

**FINAL—Archaeological Monitoring Plan for the Proposed
Mokio-Anapuka Conservation Fence Project within the Mokio
Preserve, Kaluako‘i Ahupua‘a, Kona District, Island of
Moloka‘i, Hawai‘i**

TMK: (2) 5-1-002:060 (por.)



Prepared For:
Moloka‘i Land Trust
PO Box 1884
Kaunakakai, HI 96748

December 2020



Keala Pono Archaeological Consulting, LLC • PO Box 1645, Kaneohe, HI 96744 • Phone 808.381.2361

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MANAGEMENT SUMMARY

Archaeological monitoring will be conducted for ground disturbing activity associated with construction of a predator control fence on a portion of TMK: (2) 5-1-002:060 in the Mokio Preserve in Kaluako'i Ahupua'a, Kona District, on the Island of Moloka'i, Hawai'i. The new conservation fence will replace an existing ungulate control fence to keep axis deer, cats, dogs, and other predators away from the sensitive coastal habitat and pristine environment. This monitoring plan is designed to identify and appropriately treat archaeological resources that might be encountered during construction. This includes the treatment of three archaeological sites which were identified within the fence corridor during archaeological reconnaissance for the project: SIHP 50-60-01-02584, a series of wooden fenceposts, SIHP 50-60-01-02585, a cement ford, culvert, and curbing remnants, and SIHP 50-60-01-02586, sparse surface scatter of cultural material and midden. Full-time archaeological monitoring is recommended for all ground disturbance associated with construction of the fence.

CONTENTS

MANAGEMENT SUMMARY	i
FIGURES	iv
TABLES	iv
INTRODUCTION	1
Project Location and Natural Environment	1
Geology, Rainfall, and Soils	5
Flora and Fauna of the Preserve	8
The Undertaking	11
BACKGROUND	13
Mokio in the Pre-Contact Era	13
Place Names	13
Wind Names	14
Subsistence and Traditional Land Use	15
Nā Mo‘olelo	16
‘Ōlelo No‘eau	20
Mokio in the Historic Era	20
Early Historic Accounts	20
Māhele Land Tenure and Land Ownership	24
Historic Maps	33
Hawaiian Language Newspaper Articles	40
The Introduction of Deer	41
Previous Archaeological Studies	43
Summary and Settlement Patterns	51
Anticipated Finds	57
PROJECT DESIGN	59
Project Personnel	59
Fieldwork	59
Treatment of SIHP 02584–02586	60
Post-Field Actions	60
SUMMARY AND RECOMMENDATIONS	61
GLOSSARY	62
REFERENCES	64
APPENDIX: ROYAL PATENT NO. 3146: DEED SIGNED BY KING KALĀKAUA TO CHARLES REED BISHOP IN 1875	69

FIGURES

Figure 1. Project area on 7.5 minute 1993 USGS map for ‘Īlio Point.....	2
Figure 2. Project area on plat map for TMK: (2) 5-1-002.....	3
Figure 3. Mokio-Anapuka fence line (in red) on aerial photograph.....	4
Figure 4. The younger lava flows of East Molokai meet the older basalts of West Molokai.....	6
Figure 5. Topography of Moloka‘i (Keesing 1936:26).	6
Figure 6. Soils in the vicinity of the project area (data from Foote et al. 1972).	9
Figure 7. Map that depicts the population of Moloka‘i in 1853 (Coulter 1931)	26
Figure 8. <i>Hawaiian Star</i> article from 1897 12/21.	27
Figure 9. <i>Pacific Commercial Advertiser</i> article from 1898 01/07.	28
Figure 10. <i>Evening Bulletin</i> article from 1898 02/02.	30
Figure 11. <i>Hawaiian Star</i> article from 1898 02/02.	31
Figure 12. <i>Pacific Commercial Advertiser</i> article from 1898 02/03.	32
Figure 13. Portion of Hawaiian Government Survey map (Monsarrat 1886).	34
Figure 14. Portion of Hawaiian Government Survey Map of Moloka‘i (Alexander 1897).	35
Figure 15. Portion of water resource map of Moloka‘i (Lindgren ca. 1900).	36
Figure 16. Portion of Mahana Quadrangle (USGS 1922).	37
Figure 17. Portion of a geologic and topographic map of Moloka‘i (MacDonald 1947).	38
Figure 18. Portion of ‘Īlio Point Quadrangle map (USGS 1952).	39
Figure 19. Obituary that mentions Mokio (Mahiai 1932 02/23).	40
Figure 20. Obituary that mentions Mokio (Mahiai 1932 02/25).	40
Figure 21. Location of archaeological sites and previous studies	47
Figure 22. SIHP 50-60-01-02584 fence posts, plan view drawing.....	50
Figure 23. SIHP 50-60-01-02584 fence posts; orientation is to the south.....	51
Figure 24. Portion of ‘Īlio Point Quadrangle map (USGS 1952)	52
Figure 25. SIHP 50-60-01-02585 concrete curb and western culvert, plan view drawing.....	53
Figure 26. SIHP 50-60-01-02585 concrete curb; orientation is to the northeast	54
Figure 27. SIHP 50-60-01-02585 rock and concrete ford; orientation is to the north.....	54
Figure 28. SIHP 50-60-01-02585 culvert, plan view drawing.	55
Figure 29. SIHP 50-60-01-02585 rock and concrete culvert; orientation is to the south.	56
Figure 30. SIHP 50-60-01-02586 midden/artifact scatter, plan view drawing.....	56
Figure 31. SIHP 50-60-01-02586 adze butt (below pointed end of north arrow), plan view.....	57

