch and 3/4-inch fronting the site on Pilipoli Road. These two meters had been conditionally approved by DHHL in 2021, to supply demand for the development of the site. See *Figure 9* for the Authorization to Obtain County Water Service Letter.

4.2 PROPOSED CONDITIONS

4.2.1 WATER DEMAND

Potable water peak demand and irrigation non-potable water peak demand were estimated using plumbing fixtures specified in the “2012 Uniform Plumbing Code” and summarized below.

Potable Water

The total fixture units are 52.5 with demand of 30 gpm. The proposed water meter size for the potable water demand is 3/4-inch with maximum capacity of 30 gpm. See *Figure 10* for the Potable Water Meter Sizing Worksheet.

Non-potable Water

Hose Bibb: Fixture Units of 2.5 x Proposed Quantity of 1 = Total of 2.5 Fixture Units

Hose Bibb, EA Additional: Fixture Unit of 1.0 x Proposed Quantity of 43 = Total of 43.0 Fixture Units

The total fixture units are 45.5 with demand of 27 gpm. The proposed water meter size for the non-potable water demand is 3/4-inch with maximum capacity of 30 gpm.

The total planting area will be 2.5 acres. Based on the irrigation information provided by Kaua'i Irrigation Supply, the recommended planning irrigation is 16,000 gal/acre/day, which totals to be 40,000 GPD. The irrigation system will be serviced by the proposed non-potable water system.

4.2.2 PROPOSED WATER SUPPLY SYSTEM

Two 3/4-inch water laterals will be installed and connected to the existing 8-inch water main to supply the water demand for the proposed development. Two 3/4-inch water meters will be installed for both potable and non-potable water uses.

A proposed well is to be drilled on site and connected to the onsite non-potable water system. The well layout consists of two water storage tanks, one pressure tank, one booster pump, and one well,

The conceptual domestic water system layout is shown in *Figure 2*.

4.2.3 FIRE PROTECTION

Fire protection water supply will be provided off of the existing public water main in Pilipoli Road. Each building will be provided with an approved automatic fire sprinkler system and a new fire service connection will be installed.

Fire apparatus access will be provided along Pilipoli Road and Kukuihale Road. Since the buildings will be protected with approved automatic system, the maximum distance from fire apparatus access to buildings is 450 ft (NFPA 2012, 18.2.3.2.2.1), which is complied by the site layout.

Fire hydrants will be provided along Pilipoli Road and Kukuihale Road within 12' of the distance from the fire apparatus access. The maximum distance to a fire hydrant from the closest point of building will not exceed 400'.

5 WASTEWATER INFRASTRUCTURE

5.1 EXISTING CONDITIONS

There is no municipal wastewater service to the project site or to the adjacent subdivision (Pi'lani Mai Ke Kai Subdivision). The subdivision currently operates on IWS (Individual Wastewater System) with septic systems. There is no wastewater treatment facility within the vicinity of the site.

5.2 PROPOSED CONDITIONS

5.2.1 WASTEWATER FLOW PROJECTIONS

Wastewater flow is estimated using rates from the Hawaii Administrative Rules Chapter 62 of Title 11 (HAR 11-62) Appendix D, Table I, dated July 1, 2014. On a regular weekly basis, the projected average daily flow is anticipated to be 3,100 GPD. In the scenario where special events occur simultaneously with the weekly programs, the maximum average daily use will be 4,700 GPD. The proposed wastewater system is designed to serve this demand with composting toilets and four IWSs, with each IWS designed to receive and dispose of no more than 1,000 GPD of domestic wastewater. The wastewater calculations demand is shown in *Table 4* in the appendix.

5.2.2 PROPOSED WASTEWATER SYSTEM

Since there is not any wastewater treatment facility in the vicinity, two alternatives were proposed to serve the project – Alternative 1: Individual Wastewater Systems and Alternative 2 (Optional): Wastewater Treatment Works. The design of the proposed wastewater system is based on HAR 11-62.

Alternative 1: Individual Wastewater Systems (IWSs)

Four IWSs will be constructed near heavily-used facilities with high traffic and sized to handle maximum of 1,000 GPD:

IWS #1 will be serving the kitchen with average daily use of 1,000 GPD.

IWS #2 will be serving the Office, Marae, Co-op, Garden, and Farm with average daily use of 633 GPD.

IWS #3 will be serving the Youth Center, Youth Garden, and Farm with average daily use of 508 GPD.

IWS #4 will be serving the Youth Center, Youth Garden, and Farm with average daily use of 633 GPD.

When there are special events occurring, composting toilets and portable toilets will be implemented to limit the use of the IWSs, ensuring that the average daily use will stay within 1,000 GPD for each IWS. An additional gray water IWS will be installed for the processing center if needed.

The conceptual sewer system layout is shown in *Figure 2*.

Alternative 2 (Optional): Wastewater Treatment Works

Alternative 2 will implement Aerobic Treatment Unit (ATU) with disposal to absorption bed. Following pre-treatment in grease interceptor and pre-loaders, wastewater will be pumped to an 8,500 GPD ATU for primary treatment. The ATU will be located at the southern corner of the property. The treated effluent will be discharged into a dosing tank, then into the absorption bed disposal system.

The absorption beds will be located the proposed grassed parking area to maximize the vertical distance from ground water and maintain accessibility by maintenance vehicles. The absorption bed disposal system

(inclusive of 100% backup) will be consisted of four equally sized absorption beds at approximately 48' x 100' long, which equates to 19,200 SF of absorption area, meeting the 16,500 SF minimum area requirement as calculated from HAR 11-62. The dosing pumps will be controlled such that flow will be equally distributed to each absorption bed.

REFERENCES

National Fire Protection Association, NFPA® 1 Fire Code, 2012 Edition

State of Hawaii, Department of Health, Hawaii Administrative Rules, Title 11, Chapter 54, *Water Quality Standards*

State of Hawaii, Department of Health, Hawaii Administrative Rules, Title 11, Chapter 55, *Water Pollution Control*

State of Hawaii, Department of Health, Hawaii Administrative Rules, Title 11, Chapter 62, Wastewater Systems, January 14, 2004.

U.S. Department of Commerce, Weather Bureau, *Technical Paper No. 43 – Rainfall Frequency Atlas of the Hawaiian Islands for Areas to 200 Square Miles, Durations to 24 Hours, and Return Periods from 1 to 100 Years*, 1962

U.S. National Oceanic and Atmospheric Administration, National Weather Service, *Precipitation Frequency Atlas of the United States*, NOAA Atlas 14, Volume 4, Version 2, 2009

Websites Accessed:

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delporte, 2013: Online Rainfall Atlas of Hawai'i. *Bull. Amer. Meteor. Soc.* 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1. Accessed 20 June 2022.

U.S. Department of Agriculture, Natural Resources Soil Conservation Service, online *Web Soil Survey*. Accessed March 12 2022.

U.S. Federal Emergency Management Agency, Flood Hazard Assessment Map

U.S. National Oceanic and Atmospheric Administration, National Weather Service
HDSC Precipitation Frequency Data Server http://hdsc.nws.noaa.gov/hdsc/pfds/hi/hi_pfds.htm

TABLE 4

G70

111 South King Street, Suite 170

Honolulu, Hawaii 96813

Phone: 523-5866

Fax: 523-5874

KKOA Ulupono Anahola

Job No.: 221114-01

Date: June 2022

USE	Rate	UNITS	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Weekly
			AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,		AVERAGE DAILY,
			QTY	GPD	QTY	GPD	QTY	GPD	QTY	GPD	QTY	GPD	QTY	GPD	QTY	GPD	GPD
Staff	20	gpd/capita	5	100	5	100	5	100	5	100	5	100	5	100	5	100	
Kitchen	5	gpd/meal	200	1000	200	1000	200	1000	200	1000	200	1000	200	1000	200	1000	
Ohana Garden	20	gpd/capita	10	200	10	200	10	200	10	200	10	200	10	200	10	200	
Educational Collaboration	20	gpd/capita	30	600	0	0	0	0	0	0	0	0	0	0	0	0	
Resilient Leaders & Food Security After-School Program	20	gpd/capita	0	0	12	240	12	240	0	0	0	0	0	0	0	0	
Hoohana Program	20	gpd/capita	0	0	0	0	0	0	10	200	0	0	0	0	0	0	
Summer Intersession	20	gpd/capita	60	1200	60	1200	60	1200	60	1200	60	1200	0	0	0	0	
TOTAL for Weekly Programs			3100		2740		2740		2700		2500		1300		1300		2340
Special Events																	
Collaborative Field Trips from Schools	20	gpd/capita	30	600	30	600	30	600	30	600	30	600	0	0	0	0	
Workshops	20	gpd/capita	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	
TOTAL for Special Events			1600		1600		1600		1600		1600		1000		1000		1430
TOTAL for Weekly Programs + Special Events			4700		4340		4340		4300		4100		2300		2300		3770
TOTAL for Weekly Programs + Special Events with Composting Toilets			4100		3740		3740		3700		3500		1700		1700		3170

NOTES:

PROGRAMS/EVENTS USING ALL FACILITIES (TO BE SPLIT AMONG 3 IWSs)

Educational Collaboration: 600 GPD

Summer Intersession: 1200 GPD

Collaborative Field Trips from Schools: 600 GPD

Workshops: 1000 GPD

Staff: 100 GPD

COMPOSTING TOILETS (CT)

6 Composting toilets on site in low use/traffic areas.

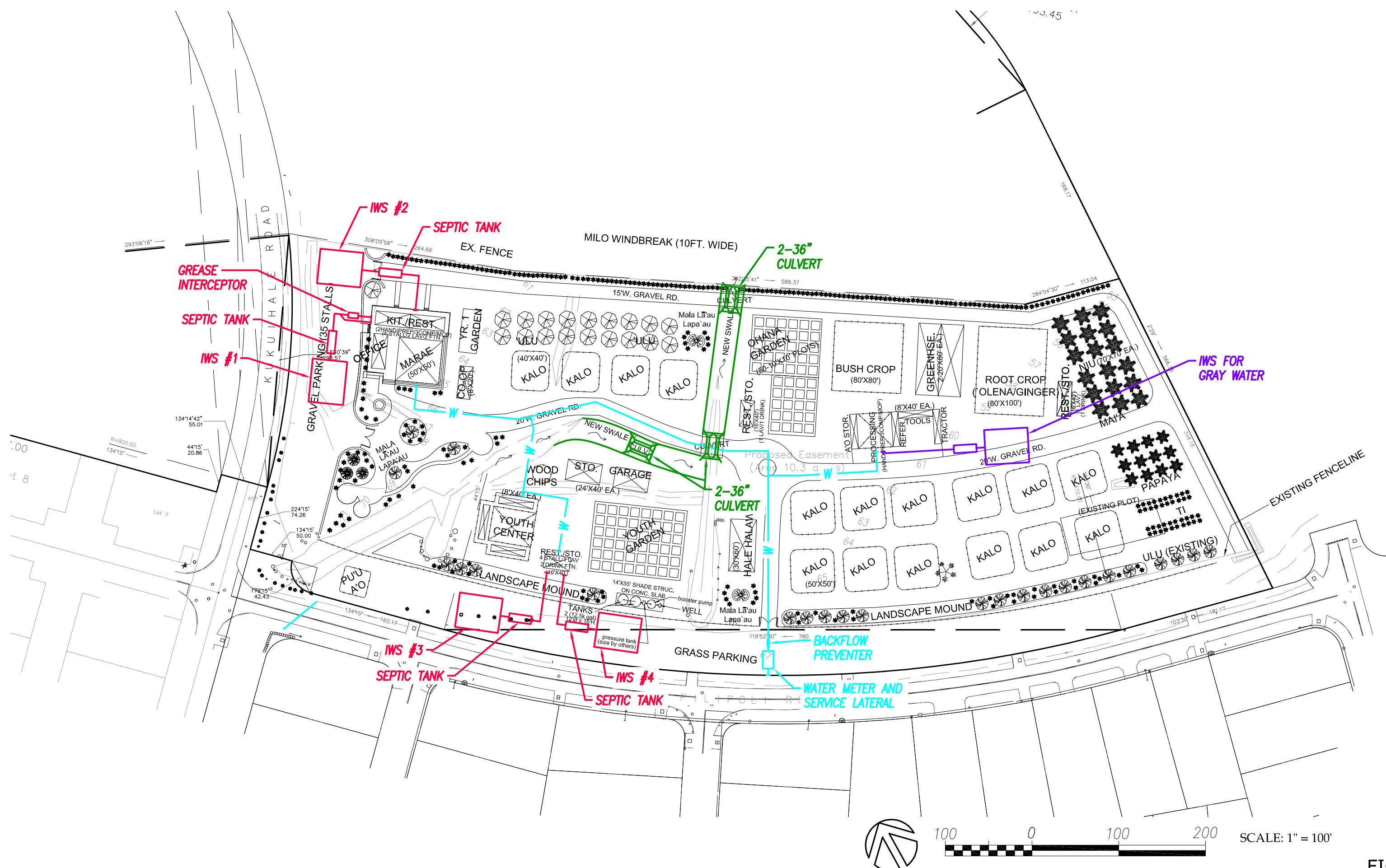
Each composting toilet accommodates 5 people in a day.

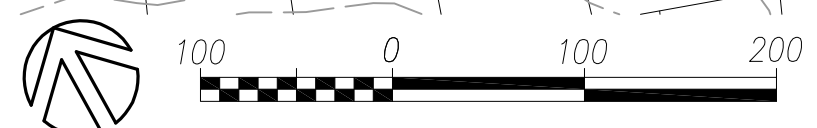
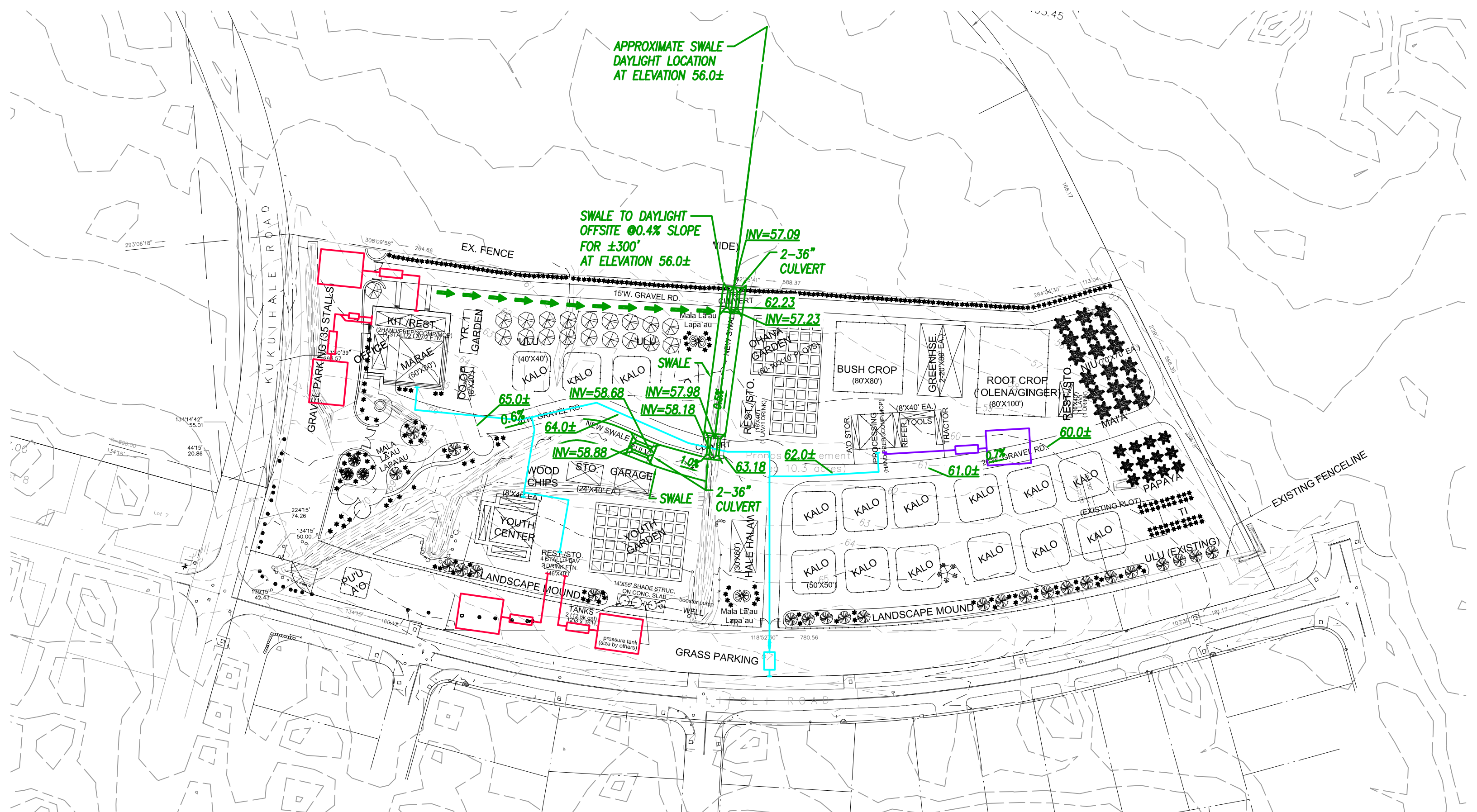
6 CT * 5 capita * 20 GPD/capita = 600 GPD reduction for IWSs, excluding IWS #1 (for Kitchen).

600 GPD / 3 IWSs = 200 GPD reduction per IWS.



Figure 1 - Project Location





SCALE: 1" = 100'
1-FT CONTOUR

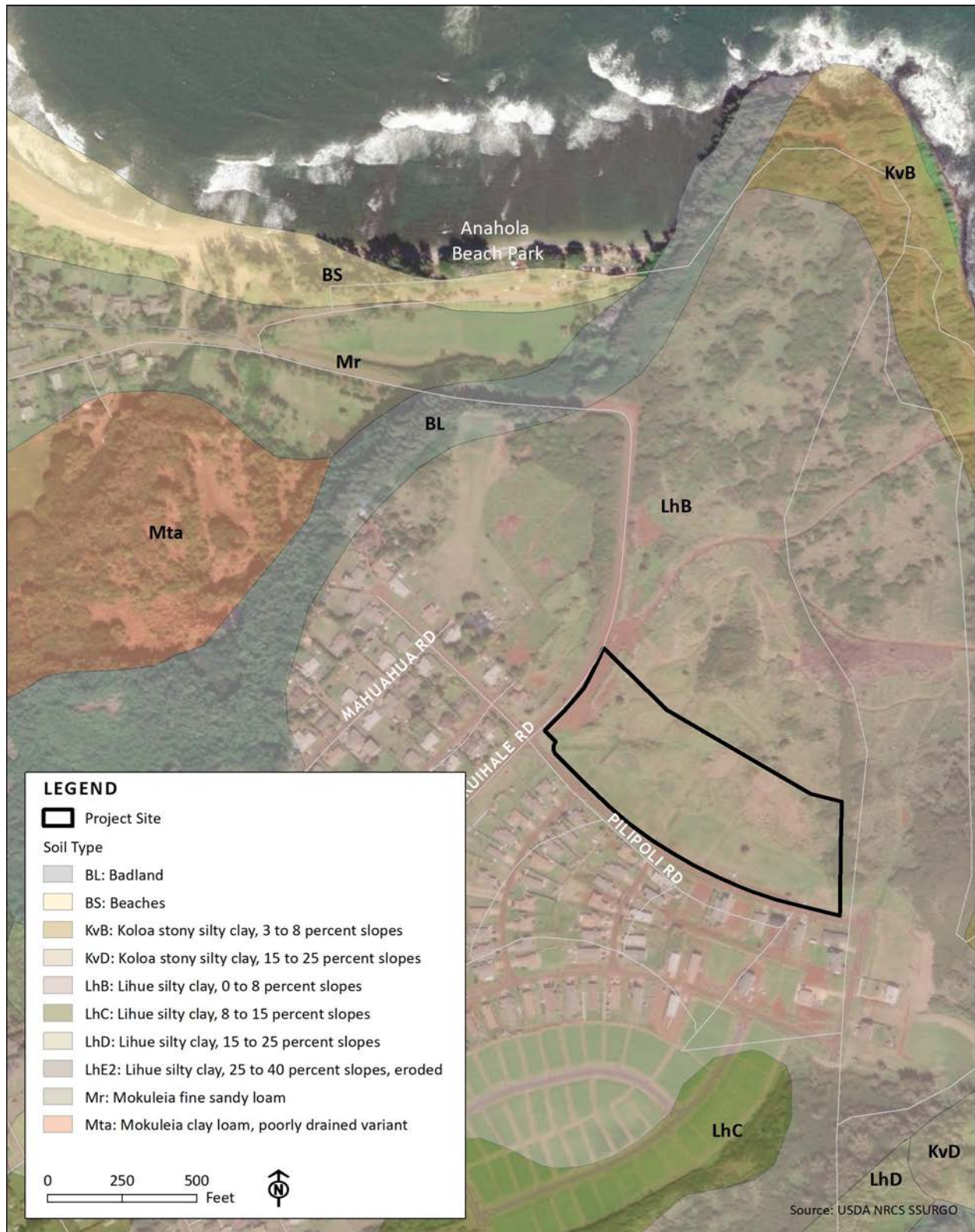
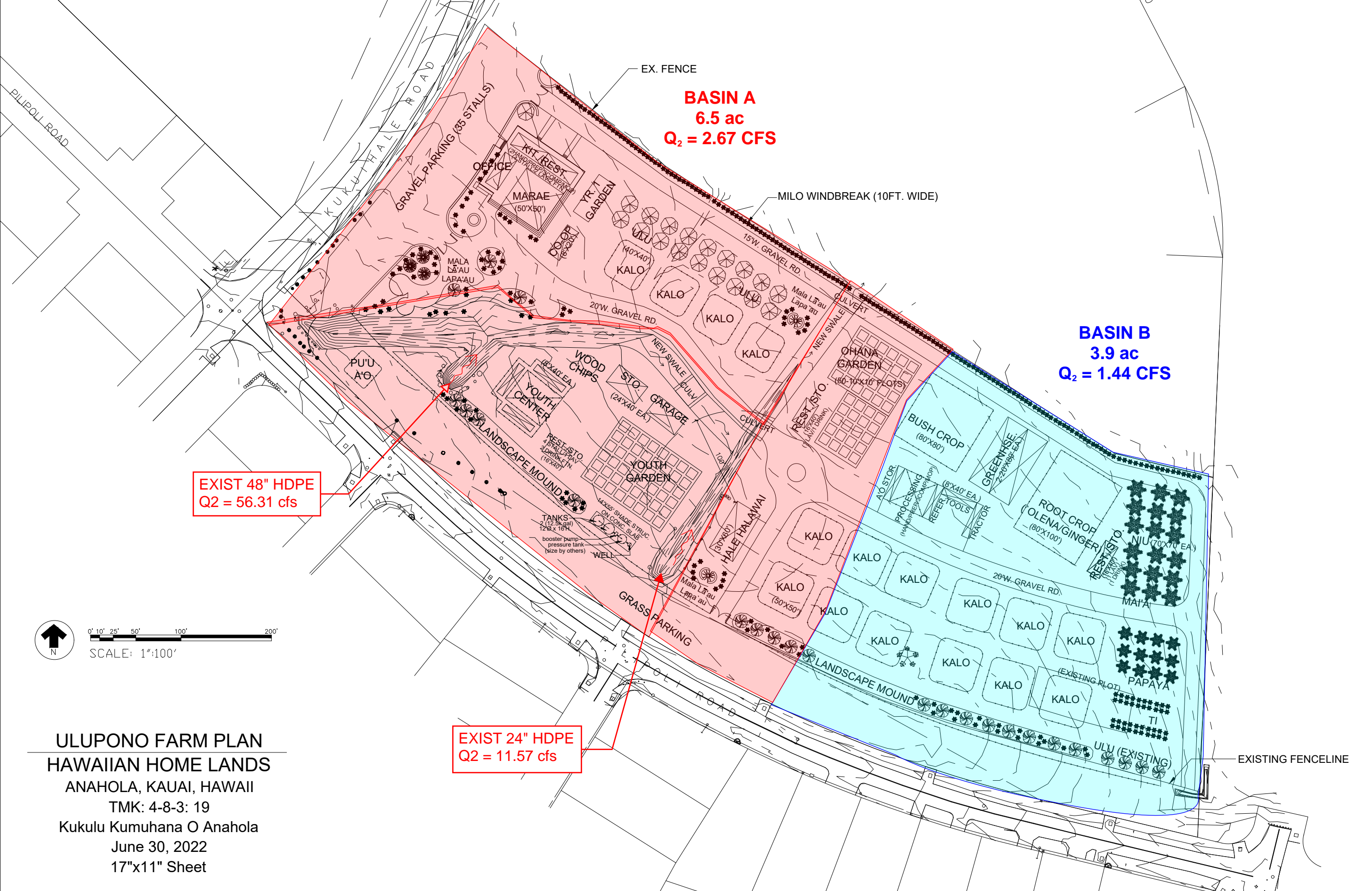


Figure 4 - Soils Map



FIGURE 6
PROPOSED HYDROLOGIC MAP



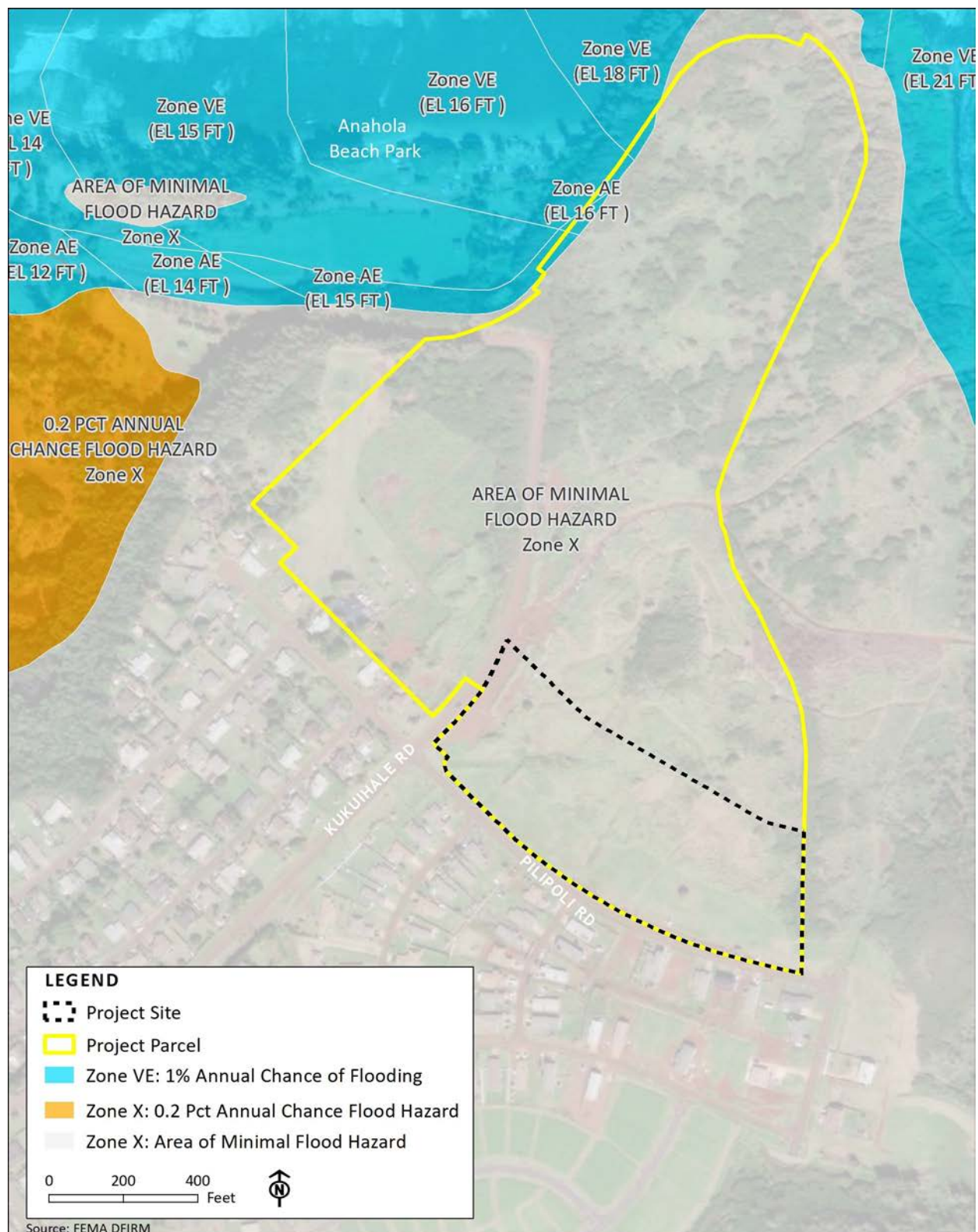


Figure 7 - Flood Map

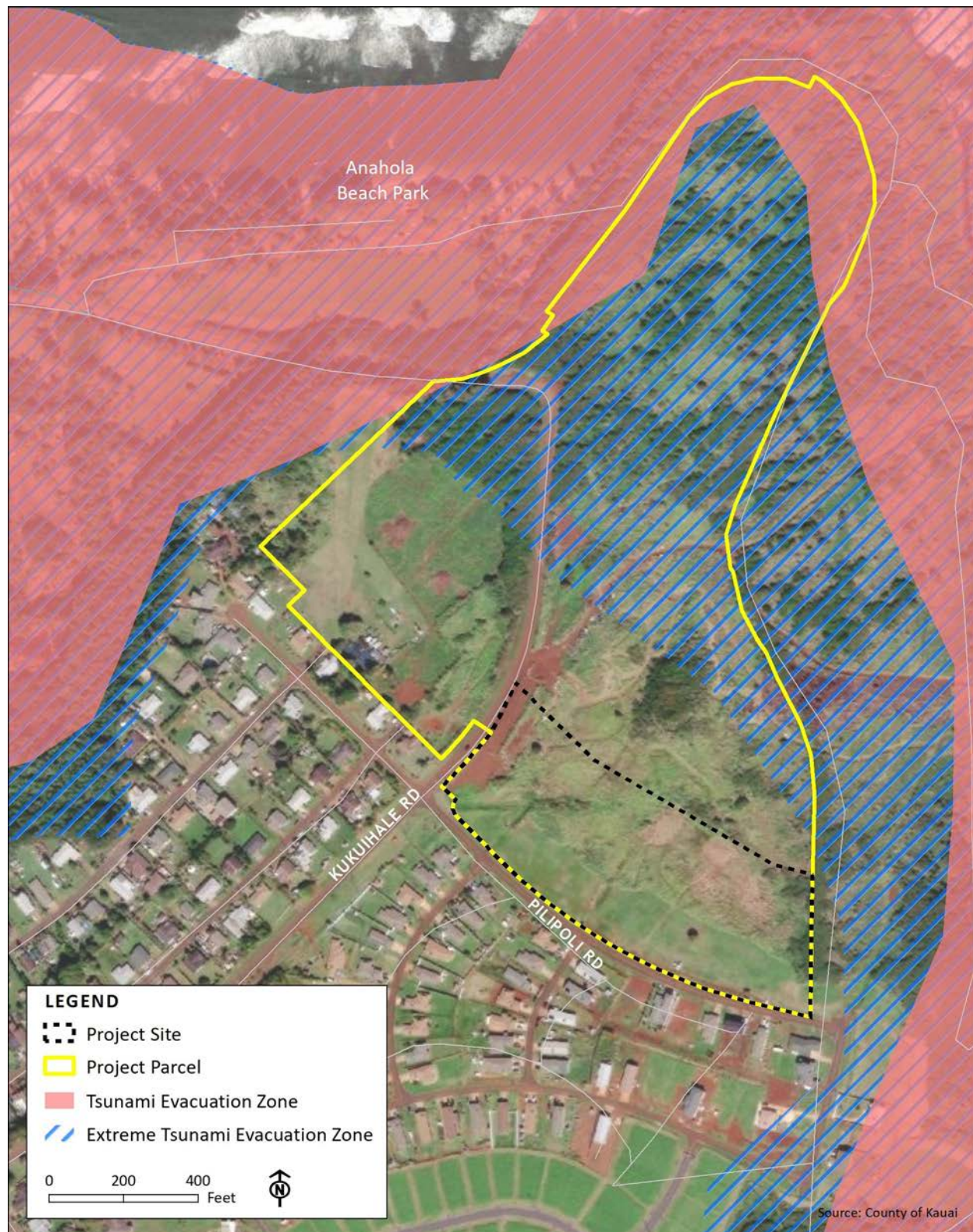
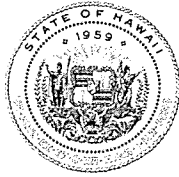


Figure 8 - Tsunami Evacuation Zone Map

Figure 9 - Authorization to Obtain County Water Service Letter

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII

JOSH GREEN
LT. GOVERNOR
STATE OF HAWAII



WILLIAM J. AILA, JR.
CHAIRMAN
HAWAIIAN HOMES COMMISSION

TYLER I. GOMES
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879
HONOLULU, HAWAII 96805

July 27, 2022

Mr. Michael Inazumi, Chief
Department of Water, County of Kauai
Water Resources and Planning Division
4398 Pua Loke Street
Lihue, Hawaii 96766

Dear Mr. Inazumi:

Subject: Authorization to Obtain County Water Service – Kukulu Kumuhana O
Anahola (KKOA); Ulupono Project, TMK:(4)4-8-003:019(por.), Anahola, Kauai

The Department of Hawaiian Home Lands (DHHL) has authorized the issuance of six (6) water credits to Kukulu Kumuhana O Anahola (KKOA) from the DHHL water credit allocation in Anahola. The six (6) credits will be used by KKOA for two (2)-3/4-inch water meters.

DHHL issued one (1) water meter credit free of charge however, KKOA will have to pay for the additional five (5) credits.

The site at TMK: (4) 4-8-003:019 (por.) a 10-acre parcel on Pilipoli Road in Anahola, is Licensed to KKOA for 5 years with an option to extend.

KKOA will be responsible to compensate DHHL for the Facilities Reserve Charge (FRC) imposed by Kauai Department of Water (KDOW) for the five (5) water credits since this is not a DHHL residential homestead property. KKOA will pay for any other KDOW expenses applicable to installing water service, such as the cost to purchase and install the water meter, back-flow prevention devices, etc. pursuant to KDOW, County of Kauai rules and regulations.

Should you have any questions or concerns, please contact Kaipo Duncan, Land Agent, Land Management Division, at 808.620.9458 or email kaipo.duncan@hawaii.gov.

Aloha,

William J. Aila, Jr., Chairman
Hawaiian Homes Commission

c: Kuulei Punua, President, KKOA

Figure 10 - Potable Water Meter Sizing Worksheet

WATER METER SIZING WORKSHEET

Department of Water - Water Resources and Planning Division

Proposed Development: * ☐ Residential - Private ☒ Non-Residential - Public *Required Fields

Project Name: * ULUPONO COMMUNITY FARM - POTABLE WATER **Bldng Permit No.:** * N/A

Tax Map Key: * (4) 4-8-003: 019 **Unit:** _____ **Existing Meter Size:** * N/A

The following information must be completed and signed by an engineer or architect.

Attach a floor plan that shows ALL plumbing fixtures. Be made aware that actual building permit floor plans should be identical to the attached floor plan that is presently being used to determine the water meter size of the development.

Reference: 2012 Uniform Plumbing Code								
Plumbing Fixtures	Fixture Unit	Existing (Quantity)				Proposed (Quantity) (+)	Total	
		Remain (+)		Demolish (-)				
WATER CLOSET (FARM)	2.5					4	10.0	
WATER CLOSET (ASSEMBLY)	3.0					4	12.0	
MOP SINK	3.0					2	6.0	
HAND SINK	2.0					3	6.0	
KITCHEN SINK	2.0					4	8.0	
ICE MACHINE	1.0					1	1.0	
LAVATORY	1.0					5	5.0	
DRINKING FOUNTAIN (FARM)	0.5					6	3.0	
DRINKING FOUNTAIN (ASSEMBLY)	.75					2	1.5	
Comments: 3/4" meter: 30 gpm max, 53 fu max		Total Fixture Units: *					52.5 fu	
		Demand (gpm): *					30 gpm	
		Proposed Water Meter Size: *					3/4"	

Preparer's Signature: *  **Date:** * 06/02/2022

Preparer's Name and Title: * NALANI R. MAHELONA, ARCHITECT

Appendix B

Cultural Impact Assessment

CULTURAL IMPACT ASSESSMENT FOR ULUPONO ANAHOLA PROJECT

**ANAHOLA AHUPUA'A, KO'OLAU MOKU, KAUA'I ISLAND
TMKS: [4] 4-8-003:019 (POR.) AND 021 (POR.)**





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This report was prepared by Nohopapa Hawaii'i, LLC for Group70

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PROJECT SUMMARY

Reference	Literature Review & Field Inspection for the Ulupono Anahola Project, Anahola Ahupua'a, Ko'olau District, Kaua'i Island, TMK [4] 4-8-003:019 (por.) 021 (por.) (Merrin et al. 2022)
Date	May 2022
Land Jurisdiction	Department of Hawaiian Homelands (DHHL)
Project Proponent	Department of Hawaiian Homelands (DHHL) (project prime), in partnership with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association
Project Location	The Ulupono Anahola Project is located within TMK (4) 4-8-003:019 (por.) and :021(por.) on approximately 10 acres of undeveloped agricultural land managed by the Department of Hawaiian Homelands. The project area is located east of Pilipoli Road and makai of the Pi'ilani Mai Ke Kai Association.
Project Description	DHHL as the primary project proponent is working with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association to facilitate the use of DHHL-managed landholdings for non-homesteading purposes. The proposed project will develop Ulupono Anahola (currently vacant agricultural land) for community use, which includes an agricultural garden training site and youth center, and the construction of a series of communal buildings and structures whose design plans were pending finalization when this study was written.
Project Acreage	Approximately 10 acres
Area of Potential Effect (APE) and Inspection Area Acreage	According to Hammatt (2005: 2) 'Aikanaka Heiau, recorded by Bennett as destroyed and marked by a large boulder, is located approximately 2000 feet north of the project area. As 'Aikanaka Heiau lies outside the boundaries of the current project area, no efforts were made to relocate or document it. Historic maps of Anahola and Kamalomalo from 1904 to 1955 show train tracks abutting the project area. The last railroad tracks were removed in 1959 no remnants were observed during the field inspection. Moreover, based on material, condition, and location, a culvert located on the mauka west corner of the property is likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s. A Ditch with the swale is likely the waste water from the plantation that dumped into the property with no clear path to its end or management of its flow. While outside the current project area, noted practices in the bay such as akule fishing and shark/ 'aumakua feeding, etc, limu growing and cultivation should be considered.
Document Purpose	The Project requires compliance with the Hawai'i environmental review process (Hawai'i Revised Statutes [HRS] Chapter 343), which requires consideration of a proposed Project's effect on cultural practices and resources. At the request of G70, Nohopapa Hawai'i, LLC is conducting this CIA. Through ethnographic research and community engagement efforts, this CIA provides information pertinent to the assessment of the proposed Project's impacts to cultural practices and resources (per the <i>Office of Environmental Quality Control's Guidelines for Assessing</i>

	<p><i>Cultural Impacts</i>) which may include Traditional Cultural Properties (TCP) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places, in accordance with Hawai'i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria (HAR §13-284) under Criterion E. The document is intended to support the Project's environmental review and may also serve to support the Project's historic preservation review under HRS Chapter 6E-42 and Hawai'i Administrative Rules (HAR) Chapter 13-284.</p>
Community Engagement	<p>Community Engagement for this CIA was conducted from February to May 2022. As a multi-phase study, the ethnographic process consisted of identifying appropriate and knowledgeable individuals, conducting ethnographic interviews, summarizing the interviews, analyzing the ethnohistoric data, and preparing the report. Six individuals were contacted to participate in this study. Three individuals participated in interviews and three were not able to participate for various reasons.</p>
Recommendations	<p>Recommendations include a continuous effort to gather and implement the knowledge and wisdom of the kūpuna, the kupa 'āina, and folks who are willing to provide feedback from their lived experiences in the area. From the interviews, it was also shared that developers should continuously seek out and implement the right protocol and practices and consider what is culturally appropriate. For instance, mitigate run-off and environmental impacts of the construction of the site on nearby resources – especially the marine resources spatially connected to the project area. Being considerate of what would contaminate the ocean such as soil and sediment that could seep down. While extremely unlikely, it was shared from the interviews that if iwi kūpuna are discovered the proper protocols are in place. In the past, the "backroads" of Anahola were somewhat connected and fishers would access the shoreline from the trails near the project area. While one does not need to come through the project area in order to access the shoreline, it was recommended to consider the community in regards to access to places, like Kahala, and the shorelines makai (seaward) of the project area. The project area itself it was envisioned by participants that the area be utilized for cultural and agricultural practices, such as farming kalo, 'awa, lā'au (for medicine), and other native Hawaiian plants that support self-sufficiency. Other planning items to consider include addressing agricultural longevity and maintenance of the area looking outwards towards the next 40 to 60 years. Lastly, it is recommended to engage and inform the community about what's happening, be ready with conflict resolution, and have a process for that sooner rather than later. Per Hawai'i Revised Statutes (HRS) 6E, "Historic Preservation" and Hawai'i Administrative Rules Title 13 Subtitle 13 Chapter 300, "Rules of Practice and Procedure Relating to Burial Sites and Human Remains" it is important to note that the project proponent is legally obligated to stop work immediately and report to SHPD any historic properties, including iwi kūpuna (Native Hawaiian ancestral remains) and human remains from other ethnic groups, located during construction/ground disturbing activities associated with the proposed project.</p>

INTRODUCTION AND METHODS

HE LEO MAHALO

Mahalo to all the individuals involved in this project. Rae Nam of Kūkulu Kumuhana o Anahola, Planner, Thomas Pi'ilani Smith and Principle, Kāwika McKeaue with G70 for meeting, coordinating, and helping schedule and plan the field inspection. Mahalo to Stacy Naipo from the State Historic Preservation Department (SHPD) for helping us retrieve reports for the project area. Lastly, mahalo to G70 for this opportunity to conduct a literature and field inspection for the Ulupono Anahola Project.

PROJECT BACKGROUND

On behalf of G70, Nohopapa Hawai'i, LLC conducted a Cultural Impact Assessment (CIA) for the Ulupono Anahola Project is located in the ahupua'a of Anahola, Ko'olau Moku, Island of Kaua'i. Specifically the project area is within TMK (4) 4-8-003:019 (por.) and :021 (por.) on approximately 10 acres under the authority of the Department of Hawaiian Homelands (DHHL) located east of Pilipoli Road and makai of the Pi'ilani Mai Ke Kai Association (Figure 1 and 2). This project spanned a 5-month period from January 2022 through May 2022. Project personnel included: Lilia Merrin, M.A., Billy Kinney, B.A., Rachel Hoerman, Ph.D. and principals, Kelley L. Uyeoka, M.A. and Dominique Cordy, M.A..

DHHL as the primary project proponent is working with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association to facilitate the use of DHHL-managed landholdings for non-homesteading purposes. The proposed project will develop Ulupono Anahola (currently vacant agricultural land) for community use, which includes an agricultural garden training site and youth center, and the construction of a series of communal buildings and structures whose design plans were pending finalization when this study was written.

DOCUMENT PURPOSE

The primary purpose of this project is to document cultural features, resources, and practices in the project area, to give voice to some of the community's 'ike (knowledge) and mana'o (thoughts) on the proposed project; and to summarize community concerns and recommendations as they relate to cultural practices within and around the project area, specifically how the proposed project might impact the community—past, present, and future. This report is intended to be used as a source to develop strategies, make informed decisions, and provide recommendations for DHHL as the primary project proponent (with Kūkulu Kumuhana o Anahola and the Pi'ilani Mai Ke Kai Community Association) regarding development of Ulupono Anahola.

This CIA is intended to support the Project's environmental review and may also serve to support the Project's historic preservation review under Hawai'i Revised Statutes (HRS) Chapter 6E—42 and Hawai'i Administrative Rules Chapter 13—284. HRS Chapter 343, requires consideration of a proposed Project's effect on cultural practices. This CIA addresses the proposed Project's impacts to cultural practices and resources, including Traditional Cultural Properties (TCP) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places, in accordance with Hawai'i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria (HAR §13—284—6) under Criterion E which states to be significant an historic property shall:

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 accounts—these associations being important to the group's history and cultural identity.

The CIA includes a review of literature (in English and Hawaiian), historical maps, photographs, and a compilation and summary of various ethnographic interviews related to traditional cultural practices and land use. Contents of the study include:


- » A discussion of the methods utilized for ethnohistorical research and review, and community engagement.
- » A general description of the natural landscapes and resources of Anahola ahupua'a including geology, soils, climate, water resources, traditional ecological zones, native flora and fauna, and traditional subsistence practices.
- » A compilation of cultural traditions such as inoa 'āina, mo'olelo, 'ōlelo no'eau, oli, and mele.
- » An examination of the traditional land uses of Anahola and a historical overview of land use changes including historical maps, visitor recollections, and Māhele information.
- » A review and summary of the archaeological and cultural resources within Anahola ahupua'a.
- » A compilation of interview summaries from community participants with a discussion concerning the cultural beliefs, practices and resources identified, and if they are affected directly or indirectly by the proposed project.
- » A presentation of final recommendations regarding the future management and stewardship of the study areas and a brief conclusion.

Information compiled in this CIA will be used to inform the Environmental Assessment (EA) and should serve as an initial cultural historical background and guide for the development of the Ulupono Anahola project. The structure and content of this Cultural Impact Assessment is in compliance with the primary guiding documents including: The Hawai'i Environmental Council's Guidelines for Assessing Cultural Impacts (Appendix D), A Bill for Environmental Impact Statements (Appendix E), and Act 50 (Appendix F). This Cultural Impact Assessment meets industry standards and is in accordance with Chapter 343, HRS.

METHODS

This Cultural Impact Assessment consisted of three primary tasks: (1) ethnohistorical research and review; (2) community ethnographic interviews, summaries, and recommendations; (3) final report compilation. The study spanned a 5-month period from January 2022 through May 2022. Project personnel included: Lilia Merrin, M.A., Billy Kinney, B.A., Rachel Hoerman, Ph.D., Dominique Cordy, M.A., and principal Kelley L. Uyeoka, M.A.. While conducting this study, Nohopapa Hawai'i's research team incorporated a set of living values and beliefs to help guide our research, analysis, behavior, perspective, and overall frame of reference. The core values directing our hui included:

- » *Aloha 'Āina- to have a deep and cherished love for the land which created and sustains us*

- 
- » *Ha‘aha‘a-* to be humble, modest, unassuming, unobtrusive, and maintain humility
 - » *Ho‘omau-* to recognize, appreciate, and encourage the preservation, perpetuation, and continuity of our wahi pana and kaiaulu
 - » *‘Imi Na‘auao-* to seek knowledge or education; be ambitious to learn
 - » *Kuleana-* to view our work as both a privilege and responsibility

These values represent the underlying foundation, spirit, and structure for this study. It was our hope that by providing a frame of reference and guiding values, the teams' efforts would be better understood in the context of our being indigenous researchers genuinely believing in and practicing aloha ‘āina and aloha lāhui.

The collection of information was divided into two parts – ethnohistorical and ethnographic.

ETHNOHISTORICAL RESEARCH METHODS

The ethnohistorical information is the foundation for understanding the natural, cultural, and historical background of Anahola. To begin to provide a more comprehensive understanding of Anahola and its surrounding areas, this research looked at the cultural and historical overview of the Ko‘olau landscape, as well as the environmental setting, places names, mo‘olelo, land use, ownership, and management history of Anahola and its surrounding areas. This task encompassed a search in various archives, repositories, and online databases.

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division, and a review of cultural history documents at the University of Hawai‘i at Mānoa's Hamilton Library, the Hawai‘i State Archives, the Mission House Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum.

Information on the environmental setting or natural landscape and resources as they relate to cultural and historical activities was gathered primarily through reviewing previous archaeological studies and various reports and books for the project area.

Historic maps and accompanying information were gathered from the University of Hawai‘i at Mānoa Historic Map Collection, State Archives, the State Survey Register Map Database and other online databases such as Papakilo and AVA Konohiki as well as our internal Nohopapa databases. A list of inoa ‘āina (place names) was compiled from these historic maps. The literal (or provided figurative) meanings of the place names were obtained online from various Hawaiian Language Dictionaries, and online through Nā Puke Wehewehe ‘Ōlelo Hawai‘i, Wehewehe Wikiwiki, and ManoMano.io.

To have a deeper understanding of place names as applicable to Anahola, mo‘olelo, oli, and ‘ōlelo no‘eau were compiled from Hawaiian language and English sources in books, newspapers, and online databases such as Lloyd Sohrens Hawai‘i Place Name Database, Hawaiian Legends Index, Institute of Hawaiian Language Research and Translation and Nupepa.org.

Historical accounts which include Kingdom of Hawai‘i land use and resource management practices, early visitor and plantation era accounts were derived from historical and documents such as Māhele records found on AVA Konohiki, and Waihona databases. Māhele information included looking at Boundary Commission Testimonies, Land Commission Awards, Native & Foreign Testimonies and Registers, Government Land Grants, Crown lands, and Government Surveys. Information about Māhele documents was accessed through Waihona ‘Aina, Kipuka, and




Papakilo databases. To accompany these historical accounts, this research included a search for historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum.

ETHNOGRAPHIC INTERVIEW METHODS

Community ethnographic efforts involved conducting ethnographic interviews with community members to record and acknowledge their historical connections to Anahola and document the visions they have for this place. Community engagement work was conducted from February 2022 through to May 2022. The ethnographic process consisted of identifying appropriate and knowledgeable individuals, reaching out to them to participate (Appendix A: Community Participation Letter) conducting ethnographic interviews in-person, over zoom, and over the phone (Appendix B: Interview Themes/Questions), summarizing the interviews, analyzing the data, and preparing this report. The data gathering methodology utilized included scoping via semi-structured community interviews and personal observations.

Scoping and Interviewee Selection



Scoping for this project began by meeting with Aunty Rae and G70, to gather contact information for interested and knowledgeable individuals recognized as having genealogical, cultural, and/or historical connections to the Ulupono-Anahola project area in the ahupua'a of Anahola, Ko'olau Moku. Initial scoping methods included emailing and mailing letters (Appendix A: Community Participation Letter) to inform individuals of the project, contacting individuals by telephone, zoom, and/or meeting with individual in person to discuss the project. Participants were selected because of their familiarity with or knowledge of the project area. Three individuals participated in interviews (Table 8).


