FINAL

ARCHAEOLOGICAL INVENTORY SURVEY
FOR THE PROPOSED
NĀ‘ĀLEHU WASTEWATER TREATMENT FACILITY
KAUNĀMANO AHUPUA‘A, KA‘Ū DISTRICT
ISLAND OF HAWAI‘I
[TMK: (3) 9-5-012:002]
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ABSTRACT

Pacific Legacy, Inc., at the request of Fukunaga & Associates, Inc. and the County of Hawai‘i, conducted an archaeological inventory survey of two potential sites for the proposed Nā‘ālehu Waste Water Treatment Plant (WWTP) located in the ahupua‘a of Kaunāmano, district of Ka‘ū on the island of Hawai‘i [TMK: (3) 9-5-012:002]. The two proposed alternate sites are located within a property presently owned by the State of Hawai‘i, Department of Land and Natural Resources (DLNR) situated just east of Nā‘ālehu Town. The areas investigated include an approximately 8.4 acre parcel located immediately adjacent to the Māmalahoa Highway at the northwestern corner of the DLNR property and an approximately 8.7 acre parcel (6.2 acres for the proposed treatment site and 2.5 acres for the access corridor extending into the site from the Māmalahoa Highway) at the eastern edge of the DLNR property, south of the Nā‘ālehu Police Station. A preliminary reconnaissance was also undertaken of the lands resting between the two inventory survey parcels in order to assist the County in determining what historic properties might be located close to the proposed project sites.

A total of 25 sites were identified during the survey. Five sites are located in the East Parcel and three of the sites in the West Parcel. The remaining 17 sites are situated outside the area of potential effect (APE) but within the DLNR property. Sites identified within the East Parcel included: Site 50-10-74-25266, a lava tube containing at least one set of human remains; Site 50-10-74-29385, a stone mound [possible burial] and a stone platform; Site 50-10-74-29386, a cattle wall; Site 50-10-74-29390, a section of railroad bed; and Site 50-10-74-29391, a cattle wall. Three sites were recorded within the West Parcel, These included: Site 50-10-74-29387, a stone wall backed with bulldozed soil to form a terrace; Site 50-10-74-29388, two wall segments; and Site 50-10-74-29389, a petroglyph. Evidence of bulldozing and grubbing was evident throughout this entire parcel.

In addition to the pedestrian survey, archaeological excavations were conducted at two of the sites identified, the Site 29385, Feature A platform and the Site 29387 terrace. The excavations were an attempt to determine the function of these features and aid in establishing how the area was traditionally used. The platform at Site 29385 was thought to be a burial, and was excavated to discover whether it did contain human remains. The excavation uncovered no evidence of human remains. Cultural material found during excavation was limited making it difficult to determine the structure’s age and function. Excavation was conducted at Site 29387 to determine whether it had functioned as an agricultural terrace. Historic materials (rubber and red brick) were uncovered behind the terrace facing and lower than the depth of the wall’s base. Thus it was determined that the feature was likely a freestanding wall which was subsequently filled in with soil on its south side and not an agricultural terrace as initially thought.

A substantial number of traditional Hawaiian and early historic sites were identified during the present survey. The majority of these sites was located either within the East Parcel or in the lands situated between the two alternative project sites. The lower number of traditional sites recorded within the West Parcel can be attributed to the fact that substantial portions of that survey area appear to have been grubbed. The traditional sites that were recorded, both during the inventory and reconnaissance portions of the present project, indicate the importance that the area held for the early Hawaiians who settled the region. All of the early historic sites
identified appear related to either the sugar industry or cattle ranching undertaken in the Na‘alehu area during the late 19th and early 20th centuries.

Three of the sites documented during the inventory survey (the Site 25266 lava tube, the Site 29390 railroad alignment, and the Site 29389 petroglyph) are recommended for preservation. If the project moves forward in either parcel, care should be taken to preserve these sites. Adequate buffers should be placed around the sites during construction activities and a preservation plan will need to be produced recommending short and long term treatments for each site.

It is our understanding that some of the funding for the Na‘alehu WWTP is being provided by the Environmental Protection Agency (EPA). This makes the project a federal undertaking subject to Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. It is understood that consultations related to the Section 106 process will be conducted for this project.
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Frontispiece: Overview of the West Parcel, view to east.
1.0 INTRODUCTION

Pacific Legacy, Inc., at the request of Fukunaga & Associates, Inc. and the County of Hawai‘i, conducted an archaeological inventory survey of two potential sites for the proposed Nā‘ālehu Waste Water Treatment Plant (WWTP) located in the ahupua‘a of Kaunāmano, district of Ka‘ū on the island of Hawai‘i [TMK: (3) 9-5-012:002] (Figure 1). The results of this survey will assist Fukunaga & Associates and the County in determining the most suitable site for the Waste Water Treatment Facility.

In addition to an archaeological inventory survey of the proposed East and West parcels, Pacific Legacy also carried out a reconnaissance survey of areas surrounding and between the two proposed parcels (Figure 2). This was done in an attempt to identify additional sites or activities that may have taken place in the general vicinity and to identifying the approximate boundaries of a makahiki field that is suggested from ethnohistoric sources to exist nearby. The identification of these adjacent sites will assist in planning and mitigating the impacts of the proposed waste water treatment facility.

The survey was conducted from 14-25 May 2012, under the overall supervision of Principal Investigator Paul Cleghorn, Ph.D. Field operations were supervised by James McIntosh, B.A. The Pacific Legacy field crew included Mr. Caleb Fechner, B.A. and Mr. Reid Yamasato, B.A.

It is our understanding that the Nā‘ālehu Waste Water Treatment Plant is a County of Hawai‘i project supported in part by funds from the Environmental Protection Agency (EPA). The presence of federal funding automatically triggers the National Historic Preservation Act (NHPA) Section 106 process. This process requires Federal agencies to take into account the effects of their undertakings on historic properties. As the Federal agency involved, the EPA is required to initiate a Section 106 consultation, which involves discussions with SHPD, local government, Native Hawaiian organizations (usually including OHA), the local community, other interested stakeholders, and the general public to resolve any questions of adverse effects to historic properties. This consultation usually results in a Memorandum of Agreement (MOA), which outlines agreed-upon measures that the agency will take to avoid, minimize, or mitigate adverse effects. This archaeological inventory survey report can be considered a contributing document to that process.

1.1 REPORT ORGANIZATION

This report is composed of 11 sections and three appendices. After this introductory section, Section 2 presents the background to the project and the environment of the project area. Section 3 provides the historical background. Section 4 presents the results of previous archaeological studies in the area and the anticipated findings. Section 5 details the field methods followed during the present survey. Section 6 presents the findings of the survey. Section 7 provides the results of the test excavations. Section 8 presents our significance assessments. Section 9 presents a summary and discussion of the findings. Sections 10 present
our recommendations for the management and mitigation of effects on the archaeological resources. **Section 11** lists the references cited in this report.

The data appendices that support the written report are provided in electronic format on a CD at the end of the report. The appendices are:

Appendix A. Inventory Survey Site Attribute Table
Appendix B. Site Descriptions for Sites Recorded During the Inventory Survey
Appendix C. Reconnaissance Survey Site Attribute Table
Appendix D. Site Descriptions for Sites Recorded During the Reconnaissance Survey
Appendix E. Site Concordance Table for Sites Recorded During Both the Inventory and Reconnaissance Surveys
Appendix F. GPS Locations of Sites
Figure 1. Location of survey areas.

Sources: ArcGIS "US Topo Map" (credits - USGS, F.A.C., NPS, EPA, NRO, GeoBase, Esri, DeLorme, TANA, Intermap, and other suppliers).

Legend
- Project Area
- Property Boundary

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Figure 2. Project areas on aerial photograph (ESRI 2012).
2.0 PROJECT BACKGROUND

2.1 PROJECT AREA

The two proposed alternate sites of the Nā‘ālehu Wastewater Treatment Facility are located within a parcel presently owned by the State of Hawai‘i, Department of Land and Natural Resources (DLNR, TMK: (3) 9-5-012: 002). This property is situated just east of Nā‘ālehu Town in the ahupua‘a of Kaunāmano, district of Ka‘ū, on the island of Hawai‘i.

The two proposed alternate site areas consists of approximately 8.4 acres located immediately adjacent to the Māmalahoa Highway at the northwestern corner of the DLNR property. This relatively level stretch of former pastureland is presently covered in grass with scattered clumps of low scrub. Aerial photographs do not show any obvious surface structures within the 8.4 acres. This western survey area, however, is located adjacent to what ethnohistoric accounts suggest may be a traditional makahiki ground. The precise boundaries of this traditional area, known as Kahua ʻOlohū, have not been precisely determined, and it is possible that activities associated with the traditional use of Kahua ʻOlohū may have taken place within the 8.4 acre survey area.

The second survey area is located at the eastern edge of the DLNR property, south of the Nā‘ālehu Police Station. This eastern survey area covers approximately 8.7 acres (6.2 acres for the proposed treatment site and 2.5 acres for the access corridor extending into the site from the Māmalahoa Highway). It also consists of relatively level land covered in grass with scattered clumps of low scrub. The southern edge of the survey area is marked by slightly rougher terrain broken by occasional shallow gullies and rock outcrops. As with the western survey area, this eastern area is located adjacent to the tentatively identified Kahua ʻOlohū makahiki ground, and may have traditionally been used for associated activities.

2.2 PROJECT BACKGROUND

The originally proposed location of the Nā‘ālehu Wastewater Treatment Facility was a 51 acre project area is located toward the center of the DLNR property between the two present survey areas. An examination of aerial photographs of this project site and its associated buffer zone indicated the presence of several stacked stone walls and stone walled enclosures that appeared to be associated with historic ranching activity in the area. Also clearly visible within the property was a section of the bed of the old Nā‘ālehu to Honu‘apo Railroad. Prior to the initiation of field work, archival research revealed that portions of the proposed project site may have formed part of a gaming field associated with the traditionally held makahiki festival (a Hawaiian festival honoring the god Lono).

In order to protect this significant cultural property, the County of Hawai‘i chose to shift the proposed location of the facility away from the makahiki ground. The two parcels addressed in
this report were selected as alternative locations for the WWTP. As part of the present archaeological inventory survey, Pacific Legacy archaeologists attempted to identify the approximate boundaries of the makahiki field (see Section 6.2).

2.3 ENVIRONMENTAL SETTING

The land area examined during the present archaeological inventory survey rests on the southeastern side of the island of Hawai‘i on the lower slopes of Mauna Loa. The area is characterized by gently rolling hills of pāhoehoe lava with weathered basalt outcroppings and shallow natural drainages scattered throughout. The majority of the project area is currently used as pastureland with cattle actively grazing over much of the area.

2.3.1 Soils

Land types within the project area (Figure 3) include those covered with soils of the Naalehu Series (NaC, NhD), as well as those characterized as Aa Lava Flows (rLV), Rock Land (rRO), and Very Stony Land (rVS) (Sato et al. 1973). The descriptions of these are presented below.

Naalehu Series

Naalehu Series soils consist of well-drained silty clay loams that formed in volcanic ash. These soils are nearly level to steep. They are on the uplands at an elevation ranging from 750-1,800 feet and they receive from 35 to 60 inches of rainfall annually...Naalehu soils are used mostly for sugarcane. Small areas are used for pasture (Sato et al 1973: 40).

Naalehu silty clay loam, 0-10 percent slopes (NaC): This soil is similar to Naalehu silty clay loam, 10 to 20 percent slopes, except that the slopes are less steep. Runoff is slow, and the erosion hazard is slight...This soil is used mostly for sugarcane. Small areas used for pasture (Sato et al. 1973: 41).

Naalehu very rocky silty clay loam, 6 to 20 percent slopes (NhD): This soil is shallower than is typical for the Naalehu Series. It is only 20 to 36 inches deep to bedrock, and rock outcrops make up 5 to 15 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate...This soil is used for pasture (Sato et al. 1973: 41).

Lava Flows, Aa

This lava (rLV) has practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small ōhi‘a trees. It is at an elevation ranging from near sea level to 13,000 feet and receives from 10 to 250 inches of rainfall annually...This lava is rough and broken. It is a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps (Sato et al 1973: 34).

Rock Land

Rock Land (rRO) is a miscellaneous land type that consists of pāhoehoe lava bedrock covered in places by a thin layer of soil material. The dominant slope is between 10 and 15 percent. Pāhoehoe outcrops occupy 50 to 90 percent of the surface. The average
depth of the soil material is between 6 and 8 inches, although in some places the material extends into the cracks of the lava. Rock land is at an elevation ranging from near sea level to 13,000 feet and receives from 10 inches to more than 150 inches of rainfall annually. The hazard of water erosion is slight. Rock land is used for pasture, wildlife habitat and watershed (Sato et al. 1973: 51).