TABLES

Table 1. Plant Species Found within the Mokio Preserve (Reproduced from MLT 2012–2017) ...	10
Table 2. Birds observed at Mokio Preserve (Reproduced from MLT 2012-2017)	12
Table 3. Plants in the Project Region ca. 1893 (after Remy 1893).....	22
Table 4. Archaeological Studies in the Project Vicinity.....	46
Table 5. Archaeological Sites in the Project Vicinity.....	48

INTRODUCTION

At the request of the Molokaʻi Land Trust (MLT) in cooperation with the American Bird Conservancy (ABC), Keala Pono Archaeological Consulting has prepared an archaeological monitoring plan for TMK: (2) 5-1-002:060 (por.) in the Mokio Preserve in Kaluakoʻi Ahupuaʻa, Kona District, on the island of Molokaʻi. The Molokaʻi Land Trust is proposing to build a predator-proof conservation fence within the preserve.

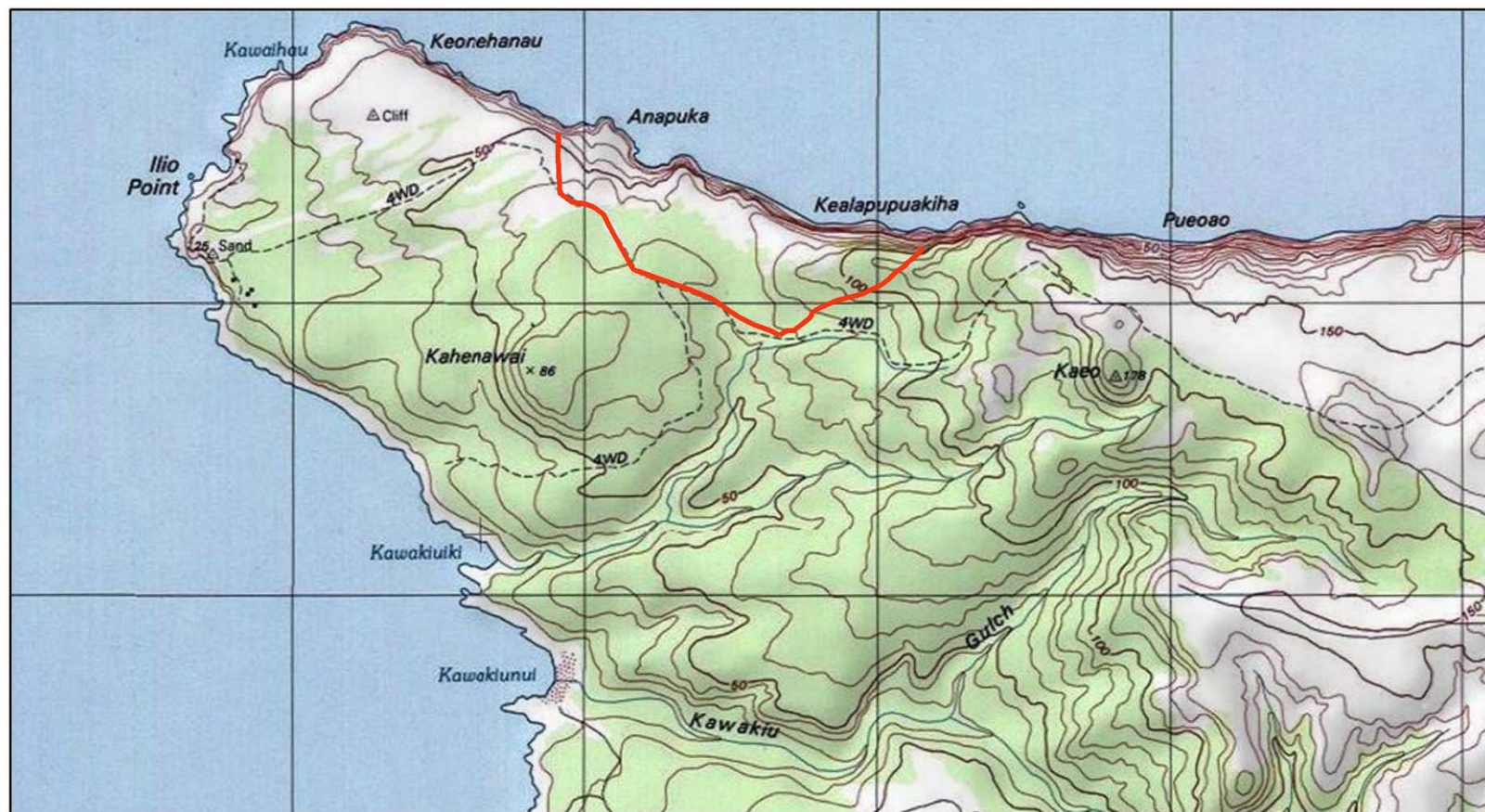
Upon receiving the Mokio Preserve as gifted land from Molokai Ranch in 2008, MLT prepared an initial archaeological reconnaissance survey (Weisler 2009) and an oral history study (McGregor 2010) for the entire parcel. A subsequent archaeological reconnaissance survey was conducted specifically for the current Mokio-Anapuka fence project in 2018 (McElroy and Eminger 2020). In the same year, an environmental assessment was also completed for the project (MLT 2018). An archaeological monitoring plan was requested prior to the issuance of the special management area permit by the State Historic Preservation Division (SHPD) in a letter dated July 21, 2020 (Log No. 2020.01521, Doc No. 2007GC10).