Knowledge Sources

During the study, project staff learned that kama'āina that participated in the interviews acquired their knowledge about the region of Anahola and the Ulupono Project Area from the following sources:

1. 'Ohana knowledge or personal, historical knowledge and information passed on within the 'ohana from one generation to the next, as well as raising their own families.
2. Knowledge obtained from individuals outside their 'ohana such as teachers, cultural practitioners, and kūpuna.
3. Knowledge obtained through written sources such as books, documents, newspapers, reports, and studies.
4. Knowledge gathered through personal experience, observations and practices growing up in the area (such as knowledge acquired through cultural work and practices within or near the project area).

Generally, the kama'āina that participated in the interviews acquired their knowledge about the Anahola ahupua'a through growing up in the area, personal experience and observations, and/or knowledge from written sources. Additionally, they acquired their knowledge from older family members who passed on personal, historical, and/or genealogical information about Anahola and/or from other individuals outside their family. Some individuals acquired their knowledge from written sources or from other individuals outside their family.

Ethnographic Interviews



This ethnographic work utilized semi-structured interviews because they are open ended yet follow a general script covering a pre-determined list of topics. The interviews were conducted in a “talk story” format to allow for a more informal dialogue and free-flowing conversation. This interview style is typically more comfortable for participants as it flows more naturally and does not follow a rigid structure. Most of the interview questions were open-ended allowing for more response freedom while still maintaining the desired interview focus. The interview questions were derived from primary themes identified to obtain an understanding of Anahola’s historical and contemporary significance and to document concerns and recommendations. Community mana’o is organized in six overarching themes included:

1. Mo’okū’auhau – genealogy and family history, and ‘ohana and individual connections and relationships to the area
2. Mo’okū’auhau ‘āina – genealogy of the land and traditional and historic land use and ownership
3. Mo’olelo – traditional accounts including place names, mele, oli, hula, ‘ōlelo no’eau
4. Loina kūpuna – customary practices past and present
5. ‘Āina Maui Ola – natural resources and ecosystems including changes over time
6. Recommendations, concerns and suggestions regarding future management of this area



Data Integration

All the interviews were recorded by hand-written notes and/or audio, and portions were then transcribed and summarized. The summaries were then sent to the participants for review, an accuracy check, and to confirm they were comfortable with the thoughts, information, and comments being shared. Nohopapa Hawai’i worked hard to ensure that the voices of the community were honored, respected, correctly heard, and properly conveyed.

Ethics

Throughout the study, and particularly before any meetings or interviews, it was carefully explained to all participants that their involvement in the study was voluntary. An informed consent process was initiated and completed, including providing ample project background information. The informed consent form (Appendix C) included the participant’s rights including notification that participants could choose to remain anonymous. Project background information included explaining the study focus and the purpose and importance of the study. After proper notification and discussion, the interview participants voluntarily provided verbal consent for Nohopapa Hawai’i to use their mana’o for the project as well as signed the informed consent forms. All of the interviews were scheduled and arranged for the participant’s convenience, and none of the interviews was initiated until participants felt completely satisfied with the process.

NATURAL LANDSCAPE AND RESOURCES

PROJECT AREA

The Project area for this CIA focuses on an undeveloped ~10-acre portion within the DHHL Anahola property, makai of Kuhio Highway, that includes portions of TMK (4) 4-8-003:019 and TMK (4) 4-8-003:021. These parcels are located on the eastern side of Kaua'i island in the traditional ahupua'a of Anahola, Ko'olau Moku (Figure 2). This undeveloped land is managed by the Department of Hawaiian Homelands. Specifically the project area is located about less than a half miles southwest and mauka (inland) of Anahola Bay, which is on the northern portion of Kaua'i's windward coast; and just south of Kahala Point (inland), east of Pilipoli Road and makai of the Pi'ilani Mai Ke Kai Association.

Currently it is vacant land with grass, shubbery and hog wire fencing surrounding the current ten acre site. In the last five years many fires have burned in this vicinity causing panic to the area residents. Also the site is proint to heavy illegal dumping. The site is desingated for Community Use (CU) and Residential (R).

ENVIRONMENTAL SETTING

Anahola is the largest of 10 ahupua'a within the moku of Ko'olau, along the northeast coast of the island of Kaua'i. Located between the ahupua'a of 'Aliomanu to the north and Kamalomalo'o to the south, Anahola is rich with natural and cultural history and resources.

Natural resources within the ahupua'a include Anahola stream, two prominent mountain peaks known as Hōkū'alele peak (lit. "star messenger, shooting star, or comet") and Kalalea Mountain (lit. "prominent, protruding"), fertile land and abundant ocean resources. Historically, the upper portion of the valley contained taro terraces, but it is the flatlands along the river mouth that were heavily cultivated (Wichman 1998).

In general, the climate of Anahola is mild. Temperatures near the shoreline average a high of 87 degrees Fahrenheit and an average low of 60 degrees Fahrenheit. The project area itself receives an average of 1074.5 millimeters (mm) (42.30 inches [in]) of annual rainfall (Giambelluca et al. 2022). The prevailing wind is offshore from the northeast.

The project areas is generally a flat land with a slight slope with soil suitable for agricultural uses. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic database (2001) and soil survey data gathered by Sato et al. (1973), the project area's soil predominantly consists of the Lihue silty clay, 0 to 8 percent slopes (LhB), as well as possible sediments of nearby of the Badland (BL), Koloa stony silty clay, 3 to 8 percent slopes (KvB), Koloa stony silty clay, 15 to 25 percent slopes (KvD) and Lihue silty clay, 8 10 15 percent slopes (LhC), (Table 1, Figure 4).

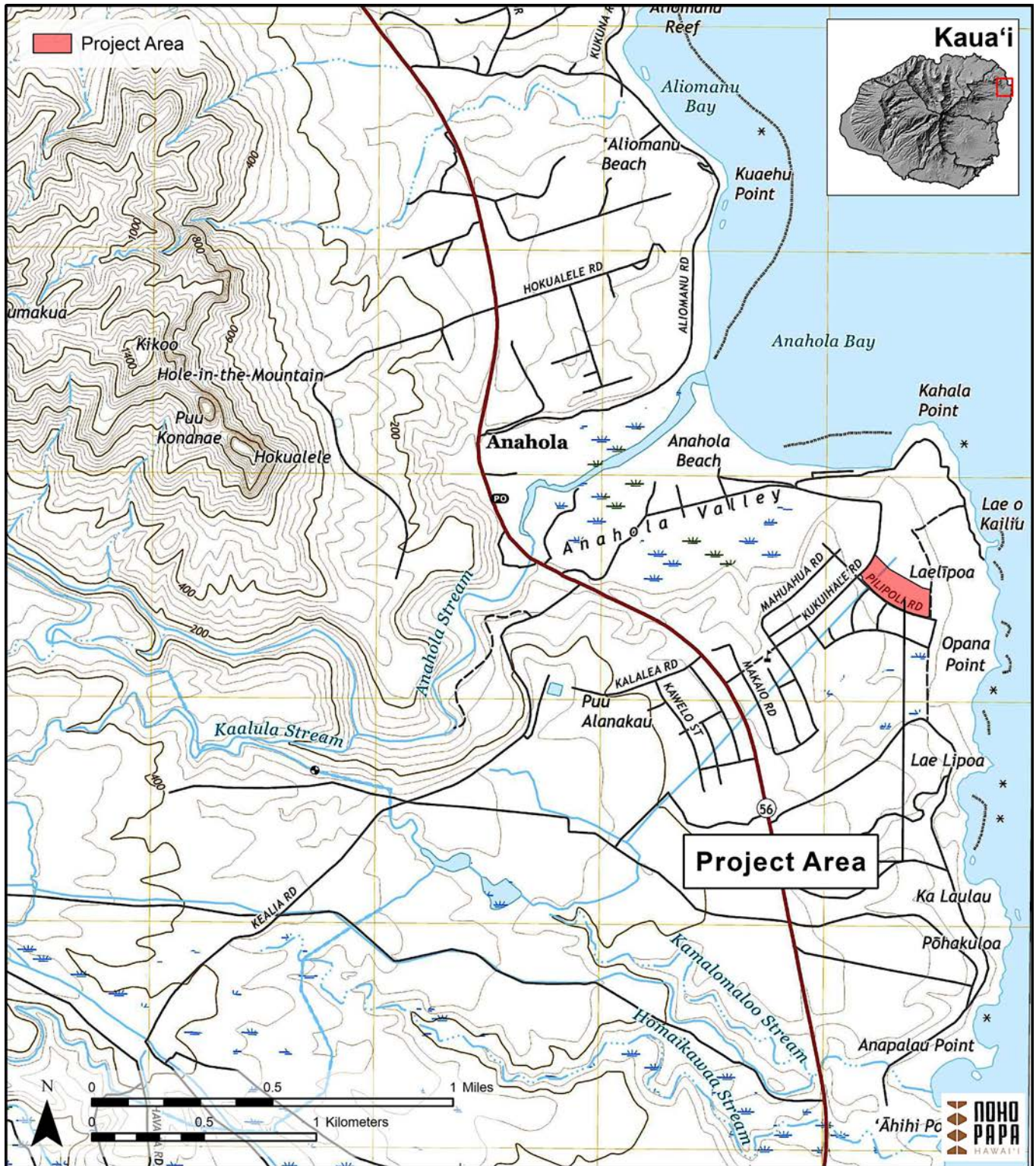


Figure 1. Overview map showing the location of the project area.

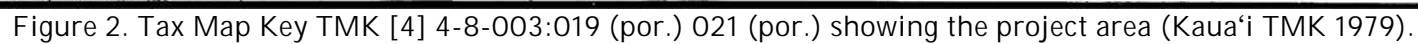




Figure 3. Aerial photograph showing the location of the project area (Google Earth 2020).

Table 1. Soil types within and nearby the project area.

Soil Abbreviation	Soil Name
BL	Badland
KvB	Koloa stony silty clay, 3 to 8 percent slopes
KvD	Koloa stony silty clay, 15 to 25 percent slopes
LhB	Lihue silty clay, 0 to 8 percent slopes
LhC	Lihue silty clay, 8 10 15 percent slopes
Mr	Mokuleia fine sandy loam

The Lihue silty clay, 0 to 8 percent slopes (LhB) series is on the tops of broad interfluvies in the uplands. General characteristics of this type of soil has a very dark greyish-brown surface layer and a mottled subsoil. In a representative profile that surface later is dusky red silty clay about 12 inches thick. The subsoil, more that 48 inches thick, is a dark reddish-brown, compact silty clay that has subangular blocky structure. The substratum is soft, weathered rock. The subsurface layer is strongly acid. The subsoil is slightly acid to neutral. Permeability is moderately rapid. Run-off is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.5 inches per foot of soil. In places, roots penetrate to a depth of 5 feet or more. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.

The Lihue silty clay, 8 10 15 percent slopes (LhC) series has slow run-off and slight erosion hazard. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.


Badland (BL) consists of steep over very steep, nearly barren land, ordinarily not stony. The soil-forming material is generally soft of hard saprolite. The annual rainfall amounts to 22 to 60 inches. This land type occurs of the island of Kaua'i. It is steep to very steep and nearly barren. Runoff is very rapid, and geological erosion is active. This land type is used for water supply and wildlife habitat. Ironwood trees have been planted in all areas.

The Koloa stony silty clay, 3 to 8 percent slopes (KvB) series occurs on upland slopes. Permeability is moderately rapid. Run-off is slow and the erosion hazard is slight. The available water capacity is about 1.8 inches per foot of soil. Roots penetrate to the bedrock. This soil is used for sugarcane.

The Koloa stony silty clay, 15 to 25 percent slopes (KvD) series has medium run-off and the erosion hazard is moderate to severe. The soil is used for irrigated sugarcane, pasture, woodland, and wildlife habitat.

HAWAIIAN CULTURAL LANDSCAPE

Although the modern district within which the project area is located is historically referred to as Kawaihau, its traditional land division is Ko'olau Moku. Puna Moku to the south was generally looked upon as the most fertile (agriculturally-productive) district (particularly Kapa'a and Wailua), with Ko'olau being somewhat less so. Carson (2005:72) describes the Ko'olau as "literally the "windward" part of the island, and predictably it receives abundant and reliable rainfall. However, most of the streams are cut steeply into drainages, creating little or no opportunity for irrigated terracing on the steep-sides valley slopes." Handy and Handy (1972:423), place the old moku boundary between Ko'olau and Puna at the boundary between Anahola (Ko'olau) and Kamalomalo'o (Puna).



The project area is on the periphery of Anahola's primary planting and habitation areas, which would have been along the main stream and at its delta and bay. In traditional Hawaiian terms, the project area would have been part of the wao kānaka, or accessible forested lands where valuable resources (e.g., medicinal plants, trees for wood, etc.) could be easily gathered.

Anahola Ahupua'a is more well-known than Kamalomalo'o—given its higher "carrying capacity," or ability to feed and support more people, its unique geography, surf breaks, large number of historic Māhele claims, and developed modern community, Kamalomalo'o has a small stream, a rocky reef; and although it stretches far mauka, it is characterized by extensive kula lands. Anahola, vs Kamalomalo'o, also has a higher "carrying capacity," or ability to feed and support more people. Referring to the agricultural potential of these lands, Handy and Handy (1972:423) describe Anahola:

Here is the largest river in Ko'olau District. There are old abandoned terraces along its banks far upstream. There are old lo'i from two to four miles inland along Anahola River and its tributary Ka'alua Stream, and below their point of juncture there are many lo'i on flats along the river banks as it meanders through its wide gulch. The delta is three-fourths mile wide, and this was all terraced. Kamalomalo'o, on the other hand, was described (along with Keālia) as "...rather dry, with small streams and gulches and only a few lo'i areas." [Handy and Handy 1972:423]



RAINS AND WINDS

Native Hawaiians respected nature because as kānaka, they are related to all that surrounds them - to plants and creatures, rocks and sea, sky and earth, and to natural phenomena, including rain and wind. With an intimate relationship to their environment, Native Hawaiians have a vast vocabulary for weather and a nuanced understanding of the winds and rains of their home. Like place names, winds and rains acted as mnemonic devices facilitating the recollection of the places they occurred (Olivera 2014:89-90).

There are two seasons in Hawai'i. The wetter season is called Ho'oilō which are the cooler months (November to April) when trade winds dissipate, and this property will typically receive its highest rainfall. The dry season is called Kau which are the warmer months (generally May to October).

According to Akana and Gonzales (2015:131) The name of the rain associated to Ko'olau, Kaua'i is called Kukupa'u. Also known as Kukupau. "Kukupa'u means "to do with zest." "Kukupa'ū" means "to beat overlaid kapa." "Kuku pau" means "to beat completely," as Kapa. Below is a kanikau titled "He kumu lewa no Kaleleonalani" for Emma Kalelenonālani. According to Soehren, "Neki" is the name of a peak at the Wai'oli-Waipā-Lumaha'i border in Halele'a, and "Manolau" is an area along the seaward border of Hanalei and Wai'oli. Keaweamahi says that "Hālaulani" is the name of a peak above the ahupua'a of Waiakalua, which has groves of hala trees. It is also the name of an area on the seaside of Anahola.

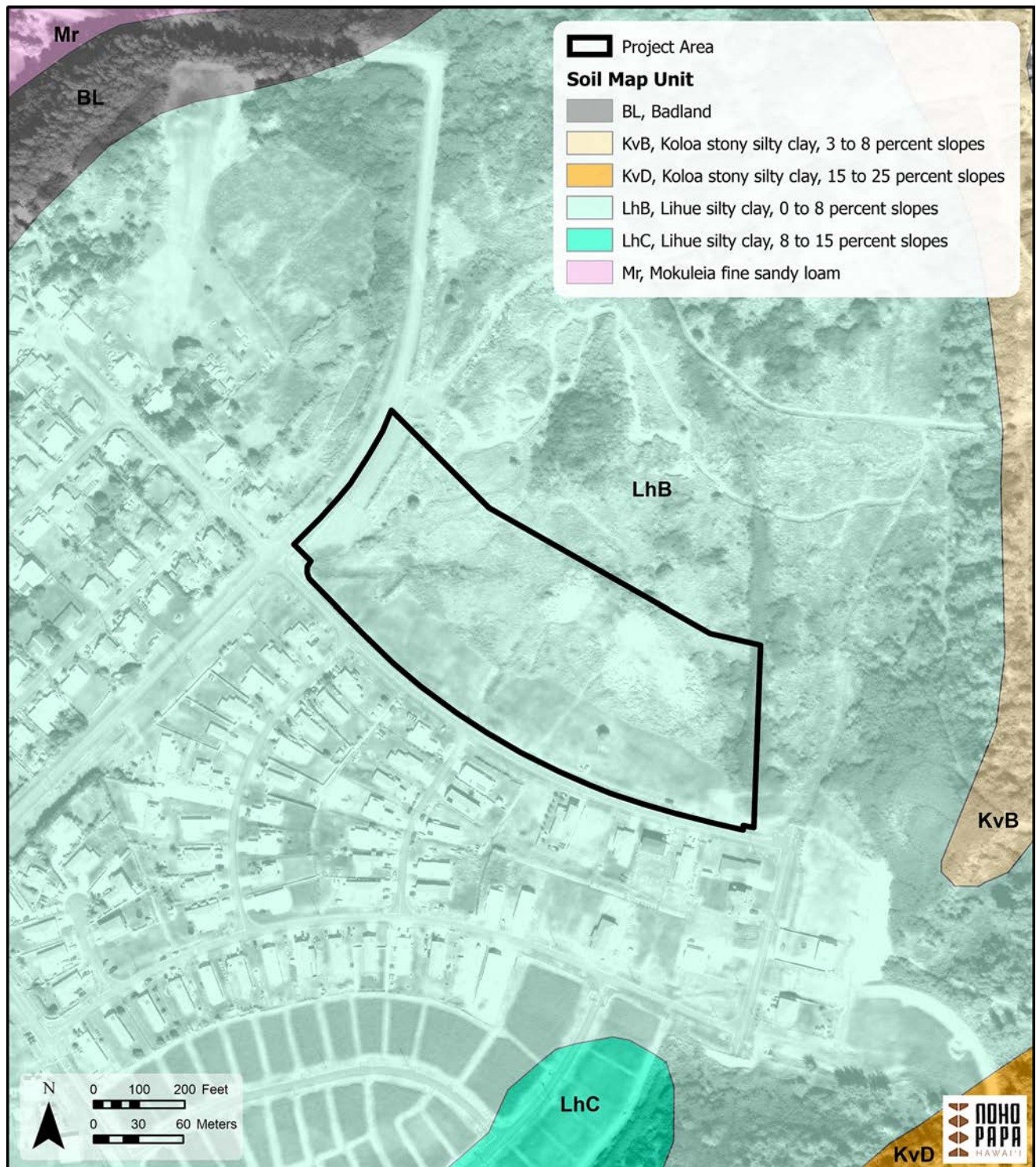


Figure 4. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

I kumu wai ho'i Neki na ka wai
Ua i Pueo, ke kumu o ka ua
Hohola ihola i luna o Hā[ī]aulani
Ka [pane'e kū] a ka ua i ka lā'au
Ka ua Kukupau i luna o ka lau hala
Ka ua Kanikaikū, me he kanaka lā
Ka ua hahi i ke kai o Manolau

The headwaters at Neki are fed by water
Raining at Pueo, the origin of the rain
Spreading out above Hālaulani
The rain forces its way through the trees
The Kukukapu rain atop the hala leaves
The Kanikaikū rain, seeminly a person
The rain that walks on the sea of
Manolau

[Translated by Akana and Gonzales 2015:131]

In addition, the epic tale of of Hi'ikaikapoliopole describes and names the winds of Anahola, Kaua'i.

He Anu ka makani o Anahola,
He Kiuwailehua no aia ilaila,
He Hokualele ka makani o Anahola
He Apoonui ka makani o Anahola
He Laupeekoa ka makani o Anahola
He Laula ka makani o Anahola
He Laekuaehu ka makani o Anahola
He Akeakea ka makani o Anahola
He Ulumanao ka makanai o Anahola
He Laeokahala ka makani o Anahola
He Aoao ka maka[n]i o Anahola
Holoikalapa makani pee malualua o Anahola
Holohiukaimaloo ka makani o Anahola
He Malua kuehu ka makani kai nui o Anahola
[Ka Na'i Aupuni, June 6 1906]

VEGETATION

Anahola's natural resources were abundant from mauka to makai. Historically, the upper portion of the valley contained taro terraces, and the flat bottom lands along the Anahola river mouth were heavily cultivated with taro and other crops.

As Anahola is the southern most ahupua'a in the Kawaihae district, Handy and Handy (1972:152) writes that the ahupua'a was once noted for its many 'ulu (breadfruit) trees.

On Kaua'i, early voyagers noted extensive plantings of breadfruit along the southern and leeward coast from Waimea to Wailua. According to Keahi Luahine, there were many breadfruit trees in Anahola.

Regarding agriculture and the method of agricultural terracing along the banks of the Anahola Stream, Handy and Handy (Part V, pg. 423) offer the following:

The last ahupua'a on this, the Ko'olau (east and northeast) coast, is Anahola. Here is the largest river in the Ko'olau District. There are old abandoned terraces along tis banks for upstream. There are old lo'i for two to four miles inland along Anahola River and its tributary Ka'alua Stream, and below their point of juncture there are many lo'i on flats along the river banks as it meanders through its wide gulch. The

delta is three-fourths mile wide, and this was all terraced. [Handy and Handy Part V: 423]

Consistent with the records of Handy and Handy, claims made in Anahola during the Māhele were focused around Anahola Stream. A large number of claims were made in Anahola during the Māhele 'between 1848 and 1850, compared to other adjacent ahupua'a including Kamalomalo'o, which indicates that there was a considerable settlement in Anahola during the mid-19th century. These records are valuable on several accounts; they provide a documentary record of those who lived on, and knew the land, in a traditional manner. The Māhele records also describe land use, residency, and the practices of the families of Anahola and its smaller land divisions. Table 4 contains the Land Commission Award claims for the ahupua'a of Anahola. With this information, we gain considerable insight into the history and cultural landscape of Anahola. In general, Anahola claims included lo'i kalo, wauke (*Broussonetia papyrifera*), and noni (*Morinda citrifolia*). Additional parcels were used for house lots, ponds, and some māla of noni and wauke. The claims for lo'i (wet land) and kula (dry land) suggest that people were producing a wide range of crops such as yams, sweet potatoes, and squashes.

Due to impacts of sugar and pineapple, much of the landscape has been altered. Today, most of the project area consists of introduced/ invasive bushes and grasses which is controlled on an on-going bases. On the eastern side of the property there are some scattered java plum trees. One small patch of Uhaloa was found growing. Near the Mauka (southern) end of the property dry land kalo had been planted recently. No threatened or endangered species were observed during the field inspection (Merrin et. al. 2022).

HISTORICAL MAPS (PAPAPALA 'ĀINA)

Early maps of Anahola ahupua'a and the surrounding area provide information describing the project area landscape prior to modern times (Figures 6-10). Historic maps physically document changes to the land occurring over a period of years. The following are historic maps of Ko'olau; focusing on the ahupua'a of Anahola (highlighted in red). The earliest map presented is from 1876; dates for the remainder vary but run through the year 1955. Most of these maps illustrate the ahupua'a in the district as well as general information on boundaries, land use, land ownership, and cultural and natural resources. From these maps we see that in the early 1900s the land within and near the project area was designated for pineapple and sugar.

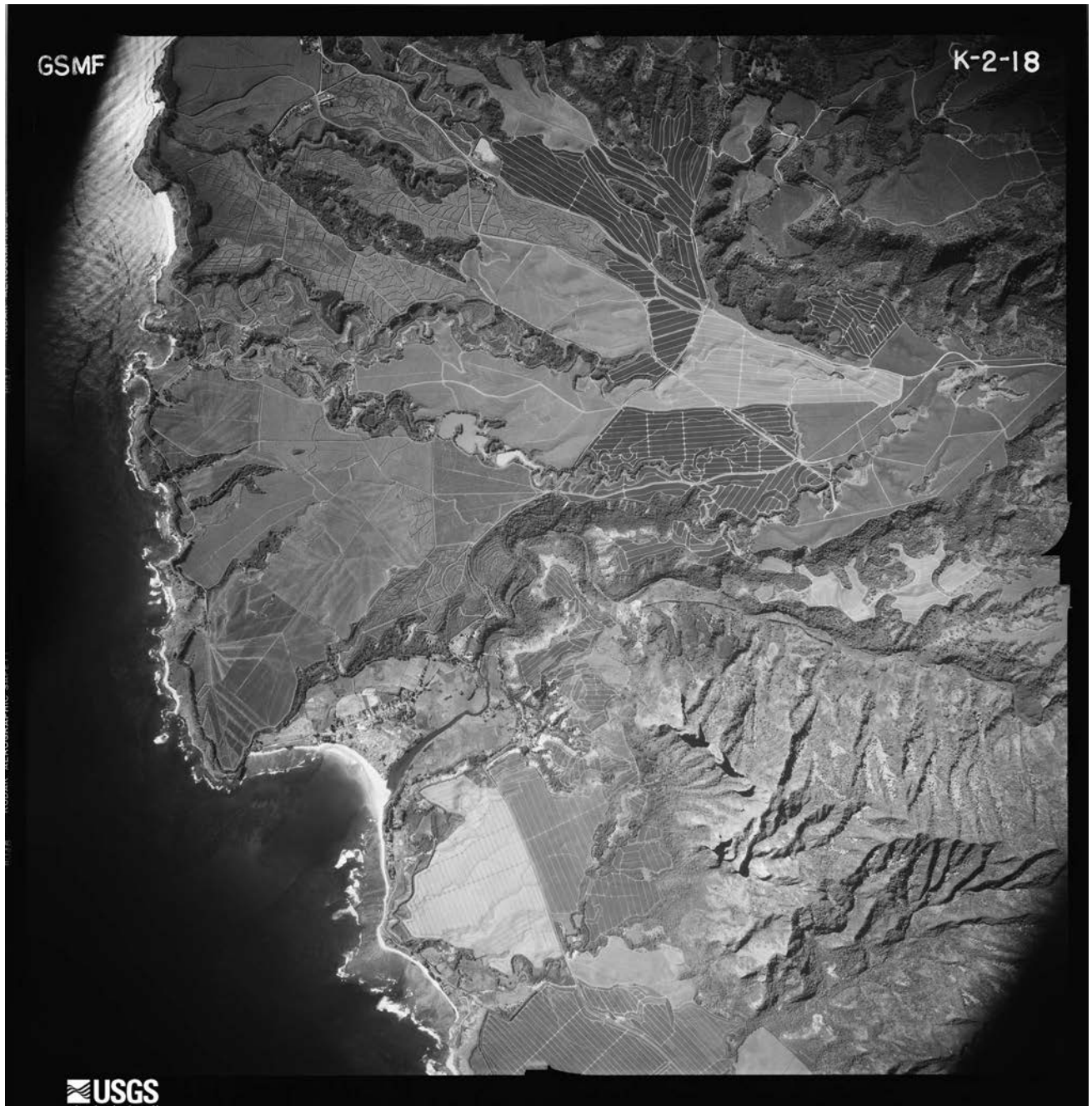


Figure 5. MAGIS 1950 USGS Aerial Image of Anahola.

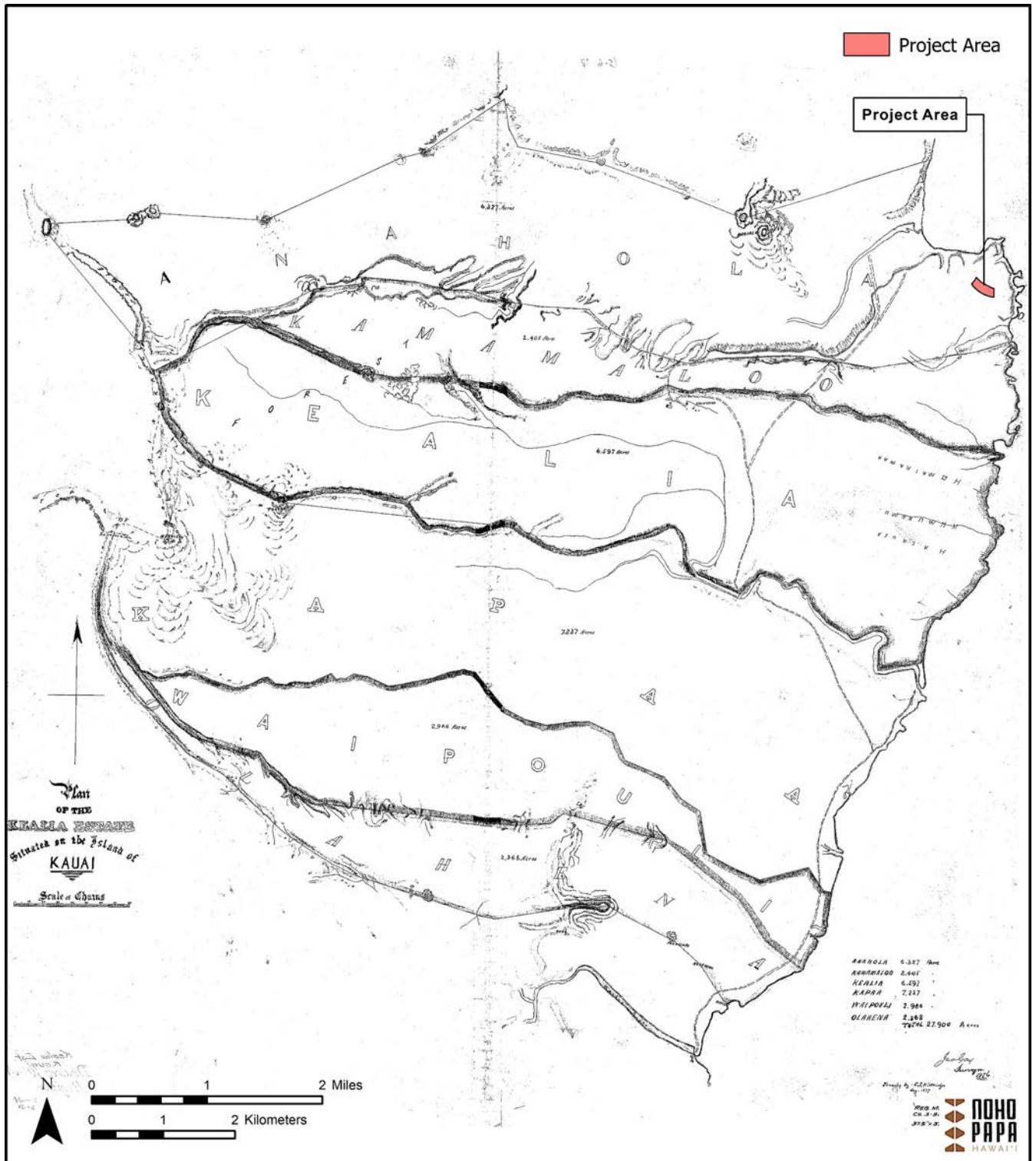


Figure 6. 1876 map titled "Plan of the Kealia Estate, Situated on the Island of Kaua'i" by Surveyor Gay (DAGS Register Map 386)

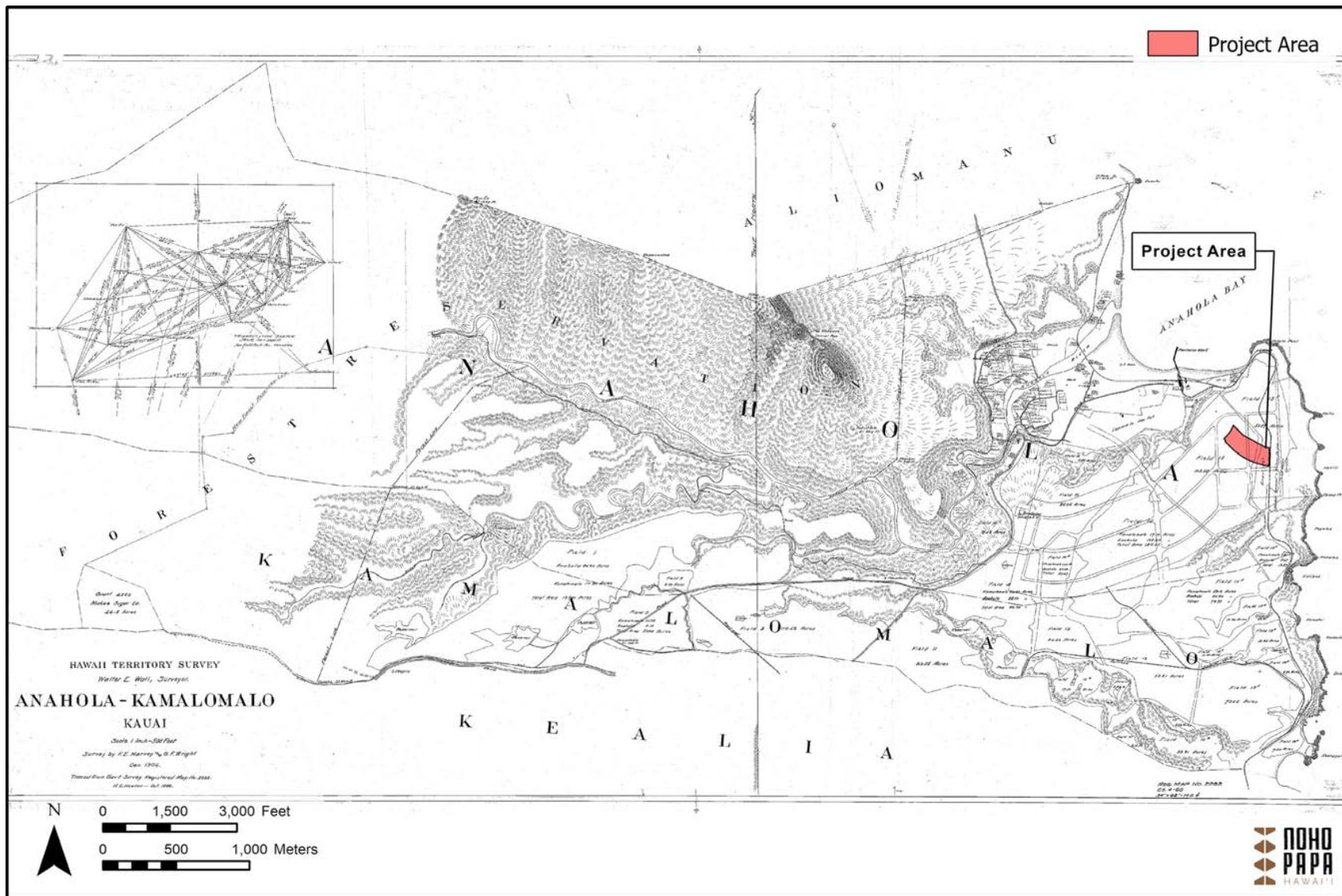


Figure 7. 1904 Map of Anahola and Kamalomalo by survey Harvey and Wright showing project area designated as Field 15 (DAGS Register Map 2282)

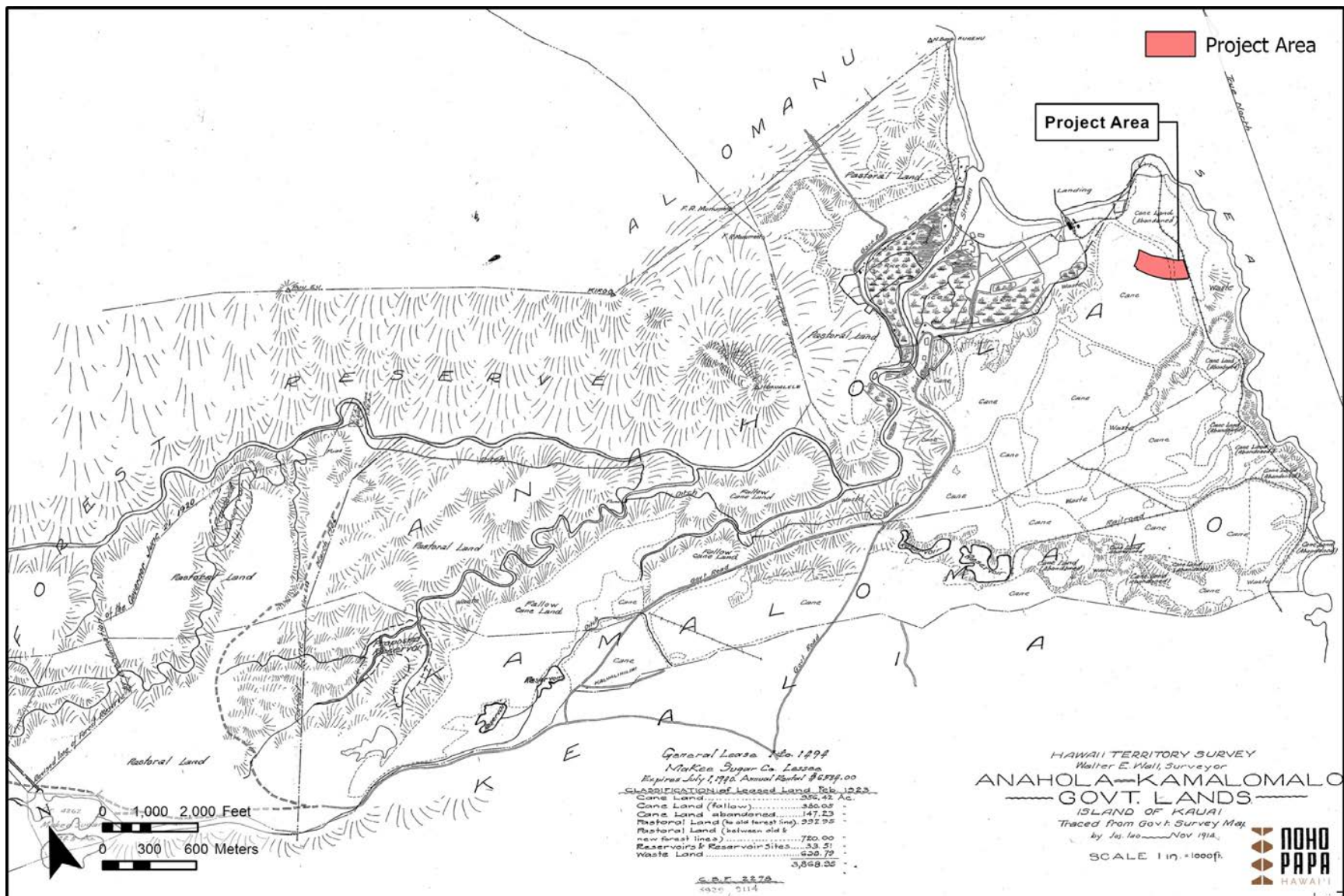
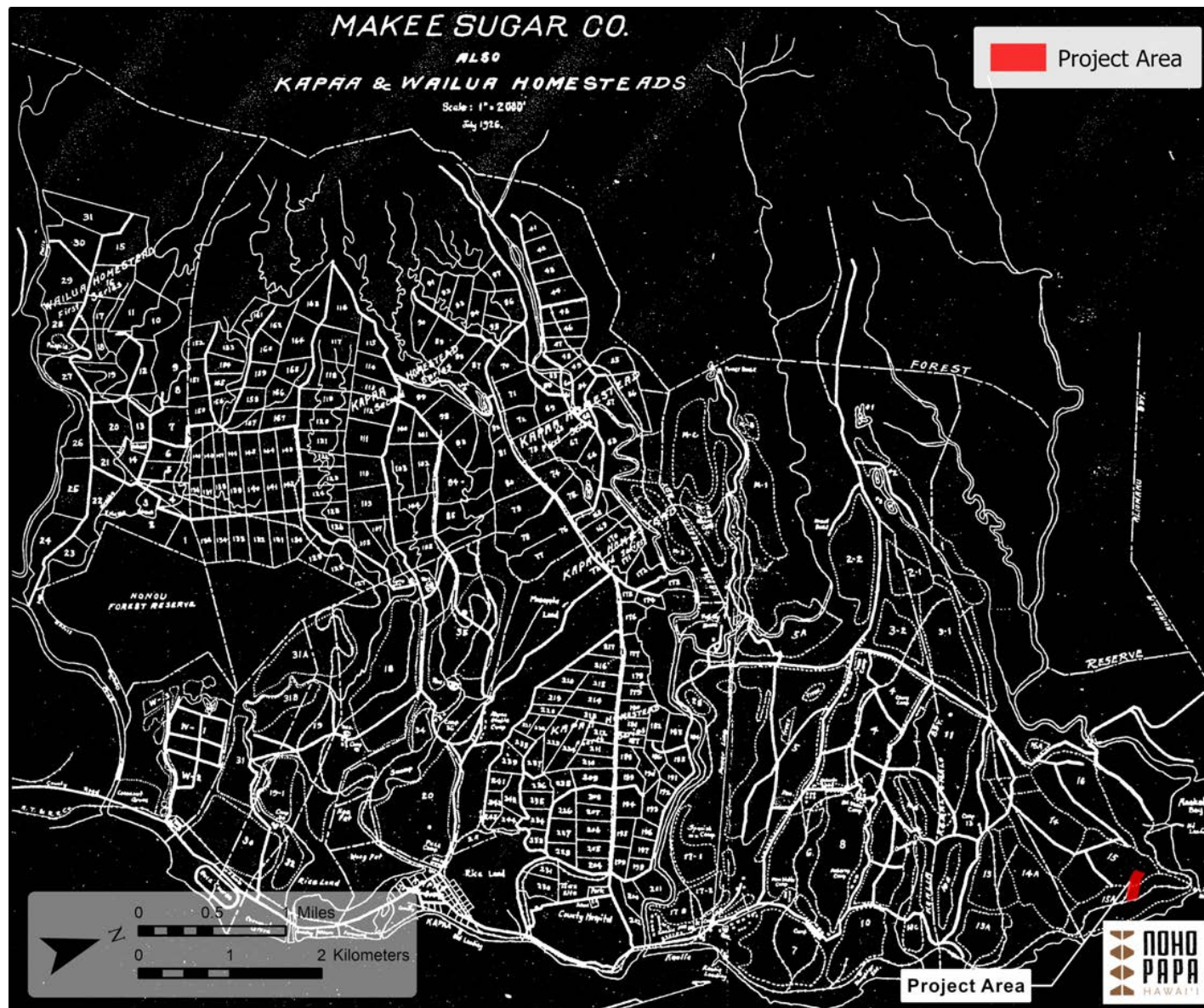


Figure 8. 1914 Territory Survey of "Anahola- Kamalomalo Govt Lands" by Walter Wall showing project area designated as cane land. (HTS Plat3003)





BUILT ENVIRONMENT

The project is directly surrounded by Pilipoli road to the south and south west; a portion of Kukuihake Road road to the west and northwest; the heavy shubbery and bush both makai north and east. There are no structures within the project area. Based on all available evidence, we believe the project area has been completely transformed by grading, grubbing, and intensive mechanized plantation agriculture: both sugar cane and pineapple operations took place during the early historical era through the late twentieth century, and bulldozing occurred in the early 2000s in the project area to create a firebreak. There are no undisturbed ground surfaces or subsurface deposits dating from pre-Contact ("prehistoric") times in the project area. One indication of this comprehensive transformation of the entire landscape is the near-complete absence of any rocks on the ground surface: clearing and removal of rocks was one of the first tasks that would have been carried out by plantation workers in order to maximize planting and harvesting activities, while also gathering raw material for building and construction projects.

Based on material, condition, and location, a culvert located on the mauka west corner of the property is likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s. A Ditch with the swale is likely the waste water from the plantation that dumps into the property with no clear end to it. Near the Mauka (southern) end of the property dry land kalo has been planted recently along with three installed portable watertanks. Hog wire fencing currently surrounds the current ten acre site with an access gate on the mauka side of the property border.

CULTURAL HISTORICAL OVERVIEW

INOA ‘ĀINA (PLACE NAMES)

The mindset of Kānaka ‘Ōiwi (Native Hawaiians) evolved and developed over centuries of being intimately in tuned with the natural environment from the heavens above to the depths below. One piece of evidence that provides a hint of how nā kūpuna (the ancestors) saw the landscape of Hawai‘i is through the thousands of place names still recorded today. Traditional place names provide an avenue to understand a landscape and tap into the mana (spiritual power) that is part of each area. A place name may tell of a commemorative event, an important person, may describe the physical environment, or reveal the function of the land. When explaining the concept of mana that is instilled in a name, Pūku‘i (1972) writes, “Once spoken, an inoa took on an existence, invisible, intangible, but real. An inoa could be a causative agent, capable of marshaling mystic elements to help or hurt the bearer of the name. And, so went the belief, the more an inoa was spoken, the stronger became this name-force and its potential to benefit or harm” (Pukui, Haertig, & Lee 1972:94).

Traditional Hawaiian place names often reoccur in oli, mele, mo‘olelo, and ‘ōlelo no‘eau. Other sources that have documented these names include ethnographic surveys, historic maps, and early historic documents such as Land Commission Award (LCAw) claims, Government Grant sales, and Boundary Commission testimonies. The place names that are presented in the following table were gathered from research done by Pukui and Elbert (1970), Pukui, Elbert, and Mo‘okini (1970), and Lloyd Soehren (2002). There are no diacritical marks (‘okina and kahakō) used in the initial spelling of names because these are rarely used in original sources. However, there is a lexicology section that includes the documented spelling and translation of specific place names. Presented below are the place names associated with the the makai area for the ahupua‘a of Anahola.

Abbreviations and Symbols in Place Name Table

- » BC Boundary Certificate No. (volume: page)
- » BCT Boundary Commission Testimony
- » IDLL Interior Department, Land, Letters (Incoming). Archives of Hawai‘i.
- » LCAw Land Commission Award
- » MB Māhele Book
- » NR Land Commission, Native Register
- » NT Land Commission, Native Testimony
- » PE Pukui & Elbert, Hawaiian Dictionary
- » PEM Pukui, Elbert & Mo‘okini, Place Names of Hawaii
- » TM Tax Map (zone, section, plat)
- » USGS United States Geological Survey

*See references for complete citations

Hawaiian Words in Place Name Table

- » Ahupua‘a - Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones.

- » 'Ili 'āina - Land section, next in importance to ahupua'a and usually a subdivision of an ahupua'a.
- » Pu'u - Hill, peak, cone hump, mound, bulge heap, pile, portion.
- » Wahi Pana- A legendary or storied place
- » Wai Hālau- Wai is water; Hālau literally means long house, large, or numerous. It is the source from which many waters will expand or make numerous.
- » Kahawai- Stream, river, ravine, gluch, whether wet or dry.
- » Loko- Pond, lake pool.

Table 2. Place Name table for features within and near the project area in Anahola.

Name	Feature	Comments	Lexicology	Location	Source
Anahola	Ahupua‘a, Peak, Stream	The ahupua‘a was returned by Lunalilo, retained by Crown at the Māhele. The stream rises at 2280 ft. on Mt. Namahana.	Anahola. Fish Poisin. Cave. (Parker)	Anahola Located directly in the project area.	MB. 26, 288; IN 28; USGS 1963
‘Aikanaka	Heiau	Bennett's site 113. "...at Anahola Point [now Kahala Point] near the end of the bluff on the south side of the bay. Described by Thrum as ‘a small heiau, about 40 feet in size. All destroyed.' One large rock marks the spot of this heiau in the cane field.	Literally, Man-eating (PEM) also name of a star. Also name for a legendary oppressive cheif who was deafted by Kawelo (For. Sel. 32-113)	Anahola, Approx. 2000 feet away from project area.	Bennett 1931:129
‘Āpulu	Point	Between Kalipoa and Pohopohoiki on the Kamalomaloo/Anahola bdry.	Worn out, rough, dingy (PE)	Anahola/ Kamalomalo‘o	BC 19 (1:103); BCT 1:101.
Lae Līpoa	Point	Lae-līpoa serves as the southernmost boundary in the ahupua‘a of Anahola.	Līpoa seaweed Point	Anahola/ Kamalomalo‘o	USGS 1963
Lae o Kaili‘u	Point	N/A	Point of the salty sea (PEM)	Anahola	USGS 1963
Kāhala	Point	Point light, Anahola, Kaua‘i. Light atop a 22-foot pole on the low sea cliffs south of Anahola Beach Park. (PEM)	Amberjack fish (Seriola purpurascens.) (PEM, Andrews, Parker)	Anahola	USGS 1963
Ka‘ili‘ili	Point	N/A	Literally meaning the pebble (PEM); Kā‘ili‘ili meaning snatching, pulling, especially of a newly carved canoe hauled from the mountains to the sea (PE). Kailiili- To take and carry here and there (Andrews); To snatch or grab repeatedly; to give away and take back indefinitely (Parker);	Anahola	DAGS Register Map 2282

Name	Feature	Comments	Lexicology	Location	Source
‘Ōpana	Point	The south bdry at the shore of DHHL land in Anahola.	Perhaps related to ‘ōpā, squeeze. (PEM)	Anahola	USGS 1963
Pohopohoiki	Point	"...small hollow" between Apulu and Kaluakawela on the Kamalomaloo/Anahola bdry.	N/A	Anahola/ Kamalomalo‘o	BC 19 (1:103); BCT 1:101.
Pōhakuloa	Point	N/A	Long stone (PEM)	Anahola	USGS 1963
Papaloa	Point	Bdry at the shore between Kamalomaloo and Anahola. The location on USGS is not at the present bdry.	Long flat. (PEM)	Anahola/ Kamalomalo‘o	BCT 1:100,101; USGS 1963.
Makalea	Point	N/A	Possibly Makale‘a meaning Ptinkle-eyed, happy-eyed, mischievous (PE).	Anahola/ Kamalomalo‘o	N/A
Kalīpoa	Stone and point	Between Papaloa and Apulu on the Kamalomaloo/Anahola bdry.	The līpoa seaweed (PE)	Anahola/ Kamalomaloo‘	BC 19 (1:102); BCT 1:101.



Figure 11. Place name map showing various Lae as well as the project area.