**Very Stony Land (rVS)**

Very stony land (rVS) is a miscellaneous land type consisting of very shallow soil material and a high proportion of ‘a‘a lava outcrops. The dominant slope is between 10 and 15 percent. Between the lava outcrops and in the cracks of the lava, the soil material extends to a depth of 5 to 20 inches. This land is at an elevation ranging from near sea level to 13,000 feet and receives from 10 inches to more than 150 inches of rainfall annually...The erosion hazard is slight. This land is used for pasture and watershed and wildlife habitat (Sato et al. 1973: 52).

The northern portions of both project areas are covered in Naalehu Series soils, while the southern portions are composed of less fertile land types.

### 2.3.2 Vegetation and Rainfall

The project area presently consists of open pastureland with vegetation composed of *kukui* (*Aleurites moluccana*), Christmasberry (*Schinus terebinthfolius*), *kiawe* (*Prosopis pallida*), and *koa haole* (*Leucaena leucocephala*) trees, lantana (*Lantana camara*) shrubs, and low grass.

Rainfall for the area of Nā‘ālehu ranges between 30 to 60 inches annually (Juvik and Juvik 1998: 57) with trade winds blowing out of the northeast.

### 2.4 Recent Impacts

Portions of the project areas show evidence of previous ground disturbing activities. The aerial image below (Figure 4) indicates the areas where grubbing or other ground disturbing activities have occurred. The areas of disturbance indicated on the image were confirmed visually during the field survey. The amount of disturbance varies throughout the area but appears to be consistent with chain dragging or the grubbing and clearing of rocks and vegetation. During field investigations, heavy machinery scars (metal track indentations) were noted on numerous basalt outcrops. This was usually associated with the clearing of rocks which would normally have been present. The activity of chain dragging and/or grubbing is typical of areas used for ranching, where pastures needed to be created.
Figure 3. Geology and soils within the project area.
Figure 4. Aerial image showing the areas of historic ground disturbances.
3.0 HISTORIC BACKGROUND

3.1 TRADITIONAL PERIOD

The ahupua’a within which the survey areas are located, Kaunāmano, literally translates as “multitudes are placed [here]” (Pukui et al. 1974:95), while Nā‘ālehu means “the volcanic ashes” (Pukui et al. 1974:160).

Early historic maps (see Section 3.2.2) suggest that the present project area may in originally have belonged within the ‘ili of Poupouwela, which appears to have formed part of the ahupua’a of Kaunāmano. The ahupua’a of Poupouwela is mentioned in “The Heart Stirring Legend of Ka-Miki”, published between 1814 and 1917 in the Hawaiian language newspaper Ka Hoku o Hawaii. According to the story, Poupouwela translates as “short heat” and was named after a master instructor of lua (hand to hand fighting and bone breaking) who served the high chief Pōhina (Maly 1992:149).

A great deal of information is known about the Nā‘ālehu area as it existed in the pre-Contact and early historic periods. Much of this information comes from the respected Hawaiian scholar Mary Kawena Pukui. Ms. Pukui spent her childhood living with her grandmother, Po’ai Wahine, who had a house located on the hill slope above the present project areas. As a result, Ms. Pukui was very knowledgeable about the history of the region. She learned the traditions regarding the various wahi pana (storied placed) of Nā‘ālehu from her grandmother and from the area’s other elder residents. Much of this information she included in the book Native Planters of Old Hawaii which she co-authored with E. S. Craighill Handy and his wife Elizabeth Handy (Handy et al. 1972). Among the many wahi pana described in Native Planters of Old Hawaii is the gaming ground of Kahua ‘Olohū.

3.1.1 Kahua ‘Olohū

On the United States Geological Survey map of southern Ka‘ū, within the boundaries of the DLNR property, can be found the place name “Kahua Olohu” (Figure 1). In attempting to trace the origin and meaning of this place name, Pacific Legacy researchers came upon the following reference to Kahua ‘Olohū in E. S. Craighill Handy, Elizabeth Handy and Mary Kawena Pukui’s book Native Planters of Old Hawaii.

The famous bowling field named Kahua-‘olo’hū (maika [bowling] stones were called ‘olo’hū in Ka‘ū) was just below the present town of Nā‘ālehu. It is a large level area to seaward of the road which must have been cleared and graded. In old Hawaiian times this broad kahua or plaza was used not just for bowling, but for other sports such as boxing, javelin throwing, and hula dancing during the Makahiki festival. But in a later era this was good sweet-potato land. Kawena Pukui’s elder relative, Opupele, had ‘uala patches here when she was a child (Handy et al. 1972:596).
A kahua is defined as “an open place, as for camping or for sports, as for ‘ulu maika or hōlua sliding” (Pukui and Elbert 1971:105). The topographic contours in the central northern portion of the DLNR property show just such a “a large level area to seaward of the road” located between the two present project areas. This would seem to be the most logical location of Kahua ‘Olohū.

Mary Kawena Pukui’s description of “The famous bowling field named Kahua-‘Olohū” is not the only early mention of a gaming ground in the Nā‘ālehu area. Reverend William Ellis, who traveled through the region in 1823, wrote in his published journal that upon leaving the valley of Wai‘ōhinu,

…we proceeded along by the foot of the mountains, in a line parallel with the sea, and about a mile and a half from it. In our way we passed over a tahua pahe [Ellis, a missionary to Tahiti, used the English style of spelling Hawaiian words, writing the k sound as a t], or pahe floor, about fifty or sixty yards [approximately 46 to 55 meters] long, where a number of men were playing at pahe, a favorite amusement of with farmers and common folk in general. The pahe [pahe‘e]is a blunt kind of dart, varying in length from two to five feet, and thickest about six inches from the point, after which it tapers gradually to the other end. These darts are made with much ingenuity, of a heavy wood. They are highly polished and thrown with great force or exactness along the level ground, or floor of earth, previously prepared for the game….On the same tahua or floor they also play at another game, resembling the pahe, which they call maita or uru maita [‘ulu maika] (Ellis 1917:147-148).

Although Ellis does not indicate the exact location of the “tahua pahe” that he encountered on his travels from Wai‘ōhinu to Honu‘apo, it is possible that this may be the Kahua ‘Olohū described by Pukui. If it is not the same kahua, it at least emphasizes the fact that pahe‘e and ‘ulu maika were popular sports with the people of the Nā‘ālehu area.

Mary Kawena Pukui’s account suggests that Kahua ‘Olohū was not simply a gaming ground for pahe‘e and ‘ulu maika, but that it was associated with the makahiki festival. In pre-Contact Hawai‘i the makahiki was an annual harvest festival dedicated to the god Lono, who is associated with the winter rains and with the growth of dryland crops. Beginning in late October or early November, when the constellation of the Pleiades was first observed rising above the horizon at sunset, the makahiki period continued for approximately four months. The makahiki was a time to give ritualized thanks for the abundance of the earth and to call upon the gods to provide rain and prosperity in the coming year. All warfare ceased during this period, and the people gathered to pay tribute to the chiefs, to feast and to enjoy competitive games. Both chiefs and commoners competed in these sports, which included ‘ulu maika (a type of bowling with circular stone disks), boxing, foot races, marksmanship with pahe‘e (dart sliding), javelin throwing, wrestling and hula dancing. Many of the hula performed were composed specifically for the makahiki. These annual makahiki games were held at recognized festival grounds. Kahua ‘Olohū in Nā‘ālehu appears to represent one such site.

While Kahua ‘Olohū appears to have been primarily a gaming field, its connection with the makahiki festival means that it is directly related to an important religious event in the Hawaiian calendar and was most probably the site of rituals and ceremonies associated with the makahiki games.
3.2 Historic Period

After Kalaniopu‘u’s death in 1782, his son Keōua became ruling chief of Ka‘ū and Puna. Keōua was killed by Kamehameha in battle in 1790 during his unification of the islands.

Early visitors to the area saw large but scattered populations. “The valley of Waiohinu, according to early foreign observers, was the heart of the cultivated area of Ka-‘u” (Handy and Pukui 1972: 242).

As late as 1833, according to the missionary surveyors, there were twenty sizable plots (lo‘i) of irrigated taro in Waiohinu village requiring constant flooding by flowing water diverted from the stream in ditches (‘auwai). This indicated both an abundance of water (considering the needs of the two or three thousand people estimated to be dwelling within the valley) and an intensive use of it in conjunction with fertile soil (Handy and Pukui 1972: 242).

3.2.1 Mahele ‘Āina

Private land ownership was introduced into Hawai‘i during the 1848 Mahele ‘Āina (land division) of 1848. Crown and ali‘i lands were awarded in 1848 and kuleana titles were awarded to the general populace in 1850 (Chinen 1958). The awarded lands are called Land Commission Awards (LCA’s). A review was made of the LCA’s located in the vicinity of the current project areas. This revealed that only two LCA’s were awarded in the immediate area, LCA 8774-1 and 8774-2 (Figure 6). Both were awarded to a Kapunanui, and both are located across the Māmalahoa Highway to the north of the project area. Several of the properties surrounding the DLNR property were awarded as land grants (Figure 5).

3.2.2 Late Historic Period

The first sugar mill was built in Ka‘ū at Wai‘ōhinu by Nicholas George in 1866 (Elwell and Elwell 2005:23). On April 3, 1868 an earthquake measuring 7.9 on the Richter scale resulted in tsunamis that leveled several coastal villages. Seventy-seven people were killed, 46 from tsunami and 31 from landslides. Many of the coastal residence displaced by the tsunami moved up to Nā‘ālehu town.

In 1868, Nā‘ālehu Plantation was started by Alexander Hutchinson who brought in a small mill. Hutchinson brought over Hawaiian laborers from Honolulu but these were not enough. Hutchinson brought in the first real immigrant workers in 1876:

Hutchinson brought a group of Chinese to work in the fields of the Nā‘ālehu Sugar Company. The second group of immigrant workers came from Portugal, and a government census in 1884 reported that the Ka‘ū labor force included 568 Chinese, 933 Portuguese and 85 Pacific Islanders, probably from the Gilbert Islands (Elwell and Elwell 2005:25-26).

Upon Hutchinson’s death in 1879, “Wm. G. Irwin and Claus Spreckels bought Naalehu Plantation and changed its name to Hutchinson Plantation” (Campbell and Ogburn 1990: 1).
In the early days, sugar cane was transported to the mill via carts and horses. To ease transportation of sugar and supplies, Honu’apo wharf was completed in 1883 (Kelly 1980: 18). The use of horses and carts ended with the introduction of flumes, however, the reliance upon rain water made the use of flumes unpredictable. “Narrow-gauge railroads were therefore built by the mid 1890s, with steam trains hauling the cane to the mill and port in Honu’apo. The trains continued to run until the 1940s when they were replaced by trucks (Elwell and Elwell 2005:26). The pier at Honu’apo was subsequently destroyed by the military in 1942 because of the threat of invasion (Elwell and Elwell 2005:48). What remained was also impacted by a tsunamis that struck Hawai’i in 1945.

By 1911, Hutchinson moved its milling process to Honu‘apo, the location of its landing. “Hutchinson Sugar Plantation Co. was in charge of the stevedoring operations. A permanent gang of eight men was in charge of the equipment and on steamer days stevedore gangs, mostly Hawaiians, were employed” (Campbell and Ogburn 1990:2).

An examination of historic maps of the Nā‘ālehu region uncovered an 1887 Government Survey map and a 1906 Hawai‘i Territory Survey map, both of which show the DLNR property. The 1887 map (Figure 5) shows a small stone walled enclosure located toward the northeastern corner of the property (the enclosure is visible in current aerial photographs), as well as several hala (Pandanus tectorius) trees located closer to its northwestern corner. The 1887 Government Survey map seems to indicate that the present project areas may in originally have formed part of the ‘ili of Poupouwela, which appears to have formed part of the ahupua‘a of Kaunāmano.

The 1906 map (Figure 5) also shows the location of some of the hala trees indicated on the 1887 map, as well as the track of the Nā‘ālehu to Honu‘apo Railroad which cuts through the center of the DLNR property from east to west. This railway was constructed by the Hutchinson Sugar Company to carry cane from the fields above Nā‘ālehu to the mill at Honu‘apo (Dorrance and Morgan 2000). A notation on the 1906 map states that within the DLNR property there was, “good land from Gov’t Rd. [government road] to R.R. [railroad] track, below track quite a little aa.” A handwritten note on the map indicates that the eastern portion of the DLNR property between the rail line and the Government Road (now the Māmalahoa Highway) served at that time as the “County Stable Lot”. A survey point near the northern edge of DLNR property is identified as being “rock “X” at mouth of cave”, suggesting there was once a lava tube in this vicinity. The present survey was unable to relocate this cave, which may have been covered by grubbing.

It will be remembered that Mary Kawena Pukui’s elder relative, Opupele, had ‘uala (Ipomoea batatas, sweet potato) patches here when she was a child, which would have been in the early 1900s (Handy et al. 1972:596).
Figure 5. Portion of the 1887 M.D. Monsarrat Map, Reg. Map No. 1455. Current project areas and DLNR property boundary outlined in red.
Figure 6. Portion of the 1905 Geo. Wright map. Register Map No. 2340. Current project area and DLNR property boundary outlined in red.
4.0 ARCHAEOLOGICAL BACKGROUND

4.1 PREVIOUS ARCHAEOLOGY

While no archaeological investigations have been conducted within the current project areas, at least four studies have occurred in the vicinity of the current investigation. These previous surveys are summarized below.