This report is drafted to meet the requirements and standards of federal and state historic preservation law, as set out in Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations in 36 Code of Federal Regulations (CFR) Part 800, as well as Chapter 6E of the Hawaiʻi Revised Statutes. This monitoring plan is designed to identify historic properties that might be exposed during the fence construction and to treat them properly, in accordance with the SHPD's *Rules Governing Standards for Archaeological Monitoring Studies and Reports* (§ 13-279-4). The plan includes background information on the project area, a description of the environment and undertaking, and an outline of field methods and post-field actions proposed for the archaeological monitoring. Hawaiian words and flora and fauna are defined in the glossary at the end of the document.

Project Location and Natural Environment

The project area is located in Kaluakoʻi Ahupuaʻa on the rugged northwest shore of Molokaʻi on a portion of TMK: (2) 5-1-002:060 within the Mokio Preserve, an area gifted to MLT by Molokai Ranch (Figure 1). The approximately 1,769-acre parcel is owned and managed by the MLT and is situated between the ʻĪlio point parcel owned by the State of Hawaiʻi to the west and the Moʻomomi-Keonelele parcel (Moʻomomi Preserve) owned by The Nature Conservancy to the east. The Mokio Preserve is bounded on the north by the ocean and roughly follows an undeveloped dirt road on the south that runs from Keonelele to ʻĪlio. Access to the project area is only accessible by 4WD vehicle on a private road that runs through private land owned by Molokai Ranch. The Area of Potential Effect is a 2.25 km (1.40 mi.) long; 1.83 m (6 ft.) wide corridor that covers .413 ha (1.02 ac.) of TMK: (2) 5-1-002:060 enclosing the westernmost portion of the Mokio Preserve (Figure 2). The east and west ends of the project corridor are on cliffs at the coastline, while the central portion of the corridor extends around 400 m (1,312 ft.) inland on a relatively flat, dry area (Figure 3).