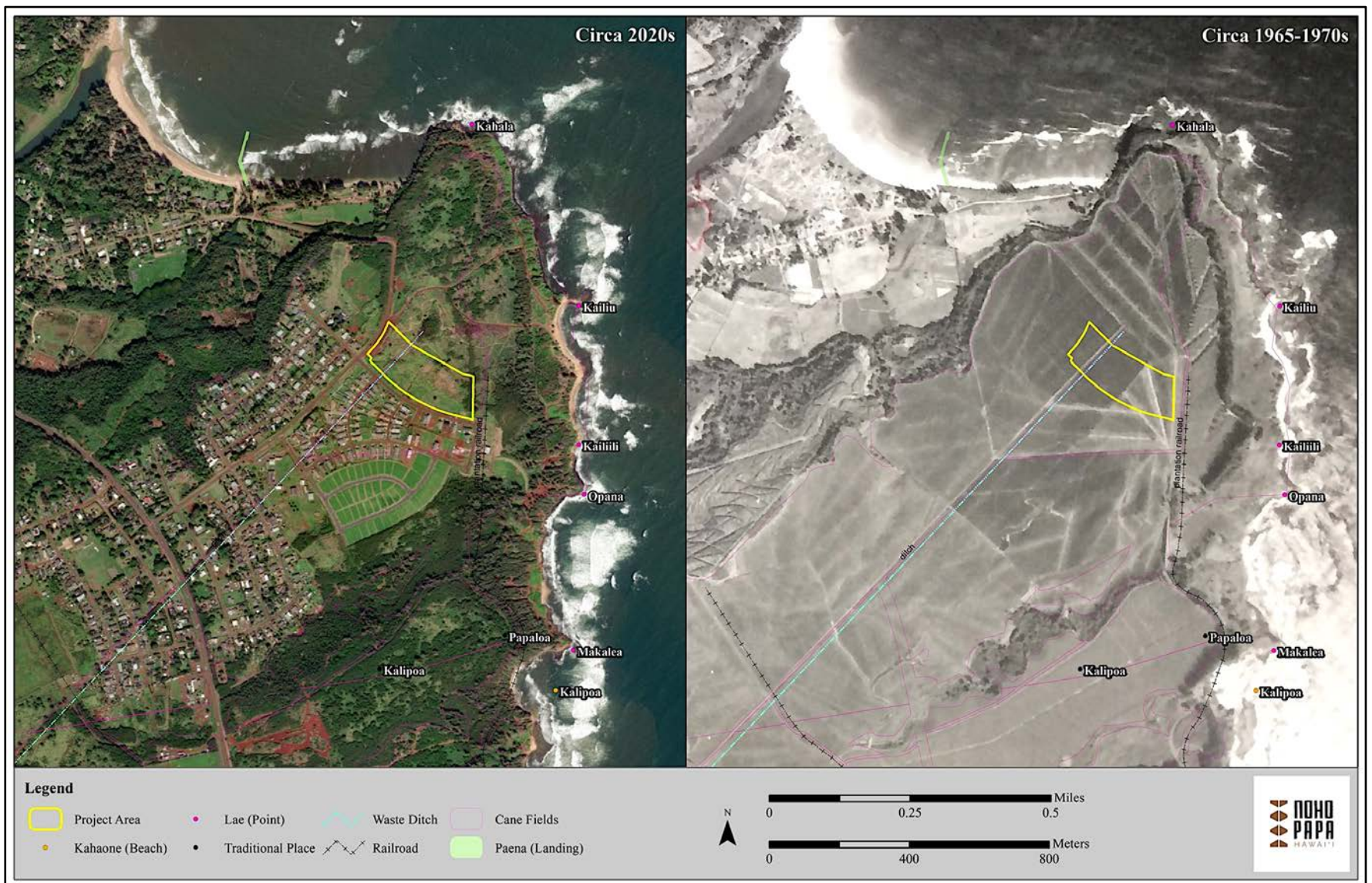


Figure 12. A side by side map showing study area and waste water ditch, with a modern aerial (left) and aerial from Kaua'i Historical Society, showing plantation in the mid 60's to early 70's (right).

In Pukui & Elbert's, *Hawaiian Dictionary* (1974:12), there is no translation for Anahola.¹ Frederick B. Wickman attributes the name Anahola to a legendary mo'o who had lived in Ko'olau moku. Other sources suggest that Anahola is named after the mountain peak that serves as the upland pinnacle boundary point of the ahupua'a (and the adjacent Kamalomalo'o ahupua'a); here Anahola may be translated as "Holo Cave", referring to the technique of holo or 'auhuhu, a traditional method of fishing by poisoning or stunning fish with the 'auhuhu plant (*Tephrosia purpurea* syn. *T. piscatoria*)². In Mary Kawena Pukui's interviews with Anahola kūpuna (BPBM archives), many pronounce Anahola as Anehola.

Anahola or Anehola? In most if not all cases, when researching places in Hawai'i, variations in spelling and pronunciation occur. In some places, the variation is due to a lack of auditory acuity to the nuances of the spoke Hawaiian language, and in others, because of local colloquialism or dialect. In the case of Anahola or Anehola, it seems to be the latter. While both spelling appear when word searched within archival database, it seems that the "kama'āina," as recorded in interviews by Mary Kawena Pukui in the 1930s, lean toward the use of Anahola, while those not native to the locale used Anahola. Today, Anahola is the pronunciation commonly used by both kupā'āina and malihini.

HAWAIIAN ORAL TRADITIONS

Hawaiian oral traditions are historical information that has been passed down by word of mouth from one generation to the next and recorded in more contemporary times. Hawaiian oral traditions are important because it gives a general sense of Kanaka 'Ōiwi history, their connection to land, how they lived, and their traditional land tenure. These Hawaiian Oral traditions come in the form of oli (chants), mele (songs), 'ōlelo no'eau (proverbs), pana no'eau (sayings), mo'olelo (stories), mo'okūauhau (genealogies), and nūpepa (historic newspaper articles). These forms of oral traditions can be woven into each other. For instance, a mo'olelo may present a mele or oli about a mo'okūauhau. Essentially, these forms are the methods to ensure the survival of cultural beliefs and the vehicles for intergenerational transmission of knowledge. They are a direct link to experience Hawai'i through a timeless bridge of cultural insights that have guided Hawaiians for many generations.

Today, through written form and English translations, these cultural traditions are a source of wisdom to be better understood and appreciated. Bush (1994) further explains, "The stories provide the younger generation with the reason to uphold our intimate and fond attachment to our revered land, notable sites and prominent heroic deeds of our ancestors." The following Hawaiian oral traditions tell of the resources of the land, akua (gods), kupua (supernatural dieties), 'aumākua (familial guardians), ali'i (chiefs), and ka po'e kānaka (the Hawaiian people) whose stories weave a unique and treasured history of this 'āina.

'ŌLELO NO'EAU

'Ōlelo no'eau have long contributed to the perpetuation of traditional knowledge. These creative expressions not only present kaona (hidden meaning) used in Hawaiian language, but they also integrate observational knowledge with educational values, history, and humor. The following

¹ Although Anahola is not defined by Pukui et al (1974), they do refer the reader to Kanahāwale (literally, "easily broken"), described as an ancient surfing area at Anahola.

² Pukui and Ebert (1986) offers the following definition of holo: "to spread...Same as 'auhuhu; to drug fish with this poison."

‘ōlelo no‘eau were gathered by Mary Kawena Pukui and published in her book titled, ‘Ōlelo No‘eau Hawaiian Proverbs and Poetical Sayings (1983). While no ‘ōlelo no‘eau were found directly for Anahola, included are ‘ōlelo no‘eau for the larger landscape, the moku of Ko‘olau, to explore and commemorate some of the renowned traditions of this district.

78 ‘Ai manu Ko‘olau

Eat of the birds of Ko‘olau

Said of a feast where delicious foods are eaten.

550 He au Ko‘olau aku ia.

That is Ko‘olau weather

The Ko‘olau, or windward side of an island is often stormbeaten. This expression was first used in a chant to Hi‘iaka by Wahine‘oma‘o, who pleaded with her not to let her wrath lead to destruction. Later used as a warning that headstrong willfulness leads to distress.

1976 Lele I Kona; lele I Ko‘olau

Flies to the leeward side of the island and flies to the windward.

Said of one who is hard to locate.

2153 Me he lau no ke Ko‘olau ke aloha.

Love is like the ends [fingertips] of the Ko‘olau breeze.

Love is like a zephyr- gentle and invisible but present nevertheless.

2467 O Kilohana ia, he ‘awe‘awe moku.

That is the Kilohana of the broken bundle cords.

Said of Kilohana above Līhu‘e on Kaua‘i. An old trail went by here, leading from Kona to Ko‘olau. Robbers hid there and waylaid lone travelers or those in small companies and probed them of their bundles.

MELE

Oli (chants) and mele (songs) have long been a means of perpetuating traditional knowledge through artistic expression. Pukui (1949) refers to oli and mele composition and writes, “Hawaiians were lovers of poetry and keen observers of nature. Every phase of nature was noted and expressions of this love and observation woven into poems of praise, of satire, of resentment, of love and of celebration for any occasion that may arise.” The word oli refers to a chant that is not danced to and the word mele refers to a song, poem, or chant of any kind (Elbert & Pukui 1959). Oli and mele are often given as ho‘okupu (a gift or offering) to honor akua and ali‘i, to commemorate place visits and events, to celebrate life and death, and to share stories.

In the translation of oli and mele, there is oftentimes a double meaning that consists of the literal translation and an interpretation of the kaona, or inner meaning. Pukui explains that the kaona can sometimes be obvious enough that anyone familiar with the figurative use of Hawaiian language can understand it. Other times, it may be so veiled that it is only understood by those to whom the composition belongs (Pukui 1949). During this study very few mele and oli were found for Anahola. Many of these contemporary compositions are written for or about Anahola makai. Today, the concentration of population, housing, and access to resources of Anahola is primarily all in the makai portion of the ahupua‘a. Presented below are two historical mele that make reference to Anahola and its adjacent areas.

The mele, Anahola by Jerimiah Kaialoa, Sr. speaks of Anahola, the homestead land on Kauaʻi, Kalalea, the hill inland at Anahola. The legend says a spear was hurled at the hill piercing it. This hole is named Konanae and collapsed during hurricane ʻIniki. The spear is lying in the stream bed nearby. Verse 3 tells of the activities at the ship's landing on the southern corner of Anahola beach, that was constructed about 1900. Amu is the place name of a small section of land and the name of the wind there, that blows in all directions. The translator of this mele is unknown and the Hawaiian Text was edited by Puakea Nogelmeier.

Anahola- Jeremiah Kaialoa, Sr.

Hanohano Kalalea kau mai i luna ʻO ka pali kaulana aʻo Anahola	Majestic Kalalea rises above The famous cliff of Anahola
ʻAlawa iho ʻoe iā Konanae ʻO ka hoapili like o kuʻu milimili	You glance at Konanae The beloved close companion
I laila hoʻi au ʻike i hola Nā kaula likini mōliolilo	I was there and I saw The rigging lines pulled tautly
Huli aku nānā iā Amu I ka makani ʻalo ʻehu hele ulūlu	Turn and look at Amu The wind that blows fiercely
Haʻina ʻia mai ana ka puana ʻO ka pali kaulana aʻo Anahola	The story be told Of the famous cliff of Anahola

The next mele, titled Kalalea was composed by Kealiʻikuaʻāina Kahanu & Kaleialoha Williams. P. Williams is the great granddaughter of the composers. It was recorded by Kainani Kahaunaele, great, great, great granddaughter of composers, "Naʻu ʻOe" CD. - Kalalea is the prominent hill overlooking Anahola, Kawaihau, Kauaʻi. Legend says Huhu, the demigod, who could take the form of a moʻo or bird, pecked the hole near the top, to see the other side. Another legend tells of the hero Kawelo, thrusting his spear to form the hole named Aolani (heavenly cloud). Others give the name of the hero as Kapūnohu.

Kalalea - Kealiʻikuaʻāina Kahanu & Kaleialoha Williams

Kiʻekiʻe Kalalea`a i ka makani ʻO ka pali kaulana o Anahola	Kalalea stands majestically in the wind Famed cliff of Anahola
Noho iho e ka ʻohu noe i nā pali A he nani maoli nō mai ʻō a ʻō	The mist rests upon the cliffs Simply exquisite from end to end
A ke aku la e ʻike I ke kai nehe aʻi Hālaulani ʻO ka pā kolonahe a ka makani I laila māua me kuʻu aloha	I yearn to see The rustling sea at Hālaulani The gentle breeze That's where I am with my sweetheart

An 1860 article published the nupepa (newspaper) Ka Hae Hawaiʻi, shares the importance of publishing traditional mele to ensure the continuance of these compositions and their meaning are remembered onward for future generations.

“Ua aneane nalowale paha na mele o ka wa kahiko, kawalawala loa na kanaka i ike.
He mea minamina ia, no ka mea, ma ua mau mele la, ua maopopo ke ano o ka noho

ana o kanaka i ka wa mamua loa aku nei, a o ka moolelo o ka aina kekahi. O ka mea e mau aku ai a nalowale ole na mele, oia ke pai ana ma ka buke a ma ka nupepa paha, alaila, he hiki no i na hanauna hou aku ke heluhelu a e kawiliwili iloko o ka manao..."

-*Ka Hae Hawai'i*. March 21, 1860

Traditional Hawaiian songs may soon be forgotten; they are not seen enough by people. This is very unfortunate, because it is within these compositions that the lives of those who lived before us are understood, as well as the stories of the land. What will ensure the continuance of these traditional Hawaiian songs so that they are not lost, is publishing them in books and perhaps newspapers, then, future generations will be able to read them and become entwined in their meaning...[English Translation, *Ka Hae Hawai'i*. March 21, 1860]

However just as important as publishing traditional mele, is also the composition of new mele. A very important aspect of doing cultural, strength, and project-based education is incorporating Hawaiian protocol as part of the learning process. Oli, Mele, and Pule, are ways to show respect to the 'āina where a project, excursion, or research takes places and is a way to build a relationship with that 'āina as well.

Kaiāulu Papaloa is a non-profit educational organization based in Wailua, Puna, Kaua'i and is dedicated to promoting and perpetuating Kaua'i's traditional knowledge of natural and cultural marine resources. Practicing traditional knowledge, their website features two (2) mele and one (1) oli, written and inspired by their students who attended their intersession and after school outreach programs. These mele/oli were composed by conducting background research about Anahola. They share the following three (3) references to be the most useful, 'A'ā Hoaka is a traditional story about the Ko'olau area that appeared in the Kū 'Okō'a Hawaiian Newspaper in the 1800 hundreds but is written only in Hawaiian and is widely used amongst Hawaiian language speaking educators. Nā Makani Hawaii is a research paper put out by the former Hawaiian Studies Institute at Kamehameha Schools, and He Mele Hawaii is a reference book that can be found at the local libraries.

Kaulana 'O Anahola

Kaulana i'ō nō 'o Anahola
'Āina 'uluwehi, kai momona
Pō'ai ke aloha me nā malihini
Nānea ho'i kau me ka lehu

Famous is the place called Anahola.
The land is lush and the ocean filled with delicacies.
This is a place surrounded with aloha for malihini.
This is a place where one can relax with everyone.

Makamae mau nō 'o Kahala
'Apapa 'olu'olu, ka moani 'uli
He nani i'ō nō ke 'ike aku
Kū 'ia ho'i wale me ka mālie

Forever cherished is the place Kahala.
The reef is very kind/forgiving and the ocean blue/deep.
This is a place that is beautiful when looking out into the ocean.
However, don't forget, it's a reef so one must stand relaxed and calm.

Hanohano palena'ole 'o
Kanahawale
Nalu maika'i, he kai 'ehu
Papahe'enalu, nā hoa pa'a
Kohukohu 'ia ho'i ma ke kai lā

Famous is the surf break Kanahawale.
The waves are great and the ocean is so clear.
This is a place where best friends surf.
This is a place where one can show off what they do in the ocean.

Pu'ana i'ō nō e, 'o Anahola
'Āina uluwehi, kai momona

This is where my story ends in Anahola.

Pō'ai ke aloha me nā malihini
Nānea ho'i kau me ka lehu

The land is lush and the ocean filled with delicacies.
This is a place surrounded with aloha.
This is a place where one can relax with everyone.

Oli Hea Kaiāulu Anahola

Hea mai ka leo aloha lā
Eia nō mākou ē
Nā Pua o ke awa lau o Anahola
ē
Mai Papaloa a Kūaehu ē
Ke kai a momona
Hānai 'ia e nā kai
E ulu a'e ke kanu
E ulu a'e ka 'i'o
E ulu a'e nā Mamo o Kū'ula
Pūpūkahi e holomua
Pua a Kū Kanaloa ē
Wili'ia ka lei maile aloha me ka
mokihana
E Ola e, he leo wale nō ē
Aloha ē, Aloha ē, Aloha ē

This is an chant that celebrates the importance of the ocean resources to the people in Anahola. From this we understand that Anahola stretches from Papaloa to Kuaehu and that the ocean is a source of many types of food for people in Anahola and the larger district of Anahola. We also celebrate our relationship with two Hawaiian Gods, Kanaloa and Kū'ula. Kanaloa, according to Hawaiian tradition is the god of the ocean and Kū'ula

Mele Kaiāulu

Eia nō he mo'olelo e
Pili 'ia nā kaiāulu e
Hali'a mai ka mana'o e
Mehana ku'u pu'uwai e

This is a story about the gentle winds of Anahola. These winds remind me of a different time and my heart becomes warm when I think of the past.

Hui:
'O Anahola ku'u kulā'iwi e
Pa'a ka mauna e ka makani e
Iho 'ia no'eau kahiko e
Ea ho'i mai ke kilihune e

Chorus:
Anahola is my beloved 'āina. As the winds hit the mountain, the wisdom of the past descends down, hitting the ocean causing a mist (spray) of 'ike.

'O Kuaehu ku'u kūpuna e
Mehameha ke 'ano makani e
Nānea 'ia nō ma ke kai lā e
Nalu wale ku'u iho e

Kuaehu is my kūpuna and the wind blows in solitude.
As I sit by the ocean, I ponder on what occurred before in this place.

'O Amu ku'u hoa e
Kū kilakila ke 'ano makani e
Pa'a ke kuahiwi e ho'i nui e
Ho'olono ia mea kahiko lā e

Amu is my beloved friend and the wind blows so majestically/feisty. As it hits the mountain and spreads across the land, I hear the voices of the past.

'O Kahala ku'u kaina e
Nahenahe ke 'ano makani e
Ku'i 'ia mai ke kai o luna lā e
Piha ka 'āina, e pono ho'i e

Kahala is my beloved brother and the wind is gentle. As it strikes the ocean, the ocean is filled with momona and pono returns to our land.

Pu ana ‘ia mau e kaiāulu e
Eia nō he mo‘olelo e
Hali‘a mai ka mana‘o e
Mehana ku‘u pu‘uwai e

This is my story with aloha about a mo‘olelo
about the gentle winds of Anahola. These winds
remind me of a different time and my heart
becomes warm when I think of the past.

MO‘OLELO AND KA‘AO

The term mo‘olelo refers to stories, myths, and legends, while the term ka‘ao is used to refer to a fictional legend or fanciful tale. Pukui describes the tradition of storytelling as, “a principal source of entertainment while simultaneously providing instruction in the many interwoven aspects of life – ancestry, history, religion, human relations, crafts, and the natural world” (Pukui & Green 1995:xii). Before Hawaiian became a written language in the 1820’s, cultural knowledge was perpetuated through various forms of oral repetition and passed down from generation to generation through mele (songs), hula (dances), kū‘auhau (genealogies), ka‘ao (legends), or mo‘olelo (traditional stories) (Kalākaua; Daggett; Grant 1990:ii). Today, through written form and English translation, these traditional compilations serve as sources of wisdom for a much larger audience.

A limited amount of narratives that directly reference Anahola Ahupua‘a. The tables and narratives documented below are mo‘olelo associated Anahola Ahupua‘a that were found during this study and are the more commonly known, it should be noted that this is no way a complete list mo‘olelo. There is a potential for more mo‘olelo to be uncovered.

Table 3. Comprised list of mo‘olelo for the Ahupua‘a of Anahola.

Anahola Ahupua‘a Mo‘olelo
“Pohaku-Loa, Long Stone of Kauai” Armitage, George T., and Henry P. Judd, <i>Ghost Dog and Other Hawaiian Legends</i>
“Legend of Kaipalaoa, the Hoopapa Youngster” Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 4</i>
“Legend of Kapunohu” Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 5</i>
“Legend of Kuapakaa” Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 5</i>
“The Legends of Kawelo” Thrum, Thomas G., <i>More Hawaiian Folk Tales: A Collection of Native Legends and Traditions</i>
“The Penalty for Peeking” Armitage, George T., and Henry P. Judd, <i>Ghost Dog and Other Hawaiian Legends</i>

The famous mo‘olelo of ‘A‘ahoaka the Warrior was published in the Kuokoa from December 30th, 1876 and ran until March 3rd 1877 where it ends abruptly. The story was written in five parts. Below is an excerpt from the mo‘olelo pertaining to Anahola/Anaehola. Within the mo‘olelo we learn of various place names, customs and resources. The story of ‘A‘ahoaka begins with this birth scene.

Kalalea was born of Kapaopao his father and Kahala his mother. Anehola (Anahola) is his birthplace. These two were chiefs of this Ko'olau area here.

The area in which they lived was Kalaewahiwai, it is on the road that leads inland. This was a familiar dwelling area of the chiefs. When they were living there, they were both young. Kahala became pregnant at that time, up until the time she gave birth, thunder rolled, lightning flashed, the rivers ran muddy. For three nights, and three days, there was nothing that would free this poor child of the chiefs. Someone was sent for to get the kahuna, whose name was Kanoealaka'i. He lived in the mountains of Wainiha. When the messenger arrived, he was sitting there, opening some 'awa. The kapa that he was sitting on was a thin soft type; Miloli'i is a place that makes a lot of this kind of kapa. When this happened, the kahuna already knew what that messenger came for, he then asked, "For what purpose have you come here to me?" "I have been sent by the chief of Anehola, by Kapaopao, because of the birth of his wife. For three nights, and three days, the child has not come out, so, I have come to fetch you."

The kahuna then said, "I will not go with you today. As soon as tomorrow comes and night falls, I will go and sleep at Kuaehus in 'Aliomanu. This is what you go back and tell those chiefs. Go to Mai'akini and get, a clump of 'awa hiwa as well as its leaves, this place is in the uplands of Keālia. Here is the second, go and fetch water on top of Wai'ale'ale, not with a gourd, but with the leaf of the mokihana, wrapped tightly, bring it down, and when I arrive I will work." When the kahuna was done saying all these things, the messenger returned to Kapaopao, the chief, and told him everything he heard from the kahuna. The chief listened, he then turned and asked all the chiefs sitting there, "Who is the right person to fetch these things as instructed by the kahuna?" Kahala in her pain turned, and she asked her brother Pōhakumalumu, "Hey, you should be the one to get the 'awa in the uplands of Mai'akini." he accented. "Who will fetch the water?" "Keanuo'aipō will fetch the water on top of Wai'ale'ale."

In no time, these two things arrived, and that night, the kahuna arrived and slept at the Kuaehus home. Hoku was this night, and the next day is also Hoku. On this day, the kahuna went before Kapaopao, "Everything is ready, only your job is left." Then, the 'awa was chewed from the roots, to the stem, and then to the leaves. When the 'awa was soft, it was added to the water, and rubbed onto the chiefs from head to toe. As soon as that was done, the thunder rumbled, the lightning flashed, the earth shook. As soon as that happened, the child came out and cried, a boy, he was black on his back from head to foot, and had normal skin on the front. When ten days passed, the umbilicus was cut, and he was given the name Kalalea, all troubles were then over, because the child had come out.

During these birthing pains, Kahala became pregnant again. As it got closer to full term, Kahala started to crave the 'ōlali fish who rests on the sands of Hālaulani. Her birth day in the night of Kulu came closer, the day went swiftly, the night was tumultuous, the thunder rolled, the lightning struck, and the earth quaked. On this night, a child was born. When the birthing was done, it was found to be a girl, she was named Nālehuaolulu'upali. The rearing of this girl was taken by Ho'ohila, a brother of Kahala, who lived in Lumaha'i. These were the only children of these chiefs. Kalalea lived and grew and became very handsome, a truly perfect man. His common past time was surfing. He would watch the breaking of the waves of Kanahāwale, until the waves swelled perfectly. They would go down, he and his

friend named Palikoa, a very mischievous child. When he saw a bald man, he went with a clump of grass and planted it on his head while saying, "Here is the hair for your head!" And all the people burst into laughter.

They both went down to the ocean, on the far side of the river of Anehola. There is the waves of Kanahāwale. It is a place that the people of this place commonly go to relax. On that side is where an old man lives, a seer, who tells the fortunes of people. The name of this man is Kuaehu. While Kalalea was surfing with his friend Palikoa, he was the most proficient at surfing, he would not surf the main wave, but would surf down the sides. He would go until his spray was like that of a small canoe. The cheers were roared and people were moved by the skill. That is how it was every time. The old man would always watch Kalalea and say, "If this was the husband of my grandchild, my legacy would live on," that's what he would say to himself.

Let us leave Kalalea for a bit, and let's look at Kuaehu and his grandchild Koananai. This is a woman famed for her beauty. This girl lives in the uplands of Kahihikolo with her parents, Pueo her father, and Kahihikolo his wife. These are chiefs, and the rule all of Ko'olau. There are three children of Pueo and Kahihikolo... [Nupepa Kuokoa, December 30, 1876]

Kekua and Alapa'i; 2012 provide insight to this mo'olelo help to elucidate this traditional story, its meaning, and the place names therein:

The main characters in the story are traditional places in Anahola. They remain significant landmarks to this day. In the process of preparing this study, Native Kaua'i [the author/ translators] consulted and met with many indigenous Hawaiians of Anahola. While all of the identified and referred to Anahola's landmark mountain range as Kalalea, all were not aware of the individual mountain peaks or their original names and related stories. There was great interest expressed by those interviewed, to learn more information.

Kalalea is the offspring born to Kahala—a female, and Kapa'opa'o—a male. Both Kalalea and Kahala are names of traditional wahi pana or storied places in Anahola...

Kahala and Kapa'opa'o—Kalalea's mākuā or parents are also names of native fish species that are highly prized as a food source as well as for their symbolism in Hawaiian culture. Both are tropical marine fish in the carangidae family which include the jacks, pompanos, jack mackerels and scads. Most species are fast-swimming predatory fishes that hunt in the waters above reefs and in the open sea. Some dig in the sea floor for invertebrates. The largest fish in the family is the greater amberjack or kāhala.

The other characteristic that both the kāhala and the kapa'opa'o fish species share is that they are strong, fast and aggressive in nature. They are symbols of protective mana or energy that is an essential value and characteristic of parents with young offspring. These are also 'ano or traits that are essential to a child that is destined to grow into a warrior...

Mo'olelo...provide insight into the ways, practices and beliefs of the ancient Hawaiians. We have 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) have to the land and the people that they manage and oversee...

Lae Kuaehu held a prominent place in the lives of the ancient people of this district. Located on the coast at the northern boundary line of the Anahola ahupua'a, Kuaehu was identified by native Hawaiian informant, Kauniahī as a place of sacrifice in the olden days, and as a place of worship by Pihūiki. The kama'aina also described it as a resting place called Aholē just ma uka of Kuaehu...

On a literal level, Kuaehu means, "silent, still or lonely". It also describes interactive movements of the environment that are typical to that place. Windward breezes blowing offshore conjure up waves that carry the ehukai or seaspray to create shrouds of ocean mist over the promontory.

However, it is through the experiences of our Hawaiian ancestors, preserved in the form of mo'olelo or traditional stories that we learn there is much more to the place name, Lau Kuaehu.

Recordings preserved in the Bishop Museum archives feature oral interviews with native Hawaiian kūpuna of Anahola in the 1950s and 1960s provide additional insight on the close connection between geography, native biology, place names, and wahi pana (storied places) in Hawaiian civilization (See Previous Oral History Interviews below). The following mo'olelo is based on an interview conducted by Hawaiian scholar, Mary Kawena Pukui and kupuna Daisy Waihoikahea Valpoon Lovell (Kekua and Alapa'i; 2012):

Hālaulani Lit. Myriad Breaths of the Heavens

Just outside of Lae Kuaehu is a channel where the kūpuna cite the location of Hālaulani—the home of the shark god and his retinue of resident manō. Kupuna Daisy Waihoikahea Valpoon Lovell spoke about Hālaulani as the home of 'aumākua sharks just outside of Lae Kuaehu. She described the relationship and feeding customs that her grandmother and her 'ohana were still practicing when she was a young girl. Makahia and Malaepapa are the names of the reef flats in this area where the shark was fed. This shark provided them protection and was both an ancestor and guardian to them. Neither of the two big tidal waves in her lifetime damaged Lovell's seaside home.

The name Hālaulani also references a heavenly or chiefly structure; such as a home of a chief. The ali'i is not the only native chief who rules over the land. The manō too, is recognized as a chiefly denizen of the ocean realms—fierce, dominant and ready to protect and regulate over his domain.

Other elders of Anahola, as well as kupuna in our own family preserved knowledge of these practices through the telling of stories and experiences that were occasionally shared. Admittedly, they did not explain all of the intricate details of how and why they interacted with the manō (sharks) in the way that they did. There was no need to know more beyond their response that, "We feed them because they are 'ohana to us."

One of the recordings preserved in the Bishop Museum Archive made on August 13, 1959 is an interview with kupuna David Kahanu, who discusses some of the prominent geographical features

of Anahola. He spoke about the pu'u named Kalalea and Kōnanae, citing that the former Kalalea is male and Kōnanae, the latter, is female. These two peaks are husband and wife, companions as allegorical figures in nature that are celebrated as characters in the mo'olelo and traditions of this region. They are personified and seen as beloved kūpua or supernatural forms in the landscape that guard, watch over, and protect the families who have dwelt in this community for generations. Kalalea is seen as the upright peak representing the masculine power of the god Kū. Kōnanae is representative of the feminine energy of the goddess, Hina. Together, they serve as symbols of procreative vigor and the balance of these two principles, serving as inspiration for the perpetuation of the family lineages of Anahola.

HISTORICAL LANDSCAPE

EARLY HISTORIC PERIOD

Much of the knowledge of traditional land use patterns is based on recorded information during the early post-contact period and later oral reports. Although few early visitors reported on Anahola, traditional Hawaiian economy was based on agricultural production, marine exploitation, livestock raising, and wild plant collection.

Early visitors who witnessed Anahola write that it was a small village surrounded by fertile lands. In an account by George Vancouver (1798:221:223) he states, "the most fertile and pleasant district of the island..." however he did not anchor or go ashore due to the inhospitable ocean conditions.

In 1840, Peale and Rich, with Charles Wilkes United States Exploring Expedition (1844), traversed the coastline on horseback heading north from Wailua, writing:

The country on the way is of the same character as that already seen. They passed the small villages of Kuapau [Kapa'a], Keālia, Anehola [Anahola], Mowaa, and Kauharaki, situated at the mouths of the mountain streams, which were closed with similar sand-bars to those already described. These bars afforded places to cross at, though requiring great precaution when on horseback. The streams above the bars were in most cases, deep, wide, and navigable a few miles for canoes. Besides the sugarcane, taro, etc., some good fields of rice were seen. The country may be called open; it is covered with grass forming excellent pasture-grounds, and abounds in plover and turnstones, scattered in small flocks. [Wilkes 1845:69]

In 1849 William Patterson Alexander toured the island of Kaua'i and described Anahola as:

...chequered with kalo patches, and studded with houses ... a delightful view from the south side. The Anahola river, one of the finest on the island, flows through the valley, and spreading near its mouth into a broad sheet of water, surrounds a little islet which has a romantic appearance. [Alexander 1991:123]

Missionaries began taking censuses in Hawai'i in 1823, although Anahola's population was not counted until 1847. The population at that time was 280 people, and thus it was the second most populated ahupua'a on the northern shores of Kaua'i. However, the drastic depopulation of the Hawaiian Islands following the introduction of Western disease has been documented in a number of sources (Bingham 1847; Stannard 1989; Bushnell 1993). According to one estimate, the population of Hawaiians and part-Hawaiians fell from approximately 300,000 in 1778 to 82,593 by 1850 (Schmitt 1968:43, 74). Therefore, the population of Anahola prior to the first census was likely significantly higher.

THE MĀHELE AND THE KULEANA ACT

The 1848 Māhele was established to guide Hawai'i in its transition from a traditional system of land use to a western model of privatization of property during the reign of King Kamehameha III Kūikeyouli. The traditional Hawaiian land system previously existed within the context of a highly stratified hierarchy and social order, a self-sustaining model of ahupua'a management and

use, and a communal and subsistence based economy which worked effectively for the people for generations.

The traditional land tenure system was based on a reciprocal relationship which derives from the lesson of mālama ‘āina (to care for the land). It is derived from a cosmological worldview that Hawaiians have a genealogical connection to the land. This relationship is defined by the kaikaina-kua‘ana (younger sibling-older sibling) reciprocal relationship (Kame‘eleihiwa 1992:25). The land and water was not owned in any legal sense, but revocable rights to its use were allocated and reallocated from the mō‘ī (king or paramount chief) down through the ranked system of ali‘i (lower chiefs) and finally to the maka‘āinana (commoners). Therefore, this historical event introduced the foreign concept of private property and fundamentally changed people’s relationship to land.

During this process tenants of the land were required to document their claims to specific parcels in order to gain permanent title. The application process required claimants to provide a native testimony, foreign testimony, and native or foreign registrar. These records of the historical Land Commission Award (LCA) documents provide firsthand accounts of residency, resources, land use, access, traditional and customary practices of the lands they lived and actively cultivated from late pre-contact history into the period of the Kingdom of Hawai‘i.

Historical land documents from the Māhele contain useful and relevant information in regards to understanding traditional Hawaiian land tenure and the transformation of this system into one based on land privatization. The Land Commission Awards (LCA) documented the size of the land, the sale of the land, award number, and royal patent number. The native and foreign registers were written by the claimant and provided information about the claims to their land. However, after a reviewing and compiling all the Kuleana in Anahola, historically the number of Māhele awards are more makai. There are no kuleana in and around the project area.

Anahola Ahupua‘a was Crown Lands, returned by Lunalilo (6th monarch of the Hawaiian Kingdom), who was the second-largest landowner (trailing only Kamehameha III) at the time of the initiation of the Māhele (middle nineteenth century). In a Crown land inventory, Anahola is stated as:

Anahola. — This land is siuate in the district of Koolau and comprises an area of 6237 acres. Nearly all the land in the valley is good rice land, mostly on kuleanas. The Anahola stream furnishes an abundant supply of water. A considerable portion above the valley, about 500 acres is under cultivation of cane by the Makee Sugar Co., the remainder being good pasture and wood land. Good roads connect it with the plantation.

C.P. Iaukea, Agent of Crown Lands

[In, The Biennial Report of the Commissioners of Crown Lands, 1894, p38]

Table 4. Land Commission Award Claims for the Ahupua‘a of Anahola 1848 to 1850.

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
0457	Anahola	Anahola, Puamano, Papikiahoaka	3 lo‘i, 2 mala of wauke, 1 mala of noni and the house site	Award 4547; R.O. 7083; Anahola, Koolau; Jan.11, 1848
04538	Ehuelua	Anahola	2 lo‘i, 2 mala of noni, a kula planted in wauke and the house lot	Not awarded Jan. 12, 1848

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
04593	Haili	Anahola, Haili	5 lo‘i and a kula adjoining the lo‘i and the house lot	Award 4593; R.P. 6544; Haili Anahola, Ko‘olau; Jan. 12, 1848
04594	Hiapo	Anahola	2 lo‘i, 1 cultivated kula and the house lot and the trees planted on it, an orange, some breadfruits and a kou	Not awarded Jan. 11, 1848
05391	Hilo	Anahola, Kaakaulua, Papakolea	Taro land; Name of the taro land is Papakolea, and there is also a house	Award 5391; R.P. 8086; Kaakaulua Anahola, Koolau; Jan. 19, 1848
04591	Hulu	Anahola, Kuakemana, Paanoho	9 lo‘i and 2 mala of noni, an orange tree, a mala of wauke. Kali‘ipalala is the name, and Koelonai 2 is the house lot	Award 4591; Poanoho, Anahola, Ko‘olau; Jan. 13, 1848
04581	Huluhulu	Anahola, Kanapaa, Kapuonunui, Papaukai	1 lo‘i, 3 mala of noni and the house site	Award 4581; R.P. 6631; Kanapa‘a, Anahola Koolau; Jan. 11, 1848
04879	(No name given)	Anahola, Kape, Kukuluaui	4 taro lo‘i and 1 house lot. Taro lo‘i and kula received from Makuakāne	Not awarded; Numerical index lists this as Inoa‘ole; Jan. 13, 1848
05143	Kaahiki Hilo (his son)	Anahola	13 lo‘i, 2 kula for wauke, 2 kula for noni, 7 orange trees, 2 kuakua, two hala trees, one place in a gobey fish stream. It was held from Kahanapapa until Panipani (probably Konohiki names)	Not awarded Jan. 13, 1848
05048	Kaehu	Anahola	3 lo‘i, 1 mala of wauke and the house lot	Not awarded Jan. 13, 1848
04909	Kaeleu	Anahola, Kamalupe, Kaloula/Kalouulu, Olelokana	9 lo‘i, a cultivated kula adjoining those lo‘i, also another cultivated kula in another place, 2 kula for wauke and 3 kula for noni, two house claims, Malupa and Kumakole, 1 orange tree	Award 4909; R.P. 7487; Kalouulu, Anahola, Ko‘olau; Mar. 13, 1850
05105	Kahaiola	Anahola, Pikau, Kalama	2 lo‘i and a cultivated kula, and a house lot	Award 5105; Pikau Anahola, Ko‘olau; 1847
05205	Kaholomoana	Anahola, Hahalua	Lo‘i and its kula, 1 mala of noni, 2 mala of wauke and one house lot	Award 5205; Hahalua, Anahola, Koolau; Jan. 12, 1848
05170	Kalawaia	Anahola, Ananakini, Hakaea	9 lo‘i, 3 mala of noni, 1 mala of wauke and the house site	Award 5170; Ananakiki, Anahola, Ko‘olau; Jan. 11, 1848
04971	Kalehua	Anahola, Kanamoa, Kapuakea	4 lo‘i, a kula, a house lot, a plantation of wauke and a mala of noni	Award 4971; Kahaina‘a, Anahola, Ko‘olau; Jan. 12, 1848

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
04981	Kalimaeleele (wahine)	Anahola	3 lo‘i, and the noni standing there and the house site	Award 4981; Anahola, Ko‘olau; Jan. 12, 1848
05142	Kaliuwa‘a	Anahola Hoolakauka, Kamoku	2 lo‘i, 1 mala of wauke, 1 mala of bitter gourd, 1 mala of noni, 1 mala of tobacco, and the house lot	Award 5142; Anahola, Ko‘olau; Jan. 11, 1848
05084	Kaniku	Anahola Palikoa, Puapala	5 lo‘i, 5 mala of noni, 3 orange trees, 1 place for catching gobey fish. There are some pōulu, also breadfruit trees	Award 5084; R.P. 6760; Puapala, Anahola, Ko‘olau; Jan. 12, 1848
04913	Kanuha	Anahola Olokuiha, Kamokuapi	2 lo‘i and a kula and the house lot	Award 4913; R.P. 6325; Kamokuapi, Anahola, Ko‘olau; Jan. 13, 1848
05099	Kauhaialae	Anahola Puuomano, Olelokana	1 lo‘i, 2 mala of noni and the house site	Award 5099; R.P. 5541; Olelokana, Anahola, Ko‘olau; Jan. 11, 1848
05141	Kaukai	Anahola Kuloa, Koapupu	14 lo‘i, 2 mala of noni, 1 mala of wauke and the house site	Award 5141; R.P. 7872; Kuloi‘i, Anahola, Ko‘olau; Jan. 11, 1848
05078	Kawaaiiai	Anahola Kahalepua, Pohakumano	2 lo‘i and kula which adjoins them. 2 mala are in another place, and in another place is a mala of noni and wauke, and also a house lot	Award 5078; Anahola, Ko‘olau; Jan. 11, 1848
03030	Kawaimakanui	Anahola Palawai, Pauko	House lot and also taro land	Award 3030; R.P. 7275; Palawai, Anahola, Ko‘olau; Jan. 12, 1848
05104	Kawaohia (Kawaaohia)	Anahola Olokauha, Kaheewale	3 lo‘i, 2 kula of wauke and noni, and the 2 house lots	Award 5104; R.P. 7314; Kaheewale Anahola, Ko‘olau; Jan. 11, 1848
04987	Keamuhawai‘i	Anahola Pauku, Kaupapa, Papaikiapoaka	4 lo‘i, 2 mala of noni, and the house lot and a kou tree	Award 4987; R.P. 6291; Anahola, Ko‘olau; Jan. 12, 1848
04590	Kekuaiki, Ho‘opana, his wife	Anahola Hahalina / Kahalina	5 lo‘i and a kula planted in tobacco, 4 mala of noni and the house lot	Award 4590; R.P. 7347; Kahalina, Anahola, Ko‘olau; Jan. 12, 1848
05190	Kekuaiki	Anahola	5 lo‘i and the kula planted in wauke and the house site	Not awarded Jan. 11 1848
05083	Kiei	Anahola Kanakawale, Hikii	4 mala of noni, 2 mala of wauke, 3 lo‘i and the house site	Award 5083; R.P. 7122; Anahola, Ko‘olau; Jan. 11, 1848
04984	Kole (Kale)	Anahola Papooulu, Kealuaahokia/ Kalalea	2 lo‘i, a kula planted in gourd and the house site	Award 4984; R.P. 7597; Kaluaohiki,

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
				Anahola, Ko‘olau; Jan. 12, 1848
04935	Koleaka (Kolehaka) Keolawa, brother in law	Anahola Kalahiki, Hikii	2 lo‘i, and a cultivated kula and one house lot	Award 4935; Hiki‘i; Anahola, Ko‘olau; Jan. 12, 1848
05023	Kolia, D	Anahola Pukoenieni, Kanakahikio, Kuka, Kuaimanui, Kahonaula, Palikoa, Kauakahi	Small area of land named Kiki‘i which was given to me by Kaikioewa. Lo‘i named Kuemonū, 2 house lots, 2 mala of noni	Award 5023; R.P. 7740; Kauakahi, Anahola, Ko‘olau Jan. 13, 1848
05089	Kuhaimoana Nahulekoa, wahine	Anahola	2 lo‘i, 6 mala of noni, 1 mala of wauke, and the planted trees: 2 kou, 1 orange and 1 breadfruit	Not awarded Jan. 12, 1848
05102	Kuihu	Anahola Puuoniunu, Papahikiloaka	1 lo‘i, 1 mala of noni, 2 mala of wauke, and the mala of bitter gourd, and the house lot	Award 5102; R.P. 5927; Anahola, Ko‘olau; Jan., 11, 1848
04916	Kumukou	Anahola Lanakini, Piwaha	1 lo‘i, 1 gulch planted with noni, and 2 mala of wauke and the house lot	Award 4916; R.P. 7318; Lanakini Anahola, Ko‘olau Jan. 12, 1848
04984	Kole (Kale)	Anahola Papooulu, Kealuaahokia/K alalea	2 lo‘i, a kula planted in gourd and the house site	Award 4984; R.P. 7597; Kaluaohiki Anahola, Ko‘olau Jan. 12, 1848
05199	Kuoha (Kueha)	Anahola Puamano, Kalua`o`opu	7 lo‘i and a kula for planting tobacco adjoining the lo‘is, a mala of noni in another place, and the house lo	Award 5199; R.P. 7120; Kalua`o`opu Anahola, Ko‘olau Jan. 12, 1848
04980	Kuohu	Anahola Pu‘uoio, Olelokana	1 lo‘i, 1 mala of noni, 1 mala of wauke and also the house site	Award 4980; R.P. 6018; Olelokana Anahola, Ko‘olau Jan. 12, 1848
05112	Kupukupu Mumuku	Anahola	5 lo‘i, a place for planting wauke and also a mala of noni, and the house site	Not awarded Jan. 13 1848
04694	Lono	Anahola Puoio, Kumunana	2 lo‘i, 2 mala of noni, 1 mala of wauke, 1 male of bitter gourd and the house lot	Award 4694 to Lono 2; R.P. 6449, Anahola, Ko‘olau Jan. 11, 1848
04694B	Lonoiki	Anahola Ananakini,	1 lo‘i in ‘ili Ananakini 1 lo‘i in ‘ili Kalua`o`opu	Award 4694B; Lonoiki Anahola, Ko‘olau

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
		Kalua‘o‘opu; Puoio, Kapuoni		(No Date)
04693	Luahele	Anahola Palawai, Koananai	2 lo‘i, 4 mala of wauke	Award 4693; R.P. 7598; Palawai Anahola, Ko‘olau Jan. 12, 1848
04699	Lupaieie	Anahola	2 lo‘i and a kula which adjoins them, also a mala of wauke in another place, also a mala of noni, another mala of noni at Kamalomalo‘o, and my house lot in Anahola	Award 4699; R.P. 7275; Anahola, Ko‘olau Jan. 13, 1848 4608 not awarded
04722	Mahilauawa	Anahola Palawai	1 lo‘i, and some trees, a kou and a noni	Award 4722; R.P. 7511; Palawai Anahola Ko‘olau Jan. 13, 1848
04711	Mailou	Anahola Hakaea, Makaikai	6 lo‘i, 3 mala of noni, 1 mala of wauke, 2 orange trees, 2 mala of kikope* and the house site	Award 4711; Land Patent 8090 Jan. 11, 1848
04712	Makaino Kikoo	Anahola Hioka / Kioka	7 lo‘i, 3 mala of noni, 1 mala of wauke and the house site.	Award 4712; Hioka Jan. 11, 1848
04721	Makakane	Anahola	1 lo‘i, and a cultivated kula and the house lot	Not awarded Jan. 13, 1848
04719	Makaole (Makaola)	Anahola Hoopala	12 lo‘i and a cultivated kula adjoining the lo‘is, and the house lot	Award 4719; R.P. 3887; Ho‘opala; Jan. 12, 1848
04731	Makuakāne	Anahola Kanapa‘a, Pouka, Pauka, Palawai	I, the Konohiki on the land of Anahola on the island of Kauai, am under Ka‘aha. All the benefits of the Pō‘alima confirmed by law as belonging to the Konohiki are what I claim	Award 4731; R.P. 6342; Kanapa‘a, Anahola, Koolau Jan. 11, 1848
04730	Manamana	Anahola Kalaewahiwai, Kamuliwai, Kekau	6 lo‘i, 5 mala of wauke, 3 mala of noni, 1 kula weuweu /grass kula/, 4 orange trees, 2 kou trees and two house lots	Award 4730; R.P. 7118; Anahola, Ko‘olau; Jan. 12 1848
04718	Maumau	Anahola	1 lo‘i and a kula for cultivation and a house lot	Award 4718; R.P. 6685;

Claim Number	Claimant	‘Ili/ Ahupua‘a	Kuleana	Designation
				Anahola, Koolau; Jan. 12, 184
04724	Mona (Mana)	Anahola Kamoku, Kamuliwai, Kekau	4 lo‘i, 4 kula of noni, one kula of wauke, 2 house lots	Award 4724; R.P. 7119; Kamoku Anahola, Ko‘olau; Jan. 12, 1848
04760-1	Naelele	Anahola Palawai, Pukalio	1 lo‘i and a kula and 2 mala of noni	Award 4760; R.P. 5666 Anahola, Ko‘olau Jan. 13, 1848
04780	Naiwi (Naiui)	Anahola Mamania, Kaluanui	5 lo‘i, 3 mala of wauke, 6 mala of noni, 3 orange trees, 2 pō‘ulu breadfruit trees, and 1 house lot	Award 4780; R.P. 3917; Kaluanui; Jan. 12, 1848
04782	Nakea	Anahola Pauko	2 lo‘i and a kula and 3 mala of noni	Award 4782; Pouko, Anahola, Ko‘olau; Jan. 12, 1848
04690	Nalawaia Nalawaianui	Anahola Kealohi	Lo‘i, named Ke‘alohi, 2 mala of noni, 2 mala of wauke and 2 house lots	Award 4690; R.P. 7596; Kealohi, Anahola, Ko‘olau; Jan. 12, 1848
04777	Nanukuwaiki (Nukuwaiki) Kukaena, his wife	Anahola Kauapa, Kumuahane, Kapunaku	4 lo‘i, 5 mala of noni, 2 mala of wauke, 1 mala of bitter gourd, and the house lot	Award 4777; R.P. 3957; Kauapa, Anahola, Ko‘olau; Jan. 11, 1848
04765	Naololi Kekuaiki, his brother	Anahola Pukoanini, Kaupake	5 lo‘i, 2 mala of noni, 1 mala of wauke and 2 house lots	Award 4765; R.P. 7319; Kaupaka, Anahola, Ko‘olau; Jan. 11, 1848

No individual kuleana Land Commission Awards (LCA) were awarded in the current project area. Most of the awards are within close proximity to Anahola River with the majority of the ahupua‘a held by the crown (Indices 1929). In general, Anahola claims included lo‘i kalo, wauke (*Broussonetia papyrifera*), and noni (*Morinda citrifolia*). Additional parcels were used for house lots, ponds, and some māla of noni and wauke. The claims for lo‘i (wet land) and kula (dry land) suggest that people were producing a wide range of crops such as yams, sweet potatoes, and squashes. These crops were likely being sold or traded. House lots were for the most part located on the coast with lo‘i parcels on either side of Anahola River to take advantage of the fertile soil and fresh waters of the river’s wide floodplain.

MID- TO LATE 1800S

The following are a list and brief summary of the newspaper articles pertaining to Anahola from the database of Hawaiian Language Newspaper (Nūpepa):

Table 5. Selected Nupepa clipping for Anahola.