In 1987, Joseph Kennedy (Kennedy 1987) conducted an archaeological surface and subsurface survey at a parcel within the *ahupua’a* of Kaunāmano [TMK (3)9-5-012:002] for the then proposed Kaʻū Police Station. No sites were recorded. The survey was conducted over an area that was “flat, covered with low grass and scattered boulders only and appears to be a pasture used for grazing animals” Kennedy 1987:1). Kennedy identified a single, low running wall c. 70 meters long just inside the property line identified as a historic ranch wall. Shovel tests conducted within the project area failed to identify any subsurface cultural material. No further work was recommended.

In 2005 Haun & Associates (Haun and Henry 2005) conducted an archaeological assessment survey for Sunrise Oceanfront Farms, LLC on a c. 1 acre parcel located in the land of Kaunāmano, Kaʻū District, [TMK: (3)9-5-011: Por. 001] and situated along the eastern side of the dirt road that runs south from the Māmalahoa Highway just east of the school. The area had been substantially impacted by historic/modern ranching activity. No archaeological sites or features were identified.

Also in 2005, Haun & Associates (Haun et al. 2006) conducted a survey of a large parcel encompassing nearly all of the lands of Kaunāmano between Highway 11 and the coast (this area abuts the East Parcel of the current survey area). Although no formal report has been produced for their investigations, Alan Haun did forward a map to Pacific Legacy which shows at least 216 sites located to the north and east of the current project area (Figure 7). Haun’s map gives some idea of the intensity of traditional human activity in the Nāʻalehu area. No detailed report summarizing the findings of this survey is available.

Between April and July 2009, Cultural Surveys Hawai’i (Wilkinson et al 2009) conducted archaeological monitoring for a cesspool instillation project at Nāʻalehu Elementary school [TMK: (3) 9-5-009:006, 015]. No subsurface cultural resources were identified during this project.
Figure 7. Archaeological Sites in the vicinity of the current project area identified by Haun and Associates (after Haun et al. 2006).
4.2 ANTICIPATED SURVEY FINDINGS

Based upon the background and literature search, there was little doubt significant archaeological resources would be identified during the current investigations. Previous studies had suggested that the possible traditional resources present might include lava tubes containing cultural material and potential human burials (ʻiwi kūpuna), which is always a potential on the island of Hawai‘i. Further, the proximity of the current project area to the documented makahiki field of Kahua ʻOlohū also made it likely that features associated with traditional makahiki activities might be located in the survey area. Stone enclosures, house platform and mounds were expected to be identified given the use of the area for the makahiki. Given the large population that would have been associated with the event, numerous support structures (cooking houses, etc.) could also be present. Historical resources anticipated in the project areas included the bed of the Nāʻālehu to Honuʻapo Railroad, cattle walls and other structures identified with Nāʻālehu’s history of sugar cultivation and ranching.
5.0 FIELD METHODS

5.1 SURVEY

To ensure that all of the archaeological features present within the project area were located and identified, pedestrian sweeps were undertaken of both the 8.7 acre Eastern Parcel and the 8.4 acre Western Parcel. These pedestrian transects were conducted by the field crew spaced between 10 and 15 meters apart, depending upon the density of the vegetation.

Each archaeological site found was assigned a temporary field number to facilitate identification. This consisted of a T (for temporary) followed by a consecutively number (i.e., T-001). Individual structural features within a specific site were assigned consecutive letter designations to aid in recording and mapping. Hawai‘i State Inventory of Historic Properties (SIHP) site number were requested and received from the State Historic Preservation Office for all sites within the project area. The SIHP numbering system employs a four part numeric code. The first element designates the state. The second specifies the island. The third indicates the U. S. Geological Survey topographic quadrangle within which the site is located. The fourth is a site specific number designation (i.e., Site 50-10-28-26864). Since, at the time of the survey, SIHP number had not been assigned, the metal site tags left at each site were marked with the temporary field number and date.

Once identified, each site and its component features were fully documented. Vegetation clearance was undertaken as needed. The relative location of each site was mapped using a hand held Trimble GeoExplorer XT global positioning system (GPS) (Figure 8). Its coordinates were recorded using a Universal Transverse Mercator, North American Datum for 1983, Zone 5 (UTM NAD 83 Z5) projection. An individual point was taken for each site and for each individual feature. A listing of these coordinates is provided in Appendix C. Detailed site and feature descriptions were recorded for all identified archaeological remains (Appendix A provides a list of site attributes, while Appendix B provides full descriptions for all recorded sites and features). Documentation also included digital photographs of each site. Plan view maps were prepared for select sites using tape and compass. A metal site tag was filled out and affixed to a stone at all sites (including the sites identified during the Reconnaissance Survey) for future relocation purposes.
5.2 **TEST EXCAVATIONS**

Test excavations were undertaken at two sites located within the project area. These excavations were conducted to better assess the possible age and function of the sites. A 1 by 1 meter test unit was excavated at Site 29385, Feature A (Figure 9), and a similar test unit at Site 29387. Both test units were excavated in 5 centimeter arbitrary levels within natural layers using trowels and brushes. All excavated material was screened through ½ inch wire mesh. All cultural material recovered during screening was bagged according to the layer and level in which it was found. Upon completion of the excavation, one face of the test unit was drawn in profile, and the soils described following USDA nomenclature and using Munsell color notations. Soil samples from each stratigraphic layer were collected for possible reference during laboratory analyses and report preparation. All collected material was assigned a unique bag number for tracking and cataloguing purposes.
5.3 LABORATORY ANALYSIS

All materials collected during the course of test excavations were transported to Pacific Legacy’s O’ahu laboratory for processing, identification and detailed analysis. Analysis of recovered materials included sorting, identification, labeling, and curation. No human bone was recovered from either of the two test excavations. The items recovered during test excavations were cleaned, identified, measured, weighed, described, and cataloged.

5.4 CURATION

All field records (descriptions, notes and photographs) resulting from the inventory survey, as well as all cultural materials (artifacts, midden, etc.) and samples (soil) collected during test excavations, have been temporarily housed in the Pacific Legacy Kailua, O’ahu office.
6.0 FIELD INVESTIGATIONS

6.1 INVENTORY SURVEY RESULTS

A total of 25 sites were identified during the survey (Figure 10). Five sites are located in the East Parcel and three of the sites in the West Parcel. The remaining 17 sites are situated outside the area of potential effect (APE) but within the DLNR property. One identified site in the East parcel was previously recorded during the 2005 Haun survey and assigned SIHP number 50-10-74-25266. It was fully documented during the current investigations. Subsurface excavations were carried out at two sites (29385 and 29387).

6.1.1 East Parcel

The East Parcel is located along the northeast corner of the DLNR property. The survey identified five sites within the survey area and an additional four sites on the south and west edges of the parcel (Figure 11). Sites identified within the East Parcel included: Site 25266, a lava tube containing at least one set of human remains; Site 29385, a stone mound [possible burial] and a stone platform; Site 29386, a cattle wall; Site 29390, a section of railroad bed; and Site 29391, a cattle wall.

Site 50-10-74-25266

Site 50-10-74-25266 (recorded in the field as Site T-001) is a modified lava tube (Figure 12) containing a large skylight entrance (Figure 13) and a second smaller, partially filled skylight entrance (Figure 14) with two side chambers. The site was originally found by Haun and Associates in 2005 (Pacific Legacy recovered the Haun and Associates site tag). The site is located on the east side of the East Parcel ca. 3 meters from the edge of the project area. The lava tube extends roughly west/east and contains cleared areas, several low rock walls, shell midden, volcanic glass flakes, coral, charcoal and 'ulu maika (Figure 16) and at least one human burial.

Overall the tube measures at least 43 meters in length with the east side measuring at least 16 meters long and 6 meters wide. The floor is mixed with roof fall and cleared soil areas and scattered marine shell. There are two built up/walled areas towards the back of the tube. The human remains are located near the rear of the east chamber situated behind low rock stacking. Upon identifying the human remains, Pacific Legacy contacted Ms. Theresa Donham (SHPD Archaeologist and Branch Chief) who requested that the tube be mapped and recorded. No excavation was conducted at this site. Three complete cow skeletons were situated within a cleared/soil portion of the chamber. The west chamber is at least 47 meter in length and narrows to 2 meters in width. This chamber gets very tight and access is limited. Roof fall in this area is pushed to the side allowing for a single individual to crawl through. The west chamber gets very narrow and low but maintains a rock wall nearly blocking the tube. Soil covers nearly the entire floor. At 6 meters, there is a low rock wall on the south side of the tube. Approximately 22 meters into the chamber, a rock wall has been constructed that blocks access to the remainder of the tube (Figure 15). However, the wall was crossed, without dismantling to investigate the remainder of the tube. This chamber extends at least 20 more meters where it splits into upper chamber and a lower chamber with a c. 10 foot drop. At this point the investigation of the tube was halted due to safety reasons.
Figure 10. All archaeological sites identified during the Inventory and Reconnaissance Surveys.

FINAL — Archaeological Inventory Survey
Nāʻālehu Wastewater Treatment Facility
Kaunānāo Ahupuaʻa, Kaʻu District, Hawaiʻi Island
February 2013
Figure 11. Archaeological sites identified during the Inventory Survey.
Figure 12. Plan view map of Site 50-10-74-25266 modified lava tube.
Figure 13. The main entrance to Site 25266, note, cow bones are visible on tube floor (view east).

Figure 14. Smaller secondary/partially blocked tube entrance (view north).
Figure 15. Internal wall blocking the west chamber at Site 25266 (view south west).

Figure 16. ‘Ulu maika found within Site 25266.
Site 29385
Site 29385 is a stone platform (Feature A) and a stone mound (Feature B) located approximately 35 meters west of Site 25266 (Figure 19). The site is situated on a small rise overlooking Site 25266. An old ranch road extends along the north edge of Feature A and there is an old water tank located 20 meters down slope to the south. Several bedrock outcrops are present in the vicinity along with natural broken outcrops that resemble mounds.

Feature A is a stone platform constructed of basalt cobbles and boulders and measures 3.8 meters long, 3.0 meters wide and 0.7 meters high (Figure 17). The platform is constructed on top of a weathered bedrock outcrop. This feature is roughly rectangular in shape and was originally thought to be a possible burial. Subsequent subsurface testing determined that no human remains were present (Figure 18). Feature A is likely a clearance mound.

Feature B is a stone mound located 30 meters at 299° from Feature A (Figure 18). It measures 2.8 meters long, 1.7 meters wide and 0.7 meters high. It is constructed of basalt cobbles and incorporates a bedrock outcrop into its construction. Feature B is roughly rectangular in shape and may be a burial or a clearing mound.

Figure 17. Site 29385, Feature A stone platform (view south).
Figure 18. Site 29385, Feature A stone platform, plan view.
Figure 19. Plan view map of Site 29385.
Figure 20. Site 29385, Feature B stone mound (view southwest).
Site 29386
Site 29386 is a cattle wall located on the northern edge of the East Parcel (Figure 21). The wall is oriented at ca. 244° and measures approximately 256 meters long, 0.75 meters wide and 0.70 meters high. It is constructed of basalt cobbles and boulders (Figure 22). A barbed wire fence extends along the east side of the wall for its entire length. The north end of the wall terminates at a cattle gate while the south end abuts Site 29390 (railroad bed). Site 29391 abuts into Site 29386 on the northeast side and was likely constructed at a later date because it utilizes larger boulders and is not as well constructed as Site 29386. This site was likely constructed during the historic period to limit the movements of cattle.

Figure 21. Overview of Site 29386 wall (view south).
Figure 22. Close-up of Site 29386, cattle wall (view southeast).
Site 29390
Site 29390 is a raised railroad bed that extends nearly the entire length of the DLNR property (Figure 23). It is a remnant of the sugar industry that operated in Nāʻālehu. The south end of the bed terminates near the West Parcel (closest to Nāʻālehu town) while the north end extends into the East Parcel and simply stops. The majority of the site extends to the south of the East Parcel.

In total, the railroad bed measure 933 meters long, 2.8 meters wide and between 1.0 meters and 5.0 meters in height. The overall length of the railroad is split into three sections (309 meters, 27 meters and 470 meters in length respectively). The gaps between the sections are natural drainages leading to the conclusion that wooden bridges once spanned these drainages. The bridges are no longer present. The bed is constructed of a soil berm with stacked ‘a‘a cobbles and boulders on the exterior sides for support (Figure 24). The rock walls supporting the bed are angled to help reinforce it. The surface of the bed is comprised of soil mixed with crushed rock, brick and limestone. No metal railroad beams remain on the bed.