The Mokio Preserve has several prominent natural landscape features. The two major points that jut out from the shoreline are Waiakanapō on the east and Mokio Point in the center of the property. The seasonal Kaʻa Wetland appears during rainy season and is home to endangered plants and at least two species of shrimp (MLT 2012–2017). The wetland drains out of Kaʻa Gulch on the east of the parcel. Next to the gulch is a large hill, Puʻu Kaʻa. A second hill, Puʻu Kaʻeo is located on the west side of the preserve where a large adze quarry and habitation complex was found during surveys. High cliffs known as Pueoao are just north of Puʻu Kaʻeo on the shoreline. Kealapūpūakiha is another quarry complex as well as habitation site located at the edge of the dunes and will be



Legend

— Project Area



Figure 1. Project area on 7.5 minute 1993 USGS map for Ilio Point.

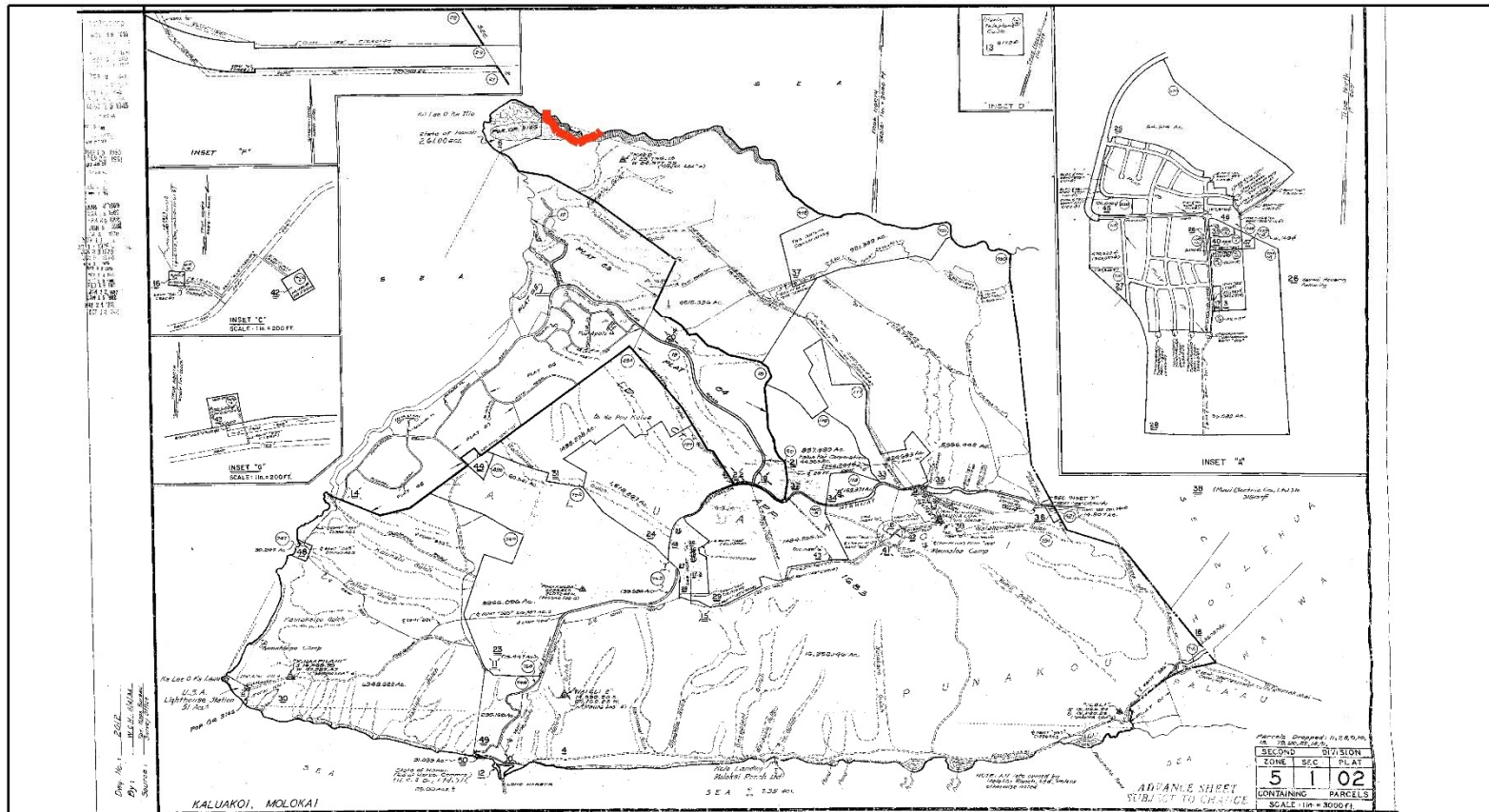
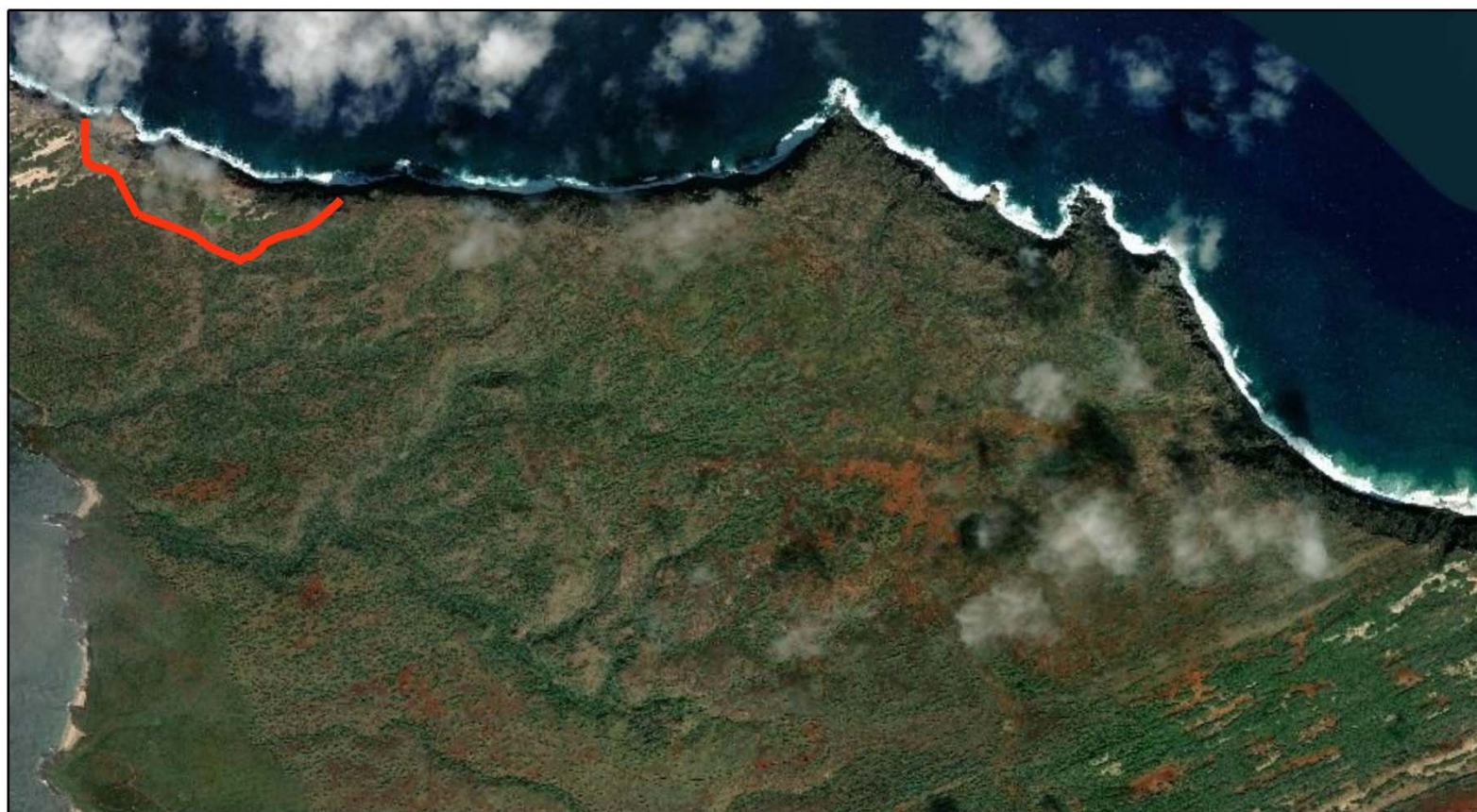


Figure 2. Project area on plat map for TMK: (2) 5-1-002.