Source	Summary
He papa o na Kanaka ma Kauai <i>Ke Kumu Hawaii</i> 14 October 1835	Anehola: Adults 274, Children, 49, Total: 323 living in Anehola, Puna district
Ka Moololo o Laieikawai <i>Ka Nupepa Kuokoa</i> 29 November 1862	The prophet goes to top of Kalelea in Anehola and see the signs that a high chief is born.
Kauai Muliwau Nui <i>Ka Nupepa Kuokoa</i> 22 August 1868	Logging and ranching the biggest businesses in Anahola, there is a fear the because of these and the amount of people moving here that the land will become barren.
Huakai Makaikai ia Kauai, na D. Keawemahi <i>Ka Lahui Hawaii</i> 17 August 1876	Tour of David Keaweamahi on Kaua'i, visits Anahola and told the story of Kapukalani relating to Māui the demi-god and Pōhakuokaua'I outside of Ka'ena.
He Moololo no Aahoaka <i>Ka Nupepa Kuokoa</i> 30 December 1876- 3 March 1877	Story of the chiefs of Ko'olau Kaua'i. Place names correspond to ali'i and characters in the mo'olelo.
Mai Anahola Kauai mai <i>Ko Hawaii Pae Aina</i> 12 March 1881	From Anahola to Kīlauea in quarantine because of smallpox.
Me ke Kauoha, Hoolaha kuai o no hoolimalima o na aina aupuni o Wailua a me Anahola Kamalomalo <i>Kauai Ka Hoku o Hawaii</i> 10 May 1939	Auction of leases to 2 parcels of that was owned by Līhu'e Sugar in Anahola/ Kamalomalo about 2860 acres, including: Sugar lands including the train, reservoir, pasture, and arid land.

Following the 1848 Māhele, cash-crop agriculture and cattle ranching gradually replaced traditional subsistence pursuits on the land, and indentured laborers, primarily China, Japan, Pacific Islands, the Philippines, and Portugal, were brought in to work on the sugarcane and pineapple plantations, many of these individuals eventually marrying into local families. Lo'i (or irrigated pond fields) and terraces were converted to rice production in the valley bottom, and kula land once planted in traditional tree crops became the locus of vegetable farming for markets outside the district.



1915 Anahola Valley showing lo'i converted to rice (Bernice P. Bishop Museum)

An article written by Dixon et. al (2005:74-84) provides a good summary of foreign visitors who wrote about the landscape of Anahola in the post-Māhele period.

Brief mention of the Anahola Valley is made in several visitors' journals dating to the latter half of the nineteenth century, a period which seems to have been one of considerable change for the district's inhabitants and their land. In 1849, the Anahola Valley was described as "chequered with kalo patches & studded with houses..." (Alexander 1991:123), painting a picture of relatively undisturbed traditional land use. A somewhat later visit in 1865 states that "The coast of Kauai... near Anahola is abrupt in places and very read from the soil; few trees except the pandanus were seen" (Lydgate 1991:136). Such a different description only 16 years later suggests the effect of deforestation associated with the introduction of non-traditional agriculture on the valley slopes and costal plain. Another visitor in 1895 only mentioned in crossing the Anahola River, but the described a "melon patch" to the north in Moloa'a (Knudsen 1991:152) suggestion the much of the region was being transformed from traditional land use into an area of commercial agricultural production, a process occurring elsewhere on Kaua'i by the end of the nineteenth century (Mawyer and Creed 1997).

An article titled "Ernest Krull's Dairy" was written by Hank Sobole and published in The Garden Island on September 7, 2014. This article documents important details in the timeline of the Ernest Krull Sugar Estate leading up to Makee Sugar Company and eventually Lihu'e Sugar Plantation.

In 1854, German immigrant Ernest Krull purchased a tract of land at Kealia, Kaua'i from the Hawaiian Government for \$200 (about \$5,720 in 2013 dollars), which extended westward from the area where the Spalding Monument would later be built to nearly the vicinity of the Waipahee Slippery Slide.

Then, about six years later, Krull began operating a dairy on his land for the purpose of selling visiting whaling ships and Honolulu merchants' beef and dairy products — mainly hides, tallow and butter. He sold firewood to ships anchored off Anahola as well.

During the 1860s and early 1870s, large herds of cattle could be seen roaming over Krull's broad pastures.

While touring Kauai in 1863, American visitor Mary E. Anderson described Krull's dairy homestead at Kalualihilihi as follows:

"Mr. Krull has a large dairy, which in part supplies the Honolulu market with butter. He has a well-conducted, elegant, and tasteful establishment; indeed, it was difficult to imagine that no lady's hand was employed in it.

The grounds about the house are prettily laid out, and two walks lead to a picturesque summerhouse, called "Bellevue," from which one looks off over an extensive plain to the sea. We slept in a nice grass house with matting on the side instead of paper. Familiar engravings adorned the walls, and the beds, with their pretty muslin mosquito-curtains, looked inviting enough to the weary traveler.

We saw many kinds of tea-roses with their delicate tints. The garden abounded in a variety of vegetables, and we feasted on strawberries which were hanging on their stems in the morning. Within sight was a fine bluff extending down to the sea."

Krull sold his dairy and ranch lands to sugar planters Capt. James Makee and his son-in-law, Col. Z. S. Spalding, in 1876 for the sum of \$30,000 (\$673,000.00 in today's dollars) — lands that would later become part of Makee Sugar Company and eventually, Lihue Plantation.

Saito and Campbell (1987) processed the document, *Hawaiian Sugar Planter's Association – Plantation Archives* covering the years 1850-1968 providing details of The Lihue Plantation Company history. The table below is a summarized timeline of events from Ernest Krull Sugar Estate to Makee Sugarcane. During the time of Makee Sugar Company the project area was known as "Field 15" with the railroad running adjacent to the project area heading down to the landing in Anahola bay.

Table 6. Timeline in chronological order of Ernest Krull Sugar Estate to Makee Sugarcane.

Year	Event
1854	Ernest Krull Sugar Estate
1877	Cpt James Makee (from Ulupalakua), King Kalakaua, & others, purchased Ernest Krull sugar estate.
1877	May 1 st , Makee Sugar Co. signs 30-year Crown land Lease for Kapa'a/Anahola lands. \$600/year, extended to July 1, 1913 (Biennial report of Crown Land Commissioners Table F. Rent Roll, p75).

1877-8	Col Spalding (Cpt Makee's son) purchases land & erects mill at Kealia.
1878	Makee died & his son Col. Z.S. Spalding purchased majority interest & took over Makee Sugar Co. mgmt..
1880	190 men employed on Kapaa plantation, ~1500 tons (estimated) sugar crop. Annual fuel consumption 244 tons coal & 250 cords of firewood. <i>Lihue Plantation Co. Ltd.</i> , p.5
1885	Col. Splading dismantled Kapa'a mill & moves it to Kealia & combines two factories (Kealia & Kapaa or Makee & Kealia).
1887	Up to 1887 W.G. Irwin & Co. were agents for Makee Sugar.
1887	C.Brewer & Co. Ltd agents for Makee Sugar.
1889	Makee Sugar - 1,030 workers producing 5000 tons of sugar/year. Confirmed irrigation ditches brining mountain wai to plantation.
1904	H. Hackfield Agents for Makee sugar.
1909	Hackfield became American Factors (now American Factors) agents of Makee Sugar.
1910	Lihue Plantation purchases controlling interest in Makee Sugar Co.
1916	Lihue Plantation & W.F. Sanborn purchased 6,000-acre Princeville Plantation
1922	American Factors (successor co. of H. Hackfield & Co.) acquired control of Lihue Plantation Co. by purchasing 3,026 shares of its stock.
1933	Lihue Plantation Company sole owners of Makee Sugar Co. & plantations merged.
1934	Kealia mill (Makee Sugar Co.) dismantled and combined with Lihue factory. Prior to merger with Lihue Makee Sugar Co. managers: Col. Spalding and Messrs. Fairchild, Blaisdell, Wilcox and Wolters.

In 1852, Inter-Island Steamers launched their first attempt at service. In August of that same year, the Marianne capsized on her trip from Kaua'i to Honolulu. Many of the native Hawaiians on board swam to shore, some with children on their backs, to Anahola Bay. This was just one of the many events that began the twenty year struggle for inter-island steamers. By 1914 the interisland steamers were finally profitable with 47 regular ports or landings, one of which was in Anahola (Thomas 1983: 31, 133).

In 1877-1878 the Kealia Mill was erected. According to a Kaua'i Historical Society finding aid (re-write) of the Lihue Plantation Co. Ltd.:

Col. Spalding dismantled the Kapaa mill and moved it to Kealia, where he combined the two factories. Shortly thereafter, Col. Spalding changed to the diffusion process of sugar manufacture. To keep the process continually fed with cane, Makee Sugar Co. instituted the first night manufacture in Hawaii. The factory was outfitted with electric lights and even the fields were lighted for night harvesting, which enabled the new plant to handle 400 tons of sugar every 24 hours."

In 1900, the diffusion plant was changed back to the maceration process and in ten years, a modern nine roller mill was in operation. Power for the mill was generated by burning bagasse as well as hydroelectrically from mountain streams and the company had its own ice plant. Approximately 2000 acres of cane were harvested in 1914 producing 10,660 tons of sugar. [KHS finding aid (re-write) Lihue Plantation Co. Ltd.]



Figure 13. No Date, Landing at Anahola Bay, Anahola Beach (Kaua'i Historical Society)



Figure 14. No date, Pineapple Fields in Moloa'a looking towards Anahola (Kaua'i Historical Society)

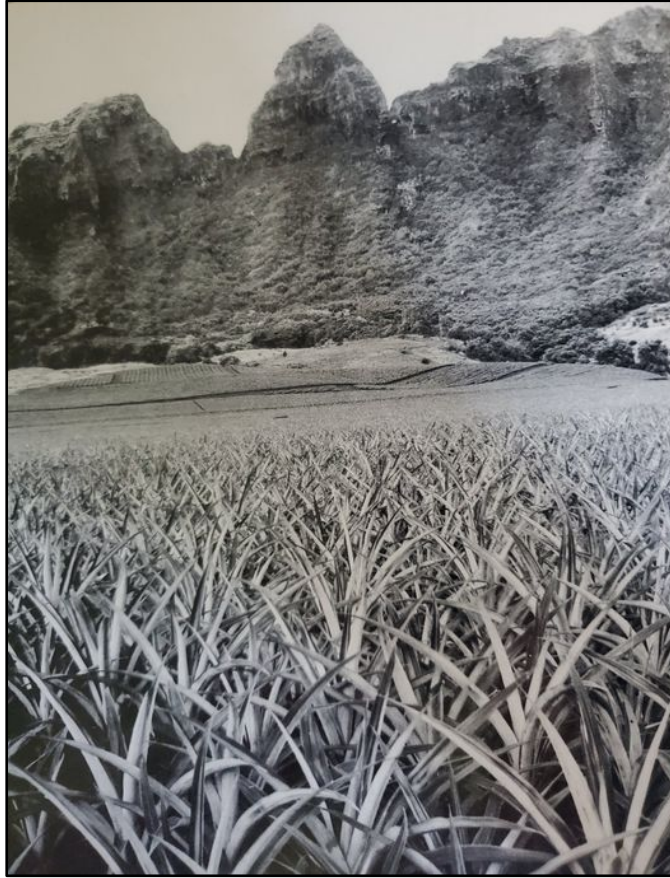
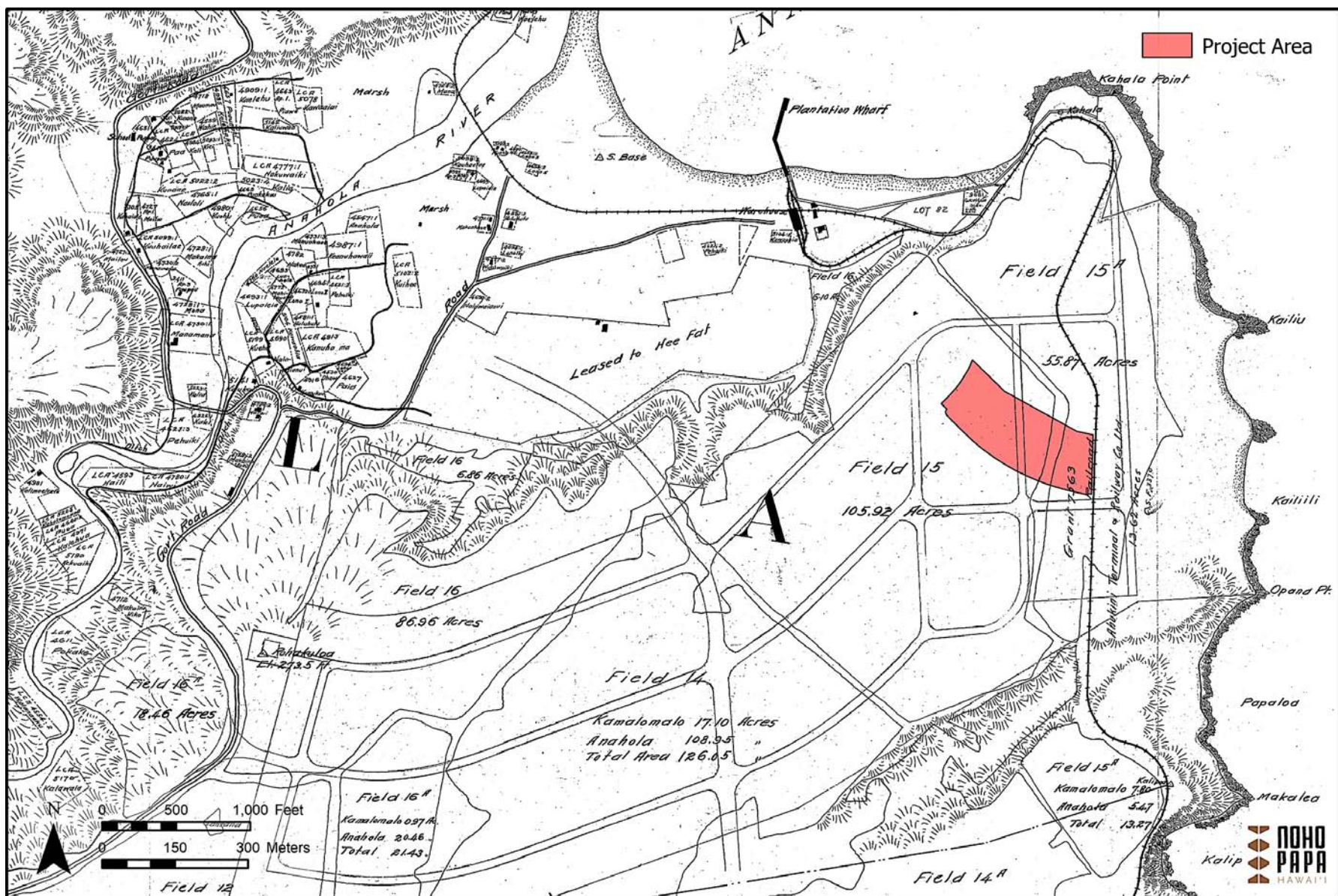


Figure 15. Anahola hillside covered in pineapple with Kalalea Muntain in the background in the early 1900s.(No Date, Photo from Nohea David)



Figure 16. Lihue Plantation steam locomotive number 4 (Built for McBryde Plantation as number 1,) on a special charter trip in 1957. Oahu group of railroad fans chartered the trip from Lihue to Anahola and back behind Lihue 4 (Photo from Buddy Victorino)



1900S TO PRESENT DAY

Like most well watered areas in Hawai'i, rice crops began replacing former lo'i kalo in the second half of the 1800s. Chinese settlers purchased lands and converted lo'i terraces adjacent to the Anahola River and in Anahola Valley into rice fields (Joesting 1984, *Oryza sativa*). By 1892, Anahola was a rice farming district that was controlled by Mana and Hee Fatt from Kapa'a. Rice production co-existed with the nearby sugar plantations until the 1930s. Chinese rice farming began to decline in the 1930s due to rising costs and and competition from California. Many pond fields were left fallow for years, some only recently returning to taro production. Pineapple production began in the late 1800s but it also slowed in the 1930s, as did sugarcane production. Vegetable farming of the flood plain soils and coastal plain also altered the landscape of Anahola after this period, as did the small-scale cattle grazing (Dixon et. al 2005: 81-81).

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa'a to Ahukini Landing and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Condé and Best 1973:185). The rail system in Anahola traveled along the coast to a landing (see Figure 16) that had been built in Anahola Bay in the early 1800s. In 1934, the Lihue Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Condé and Best 1973:167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At the same time, in addition to hauling sugar cane, the railroad was also used to haul plantation freight including "fertilizer, etc...canned pineapple from Hawaiian Canneries to Ahukini and Nāwiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd." (Hawaiian Territorial Planning Board 1940:11). Shortly after the Lihue Plantation gained ownership of the railroad, passenger cars ran on the tracks. The last railroad tracks were removed in 1959 (Hilton 1990:378). The tracks still appear on the 1955 Dunn survey map (Figure 10) and are not on the 1963 USGS map.

Lihue Plantation closed in November 2000. Towns dependent on sugar cultivation and production suffered after the closing of the plantations, however, the growing tourist industry has begun to ease the economic affects. Plantation's fields in Anahola that were formerly Crown Lands reverted to the Department of Hawaiian Homelands.

PREVIOUS ORAL HISTORY INTERVIEWS

In the late 1930s, Mary Kawena Pukui began working for the Bishop Museum. As part of her work, she traveled throughout the islands conducting interviews with Hawaiians, gathering the mo'olelo they remembered about the places they lived. She did a series of interviews with kūpuna from Anahola who shared the following:

HAW 50.1.1: Mrs. Elizabeth Leina'ala Ewaliko:

According to Mrs. Ewaliko, who moved to Anahola in 1914, her father was Robert Hanapī a Judge for Anahola. There was no water to irrigate their, or any of the homesteads. It was her husband that sought out the rights to bring water down from the upland streams to irrigate the fields.

Mrs Ewaliko also talked about how abundant the 'o'opu was and that the time to fish for them was from September to December. There used to be a river where the road to Hanalei was, but it is intermittent perhaps because of all the work to build the road.

Anahola was also known for its ‘Alaea or red dirt for medicine. The more effective form being from near the ocean. The ocean was also abundant with many types of seaweed like kohu, wāwae ‘iole, lipoa and līpe‘epe‘e.

HAW 50.1.2: Mrs. Rena Peters:

Mrs. Peters and her family are longtime residents of Anahola. She shares that the farmers there produced rice and taro of the lehua variety to sell to O‘ahu but use to also grow lūkea and other varieties to eat. But because people want to buy the red poi lehua is the preferred for selling and farming.

The ‘o‘opu or goby was plentiful in Anahola, the ‘o‘opu hua were the golden fish that were prized, she also talks of the lai ‘ula‘ula, a small fish that they would catch using a hopai, or small net. These fish lived in the irrigated taro fields along with ‘o‘opu and other freshwater creatures.

HAW 50.2.3: Mrs Daisy Valpoon Lovell:

Mrs. Lovell is a long time kama‘āina of Anahola, her family home is near the ocean at Pu‘ukoaniani. She explains that they would gather their water from the mountain streams and irrigation ditches of the plantations. These streams were full of ‘o‘opu the goby and ‘ōpae kala ‘ole or freshwater shrimp. The streams and irrigation ditches had been broken many times due to massive flooding. The people of Anahola are working for the pineapple plantation and are involved with mostly harvesting.

There is a stream called Alaweo whose waters are said to be special and come from a spring in a cave was the dwelling for the mo‘o. The area near the river is sacred or haunted place by three women, which is why no one has been able to live there. The mountain behind Anahola have three different names for the three parts, the first is Kalalea, the second is Konanai and the last ‘Āmū, these are also the names David Kahanu as well as other kūpuna of that time use. Kalalea is a male mountain, Konanai female.

The ocean of Anahola was very productive. The people would call out through the community to do surround fishing for akule. Mrs Lovell and others would sell limu kohu from the surrounding reefs for .25 cents a pound. According to Mrs. Lovell, the currents have changed since she was a little girl and parts of the reef have fallen away. When she was younger, they would be able to walk from one reef to the next, now there are deep channels.

The point of Pali‘au was a place to get ‘alae wahine or the dark red dirt for medicine. During the moons of Hilo and Hoaka the ‘a‘ama would come out. The bay of Anahola was also a place for feeding the shark aumakua.

Anahola has a rich natural and cultural history. From these sources we scratch the surface of what these histories have to offer us in our time. Looking at the earliest articles, we see that Anahola was prosperous and had a large population so much so that it was a favorite place for chiefs of Ko‘olau. However, as we progress into modern era, it was on the road to destroying these natural resources.

From Mrs. Ewaliko, Mrs. Peters and Mrs. Lovell, we learn how life was in the early 1900s during the plantation era. These women share the important cultural and natural resources that span from the uplands out to the reef and surrounding ocean. We learn that the water courses and irrigation were vital to the people and that new water ways had to be made in order to feed the homesteads there. We also learn that the aquatic life was thriving, both in mountain streams and

in the ocean, enough to feed the population as well as sell to communities as far away as O‘ahu. We are given specifics on places and times in which these resources were gathered and maintained by the kama‘āina of this area along with the changes they have seen in their lifetime there. In comparing these sources of the past with the knowledge of kama‘āina in this present day, we are able to bridge the gap between knowledge and history that has been forgotten, bringing to light a fuller history of this storied place.

PREVIOUS ARCHAEOLOGICAL STUDIES

This section of the report summarizes previous archaeological studies that have been conducted in the project area and surrounding vicinity. A chronological summary of archaeological work conducted in the project area is discussed and presented in the table below.

PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE PROJECT AREA

No previous archaeological studies are associated with the project area.

PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE PROJECT AREA VICINITY

Bennett 1931

The archaeological investigation most relevant to the present project site is Wendall Bennet's survey of Kaua'i completed during the early 20th century. Of Bennet's five sites in the Anahola area, only 'Aikanaka Heiau, as located and described by Bennett, is in any proximity to the present project site. Bennet describes the heiau as:

Site 113: Aikanaka Heiau, at Anahola point near the end of the bluff on the south side of the bay. Described by Thrum as "a small heiau, about 40 feet in size. All destroyed." One large rock marks the spot of the heiau in the cane field. [Bennet 1931:129]

Rechtman & Dougherty 2001

At the request of Mr. Clyde Kodani of Kodani and Associates on behalf of their client, the Department of Hawaiian Homelands (DHHL), Rechtman Consulting conducted an archaeological inventory survey of TMK: 4-8-03:05 and 4-8-03:por.16 comprising approximately 38 acres located in Anahola Ahupua'a, Kawaihau District, Island of Kaua'i. DHHL planned to develop a roughly 3-acre housing subdivision (11 lots) along Anahola Blvd at the extreme western portion of the project area. The remaining 35 acres was left as pastureland. The objective of the survey was to record the locations of all archaeological sites and features that might be present within the study area and to provide preliminary significance evaluations for any recorded sites. No surface features or surface manifestations of cultural deposits were observed during the reconnaissance.

Hammatt 2005

At the request of PBR Hawai'i, Cultural Surveys Hawai'i completed a letter report on archaeological concerns for the Anahola Residence Lots, Unit 6 Anahola Ahupuaa, Koolau District, Island of Kauai [TMK (4) 4-8-003: Por. 3, 19, & 21]. Procedures undertaken for this letter report include brief review of historic documentation and previous archaeological investigation of Anahola Ahupua'a and a field inspection of the project site. Though there was no evidence of surface historic properties within the project area, 'Aikanaka Heiau which was recorded by Bennett as being destroyed and site marked by a large boulder lies 2000 feet north of the project area at Anahola Point.

Despite extensive efforts, Nohopapa Hawai'i, LLC was unable to procure the Ota 1985, Taniguchi 1996, McGerty and Spear 1999 and Dye 2012 archaeological studies absent from the State Historic Preservation Division and referenced in other archaeological reports. Information from the Ota 1985, Taniguchi 1996, McGerty and Spear 1999 and Dye 2012 archaeological studies included in the table below is taken from (Cordy et al. 2020: 59-60).

Table 7. Previous Archaeological Studies in the Project Area Vicinity

Reference	Type of Study	Location	Results
Bennett 1931	Archaeological survey	End of the bluff on the south side of the bay.	‘Aikanaka Heiau at Anahola Point, noted as destroyed.
Ota 1985	Archaeological Reconnaissance survey	Anahola Ahupua’a TMK (4) 4-9-010: 1, 2, 3 & 5; & 4-8-various	No evidence of these heiau was found, confirming their reported destruction
Taniguchi 1996	Site inspection	Anahola Ahupua’a TMK (4) 4-8-018:024	Site #115 (remnants of Kuhua Heiau)
McGerty and Spear 1999	Archaeological inventory survey	Anahola Beach Park, Kawaihau, Kauai, Hawaii (TMK 4-8-14:6)	N/A
Rechtman & Dougherty 2001	AIS of 38 acres; included backhoe trenching	Approximately 38 Acres, Department of Hawaiian Homelands (TMK: 4-4-8-03:05, por. 16) Anahola Ahupuaa Kawaihau District Island of Kauai	Site #877 (pre-Contact agricultural soil layer in subsurface context); no surface (above-ground) historic properties were identified
Hammatt 2005	Archaeological Letter Report	Anahola Residence Lots, Unit 6, Anahola Ahupuaa, Koolau District, Island of Kauai [TMK (4) 4-8-003: Por. 3, 19, & 21]	No historic properties or cultural materials were identified.
Dye 2012	Archaeological inventory survey	Kumu Youth Academy at Site 50–30–08–116 Anahola Ahupuaa, Kawaihau District, Kauai Island	N/A

COMMUNITY ETHNOGRAPHY

Ethnographic work for this study was conducted from February to May 2022. As a multi-phase study, the ethnographic process consisted of identifying appropriate and knowledgeable individuals, conducting ethnographic interviews, summarizing the interviews, analyzing the ethnohistoric data, and preparing the report. Six individuals were contacted to participate in this study. Three individuals participated in interviews and three were not able to participate for various reasons. The table below lists the names, background information and the dates of individuals that were interviewed for this study.

Table 8. Community Interview Participants (in alphabetical order)

Participant	Background	Notes
John Ka'ohelaui'i	» DHHL Anahola resident since 1991 » Community Educator using Kōnane	Completed interview on 5/2/22. Mana'o is included below.
Kevin "Bear" Kaleiohi	» Lifelong Anahola Resident » Lineal Descendant of the area » Mahi 'ai and Lawai'a	Completed interview on 4/21/22. Mana'o is included below.
Nalani Kaneakua	» Lifelong Anahola Resident » Lineal Descendant of the area » Lawai'a and trained chef » Director of the Ko'olau Limu Project	Completed interview on 4/22/22. Mana'o is included below.
Kahanu Keawe	» Kanuikapono Charter School Kumu » KKOA Volunteer » Ka Hale Pono board member » Pi'ilani Mai Ke Kai Homeowners Association board member	Completed interview on 5/24/22. Mana'o is included below.


ACKNOWLEDGEMENTS

Nohopapa Hawai'i would like to mahalo the individuals who shared their precious time, memories, and mana'o for this study. Without their willingness to share personal recollections and stories, this important project would not have been possible. The mana'o that was shared will help to mālama Anahola for future generations to better understand, appreciate, and cherish the special significance of this place.

SUMMARY OF COMMUNITY MANA'O


MO'OKŪ'AUHAU (BACKGROUND INFORMATION)

Kevin "Bear" Kaleiohi and Nalani Kaneakua, both, speak to their deep, longtime connections to Anahola and the surrounding area. Bear shares, "My father guys lived in Anahola for many of years. They're originally from Pāpa'a Bay but lived in Anahola for a very long time." Born in 1959, Nalani Kaneakua recalls growing up in Anahola "Village" (lower Anahola river valley), what life was like, and notes that her family goes back four or five generations in Anahola. Another interviewee, John Ka'ohelaui'i, moved to Anahola DHHL and recounts his lived experiences since



1991 when he moved his family to Anahola. He adds, “when I moved to Anahola, you know, I, ...was gonna be like my final, like my final resting spot. Kahanu Keawe and her family moved into their home, at Pi’ilani Mai Ke Kai, about 12 years ago. She shares her love of Anahola through her various roles: in addition to being a māmā and community kākō’o she is dedicated to Anahola’s youth as a kumu (teacher) at Kanu I Ka Pono Charter School. She, like other interviewees, are tied to the landscape and resources through hana – she also spends lots of her time assisting Kūkulu Kumuhana O Anahola and her Homeowners Association. Each interviewee continues to actively build community and capacity through their individual contributions – from helping with clean ups, growing food, elevating cultural practice and learning, and leading native seaweed restoration projects.

MO’OLELO (PLACE NAMES, MELE, OLI, HULA, ‘ŌLELO NO‘EAU)




Most significantly in terms of, both, mo’olelo and cultural sites, three (3) interviewees mentioned the existence of remnants of a heiau referred to as ‘Aikanaka. Particularly, interviewees large stone feature adjacent, across the road (Kukuihale), to the project area that were probably part of the ‘Aikanaka complex. Uncle John and Aunt Nalani both mention ‘Aikanaka in relation to the famous Kaua’i tale(s) of Kawelo. Aunt Nalani made sure include mention of ‘A’ahoaka, a paramount mo’olelo that carries much of the genealogical knowledge and cosmogonic information about how land features in the Ko’olau moku were conceived and named. She continued to share how she uses mo’olelo, like ‘A’ahoaka to teach and promote proper ‘inoā, “It is part of my limu restoration project, that we teach history, and legends, and myths, and a lot of, you know, mo’olelo all of the area. And, it includes ‘A’ahoaka..., how Kanahāwele was looked at, of course he was the wave, you know. But he was big, tall, and sturdy and how Kahala Point, Kahala was the mother on Pu’u Koananae which gave birth to Kalalea.” Later, Aunt Nalani again mentions the “big connection with Kawelo” in the ahupua’a of Anahola as connect to other important wahi beyond its borders, like “Kumukumu (stream) and Hōmaikawa’a.”

Three (3) interviewees mentioned that they don’t know of any oli, mele, hula connected to the project area, specifically, but express the potentiality of uncovering more tied to the general area – along with forgotten inoa wahi – as an added benefit of building community around spaces like Ulupono and Kanuikapono Charter School.

MAUKA-MAKAI CONNECTIONS, MĀLAMA THE ICE BOX AND OUR MARINE RESOURCES


Each interviewee adds their observations made over their lifetime, or their time in Anahola, about the project area historical plantation use and then falling into disarray. Bear recalls, “[the project area was] pretty much just used as one dump, for years people have been dumping cars on this site over there, and in the back roads, and just trash, and not mālama. Everybody was just dumping and not caring about the place. And I’d like to see more, more people taking pride, and taking care of the ‘āina.” Kahanu reiterates that sentiment, she says “for years, people are just dumping things over there and there are different fires over the last 12 years”. Makai (seaward) of the project area, even during the time that the land was used for sugar, those trails and backroads were access points for fishers. “My father always used to tell me that back roads over there from Kahala Point to the back was always the ice box. That’s where all the kūpuna would go. Even in the bay, they all fish all through these backroads over here. Anahola was known as an Akule bay. Always surround Akule and the community always did get, come and help take out fish and everybody take fish home, you know?”, adds Bear. When he first moved to Anahola in 1991, Uncle John says he did a lot of fishing when he first moved to Anahola, using backroads to Kahala, he says “I did a lot of fishing in that area. That was one of the ways that I would feed my family was



fishing and picking limu.” Bear considers Anahola to be a fishing and farming “village”, and the farming of kalo in the Anahola river valley contrasts the bounty of Anahola’s fishery. We would know the direction like, oh, the winds are coming from Malanai, or the winds are coming from Ko’olau or the winds are coming from Kona. You know, just the general wind direction. Interviewees list common fish and limu species known to be in the makai area of Ulupono Project Area: Kala, Āholehole, Uhu, Uouoa, Manini, Akule, Limu Kohu, Limu Kala, Limu Līpoa, Limu Kahili, Limu Pepeiao, among others.

Aunty Nalani is the current President and Director of a organization centered around limu (native seaweed) cultivation and restoration previously started by her late father. She sees Ulupono as a space for cultivating informed, activated, and nowedagable stewards of natural and cultural resources – her avenue to actualize these visions has been limu.

NATIVE PLANTS, TREES, ANIMALS




The effects of sugar-use had left the project area degraded, as Aunty Nalani states: “the land was pretty much bulldozed and left barren from the farming [of the plantation].” But, she is sure that natives did once flourish in that area as evident from the shorelines still boast “ākulikuli, koali; the morning glory, and the naupaka,” amongst the introduces trees and plants like pine (Ironwood) “that was introduced because it would be for wind break.” Uncle John confirms, “when you get close to the ocean, maybe Koali or some other types of vines that maybe along the beach, but I don’t see too many native species because it’s been over overwhelmed by the introduced species. Introduced Guinea grass. The Australian pine, our Ironwood trees that grow a lot in that area... I remember seeing Kiawe in the past, but mostly Ironwood and just weeds basically.” Bears adds that there were a presence of Milo and Naupaka along the shoreline (not necessarily in the project area): “I hardly see ‘em now a days. There’s not too much. A lot of pine used to grow on the coastline down here.” Kahanu also understands that while there are native trees within the region, the particular project area suffered “damage” and that the “sugar and pineapple [plantations] “had wipe everything in that area”.

Uncle John specifically points out the presence of Nēnē and Pueo which he has seen in the project area and the surrounding area. However, he is not concerned with the development. In fact, he believes that the clearing and cleaning of the project area, and subsequent farming, will possibly provide an improvement to the quality habitat and safety of Pueo – in comparison to illegal dump sites and surrounding community. He has a suspicion that human impacts pose a more dangerous threat to native wildlife, such as Pueo (e.g. mouse / rat poisons and brush fires).

WINDS, RAINS, WATER RESOURCES, SPRINGS, STREAMS – NATURAL LANDSCAPES

As far as known water resources / sources are concerned, all three interviewees noted that if there were historical ‘auwai or springs in the project area that it would have been destroyed by the plantation(s). To their knowledge there are no water resources, springs, streams in that project area that would be impacted by development. During the field inspection component of this project, an uncle who drove truck for cane and tilled during the plantation, bull bozed the fire break (on the south-end) and now helps to maintain the property, briefly mentioned the waste water ditch which dumps into the project area.

Bear and Uncle John did not make mention of any wind or rain names, specific to the project area, but is sure that they exist. No interviewee was familiar with or mentioned wind or rain names simply for the fact that for their generation it had gone dormant in its use and perpetuation. Aunty




Nalani reiterates what Bear and Uncle John mentioned previously: that, in their lives and practices they made general observations and basic generalizations about wind and rain direction. Aunty Nalani adds, “We would know the direction like, oh, the winds are coming from Malanai, or the winds are coming from Ko’olau or the winds are coming from Kona. You know, just the general wind direction.” However, all interviewees are hopeful that these Anahola-specific wind and rain names will be uncovered and put into use by younger Anahola residents and scholars. Aunty Nalani is also hopeful that current and future haku mele (song composers) will include them into new songs and poetry for Anahola.



IMPACTS AND RECOMMENDATIONS

CONCERNS, DOCUMENTING CHANGE, ELEVATING LIVED EXPERIENCES AND OBSERVATIONS, MITIGATING IMPACTS


Interviewees believe that mitigating impacts and addressing concerns regarding the project area and areas adjacent require continuous effort to gather and implement the knowledge and wisdom of the kūpuna, the kupa ‘āina, and folks who are willing to provide feedback from their lived experiences of the area.



Kahanu mentions that there may be concerns within the community about access to places, like Kahala, and the shorelines makai (seaward) of the project area. In the past the “backroads” of Anahola were somewhat connected and fishers would access the shoreline from the trails near the project area. However, she quickly exclaimed that those perceived access points are not in the project area, and is far from Kahala – she exclaims that you do not need to come through the project area in order to access the shoreline near Kahala. All claims or grievances from the community should be irrelevant in this case. And, she adds that the true concerns may be – in reality – the status and misuse of those unencumbered lands makai of the project area. Kahanu continues, “I feel like the concern is the people who are doing illegal activities and accessing, creating the fires and leaving cars”.

In terms of potential impacts on cultural resources and practices in the project area, interviewees do not believe significant impacts will occur – with the knowledge they have, if there were landscapes and uses occurring there (within the project area) at one time that plantation agriculture would have destroyed completely. All interviewees express their support of the Ulupono Project, they also believe that a concerted effort should be made to mitigate run-off and environmental impacts of the construction of the site on nearby resources – especially the marine resources spatially connected to the project area. Aunty Nalani continues to say, the “coast is a representation of what is happening above us. I’m about biosecurity.” She recommends and concludes by saying, “no bringing anything in that’s not going to contaminate our ocean. Which means soil, sediment that seep down. If they come across iwi, make sure get their protocols in place. You know, we are coming from a cultural perspective and somebody, for me, where our natural resources are very important and especially our limu.” Aunty Nalani pronounces, “I always fight for the ocean and fight for our natural resources. And I fight for our kumulipo of the ocean, and the animals of the kumulipo. And, of course, the limu because they go way back.” She continues to remind us that we cannot always control what others do, how they interact with or use resources, but “we can set a standard. We can set examples. So, I think the most important thing for me in this project which I support. But at the same time, they must continue to seek out guidance from our kūpuna, whoever is still around” she adds. Aunty Nalani recommends that “they [developers] continuously have to seek out the right protocol, and the right practices along the way. And they have to really look back and say, are we doing this right? Or did we do it right? You don’t wanna wait to things that gone too out of control. And like I said, if one breach, and one big rain come...”


Kahanu is vocally unconcerned about the development, the building sizes and placement, however she recommends addressing agricultural longevity and maintenance. She professes, “I’m not the farmer. Right?” but knows that the project leaders have “aloha for the whole community and are willing to serve” and asks, “how can we as a community support them back as well”. She envisions maintenance of the place looking like committed and engage communities of farmers “for the next 40 to 60 years”. She knows that it will take a “desire and capacity to build relationships and



connections. And ho‘oponopono along the way because that's always needed.” Kahanu states that it is a tricky thing: the Anahola community can be diverse, and disagreement between individuals and groups are gonna be commonplace. She recommends that it is most pono to “engage community and inform community about what's happening” and be ready with conflict resolution – and having a process for that sooner rather than later.

RESTORING CULTURAL PRACTICES AND KNOWLEDGE AND GROWING PRESENCE FOR SAFETY AND STEWARDSHIP

Bear and Uncle John add to this narrative and are hopeful that this development will become a viable resource for the community and place. Uncle John states, “I think this project is that you know, one positive step forward in a group of other organizations going toward that step, it's the community now maturing to the point now, were they making that move forward for the future.”




Uncle John knows that Ulupono can be a space if the community works on it collaboratively, that will incubate ideas and practices for sustainability. He says, “we are gonna move to, this type of economy, a different type of world. And so, we need to be more self-sufficient as much as possible and better to be self-sufficient with, with and amongst ourselves, rather than having people coming in with different ideas that may not be culturally appropriate, or may, may not culturally mesh well, what we have what our resources in. He uses kōnane as a way to explain this: he says that kōnane is a game of resources. In kōnane you identify and then manage resources responsibly, that is the goal. On a map, he says, Ulupono may just be a TMK number but as it gets developed Ulupono can be that viable resource and make positive impacts.

Bear recommends, “I would like to see the land be utilized more for like cultural practice, like farming taro. Maybe farming ‘awa you know. Stuff that can be utilized for the people, you know, maybe some lā‘au, native Hawaiian plants that are used for medicine.” In this way, it is and is dependent on the inclusion of the community to “help in the areas that they need help with. And I think that the people of Anahola should take pride and have a say in it, you know?”

POTENTIAL EFFECTS OF THE PROPOSED ACTION

From previous documentation and interviews, we know there have been over 100 years of modification to the landscape from plantation from both sugar and pineapple within the project area. According to Hammatt (2005:2) ‘Aikanaka Heiau, recorded by Bennett as destroyed and marked by a large boulder, is located approximately 2000 feet north of the project area. As ‘Aikanaka Heiau lies outside the boundaries of the current project area, no efforts were made to relocate or document it. Any future action near this heritage landscape outside the parameters of the study area should be considered.

Considerations within the parameters of this study include the management of water that comes from culvert and ditch. Based on material, condition, and location, a culvert located on the mauka west corner of the property is likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s. A ditch with the swale is likely the wastewater from the plantation that dumped into the property. Both the culvert and the ditch have no clear path to its end or management of its flow. From previous interviews, we learn about noted practices outside the current project area, specifically in Anahola Bay, such as akule fishing and shark/ ‘aumakua feeding. Current interviews also share the value of the marine resources in Anahola bay such limu. As expressed by interviewees, a concerted effort should be made to



mitigate run-off and environmental impacts of the construction of the site on nearby resources – especially the marine resources spatially connected to the project area.



REFERENCES

- Akana Collette and Kiele Gonzales
2015 *Hānau ka Ua*. Kamehameha Schools Publishing, Honolulu.
- Alexander, William D.
1991 *A Tour of Kauai in 1849, Private journal of William DeWitt Alexander*. In *The Kauai Papers*, p. 121-135. Kaua'i Historical Society, Līhu'e.
- Andrew, Lorrin
1865 *Dictionary of the Hawaiian Language, to Which Is Appended an English-Hawaiian Vocabulary and a Chronological Table of Remarkable Events*. Honolulu: H.M. Whitney.
1922 *A Dictionary of the Hawaiian Language: Revised by Henry H. Parker*. Honolulu: Board of Commissioners of Public Archives of the Territory of Hawai'i.
- Beckwith, Martha Warren
1976 *Hawaiian Mythology*. Honolulu: University of Hawai'i Press.
- Bennett, Wendall Clark
1931 *Archaeology of Kaua'i*. Bishop Museum Bulletin 80. Bishop Museum Press, Honolulu.
- Bingham, Hiram
1847 *A Residence of Twenty-One Years in the Sandwich Islands; or the Civil, Religious, and Political History of Those Islands*. Hezekiah Huntington, Hartford, CT.
- Boundary Commission. Kingdom of Hawaii (ms in Hawaii State Archives.)
- Bushnell, O. A.
1993 *The Gifts of Civilization: Germs and Genocide in Hawaii*. University of Hawai'i Press, Honolulu.
- Carson, Mike T.
2005 *Ko'olau District. Na Mea Kahiko o Kaua'i: Archaeological Studies in Kaua'i*. Publication No. 2 Society for Hawaiian Archaeology, Honolulu.
- Clark, John
2002 *Hawai'i Place Names*. University of Hawai'i Press, Honolulu.
- Clark, Matthew R., Ashton K. Dircks Ah Sam, Lauren M.U. Kepa'a and Robert B. Rechtman
2014 *An Archaeological Inventory Survey of the Lālāmilo Wind Farm Repowering Project, TMKs: (3) 6-6-01:002 (por.), 071, and (3) 6-8-01:001 (por.), Lālāmilo and Waikōloa ahupua'a, South Kohala District, Island of Hawai'i*. Prepared for Lālāmilo Wind Company, LLC.
- Condé, Jesse C. and Gerald M. Best
1973 *Sugar Trains, Narrow Gauge Rails of Hawaii*. Glenwood Publishers, Felton, CA.
- Cordy, Dominique, Lilia Merrin, Devin Kamealoha Forrest
2020 *Anahola i ke Au Holo, A Cultural Impact Assessment for DHHL's Anahola Kuleana Homestead Tract, Kamalomalo'o Ahupua'a, Puna Moku and Anahola Ahupua'a, Ko'olau Moku, Kaua'i Mokupuni TMKs (4) 4-7-002:004, (4) 4-8-*

- Dixon Boyd, Patty J. Conte, Valerie Curtis, and W. Koa Hodgins
2005 A Late Pre-Contact Domestic Habitation Area and Garden in Anahola Ahupua'a, Ko'olau District Kaua'i. *Na Mea Kahiko o Kaua'i: Archaeological Studies in Kaua'i*. Publication No. 2 Society for Hawaiian Archaeology, Honolulu.
- Elbert, Samuel H.
1959 *Selections from Fornander's Hawaiian Antiquities and Folk-lore*. Honolulu: University of Hawai'i Press.
- Elbert, Samuel H., and Noelani Mahoe
1970 *Nā Mele O Hawai'i Nei: 101 Hawaiian Songs*. Honolulu: University of Hawai'i Press.
- Elbert, Samuel H., and Mary Kawena Pukui
1971 *Glossary of Hawaiian Gods, Demigods, Family Gods, and a Few Heroes*. Hawaiian Dictionary: Hawaiian-English, English-Hawaiian. Honolulu: University of Hawai'i Press.
1986 *Hawaiian-English Dictionary*. Honolulu: University of Hawai'i Press.
- Emerson, Nathaniel Bright
1998 *Unwritten Literature of Hawaii: The Sacred Songs of the Hula*. Honolulu: Mutual Publishing.
2005 *Pele and Hi'iaka: A Myth from Hawai'i*. Revised ed. Hilo: Edith Kanaka'ole Foundation.
- Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.
- Fornander, Abraham, and Thomas G. Thrum
1919 *Fornander's Collection of Hawaiian Antiquities and Folk-lore: The Hawaiian Account of the Formation of Their Islands and Origin of Their Race, with the Traditions of Their Migrations, etc.* Honolulu: Bishop Museum Press.
- Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte
2013 Online Rainfall Atlas of Hawai'i. *Bulletin of the American Meteorological Society* volume 94, pp. 313-316, doi: 10.1175/BAMS-D-11-00228.1. Electronic document, <http://rainfall.geography.hawaii.edu> (accessed 10 April 2014).
- Handy, E.S. Craighill, Elizabeth Green Handy, Mary Kawena Pukui
1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Press, Honolulu.
1972 *Native Planters in Old Hawaii; Their Life, Lore, and Environment*. B.P. Bishop Museum Bulletin No. 233, Honolulu.
- Handy, E.S. Craighill, and Mary Kawena Pukui
1998 *The Polynesian Family System of Ka'u, Hawai'i*. Honolulu: Mutual Publishing.
- Hawai'i Administrative Rules (HAR) Title 13 Subtitle 13 Chapter 300

- 1996 Rules of Practice and Procedure Relating to Burial Sites and Human Remains. Department of Land and Natural Resources, Historic Preservation Division. Online resource. <https://files.hawaii.gov/dlnr/shpd/rules/300.pdf>. Accessed 5-3-22.

Hawai'i Revised Statutes (HRS) Chapter 6E

- 1976 Chapter 6E Historic Preservation. Department of Land and Natural Resources, Historic Preservation Division. Online resource <https://dlnr.hawaii.gov/shpd/files/2015/06/HRS-6E.pdf>. Accessed 5-03-22.

Hilton, George Woodman

- 1990 *American Narrow Gauge Railroads*. Stanford University Press, Stanford, CA.

‘Ii, John Papa

- 1959 *Fragments of Hawaiian History*. Honolulu: Bishop Museum Press.

Indices of Awards

- 1929 *Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Star-Bulletin Press, Honolulu.

Joesting, Edward

- 1984 *Kauai : The Separate Kingdom*. University of Hawai'i Press, Honolulu.

Kamakau, Samuel Manaiakalani

- 1870 No Ke Kaua a Umi-a-Liloa me na Lii o Hawaii. Ke Au 'Ōko'a [Honolulu]. 1 December, 1870: 1. www.nupepe.org.
1961 *Ruling Chiefs of Hawai'i*. Revised Edition. Kamehameha Schools Press, Honolulu.
1992 *Ruling Chiefs of Hawai'i*. Honolulu: Kamehameha Schools Press.
1996 *Ke Kumu Aupuni: Ka Mo'olelo Hawai'i no Kamehameha Ka Na'i Aupuni a Me Kāna Aupuni I Ho'okumu Ai*. Honolulu: 'Ahanui 'Ōlelo Hawai'i.

Kamakau, Samuel Manaiakalani, Dorothy B. Barrère, and Mary Kawena Pukui

- 1991 *Ka Poe Kahiko, The People of Old*. Honolulu: Bishop Museum Press.
2010 *Tales and Traditions of the People of Old*. Honolulu: Bishop Museum Press.

Kanahele, Pualani Kanaka'ole

- 2003 *Native Hawaiian Environment, Wao Akua: Sacred Source of Life*. Division of Forestry and Wildlife, Department of Land and Natural Resources, Honolulu, Hawai'i.
2011 *Ka Honua Ola: 'Eli'eli Kau Mai, The Living Earth: Descend, Deepen the Revelation*.

Krauss, Beatrice H.

- 1993 *Plants in Hawaiian Culture*. University of Hawai'i Press, Honolulu

Kame'eleihewa, Lilikalā

- 1992 *Native Land Forgiven Desires, Pehea lā e Pono ai?*. P. Bishop Museum Press, Honolulu.

Kekua, L.K. and Alapa'i, A.A.

- 2012 *Cultural Impact Assessment: Native Hawaiian Traditions, Customary Practices and Perspectives of Kamalomalo'o and Anahola Ahupua'a, Moku O Kawaihau, Kaua'i Island*. Native Kaua'i LLC for Kauai Island Utility Cooperative.

Kuokoa

- 1876-77 "He Mo'olelo no Aahoaka a me Kona Kahanaukupanaha ana. He Mo'olelo Kahiko

no Kauai. The Story of ‘A‘ahoaka and his amazing birth, an old story from Kaua‘i.”
Nupepa Kuokoa, 2/30/1876 to 3/3/1877.

Land Commission. Kingdom of Hawaii (ms in Hawaii State Archives.)

- n.d. *Awards Book*
- n.d. *Native Testimony*
- n.d. *Native Register*

Lihue Plantation Company

- 1987 “Hawaiian Sugar Planters’ Association, Plantation Archives, Register of the Lihue Plantation Company, Lihue, Kauai, 1850–1968.” Ms, Accession # 84-06 (Processed by Deborah Saito & Susan Campbell). Kaua‘i Historical Society, Līhu‘e, Hawai‘i.

Mahele Book

- 1848 *Buke Kakau Paa no ka mahele aina i hooholoia iwaena o Kamehameha 3 a me Na Lii a me Na Konohiki ana*. Hale Alii Honolulu. Ianuari 1848. [He kope 1868.] ms in Hawaii State Archives.

Malo, David

- 1951 *Hawaiian Antiquities*. Honolulu: Bishop Museum Press.
- 1997 *Hawaiian Antiquities, Mo‘olelo Hawai‘i*. Translated from the Hawaiian by Dr. Nathanieil B. Emerson 1898. Second ed. 1951. 7th reprint 1997. Bishop Museum Press. Honolulu.

McGregor, Davianna Pōmaika‘i

- 2007 *Nā Kua‘āina: Living Hawaiian Culture*. Honolulu: University of Hawai‘i Press.

Merrin, Lilia, Rachel Hoerman, and Kelley Uyeoka

- 2022 Literature Review and Field Inspection for The Ulupono Anahola Project Anahola Ahupua‘a, Ko‘olau Moku, Kaua‘i Island TMKs: [4] 4-8-003:019 (por.) and 021 (por.), Nohopapa, Hawai‘i.