Figure 23. Site 29390 railroad bed (view south).
A barbed wire fence extends parallel on the east side along portion of the bed. This is no doubt a later addition by ranchers using the raised portion of the bed as a wall to secure the pasture for the cattle. Small portions of the bed have been damaged by cattle crossing, however, in all the railroad bed is in good shape.
Figure 24. Site 29390, note the massive construction across a gulch (view north).
Site 29391
Site 29391 is a roughly V-shaped cattle wall constructed of stacked basalt cobbles and boulders (Figure 25). It measures ca. 38.7 meters long, 0.90 meters high and 0.80 meters wide. The wall is well stacked and faced with larger boulders on the exterior and smaller ‘a‘a cobbles on the interior (similar to core filling) (Figure 26). The southwest/northeast wall measures ca. 30 meters long and is oriented at 270° and the east/west measures 15 meters long and is oriented at 140°. The east/west section appears to be a later addition, evidenced by the different construction of mostly boulders and may have been an attempt to close off the field between Sites 29386, 29390, and 29391. The majority of Site 29391 extends parallel to Site 29390 (railroad). The northeast end terminates at the end of the parcel while the south end simply ends. Another wall appears ca. 60 south of Site 29391, outside of the project boundary and may have been associated with Site 29391 at one time. This site is in fair condition.

Figure 25. Site 29391 stone wall (view north).
6.1.2 West Parcel
The West Parcel is located on the west end of the DLNR property and abuts the *makai* side of the Hawai‘i Belt Road. This area is actively used as a pasture and contained cattle during the current survey. Three sites were recorded within the West Parcel, These included: Site 29387, a stone wall backed with bulldozed soil to form a terrace; Site 29388, two wall segments; and Site 29389, a petroglyph. Evidence of bulldozing and grubbing was evident throughout this entire parcel.

Figure 26. Site 29391 stone wall (view south).
Site 29387
Site 29387 is located at the base, on the north facing side of a low ridge. This site was originally thought to be a soil terrace with a rock wall facing (Figure 27). The site consists of a single terrace (soil with rock facing) measuring 17 meters long (east/west), 2.5 meters deep (north/south), and 0.6 meters in height (ABS). The terrace interior is soil and blends into the natural slope on the south side. The wall facing is comprised of basalt cobbles and boulders stacked upon bedrock (Figure 28). A *kukui* nut tree is located in the soil terrace and a large *kiawe* tree is immediately to the north of the terrace.

Overall, the site is in fair condition considering the cattle that rest under the *kiawe* tree (numerous cattle bones were found scattered around the *kiawe* tree). No traditional or historic artifacts were observed on the surface. Likewise no midden was seen. There is evidence of bulldozing entirely around the site, both the east and west ends taper into the exiting slope possibly impacted from dozer activity. The site was originally thought to have functioned as an agricultural terrace. The closest site is Site 29388 (rock wall) located c.40.0 meters to the east.

Test excavations conducted at this site recovered abundant historic debris including a red brick, metal, rubber and glass (Figure 29). The excavation confirmed that the site was not an agricultural terrace, but rather a free-standing stone wall that was filled with soil on its south side giving the appearance of a soil terrace.

![Figure 27. Site 29387 terrace (view southeast).](image-url)
Figure 28. Site 29387 terrace (view west).
Figure 29. Plan view map of Site 29387.
Site 29388

Site 29388 is located on the north facing side of a low ridge. The site consists of two wall segments which were connected at one time but appear to have been disconnected by a bull dozer/road cut (Figure 30). The western wall (Figure 31) segment is oriented at 294° and measures 7.2 meters long (east/west), 1.0 meters wide (north/south), 0.7 meters high on its south side, and 0.8 meters high on its north side. The wall is comprised of loosely stacked basalt cobbles and boulders that remain stacked on the east end but are tumbled on the west end. The west end was likely impacted by dozer activity and cattle. The eastern wall segment is oriented at 295° and measures 7.8 meters long (east/west), 1.2 meters wide (north/south), 0.6 meters high on its north side, and 0.25 meters high on its south side. The breach in between the two segments is 7.7 meters wide (Figure 32). The eastern wall segment is in poor condition from dozer activity, cattle, and vegetation (two hale koa trees are growing in this segment). It is constructed of basalt cobbles and boulders. Vegetation in the area consists of pasture grass and ‘ilima. The closest site is 29387 located c. 40.0 meters to the west. The site’s GPS point was taken with the datum on the west end of western segment.
Figure 30. Plan view map of Site 29388.
Figure 31. Site 29388 stone wall segment located on the west side of dozer cut (view east).

Figure 32. Overview of Site 29388 (view north).
Site 29389
The site is located on the south side of a basalt outcrop in the middle of the pasture. The site consists of a single human figure petroglyph measuring 24.0 centimeters long, and 21.0 centimeters wide (Figure 33 and Figure 34). The basalt outcrop into which the image is pecked measures 4.1 meters long (east/west), and 2.0 meters wide (north/south). The basalt panel has scarring from several dozer passes but the petroglyph itself is not damaged. The only impact is likely due to weathering. The north side of the basalt outcrop contains large boulders that have been placed there by the dozer. A single metal pipe is stuck in the boulder pile.

Figure 33. Site 29389 human figure petroglyph (view north).
6.2 Reconnaissance Survey Results

In addition to the Inventory Survey conducted in the East and West parcels, a reconnaissance survey was conducted in the adjoining areas on the DLNR land. There were two primary reasons for doing this: 1) attempt to identify the locations and sites types associated with the makahiki field known to exist in the area; 2) determine if other sites were in the vicinity should the proposed WWTP location need to be moved or adjusted. It was understood by all parties that the reconnaissance survey of these areas would not be conducted at the same level as the inventory survey and if the need arose to shift the WWTP location, a formal inventory survey of the new area would need to be undertaken. A total of 17 additional sites were documented during the reconnaissance survey (Table 1). Detailed descriptions of these sites are provided in Appendix B.

Within the adjoining areas between the East and West parcels, four petroglyphs (T-011, -015, -016 and -026) were recorded (see Appendix B for all site descriptions). The number of petroglyphs identified is likely associated with the areas link to the Kahua ʻOlohū (the makahiki...
Several enclosures and possible enclosures were documented (Site T-004, -013, -022, -025). Site T-013 contains at least two enclosures within the site complex. This site is situated on a ridgeline overlooking the makahiki field and may be associated with activities or event surrounding the festival. Site T-022 is a smaller enclosure, possible used for habitation and contains an ‘ulu maika in its wall.

**Site T-014**

During the reconnaissance survey an attempt was made to identify the approximate boundaries of the Kahua ‘Olohū gaming ground. This site, which ethnohistoric accounts suggest served as a traditional makahiki field, is currently used for pasture and is split between two landowners. The site is partially located on the DLNR property and partially on land owned by a private landowner (which the state is reportedly attempting to acquire through exchange). A survey of the boundaries of the entire site was not completed since a large portion of the field is situated on property to which the archaeological survey did not have access (Figure 10).

While we did not enter the adjacent property to the northwest (not owned by the State), we did survey along the northwest fence-line of the western parcel and identified a large flat soil area in the adjacent property which we interpret to be the approximate boundary of the makahiki grounds (Site T-014) (Figure 35). The boundary between the possible makahiki grounds and the surrounding area is visually apparent. The area within Site T-014 is nearly all soil, and no loose rocks or rock outcrops are present, while outside its boundary the ground surface is scattered...
with stones. This stone free area appears to extend west to the Hawai‘i Belt Road, while to the east the ground becomes rocky and undulating. There are no apparent “man-made” physical features defining the makahiki other than the lack of rock in the field, but stones do appear to have been intentionally cleared from the field. East of the field, the land is covered in scattered rocks and basalt outcroppings. It is in this area that the Site T-011, 015, and 016 petroglyphs are located. The western edge of the cleared gaming field appears to be visible in aerial photographs, but since this edge is located outside the DLNR property it was not possible to delineate the exact western boundary. This adjoining property is presently covered in high grass. The ground appears to slope upward from the western edge of the field, and this area may have served as a natural viewing area or “bleechers” associated with the makahiki grounds.

Figure 35. Photo of probable makahiki field area. Photo taken from West Parcel (view east).

Four historic cattle walls (Site T-017, -018, -019, and -021) and one wall with an unknown function (Site T-003) were also documented. Several of the walls are of later construction, and were built when the areas use was converted to pasture for cattle. One of these walls (T-017) may have been constructed about the time the area was utilized as the county stable lots.

Other sites identified during the reconnaissance survey include a possible agricultural terrace (Site T-005) and several modified outcrops (Site T-023).
Lastly, Site T-012 is a complex of stone platforms (n=3) which resemble burial platforms. Three of the platforms are situated in shallow depressions with at least ones faced edge. Their location, on top of a small but protect rise south of the *makahiki* field and style of construction point to their possible function as burial platforms.
7.0 EXCAVATION RESULTS

Archaeological testing was carried out as part of the inventory survey within the two project areas. This testing was undertaken to provide additional information on the character and chronology of human activity. Excavations were conducted at two sites. The field and laboratory methods employed during these excavations have been described in Sections 5.2 and 5.3. Detailed descriptions of the excavated sites are presented below. These descriptions follow a standard format to facilitate comparison.

7.1 SITE 29385, TEST UNIT 1

Description. Site 29385 consists of two small platforms (Features A and B) thought to possibly contain human burials. Feature A was excavated because of its more formal style of construction (an elongated stone platform) and its proximity to Site 25266 (c. 35 meters NW), a lava tube containing a human burial. Since Site 29385 is in the same general direction as the west chamber of Site 25266, it was believed that Feature A could contain further human remains or could be a sealed entrance of the lava tube.

Excavation Summary. Test Unit 1 was a 1.0 by 1.0 meter test pit laid out in the center of the structure (Figure 18). The stones were removed and placed on the side for later backfilling. The remainder of the test unit was excavated in 5 centimeter arbitrary levels within natural layers down to bedrock (Figure 37). Excavations were conducted with trowel and brush, and all excavated soil was screened through ½ inch wire mesh. Upon completion of excavation a profile was drawn of the west wall of the test unit (Figure 36).

Stratigraphy.

Layer I 0-60 cmbd  Rock (no Munsell). Basalt cobbles and boulders and loose bedrock that make up the platform.

Layer II 35-73 cmbd  Dark brown (10YR 3/3) silt loam; weak, very fine structure; mixed with duff vegetation; these are wind-blown sediments.

Cultural Materials. No human remains were identified within the feature. A single marine shell was recovered from Layer II. Charcoal flecking was also noted scattered throughout the layer but was not present in large enough concentrations to recover. No artifacts or dateable material was recovered during the excavation.
Table 2. Remains Recovered from Test Unit 1, Site 29385

<table>
<thead>
<tr>
<th>Test Unit</th>
<th>Layer</th>
<th>Identification</th>
<th>Weight (gm)</th>
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<tbody>
<tr>
<td>1</td>
<td>II</td>
<td>unidentifiable marine shell</td>
<td>0.1</td>
</tr>
<tr>
<td>1</td>
<td>II</td>
<td>canine (small rodent) Mongoose</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Herpestes Javanicus)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 36. Site 29385, Feature A, Test Unit 1, West Wall profile.
Summary. The results of the excavation of Test Unit 1 at Site 29385 confirm that Feature A is not a burial, nor does it seal a lava tube entrance. Rather, the feature is a collection of stone placed atop a basalt outcrop. The purpose and function of the feature is undetermined. The lack of cultural material collected from the excavation indicates that there was little or no use of the feature after its construction.

7.2 SITE 29387, TEST UNIT 2

Description. Site 29387 is a possible agricultural terrace (soil terrace) with rock retaining wall. This feature was excavated to confirm its function as an agricultural terrace and to obtain datable material to establish a chronology for the site.

Excavation Summary. Test Unit 2 was a 1.0 by 1.0 meter test pit placed in the western end of the terrace, abutting the terrace wall (Figure 29). The unit was excavated in 5 centimeter arbitrary levels within natural layers. Excavations were conducted with trowel and brush, and all excavated soil was screened through ¼ inch wire mesh. Once the bottom of the terrace face was reached and it was determined that the deposit thought to be the interior of the terrace consisted of soil and historic debris bulldozed up against a ranch period wall, excavation was halted. Upon completion of excavation a profile was drawn of the west wall of the test unit (Figure 38).
**Stratigraphy.**

Layer I 0-8 cmbs Dark grayish brown (10YR 4/2) loam; weak, fine structure; non sticky, non-plastic; abrupt smooth boundary. Contains duff vegetation and rootlets.

Layer II 3-60 cmbs Dark yellowish brown (10YR 4/4) silty clay loam; moderate, fine to medium structure; slightly sticky, slightly plastic. Contains: non-human fauna (cow), volcanic glass frags (4), bottle glass frags (2), barbed wire, unidentifiable metal frags (2), rubber frags (2) and a piece of red brick with mortar.