Legend

— Project Area



Figure 3. Mokio-Anapuka fence line (in red) on aerial photograph.

enclosed within the fence line. This area as well as Mokio Point were used to access the shoreline in historic times. Anapuka makes up the westernmost portion of the preserve and is a peninsula that includes Ka Lae o ka 'Īlio.

Geology, Rainfall, and Soils

The Hawaiian Islands comprise one of the most isolated landmasses on the planet, situated roughly 2,500 miles from North America, the nearest continent. This extreme isolation has resulted in a very high rate of endemism among the plant and animal colonizers that successfully reached these islands and reproduced.

Over the eons, in a benign, ocean-tempered climate, these islands were slowly colonized by life. The colonizers then evolved into uniquely Hawaiian species, often many of them from a single ancestral type...adapting to the great variety of island habitats. (Culliney 1988:ix)

Centrally located within the chain, Moloka'i is the fifth largest of the Hawaiian Islands. The bulk of Moloka'i was formed by two large shield volcanoes, today called West Molokai and East Molokai. The West Molokai volcano is the older of the two. It is low and flat, only reaching an elevation of 421 m (1,381 ft.) at its highest point. At some point late in its history the northeast section of West Molokai broke off, fell into the ocean, and left slide scarps west of the Ho'olehua plain. One of the pali, or cliffs there is called the Hauākea Pali.

During or shortly after the late stage of alkalic volcanism, the summit and northeastern flank of West Moloka'i collapsed into the ocean. Their departure left a set of large slide scarps across the sundered top of the mountain. Flows from neighboring East Moloka'i built up against these scarps, showing that it is a much younger volcano. (Hazlet and Hyndman 1996:192)

The younger East Molokai volcano may have stood as high as 3,353 m (11,000 ft.) in the past, but has since subsided and weathered to its present 1,512 m (4,961 ft.) elevation. As the East Molokai volcano grew, it flowed out, met, and overlapped the older, dormant West Molokai volcano. The project area is located on the West Moloka'i volcano, just west of where the flows met and overlapped (Figure 4). The East Molokai lavas built up against the faulted edge of West Molokai, though they never attained much height and this remained the lowest spot along that coastline. The Mokio Preserve has roughly five miles of rugged sea cliffs that continue west to 'Īlio Point, but lowers to sea level to the east at Mo'omomi (Figure 5).

Kaluako'i is mentioned in Summers' description of the northwest Moloka'i coastline. Ahupua'a are the traditional land divisions in the Hawaiian Islands that, according to archaeologist Patrick Kirch, were established between AD 1450–1650 (1985:303–306).

The major traditional land division in Hawai'i is the ahupua'a, an ancient political land management division. The ahupua'a is generally based on topographic features... This land division remains an important cultural feature on the land and is the basis for most land surveys and divisions that have happened since the time of the mahele. (Wingert et al. 2002)

Kaluako'i is the largest ahupua'a, or land division, on the Moloka'i. With regard to ahupua'a, Lyons asserts that, "in populous portions the sub-division was very minute" (1875). Consequently, the size of the Kaluako'i Ahupua'a would suggest a small population for this part of Moloka'i, a situation borne out by the archaeological record.