Monahan, Christopher, Dominique Cordy, Lyle Auld, Kaile Luga, Momi Wheeler, Kekuewa Kikiloi

- 2018 Archaeological Reconnaissance Survey of an Approximately 467-Acre Project Area Anahola & Kamalomalo‘o Ahupua‘a Kawaihau (Ko‘olau/Puna) Moku, Kaua‘i TMK (4) 4-7-002:004 (por.), 4-8-002:001 (por.) & 4-8-003:006 (por.) Nohopapa, Hawai‘i.

Olivera, Katrina-Ann

- 2014 *Ancestral Places : Understanding Kanaka Geographies*, Oregon State University Press, Corvallis.

Ota, Jason

- 1985 Archaeological Reconnaissance Conducted in Anahola Area, Kaua‘i, TMK: 4-8various; 4-9-10:1,2,3,5, Hawaiian Homelands.

Rechtman, Robert B. and Dennis S. Dougherty

- 2001 Archaeological Inventory Survey of Approximately 38 acres, Department of Hawaiian Homelands (TMK:4-4-8-03:05, por. 16), Anahola Ahupua‘a, Kawaihau District, Island of Kaua‘i. Rechtman Consulting, Kea‘au, Hawai‘i.

Pukui, Mary Kawena

- 1983 *‘Ōlelo No‘eau: Hawaiian Proverbs & Poetical Sayings*. Honolulu: Bishop Museum Press.

1995 *Nā Mele Welo: Songs of Our Heritage*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, and Caroline Curtis

2010 *Hawai'i Island Legends Pīkoi, Pele, and Others*. Honolulu: Kamehameha Schools Press.

Pukui, Mary Kawena, and Laura S. Green

1995 *Folktales of Hawai'i: He Mau Ka'ao Hawai'i*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, E.W. Haertig, Catherine A. Lee

1972 *Nānā I Ke Kumu: Look to the Source*. Vol.1. Hui Hānai. Honolulu, Hawai'i.

1972 *Nānā I Ke Kumu: Look to the Source* Vol.2. Hui Hānai. Honolulu, Hawai'i.

Pukui, Mary Kawena, Samuel H. Elbert

1986 *Hawaiian-English Dictionary*. Honolulu: University of Hawaii Press.

1983 *ʻŌlelo Noʻeau: Hawaiian Proverbs & Poetical Sayings*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, Samuel H. Elbert, and Esther T. Mookini

1974 *Place Names of Hawaii*. Honolulu: University of Hawaii Press.

1949 "Songs (Meles) of Old Ka'u, Hawai'i." *Journal of American Folklore*: Vol.62, No. 245.

Schmitt, Robert C

1968 *Demographic Statistics of Hawaii: 1778-1965*. University of Hawai'i Press Honolulu.

Soehren, Lloyd J.

2002 *A Catalog of Hawaiian Place Names. Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaii*. Collected and annotated by Lloyd J. Soehren. Ulukau Digital Library (<http://ulukau.org/cgi-bin/hpn>).

Stannard, David E.

1989 *Before the Horror*. Social Science Research Institute, University of Hawai'i, Honolulu.

U.S. Department of Agriculture

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/> (accessed March 2005).

United States Geological Survey.

n.d. Board on Geographic Names, Geographic Names Information System. various dates
Topographic maps of the Islands of Niihau, Kauai, Oahu, Molokai, Lanai, Maui, Hawaii. 1:24,000, 7.5 minute series.

Vancouver, George

1798 *A Voyage of Discovery to the North Pacific Ocean...performed in the years 1790, 1791, 1792, 1793, 1794, and 1795, in the Discovery ... and ... Chatham ...* Amsterdam, N. Israel. Vols. 1-3. London.

Westervelt, William D.

1998 *Hawaiian Legends of Ghosts and Ghost Gods*. Honolulu: Mutual Publishing.



1999 *Hawaiian Legends of Volcanoes*. Boston: G.H. Ellis Press

Wichman, Fredrick B

1985 *Kaua'i Tales*. Bamboo Ridge Press, Honolulu.

1997 *More Kaua'i Tales*. Bamboo Ridge Press, Honolulu.

1998 *Kaua'i*

Wilkes, Charles

1844 *Narrative of the U.S. Exploring Expedition During the Years 1838, 1839, 1840, 1841, 1842....* C. Sherman, Philadelphia.



APPENDIX A: COMMUNITY PARTICIPATION LETTER



March 2022

Welina mai me ke aloha,

On behalf of the Group70, Nohopapa Hawai'i, LLC is conducting a Cultural Impact Assessment (CIA) for the proposed Ulupono Anahola Project, in the Anahola ahupua'a, Ko'olau moku, Island of Kaua'i. The project location is TMK: [4] 4-8-003:19 (por.) and 021 (por.) on approximately 10 acres under the authority of the Department of Hawaiian Homeland located east of Pilipoli Road, makai of the Pi'ilani Mai Ke Kai Association (see attached aerial map). We understand that the Project will include an agricultural garden training site and youth center, which will include a series of buildings and structures to support the various programs.

The purpose of for this CIA is to gather and evaluate potential impacts to the cultural practices and resources of the proposed area. We are seeking individuals, 'ohana, and/or organizations that have relationships to this area. In particular, we would like to gather information relating to:

- » Cultural knowledge of mo'olelo, ka'ao, inoa 'āina, mele, oli, 'ōlelo no'eau, and hula related to the project area
- » Knowledge of wahi pana, wahi kapu, and wahi kūpuna and cultural practices associated with these wahi
- » Knowledge of the 'āina, natural landscapes and resources, and associated cultural uses
- » Concerns regarding how this project might impact any Hawaiian wahi kūpuna (cultural resources) or practices within or around the project area
- » Suggestions and recommendations regarding the management and stewardship of wahi kūpuna in and around the project area
- » Referrals of kūpuna and kama'āina who are knowledgeable of the project area and might be willing to participate in this study

We will be reaching out to you soon in hopes of arranging an interview. To exercise precaution, we are able to conduct interviews via zoom or phone call as well. We look forward to collaborating with you to document your mana'o for the cultural significance of Anahola ahupua'a for this important study.

Me ka ha'aha'a,

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Aerial view of the project area in red.

APPENDIX B: INTERVIEW THEMES AND QUESTIONS



Anahola-Ulupono Nīnau

Background Information:

- Name?
- When and where were you born?
- Where did you grow up?
- What is your Personal/Family connection to the Anahola-Ulupono area?
- Occupation /Affiliation:
- Area of current residence & How long have you lived here?

Natural Landscape and Resources, Uses: (*Mauka – Makai Relationship*)

- Can you share anything about the... in and around the project area? And significance/uses of these resources?
 - o Native plants and trees
 - o Water resources, springs, streams
 - o Winds and Rains
 - o Mountains, pali, pu'u, caves
 - o Marine resources
 - o Native birds or animals

Mo 'olelo, Place Names, Mele:

- Do you know of any...for this area?
 - o Legends or mo'olelo
 - o Place names
 - o Mele, Oli for the area
 - o Akua & 'aumakua

Cultural Landscape and Resources:

- Are there any Cultural sites, trails, view plains, corridors you know about or want to share about?

Cultural Practices (gathering, hula, protocol, ho'okupu):

- Current cultural practices -
- How did you learn the activities and how long have you been doing them –
- Past cultural practices –
- Past or present cultural protocols observed –

Historical Sites, Persons, Landuse

- Can you share about any...
 - o Historical sites (from plantation days, railroad, harbors)?
 - o Historic uses of the area (sugar, pineapple, ranching use? etc)
 - o Historic events
 - o Historic Persons



Community / Individual Concerns and Recommendations

- What changes in the landscape, practices and uses of natural and cultural resources have you observed in your lifetime:
- Do you have any, or know of any concerns the community might have related to cultural practices in the vicinity? (Particularly towards water resources or makai resources?)
- What solutions do you think would be helpful towards these concerns
- Do you have any recommendations regarding site management or protection, and development in the area:

References and Closing Mana'o:

- Can you refer us to any other individuals or organizations we should talk to?
- Is there any information you shared with us that you do not want to be public?
- I just need to get verbal consent, may we use the information from today's interview for our write up to G70 for DDHL?

APPENDIX C: INFORMED CONSENT FORM



INFORMED CONSENT FORM

Aloha mai, Nohopapa Hawai'i appreciates your willingness to share your knowledge of the Anahola-Ulupono. This mea will be used to guide and inform Nohopapa Hawai'i's Cultural Impact Assessment (CIA) for the Ulupono Anahola Project, which is on TMK: [4] 4-8-003:19 (por.) and 021 (por.) on approximately 10 acres under the authority of the Department of Hawaiian Homeland located east of Pilipoli Road, makai of the Pi'ilani Mai Ke Kai Association. The CIA is a contributing component of the Environmental Assessment (EA) for this project. The EA is being prepared by Group70 (G70), for the Department of Hawaiian Home Lands (DHHL). The EA will serve as the compliance document for the proposed agricultural garden training site and youth center, which will include a series of buildings and structures to support the various programs within the Anahola Kuleana Homestead Tract.

Nohopapa Hawai'i understands our responsibility in respecting the wishes and concerns of the interviewees participating in this study. Here are the procedures we promise to follow:

1. The interview will not be recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript and summary of your interview. At that time, you may make any additions, deletions or corrections you wish.
3. You will be given a copy of the interview transcript and/or summary for your records.
4. You will be given a copy of this release form for your records.
5. You will be given a copy of any photographs taken of you during the interview.

For your protection, we need your written confirmation that (*circle* yes or no below):

1. You consent to the use of the complete transcript and/or interview quotes for the purposes of this study. Yes No
2. If a photograph is taken during the interview, you consent to the photograph being included in this study. Yes No

I, _____, agree to the procedures outlined above and,
(Please print your name here)
by my signature, give my consent and release of this interview and/or photograph to be used as specified.

(Signature)

(Date)

Nohopapa Hawai'i, LLC nohopapa.hawaii@gmail.com

APPENDIX D: GUIDELINES FOR ASSESSING CULTURAL IMPACTS

INTRODUCTION

It is the policy of the State of Hawai'i under Chapter 343, HRS, to alert 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.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment of a project that may significantly affect cultural resources.

BACKGROUND

Prior to the arrival of westerners and the ideas of private land ownership, Hawaiians freely accessed and gathered resources of the land and seas to fulfill their community responsibilities. During the Māhele of 1848, large tracts of land were divided and control was given to private individuals. When King Kamehameha the III was forced to set up this new system of land ownership, he reserved the right of access to privately owned lands for Native Hawaiian ahupua'a tenants. However, with the later emergence of the western concept of land ownership, many Hawaiians were denied access to previously available traditional resources.

In 1978, the Hawaii constitution was amended to protect and preserve traditional and customary rights of Native Hawaiians. Then in 1995 the Hawaii Supreme Court confirmed that Native Hawaiians have rights to access undeveloped and under- developed private lands. Recently, state lawmakers clarified that government agencies and private developers must assess the impacts of their development on the traditional practices of Native Hawaiians as well as the cultural resources of all people of Hawaii. These Hawaii laws, and the National Historic Preservation Act, clearly mandate federal agencies in Hawaii, including the military, to evaluate the impacts of their actions on traditional practices and cultural resources.

If you own or control undeveloped or under-developed lands in Hawaii, here are some hints as to whether traditional practices are occurring or may have occurred on your lands. If there is a trail on your property, that may be an indication of traditional practices or customary usage. Other clues include streams, caves and native plants. Another important point to remember is that, although traditional practices may have been interrupted for many years, these customary practices cannot be denied in the future.

These traditional practices of Native Hawaiians were primarily for subsistence, medicinal, religious, and cultural purposes. Examples of traditional subsistence practices include fishing, picking opihi and collecting limu or seaweed. The collection of herbs to cure the sick is an example of a traditional medicinal practice. The underlying purpose for conducting these traditional practices is to fulfill one's community responsibilities, such as feeding people or healing the sick.

As it is the responsibility of Native Hawaiians to conduct these traditional practices, government agencies and private developers also have a responsibility to follow the law and assess the impacts of their actions on traditional and cultural resources.

The State Environmental Council has prepared guidelines for assessing cultural resources and has compiled a directory of cultural consultants who can conduct such studies. The State Historic Preservation Division has drafted guidelines on how to conduct ethnographic inventory surveys. And the Office of Planning has recently completed a case study on traditional gathering rights on Kaua'i.

The most important element of preparing Cultural Impact Assessments is consulting with community groups, especially with expert and responsible cultural practitioners within the ahupua'a of the project site. Conducting the appropriate documentary research should then follow the interviews with the experts. Documentary research should include analysis of Māhele and land records and review of transcripts of previous ethnographic interviews. Once all the information has been collected, and verified by the community experts, the assessment can then be used to protect and preserve these valuable traditional practices.

Native Hawaiians performed these traditional and customary practices out of a sense of responsibility: to feed their families, cure the sick, nurture the land, and honor their ancestors. As stewards of this sacred land, we too have a responsibility to preserve, protect and restore these cultural resources for future generations.

CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man-made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

1. Identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a;
2. Identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;
3. Receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;
4. Conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;
5. Identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and
6. Assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

Primary source materials reviewed and analyzed may include, as appropriate: Māhele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

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.
2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.
3. Ethnographic and oral history interview procedures, including the circumstances, under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.
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.
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.
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.
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.
8. An explanation of confidential information that has been withheld from public disclosure in the assessment.
9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.
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.
11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call 586-4185.

APPENDIX E: A BILL FOR ENVIRONMENTAL IMPACT STATEMENTS

A BILL FOR AN ACT RELATING TO ENVIRONMENTAL IMPACT STATEMENTS [UNOFFICIAL VERSION] HOUSE OF REPRESENTATIVES H.B. NO, 2895 H.D.1 TWENTIETH LEGISLATURE, 2000, STATE OF HAWAI'I

A BILL FOR AN ACT RELATING TO ENVIRONMENTAL IMPACT STATEMENTS. BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAI'I:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawai'i. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai'i Revised Statutes, is amended by amending the definitions of "environmental impact statement" or "statement" and "significant effect", to read as follows:

"Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective

accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[.], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000.

APPENDIX F: ACT 50 [STATE OF HAWAI‘I 2000]

Act 50 [State of Hawai‘i 2000]. H.B. NO. 2895 H.D.1 was passed by the 20th Legislature and approved by the Governor on April 26, 2000 as Act 50. The following excerpts illustrate the intent and mandates of this Act:

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the “aloha spirit” in Hawai‘i. Articles IX and XII of the State constitution, other State laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

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Literature Review and Field Inspection

LITERATURE REVIEW AND FIELD INSPECTION FOR THE ULUPONO ANAHOLA PROJECT

**ANAHOLA AHUPUA'A, KO'OLAU MOKU, KAUA'I ISLAND
TMKS: [4] 4-8-003:019 (POR.) AND 021 (POR.)**



Prepared by



Prepared for





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This report was prepared by Nohopapa Hawai'i, LLC for Group70

AUTHORS

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MANAGEMENT SUMMARY

Reference	Literature Review & Field Inspection for the Ulupono Anahola Project, Anahola Ahupua'a, Ko'olau District, Kaua'i Island, TMK [4] 4-8-003:019 (por.) 021 (por.) (Merrin et al. 2022)
Date	April 2022
Land Jurisdiction	Department of Hawaiian Homelands (DHHL)
Project Proponents	Department of Hawaiian Homelands (DHHL) (project prime), in partnership with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association
Project Area	The Ulupono Anahola Project is located within TMK (4) 4-8-003:019 (por.) and :021(por.) on approximately 10 acres of undeveloped agricultural land managed by the Department of Hawaiian Homelands. The project area is located east of Pilipoli Road and makai of the Pi'ilani Mai Ke Kai Association.
Project Area Acreage	Approximately 10 acres
Project Description	DHHL as the primary project proponent is working with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association to facilitate the use of DHHL-managed landholdings for non-homesteading purposes. The proposed project will develop Ulupono Anahola (currently vacant agricultural land) for community use, which includes an agricultural garden training site and youth center, and the construction of a series of communal buildings and structures whose design plans were pending finalization when this study was written.
Document Purpose	This investigation was designed – through detailed cultural, historical, and archaeological background research and a field inspection of the proposed project area – to preliminarily assess whether historic properties are present in the project area, whether the historic properties will be affected by the proposed project, and provide preliminary historic preservation compliance review next step recommendations. This document is intended to facilitate project planning, support the project's environmental compliance review, and initiation of the project's historic preservation compliance review. This study does not fulfill the requirements of an archaeological inventory survey investigation, per Hawai'i Administrative Rules (HAR) §13-13-276.
Regulatory Context	This study was generated to inform an Environmental Assessment under Hawai'i Environmental Policy Act (HEPA) Hawai'i Revised Statutes (HRS) §343 and to initiate future historic preservation compliance review under HRS 6E-42.
Background Research Effort	Background research included a review of previous archaeological studies on file at the SHPD; review of online reports and documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and other online records from Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Kaua'i Historical Society and the University of Hawai'i at Mānoa's Maps,

	<p>Aerial, Photograph and GIS (MAGIS) library; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Reports, historic maps and photographs from the Nohopapa internal database were also consulted. In addition, Māhele records were examined from the from databases such as Papakilo Database, Ulukau, AVA Konohiki, Ancestry, the Buke Māhele, and Boundry Commisssons. Inoa ‘āina (place names) Inoa Ua, Inoa Makani, mele, mo‘olelo (stories), and ‘ōlelo no‘eau (proverbs) were compiled from Hawaiian language and English sources in books, newspapers, and previously named online databases and archives.</p> <p>This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.</p>
Fieldwork Effort	<p>Fieldwork was conducted on the pō mahina (moon phase) Kūpau, on March 8, 2022, by Nohopapa field crew, Lilia Merrin, M.A. and Dominique Cordy M.A. under the general supervision of Principal Investigator, Kelley Uyeoka, M.A. Fieldwork required two field technicians one 8-hour workday to complete. A pedestrian field inspection of 95% of the project area was performed. Due to thick tall grass and some trees the remaining 5% of the project area was visually inspected from close proximity and 100% photo documented in order to record current conditions and assess the presence of historic properties. No historic properties were identified.</p>
Results Summary	<p>Evidence of land use and settlement patterns in the project area and vicinity located during background research and the field inspection performed for this study evince that the project area has been completely transformed by grading, grubbing, and intensive mechanized plantation agriculture: both sugar cane and pineapple operations took place during the early historical era through the late twentieth century, and bulldozing occurred in the early 2000s in the project area to create a firebreak.</p> <p>While no archaeological studies have occurred within the project area, background research paired with archaeological studies immediately adjacent to the project area indicate there are unlikely to be any undisturbed subsurface deposits dating from pre-Contact (“prehistoric”) times through historical eras in the project area.</p> <p>Background research and the field inspection for this study yielded no historic properties present in the project area. Based on material, condition, and location, the culvert located during the field inspection that connects Ditch 1 with the swale is not a historic property and likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s.</p> <p>According to Hammatt (2005:2) Aikanaka Heiau, recorded by Bennett as destroyed and marked by a large boulder, is located approximately 2000 feet north of the project area. As Aikanaka Heiau lies outside the boundaries of the current project area, no efforts were made to relocate or document it.</p>



<p>Conclusions and Recommendations</p>	<p>Background research, combined with the field inspection performed for this study indicate there is a low likelihood for subsurface historic properties in the project area due to over a century of intensive mechanized agriculture and other modern land-altering activities occurring in the project area and vicinity. No surface historic properties are present in the project area. This study therefore concludes the proposed project poses no effects to historic properties and no additional historic preservation next steps are recommended.</p> <p>Per Hawai'i Revised Statutes (HRS) 6E, "Historic Preservation" and Hawai'i Administrative Rules Title 13 Subtitle 13 Chapter 300, "Rules of Practice and Procedure Relating to Burial Sites and Human Remains" it is important to note that the project proponent is legally obligated to stop work immediately and report to SHPD any historic properties, including iwi kūpuna (Native Hawaiian ancestral remains) and human remains from other ethnic groups, located during construction/ground disturbing activities associated with the proposed project.</p>
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PROJECT SCOPE & METHODS

HE LEO MAHALO

Mahalo to all the individuals involved in this project. Rae Nam of Kūkulu Kumuhana o Anahola, Planner, Thomas Pi'ilani Smith and Principle, Kāwika McKeage with G70 for meeting, coordinating, and helping schedule and plan the field inspection. Mahalo to Stacy Naipo from the State Historic Preservation Department (SHPD) for helping us retrieve reports for the project area. Lastly, mahalo to G70 for this opportunity to conduct a literature and field inspection for the Ulupono Anahola Project.

PROJECT BACKGROUND

On behalf of G70, Nohopapa Hawai'i, LLC conducted a literature review and field inspection in support of an archaeological study for the Ulupono Anahola Project. The Ulupono Anahola Project is located in the ahupua'a of Anahola, Ko'olau Moku, Island of Kaua'i. Specifically the project area is within TMK (4) 4-8-003:019 (por.) and :021 (por.) on approximately 10 acres under the authority of the Department of Hawaiian Homelands (DHHL) located east of Pilipoli Road and makai of the Pi'ilani Mai Ke Kai Association (Figure 1 and 2). This project spanned a 4-month period from January 2022 through April 2022. Project personnel included: Kelley L. Uyeoka, M.A. and Kekuwa Kikiloi, Ph.D., and Dominique Cordy, M.A., principals, Lilia Merrin, M.A., and Rachel Hoerman, Ph.D.

DHHL as the primary project proponent is working with Kūkulu Kumuhana o Anahola (KKOA) and the Pi'ilani Mai Ke Kai Community Association to facilitate the use of DHHL-managed landholdings for non-homesteading purposes. The proposed project will develop Ulupono Anahola (currently vacant agricultural land) for community use, which includes an agricultural garden training site and youth center, and the construction of a series of communal buildings and structures whose design plans were pending finalization when this study was written.

DOCUMENT PURPOSE

This investigation was designed – through detailed cultural, historical, and archaeological background research and a field inspection of the proposed project area – to preliminarily assess whether historic properties are present in the project area, whether the historic properties will be affected by the proposed project and provide preliminary historic preservation compliance review next step recommendations. This document is intended to facilitate project planning, support the project's environmental compliance review, and initiation of the project's historic preservation compliance review. This study does not fulfill the requirements of an archaeological inventory survey investigation, per Hawai'i Administrative Rules (HAR) §13-13-276.

REGULATORY CONTEXT

This study was generated to inform an Environmental Assessment under Hawai'i Environmental Policy Act (HEPA) Hawai'i Revised Statutes (HRS) §343 and to initiate future historic preservation compliance review under HRS 6E-42.

ETHNOHISTORICAL RESEARCH METHODS

Background research included a review of previous archaeological studies on file at the SHPD; review of online reports and documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and other online records from Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Kaua'i Historical Society and the University of Hawai'i at Mānoa's Maps, Aerial, Photograph and GIS (MAGIS) library; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Reports, historic maps and photographs from the Nohopapa internal database were also consulted. In addition, Māhele records were examined from the from databases such as Papakilo Database, Ulukau, AVA Konohiki, Ancestry, the Buke Māhele, and Boundry Commisssons. Inoa 'āina (place names) Inoa Ua, Inoa Makani, mele, mo'olelo (stories), and 'ōlelo no'eau (proverbs) were compiled from Hawaiian language and English sources in books, newspapers, and previously named online databases and archives.

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

FIELD INSPECTION METHODS

Fieldwork was conducted on the pō mahina (moon phase) Kūpau, on March 8, 2022, by Nohopapa field crew, Lilia Merrin, M.A. and Dominique Cordy M.A. under the general supervision of Principal Investigator, Kelley Uyeoka, M.A. Fieldwork required two field technicians one 8-hour workday to complete. A pedestrian field inspection of 95% of the project area was performed. Due to thick tall grass and some trees the remaining 5% of the project area was visually inspected from close proximity and 100% photo documented in order to record current conditions and assess the presence of historic properties. No historic properties were identified.

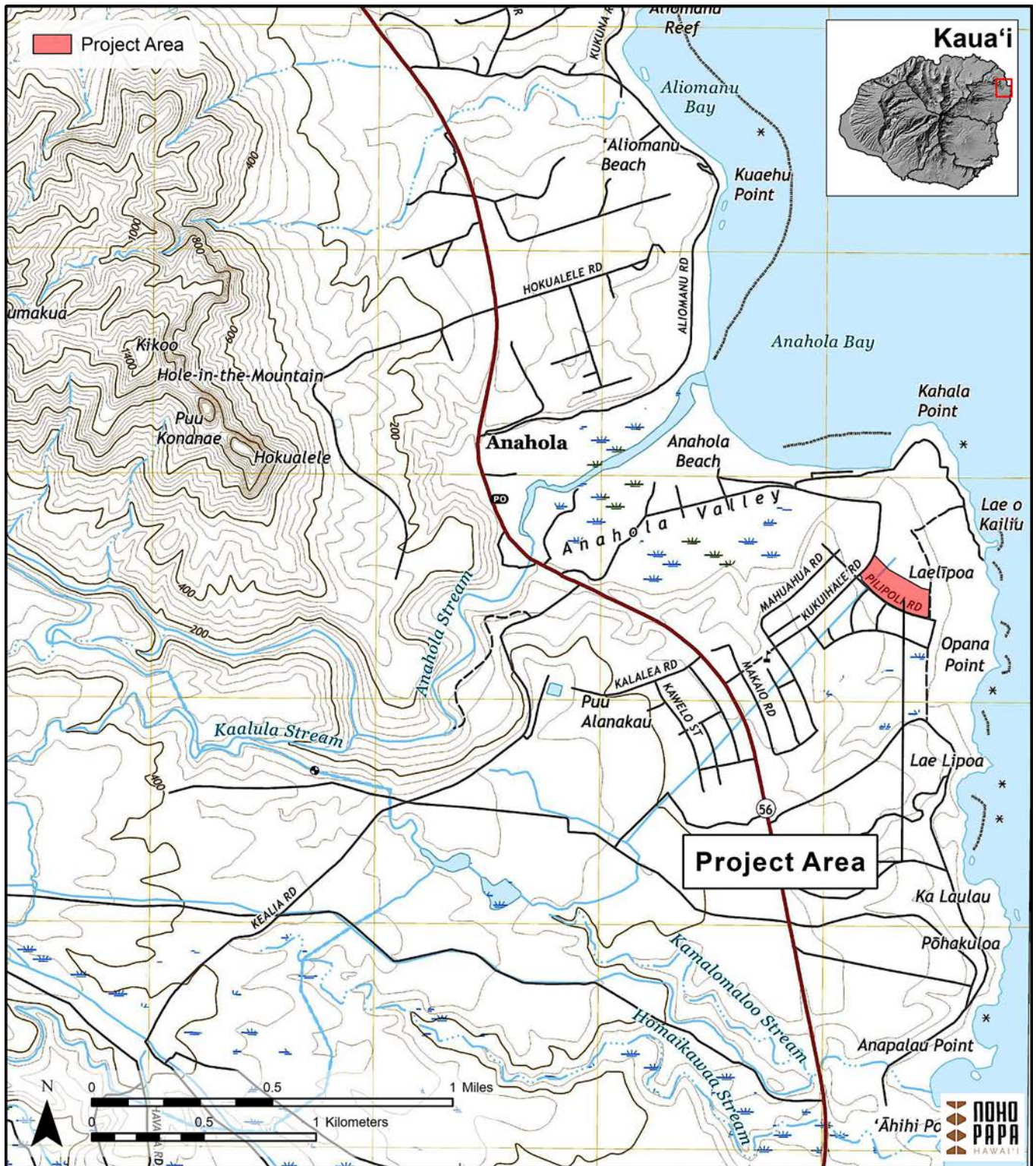


Figure 1. Overview map showing the location of the project area.



Figure 3. Aerial photograph showing the location of the project area (Google Earth 2020)

ENVIRONMENTAL LANDSCAPE

NATURAL LANDSCAPE

The Ulupono Anahola project site lies on approximately 10-acres, just makai and across of the Anahola Residence Lots on Pilipoli Road, on the east side of the island of Kauaʻi, within the ahupuaʻa of Anahola. Anahola is the largest ahupuaʻa within the Koʻolau district, containing some 6,327 acres (Hammatt 2005: 1). The ahupuaʻa of Aliomanu (lit. "scar made by birds") lies to the north and the ahupuaʻa of Kamalomaloʻo (lit. "dry loincloth") to the south. The northern boundary of the ahupuaʻa is at Kauehu Point (lit. "silent, still, lonely), and the southern boundary of the ahupuaʻa is at Lae Līpua (lit. "līpoa seaweed point").

Natural resources within the ahupuaʻa include Anahola stream, two prominent mountain peaks known as Hōkūʻalele peak (lit. "star messenger, shooting star, or comet") and Kalalea Mountain (lit. "prominent, protruding"), fertile land and abundant ocean resources. Historically, the upper portion of the valley contained taro terraces, but it is the flatlands along the river mouth that were heavily cultivated (Wichman 1998).

The project area itself receives an average of 1074.5 millimeters (mm) (42.30 inches [in]) of annual rainfall (Giambelluca et al. 2022). According to Akana and Gonzales (2015:131) The name of the rain associated to Koʻolau, Kauaʻi is called Kukupaʻu. Also known as Kukupau. "Kukupāʻu means "to do with zest." "Kukupāʻū" means "to beat overlaid kapa." "Kuku pau" means "to beat completely," as Kapa. Below is a kanikau titled "He kumu lewa no Kaleleonalani" for Emma Kalelenonālani. According to Soehren, "Neki" is the name of a peak at the Waiʻoli-Waipā-Lumahaʻi border in Haleleʻa, and "Manolau" is an area along the seaward border of Hanalei and Waiʻoli. Keaweamahi says that "Hālaulani" is the name of a peak above the ahupuaʻa of Waiakalua, which has groves of hala trees. It is also the name of an area on the seaside of Anahola.

I kumu wai hoʻi Neki na ka wai
Ua i Pueo, ke kumu o ka ua
Hohola ihola i luna o Hā[ʻ]aulani
Ka [paneʻe kū] a ka ua i ka lāʻau
Ka ua Kukupau i luna o ka lau hala
Ka ua Kanikaukū, me he kanaka lā
Ka ua hahi i ke kai o Manolau
[Translated by Akana and Gonzales 2015:131]

The headwaters at Neki are fed by water
Raining at Pueo, the origin of the rain
Spreading out above Hālaulani
The rain forces its way through the trees
The Kukupau rain atop the hala leaves
The Kanikaikū rain, seemingly a person
The rain that walks on the sea of Manolau

In addition, the epic tale of of Hiʻiakaikapoliopole describes and names the winds of Anahola, Kauaʻi.

He Anu ka makani o Anahola,
He Kiuwailehua no aia ilaila,
He Hokualele ka makani o Anahola
He Apoonui ka makani o Anahola
He Laupeekoa ka makani o Anahola
He Laula ka makani o Anahola
He Laekuaehu ka makani o Anahola
He Akeakea ka makani o Anahola
He Ulumanao ka makanai o Anahola
He Laeokahala ka makani o Anahola
He Aoao ka maka[n]i o Anahola

Holoikalapa makani pee malualua o Anahola
Holohiukaimaloo ka makani o Anahola
He Malua kuehu ka makani kai nui o Anahola
[Ka Na'i Aupuni, June 6 1906]

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic database (2001) and soil survey data gathered by Sato et al. (1973), the project area's soil predominantly consists of the Lihue silty clay, 0 to 8 percent slopes (LhB), as well as possible sediments of nearby of the Badland (BL), Koloa stony silty clay, 3 to 8 percent slopes (KvB), Koloa stony silty clay, 15 to 25 percent slopes (KvD) and Lihue silty clay, 8 10 15 percent slopes (LhC), (Table 1, Figure 4).

Table 1. Soil types within and nearby the project area.

Soil Abbreviation	Soil Name
BL	Badland
KvB	Koloa stony silty clay, 3 to 8 percent slopes
KvD	Koloa stony silty clay, 15 to 25 percent slopes
LhB	Lihue silty clay, 0 to 8 percent slopes
LhC	Lihue silty clay, 8 10 15 percent slopes
Mr	Mokuleia fine sandy loam

The Lihue silty clay, 0 to 8 percent slopes (LhB) series is on the tops of broad interfluvies in the uplands. General characteristics of this type of soil has a very dark greyish-brown surface layer and a mottled subsoil. In a representative profile that surface later is dusky red silty clay about 12 inches thick. The subsoil, more that 48 inches thick, is a dark reddish-brown, compact silty clay that has subangular blocky structure. The substratum is soft, weathered rock. The subsurface layer is strongly acid. The subsoil is slightly acid to neutral. Permeability is moderately rapid. Run-off is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.5 inches per foot of soil. In places, roots penetrate to a depth of 5 feet or more. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.

The Lihue silty clay, 8 10 15 percent slopes (LhC) series has slow run-off and slight erosion hazard. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites.

Badland (BL) consists of steep over very steep, nearly barren land, ordinarily not stony. The soil-forming material is generally soft of hard saprolite. The annual rainfall amounts to 22 to 60 inches. This land type occurs of the island of Kaua'i. It is steep to very steep and nearly barren. Runoff is very rapid, and geological erosion is active. This land type is used for water supply and wildlife habitat. Ironwood trees have been planted in all areas.

The Koloa stony silty clay, 3 to 8 percent slopes (KvB) series occurs on upland slopes. Permeability is moderately rapid. Run-off is slow and the erosion hazard is slight. The available water capacity is about 1.8 inches per foot of soil. Roots penetrate to the bedrock. This soil is used for sugarcane.

The Koloa stony silty clay, 15 to 25 percent slopes (KvD) series has medium run-off and the erosion hazard is moderate to severe. The soil is used for irrigated sugarcane, pasture, woodland, and wildlife habitat.

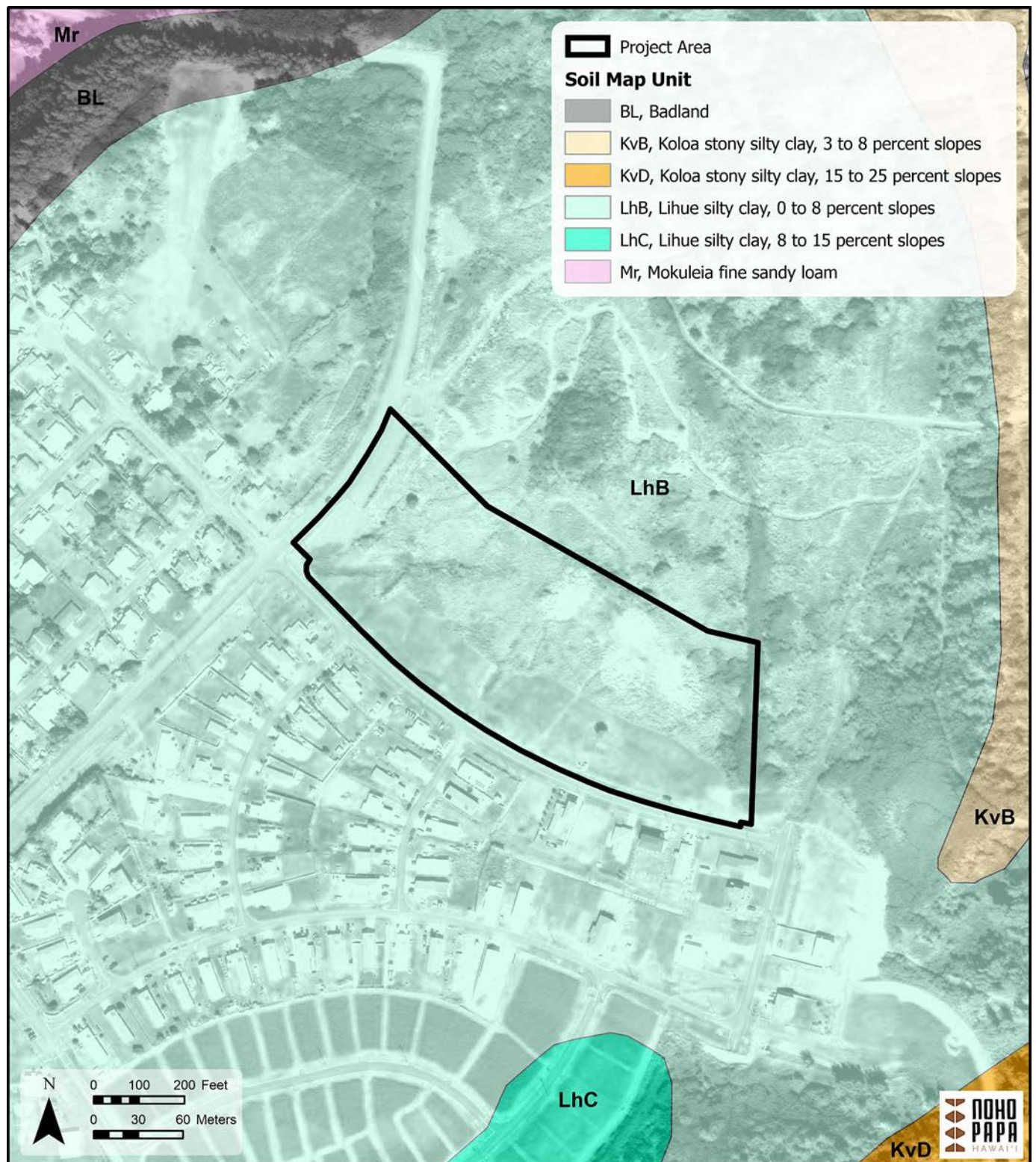


Figure 4. Overlay of Soil Survey of the State of Hawaii (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

CULTURAL LANDSCAPE

PLACE NAMES

The mindset of k̄naka (Hawaiian people) evolved and developed over centuries of being intimately in tuned with the natural environment from the heavens above to the depths below. One piece of evidence that provides a hint of how nā k̄puna (the ancestors) saw the landscape of Hawai'i is through the thousands of place names still recorded today. Traditional place names provide an avenue to understand a landscape and tap into the mana (spiritual power) that is part of each area. A place name may tell of a commemorative event, an important person, may describe the physical environment, or reveal the function of the land. When explaining the concept of mana that is instilled in a name, P̄kui (1972) writes, "Once spoken, an inoa took on an existence, invisible, intangible, but real. An inoa could be a causative agent, capable of marshaling mystic elements to help or hurt the bearer of the name. And, so went the belief, the more an inoa was spoken, the stronger became this name-force and its potential to benefit or harm" (Pukui, Haertig, & Lee 1972:94).

In Pukui & Elbert's, *Hawaiian Dictionary* (1974:12), no translation is translation for Anahola.¹ Frederick B. Wickman attributes the name Anahola to a legendary mo'o who had lived in Ko'olau moku. In Mary Kawena Pukui's interviews with Anahola k̄puna (BPBM archives), many pronounce Anahola as Anehola.

Anahola or Anehola? In most if not all cases, when researching places in Hawai'i, variations in spelling and pronunciation occur. In some places, the variation is due to a lack of auditory acuity to the nuances of the spoke Hawaiian language, and in others, because of local colloquialism or dialect. In the case of Anahola or Anehola, it seems to be the latter. While both spelling appear when word searched within archival database, it seems that the "kama'āina," as recorded in interviews by Mary Kawena Pukui in the 1930s, lean toward the use of Anahola, while those not native to the locale used Anehola. Today, Anahola is the pronunciation commonly used by both kupa'āina and malihini.

Traditional Hawaiian place names often reoccur in oli, mele, mo'olelo, and 'ōlelo no'eau. Other sources that have documented these names include ethnographic surveys, historic maps, and early historic documents such as Land Commission Award (LCAw) claims, Government Grant sales, and Boundary Commission testimonies. The place names that are presented in the following table were gathered from research done by Pukui and Elbert (1970), Pukui, Elbert, and Mo'okini (1970), and Lloyd Soehren (2002). There are no diacritical marks ('okina and kahakō) used in the initial spelling of names because these are rarely used in original sources. However, there is a lexicology section that includes the documented spelling and translation of specific place names. Presented below are the place names associated with the ahupua'a of 'Anahola (Ko'olau).

¹ Although Anahola is not defined by Pukui et al (1974), they do refer the reader to Kanahāwale (literally, "easily broken"), described as an ancient surfing area at Anahola.

Table 2. Place Name table for features within and near the project area in Anahola.

Name	Feature	Comments	Lexicology	Location	Source
Anahola	Ahupua'a	Returned by Lunalilo, retained by Crown at the Māhele	Anahola. Fish Poisin. Cave. (Parker)	Anahola. Located directly in the project area.	MB. 26, 288; IN 28; USGS 1963
Laelīpoa	Point	N/A	Līpoa seaweed Point	Anahola.	
Lae o Kaili'u	Point	N/A	Point of the salty sea (PEM)	Anahola.	USGS 1963
Kahala	Point	N/A	Not translated	Anahola.	USGS 1963
Aikanaka	Heiau	Bennett's site 113. "...at Anahola Point [now Kahala Point] near the end of the bluff on the south side of the bay. Described by Thrum as 'a small heiau, about 40 feet in size. All destroyed.' One large rock marks the spot of this heiau in the cane field.	Man-eating	Anahola.	Bennett 1931:129
Kiokala	Pu'u	Possibly an ili name, probably pu'u or plateau summit name. Claim no. 4640 by Puaa: "No. 2 is 7 lois & kula adj. in Kiokala." TMK 4802:2. A bdry point on the Kealia Forest Reserve. Elev. about 540 ft.	Kiokala. No translation, meaning uncertain.	Anahola.	RM2282 trace (c.1906). FT 12:120; USGS 1963.
Pohopohoiki	Wahi pana	Perhaps an ili or boundary name. "...small hollow" between Apulu and Kaluakawela on the Kamalomaloo/Anahola bdry.	Pohopohoiki. Pohopoho literally means sinking, marshy, muddy. Iki literally means small. Meaning uncertain.	Anahola. Located directly in the project area.	RM143 and RM378 (c.1875). RM2282 trace (c.1906). BC 19 (1:103), BCT (1:101)
Kekoiki	Wai hālau, Pu'u	Highest peak of the Namahana Mountains. The head of Anahola on the Kawaihau/Hanalei District bdry. Elev. 2814 ft. "...called Kokoiki [sic], also called Malamalamaiki in a survey...made by M. D. Monsarrat..." On one side is Anahola, Kalihiwai on the other.	Keko-iki. PE: little keko [said to be an ancient name for a small and ugly creature, especially with a pug nose].	Anahola, Kalihiwai.	BC 31 (1:155); USGS 1963.

Name	Feature	Comments	Lexicology	Location	Source
Ka‘ālua	Kahawai	Begins at Kanehu Reservoirs, enters Anahola Stream.	Ka‘ālua. Perhaps ka-‘ālua is the endemic <i>Brighamia</i> spp., written ālua in PE, ‘ālua in PEM.	Anahola	KHS-E-17 (c.1939 & 1942). USGS 1963.
Kaluakaweli	Wahi pana	Along ahupuaa border of Anahola and Kamalomalo, possibly an ili?	Kaluakaweli. No translation, meaning uncertain.	Anahola, Kamalomalo‘o	RM143 (c.1875) and RM378 (1875).
Kamakaua	Wahi pana	Along ahupuaa border of Anahola and Kamalomalo, possibly an ‘ili.	Kamakaua. No translation, meaning uncertain.	Anahola, Kamalomalo‘o	RM143 (c.1875) and RM378 (1875).
Kamana	Pu‘u	RM2282 trace (circa 1906) shows elevation is 643 ft amsl. Wahi is on the forest line.	Kamana. Possibly meaning the branch or the power.	Anahola, Kamalomalo‘	RM2282 trace (c.1906)
Pe‘ekoapu	Wahi pana	RM2282 trace (circa 1906) shows elevation is 643 ft amsl. Wahi is on the forest line.	Pe‘ekoapu. No translation, meaning uncertain.	Anahola, Kamalomalo‘o	RM143 (c.1875) and RM378 (1875).
Pu‘u ‘awa	Pu‘u	A peak on the Kamalomalo/Anahola bdry. Elev. 1160+ ft.	Pu‘u ‘Awa literally means ‘Awa Hill.	Anahola, Kamalomalo‘o	RM143 (c.1875) and RM378 (1875). BC 19 (1:103); USGS 1963.
Nāmāhāna	Wai hālau	Namahana is the mauka-most upland of Anahola and the wai halau of Anahola stream.	Nāmāhāna. PEM: the twins.	Anahola, Kilauea	RM1378 (c.1875). USGS Topo.
Pu‘u ‘Eu	Pu‘u	On the boundary of Anahola and Moloa‘a, at 1,805 ft amsl., per USGS Topo. “Puu Eu the highest peak” (BC 20) Elev. 1946 ft. Written “Pueu” in testimony and TM 4800, “Puu Eu” on RM 1395; misspelt “Puu Ehu” on USGS.	Pu‘u ‘Eu. PEM: Rascal hill.	Moloa‘a, Aliomanu, Anahola.	RM378 (c.1875). BC 20 (1:97); BCT 1:94,95,96; RM 1395; TM 4800.

Name	Feature	Comments	Lexicology	Location	Source
Pu‘u Keākea	Pu‘u	Pu‘u Keakea is at the apex of Papa‘a (mauka) on its Anahola border. It does feed one of the mauka tributaries of Moloa‘a stream, which flows through the Moloa‘a DHHL apana. Also apex of an Anahola stream tributary feeding Anahola DHHL apana.	Keākea. PEM: the breadth.	Papa‘a (mauka), Anahola. On the boundary of Anahola and Moloa‘a, between Pu‘u ‘Eu and Mālamalamaiki on the Anahola/ Moloa‘a bdry at 1,565 ft amsl., per USGS Topo.	RM378 (c.1875). RM1971 trace (1918 trace of a 1892 Monsarrat map). BC 20 (1:97); BCT 1:94,95,96; USGS 1963.
Pu‘u Ehu	Wai hālau	Misspelt, see Pu‘u ‘Eu. Pu‘u ‘Ehu is point where three ahupua‘a connect, Moloa‘a, Aliomanu, and Anahola.	Pu‘u Ehu. PEM: Dust hill.	Moloa‘a, Aliomanu, Anahola.	RM378 (c.1875). RM2282 & trace (c.1904 & 1906). KHS-E-17 (c.1939 & 1942). USGS Topo
Mālamalamaiki	Wai hālau	"...Kokoiki [Kekoiki], also called Malamalamaiki in a survey of a portion of Kalihiwai made by M. D. Monsarrat..." Elev. 2814 ft. See Kekoiki.	Mālamalamaiki. PEM: little light.	Moloa‘a, Anahola.	RM143 (c.1875). USGS Topo. BC 31 (1:155).
Kaho‘opulu	Wai hālau	Kaho‘opulu is the wai hālau for Moloa‘a Stream. It is where three ahupua‘a connect, Moloa‘a, Papa‘a (mauka) and Anahola.	Kaho‘opulu. PEM: the wetting	Moloa‘a, Papa‘a, Anahola.	USGS 1963.
Keao‘opu	Wai hālau	Water source of Keao‘opu stream. Alongside this wahi, RM1378 (circa 1875) shows an "old roadway" running north south across a pass in the mountains. Per USGS Topo, 1,385 ft amsl.	Keao‘opu. No translation, meaning uncertain	Papa‘a, Anahola.	USGS Topo

‘ŌLELO NO‘EAU

‘Ōlelo no‘eau have long contributed to the perpetuation of traditional knowledge. These creative expressions not only present kaona (hidden meaning) used in Hawaiian language, but they also integrate observational knowledge with educational values, history, and humor. The following ‘ōlelo no‘eau were gathered by Mary Kawena Pukui and published in her book titled, *‘Ōlelo No‘eau Hawaiian Proverbs and Poetical Sayings* (1983). While no ‘ōlelo no‘eau were found directly for Anahola, included are ‘ōlelo no‘eau for the larger landscape, the moku of Ko‘olau, to explore and commemorate some of the renowned traditions of this district.

78 ‘Ai manu Ko‘olau
Eat of the birds of Ko‘olau
Said of a feast where delicious foods are eaten.

550 He au Ko‘olau aku ia.
That is Ko‘olau weather
The Ko‘olau, or windward side of an island is often stormbeaten. This expression was first used in a chant to Hi‘iaka by Wahine‘oma‘o, who pleaded with her not to let her wrath lead to destruction. Later used as a warning that headstrong willfulness leads to distress.

1976 Lele I Kona; lele I Ko‘olau
Flies to the leeward side of the island and flies to the windward.
Said of one who is hard to locate.

2153 Me he lau no ke Ko‘olau ke aloha.
Love is like the ends [fingertips] of the Ko‘olau breeze.
Love is like a zephyr- gentle and invisible but present nevertheless.

2467 O Kilohana ia, he ‘awe‘awe moku.
That is the Kilohana of the broken bundle cords.
Said of Kilohana above Līhu‘e on Kaua‘i. An old trail went by here, leading from Kona to Ko‘olau. Robbers hid there and waylaid lone travelers or those in small companies and probed them of their bundles.

MELE

Oli (chants) and mele (songs) have long been a means of perpetuating traditional knowledge through artistic expression. Pukui (1949) refers to oli and mele composition and writes, “Hawaiians were lovers of poetry and keen observers of nature. Every phase of nature was noted and expressions of this love and observation woven into poems of praise, of satire, of resentment, of love and of celebration for any occasion that may arise.” The word oli refers to a chant that is not danced to and the word mele refers to a song, poem, or chant of any kind (Elbert & Pukui 1959). Oli and mele are often given as ho‘okupu (a gift or offering) to honor akua and ali‘i, to commemorate place visits and events, to celebrate life and death, and to share stories.

In the translation of oli and mele, there is oftentimes a double meaning that consists of the literal translation and an interpretation of the kaona, or inner meaning. Pukui explains that the kaona can sometimes be obvious enough that anyone familiar with the figurative use of Hawaiian language can understand it. Other times, it may be so veiled that it is only understood by those to whom the composition belongs (Pukui 1949). During this study very few mele and

oli were found for Anahola. Many of these contemporary compositions are written for or about Anahola makai. Today, the concentration of population, housing, and access to resources of Anahola is primarily all in the makai portion of the ahupua'a. Presented below are two historical mele that make reference to Anahola and its adjacent areas.

The mele, Anahola by Jerimiah Kaialoa, Sr. speaks of Anahola, the homestead land on Kaua'i, Kalalea, the hill inland at Anahola. The legend says a spear was hurled at the hill piercing it. This hole is named Konanae and collapsed during hurricane 'Iniki. The spear is lying in the stream bed nearby. Verse 3 tells of the activities at the ship's landing on the southern corner of Anahola beach, that was constructed about 1900. Amu is the place name of a small section of land and the name of the wind there, that blows in all directions. The translator of this mele is unknown and the Hawaiian Text was edited by Puakea Nogelmeier.