Layer III 40-60 cmbs Dark yellowish brown (10YR 3/6) clay loam; fine, structure; slightly sticky, slightly plastic.

**Cultural Materials.** No human remains were identified within the feature. The volcanic glass fragments recovered from the unit are natural and have no flake scaring or use-wear. All are of low grade and are likely natural silica that is observed on the basalt in the area. The metal, glass and brick are historic materials and were probably deposited from mechanical activity that was observed upslope from the feature.

**Table 3. Artifactual Material Recovered from Test Unit 2**

<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth (cmbd)</th>
<th>Identification</th>
<th>Weight (gms)</th>
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</tr>
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<td>II</td>
<td>21</td>
<td>Volcanic Glass</td>
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</tr>
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<td>25</td>
<td>Volcanic Glass</td>
<td>0.07</td>
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<td>II</td>
<td>25</td>
<td>Volcanic Glass</td>
<td>5.29</td>
</tr>
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<td>II</td>
<td>29</td>
<td>Metal barb (wire)</td>
<td>0.13</td>
</tr>
<tr>
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<td>29</td>
<td>Metal (unidentifiable)</td>
<td>1.26</td>
</tr>
<tr>
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<td>30</td>
<td>Waterworn pebble</td>
<td>0.02</td>
</tr>
<tr>
<td>II</td>
<td>30</td>
<td>Glass fragments</td>
<td>0.01</td>
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<td>II</td>
<td>35</td>
<td>Metal (unidentifiable)</td>
<td>2.12</td>
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<td>35</td>
<td>Glass</td>
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<td>II</td>
<td>35</td>
<td>Volcanic Glass</td>
<td>0.12</td>
</tr>
<tr>
<td>II</td>
<td>35</td>
<td>Waterworn pebble</td>
<td>0.02</td>
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<td>40</td>
<td>Metal (unidentifiable)</td>
<td>0.35</td>
</tr>
<tr>
<td>II</td>
<td>40</td>
<td>Volcanic Glass</td>
<td>0.03</td>
</tr>
<tr>
<td>II</td>
<td>40</td>
<td>Glass fragments</td>
<td>0.05</td>
</tr>
<tr>
<td>II</td>
<td>60</td>
<td>Rubber</td>
<td>0.07</td>
</tr>
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<td>II</td>
<td>60</td>
<td>Volcanic Glass</td>
<td>0.04</td>
</tr>
<tr>
<td>II</td>
<td>60</td>
<td>Rubber</td>
<td>0.03</td>
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</tbody>
</table>

**Summary.** The results of the excavation at Site 29387 indicates the site is not an agricultural terrace but rather a free standing (ranch) wall which has been filled in with soil on its south side. The historic material collected in Layer II appears to have been deposited from upslope where mechanical clearing occurred sometime in the past.
Figure 38. Site 29387, Test Unit 2, West Wall profile.

Figure 39. Test Unit 2, post-excavation (view north).
8.0 SIGNIFICANCE ASSESSMENTS

The National Historic Preservation Act of 1966 (as amended) authorizes the Secretary of Interior to expand and maintain a National Register of Historic Places (NRHP) that contains a listing of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology, engineering and culture. The National Register is an authoritative guide used by Federal, State, and local governments, private groups and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment. The National Register was designed to be and is administered as a planning tool. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 CFR §60.4:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

The State of Hawai‘i recognizes the above criteria under HRS §13-275-6 (b), and has also added a fifth significance criterion to the evaluation process. Under this criterion a historic property can be recognized as significant if it is known to:

(e) Have an important value to the Native Hawaiian people or to another ethnic group of the State due to associations with cultural practices once carried out or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts – these associations being important to the group’s history and cultural identity.

In addition, the State of Hawai‘i recognizes that, “A group of sites can be collectively argued to be significant under any of the criteria” listed above (HRS §13-275-6 b).
8.1 ASSESSED SIGNIFICANCE OF INVENTORY SURVEY SITES

All of the sites documented during the inventory survey are considered significant for their information content (Criterion D). In addition, Site 29390 can be said to be associated with broad patterns of history (Criterion A). None of the sites can be directly linked to important historic personages (Criterion B) or embody distinctive characteristics or represent the work of a master (Criterion C). However, two sites were considered to have important value to Native Hawaiians or other ethnic groups because of those sites’ association with traditional beliefs, events or oral accounts (Criterion E). These included Site 25266 and 29385. Due to its artistic merit and potential symbolic and ceremonial significance, the Site 29389 petroglyph was also included under Criterion E (Table 4).

Table 4. Site Significance and Recommended Treatments

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Type</th>
<th>Parcel</th>
<th>Significance</th>
<th>Recommended Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>25266</td>
<td>Lava Tube</td>
<td>East</td>
<td>d, e</td>
<td>Preservation</td>
</tr>
<tr>
<td>29385</td>
<td>Platform/Mound</td>
<td>East</td>
<td>d, e</td>
<td>Data Recovery</td>
</tr>
<tr>
<td>29386</td>
<td>Wall</td>
<td>East</td>
<td>d</td>
<td>No Further Work</td>
</tr>
<tr>
<td>29387</td>
<td>Wall</td>
<td>West</td>
<td>d</td>
<td>No Further Work</td>
</tr>
<tr>
<td>29388</td>
<td>Wall Segments (n=2)</td>
<td>West</td>
<td>d</td>
<td>No Further Work</td>
</tr>
<tr>
<td>29389</td>
<td>Petroglyph</td>
<td>West</td>
<td>d, e</td>
<td>Preservation</td>
</tr>
<tr>
<td>29390</td>
<td>Railroad Bed</td>
<td>East</td>
<td>a, d</td>
<td>Preservation</td>
</tr>
<tr>
<td>29391</td>
<td>Ranch wall</td>
<td>East</td>
<td>d</td>
<td>No Further Work</td>
</tr>
</tbody>
</table>

8.2 RECONNAISSANCE SURVEY SITES

None of the sites identified during the reconnaissance survey were fully recorded or mapped, thus no permanent sites numbers were requested from the State Historic Preservation Division (SHPD) and no significance has been assessed. While we believe it is premature to evaluate the sites recorded during the reconnaissance survey for their significance, the cultural importance of the Kahua ‘Olohu makahiki field (Site T-014) and the adjacent sites needs to be stressed. This is particularly true in light of the fact that the construction of the WWTP at Nā‘ālehu will be, at least in part, funded by the EPA. The involvement of the EPA, a federal agency, makes the project a federal undertaking subject to Section 106 of the National Historic Preservation Act. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties and to consult with Native Hawaiian organizations and other parties with an interest in the effects of the undertaking on historic properties (36 CFR §800.1). It is understood that consultations related to the Section 106 process will be conducted for the Nā‘ālehu Waste Water Treatment Plant project. As an undertaking, the location and importance of the makahiki field takes center stage, thus some discussion regarding the cultural significance of Site T-014 is justified.

Although, in traditional times, there were several makahiki grounds located throughout the islands, the locations of only a few of these are known today. The most well known makahiki site is situated at Nā‘iwa on the island of Moloka‘i. In 2004 the U. S. Department of the Interior...
awarded a grant of $37,000 to study the site and to formulate recommendations for its preservation and management. This federal interest in the Nā‘iwa site provides some indication of the importance in which such sites are held.

While Kahua ‘Olohu appears to have been primarily a gaming field, its connection with the makahiki festival means that it is directly related to an important religious event in the Hawaiian calendar and was most probably the site of rituals and ceremonies associated with the makahiki games. Given its traditional importance as a site of the annual makahiki games and festivities, “the famous bowling field named Kahua-‘Olohu” would appear likely to qualify for nomination to the National Register of Historic Places (NRHP).

Kahua ‘Olohu could possibly be eligible for nomination under the following significance criterion as defined in 36 CFR §60.4:

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

It would also qualify under the additional State of Hawai‘i significance criterion as outlined in HAR §13-275-6 (b):

(e) That 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.

It is also likely that Kahua ‘Olohu would be eligible for nomination as a Traditional Cultural Property (TCP). The National Register Bulletin 38 “Guidelines for Evaluating and Documenting Traditional Cultural Properties” (Parker and King 1990) defines “A traditional cultural property … as one that is eligible for inclusion on the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1990:1). Given the significance of the makahiki festival, both traditionally and today (in 2004 the Federal Courts officially recognized the makahiki as a Native Hawaiian Religious Ceremony), the makahiki ground of Kahua ‘Olohu would seem a likely candidate for nomination to the National Register as a Traditional Cultural Property.
A Traditional Cultural Property can be considered a historic property even if it does not possess any recognizable archaeological remains. While Kahua ‘Olohū is documented as an important gathering area for makahiki festivities and ceremonies, the events that took place there in traditional times may not necessarily have left any archaeological traces. The kahua would have roughly resembled a Western fairground, a level open stretch of land set aside for annual makahiki games with no substantial surface structures. An Archaeological Inventory Survey of the site might not reveal any physical evidence of the area’s past use. This would, however, in no way reduce its importance as a Traditional Cultural Property. “Although many traditional cultural properties have physical manifestations that anyone walking across the surface of the earth can see, others do not have this kind of visibility, and more important, the meaning, the historical importance of most traditional cultural properties can only be evaluated in terms of the oral histories of the community” (Sebastian 1993, CRM - Vol. 16:22).

The fact that the Kahua ‘Olohū makahiki field went out of use in the early historic period and the area was subsequently utilized as a sweet potato field (Handy et al. 1972:596), and later as a County stable yard (1906 Territorial Survey map), would also not affect its eligibility as a TCP. The Advisory Council on Historic Preservation (ACHP 1985) guidelines note that “[a] property need not have been in consistent use since antiquity by a cultural system in order to have traditional cultural value...” (ACHP 1985:7).

The identification of Kahua ‘Olohū as a culturally significant historic property means that the EPA will need to consider it during Section 106 consultation and will need to address the impacts (not only direct, but also visual and auditory) to the makahiki ground from the construction and use of the waste water treatment plant.
9.0 MITIGATION RECOMMENDATIONS

Each of the archaeological resources identified during the present survey contributes in its own way to the archaeological landscape of the Ka‘ū District and to our understanding of the history of the Kaunā mano ahupua‘a. This section provides specific management and mitigation recommendations for each of the sites (Table 4). These recommendations include preservation, no further work, or mitigation through data recovery. These recommendations are being made only for those sites located within the two inventory survey areas (the East and West Parcels). Since none of the sites identified during the reconnaissance survey was fully recorded or mapped and their significance was not assessed, no recommendations have been proposed for them. These sites are located outside the proposed waste water treatment plant project areas, and so should not be directly impacted by plant construction or use. However, their presence needs to be taken into consideration in project planning and particularly in consultations initiated under Section 106.

9.1 PRESERVATION

This management strategy involves the preservation of a site and its features in their entirety. It is most often applied to sites which have been determined to be significant for more than simply their informational content (that have been assessed as significant under criteria A, C or E). Prior to initiation of any ground disturbing activities related to the development of the project area a detailed Preservation Plan outlining how these sites are to be protected will need to be prepared and submitted to the State Historic Preservation Division for review and approval.

Three of the sites documented during the inventory survey are recommended for preservation. If the project moves forward in either parcel, care should be taken to preserve these sites. Adequate buffers should be placed around the sites during construction activities and a preservation plan will need to be produced recommending short and long term treatments for each site.

Site 25266 is recommended for preservation due to the presence of observed human remains, as well as the potential for more remains to exist within the unexplored portions of the chambers. Should work proceed in this parcel, great care should be taken around Site 25266. The entire site is subsurface making it difficult to determine its exact location and extent.

Site 29389 was the only petroglyph identified during the inventory survey. This site is in good condition and, given the unique site type and the proximity to Kahua ‘Olohū, along with its potential symbolic and/or ceremonial importance, is recommended for preservation. If it is determined that the WWTP will be sited within the West Parcel, an adequate buffer should be placed around the site during construction activities.

Site 29390, the bed of the former Nā‘ālehu to Honu‘apo Railroad, is the only historic site recommended for preservation. The unique nature and construction of the site along with its importance to the history of the area, including the development surrounding the town of Nā‘ālehu, argues for the site to be preserved.
9.2 DATA RECOVERY

Data recovery is recommended when a site is deemed significant solely for its informational content, but when the documentation of that content requires more detailed investigation than included within the scope of the archaeological inventory survey. Data recovery investigations often involve subsurface excavation, and may uncover additional information (in the form of internal features, subsurface artifacts, midden, and other cultural remains) not documented during the inventory survey.

Only one site within the inventory survey parcels, Site 29385, is recommended for data recovery. Although the Site 29385, Feature A platform has been tested and found to contain no human remains, additional excavation may yield additional information about the age and function of the structure. Site 29385, Feature B is a stone mound located near Feature A platform and not far from the Site 25266 lava tube containing human remains. This feature has the potential to contain additional human remains and should be tested if work is moved forward in the East Parcel.