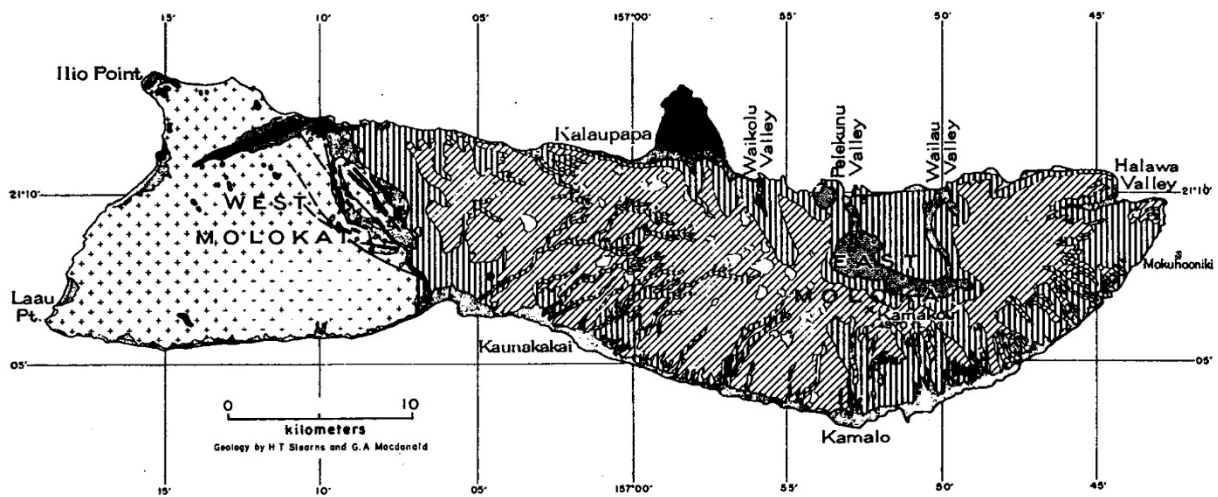


Figure 4. The younger lava flows of East Molokai (striped) meet the older basalts of West Molokai (stippled) east of the project area at Mo'omomi (Macdonald et al. 1983:411).

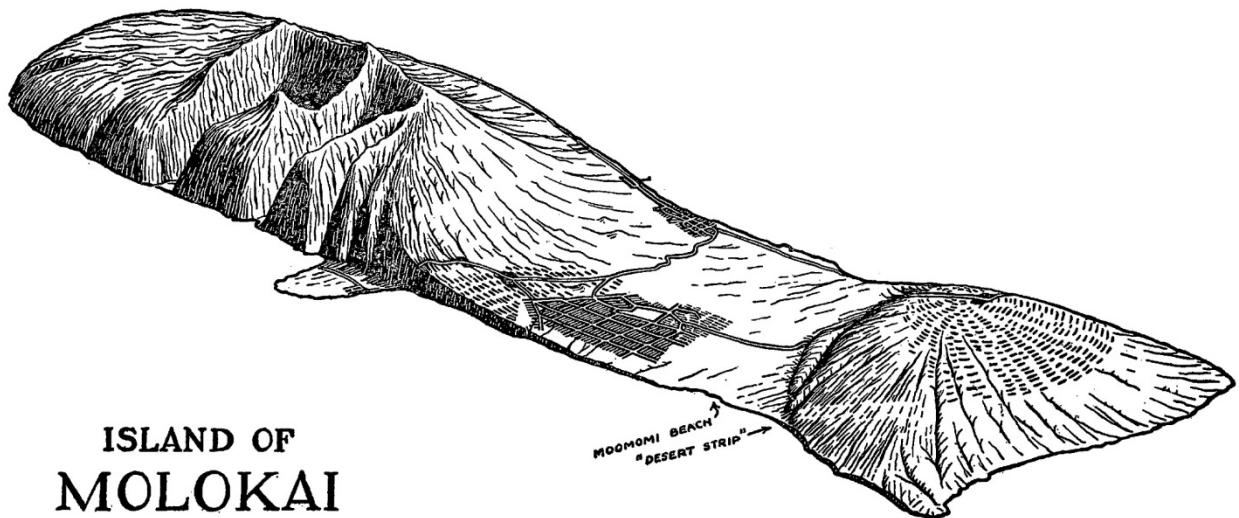


Figure 5. Topography of Moloka'i, illustrating the high sea cliffs along Mokio until Ka Lae o ka 'Ilio (Keesing 1936:26).

Fresh water is scarce in this region, with most watercourses ephemeral in nature and only appearing directly after heavy rainfall. Rainfall is sparse, with a mean of 53.41 cm (21.03 in.) per year (Giambelluca 2011). June to September are the driest months with 2.28–.67 cm (.90–.26 in.) of rainfall, while December and January see the most rain with 7.76–7.40 cm (3.05–2.91 in.) (Giambelluca 2011). The following passages explain the rainfall patterns of west Moloka'i:

Much of the precipitable moisture in the trade wind flow falls as orographic rain on the relatively high East Molokai mountains, resulting in a drier air mass by the time it reaches West Molokai. Thus, West Molokai is in the “rain shadow” of East Molokai. The low elevation of West Molokai prevents much of what moisture remains from being condensed out of the trade winds with the effect that West Molokai is dry (Giambelluca et al. 2011).

Large-scale storm systems are the source of most of the rainfall over drier areas of Hawai‘i such as at West Molokai (Sanderson 1993).

The orientation of the East Molokai mountain lying in-line with, and splitting, the trade wind flow causes a cloud band to develop over West Molokai where the winds come back together. Although this line of clouds, and related rain showers miss the Mokio-Anapuka coastline, it can be seen from there when it forms.