Anahola- Jeremiah Kaialoa, Sr.

Hanohano Kalalea kau mai i luna 'O ka pali kaulana a'o Anahola	Majestic Kalalea rises above The famous cliff of Anahola
'Alawa iho 'oe iā Konanae 'O ka hoapili like o ku'u milimili	You glance at Konanae The beloved close companion
I laila ho'i au 'ike ihola Nā kaula likini mōliolio	I was there and I saw The rigging lines pulled tautly
Huli aku nānā iā Amu I ka makani 'alo 'ehu hele ulūlu	Turn and look at Amu The wind that blows fiercely
Ha'ina 'ia mai ana ka puana 'O ka pali kaulana a'o Anahola	The story be told Of the famous cliff of Anahola

The next mele, titled Kalalea was composed by Keali'ikua'āina Kahanu & Kaleialoha Williams. P. Williams is the great granddaughter of the composers. It was recorded by Kainani Kahaunaele, great, great, great granddaughter of composers, "Na'u 'Oe" CD. - Kalalea is the prominent hill overlooking Anahola, Kawaihau, Kaua'i. Legend says Hulu, the demigod, who could take the form of a mo'o or bird, pecked the hole near the top, to see the other side. Another legend tells of the hero Kawelo, thrusting his spear to form the hole named Aolani (heavenly cloud). Others give the name of the hero as Kapūnohu.

Kalalea - Keali'ikua'āina Kahanu & Kaleialoha Williams

Ki'eki'e Kalalea`a i ka makani 'O ka pali kaulana o Anahola	Kalalea stands majestically in the wind Famed cliff of Anahola
Noho iho e ka 'ohu noe i nā pali A he nani maoli nō mai 'ō a 'ō	The mist rests upon the cliffs Simply exquisite from end to end
A ke aku la e 'ike I ke kai nehe a'i Hālaulani 'O ka pā kolonahe a ka makani I laila māua me ku'u aloha	I yearn to see The rustling sea at Hālaulani The gentle breeze That's where I am with my sweetheart

An 1860 article published the nupepa (newspaper) *Ka Hae Hawai'i*, shares the importance of publishing traditional mele to ensure the continuance of these compositions and their meaning are remembered onward for future generations.

"Ua aneane nalowale paha na mele o ka wa kahiko, kawalawala loa na kanaka i ike. He mea minamina ia, no ka mea, ma ua mau mele la, ua maopopo ke ano o ka noho ana o kanaka i ka wa mamua loa aku nei, a o ka mooolelo o ka aina kekahi. O ka mea e mau aku ai a nalowale ole na mele, oia ke pai ana ma ka buke a ma ka nupepa paha, alaila, he hiki no i na hanauna hou aku ke heluhelu a e kawiliwili iloko o ka manao..."

-*Ka Hae Hawai'i*. March 21, 1860

Traditional Hawaiian songs may soon be forgotten; they are not seen enough by people. This is very unfortunate, because it is within these compositions that the lives of those who lived before us are understood, as well as the stories of the land. What will ensure the continuance of these traditional Hawaiian songs so that they are not lost, is publishing them in books and perhaps newspapers, then, future generations will be able to read them and become entwined in their meaning...[English Translation, *Ka Hae Hawai'i*. March 21, 1860].

However just as important as publishing traditional mele, is also the composition of new mele. A very important aspect of doing cultural, strength, and project-based education is incorporating Hawaiian protocol as part of the learning process. Oli, Mele, and Pule, are ways to show respect to the 'āina where a project, excursion, or research takes places and is a way to build a relationship with that 'āina as well.

Kaiāulu Papaloa is a non-profit educational organization based in Wailua, Puna, Kaua'i and is dedicated to promoting and perpetuating Kaua'i's traditional knowledge of natural and cultural marine resources. Practicing traditional knowledge, their website features two (2) mele and one (1) oli, written and inspired by their students who their attended their intersession and after school outreach programs. These mele/oli were composed by conducting background research about Anahola. They share the following three (3) references to be the most useful, 'A'ā Hoaka is a traditional story about the Ko'olau area that appeared in the Kū 'Okō'a Hawaiian Newspaper in the 1800 hundreds but is written only in Hawaiian and is widely used amongst Hawaiian language speaking educators. Nā Makani Hawaii is a research paper put out by the former Hawaiian Studies Institute at Kamehameha Schools, and He Mele Hawaii is a reference book that can be found at the local libraries.

Kaulana 'O Anahola

Kaulana i'ō nō 'o Anahola
'Āina 'uluwehi, kai momona
Pō'ai ke aloha me nā malihini
Nānea ho'i kau me ka lehu

Famous is the place called Anahola.
The land is lush and the ocean filled with delicacies.
This is a place surrounded with aloha for malihini.
This is a place where one can relax with everyone.

Makamae mau nō 'o Kahala
'Apapa 'olu'olu, ka moani 'uli
He nani i'ō nō ke 'ike aku
Kū 'ia ho'i wale me ka mālie

Forever cherished is the place Kahala.
The reef is very kind/forgiving and the ocean blue/deep.
This is a place that is beautiful when looking out into the ocean.
However, don't forget, it's a reef so one must stand relaxed and calm.

Hanohano palena'ole 'o
Kahahawale
Nalu maika'i, he kai 'ehu
Papahe'enalua, nā hoa pa'a
Kohukohu 'ia ho'i ma ke kai lā

Pu'ana i'ō nō e, 'o Anahola
'Āina uluwehi, kai momona
Pō'ai ke aloha me nā malihini
Nānea ho'i kau me ka lehu

Oli Hea Kaiāulu Anahola

Hea mai ka leo aloha lā
Eia nō mākou ē
Nā Pua o ke awa lau o Anahola ē
Mai Papaloa a Kūaehu ē
Ke kai a momona
Hānai 'ia e nā kai
E ulu a'e ke kanu
E ulu a'e ka 'i'o
E ulu a'e nā Mamo o Kū'ula
Pūpūkahi e holomua
Pua a Kū Kanaloa ē
Willi'ia ka lei maile aloha me ka
mokihana
E Ola e, he leo wale nō ē
Aloha ē, Aloha ē, Aloha ē

Mele Kaiāulu

Eia nō he mo'olelo e
Pili 'ia nā kaiāulu e
Hali'a mai ka mana'o e
Mehana ku'u pu'uwai e

Hui:
'O Anahola ku'u kulā'iwi e
Pa'a ka mauna e ka makani e
Iho 'ia no'eau kahiko e
Ea ho'i mai ke kilihune e

'O Kuaehu ku'u kūpuna e
Mehameha ke 'ano makani e
Nānea 'ia nō ma ke kai lā e
Nalu wale ku'u iho e

'O Amu ku'u hoa e
Kū kilakila ke 'ano makani e
Pa'a ke kuahiwi e ho'i nui e
Ho'olono ia mea kahiko lā e

'O Kahala ku'u kaina e
Nahenahe ke 'ano makani e

Famous is the surf break Kanahawale.
The waves are great and the ocean is so clear.
This is a place where best friends surf.
This is a place where one can show off what they do in the ocean.

This is where my story ends in Anahola.
The land is lush and the ocean filled with delicacies.
This is a place surrounded with aloha.
This is a place where one can relax with everyone.

This is an chant that celebrates the importance of the ocean resources to the people in Anahola. From this we understand that Anahola stretches from Papaloa to Kuaehu and that the ocean is a source of many types of food for people in Anahola and the larger district of Anahola. We also celebrate our relationship with two Hawaiian Gods, Kanaloa and Kū'ula. Kanaloa, according to Hawaiian tradition is the god of the ocean and Kū'ula

This is a story about the gentle winds of Anahola. These winds remind me of a different time and my heart becomes warm when I think of the past.

Chorus:

Anahola is my beloved 'āina. As the winds hit the mountain, the wisdom of the past descends down, hitting the ocean causing a mist (spray) of 'ike.

Kuaehu is my kūpuna and the wind blows in solitude.
As I sit by the ocean, I ponder on what occurred before in this place.

Amu is my beloved friend and the wind blows so majestically/feisty. As it hits the mountain and spreads across the land, I hear the voices of the past.

Ku'i 'ia mai ke kai o luna lā e
Piha ka 'āina, e pono ho'i e

Pu ana 'ia mau e kaiāulu e
Eia nō he mo'olelo e
Hali'a mai ka mana'o e
Mehana ku'u pu'uwai e

Kahala is my beloved brother and the wind is gentle. As it strikes the ocean, the ocean is filled with momona and pono returns to our land.

This is my story with aloha about a mo'olelo about the gentle winds of Anahola. These winds remind me of a different time and my heart becomes warm when I think of the past.

MO'OLELO

The term mo'olelo refers to stories, myths, and legends, while the term ka'ao is used to refer to a fictional legend or fanciful tale. Pukui describes the tradition of storytelling as, "a principal source of entertainment while simultaneously providing instruction in the many interwoven aspects of life – ancestry, history, religion, human relations, crafts, and the natural world" (Pukui & Green 1995:xii). Before Hawaiian became a written language in the 1820's, cultural knowledge was perpetuated through various forms of oral repetition and passed down from generation to generation through mele (songs), hula (dances), kū'auhau (genealogies), ka'ao (legends), or mo'olelo (traditional stories) (Kalākau; Daggett; Grant 1990:ii). Today, through written form and English translation, these traditional compilations serve as sources of wisdom for a much larger audience.

A limited amount of narratives that directly reference Anahola Ahupua'a. The tables below document mo'olelo associated Anahola Ahupua'a that were found during this study and are the more commonly known, it should be noted that this is no way a complete list mo'olelo. There is a potential for more mo'olelo to be uncovered. In addition, many of these mo'olelo have multiple variations.

Table 3. Comprised list of mo'olelo for the Ahupua'a of Anahola

Anahola Ahupua'a Mo'olelo
"Pohaku-Loa, Long Stone of Kauai" Armitage, George T., and Henry P. Judd, <i>Ghost Dog and Other Hawaiian Legends</i>
"Pehuiki, mo'o of Alawelo Pond at Anahola River" Wichman, Fredrick B.
"Legend of Kaipalaoa, the Hoopapa Youngster" Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 4</i>
"Legend of Kapunohu" Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 5</i>
"Legend of Kuapakaa" Fornander, Abraham, <i>Fornander Collection of Hawaiian Antiquities and Folk-Lore, Volume 5</i>
"The Legends of Kawelo" Thrum, Thomas G., <i>More Hawaiian Folk Tales: A Collection of Native Legends and Traditions</i>
"The Penalty for Peeking" Armitage, George T., and Henry P. Judd, <i>Ghost Dog and Other Hawaiian Legends</i>

HISTORICAL LANDSCAPE

EARLY HISTORIC PERIOD

Early maps of Anahola ahupua'a and the surrounding area provide information describing the project area landscape prior to modern times (Figures 6-10). Historic maps physically document changes to the land occurring over a period of years. The following are historic maps of Ko'olau; focusing on the ahupua'a of Anahola (highlighted in red). The earliest map presented is from 1876; dates for the remainder vary but run through the year 1955. Most of these maps illustrate the ahupua'a in the district as well as general information on boundaries, land use, land ownership, and cultural and natural resources. From these maps we see that in the early 1900s the land within and near the project area was designated for pineapple and sugar.

THE MĀHELE

The 1848 Māhele was established to guide Hawai'i in its transition from a traditional system of land use to a western model of privatization of property during the reign of King Kamehameha III Kauikeaouli. The traditional Hawaiian land system previously existed within the context of a highly stratified hierarchy and social order, a self-sustaining model of ahupua'a management and use, and a communal and subsistence based economy which worked effectively for the people for generations.

The traditional land tenure system was based on a reciprocal relationship which derives from the lesson of mālama 'āina (to care for the land). It is derived from a cosmological worldview that Hawaiians have a genealogical connection to the land. This relationship is defined by the kaikainakua'ana (younger sibling-older sibling) reciprocal relationship (Kame'eleihiwa 1992:25). The land and water was not owned in any legal sense, but revocable rights to its use were allocated and reallocated from the mō'i (king or paramount chief) down through the ranked system of ali'i (lower chiefs) and finally to the maka'āinana (commoners). Therefore, this historical event introduced the foreign concept of private property and fundamentally changed people's relationship to land.

During this process tenants of the land were required to document their claims to specific parcels in order to gain permanent title. The application process required claimants to provide a native testimony, foreign testimony, and native or foreign registrar. These records of the historical Land Commission Award (LCA) documents provide firsthand accounts of residency, resources, land use, access, traditional and customary practices of the lands they lived and actively cultivated from late pre-contact history into the period of the Kingdom of Hawai'i.

Historical land documents from the Māhele contain useful and relevant information in regards to understanding traditional Hawaiian land tenure and the transformation of this system into one based on land privatization. The Land Commission Awards (LCA) documented the size of the land, the sale of the land, award number, and royal patent number. The native and foreign registers were written by the claimant and provided information about the claims to their land. However, after a reviewing and compiling all the Kuleana in Anahola, historically the number of Māhele awards are more makai. There are no kuleana in and around the project area.

Anahola Ahupua'a was Crown Lands, returned by Lunalilo (6th monarch of the Hawaiian Kingdom), who was the second-largest landowner (trailing only Kamehameha III) at the time of the initiation of the Māhele (middle nineteenth century). In a Crown land inventory, Anahola is stated as:

Anahola. — This land is siuate in the district of Koolau and comprises an area of 6237 acres. Nearly all the land in the valley is good rice land, mostly on kuleanas. The Anahola stream furnishes an abundant supply of water. A considerable portion above the valley, about 500 acres is under cultivation of cane by the Makee Sugar Co., the remainder being good pasture and wood land. Good roads connect it with the plantation.

C.P. Iaukea, Agent of Crown Lands

[In, The Biennial Report of the Commissioners of Crown Lands, 1894, p38]

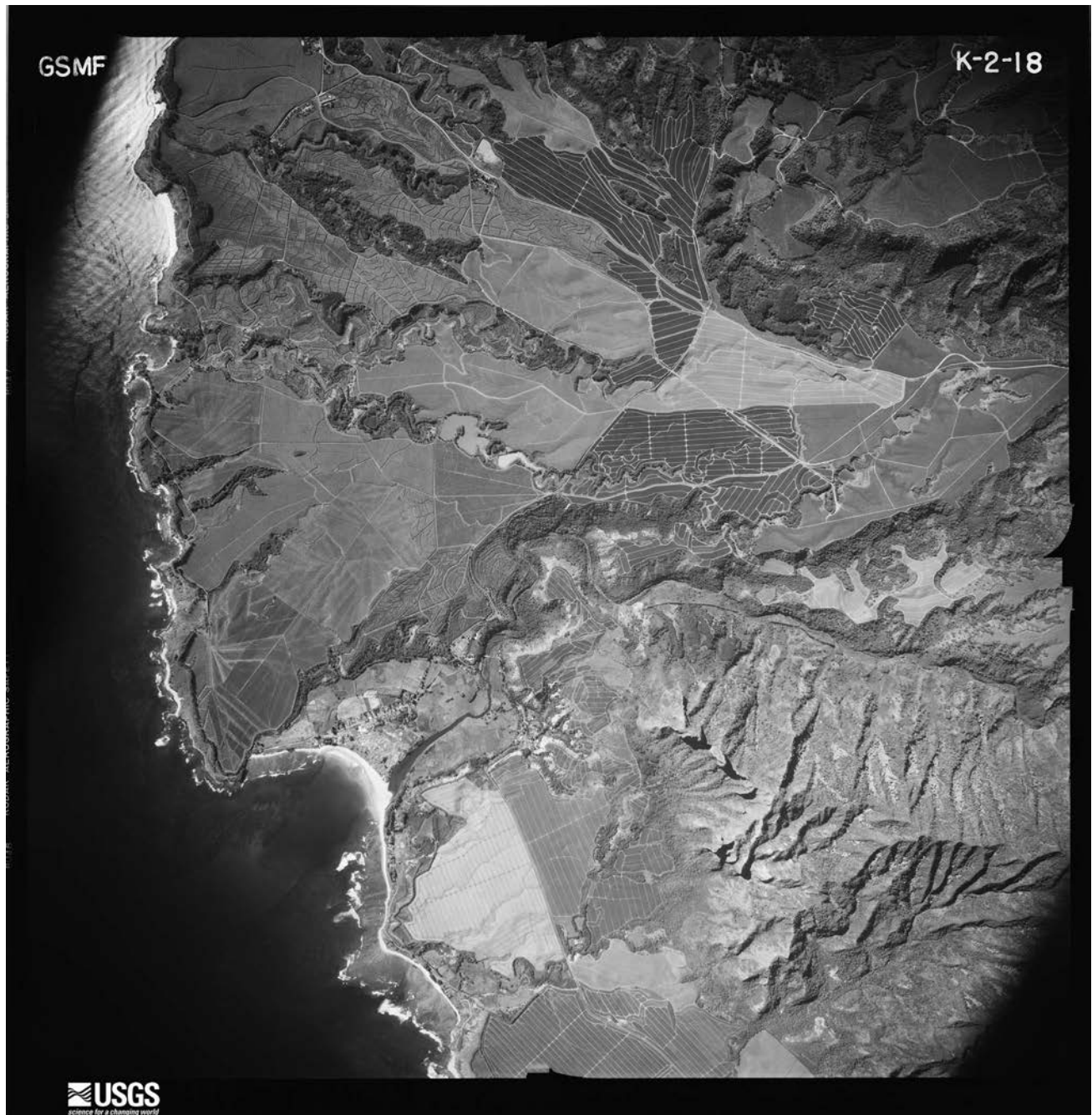


Figure 5. MAGIS 1950 USGS Aerial Image of Anahola

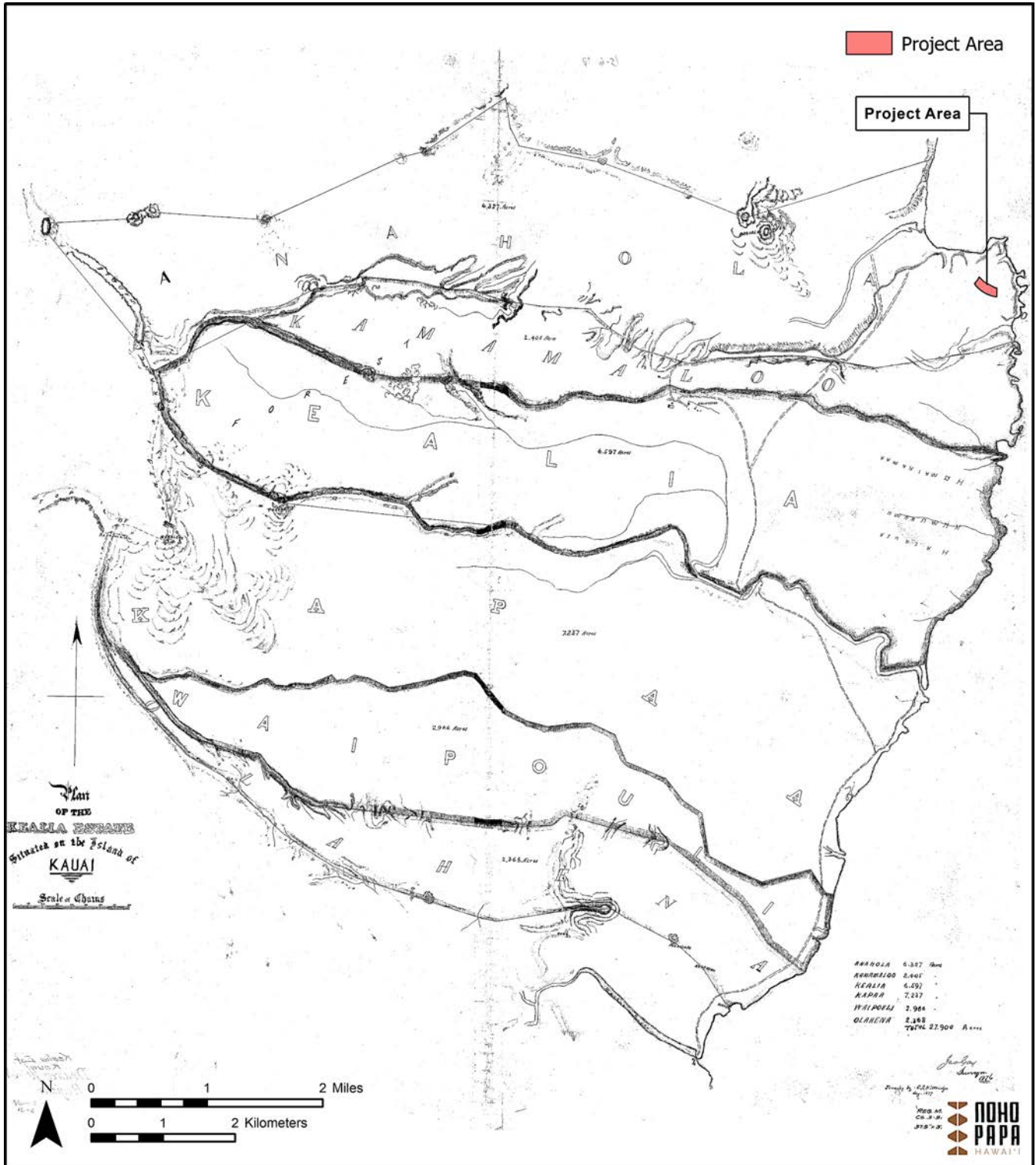


Figure 6. 1876 map titled "Plan of the Kealia Estate, Situated on the Island of Kaua'i" by Surveyor Gay (DAGS Register Map 386)

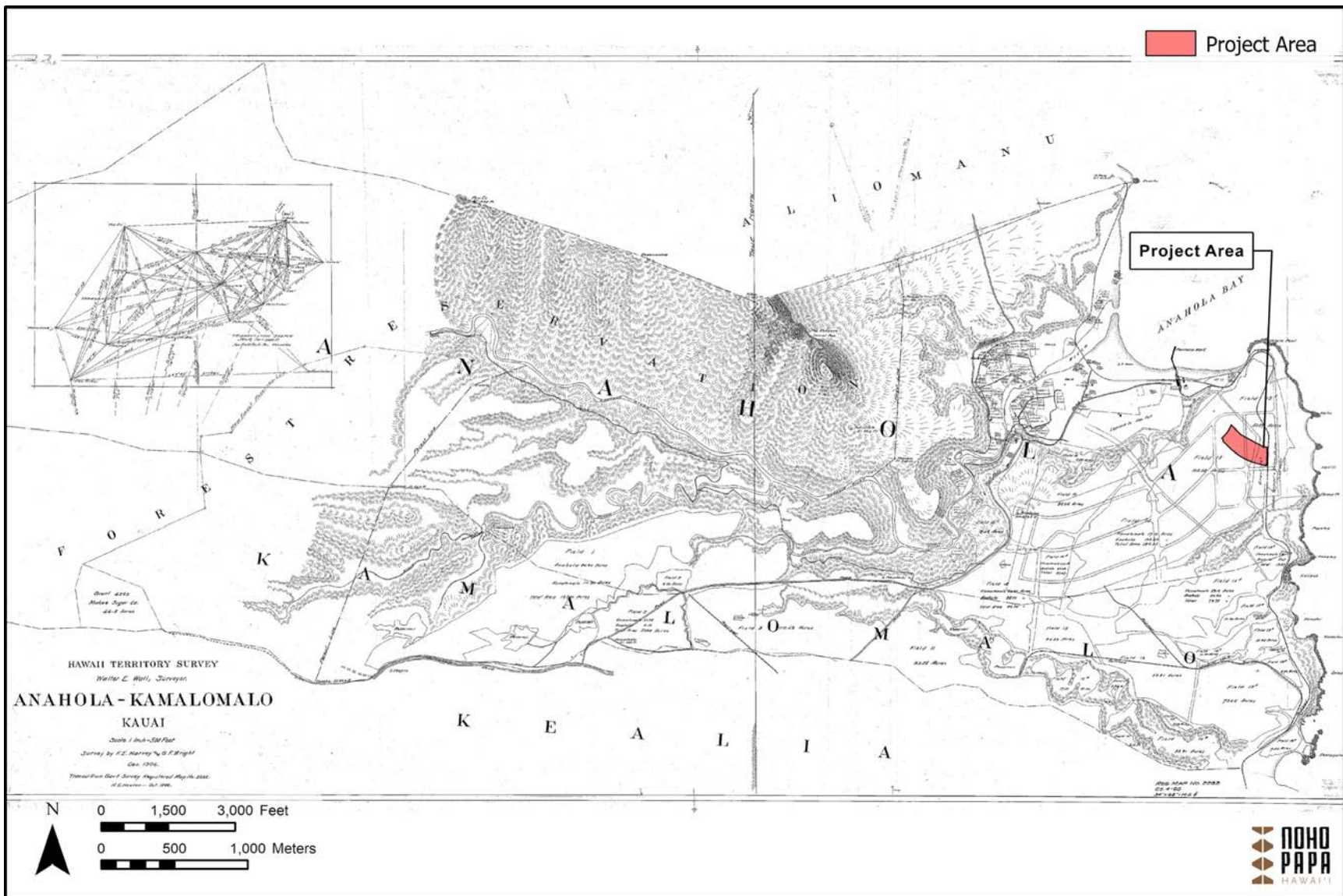


Figure 7. 1904 Map of Anahola and Kamalomalo by survey Harvey and Wright showing project area designated as Field 15 (DAGS Register Map 2282)

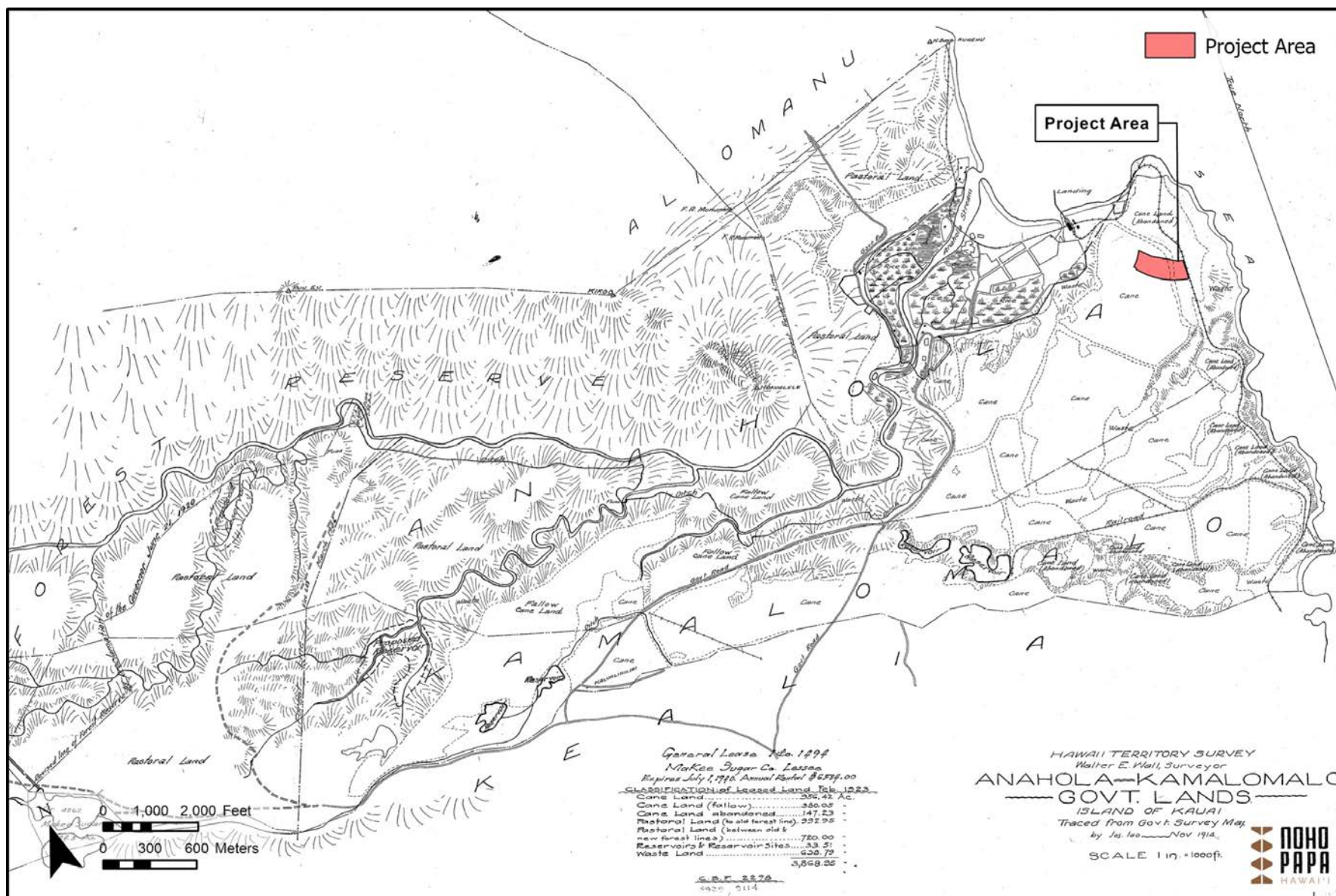


Figure 8. 1914 Territory Survey of "Anahola- Kamalomalo Govt Lands" by Walter Wall showing project area designated as cane land. (HTS Plat3003)

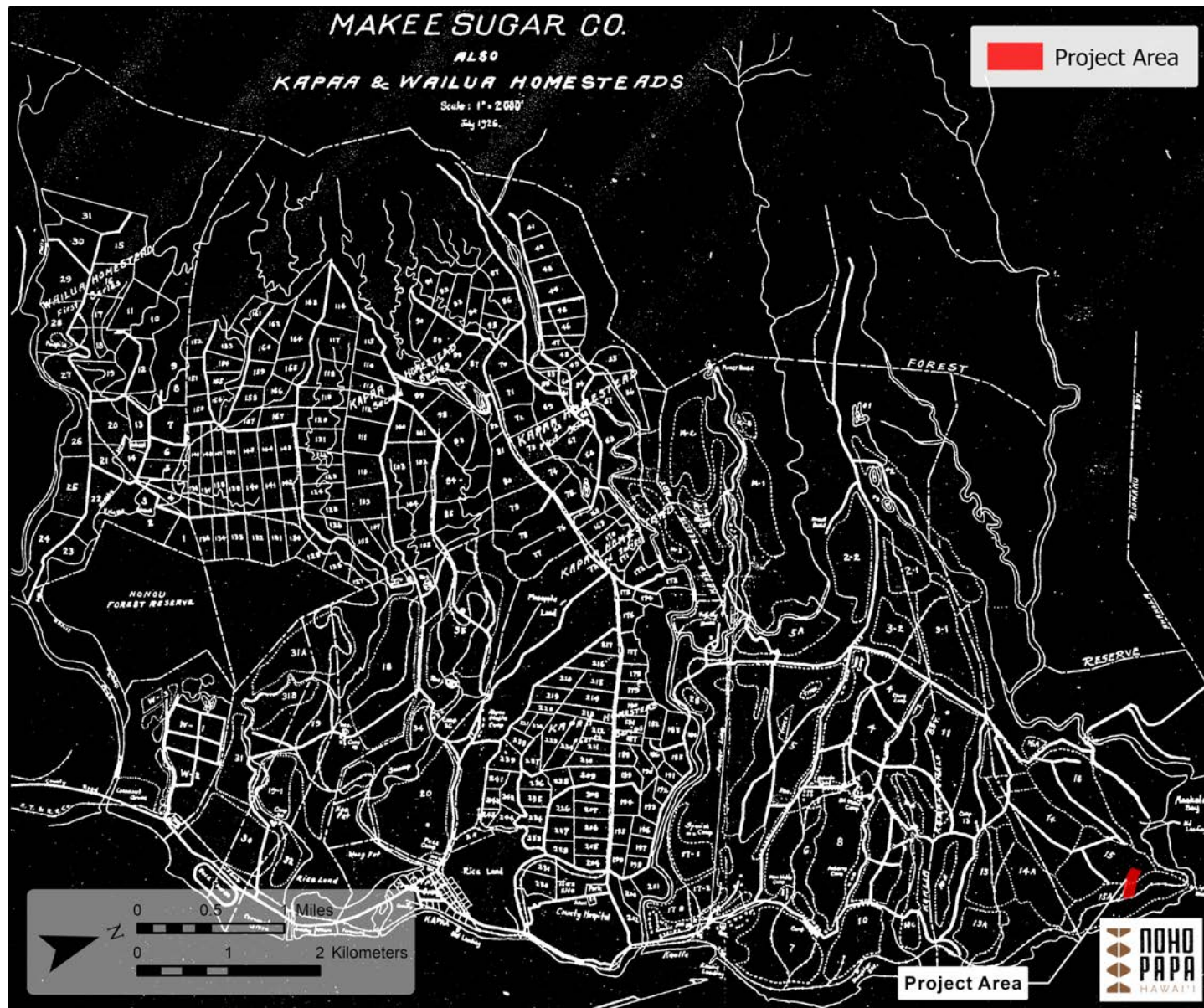


Figure 9. 1926 Makee Sugar Company Map by Conde and Best showing project area designated a Field 15.

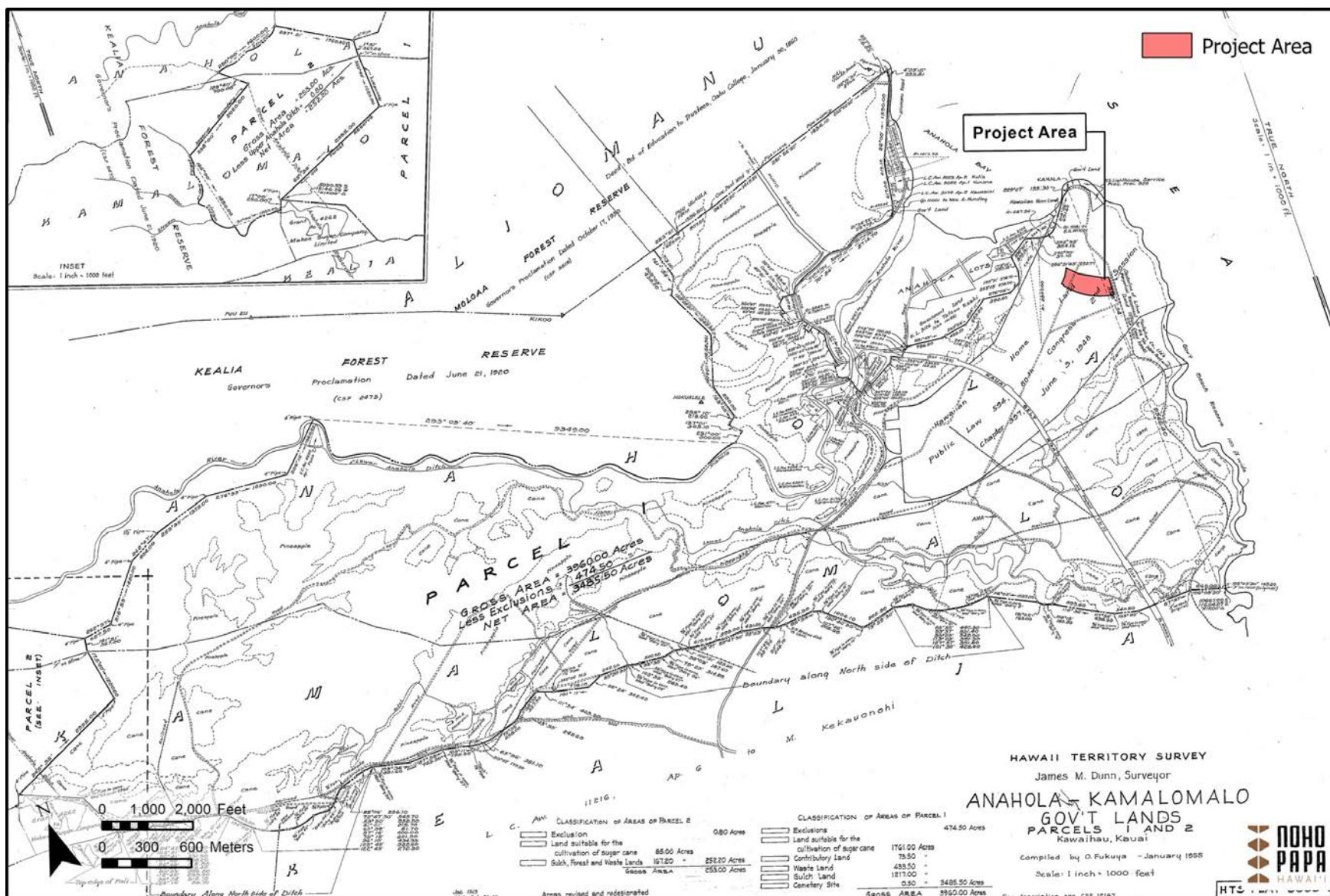


Figure 10. 1955 Map of "Anahola and Kamalomalo Govt Lands Parcels 1 and 2" by James Dunn showing project area designated as Hawaiian Homelands (HTSPlat3003-B)

1900s

Following the 1848 Māhele, cash-crop agriculture and cattle ranching gradually replaced traditional subsistence pursuits on the land, and indentured laborers, primarily China, Japan, Pacific Islands, the Philippines, and Portugal, were brought in to work on the sugarcane and pineapple plantations, many of these individuals eventually marrying into local families. Lo'i (or irrigated pond fields) and terraces were converted to rice production in the valley bottom, and kula land once planted in traditional tree crops became the locus of vegetable farming for markets outside the district.

An article written by Dixon et. al (2005:74-84) provides a good summary of foreign visitors who wrote about the landscape of Anahola in the post-Māhele period.

Brief mention of the Anahola Valley is made in several visitors' journals dating to the latter half of the nineteenth century, a period which seems to have been one of the considerable change for the district's inhabitants and their land. In 1849, the Anahola Valley was described as "chequered with kalo patches & studded with houses..." (Alexander 1991:123), painting a picture of relatively undisturbed traditional land use. A somewhat later visit in 1865 states that "The coast of Kauai... near Anahola is abrupt in places and very red from the soil; few trees except the pandanus were seen" (Lydgate 1991:136). Such a different description only 16 years later suggests the effect of deforestation associated with the introduction of non-traditional agriculture on the valley slopes and coastal plain. Another visitor in 1895 only mentioned in crossing the Anahola River, but he described a "melon patch" to the north in Moloa'a (Knudsen 1991:152) suggesting the much of the region was being transformed from traditional land use into an area of commercial agricultural production, a process occurring elsewhere on Kaua'i by the end of the nineteenth century (Mawyer and Creed 1997).

By the early 1900s, the pond field and terrace system in Anahola Valley appears to have been converted into a primary rice production center on the island (Joesting 1984), with local Chinese merchants selling their product in Kapa'a (Char 1979) among other markets. Chinese rice farming declined in the 1930s, however, due to rising costs and production on the U.S. mainland, and many pond fields were left fallow for years, some only recently returning to taro production. Pineapple production began in the late 1800s on elevated terraces above the project area, but it also slowed in the 1930s, as did sugarcane production. Vegetable farming of the flood plain soils and coastal plain also altered the landscape of Anahola after this period, as did the small-scale cattle grazing. [Dixon et. al 2005: 81-81]

An article titled "Ernest Krull's Dairy" was written by Hank Sobole and published in The Garden Island on September 7, 2014. This article documents important details in the timeline of the Ernest Krull Sugar Estate leading up to Makee Sugar Company and eventually Lihue Sugar Plantation.

In 1854, German immigrant Ernest Krull purchased a tract of land at Kealia, Kaua'i from the Hawaiian Government for \$200 (about \$5,720 in 2013 dollars), which extended westward from the area where the Spalding Monument would later be built to nearly the vicinity of the Waipahee Slippery Slide.

Then, about six years later, Krull began operating a dairy on his land for the purpose of selling visiting whaling ships and Honolulu merchants beef and dairy products — mainly hides, tallow and butter. He sold firewood to ships anchored off Anahola as well.

During the 1860s and early 1870s, large herds of cattle could be seen roaming over Krull's broad pastures.

While touring Kauai in 1863, American visitor Mary E. Anderson described Krull's dairy homestead at Kalualihilihi as follows:

"Mr. Krull has a large dairy, which in part supplies the Honolulu market with butter. He has a well-conducted, elegant and tasteful establishment; indeed, it was difficult to imagine that no lady's hand was employed in it.

The grounds about the house are prettily laid out, and two walks lead to a picturesque summer-house, called "Bellevue," from which one looks off over an extensive plain to the sea. We slept in a nice grass house with matting on the side instead of paper. Familiar engravings adorned the walls, and the beds, with their pretty muslin mosquito-curtains, looked inviting enough to the weary traveler.

We saw many kinds of tea-roses with their delicate tints. The garden abounded in a variety of vegetables, and we feasted on strawberries which were hanging on their stems in the morning. Within sight was a fine bluff extending down to the sea."

Krull sold his dairy and ranch lands to sugar planters Capt. James Makee and his son-in-law, Col. Z. S. Spalding, in 1876 for the sum of \$30,000 (\$673,000.00 in today's dollars) — lands that would later become part of Makee Sugar Company and eventually, Lihue Plantation.

Saito and Campbell (1987) processed the document, *Hawaiian Sugar Planter's Association – Plantation Archives* covering the years 1850-1968 providing details of The Lihue Plantation Company history. The table below is a summarized timeline of events from Ernest Krull Sugar Estate to Makee Sugarcane

Table 4. Timeline in chronological order of Ernest Krull Sugar Estate to Makee Sugarcane

Year	Event
1854	Ernest Krull Sugar Estate
1877	Cpt James Makee (from Ulupalakua), King Kalakaua, & others, purchased Ernest Krull sugar estate.
1877	May 1 st , Makee Sugar Co. signs 30-year Crown land Lease for Kapa'a/Anahola lands. \$600/year, extended to July 1, 1913 (Biennial report of Crown Land Commissioners Table F. Rent Roll, p75).
1877-8	Col Spalding (Cpt Makee's son) purchases land & erects mill at Kealia.
1878	Makee died & his son Col. Z.S. Spalding purchased majority interest & took over Makee Sugar Co. mgmt..
1880	190 men employed on Kapaa plantation, ~1500 tons (estimated) sugar crop. Annual fuel consumption 244 tons coal & 250 cords of firewood. <i>Lihue Plantation Co. Ltd., p.5</i>
1885	Col. Splading dismantled Kapa'a mill & moves it to Kealia & combines two factories (Kealia & Kapaa or Makee & Kealia).
1887	Up to 1887 W.G. Irwin & Co. were agents for Makee Sugar.

1887	C.Brewer & Co. Ltd agents for Makee Sugar.
1889	Makee Sugar - 1,030 workers producing 5000 tons of sugar/year. Confirmed irrigation ditches brining mountain wai to plantation.
1904	H. Hackfield Agents for Makee sugar.
1909	Hackfield became American Factors (now American Factors) agents of Makee Sugar.
1910	Lihue Plantation purchases controlling interest in Makee Sugar Co.
1916	Lihue Plantation & W.F. Sanborn purchased 6,000-acre Princeville Plantation
1922	American Factors (successor co. of H. Hackfield & Co.) acquired control of Lihue Plantation Co. by purchasing 3,026 shares of its stock.
1933	Lihue Plantation Company sole owners of Makee Sugar Co. & plantations merged.
1934	Kealia mill (Makee Sugar Co.) dismantled and combined with Lihue factory. Prior to merger with Lihue Makee Sugar Co. managers: Col. Spalding and Messrs. Fairchild, Blaisdell, Wilcox and Wolters.

In 1877-1878 the Kealia Mill was erected. According to a Kaua'i Historical Society finding aid (re-write) of the Lihue Plantation Co. Ltd.:

Col. Spalding dismantled the Kapaa mill and moved it to Kealia, where he combined the two factories. Shortly thereafter, Col. Spalding changed to the diffusion process of sugar manufacture. To keep the process continually fed with cane, Makee Sugar Co. instituted the first night manufacture in Hawaii. The factory was outfitted with electric lights and even the fields were lighted for night harvesting, which enabled the new plant to handle 400 tons of sugar every 24 hours."

In 1900, the diffusion plant was changed back to the maceration process and in ten years, a modern nine roller mill was in operation. Power for the mill was generated by burning bagasse as well as hydroelectrically from mountain streams and the company had its own ice plant. Approximately 2000 acres of cane were harvested in 1914 producing 10,660 tons of sugar. [KHS finding aid (re-write) Lihue Plantation Co. Ltd.]



Figure 11. No date, Pineapple Fields in Moloa'a looking towards Anahola (Kaua'i Historical Society)

PREVIOUS ARCHAEOLOGICAL STUDIES

PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE PROJECT AREA

No previous archaeological studies are associated with the project area.

PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE PROJECT AREA VICINITY

Bennett 1931

The archaeological investigation most relevant to the present project site is Wendall Bennet's survey of Kaua'i completed during the early 20th century. Of Bennet's five sites in the Anahola area, only Aikanaka Heiau, as located and described by Bennett, is in any proximity to the present project site. Bennet describes the heiau as:

Site 113: Aikanaka Heiau, at Anahola point near the end of the bluff on the south side of the bay. Described by Thrum as "a small heiau, about 40 feet in size. All destroyed." One large rock marks the spot of the heiau in the cane field. [Bennet 1931:129]

Rechtman & Dougherty 2001

At the request of Mr. Clyde Kodani of Kodani and Associates on behalf of their client, the Department of Hawaiian Homelands (DHHL), Rechtman Consulting conducted an archaeological inventory survey of TMK: 4-8-03:05 and 4-8-03:por.16 comprising approximately 38 acres located in Anahola Ahupua'a, Kawaihau District, Island of Kaua'i. DHHL planned to develop a roughly 3-acre housing subdivision (11 lots) along Anahola Blvd at the extreme western portion of the project area. The remaining 35 acres was left as pastureland. The objective of the survey was to record the locations of all archaeological sites and features that might be present within the study area and to provide preliminary significance evaluations for any recorded sites. No surface features or surface manifestations of cultural deposits were observed during the reconnaissance.

Hammatt 2005

At the request of PBR Hawai'i, Cultural Surveys Hawai'i completed a letter report on archaeological concerns for the Anahola Residence Lots, Unit 6 Anahola Ahupuaa, Koolau District, Island of Kauai [TMK (4) 4-8-003: Por. 3, 19, & 21]. Procedures undertaken for this letter report include brief review of historic documentation and previous archaeological investigation of Anahola Ahupua'a and a field inspection of the project site. Though there was no evidence of surface historic properties within the project area, Aikanaka Heiau which was recorded by Bennett as being destroyed and site marked by a large boulder lies 2000 feet north of the project area at Anahola Point.

Despite extensive efforts, Nohopapa Hawai'i, LLC was unable to procure the Ota 1985, Taniguchi 1996, McGerty and Spear 1999 and Dye 2012 archaeological studies absent from the State Historic

Preservation Division and referenced in other archaeological reports. Information from the Ota 1985, Taniguchi 1996, McGerty and Spear 1999 and Dye 2012 archaeological studies included in the table below is taken from (Cordy et al. 2020: 59-60).

Table 5. Previous Archaeological Studies in the Project Area Vicinity

Reference	Type of Study	Location	Results
Bennett 1931	Archaeological survey	End of the bluff on the south side of the bay.	Aikanaka Heiau at Anahola Point, noted as destroyed.
Ota 1985	Archaeological Reconnaissance survey	Anahola Ahupua'a TMK (4) 4-9-010: 1, 2, 3 & 5; & 4-8-various	No evidence of these heiau was found, confirming their reported destruction
Taniguchi 1996	Site inspection	Anahola Ahupua'a TMK (4) 4-8-018:024	Site #115 (remnants of Kuhua Heiau)
McGerty and Spear 1999	Archaeological inventory survey	Anahola Beach Park, Kawaihau, Kauai, Hawaii (TMK 4-8-14:6)	N/A
Rechtman & Dougherty 2001	AIS of 38 acres; included backhoe trenching	Approximately 38 Acres, Department of Hawaiian Homelands (TMK: 4-4-8-03:05, por. 16) Anahola Ahupuaa Kawaihau District Island of Kauai	Site #877 (pre-Contact agricultural soil layer in subsurface context); no surface (above-ground) historic properties were identified
Hammatt 2005	Archaeological Letter Report	Anahola Residence Lots, Unit 6, Anahola Ahupuaa, Koolau District, Island of Kauai [TMK (4) 4-8-003: Por. 3, 19, & 21]	No historic properties or cultural materials were identified.
Dye 2012	Archaeological inventory survey	Kumu Youth Academy at Site 50-30-08-116 Anahola Ahupuaa, Kawaihau District, Kauai Island	N/A



BACKGROUND SUMMARY AND PREDICTIVE MODEL

No previous archaeological studies have occurred within the project area. Based on all available background research evidence, the project area has been completely transformed by mechanized plantation agriculture: both sugar cane and pineapple operations took place during the Historic period, and well into the middle-late twentieth century. Previous archaeological studies indicate there are unlikely to be any undisturbed ground surfaces or subsurface deposits dating from the pre-Contact or historical eras in the project area. One indication of this comprehensive transformation of the entire landscape is the near-complete absence of any rocks on the ground surface: clearing and removal of rocks was one of the first tasks that would have been carried out by plantation workers in order to maximize planting and harvesting activities, while also gathering raw material for building and construction projects (e.g., irrigation ditches, sluice gates and culverts). According to Hammatt (2005:2) Aikanaka Heiau which was recorded by Bennett as being destroyed and site marked by a large boulder lies approximately 2000 feet north of the project area. Extensive land alteration and agricultural use, combined with a dearth of historic properties in the project area vicinity indicate there are no surface historic properties in the project area and a very low likelihood for subsurface historic properties in the project area.