9.3 NO FURTHER WORK

When a site is determined significant solely for its informational content and that information has been adequately documented during the present archaeological inventory survey no further work is suggested. A number of the sites identified during the survey were determined to be significant only for the information they may yield. The detailed recording undertaken during the present archaeological inventory survey adequately documents the information these sites possess. As a result, no further work is recommended for Site 29386, -007, -008 and -020. All of these sites are ranch walls and would yield no further information with additional work.

9.4 MITIGATION PLANNING

One of the purposes of this report is to serve as a planning document to assist Fukunaga and Associates, Inc. and the County of Hawai‘i in determining the best location for the Nā‘ālehu WWTP. It provides detailed information on the location, character and relative significance of the archaeological remains present within the two alternative project parcels. It should not, however, be considered an exhaustive document. The present program of site recording was undertaken to gather information about the sites, not to mitigate any adverse impacts to these archaeological remains. Prior to the initiation of any construction activities a preservation/mitigation plan will need to be prepared so as to best anticipate and mitigate the adverse impacts of construction upon the archaeological resources present in the area. This mitigation plan will be developed pursuant to Hawai‘i Administrative Rules (HAR) §13-275, following the guidelines provided in HAR §13-277, “Rules Governing Requirements for Archaeological Site Preservation and Development.”
10.0 SUMMARY AND DISCUSSION

At the request of Fukunaga and Associates, Inc. and the County of Hawai‘i, Pacific Legacy, Inc. conducted an archaeological inventory survey at two proposed locations in Kaunānāno Ahupua‘a for the proposed Nā‘ālehu WWTP. Additionally, a reconnaissance survey of lands located between the two parcels was undertaken to identify additional sites or activities that may have taken place in the general vicinity and to attempt to identify the approximate boundaries of the Kahua ‘Olohū makahiki field known to exist near the proposed project areas.

The inventory survey identified five sites in the East Parcel and three sites in the West Parcel. Seventeen other sites were identified during the reconnaissance level survey outside of the two project area parcels but within the larger DLNR property.

A substantial number of traditional Hawaiian and early historic sites were identified during the present survey. The majority of these were located within the East Parcel or in the lands situated between the two alternative project sites. The lower number of traditional sites recorded within the West Parcel can be attributed to the fact that substantial portions of that survey area appear to have been grubbed. The traditional sites that were recorded, both during the inventory and reconnaissance portions of the present project, indicate the importance that the area held for the early Hawaiians who settled the region. All of the early historic sites identified appear related to either the sugar industry or cattle ranching undertaken in the Nā‘ālehu area during the late 19th and early 20th centuries.

The East Parcel contained five sites. The importance of Site 25266 cannot be overstated. The lava tube contains at least one set of human remains making it highly culturally significance. The entire lava tube could not be surveyed due to the difficulty of access and the potential safety concerns for the archaeologists. However, the presence of the wall nearly sealing the west chamber access indicates the potential for additional remains to be present within the tube. Site 29385 is in the same general direction as the west chamber of 25266 lending credence to the possibility that Feature B of Site 29385 could contain human remains. The railroad bed (Site 29390) is partially located within the East Parcel but should be looked at in its entirety. This site relates to the early history of Nā‘ālehu town and could be the only remaining portion of the Nā‘ālehu to Honu‘apo Railroad in the area. Given the number of significant sites present within it, the East Parcel does not appear to be a suitable location for the waste water treatment facility.

The West Parcel contained three sites. Sites 29387 and 29388 are cattle or ranching walls, while Site 29389 is a traditional petroglyph. The proximity of the petroglyph to the Kahua ‘Olohū makahiki field may give it additional cultural significance. If the waste water treatment facility is to be located within the West Parcel, an effort should be made to avoid and protect the Site 29389 petroglyph by establishing an adequate buffer around it both during and after construction.

As part of the inventory survey, archaeological excavations were conducted at two sites, the Site 29385, Feature A platform and the Site 29387 wall. While both of the excavations failed to uncover substantial traditional cultural material, they were beneficial in helping to clarify the
character of each feature. The Feature A platform, which possessed the potential to contain a burial or to mark a lava tube entrance, was determined to be just a stone platform. The lack of any cultural material, other than a since fragment of marine shell, makes determining the original function of the platform difficult. At this time Feature A has no identified function.

The opposite is true for the excavations at Site 29387. The site was originally postulated to be an agricultural terrace. Test excavations, however, recovered a number of historic materials (rubber, metal, glass and a red brick) within the fill of the supposed terrace. The recovered material allowed for the determination that the site was not an agricultural terrace, but rather, a ranch era wall against which soil and debris has been pushed during the bulldozing of an adjacent area. It is for these reasons that the subsurface testing was successful.

The seventeen sites located outside the two project parcels and identified during the reconnaissance survey were not recorded at the inventory survey level. Thus they cannot be adequately evaluated for their cultural and historic significance. However, for the purposes of future work in the area, the complex of sites should be viewed as a whole, in conjunction with the makahiki field, and should be considered during the planning process due to their importance and significance to the prehistory of the area.

If, for any reason, the current project areas are determined to be unsuitable for the waste water treatment facility and it is necessary to shift the site location to an area outside the limits of the two parcels which were examined during the present inventory survey, additional archaeological work will need. Another inventory survey will be need to be undertaken within this newly established project area.

It is our understanding that some of the funding for the Nāʻālehu WWTP is being provided by the Environmental Protection Agency (EPA). This makes the project a federal undertaking subject to Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. It is understood that consultations related to the Section 106 process will be conducted for this project.
11.0 REFERENCES

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Native Register
The Native Register provides a record of all claims received from native claimants during the Mahele ‘Aina. It comprises one of five bound volumes which, together with the Mahele Book, constitute the principle documentation resulting from the Mahele. These volumes are preserved in the Hawai‘i State Archives and are accessible on microfilm.

Native Testimony
The testimony of witnesses to land claims made during the Mahele was recorded in volumes labeled Native Testimony and Foreign Testimony. The book of Native Testimony comprises one of five bound volumes which, together with the Mahele Book, constitute the principle documentation resulting from the Mahele. These volumes are preserved in the Hawai‘i State Archives and are accessible on microfilm.

Parker, P.L., and T.F. King

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Geographic information system background shape files used in the production of site location maps were downloaded from the State of Hawai‘i Office of Planning website, Hawai‘i Statewide GIS Program. www.hawaii.gov/dbedt/gis/.


APPENDIX A

INVENTORY SURVEY SITE ATTRIBUTE TABLE
<table>
<thead>
<tr>
<th>SIHP No. (50-10-74-xxx)</th>
<th>Field No.</th>
<th>Feature</th>
<th>Site / Feature Type</th>
<th>Artifacts</th>
<th>Secondary Artifact</th>
<th>Midden</th>
<th>Coral</th>
<th>Human Skeletal Remains</th>
<th>Condition</th>
<th>Possible Age</th>
<th>Possible Function</th>
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<td>T-001</td>
<td>Lava Tube</td>
<td>Traditional</td>
<td>Modern</td>
<td>Present</td>
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<td>Present</td>
<td>Present</td>
<td>Fair</td>
<td>Pre-Contact</td>
<td>Burial / Habitation</td>
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<td>29385</td>
<td>T-002</td>
<td>A Platform</td>
<td>None Observed</td>
<td>None Observed</td>
<td>Present</td>
<td>None Observed</td>
<td>None Observed</td>
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<td>Pre-Contact</td>
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<td></td>
<td></td>
<td>B Stone Mound</td>
<td>None Observed</td>
<td>None Observed</td>
<td>None Observed</td>
<td>None Observed</td>
<td>None Observed</td>
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<td>Fair</td>
<td>Pre-Contact</td>
<td>Burial / Agriculture</td>
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<td>T-006</td>
<td>Wall</td>
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<td>None Observed</td>
<td>Fair</td>
<td>Historic</td>
<td>Habitation</td>
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<td>T-008</td>
<td>Wall Segment(s)</td>
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<td>Good</td>
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<td>None Observed</td>
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<td>Historic</td>
<td>Ranching</td>
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APPENDIX B

INVENTORY SURVEY
SITE DESCRIPTIONS
The following is a listing of archaeological sites and features identified during the inventory survey of two potential locations for the proposed Nāʻālehu Waste Water Treatment Plant (WWTP). Each site and/or feature has been described based to the following attributes.

**Site Number:** All sites have been assigned a Hawaii State Inventory of Historic Properties (SIHP) site number. This numbering system employs a four part numeric code. The first element designates the state. The second specifies the island. The third indicates the U. S. Geological Survey topographic quadrangle within which the site is located. The fourth is a site specific number designation (i.e., 50-10-74-25266).

**Field Number:** During initial recording all archaeological sites were assigned a temporary field number to facilitate identification. This consisted of a T (for temporary) followed by a consecutively assigned number (e.g. T-001). Since, at the time of the survey, SIHP number had not been assigned to newly identified sites, the metal site tags left at each site were marked with the temporary field number.

**Feature:** Individual structural elements within a specific site were assigned consecutive letter designations to aid in recording and mapping.

**Site/Feature Type:** Each archaeological site or feature was identified as belonging to a specific type based upon its structural morphology and/or cultural contents. Site/Feature types include Enclosures, Terraces, Platforms, C-shapes, etc. When features of different structural types are clustered within a single site, the site type was referred to as a Complex.

**Artifacts:** If one or more artifact was observed within or adjacent to an archaeological site or feature, the relative age of the artifact was noted. Artifacts were dated according to the following broad historic periods:

1) Traditional: This designation was assigned to artifacts manufactured in a traditional style using indigenous cultural materials (stone, coral, shell, etc.). Such artifacts may have been made and utilized during either the pre-contact or early historic periods.

2) Historic: This designation includes artifacts of Western manufactured that were made from foreign materials (metal, glass, etc.). These were initially imported into the islands, but later manufactured here.

3) Modern: This designation was assigned to artifacts of Western manufactured less than fifty years of age.

**Midden:** If food remains (marine shell, bone or organic midden) was discovered at a site or feature, its presence was noted.

**Coral:** If unmodified coral was discovered at a site or feature, its presence was noted.
**Human Skeletal Remains:** In the relatively rare instances when human skeletal remains were observed at a site or feature, their presence was noted.

**Possible Age:** Due to the difficulties inherent in determining the age of a structure based solely on its visible morphology, the sites and features within the Preserve Area were only tentatively dated to a broad historic period. These periods include the following:

1) Pre-Contact: This designation was assigned to sites or features exhibiting traditional styles of construction or possessing indigenous cultural materials (traditional artifacts, marine shell midden, etc.). Such features may have been constructed and utilized during either the pre-Contact or early historic periods.

2) Historic: This designation includes structures whose morphology suggests they were constructed during the historic period. It also includes sites at which surface historic artifacts (such as ceramics, bottle glass, and window glass) were found. This designation includes sites that were constructed or utilized for ranching activities (such as pens, corrals and cattle walls).

3) Modern: This designation includes any sites built and utilized within the last 50 years.

4) Uncertain: This designation was assigned to a historic property if there was any uncertainty as to the date of its construction or use.

**Possible Function:** An archaeological site or feature was assigned a functional designation based upon its morphology and/or cultural contents. Common functional categories include Habitation, Burial, Animal Husbandry, Uncertain, etc. These designations are based solely on visual observation and are tentative in nature.

**Condition:** The relative condition of the site was also noted. The condition was recorded as either: Destroyed, Poor, Fair, Good, or Excellent.
SIHP Number: 50-10-74-25266  
Site Type: Modified Lava Tube  
Field Number: T-001  
No. Features: 1  
Artifacts: Traditional  
Midden: Present  
Coral: Present  
Skeletal Remains: Present  
Possible Age: Pre-Contact  
Possible Function: Burial, habitation  
Condition: Fair  

Description: Site 25266 consists of a modified lava tube with two adjacent chambers, one which extends to the southeast, the other to the northwest. The site is located approximately 3.0 meters from the northeastern boundary of the eastern (6.2 acre) project area. It is situated on a weathered and slightly undulating pāhoehoe lava flow. The surrounding vegetation includes a ground cover of fountain grass, lantana, and sleeping grass. A site tag from a previous survey was discovered at this site during the present investigations. Consultation with Haun and Associates confirmed that they had located this site during a survey conducted in 2005 of a large parcel encompassing nearly all of the lands of Kaunāmano between Highway 11 and the coast (Haun et al. 2006). Their survey area abuts the East Parcel of the current survey area. No formal report was produced for their investigations. A site location map produced by Haun and Associates and showing Site 25266 is included as Figure 7 in this report.

The opening into the lava tube consists of an overhead skylight near the northern end of the southeastern chamber. This skylight measures c. 2.3 meters in length (northwest to southeast) by c. 1.7 meters in width (northeast to southwest) and is roughly c. 1.9 meters from the floor of the lava tube. A second and much smaller opening into the lava tube consisting if a skylight entrance c. 1.5 meters northwest from the first and measures c. 1.3 meters in length (east to west) by c. 0.4 meters in width (north to south) and is c. 1.00 meters in depth from the floor of the lava tube. At the base of this entrance is a large amount of loosely piled basalt boulders mixed with collapsed roof fall served as a fill to tighten this entrance.

The floor of this southeastern chamber consists mainly of loosely piled basalt boulders and cobbles mixed with the collapsed roof fall. Along the northern and southern edges of the lava tube are soil floors which appear to have been cleared of stones. At c. 7.0 meters in from the entrance and abutting the northern wall of the tube is a low roughly c-shaped stone wall. The wall is constructed of loosely stacked small to large basalt cobbles and small basalt boulders. The interior of this wall consist of a level soil floor with a small concentration of charcoal fleckings near the central portion of the wall. The wall measures c. 4.2 meters in length (northwest to southeast) by c. 1.0 meters in maximum thickness and is c. 0.65 meters in maximum height along its exterior and c.80 meters along its interior. The soil floor measures c. 3.1 meters in length (northwest to southeast) by c. 1.8 meters in width (northeast to southwest). Immediately abutting the southern wall of this southeastern chamber and c. 10.5 meters in from the drip line are human burial remains of at least one individual. Loosely stacked basalt cobbles have been constructed to encase the bones. No capstone is present. Diagnostic bones include at least one femur and several other long bones. The back of these chambers consist of a soil floor
with a very low ceiling height that eventually tapers. The tube appears to continue for at least c. 3.5 meters further but was not explored due to the low ceiling heights. This chamber measures c. 18.0 meters in length (northwest to southeast) by c. 6.0 meters in width by c. 1.30 meters in maximum height. At least three cow skeletons are scattered throughout the chamber. Additional cultural material identified within this chamber includes marine shells, (cowries, ‘opihi), A single volcanic glass flake, and two pieces of coral fragments. This scatter of cultural material is concentrated between the low c-shaped wall and the burial remains. Also, a complete ‘ulu maika was observed c. 1.3 meters east from the drip line of the main entrance. The ‘ulu maika is constructed of basalt and measures c. 5.5 centimeters in diameter by c. 3.5 centimeters thick.

The northwestern chamber of this lava tube is narrow and much longer than the southeastern chamber. Just within the entrance into this chamber are loosely piled basalt cobbles and boulders that appear to tighten the crawling space. It is uncertain whether these stones were initially piled for this function. Immediately above this area of loosely piled stones is the smaller skylight entrance. The floor of this northwestern chamber consists of some soil and mainly piled basalt boulders and cobbles mixed with roof fall. These stones have been placed along the northern and southern edges of the table to form the level area of soil between them. This cleared soil floor measures c. 5.7 meters in length (northwest to southeast) by c. 1.5 meters in width (northeast to southwest) and is the pathway which leads further into the lava tube. Just within the smaller skylight entrance and along the southern wall of the tube is a smaller soil floor which appears to be concealed from the piled stones. Roughly c. 16.5 meters northwest from the smaller skylight entrance is a low L-shaped stone wall. The wall is constructed of loosely stacked basalt slab cobbles and small basalt slab boulders. Both ends of the wall immediately abuts the lava tube walls. An opening of c. 0.20 meters separates the top of the wall from the ceiling of the tube. The wall measures c. 1.7 meters (northeast to southwest) in length and then bends southeast at its northeast end for an additional c. 0.7 meters. It appears that this wall was intentionally built to prevent further access into the tube. Beyond this wall, the lava tube extends an additional c. 20.0 meters northwest until separating into an upper and lower chamber. Further inspection into these chambers ceased due to safety hazards. Possible pig bone and teeth were observed c. 2.5 meters northwest from the drip line of the smaller skylight entrance and a single cowrie shell was identified c. 11.0 meters from the same entrance. This chamber measures at least c. 36.0 meters in length (northwest to southeast) by c. 4.2 meters in width by c. 0.80 meters in maximum height.

Site 25266 is in fair condition. The presence and diversity of cultural material within this lava tube (marine shell concentration, volcanic glass, ‘ulu maika, coral, and possible pig remains) suggest that it was most likely utilized as a temporary habitation during the traditional period. The human remains within the southeast chamber also suggest that this tube functioned as a burial chamber for at least one individual during the traditional period. It may be that the burial post dates the initial occupation of the lava tube. The narrow entrances and stone wall construction within the northwest chamber suggest that there may be additional burials in portions of the chamber which have not been explored. It is also good to note that the Site 29385 stone platform is in exact line (312° TN) with the northwest chamber beneath.
Site 50-10-74-25266, overview of site entrance marked by pink flagging, view east.

Site 50-10-74-25266, partially filled western entrance blocking lava tube access.
Site 50-10-74-25266, lava tube. *In situ* photo showing *ʻulu maika* and cow bones within lava tube.

Site 50-10-74-25266, closeup of *ʻulu maika*. 
**SIHP Number:** 50-10-74-29385  
**Site Type:** Platform and Mound  
**Field Number:** T-002  
**No. Features:** 2  
**Artifacts:** None Observed  
**Midden:** None Observed  
**Coral:** None Observed  
**Skeletal Remains:** None Observed  
**Possible Age:** Pre-Contact  
**Possible Function:** Possible Burials  
**Condition:** Good  

**Description:** This site is located upslope c. 30.0 meters west of Site 25266 and a east facing slope of old pāhoehoe now serving as pasture. The site is in good condition and consists of a stone platform (Feature A) and a rock mound (Feature B). c. 30.0 meters due east-west from each other. The area between the two features consists of weathered pāhoehoe outcropping which could be mounds but appear to be natural weathered outcropping. This feature measures 3.8 meters long, 30.0 meters wide, and 0.7 meters high. It is constructed of basalt cobbles and boulders and may incorporate natural bedrock. Feature A is located to the west of old dozer cut/ranch road although it does not appear that the feature was impacted in any way. Feature B is a rock mound located 30.0 meters at 299° from feature A. It measures 2.8 meters long, 1.7 meters wide and 0.7 meters high. It is constructed of basalt cobbles and boulders and may incorporate basalt outcrops. The thin feature is rectangular in shape, and both feature A and B are possible burials.
Site 50-10-74-29385, Feature A, platform, view north.

Site 50-10-74-29385, Feature B, mound, view southwest.
SIHP Number: 50-10-74-29386
Site Type: Freestanding Wall
Field Number: T-006
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Historic
Possible Function: Cattle wall
Condition: Good
Description: This site is a cattle wall meant to divide two fields, keeping cattle out of or inside a field. The wall is oriented at 244° and is constructed of basalt cobbles and boulders. The wall measures c. 256.0 meters long, .75 meters wide, and .70 meters high. A barbed-wire fence extends the entire length of the wall on the east side. The south end terminates at the railroad bed*, the north end terminates at a cattle gate near the easement to the project area. It appears that Site 29386 past dates the construction of the railway. The north end of the wall also appears to join with Site 29391 (wall) on the west. This small section of Site 29391 wall may be a later date of construction than Site 29386 and Site 29391 main wall. Overall, Site 29386 is in good condition, was photographed, and a GPS point was taken. The site’s tag is located on the north end.

Site 50-10-74-29386, wall, view east.
SIHP Number: 50-10-74-29387
Site Type: Partially buried wall
Field Number: T-007
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Uncertain
Possible Function: Agricultural
Condition: Fair

Description: This site is located on the north facing side of a low ridge. The site was originally thought to be a soil terrace but subsequent excavation determined that the site is really a rock wall measuring 17 meters long (east/west), 2.5 meters deep (north/south), and 0.6 meters in height (ABS). Soil filling occurred on the south side of the wall from upslope and gave the appearance of a terrace. The soil in this area blends into the natural slope on the south side. The wall facing is comprised of basalt cobbles and boulders stacked upon bedrock. A *kukui* nut tree is located in the soil terrace and a large *kiawe* tree is immediately to the north of the terrace. The site is in fair condition considering the cattle that rest under the *kiawe* tree (numerous cattle bones scattered around the *kiawe* tree). No traditional or historic artifacts were observed, likewise no midden was seen. There is evidence of bulldozing entirely around the site, both the east and west ends taper into the exiting slope possibly impacted from dozer activity. The site likely functioned as an agricultural terrace. The closest site is 29388 (rock wall) located c.40.0 meters to the east. A plan view map was drawn and the sites GPS point was taken.
Site 50-10-74-29387, partially buried wall thought to be a terrace, view west.

Site 50-10-74-29387, prior to the start of excavation, view southeast.
Site 50-10-74-29387, view east.
SIHP Number: 50-10-74-29388
Site Type: Wall Segments (N=2)
Field Number: T-008
No. Features: 2
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Historic
Possible Function: Cattle Wall
Condition: Poor
Description: This site is located on the north facing side of a low ridge. The site consists of two wall segments which were connected at one time but were disconnected by a dozer/road cut. The western wall segment is oriented at 294° and measures 7.2 meters long (east/west), 1.0 meters wide (north/south), and 0.7 meters (on south), 0.8 meters high (north). The wall is comprised of basalt cobbles and boulders stacked on the east end but become tumble on the west end. The west end was likely impacted by dozer activity and cattle. The eastern wall segment is oriented at 295° and measures 7.8 meters long (east/west), 1.2 meters wide (north/south), 0.6 meters (north), and 0.25 meters (south). The breach in between the two segments is 7.7 meters. This segment is in poor condition from dozer activity, cattle, and vegetation (two hale koa trees growing in segment). It is constructed of basalt cobbler and boulders. Vegetation in the area consists of pasture grass and ʻilima. The closest site is 29387 located c. 40.0 meters west. No maps were drawn at this site. The site’s GPS point was taken with datum on the west end of western segment.
Site 50-10-74-29388, wall, view north.

Site 50-10-74-29388, wall, view east.
Site 50-10-74-29389, petroglyph, view north.
**SIHP Number:** 50-10-74-29390  
**Site Type:** Railroad Bed - Raised  
**Field Number:** T-010  
**No. Features:** 1  
**Artifacts:** Historic  
**Midden:** None Observed  
**Coral:** None Observed  
**Skeletal Remains:** None Observed  
**Possible Age:** Historic  
**Possible Function:** Railroad for Nāʻālehu Sugar  
**Condition:** Good  

**Description:** This site is situated roughly through the center of the DLNR property in a general southwest-north east direction. The site consists of a raised railroad bed split into three segments. The bed is not continuous but rather split into segments. In spots (shallow gulches), the railroad appears to had a bridge crossing although there is no evidence of any crossing. The railroad bed is constructed of stacked basalt cobbler and boulders and measures 2.8 meters wide at the top, 4.0 meters wide at its base, average 1.5 meters in height although portions are between the ground surface and 5.0 meters high. The surface of the bed is soil with some crushed rock, brick, and limestone on the surface. The walls are slightly angled, not vertical, and appear to be entirely attached with no concrete. There are no “tracks” or wooden beams for the tracks. Overall, the length of the bed is at least 900 meters long. It is in very good condition.

![Site 50-10-74-29390, railroad bed, view south west.](image)
Site 50-10-74-29390, photo showing stacked rock creating the railroad bed and the recent addition of fencing to divide the pasture.

Site 50-10-74-29390, note the extreme height of the railroad bed which was created to cross a shallow gulch, view north.
SIHP Number: 50-10-74-29391
Site Type: Freestanding Wall
Field Number: T-020
No. Features: 2
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Historic
Possible Function: Cattle Wall
Condition: Fair
Description: This site consists of a basalt cobble and boulder stacked wall oriented at c. 270°. It measures c.38.7 meters long, .90 meters high, and .80 meters wide. The wall is nicely stacked and faced with larger boulders on the exterior and smaller ‘a‘a cobbles on the interior, very similar to core filling. The main southwest/northeast wall measures c. 30.0 meters while the east/west section measures 15.0 meters. The east/west section appears to be a later construction (mostly boulders) and not as neatly stacked. This small section may have been an attempt to form a closed field between Sites 29386, 29390, and 29391. The main portion of Site 29391 extends roughly parallel to the railroad (29390). The north end terminates at the parcel easement while the south and appears to disappear. It may continue around the bend of the railroad because another wall appears on the west side of Site 29390 c. 60.0 meters southwest outside of the APE. The site tag was placed on the north end. The site was photographed and its GPS point was taken.

Close up of Site 50-10-74-29391, view northwest.
APPENDIX C

RECONNAISSANCE SURVEY
SITE ATTRIBUTE TABLE
## Attribute Table of Sites Recorded During Reconnaissance Survey

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<td>Field No.</td>
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| 29753 | T-026 | Petroglyph    | None Observed | None Observed | None Observed | None Observed | Poor | Pre-Contact Communication |

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**Final — Archaeological Inventory Survey**

Nā‘ālehu Wastewater Treatment Facility

Kaumānano Ahupua’a, Ka‘ū District, Hawai‘i Island

February 2013 87
APPENDIX D

RECONNAISSANCE SURVEY
SITE DESCRIPTIONS
Presented below are site records for sites identified during the reconnaissance survey with the exception of five sites (T-017 thru T-019, T-021) which are all cattle walls and Site T-024 which was later determined to be natural outcropping and thus not a site.