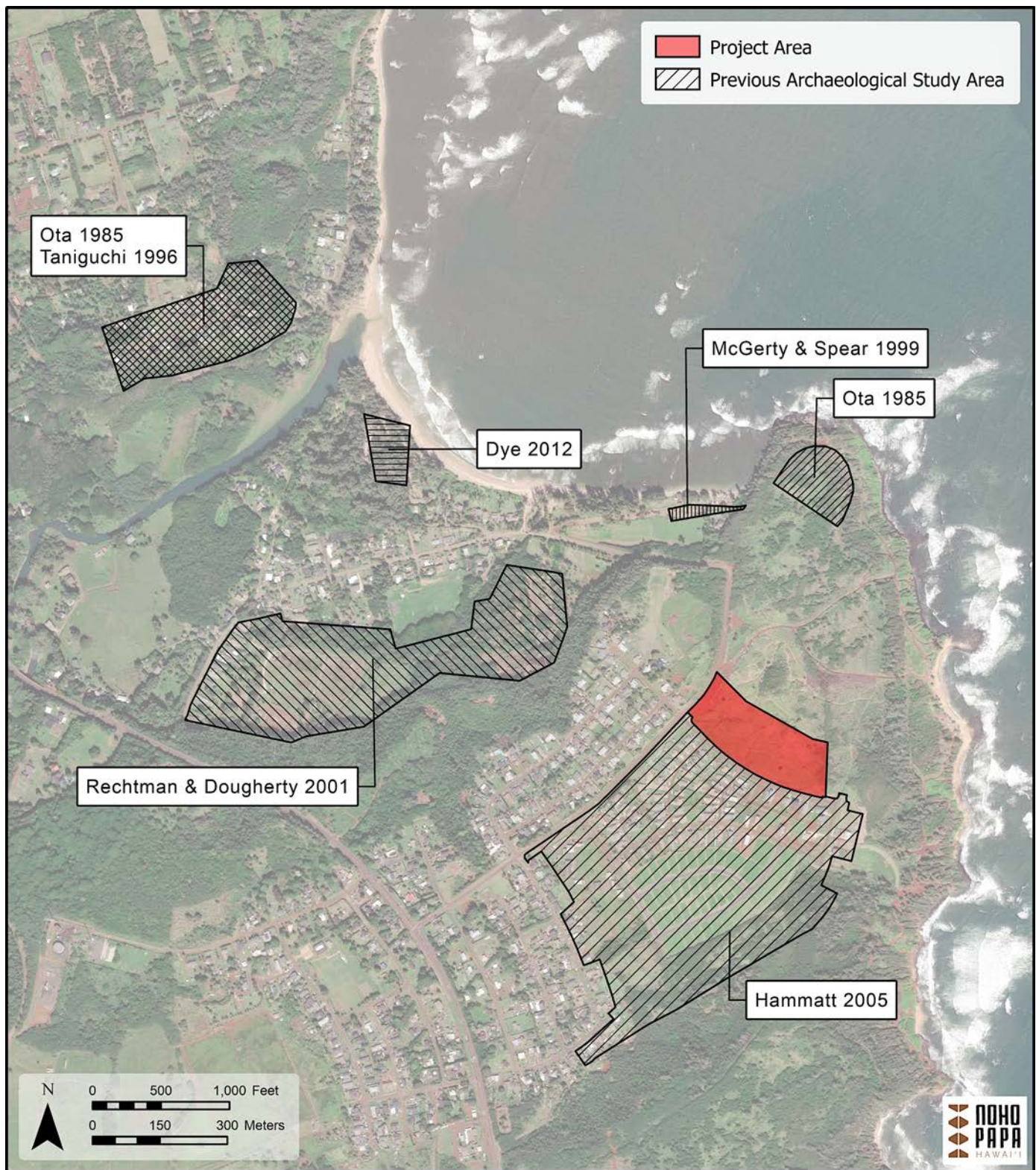


Figure 12. Previous archaeological studies in the project area vicinity.

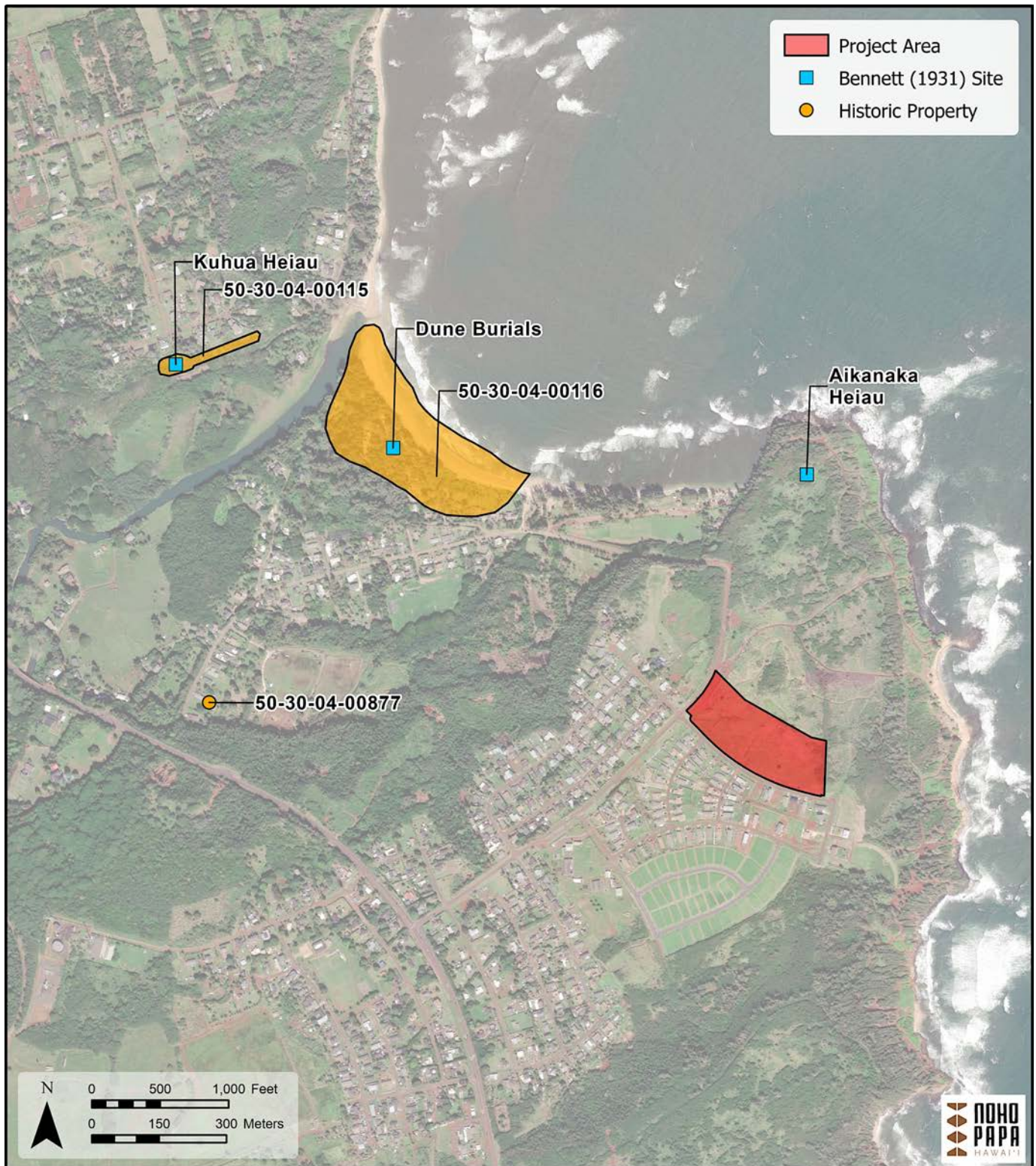


Figure 13. Previous archaeological historic properties in project area vicinity.

FIELD INSPECTION RESULTS

Nohopapa Hawai'i, LLC completed the fieldwork component of this study under archaeological permit 18-22, issued by the SHPD pursuant to HAR §13-13-282. Field survey consisted of a surface pedestrian survey to assess if historic properties were located within or in the immediate vicinity of the project area, and if present if they might be impacted by the proposed project.

The Field survey was conducted on the pō mahina (moon phase) Kūpau, on March 8, 2022, by Nohopapa field crew, Lilia Merrin, M.A. and Dominique Cordy M.A. under the general supervision of Principal Investigator, Kelley Uyeoka, M.A. Field survey required two field technicians one 8-hour workday to complete. A pedestrian field inspection of 95% of the project area was performed.

Two field crew members used approximately ~20 foot transsects starting from the Northern Makai edge of the property. Due to thick tall grass and some trees the remaining 5% of the project area was visually inspected from close proximity and 100% photo documented in order to record current conditions and assess the presence of historic properties. Open subsurface excavations for irrigation ditches were inspected and documented during the field inspection and a uniform, singular sedimentary deposit typical of sugar cane cultivation noted (Figure 22-23). No historic properties were identified.



Figure 14. Looking S218 degrees. Near the corner of the property showing dryland kalo in the foreground with about 7 rows near one area cleared to start planting.

FIELD INSPECTION RESULTS

At the time of the field inspection, approximately two thirds of project area were cleared and mowed and the other third was covered tall thick guinea grass. The project area included mowed and cleared areas, a long dirt mound/fire break, remnants of an old ditch, new trenches, some planting areas and water tank and a culvert.

Starting from the northern makai corder/edge of the property heading east, facing makai a piles of cars remain outside the fence line and within the fence line, guinea grass grows throughout. These first transacts on the northern end are clear and flat land with lots of tall guinea grass. Remenants of trash are scattered throughout the grass but no rock or features found.



Figure 15. Makai edge of the property (N 52 degrees)



Figure 16. Looking at the fence line showing an abandoned car outside of the property.



Figure 17. Showing rubbished remanants scattered throughout the brush.

Points were taken throughout the property to help document and describe the areas traversed (Figure #). ANA 1 is a point taken from inside ditch 1. From ANA 1 (in the ditch) alignment goes from 42 degrees makai to 208 degrees makua. The dirt was soft and looks like it was machine made. Could possibly be plantation or more modern day drainage. Continuing makai past the property boundires is a deanse koa haole thicket. According to the Uncle who once drove trucks for during the time of sugarcane and (now) today mows and takes care of the property, he shared that the area was tilled 3 to 4 feet throughout.



Figure 18. In ditch 1 facing mauka showing rubbish and height of grass.



Figure 19. In ditch 1 facing makai showing soft red exposed dirt and dumped car outside of the property fenceline.

The terrain of property slopes slightly downward. On the eastern boundry or north end there is a possible swale or ditch. But still heavy soil impact from sugar/ pineapple opperations. No pohaku were observed in this area. However, near ANA 1, looking mauka from this point, a group of juvinile Nene were resting. The only inaccessible portion of the project area was the thick brush in the center of the property. The entire project area has been heavily impacted by pineapple and sugar.



Figure 20. Near ANA 1, showing Nēnē resting, North 33 degrees.

ANA 2 is a point taken at 271 degrees NW near the northeast corner of the property. In this area some scatter uhaloa was observed growing area. Looking north-west out to Kalalea most of this area is cleared. Facing East, tall grass slopes goes down to the boarder of the property which slopes down the the fenceline. Vegetation was invasive scrub christmas berry and Jamecias vervain. ANA 3 is a point taken at near the water tanks and dry lo'i patch on the more mauka south eastern corner of the property.



Figure 21. Near ANA 3, showing water tank and dryland kalo plantings, NW 360 degrees.



Figure 22. ANA 4 point at profile. End photo shows Lilia makai end of short trench with north east corner at the left.



Figure 23. Subsurface measurement of the trench, showing depth of the trench.



Figure 24. Dominique taking GPS point at FB 2



Figure 25. Dominique at with recently dig ditch marking eastern mauka corner of the property.

ANA 5 point was taken at the boulders above ditch 2. Ditch 2 is approximately 4 feet deep and 6-10 feet wide. There is more of an opening near the fence line looking makai. There is also a cold patch looking makai. ANA 6 was taken near what is being called ditch 2. ANA 7 point was taken in ditch 1 where the swale is coming off the south west corner. Looking South 210 degrees, the culvert appears modified and in continuous use. The culvert is approximately 3-4 feet in diameter.



Figure 26. Showing interscetion of the culvert, waste ditch and swale.



Figure 27. Showing ditch leading up the the culvert facing S 210 degrees.

The only potential historic property present is a culvert, which connects ditch 1 and the swale. However, when looking at the material of culvert made of plastic and considering when the housing developed across the street, it is likely that this culvert is newer. It is our conclusion that the current project, as proposed, will have no impact and no significant effect to any historic properties.



Figure 28. Showing the culvert



Figure 29. Atop the culvert looking down and makai.

Per Uncle Tony who is a care taker of the area, in the early 2000s an area was bullozed to create a fire break. FB 1 and FB 2 are the the points that mark each end of the dirt firebreak. The ast big fire was in 2000.

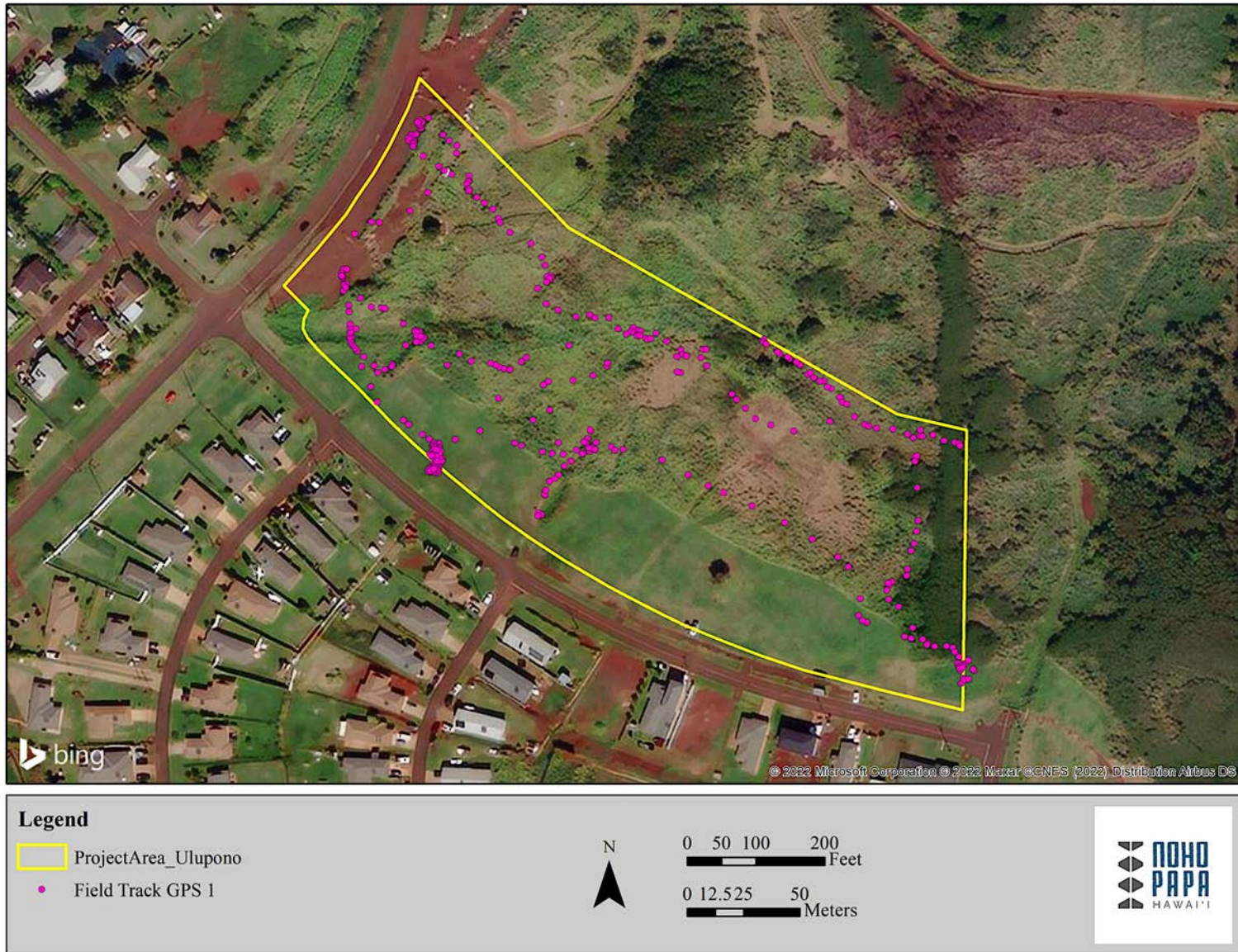


Figure 26. Field results, showing aerial imagery with of one the field crew members GPS tracking points overlain using 20 ft transects.

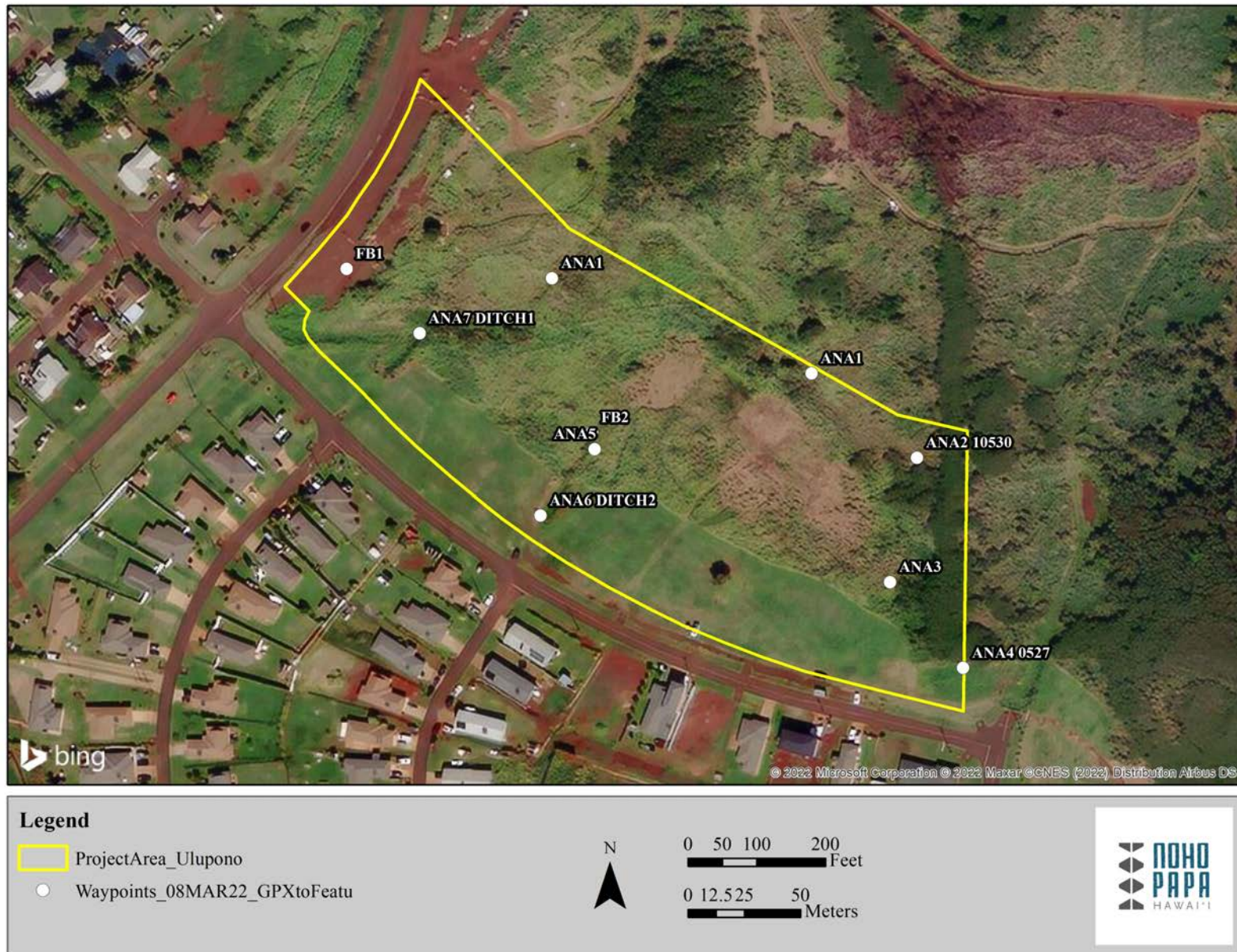


Figure 26. Field results, Aerial imagery showing field crew GPS points

CONCLUSION & RECOMMENDATIONS

Evidence of land use and settlement patterns in the project area and vicinity located during background research and the field inspection performed for this study evince that the project area has been completely transformed by grading, grubbing, and intensive mechanized plantation agriculture: both sugar cane and pineapple operations took place during the early historical era through the late twentieth century, and bulldozing occurred in the early 2000s in the project area to create a firebreak. Open subsurface excavations for irrigation ditches were inspected and documented during the field inspection and a uniform, singular sedimentary deposit typical of sugar cane cultivation was noted.

While no archaeological studies have occurred within the project area, background research paired with archaeological studies immediately adjacent to the project area indicate there are unlikely to be any undisturbed subsurface deposits dating from pre-Contact ("prehistoric") times through historical eras in the project area.

Background research and the field inspection for this study yielded no historic properties present in the project area. Based on material, condition, and location, the culvert located during the field inspection that connects Ditch 1 with the swale is not a historic property and likely associated with the housing development across the street from the project area, constructed in the late 1990s/early 2000s.

According to Hammatt (2005:2) Aikanaka Heiau, recorded by Bennett as destroyed and marked by a large boulder, is located 2000 feet north of the project area. As Aikanaka Heiau lies outside the boundaries of the current project area, no efforts were made to relocate or document it.

Background research, combined with the field inspection performed for this study indicate there is a low likelihood for subsurface historic properties in the project area due to over a century of intensive mechanized agriculture and other modern land-altering activities occurring in the project area and vicinity. No surface historic properties are present in the project area. This study therefore concludes the proposed project poses no effects to historic properties and no additional historic preservation next steps are recommended.

Per Hawai'i Revised Statutes (HRS) 6E, "Historic Preservation" and Hawai'i Administrative Rules Title 13 Subtitle 13 Chapter 300, "Rules of Practice and Procedure Relating to Burial Sites and Human Remains" it is important to note that the project proponent is legally obligated to stop work immediately and report to SHPD any historic properties, including iwi kūpuna (Native Hawaiian ancestral remains) and human remains from other ethnic groups, located during construction/ground disturbing activities associated with the proposed project.

REFERENCES

Akana Collette and Kiele Gonzales

2015 *Hānau ka Ua*. Kamehameha Schools Publishing, Honolulu.

Andrew, Lorin

1865 *Dictionary of the Hawaiian Language, to Which Is Appended an English-Hawaiian Vocabulary and a Chronological Table of Remarkable Events*. Honolulu: H.M. Whitney.

1922 *A Dictionary of the Hawaiian Language: Revised by Henry H. Parker*. Honolulu: Board of Commissioners of Public Archives of the Territory of Hawai'i.

Beckwith, Martha Warren

1976 *Hawaiian Mythology*. Honolulu: University of Hawai'i Press.

Bennett, Wendall Clark

1931 *Archaeology of Kaua'i*. Bishop Museum Bulletin 80. Bishop Museum Press, Honolulu.

Boundary Commission. Kingdom of Hawaii (ms in Hawaii State Archives.)

Carson, Mike T.

2005 Ko'olau District. *Na Mea Kahiko o Kaua'i: Archaeological Studies in Kaua'i*. Publication No. 2 Society for Hawaiian Archaeology, Honolulu.

Clark, Matthew R., Ashton K. Dircks Ah Sam, Lauren M.U. Kapa'a and Robert B. Rechtman

2014 *An Archaeological Inventory Survey of the Lālāmilo Wind Farm Repowering Project, TMKs: (3) 6-6-01:002 (por.), 071, and (3) 6-8-01:001 (por.), Lālāmilo and Waikōloa ahupua'a, South Kohala District, Island of Hawai'i*. Prepared for Lālāmilo Wind Company, LLC.

Cordy, Dominique, Lilia Merrin, Devin Kamealoha Forrest

2020 *Anahola i ke Au Holo, A Cultural Impact Assessment for DHHL's Anahola Kuleana Homestead Tract, Kamalomalo'o Ahupua'a, Puna Moku and Anahola Ahupua'a, Ko'olau Moku, Kaua'i Mokupuni* TMKs (4) 4-7-002:004, (4) 4-8-002:001, and 4-8-003:006

Dixon Boyd, Patty J. Conte, Valerie Curtis, and W. Koa Hodgins

2005 *A Late Pre-Contact Domestic Habitation Area and Garden in Anahola Ahupua'a, Ko'olau District Kaua'i. Na Mea Kahiko o Kaua'i: Archaeological Studies in Kaua'i*. Publication No. 2 Society for Hawaiian Archaeology, Honolulu.

Elbert, Samuel H.

1959 *Selections from Fornander's Hawaiian Antiquities and Folk-lore*. Honolulu: University of Hawai'i Press.

Elbert, Samuel H., and Noelani Mahoe

1970 *Nā Mele O Hawai'i Nei: 101 Hawaiian Songs*. Honolulu: University of Hawai'i Press.

Elbert, Samuel H., and Mary Kawena Pukui

1971 *Glossary of Hawaiian Gods, Demigods, Family Gods, and a Few Heroes*. Hawaiian Dictionary: Hawaiian-English, English-Hawaiian. Honolulu: University of Hawai'i Press.

1986 *Hawaiian-English Dictionary*. Honolulu: University of Hawai'i Press.

Emerson, Nathaniel Bright

1998 *Unwritten Literature of Hawaii: The Sacred Songs of the Hula*. Honolulu: Mutual Publishing.

2005 *Pele and Hi'iaka: A Myth from Hawai'i*. Revised ed. Hilo: Edith Kanaka'ole Foundation.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham, and Thomas G. Thrum

1919 *Fornander's Collection of Hawaiian Antiquities and Folk-lore: The Hawaiian Account of the Formation of Their Islands and Origin of Their Race, with the Traditions of Their Migrations, etc.* Honolulu: Bishop Museum Press.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte

2013 Online Rainfall Atlas of Hawai'i. *Bulletin of the American Meteorological Society* volume 94, pp. 313-316, doi: 10.1175/BAMS-D-11-00228.1. Electronic document, <http://rainfall.geography.hawaii.edu> (accessed 10 April 2014).

Handy, E.S. Craighill, Elizabeth Green Handy, Mary Kawena Pukui

1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Press, Honolulu.

Handy, E.S. Craighill, and Mary Kawena Pukui

1998 *The Polynesian Family System of Ka'u, Hawai'i*. Honolulu: Mutual Publishing.

Hawai'i Administrative Rules (HAR) Title 13 Subtitle 13 Chapter 300

1996 Rules of Practice and Procedure Relating to Burial Sites and Human Remains. Department of Land and Natural Resources, Historic Preservation Division. Online resource. <https://files.hawaii.gov/dlnr/shpd/rules/300.pdf>. Accessed 5-3-22.

Hawai'i Revised Statutes (HRS) Chapter 6E

1976 Chapter 6E Historic Preservation. Department of Land and Natural Resources, Historic Preservation Division. Online resource <https://dlnr.hawaii.gov/shpd/files/2015/06/HRS-6E.pdf>. Accessed 5-03-22.

Īi, John Papa

1959 *Fragments of Hawaiian History*. Honolulu: Bishop Museum Press.

Indices of Awards

1929 *Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Star-Bulletin Press, Honolulu.

Kamakau, Samuel Manaiakalani

1870 No Ke Kaua a Umi-a-Liloa me na Lii o Hawaii. Ke Au 'Ōko'a [Honolulu]. 1 December, 1870: 1. www.nupepe.org.

1961 *Ruling Chiefs of Hawai'i*. Revised Edition. Kamehameha Schools Press, Honolulu.

1992 *Ruling Chiefs of Hawai'i*. Honolulu: Kamehameha Schools Press.

1996 *Ke Kumu Aupuni: Ka Mo'olelo Hawai'i no Kamehameha Ka Na'i Aupuni a Me Kāna Aupuni I Ho'okumu Ai*. Honolulu: 'Ahanui 'Ōlelo Hawai'i.

Kamakau, Samuel Manaiakalani, Dorothy B. Barrère, and Mary Kawena Pukui

1991 *Ka Poe Kahiko, The People of Old*. Honolulu: Bishop Museum Press.

2010 *Tales and Traditions of the People of Old*. Honolulu: Bishop Museum Press.

Kanahele, Pualani Kanaka'ole

2003 *Native Hawaiian Environment, Wao Akua: Sacred Source of Life*. Division of Forestry and Wildlife, Department of Land and Natural Resources, Honolulu, Hawai'i.

2011 *Ka Honua Ola: 'Eli'eli Kau Mai, The Living Earth: Descend, Deepen the Revelation*.

Krauss, Beatrice H.

1993 *Plants in Hawaiian Culture*. University of Hawai'i Press, Honolulu

Kame'eiehiwewa, Lilikalā

1992 *Native Land Forgien Desires, Pehea lā e Pono ai?*. P. Bishop Museum Press, Honolulu.

Land Commission. Kingdom of Hawaii (ms in Hawaii State Archives.)

n.d. *Awards Book*

n.d. *Native Testimony*

n.d. *Native Register*

Lihue Plantation Company

1987 "Hawaiian Sugar Planters' Association, Plantation Archives, Register of the Lihue Plantation Company, Lihue, Kauai, 1850–1968." Ms, Accession # 84-06 (Processed by Deborah Saito & Susan Campbell). Kaua'i Historical Society, Līhu'e, Hawai'i.

Mahele Book

1848 *Buke Kakau Paa no ka mahele aina i hooholoia iwaena o Kamehameha 3 a me Na Lii a me Na Konohiki ana*. Hale Alii Honolulu. Ianuari 1848. [He kope 1868.] ms in Hawaii State Archives.

Malo, David

1951 *Hawaiian Antiquities*. Honolulu: Bishop Museum Press..

- 1997 *Hawaiian Antiquities, Mo'olelo Hawai'i*. Translated from the Hawaiian by Dr. Nathaniel B. Emerson 1898. Second ed. 1951. 7th reprint 1997. Bishop Museum Press. Honolulu.

McGregor, Davianna Pōmaika'i

- 2007 *Nā Kua'āina: Living Hawaiian Culture*. Honolulu: University of Hawai'i Press.

Monahan, Christopher, Dominique Cordy, Lyle Auld, Kaile Luga, Momi Wheeler, Kekuewa Kikilo

- 2018 Archaeological Reconnaissance Survey of an Approximately 467-Acre Project Area Anahola & Kamalomalo'o Ahupua'a Kawaihau (Ko'olau/Puna) Moku, Kaua'i TMK (4) 4-7-002:004 (por.), 4-8-002:001 (por.) & 4-8-003:006 (por.) Nohopapa, Hawai'i.

Andrew, Lorrin

- 1922 *A Dictionary of the Hawaiian Language* (Revised by Henry H. Parker). Board of Commissioners of Public Archives, Honolulu.

Pukui, Mary Kawena

- 1983 *Ōlelo No'ēau: Hawaiian Proverbs & Poetical Sayings*. Honolulu: Bishop Museum Press.
1995 *Nā Mele Welo: Songs of Our Heritage*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, and Caroline Curtis

- 2010 *Hawai'i Island Legends Pīkoi, Pele, and Others*. Honolulu: Kamehameha Schools Press.

Pukui, Mary Kawena, and Laura S. Green

- 1995 *Folktales of Hawai'i: He Mau Ka'ao Hawai'i*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, E.W. Haertig, Catherine A. Lee

- 1972 *Nānā I Ke Kumu: Look to the Source. Vol.1*. Hui Hānai. Honolulu, Hawai'i.
1972 *Nānā I Ke Kumu: Look to the Source Vol.2*. Hui Hānai. Honolulu, Hawai'i.

Pukui, Mary Kawena, Samuel H. Elbert

- 1986 *Hawaiian-English Dictionary*. Honolulu: University of Hawaii Press.
1983 *Ōlelo No'ēau: Hawaiian Proverbs & Poetical Sayings*. Honolulu: Bishop Museum Press.

Pukui, Mary Kawena, Samuel H. Elbert, and Esther T. Mookini

- 1974 *Place Names of Hawaii*. Honolulu: University of Hawaii Press.
1949 "Songs (Meles) of Old Ka'u, Hawai'i." *Journal of American Folklore*: Vol. 62, No. 245.

Soehren, Lloyd J.

- 2002 *A Catalog of Hawaiian Place Names. Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaii*. Collected and annotated by Lloyd J. Soehren. Ulukau Digital Library (<http://ulukau.org/cgi-bin/hpn>).



U.S. Department of Agriculture

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas.
<http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/> (accessed March 2005).

United States Geological Survey.

n.d. Board on Geographic Names, Geographic Names Information System. various dates
Topographic maps of the Islands of Niihau, Kauai, Oahu, Molokai, Lanai, Maui, Hawaii. 1:24,000, 7.5 minute series.

Westervelt, William D.

1998 *Hawaiian Legends of Ghosts and Ghost Gods*. Honolulu: Mutual Publishing.

1999 *Hawaiian Legends of Volcanoes*. Boston: G.H. Ellis Press

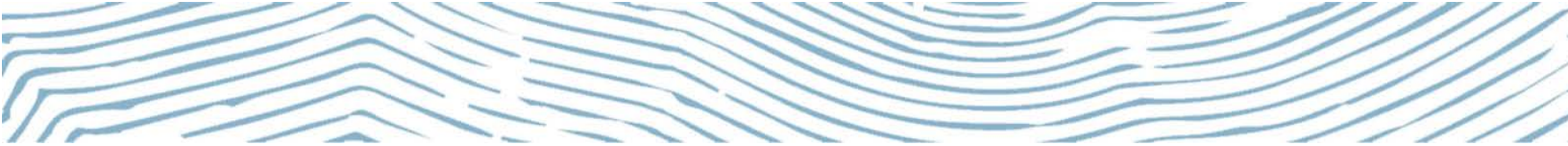
Wichman, Fredrick B

1985 *Kaua'i Tales*. Bamboo Ridge Press, Honolulu.

1997 *More Kaua'i Tales*. Bamboo Ridge Press, Honolulu.

1998 *Kaua'i: Ancient Place Names and Their Stories*. University of Hawai'i Press, Honolulu.







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Appendix D

Transportation Impact Analysis Report

KKOA Ulupono Anahola

Transportation Impact Analysis Report

Prepared for:
G70

March 25, 2022

SD21-0429

FEHR  PEERS

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1. Executive Summary

This report documents the transportation impacts associated with the proposed Kukulu Kumuhana o Anahola (KKOA) Ulupono Anahola (the Project) development to be located on the east side of Kukuihale Road and makai of Pilipoli Road in the Anahola community on the island of Kauai.

The proposed project is the redevelopment of TMK (4) 4-8-003:019, of which the parcel in full is comprised of 50 acres. The project would utilize about 10 acres of this parcel in the area adjacent to the Kukuihale Road/Pilipoli Road intersection. The proposed development includes an agricultural education and youth training center that is expected to be complete and fully operational by

Vehicular access to the site will be provided via a full access driveway on Kukuihale Road makai of Pilipoli Road serving a 35-space off-street gravel parking lot. For a limited number of special events including summer intersessions and sports camps, an additional grass area located along Pilipoli Road could accommodate up to 230 vehicles.

The impacts of the proposed project to mobility and access surrounding the project site were evaluated following guidelines and standards of the affected government agencies. A multimodal evaluation of mobility effects from the project was conducted to determine potential impacts to walking, biking, transit, and traffic operations. Two study intersections in the vicinity of the project were evaluated during the weekday morning (AM) and evening (PM) peak hours for Existing conditions, Future Year (2026) No Project conditions, and Future Year (2026) Plus Project conditions.

Trip generation for the facility was estimated based on the proposed operations schedule and expected occupancy levels provided by G70. Anticipated activities include community garden visitors, education and cultural programs occurring Monday through Friday throughout the year. These regularly scheduled activities are expected to generate a total of fewer than 20 peak hour trips during each of the AM and PM peak hours. During the summer months, additional education and recreation activities are anticipated including a summer intersession education program and a sports camp. For June and July only, these additional activities will increase typical weekday trip generation by approximately 80 trips in the AM peak hour Monday through Friday, and roughly 30 trips during the Wednesday PM peak hour only.

The mobility analysis determined that the project will have no significant impacts to any roadways, intersections, pedestrian facilities, bicycle facilities, and transit facilities. The only recommendations regarding transportation are to: 1) coordinate with the State of Hawaii Department of Transportation to stripe two new crosswalks at the Kuhio Highway/Kukuihale Road intersection to guide pedestrians to the east side of Kukuihale Road (with a more clear pedestrian path), and 2) grade the roadway shoulders fronting the site on Kukuihale and Pilipoli Roads to provide a clear and level walking path.



2. Introduction

The transportation impact analysis (TIA) presents the study conducted by Fehr & Peers for the proposed KKO A Ulupono Anahola development at the southwest corner of Kukuihale Road and Pilipoli Road in the Anahola community of Kauai. This TIA was conducted in accordance with the guidelines and standards of the affected government agencies and addresses the potential impact of the project on all modes of travel. The project site encompasses 10 acres on tax map parcel TMK (4) 4-8-003:019.

The location and vicinity of the project site are shown on **Figure 1**.

2.1 Project Description

The proposed project is redevelopment of tax map parcel TMK (4) 4-8-003:019, which in full is comprised of 50 acres. The project would utilize about 10 acres of this parcel (located at the Kukuihale Road/Pilipoli Road intersection) to provide opportunities to local youth in building life skills and creating opportunities for area youth to reconnect to their ancestral identity through an agricultural and youth training center. The concept plan includes community gardens as well as food storage and processing areas. Occupancy for normal weekday programming is expected to range from approximately eight (8) people using the facility to up to 40 people. The project requires an approval by the Hawaiian Homes Commission for a five-year lease agreement and therefore an environmental assessment (EA) will be required.

Vehicular access to the site is proposed via a full access driveway on Kukuihale Road that will include 35 parking spaces in a gravel lot designed to serve regular daily users. An additional grass area along Pilipoli Road could accommodate up to 230 additional vehicles during special events. The project site plan is shown on **Figure 2**.

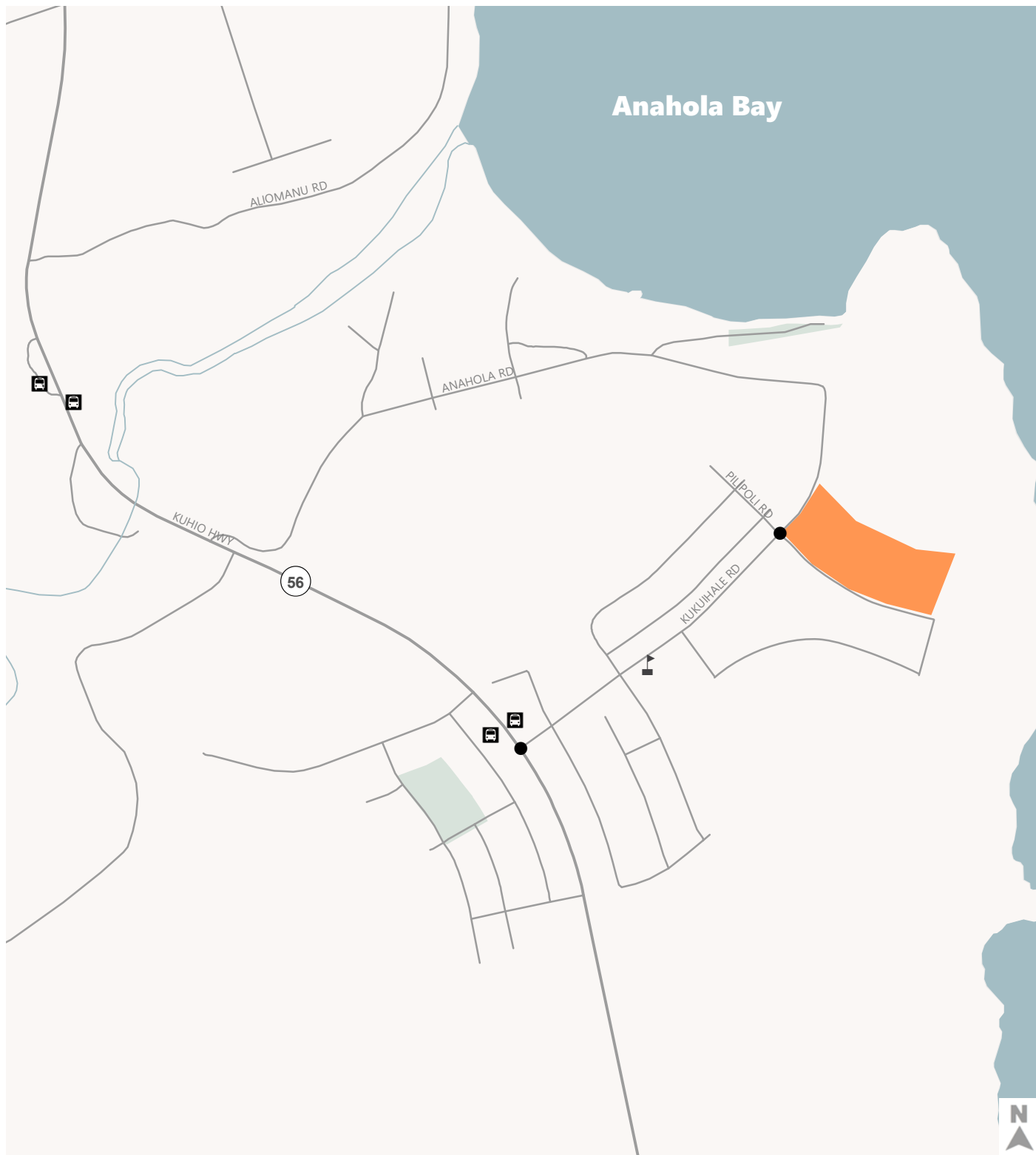
2.2 Study Area

The following analysis focused on evaluating the potential project-related transportation impacts at two existing intersections in the vicinity of the proposed project shown on **Figure 1**:

1. Kukuihale Road/Kuhio Highway
2. Kukuihale Road/Pilipoli Road

This study analyzes the potential project-related traffic impacts under typical weekday AM and PM peak hour traffic conditions. The AM and PM peak hour for each intersection are identified as the highest one-hour totals of traffic at each intersection from 6:00 AM to 9:00 AM and from 3:00 to 6:00 PM on a weekday.





Legend









- | | | | | | |
|---|-------|---|----------|---|---------------------|
|  | Roads |  | Bus Stop |  | Study Intersections |
|  | Parks |  | School |  | Project Site |

Figure 1

Vicinity Map



Figure 2

2.3 Study Scenarios

The operations of the study intersections were evaluated during the weekday AM and PM peak hours for the following scenarios:

- **Existing Conditions** – Operations based on existing traffic counts collected in March 2022.
- **Future Year (2026) No Project Conditions** – Operations calculated for existing existing peak-hour volumes increased by an annual growth factor of 2.5% per year to account for background traffic growth by completion of the project in 2026.
- **Future Year (2026) Plus Project Conditions** – This study scenario includes traffic volumes under previous scenario plus the addition of project-generated traffic.

2.4 Analysis Methodology

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual 6th Edition* (HCM 6), published by the Transportation Research Board in 2016, and integrated in the SYNCHRO 11 software package. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined, from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents “at-capacity” operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

2.4.1 Unsignalized Intersections

The operations of the unsignalized intersections were evaluated using the methodology contained in “Chapter 20: Two-Way Stop-Controlled Intersections” of the *HCM 6*. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At a two-way- or side-street-stop-controlled (SSSC) intersection, the average control delay is calculated for the minor-street stopped movement and the major-street left turns, not for the overall intersection. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For approaches with multiple lanes, the control delay is computed for each movement; the movement with the worst (i.e., longest) delay is presented for SSSC intersections. As shown in **Table 1**, LOS F is assigned to the movement if the volume-to-capacity (V/C) ratio for the movement exceed 1.0, regardless of control delay. The average control delay for unsignalized intersections is shown in **Table 1**.



Table 1: Unsignalized Intersection LOS Definition

Level of Service (V/C ≤ 1.0)	Level of Service (V/C > 1.0) ¹	Description	Delay in Seconds
A	F	Little or no delay	≤ 10.0
B	F	Short traffic delay	> 10.0 to 15.0
C	F	Average traffic delays	> 15.0 to 25.0
D	F	Long traffic delays	> 25.0 to 35.0
E	F	Very long traffic delays	> 35.0 to 50.0
F	F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board, 2016.

Notes:

¹ For approach-based and intersection-wide assessments, such as that used for all-way stop controlled intersections, LOS is defined solely by control delay.

2.4.2 Significant Impact Criteria

The analysis of Future Year conditions compares no-project operations with conditions when the project is fully built out to determine whether project implementation is expected to result in a significant impact on the surrounding roadways. Based on previous studies conducted for the State of Hawaii Department of Transportation Highways Division Planning Branch (HDOT) and the County of Kauai, the minimum desired operating standard is typically LOS D. HDOT and the County both acknowledge that some facilities may operate at worse levels during peak hours. Both agencies typically define a significant intersection impact as when traffic operations change from LOS D or better to LOS E or F. Impacts are also defined to occur when the addition of project traffic exacerbates locations already operating at or projected to operate at LOS E or F. When evaluating intersection operations at any location, other factors are considered in the analysis, such as traffic volumes and potential secondary impacts to pedestrian, bicycle, and transit travel.

Significant impacts are categorized as either a project-specific or cumulative impact. An impact is considered project-specific at a unsignalized intersection if the addition of project traffic is expected to degrade LOS D or better operations to LOS E or F operations. An impact is considered a cumulative impact at a unsignalized intersection if the addition is determined to have a potentially significant cumulative impact when it adds traffic to a study location that includes a controlled approach operating at an undesirable level (i.e., LOS E or F) and one or more volume-based signal warrants are met. The signal warrants used for this evaluation are those described in Chapter 4C of the *Manual of Uniform Control Devices* (MUTCD, 2009), published by the US Department of Transportation Federal Highways Administration (FHWA).

HDOT and the County of Kauai have not approved detailed criteria for significant impacts to pedestrian, bicycle, and transit facilities and services. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit



facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. Existing facilities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of facilities/services currently in place.



3. Existing Conditions

This chapter describes the existing pedestrian, bicycle, and transit facilities, as well as the roadway network located within the project study area. A discussion of the existing intersection LOS operation results is also included in this chapter.

3.1 Existing Roadway System

The key roadways providing vehicular access in the vicinity of the project site are described below. As noted in the previous section, the site is located adjacent to the Kukuihale Road/Pilipoli Road intersection.

Kukuihale Road is a two-lane roadway extending between Kuhio Highway and Mana I Rd and Anahola Beach Park. The posted speed limit is 25 miles per hour (mph). It is one of the primary connections between the Anahola community and Kuhio Highway. All through movements on Kukuihale Road are not controlled by any traffic control devices, while most turning movements onto Kukuihale Road from side streets include stop signs. The intersection at Kuhio Highway includes separate turn lanes on all approaches, as well as a refuge lane for vehicles turning left out of Kukuihale Road onto the highway. The refuge lane allows drivers to wait for a gap in northbound traffic only, and then merging with southbound traffic when it is safe to do so.

Pilipoli Road is a two-lane local roadway extending from Ehukai Road to a dead end (or cul-de-sac) just north of Mahuahua Rd. The posted speed limit is 25 miles per hour. The existing roadway has low vehicular volumes.



Figure 3: Existing Kukuihale Road/Pilipoli Road Intersection

Kuhio Highway is a two-lane highway and is the primary roadway on the north and east shore of Kauai connecting Lihue to Hanalei. The posted speed limit in the vicinity of the Kukuihale Road intersection is 35 mph. Parking is prohibited along the roadway in the study area. A high-visibility crosswalk and rectangular rapid-flashing beacon is provided on the northside of Kuhio Highway.



3.2 Existing Transit Facilities and Services

The project site is a one-half-mile walk to transit stops located on Kuhio Highway just north of the Kukuihale Road intersection. The existing stops include decorative shelters, bicycle racks, and refuse cans and are served by Kauai Bus Route 400, which provides service between Hanalei Neighborhood Center and Lihue and operates from 5:15 AM to 9:15 PM.



Figure 4: Transit Stop on Kuhio Highway

3.3 Existing Pedestrian Activity

No formal or paved sidewalks are provided within the study area. However, residential setbacks and grass shoulders along the roadway serve as informal paths on both sides of most street sections that. A high-visibility crosswalk and pedestrian-activated rectangular rapid flashing beacon (RRFB) exist on the north side of Kukuihale Road to support pedestrian crossings of Kuhio Highway.

Existing pedestrian access from the site to the Kuhio Highway/Kukuihale Road intersection is only viable on the south side of the road where a small shoulder path exists. The frontage at 4474 Kukuihale Road does not have a shoulder area for pedestrians to walk. As a result, any pedestrians on the south side of the road must cross the right turn lane from the highway and the Kukuihale Road approach without a striped crosswalk.

The two study intersections were generally observed to have minimal pedestrian activity. Pedestrian activity increased during morning drop-off at Kanuikapono Public Charter School & Learning Center on Kukuihale Road.





Figure 5: High visibility Crosswalk and RRFB on Kuhio Highway

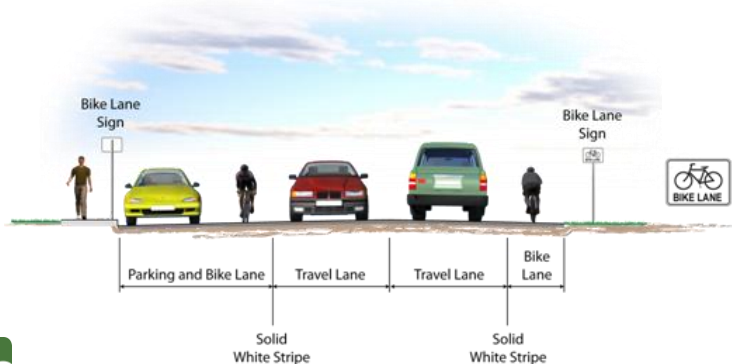
3.4 Existing Bicycle Facilities

Bicycle facilities generally consist of four types of facilities, which are outlined below:

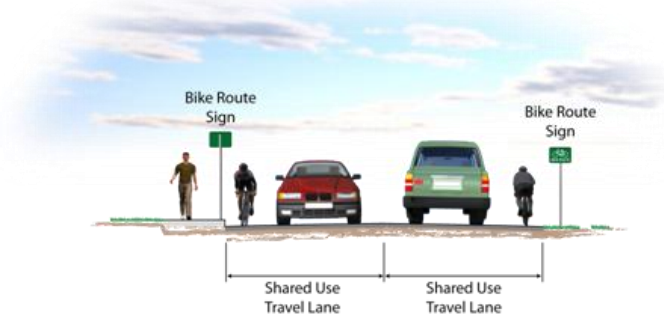
- **Bike or Shared Use Paths** provide a separate right-of-way and are designated for the exclusive use of bicycles and pedestrians (or exclusively bicycles) with vehicle and pedestrian cross-flow minimized. Generally, the recommended pavement width for a two-directional bike or multi-use path is ten (10) feet.



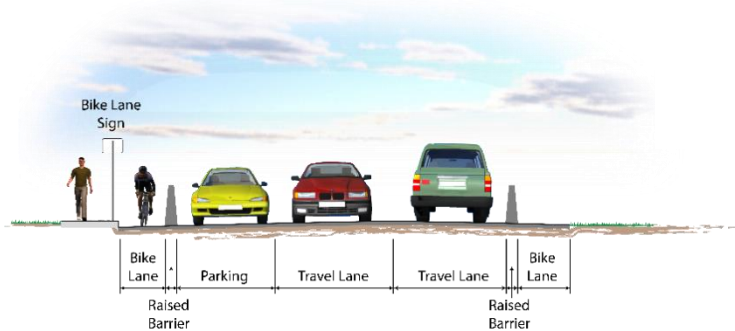
- **Bike Lanes** provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Bike Route or Signed Shared Roadways* provide a right-of-way designated by signs or shared lane pavement markings, or “sharrows,” for shared use with pedestrians or motor vehicles.



- *Separated Bikeways or Cycle Tracks* provide a restricted right-of-way with physical separation and are designated for the use of bicycles in or directly adjacent to a roadway with a raised barrier such as curbs or bollards. Separated bikeways are typically at least five (5) feet wide with a minimum three (3) foot minimum horizontal separation from an adjacent vehicle parking or travel lane (although a two (2) foot median could be used next to a travel lane with lower vehicle speeds). Adjacent vehicle parking is permitted, and vehicle/pedestrian cross-flow is restricted to selected locations (e.g., driveways) indicated by breaks in the barrier and buffer.



No formal bicycle facilities are present in the Anahaola community. Bicycle activity during field observations was very limited in the study area.



3.5 Collision History

A review of previously published State of Hawaii Department of Transportation state highway project data data through 2020 did not show any collisions in the immediate study area. One fatal collision occurred on the highway in the Anahola community in 2019; however, the collision did not occur within the project study area.

3.6 Existing Traffic Volumes, Lane Configurations, and Operations

Existing counts and lane configurations on Kukuihale Road and Kuhio Highway are shown in the graphic below.

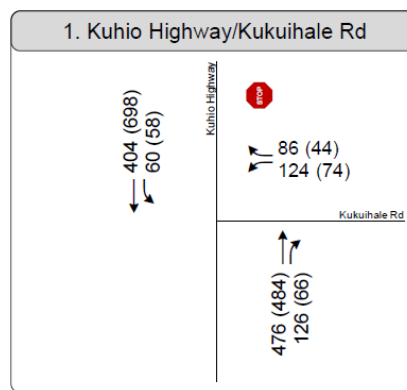


Figure 6: Existing (2022) Peak Hour Traffic Volumes and Lane Configurations

Existing LOS was calculated using SYNCHRO and the data in Figure 6, and the results are presented in **Table 2**. This location operates LOS C in the AM and PM peak hours, respectively, where the reported LOS is for the westbound left-turn movement. All other movements experience little or no delay. The Kukuihale Road and Pilipoli Road intersection was not analyzed due to very low existing weekday peak hour volumes at this intersection.

Table 2: Existing Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Delay (sec/veh) ¹	LOS	Worst Movement (for Side Street Stop)
1. Kukuihale Road/Kuhio Highway	Side Street Stop	AM	17.6	C	WBL
		PM	19.7	C	WBL

Source: Fehr & Peers, 2022.

Notes: ¹ The analysis methodology for side-street stop-controlled intersections reports the vehicular delay for the worst movement (or lane group) on the controlled approach only. No overall intersection delay or LOS is calculated.

3.6.1 Field Observations

The westbound left and right turning movements from Kukuihale Road experience some delay as Kuhio Highway volumes are substantial and movements are free-flow (i.e., uncontrolled). The worst delay



observed occurred during AM observations and included a queue of eight (8) vehicles in the westbound left-turn lane. Vehicles making this movement were delayed for an average of approximately 60 seconds during the busiest time in the AM peak hour, but this occurred for only a short 10- to 15-minute period prior to the beginning of classes at the Kanuikapono Public Charter School & Learning Center. Otherwise, delays were very short (i.e., less than 20 seconds) for turning vehicles.

All vehicles at the Kukuihale Road/Pilipoli Road experienced little or no delay during both the AM and PM peak periods. Visibility of traffic approaching the intersection appears to be sufficient in all directions based on the posted travel speeds and stop-sign control.



4. Project Traffic Volumes

This chapter describes the traffic volumes estimated to be generated by the project site once it is open and fully operational. The projected volumes are based on the anticipated activities at the site and estimated attendance levels provided by G70 and the project sponsor.

4.1 Anticipated Site Programming

The primary programs at the project site will focus on agricultural and youth training activities. The site is expected to generally operate on weekdays, Monday through Friday, with some special events occurring on select weekend days during the year. A detailed list is presented in the appendix to this report that includes both regular activities and special events and identifies their estimated attendance levels and hours of operation.

4.2 Project Trip Generation

From the provided activity list, the number of vehicles was estimated by hour for both inbound and outbound movements. These estimates are also included in the appendix and can be summarized as follows:

- Anticipated regular activities include community garden visitors, and education/cultural programs occurring Monday through Friday throughout the year. These regularly scheduled activities are expected to generate a total of fewer than 20 peak hour trips during each of the AM and PM peak hours. Nearly all of the trips were assumed to be directional where most are inbound in the morning and outbound in the late afternoon/early evening.
- Some other activities are planned such as after school programs or educational collaborations, but they will generate additional traffic during the middle of the day and outside the typical commute peak hours. The volumes for these events are expected to be similar in magnitude to the regular activities.
- During the summer months, additional education and recreation activities are anticipated including a summer intersession education program and a sports camp. For June and July only, these additional activities will increase the regular weekday trip generation described above by approximately 80 trips in the AM peak hour Monday through Friday, and roughly 30 trips during the Wednesday PM peak hour only.

Because the special events are expected to occur on days that total less than 20% of all days over the course of the year, the traffic volumes generated by the regular activities will be used to perform the impact analysis in the next chapter.



4.3 Project Trip Distribution and Assignment

The project-generated trips will represent a combination of area residents (working in the community garden), project staff, and students. All of these visitors to the site are expected to be distributed to the both directions on the highway similar to the existing distribution of traffic at the Kukuihale Road intersection. Accordingly, project traffic was assigned to the left and right-turn inbound and outbound movements based on the existing turning movement volumes. The results volumes are presented in the graphic below.



5. Future Conditions

This chapter describes traffic operations at the study intersections prior to implementation of the project, as well conditions with the project fully built and operational. A discussion of the potential impact to non-automobile travel is included in the next chapter.

5.1 Future 2026 No Project Conditions

Traffic growth will occur over the next several years in the study area prior to completion of the proposed project. This growth will occur primarily on the highway in the form of regional traffic increases, but some amount of growth may occur in the Anahola community with the occupancy of new residential units and new businesses. To account for this growth, the peak hour traffic volumes at the Kuhio Highway/Kukuihale Road intersection were increased by 1% per year for two years. The resulting Future (2026) No Project volumes and the existing lane configurations were analyzed using Synchro to establish the baseline LOS prior to project implementation. The results of this analysis are presented in **Table 3** and show that the intersection will continue to operate at the same level as existing conditions albeit with a negligible increase in average delay in both peak hours.

Table 3: Future (2026) No Project Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Delay (sec/veh) ¹	LOS	Worst Movement
1. Kukuihale Road/Kuhio Highway	Side Street Stop	AM	19.8	C	WBL
		PM	22.6	C	WBL

Source: Fehr & Peers, 2022.

Notes: ¹ The analysis methodology for side-street stop-controlled intersections reports the vehicular delay for the worst movement (or lane group) on the controlled approach only. No overall intersection delay or LOS is calculated.

Any increase in traffic at the Kukuihale Road/Pilipoli Road intersection due to growth is expected to be negligible and operations would essentially be the same as existing conditions.

5.2 Future 2026 Plus Project Conditions

The project traffic volumes at the Kuhio Highway/ Kukuihale Road intersection developed in Section 4.3 were added to the Future 2026 No Project volumes illustrated in Section 5.1 above. The resulting volumes are presented in **Figure 7** below.



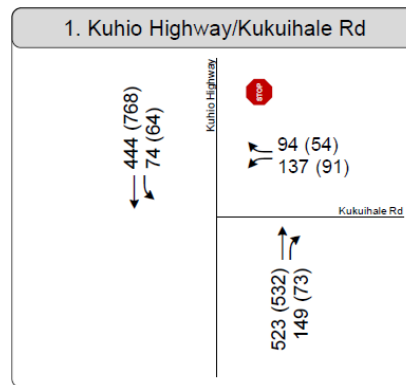


Figure 7: Future (2026) Plus Project Peak Hour Traffic Volumes and Lane Configurations

These Future (2026) Plus Project volumes and the existing lane configurations were analyzed using Synchro to calculate the intersection LOS upon project completion and full occupancy. The results of this analysis are presented in **Table 4** and show that the intersection will continue to operate at the same level as Future No Project conditions at LOS C during both peak hours.

Table 4: Future (2026) Plus Project Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Delay (sec/veh) ¹	LOS	Worst Movement
1. Kukuihale Road/Kuhio Highway	Side Street Stop	AM	20.2	C	WBL
		PM	23.6	C	WBL

Source: Fehr & Peers, 2022.

Notes: ¹ The analysis methodology for side-street stop-controlled intersections reports the vehicular delay for the worst movement (or lane group) on the controlled approach only. No overall intersection delay or LOS is calculated.

Any increase in traffic at the Kukuihale Road/Pilipoli Road intersection due to growth is expected to be negligible and operations would essentially be the same as existing conditions.

Based on these results, the proposed project is not expected to result in any significant traffic operations impacts with the regular activities and operating levels provided by the project sponsor. Accordingly, no traffic-related modifications to the roadway system are recommended as part of the project.

5.3 Future 2026 Plus Project Conditions w/ Special Events

As shown in Table 4 above, the Kuhio Highway/ Kukuihale Road intersection is projected to operate at desirable levels of LOS C or better based on the schedule of regular activities at the project site. Given the good LOS at this location, residual capacity is available to accommodate additional traffic generated by special events. As noted in Section 4.2, the project is expected to generate up to an additional 80 trips in the AM peak hour, which is the higher of the two peak hours. The addition of these trips would still result in a desirable operating level of LOS D or better, which is within the desirable range of traffic operations. Like the finding in Section 5.2, no traffic-related, physical improvements are recommended as part of the



project to address special events. However, for any larger attendance events where the volume is expected to exceed 150 vehicles in a short time period (e.g., 30 minutes), the site operator should consider the use of traffic management personnel and coordinate with the County and State as needed to enhance safety and expedite traffic flow. These higher attendance activities are anticipated to be very infrequent in occurrence.



6. Multimodal Evaluation

This chapter describes the effect of the project on pedestrian, bicycle, and transit facilities and services near the site.

6.1 Pedestrian Travel

The proposed project is expected to generate a limited number of pedestrian trips from the surrounding neighborhood. People walking to site are expected to use the shoulder of the nearby roadways as they do under existing conditions, and the additional pedestrian volumes would easily be accommodated by the existing informal paths. As noted in Section 3.3, pedestrians traveling between the site and Kuhio Highway (including bus patrons) must travel on the south side of Kukuihale Road but do not have striped crosswalks on two legs of the intersection.

Although no significant pedestrian impact is anticipated, two recommended modifications should be implemented to enhance pedestrian travel:

- The unpaved shoulders on the streets fronting the project site (Kukuihale and Pilipoli Roads) should be graded and smoothed, and a minimum 6-foot setback from the edge of the pavement should be provided. This will help to provide a dedicated space for people to walk without having to encroach into the adjacent roadway.
- New crosswalks should be striped at the Kuhio Highway/Kukuihale Road intersection to enhance pedestrian safety and encourage people to take bus transit to access the site. The recommended crosswalks are illustrated in the figure below. This improvement will be a community benefit in addition to improving walk access to the project site.



Figure 8: Recommended Crosswalks on Kuhio Highway at Kukuihale Road

6.2 Bicycle Travel

Similar to pedestrians, the project site is expected to generate new bicycle trips by nearby residents and staff. All the streets within the adjacent neighborhood are relatively low-volume and low-speed streets and bicyclists are able to share the roadway with vehicles. Accordingly, no modifications to the existing transportation system is needed to accommodate new project-generated bicycle trips.







6.3 Transit Facilities and Services

Accessing the project site by transit is considered a viable option in lieu of driving to the site due to the proximity of the existing bus stops. Some site visitors are expected to use transit, and the additional demand should be readily accommodated by existing bus service. The recommendation to stripe new high visibility crosswalks in Section 6.1 will enhance the walk to and from the site. Accordingly, no transit impacts are anticipated and no other transit-related improvements are needed to accommodate the proposed project.

Appendix A: LOS Worksheets

HCM 6th TWSC
2: Kuhio Hwy & Kukuihale Rd

Existing Condition
AM Peak Hour







Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	124	86	476	126	60	404
Future Vol, veh/h	124	86	476	126	60	404
Conflicting Peds, #/hr	5	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	93	517	137	65	439
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1096	527	0	-	522	0
Stage 1	522	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	236	551	-	0	1044	-
Stage 1	595	-	-	0	-	-
Stage 2	563	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	219	546	-	-	1039	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.7	0	1.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBL	SBT		
Capacity (veh/h)	-	420	546	1039	-	
HCM Lane V/C Ratio	-	0.321	0.171	0.063	-	
HCM Control Delay (s)	-	17.6	13	8.7	-	
HCM Lane LOS	-	C	B	A	-	
HCM 95th %tile Q(veh)	-	1.4	0.6	0.2	-	

HCM 6th TWSC
2: Kuhio Hwy & Kukuihale Rd

Existing Condition
PM Peak Hour

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	44	484	66	58	698
Future Vol, veh/h	74	44	484	66	58	698
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	48	526	72	63	759







Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1416	536	0
Stage 1	531	-	-
Stage 2	885	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	151	545	0
Stage 1	590	-	0
Stage 2	403	-	0
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	141	540	-
Mov Cap-2 Maneuver	324	-	-
Stage 1	587	-	-
Stage 2	378	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBTWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	- 324 540	1031	-
HCM Lane V/C Ratio	- 0.248 0.089	0.061	-
HCM Control Delay (s)	- 19.7 12.3	8.7	-
HCM Lane LOS	- C B	A	-
HCM 95th %tile Q(veh)	- 1 0.3	0.2	-







HCM 6th TWSC
2: Kuhio Hwy & Kukuihale Rd

Futur No Project Condition
AM Peak Hour

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	136	94	523	138	66	444
Future Vol, veh/h	136	94	523	138	66	444
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	102	568	150	72	483
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1200	578	0	-	573	0
Stage 1	573	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	204	516	-	0	1000	-
Stage 1	564	-	-	0	-	-
Stage 2	532	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	188	511	-	-	995	-
Mov Cap-2 Maneuver	390	-	-	-	-	-
Stage 1	561	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.3	0	1.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBL	SBT		
Capacity (veh/h)	-	390	511	995	-	
HCM Lane V/C Ratio	-	0.379	0.2	0.072	-	
HCM Control Delay (s)	-	19.8	13.8	8.9	-	
HCM Lane LOS	-	C	B	A	-	
HCM 95th %tile Q(veh)	-	1.7	0.7	0.2	-	







HCM 6th TWSC
2: Kuhio Hwy & Kukuihale Rd







Future No Project Condition
PM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	81	48	532	72	64	768
Future Vol, veh/h	81	48	532	72	64	768
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	52	578	78	70	835
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1558	588	0	-	583	0
Stage 1	583	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	124	509	-	0	991	-
Stage 1	558	-	-	0	-	-
Stage 2	366	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	115	504	-	-	986	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	19	0	0.7			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBL	SBT		
Capacity (veh/h)	-	291	504	986	-	
HCM Lane V/C Ratio	-	0.303	0.104	0.071	-	
HCM Control Delay (s)	-	22.6	13	8.9	-	
HCM Lane LOS	-	C	B	A	-	
HCM 95th %tile Q(veh)	-	1.2	0.3	0.2	-	

HCM 6th TWSC
2: Kuhio Hwy & Kukuihale Rd

Future Plus Project Condition
AM Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	137	94	523	149	74	444
Future Vol, veh/h	137	94	523	149	74	444
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	102	568	162	80	483
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1216	578	0	-	573	0
Stage 1	573	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	200	516	-	0	1000	-
Stage 1	564	-	-	0	-	-
Stage 2	523	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	183	511	-	-	995	-
Mov Cap-2 Maneuver	384	-	-	-	-	-
Stage 1	561	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.6	0	1.3			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBL	SBT		
Capacity (veh/h)	-	384	511	995	-	
HCM Lane V/C Ratio	-	0.388	0.2	0.081	-	
HCM Control Delay (s)	-	20.2	13.8	8.9	-	
HCM Lane LOS	-	C	B	A	-	
HCM 95th %tile Q(veh)	-	1.8	0.7	0.3	-	

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	91	54	532	73	64	768
Future Vol, veh/h	91	54	532	73	64	768
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	0	0	-	150	150	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	99	59	578	79	70	835
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1558	588	0	-	583	0
Stage 1	583	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	124	509	-	0	991	-
Stage 1	558	-	-	0	-	-
Stage 2	366	-	-	0	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	115	504	-	-	986	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	19.7	0	0.7			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1WBLn2		SBL	SBT		
Capacity (veh/h)	-	291 504	986	-		
HCM Lane V/C Ratio	-	0.34 0.116	0.071	-		
HCM Control Delay (s)	-	23.6 13.1	8.9	-		
HCM Lane LOS	-	C B	A	-		
HCM 95th %tile Q(veh)	-	1.5 0.4	0.2	-		

Appendix E

Draft Noise Assessment Report



DRAFT NOISE ASSESSMENT REPORT

ULUPONO ANAHOLA PROJECT

ANAHOLA, KAUAI

March 31, 2022

Prepared For:

G70

Prepared By:

CENSEO AV+ACOUSTICS

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1 Executive Summary

Table 1: Project Reference Information

Project Name	Ulupono Anahola Project
Location	Anahola, Kauai
Document Purpose	The purpose of this noise assessment study is to describe relevant state or local noise regulations, identify potential noise impacts to the surrounding area, and provide conceptual approaches to noise mitigation.
Agencies	Federal Transit Administration (FAA) – Construction Noise State of Hawaii Department of Health (HDOH) – Construction and Project Equipment Noise

Table 2: Summary of Noise Mitigation for Project

Potential Impact	Summary and Mitigation Recommendations
Construction Noise	<p>While construction noise mitigation may not be required for this project, there are several general factors that should be considered during project buildout:</p> <ul style="list-style-type: none">▪ All construction activities are restricted to the conditions defined in the Construction Noise Permit.▪ Community engagement is essential to reducing construction noise and vibration complaints.▪ Construction work could be sequenced to reduce noise levels to the property line.
Project Agricultural Activities	<p>Day-to-day agricultural activities are not expected to generate significant noise levels. Occasional use of mowers and tractors are expected to be the noisiest activities that occur on-site and may exceed the HDOH maximum permissible noise limit of 70 dBA at the property line. Noise mitigation measures are unlikely to be necessary.</p>
Project Community Event Activities	<p>Typical community outreach programming is not expected to generate significant noise levels. Occasional community outreach events such as movie nights and live music events may utilize portable generators and portable sound reinforcement systems. These events are expected to be infrequent. To reduce noise levels to the nearby residences, there are several mitigation factors that should be considered:</p> <ul style="list-style-type: none">▪ Community engagement is essential to reducing complaints from the surrounding neighborhood.▪ Locating portable sound system and other stationary equipment far from the property line will reduce noise levels to the nearby residences.▪ Selection, orientation, and adjustment of the portable sound system will play a major factor in reducing noise levels to the nearby residences.

2 Introduction

A community outreach project, Ulupono Anahola, has been planned for development by KKOA in the Anahola community on Kauai. The purpose of this noise study is to evaluate projected sound levels with respect to state or local noise regulations, to identify potential noise impacts to the surrounding area as a result of implementing this project, and to provide conceptual approaches to noise mitigation, where necessary.

3 Project Description and Location

Ulupono Anahola is a community center located on 10 acres in Anahola, Kauai. The project site is located at the corner of Kukuihale Road and Pilipoli Road. Main vehicular access to the project site will be from Kuhio Highway via Kukuihale Road. A map of the project area is shown in Figure 1. The properties immediately surrounding the proposed community center are primarily residential to the south and some vacant or agricultural use areas on the makai side of the property. Distances between the existing residences and the nearest road centerline are provided in Table 3 below.

The project aims to develop community agricultural plots and native gardens on the site. The project components related to agricultural use include garages, storage, a processing center, and retail. Additional components of the project will be used for community gatherings, such as the Marae, Hale Halawai, and Youth Center. A site plan of the proposed project is shown in Figure 2.

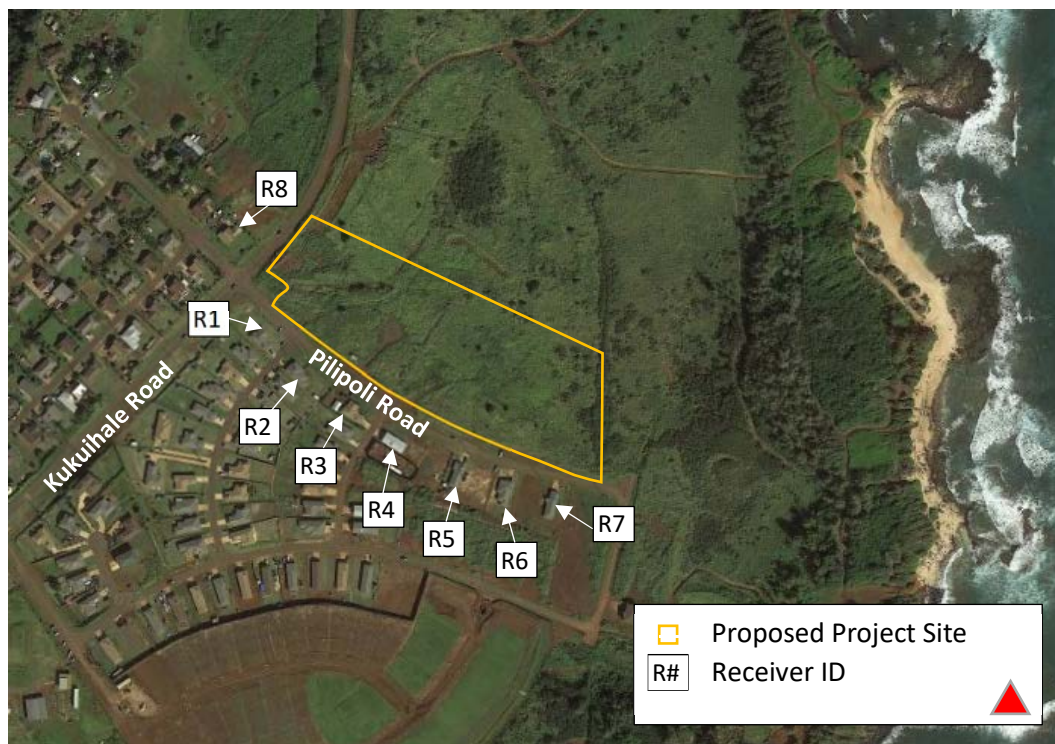


Figure 1: Map of Project Site and Surrounding Area



Figure 2: Project Site Plan

Table 3: Description of Noise Sensitive Receiver Locations

Receiver ID	Approximate Address	Receiver Type	Approx. Distance from Residence to Road Centerline	Road between Residence and Project Site
R1	4204 Ulumanao St	Single Family Residence	50 ft	Pilipoli Road
R2	4203 Ulumanao St	Single Family Residence	50 ft	Pilipoli Road
R3	4204 Malua St	Single Family Residence	50 ft	Pilipoli Road
R4	4205 Malua St	Single Family Residence	50 ft	Pilipoli Road
R5	3815 Pilipoli Road	Single Family Residence	50 ft	Pilipoli Road
R6	3795 Pilipoli Road	Single Family Residence	50 ft	Pilipoli Road
R7	3779 Pilipoli Road	Single Family Residence	50 ft	Pilipoli Road
R8	4105 Hakuaaina Rd	Single Family Residence	90 ft	Kukuihale Road

4 Sound Regulations and Guidelines

4.1 HDOH Community Noise Control – Stationary & Agriculture Equipment

Hawaii Administrative Rules, Title 11 – Department of Health, Chapter 46 – Community Noise Control regulates environmental noise limits within the state of Hawaii. Table 4 summarizes the maximum permissible noise levels for each zoning district. These sound level limits apply to “stationary noise sources, and equipment related to agriculture, construction, and industrial activities”. The noise regulation further defines stationary sources as “any mechanical source of noise fixed in or on a station, course, or mode within any premises, including but not limited to mechanical air conditioning units, exhaust systems, generators, compressors, pumps, or other similar equipment”. Therefore, sounds generated by vehicles,

hand tools, etc. are not required to satisfy the noise limits shown in Table 4 since these sources do not qualify as a stationary noise sources (defined by the noise regulation).

Table 4: HDOH Property Line Maximum Permissible Noise Levels

Land Use	Day Noise Limit 7am – 10pm	Night Noise Limit 10pm – 7am
Class A – Residential, conservation, preservation, public space, open space, or similar	55 dBA	45 dBA
Class B – Multi-family dwellings, apartment, business, commercial, hotel, resort, or similar	60 dBA	50 dBA
Class C – Agriculture, country, industrial, or similar	70 dBA	70 dBA

In mixed zoning areas, the primary land use designation is used for determining the zoning district. The maximum permissible sound levels shall not be exceeded (at or beyond the property line) by more than 10% of the time for any 20-minute period. The maximum permissible sound levels for impulsive sounds can be up to 10 dB above the maximum sound levels in the table above.

For this noise assessment, the project property is considered Class C and adjacent residential properties are considered Class A. The applicable maximum noise levels are 70 dBA at project site property lines during daytime hours and nighttime hours.

4.2 HDOH Community Noise Rule - Construction Noise Permit and Variance

The Hawaii State Department of Health (HDOH) grants permits to operate excessive noise sources, such as construction equipment, in excess of the maximum permissible noise limits shown in Table 5. The following factors may be considered in granting a Community Noise Permit for construction activities:

- Noise abatement measures, including the ‘best available control technology’, may be required to control noise levels from the excessive noise source.
- The activities are temporary and a construction schedule must be disclosed.
- Noise impacts from nighttime activities must be disclosed.
- The applicant plans to notify the people in the surrounding area of the planned activity.

There are restrictions for construction activities to occur during specific hours with the appropriate community noise permit, as shown in Table 5 belowTable 1. A Community Noise Permit must be submitted and approved by the State before construction can begin. Loud construction activities outside of normal construction hours require an approved Community Noise Variance.

Table 5: HDOH Community Noise Permit - Construction Hours

Equipment Type	Allowed Hours of Operation
Normal Construction Equipment	Monday - Friday: 7:00 am – 6:00 pm Saturday: 9:00 am – 6:00 pm Sunday & Holidays: No construction activities
Impulsive Construction Equipment: Pile Drivers, Jackhammers, Hydraulic Hammers, High Pressure Sprayers, Chain Saws, etc.	9:00 am – 5:30 pm Monday - Friday

4.3 Federal Transit Administration - Construction Noise

The HDOH does not quantify allowable construction sound levels. For this analysis, Federal Transit Administration (FTA) noise limits proposed as “reasonable criteria for assessment” are utilized to evaluate property line noise levels. The Construction Noise Limit guidelines are summarized in Table 6 and are in terms of a one-hour average equivalent sound level (L_{eq}).

Table 6: FTA General Assessment Construction Noise Limits

Land Use	One-hour L_{eq} (dBA)	
	Day (7am – 10pm)	Night (10pm – 7am)
Residential	90 dBA ^A	80 dBA ^A
Commercial	100 dBA	100 dBA
Industrial	100 dBA	100 dBA

Note

^A - This noise level may not be appropriate for rural residential neighborhoods and is considered reasonable criteria for urban areas.

For the Ulupono Anahola project, a 1-hour L_{eq} of 90 dBA is the maximum daytime construction noise level at the adjacent residential property line. However, this noise level may not be appropriate for rural residential neighborhoods and a level of 75 dBA may be more applicable. Nighttime construction activities are not recommended.

4.4 Various Agencies - Community Noise Response

The ability of the average person to perceive increases in noise has been documented by various government agencies, including the Federal Highway Administration (FHWA) and the International Standards Organization (ISO). The ISO has developed a scale, as shown in Table 7, for estimating

community response to increases in noise levels. This scale relates changes in noise levels to the subjective response of the community. The scale also allows for a direct estimation of the community's probable response to a predicted change in noise level.

Table 7: Community Response to Changes in Noise Levels

Noise Level Change (dB)	Category	Subjective Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action
20	Very Strong	Vigorous community action

5 Existing Ambient Environment

A survey of the existing ambient noise environment was not provided at the Ulupono Anahola project site. Since the project site is currently vacant, the current ambient noise environment is assumed to be dominated by environmental noise sources such as birds and wind. Traffic noise is likely low since the project site is far from Kuhio Highway and the closest roadways, Kukuihale Road and Pilipoli Road, have low traffic volumes. Based on the location of the project site and the current land use, we estimate the daytime average equivalent noise levels to be in the range of 45 to 55 dBA. This is typical of rural environments.

6 Construction Noise Assessment

The following sections address noise from construction activities during the buildout of the Ulupono Anahola project.

6.1 Construction Noise Assessment Assumptions

Most of the on-site construction work consists of excavation and general earthwork. The equipment used for excavating and grading will be the major noise sources used during the earthwork phase and the installation of the gravel parking and interior roads. If utilities must be installed, backhoes may also be utilized. A water well will also be drilled which may include the use of an auger drill.

A general assessment of construction noise to the nearby residential properties was conducted. As the specific equipment types and construction schedule are not yet defined, a rough estimate of construction noise is appropriate. Construction equipment emission levels at 50 feet were the basis for the general assessment. The following additional assumptions have been made for the general assessment:

- Free-field conditions are assumed.
- The project area is mostly grass on soft ground. A ground factor (G) of 0.4 was used to calculate ground attenuation.
- All pieces of construction equipment are assumed to operate at the near and far boundaries of the project site. This distance range is provided in the table below.
- Full power operation for a time period of one hour is assumed.
- The predictions assumed only one piece of equipment in operation at one time.

6.2 Construction Equipment Noise Levels

Reference noise levels for various pieces of construction equipment that are expected on-site can be seen in Table 8. These are the loudest pieces of equipment expected to be used during construction of the project.

Table 8: Typical Noise Levels of Anticipated Construction Equipment

Equipment	Typical Noise Level 50 ft from Source ^{A, B}
Auger Drill Rig	85
Backhoe	80
Bulldozer	85
Dump Truck	84
Excavator	85
Front End Loader	80
Generator < 25 kVA	70

Notes:

^A Table 12-1 from FTA Noise and Vibration Manual, 2006

^B FHWA Construction Noise Handbook, Table 9.1

6.3 Construction Noise Level Predictions

Predicted noise levels from the various pieces of construction equipment at the closest noise-sensitive receivers are summarized in Table 9 below. The overall sound levels are shown in A-weighted decibels. The actual noise levels produced will be a function of the type, location, and quantity of equipment employed during each stage of the construction process. As not every type of equipment will be used at a given time and the equipment will be moving throughout the 10-acre site, noise levels will vary over the duration of the construction phase.

Table 9: Predicted Construction Noise Levels at Nearby Residences

Noise-Sensitive Receiver	Distance from Reciever to Construction	Construction Equipment			
		Auger Drill	Dozer/Excavator/ Dump Truck	Backhoe/Loader	Generator
R1-R7	110 – 430 ft	63 - 77 dBA	63 - 77 dBA	58 - 72 dBA	48 - 62 dBA
R8	160 – 590 ft	59 - 73 dBA	59 - 73 dBA	54 - 68 dBA	44 - 58 dBA

7 Project Noise Assessment

Once the project is constructed, the Ulupono Anahola project will have both agricultural and community activities on-site. The following summarizes the assessment of noises from typical on-site uses to the surrounding residential community.

7.1 Typical Project Activities

Agricultural activities will occur to develop and maintain community agricultural plots and native gardens and will also involve the use of a processing center and retail space. Day-to-day activities at the garden beds, groves, processing, retail and storage areas are not expected to generate significant noise levels. Noisy agricultural equipment that may be used on an occasional basis and could include tractors and mowers.

The Ulupono Anahola program also includes community outreach events and programs. Community activities may include youth and agricultural mentoring programs, ukulele classes, movie nights, and live music entertainment. Day-to-day community uses at the Marae, Hale, Youth Center and storage areas are not expected to generate significant noise levels. The project site may host occasional movie nights with live music. The noisy equipment associated with these events could include portable generators and portable sound systems.

7.2 Project Noise Assessment Assumptions

Similar to the construction noise assessment, a general assessment of agricultural and community event noise to the nearby residential properties was conducted to provide a rough estimate of future noise levels. The agricultural and community event equipment emission levels at 50 feet were the basis for the general assessment. The following assumptions have been made for the general assessment:

- The project area is mostly grass on soft ground. A ground factor (G) of 0.4 was used to calculate ground attenuation. Free-field conditions are assumed.
- All pieces of agricultural equipment are assumed to operate at the near and far boundaries of the project site. This distance range is provided in the table below. The predictions assumed only one piece of equipment in operation at one time under full power operation for a time period of one hour.
- The community event equipment is assumed to operate in the vicinity of the Youth Center, as shown in the Figure 2 site plan.

7.3 Project Equipment Noise Levels

Reference noise levels for various pieces of agricultural and community event equipment can be seen in Table 10. These are the loudest pieces of equipment expected to be used during typical on-site uses.

Table 10: Typical Noise Levels of Anticipated Project Equipment

Equipment	Typical Noise Level 50 ft from Source
Agricultural Activities	
Mower	75 ^B
Tractor	84 ^A
Community Event Activities	
Generator < 25 kVA	70 ^A
Portable Sound System	75 to 85 ^B

Notes:

^A FHWA Construction Noise Handbook, Table 9.1

^B Noise Navigator Sound Level Database

7.4 Project Noise Level Predictions

Predicted noise levels from the various on-site agricultural and community event activities at the closest noise-sensitive receivers and the project property line are summarized in Table 11 and Table 12 below. The overall sound levels are shown in A-weighted decibels.

Table 11: Predicted Agricultural Activity Noise Levels at Nearby Residences

Noise-Sensitive Receiver	Mower		Tractor	
	Distance from Reciever to Expected Use	Predicted Noise Level	Distance from Reciever to Expected Use	Predicted Noise Level
R1-R7	110 – 430 ft	53 - 67 dBA	200 – 430 ft	62-70 dBA
R8	220 – 590 ft	49 - 60 dBA	360 – 590 ft	58-63 dBA
Property Line	50 – 380 ft	54 – 75 dBA	110 – 380 ft	63 – 76 dBA

Table 12: Predicted Community Event Noise Levels at Nearby Residences

Noise-Sensitive Receiver	Distance from Reciever to Youth Center	Community Event Activities:	
		Portable Generator < 25 KVA	Portable Sound System
R1-R7	210 ft	55 dBA	60 - 70 dBA
R8	410 ft	48 dBA	53 - 63 dBA

8 Noise Impact Assessment

8.1 Construction Noise Impact

The Ulupono Anahola project site is 10 acres in size. The actual construction noise levels that will be experienced by the nearby community will be a function of distance to the noise source and the quantity and type of equipment used during the various phases of construction. The earthwork and drilling activities are expected to be the loudest. The worst-case predicted noise level is in the range of the 75 dBA construction noise criteria applicable to rural residential land use during daytime hours.

To determine a community noise impact, predicted noise levels from construction activities can be compared to existing ambient noise levels. Based on the construction noise assessment, noise levels at the residences closest to the project site are predicted to range from 54 to 77 dBA. The existing daytime ambient environment is estimated to range from 45 to 55 dBA. It is anticipated that the closest residents may complain when the equipment is in use close to Pilipoli Road for an extended duration since the noise level increase is significant. However, these noise events are expected to be short term in nature and will occur only during buildout of the project. Construction noise in excess of the State of Hawaii Community Noise Rule will be permitted by the HDOH during the hours stated in Table 5. It is unlikely that the HDOH would consider the project construction activities to cause adverse noise impacts and construction noise mitigation measures are unlikely to be necessary.

8.2 Project Noise Impacts

The primary uses of the Ulupono Anahola project include both agricultural and educational activities. Day-to-day uses are not expected to generate significant noise levels. Occasional use of agricultural equipment such as mowers and tractors are expected to be the noisiest activities that occur on-site. Based on the agricultural activity noise assessment, noise levels at the residences closest to the project site are predicted to range from 49 to 67 dBA when a mower is in use and 58 to 70 dBA when a tractor is in use. These noise events are expected to be short term in nature and will occur on an occasional basis. The predicted agricultural equipment noise at the property line may occasionally exceed the HDOH maximum permissible noise limit of 70 dBA if a tractor or mower is in use near the property line. However, these noise events are expected to be short term in nature and will occur occasionally. Noise complaints from the agricultural activities is not expected and it is unlikely that they would cause adverse noise impacts.

The day-to-day community outreach programming is not expected to generate significant noise levels to the surrounding residential neighborhood. Occasional community outreach events such as movie nights and live music events may utilize portable generators and portable sound systems. Based on the community event noise assessment, noise levels at the residences closest to the project site are predicted to range from 60 to 70 dBA. Noise from the community events is expected to be significantly greater than the existing ambient noise environment. However, movie nights are infrequent and 2-3 hours in duration. Noise mitigation measures are discussed in the section below.

9 General Sound Mitigation Methods and Techniques

General sound mitigation methods and techniques for attenuating noise levels from construction and project activities to the surrounding residential community are discussed below.

9.1 Construction Noise Mitigation

Construction noise can be mitigated with proper planning. Although specific noise mitigation may not be required for this project, there are several general factors that should be taken into consideration:

- **Community Noise Permit**
All construction activities are restricted to the conditions defined in the Construction Noise Permit issued by HDOH. All work must be done during the construction hours described in the permit, i.e., 7:00 am to 6:00 pm, Monday to Friday and 9:00 am to 6:00 pm on Saturday. Construction work is not permitted on Sundays or holidays.
- **Community Engagement**
Humans perceive noise and vibration subjectively. Construction and other undesirable noise sources seem more annoying when they are unexpected. A concerted effort should be made to have a dialogue with the surrounding community and set expectations. Giving the nearby residents advanced warning of a particularly loud stretch of construction may allow them to make other plans or at least let them know their comfort is a concern.
- **Work Sequencing**
Vehicles should be spread out over the project area and not all work close to the property line simultaneously. Particularly noisy tasks should be separated throughout the work schedule when possible.
- **Project Site Layout**
Noisy stationary equipment, such as generators, should be moved away from noise-sensitive receivers when possible.
- **Mitigation at Source**
Use low-noise versions of equipment, when possible. Installing mufflers is an effective way to mitigate noise at the source. An equipment maintenance program is necessary as poorly maintained equipment can produce unusually high noise levels.

9.2 Project Noise Mitigation

We do not expect the community events to generate significant noise complaints if the community is given ample notice. However, the portable sound system may still be audible at the nearby residences. There are several factors to consider when mitigating community event noise to reduce noise levels to the surrounding community:

- **Community Engagement**

As described above, effort should be made to have a dialogue with the surrounding community and set expectations. The nearby residents should be given notice of a community event which will allow them to make other plans or at least let them know their comfort is a concern.

- **Distance from Noise Source**

It is expected that outdoor events may occur in the vicinity of the Youth Center. Locating the Youth Center far from the project property lines will reduce noise from the portable sound system to the surrounding community. Portable generators should be located as far as possible from property line and from the community event itself.

- **Mitigation at Source**

Selection, orientation and adjustment of the portable sound system will play a major factor in reducing noise levels. In general, loudspeakers should be aimed away from the neighboring residences which will significantly reduce sound levels. Loudspeakers that are positioned at-grade may be less intrusive than pole-mounted cabinet type loudspeakers. Loudspeaker volume/gain settings should be adjusted to a proper level such that the movie or music can be heard at a comfortable level on the project site, but not intrusive to the neighboring residents. Low-frequency sounds can be perceived as more annoying and can pass more readily through walls and windows. The equalizer settings can be used to limit bass sounds through the loudspeakers. Music selection will also influence which frequencies are more prevalent and how the audio is received by the nearby residents.

Appendix F

Comment Letters Received



P.O. Box 1023, Kilauea, HI 96754

To Whom it may concern,

This is a letter in support for the Ulupono Anahola Project that Kukulu Kumuhana o Anahola has been working on.

Aina Hookupu o Kilauea has been partnering up with KKOA for many years now and our goals and projects are very much aligned. AHK is developing a 75 acre parcel to create the first AG center to demonstrate and promote the viability of our local food system through small and medium farms. Our center allows interns the ability to have access to land, expertise, equipment, and infrastructure. Our common vision is to connect people to Aina through food.

KKOA is inspired by our successes and can count on our full support in creating their vision. They wish to provide similar opportunities as AHK to the Anahola Community through the creation of the Ulupono Anahola Project.

Please support this project as it enforces self-determination, self-worth, and hope for the future of our local youth.

Thank you for the work you do to support them,

Mahalo Nui,

Yoshito LHote

CEO

Aina Hookupu o Kilauea

COUNTY COUNCIL

Arryl Kaneshiro, Chair
Mason K. Chock, Vice Chair
Bernard P. Carvalho, Jr.
Felicia Cowden
Bill DeCosta
Luke A. Evslin
KipuKai Kualii



OFFICE OF THE COUNTY CLERK

Jade K. Fountain-Tanigawa, County Clerk
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Council Services Division
4396 Rice Street, Suite 209
Lihu'e, Kaua'i, Hawai'i 96766

September 16, 2022

Office of Planning and Sustainable Development
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

To Whom It May Concern:

**RE: LETTER OF SUPPORT FOR KŪKULU KUMUHANA O
ANAHOLA'S (KKOA) ULUPONO ANAHOLA PROJECT**

I am writing this letter in my individual capacity as a Councilmember and Planning Committee Chair of the Kaua'i County Council in support of Kūkulu Kumuhana O Anahola's (KKOA) Ulupono Anahola Project, which will develop an agricultural garden and youth training center in Anahola, Kaua'i.

Kūkulu Kumuhana O Anahola has been a longstanding partner of the Kaua'i Resilience Project, which is a bold community initiative to build our young people's ability to overcome adversity and successfully navigate life's challenges so they can lead enriched, fulfilled, and purposeful lives. This project and organization will provide practices and programs that support traditional and sustainable farming practice, community-building, and the development of self-identity, all of which are key components in enriching the lives of our youth, while also maintaining the cultural identity that is so unique in our islands. This program will create a space that is safe and nurturing, and one that will empower our *keiki* to further connect with their *kūpuna* and culture, to strengthen our island's resiliency and ensure food security for this community. Many of these practices are proven to deter suicide and will further the bond between *keiki* and their families.

I truly believe this program will be a positive and beneficial part of the Kaua'i community and I thank you in advance for your continued support. Should you have any questions, please feel free to contact me or Council Services Staff at (808) 241-4188.

Sincerely,

MASON K. CHOCK
Council Vice Chair, Kaua'i County Council

Standard Comments for Land Use Reviews
Clean Air Branch
Hawaii State Department of Health

If your proposed project:

Requires an Air Pollution Control Permit

- You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.
- Permit application forms can be found here: <https://health.hawaii.gov/cab/permit-application-forms/>

Includes construction, demolition, or renovation activities that involve potential asbestos and lead containing materials:

- Asbestos may be present in any existing structure. Prior to demolition, you must contact the Indoor and Radiological Health Branch, Asbestos-Lead Section. Testing may be required to determine if building materials may contain asbestos, such as: drywall, vinyl floor tile, mastic, caulking, roofing materials, insulation, special coatings, etc.
- Structures built prior to 1980 may also contain lead paint. Prior to demolition, contact the Indoor and Radiological Health Branch, Asbestos-Lead Section. Testing may need to be conducted to determine if building materials contain lead.
- Some construction activities have the potential to create excessive noise and may require noise permits. For DOH Noise Permits and/or Variances and for more information on the Indoor and Radiological Health Branch, please visit: <https://health.hawaii.gov/irhb/>

Includes demolition of structures or land clearing

- Department of Health, Administrative Rule: Title 11, Chapter 26, Vector Control, Section 11-26-35, Rodents; Demolition of Structures and Clearing of Sites and Vacant Lots, requires that:
 - No person, firm or corporation shall demolish or clear any structure, site, or vacant lot without first ascertaining the presence or absence of rodents which may endanger the public health by dispersal from such premises.
 - Should such inspection reveal the presence of rodents, the person, firm, or corporation shall eradicate the rodents before demolishing or clearing the structure, site, or vacant lot.
 - The Department may conduct an independent inspection to monitor compliance, or request a written report.
- The purpose of this rule is to prevent rodents from dispersing into adjacent areas from infested buildings or vacant lands during demolition or land clearing.
- Contractors may either hire a pest control firm or do the job themselves with a qualified employee. Rodenticides must be inspected daily and replenished as necessary to provide a continuous supply for at least one week prior to the start of any work.

- To submit notifications or for more information, contract the Vector Control Branch:
<https://health.hawaii.gov/vcb/>

Has the potential to generate fugitive dust

- You must reasonably control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, businesses, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does *not* require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.
- Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.
- You must provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:
 - Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
 - Providing an adequate water source at the site prior to start-up of construction activities; Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
 - Minimizing airborne, visible fugitive dust from shoulders and access roads;
 - Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
 - Controlling airborne, visible fugitive dust from debris being hauled away from the project site.
- If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

Increases the population and potential number of vehicles in an area:

- The creation of apartment buildings, complexes, and residential communities may increase the overall population in an area. Increasing the population in an area may inadvertently lead to more air pollution via vehicle exhaust. Vehicle exhaust releases molecules in the air that negatively impact human health and air quality, as they are known lung irritants, carcinogens, and greenhouse gases.
- Ensure that residents keep their vehicle idling time to three (3) minutes or less.
- Provide bike racks and/or electric vehicle charging stations for residents.
- Ensure that there are sufficient and safe pedestrian walkways and crosswalks throughout and around the development.
- Conduct a traffic study to ensure that the new development does not significantly impact traffic in the area.

Clean Air Branch (808) 586-4200 cab@doh.hawaii.gov	Indoor Radiological Health Branch (808) 586-4700	Vector Control Branch (808) 586-4400
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COOPERATIVE EXTENSION

UNIVERSITY OF HAWAII AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

20 September 2022

Aloha,

This letter is to affirm my support for the Kukulu Kumahana O Anahola (KKOA) Ulupono Anahola project that will provide training opportunities for youth, Native Hawaiians, and the Anahola community in civic agriculture, thereby increasing culturally-relevant mentorship and resilience for local young people as well as contributing to local food security.

I am an extension agent with the University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources (CTAHR) based on the island of Kauai. In my role with CTAHR Extension working closely with the community here since 2017, I have observed time and again the acute need for engaging more local youth in agriculture. KKOA is uniquely situated to be the catalyst for this engagement as they are well supported and respected in the community, and they have the clear vision to make a significant positive impact in the lives of local youth.

I fully support this project to create new opportunities to engage local youth in agriculture and will support it in any way possible, including sharing the technical resources and expertise of the CTAHR Kauai Extension team. Please feel free to contact me with any questions:

erkirk@hawaii.edu

Many thanks for your time and consideration,

Emilie Kirk

Assistant Extension Agent – Sustainable and Organic Agriculture
Kaua'i County Cooperative Extension

KAUA'I COOPERATIVE EXTENSION OFFICE

State Office Building / 3060 Eiwa Street, Room 210 / Līhu'e, HI 96766

Ph: (808) 274-3471 Fax: (808) 274-3474

lihue@ctahr.hawaii.edu www.ctahr.hawaii.edu/site/ContactKauai.aspx

An Equal Opportunity and Affirmative Action Institution



September 19th, 2022

Christy Wong
Kauai Animal Education Farm
P.O. Box 1789
Kapa'a Hi 96746

Aloha, to whom this may concern,

I am pleased to be writing a letter in support of the Kūkulu Kumuhana O Anahola (KKOA) proposal for the Ulupono Anahola project. I strongly support this initiative as it furthers KKO's mission and vision by having a positive impact on the lives of those in our community. KAEF has partnered with KKO for seven years as we work to address the needs of our community. We have seen their work transforming the land that now provides food to feed multiple programs and the changing of lives of those that are participating. We see the growth, health, happiness, pride for their community and the engagement in their culture with families learning sustainable practices.

KKOA proposal to develop the Ulupono Anahola Agricultural Garden Training Site and Youth Center (Ulupono Anahola Project), which aims to develop a youth center, agricultural plots for community gardening, native and medicinal gardens, and install a well for a sustainable on-site water source. Accordingly, KKO aims to provide families in and around the Anahola Homestead community the opportunity to work together to grow traditional and healthy crops, allowing them to sustain themselves and become stewards of these lands. The Project will ultimately serve as a social deterrent for youth suicide by providing educational and management opportunities in sustainability and traditional practices.

If you require more information about the Kauai Animal Education Farm, please contact us via www.kauaianimaleducationfarm.org, (808)822-0881, info@kauainimaleducationcenter.org.

Aloha Pumehana,

Christy Wong
Executive Director
Kauai Animal Education Farm

From: Nakayama, Megumi <megumi.nakayama@hawaii.gov>
Sent: Friday, September 9, 2022 8:32 AM
To: KKOA Ulupono Anahola 221114-01
Cc: Nancy McPherson; Maki, Lorene K
Subject: DEA-AFONSI - Kukulū Kumuhana O Anahola: Ulupono Anahola Project
Anahola , Kaua'i, Hawai'i Tax Map Key (TMK): (4) 4-8-003:019 (por.)

Aloha,

Thank you for the opportunity to comment. Office of Planning and Sustainable Development has no comments at this time for the subject matter.

Mahalo,

Megumi Nakayama

Secretary

Land Use Division,

State of Hawaii Office of Planning and Sustainable Development

Telephone: (808) 587-2842