**SIHP Number:**
**Site Type:** Wall (Freestanding)
**Field Number:** T-003
**No. Features:** 1
**Artifacts:** None Observed
**Midden:** None Observed
**Coral:** None observed
**Skeletal Remains:** None Observed
**Possible Age:** Uncertain
**Possible Function:** Uncertain
**Condition:** Fair
**Description:** This site is located on a north face of a low running ridge above a small flat area within the 6 acre parcel. This site, like T-004, is located c. 15.0 meters south of the southern project area boundary but is still within DLNR property. The site consists of a short single freestanding wall regiment. It measures 8.0 meters long, 1.5 meters wide and 0.9 meters high. It is constructed of basalt cobbles and boulders. This site has an unknown function. T-003 is located c. 8.0 meters west of T-004. The wall is slightly curved in appearance.

**SIHP Number:**
**Site Type:** Enclosure
**Field Number:** T-004
**No. Features:** 1
**Artifacts:** None Observed
**Midden:** None Observed
**Coral:** None observed
**Skeletal Remains:** None Observed
**Possible Age:** Uncertain
**Possible Function:** Uncertain
**Condition:** Poor
**Description:** The site is located on a north facing slope of a low running ridge side. It is located c. 8.0 meters east of T-003(wall) and c. 18.0 meters southwest of T-005 (enclosure). It is roughly rectangular in shape and measured 14.0 meters long. The walls are constructed of basalt cobbles and boulders and also incorporates natural bedrock. The enclosure is oriented on a slope so the northwest corner is the lowest point and the southeast corner is the highest. There is a probable entryway located on the west wall. The gap measures 0.6 meters wide with probable rock edging on both sides. The height of the exterior south wall is approximately at ground surface while the interior is c. 0.3 meters high. The interior floor contains scattered rock, most likely tumble from the east and south walls. The north and west walls are better defined and contain stacked rocks where the east and south walls are low and tumbled, likely impacted by cattle.
and an adjacent road cut to the east. This site is in a fair condition and serves as an unknown function. The sight was mapped, a GPS point was taken, and the site was photographed.

**SIHP Number:**

**Site Type:** Stone Terrace  
**Field Number:** T-005  
**No. Features:** 1  
**Artifacts:** None Observed  
**Midden:** None Observed  
**Coral:** None Observed  
**Skeletal Remains:** None Observed  
**Possible Age:** Pre-Contact  
**Possible Function:** Agriculture  
**Condition:** Fair  
**Description:** This site is located on the north facing slope of a small ridge on the south boundary of the 6.2 acre parcel. The site overlooks a small flat used for pasture in the mauka direction in rolling hills with weathered pāhoehoe. The site consists of a stone face terrace situated above a natural basalt outcrop. The terrace measures 6.0 meters long, 0.66 meters high, and 1.5 meters deep. The facing is oriented at 100°. The east end blends into the slope while the west end contains a nicely stacked corner 3 courses high (90cmags). The west wall corner turns south for 3 meters where it blends into the existing slope. The area behind the terrace wall is rocky with bedrock angled with the natural slope. A large java plum tree is growing out of the terrace. Down slope of the terrace is a natural outcrop which forms a small natural soil terrace measuring 1.3 meters by 2.0 meters. The surrounding area has been disturbed by a road cut immediately to the west and a possible one to the east. This site is likely functioned for agriculture and overall, is in fair condition. The site was drawn out, a GPS point was taken, and the site was photographed.

**SIHP Number:**

**Site Type:** Petroglyph  
**Field Number:** T-011  
**No. Features:** 1  
**Artifacts:** None Observed  
**Midden:** None Observed  
**Coral:** None Observed  
**Skeletal Remains:** None Observed  
**Possible Age:** Pre-Contact  
**Possible Function:** Communication  
**Condition:** Poor  
**Description:** This site is located on the east down slope side of a small basalt (lava) floor. The image is a human figure orientated north/south. The figure measures c. 32.0 centimeters long and 30.0 centimeters wide. The image is lightly pecked and highly weathered. The head is barely visible along with the left arm and leg. There is a dozer scar which cuts into the image. The site is c. 5.0 meters south of a ranch wall, adjacent to an old ranch gate, now barbed-wired...
The general topography of the area is gently rolling weathered pāhoehoe and pasture. This site is likely located within the makahiki grounds but not part of the field. The image was photographed and its GPS point was taken.

**SIHP Number:**
**Site Type:** Complex
**Field Number:** T-012
**No. Features:** 4
**Artifacts:** None Observed
**Midden:** None Observed
**Coral:** None Observed
**Skeletal Remains:** None Observed
**Possible Age:** Pre-Contact
**Possible Function:** Uncertain
**Condition:** Good

**Description:** This site is located near the south side of the DLNR property, south of the makahiki field, north of the railroad, on a small flat rise. The topography is rolling pasture. The site consists of at least four features (three terraces and one platform). The complex is unusual in the fact that all of the features are situated in shallow depressions or sinkholes. All features are constructed of basalt clinkers, cobbles, and boulders. Feature A is a large terrace-like structure with an irregular shape. There is a stacked facing three to four courses high. The space between the terrace facing and the depression edge forms a protective space. The feature is nearly entirely covered in Christmas berry making it difficult to identify. Feature B is a small irregular shape terrace within a shallow depression. The feature incorporates bedrock and has a corner that has fallen in. Feature C is a small terrace located at the edge along a shallow depression. The terrace forms a 90° angle to the southwest. The functions of A, B, & C are uncertain. Feature D is a square shaped platform within a depression. This feature is constructed of clinker basalt cobbles and boulders. The west facing is nicely stacked, four to six courses high. This feature may be a burial platform. The sites GPS point was taken, but no map was drawn.

**SIHP Number:**
**Site Type:** Complex
**Field Number:** T-013
**No. Features:** 4
**Artifacts:** None Observed
**Midden:** None Observed
**Coral:** None Observed
**Skeletal Remains:** None Observed
**Possible Age:** Pre-Contact
**Possible Function:** Uncertain
**Condition:** Fair

**Description:** This site is located on a flat rise overlooking and to the south of the makahiki field. The general topography is flat with basalt outcroppings and pasture land. The site complex consist of at least two enclosures, (Features A and B), a U-shape, (Feature C), and a stone
terrace, (Feature D). Feature A is a low stone enclosure constructed of basalt clinker cobbles and boulders. This feature has an unobstructed view of the makahiki field. Feature B is a much smaller enclosure also constructed of basalt clinker cobbles and boulders. The walls are very low in height, and may have been impacted by cattle, both feature A and B have entrances to the north. Feature C is a low walled U-shaped also constructed of basalt clinker cobbles. This feature has an unknown function. Feature D is a small stone terrace on the north slope overlooking the makahiki field. The terrace is constructed of basalt clinker cobbles and boulders. This feature is in good condition. These sites’ GPS points were taken, and the site was photographed.

SIHP Number:
Site Type: Makahiki Field
Field Number: T-014
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Recreation
Condition: Good
Description: This site is a large flat open grassy area situated on the makai side of the belt highway. It is partially located on the DLNR property and partially on land owned by a private landowner (which the state is reportedly attempting to acquire through exchange). This site, which ethnohistoric accounts suggest is a traditional makahiki field, is currently used for pasture and is split between the two landowners. The gaming ground is a large, flat area physical characterized by a lack of rock and basalt outcropping. Rock appears to have been intentionally cleared from the field. A low ridgeline extends along its southern and eastern edges. There are no apparent “man-made” physical features defining the makahiki other than the lack of rock in the field. A survey of the boundaries of the entire site was not completed since a large portion of the field is situated on private land. East of the field, the land slopes slightly upward with scattered rocks and basalt outcroppings. It is in this area that the Site T-011, 015, and 016 petroglyphs are located. The western edge of the cleared gaming field appears to be visible in aerial photographs, but since this edge is located on property to which the archaeological survey did not have access it was not possible to delineate the exact western boundary. This adjoining property is presently covered in high grass. The ground also appears to slope upward from the western edge of the field, and this area may have served as natural “bleechers” associated with the makahiki field.

SIHP Number:
Site Type: Petroglyph
Field Number: T-015
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Communication
Condition: Poor
Description: This site is situated on a north facing side of a basalt outcrop to the east of the makahiki field. The panel is extremely weathered making it difficult to record but pecking is visible and can be physically felt. The image is a single-anthropomorphic figure measuring c. 40.0 centimeters long and c. 44.0 centimeters wide. The image is in poor condition due to weathering. No other images were observed on the outcrop.

SIHP Number:
Site Type: Petroglyph
Field Number: T-016
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Communication
Condition: Poor
Description: This site is located on the east facing side of a basalt outcrop, east of the makahiki field. The site consists of a single petroglyph measuring 30.0 centimeters long and 26.0 centimeter high. The image is of a human figure. The body is poorly defined and the head and right arm appear to have been damaged by natural weathering. The legs are clearly defined along with the left arm. The right arm may be holding a spear although it is difficult to define. The panel that the image is on is heavily weathered. This site is likely associated with the makahiki field c. 60.0 meters to the west. The site was photographed and its GPS point was taken.

SIHP Number:
Site Type: Enclosure
Field Number: T-022
No. Features: 1
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Habitation?-Uncertain
Condition: Fair
Description: This site is located on the south side of a large basalt outcrop. This site consist of a
single enclosure measuring c. 3.5 meters east/west and 3.35 meters north/south. The interior walls are between .30-.50 centimeters high with the exterior being c. .60 centimeters high. The walls are constructed of basalt cobble and boulders and also utilize natural bedrock. The interior of the enclosure is rough with soil and scattered rock. No internal features were observed. A broken ‘ulu maika was found in the southwest corner wall of the enclosure. The ‘ulu maika measures 5.57 centimeters long, 4.5 centimeters wide (broken), and 3.0 centimeters thick. It is made of vesicular basalt. The ‘ulu maika was not collected. This site is located just to the south of the current APE. Any shifting to the south of the APE will impact this site. Additional pastures maybe located around the outcrop, possible terraces and mounds are in the vicinity. This site had a good excavation potential. This site was GPS’ed and photographed. Site tag was placed in the northeast corner.

SIHP Number: 
Site Type: Modified Outcrops – Possible Mounds N=2
Field Number: T-023
No. Features: 2
Artifacts: None Observed
Midden: None Observed
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Agriculture - Uncertain
Condition: Fair
Description: This site is situated just outside south of the current 6.2 acre APE. The site is on a 20° slope facing east. It consists of two modified outcrops or possible mounds. Site T-022 is located c. 40 meters west and site T-003 is located c. 70 meters south/east. Feature A, the southern west outcrops measures c. 1.1 meters east/west by c. 1.2 meters north/south and c. .60 centimeters high constructed with basalt cobbles and boulders on top of a natural outcrop. Feature B is c. .40 meters to the north and measures c. 1.4 centimeters north/south by c. 1.0 centimeters high. It is also constructed of basalt cobbles and boulders. Feature B could also be natural. These features serve as unknown function. The sites GPS point was taken and was photographed. A site tag was placed on Feature A.

SIHP Number: 
Site Type: “L” shaped wall
Field Number: T-025
No. Features: 2
Artifacts: None Observed
Midden: cowrie and ‘opili
Coral: None Observed
Skeletal Remains: None Observed
Possible Age: Pre-Contact
Possible Function: Habitation?-Uncertain
Condition: Fair
**Description:** This site consists of an “L” shaped wall situated on a low rise to the north of the *makahiki* field. It measures c. 35 m northeast/southeast and c.10 meters northeast/southwest. The wall is constructed of basalt cobbles and boulders measuring c. 1.0 meters wide and 0.5 meters high. A small collection of shell midden (*cowrie* and *'opihi*) was observed on the west side on top of the wall. The ground surface to the south is flat and consists of soil. It is possible that this wall is/was part of a large enclosure whose south end was not located in thick brush.

**SIHP Number:**
**Site Type:** Possible Petroglyph
**Field Number:** T-026
**No. Features:** 1
**Artifacts:** None Observed
**Midden:** None Observed
**Coral:** None Observed
**Skeletal Remains:** None Observed
**Possible Age:** Pre-Contact
**Possible Function:** Communication
**Condition:** Poor

**Description:** This site consists of a possible petroglyph of an anthropomorphic figure. The site is located c. 4 meters north of a spray-painted survey marker labeled “W-2.” The image itself is difficult to see and may measure c. 25 cm by 25 cm in size. The outcrop is heavily weathered making identification nearly impossible.
APPENDIX E

SITE CONCORDANCE TABLE
<table>
<thead>
<tr>
<th>SIHP No. (50-10-74-xxx)</th>
<th>Field No.</th>
<th>Feature</th>
<th>Site / Feature Type</th>
<th>Condition</th>
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<th>Possible Function</th>
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APPENDIX F

GPS SITE LOCATIONS
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