A convergence of trades diverted around the eastern mountain mass creates a cloud band which lies over the southern leeward coast and extends hundreds of kilometers downwind. This cloud band sometimes produces intense showers, called *nāulu* by the Hawaiians. These showers are noted for falling just offshore during the summer drought. (Sanderson 1993:34)

The two prominent geologic features that dominate the western landscape on Moloka‘i are the West Molokai volcano and the Desert Strip. West Molokai is roughly two million years old and its long dormancy has allowed a deep lateritic soil to develop that covers most of the region. “The Desert Strip,” was coined by Chester Wentworth, who described this extensive dune system as a “barren windswept country in which eolian features are developed with exceptional clarity and vigor” (1925:41). The dominant northeast trade winds have blown sand from Mo‘omomi almost completely across the northwest corner of the island including across portions of the Mokio Preserve and the current project area creating an expansive stretch of sand dunes, both consolidated and unconsolidated (Stearns 1985; Macdonald et al. 1983). The Hawaiians called this same area Keonelele, or “the flying sand” (Pukui et al. 1974).

A soil survey was conducted across the Hawaiian Islands in 1965, including Moloka‘i, to “learn what kinds of soil are on the islands, where they are located, and how they can be used” (Foote et al. 1972:2). Among the observations made were slope characteristics, stream qualities, the kinds of plants growing in the soil, rock types and qualities, as well as specific details about the soils. The survey included excavations to record soil profiles.

Generally, soils in the project area are of rock outcrop, very stony land, and jaucas sand, a soil preferred for traditional Hawaiian burials. Specifically, soils within the project corridor consist of Jaucas sand, 0–15% slopes (JaC) on the west side, which also makes up the majority of the soil within the fence line, rock outcrop (rRO) on the two northernmost ends of the fence, and very stony land, eroded (rVT2) in the south (Figure 6).

The soil survey conducted by the USDA Soil Conservation Service further defines the project area’s soil series’:

Jaucas series

This series consists of excessively drained calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean...They developed in wind and water deposited sand from coral and seashells. They are nearly level to strongly sloping. Elevations range from sea level to 100 feet; but locally on West Molokai, the elevation is as high as 650 feet.

(Jaucus sand, 0–15% slopes)...is used for pasture, sugarcane, truck crops, and urban development. (Foote et al. 1972:48–49)

Rock outcrop

Rock outcrop (rRO) consists of areas where exposed bedrock covers more than 90 percent of the surface. It occurs on all five islands. The rock outcrops are mainly basalt and andesite. This land type is gently sloping to precipitous. Elevations range from nearly sea level to 10,000 feet...This land type is not suited to farming. It is used for water supply, wildlife habitat, and recreation. (Foote et al. 1972:119)

Very stony land

This land type consists of areas where 50 to 90 percent of the surface is covered with stones and boulders.

Very stony land, eroded (rVT2)...consists of large areas of severely eroded soils on Molokai and Lanai. About 50 to 75 percent of the surface is covered with stones and boulders. There are common shallow gullies and a few deep gullies. The soil material is like that of the Holomua, Molokai, Pamoia, and Waikapu soils. This land type occurs in the same general area as very stony land, but it is mostly upslope from those area. This land type supports a thicker stand of vegetation than very stony land because it has more soil material. These areas are used for pasture and wildlife habitat. The habitat is excellent for axis deer. With a little improvement, excellent habitat for game birds can be established. (Foote et al. 1972:124)

The fence also crosses a small portion of Kapuhikani extremely stony clay, 3–15% slopes (KKTC) on the east side. The Kapuhikani series, found on the uplands in West Molokai, is well-drained and extremely stony. The series formed in material originating from olivine basalt and is typically gently sloping to moderately sloping. Kapuhikani extremely stony clay, 3–15% slopes is used for wildlife habitat and pasture. Because of the numerous stones and shallowness of the soil, plowing for cultivation purposes is impractical (Foote et al. 1972:62–63).

Also in the vicinity is very stony land (rVS) located inland and to the east of the fence line. Typically, the slope is between 7–30%. Very stony land “consists of stones and boulders underlain by soft, weathered rock and bedrock” (Foote et al. 1972:124). Similar to Kapuhikani extremely stony clay, very stony land is utilized for pasture and wildlife habitat, but is difficult to improve due to the multitude of stones.

Flora and Fauna of the Preserve

While the Mokio region is described as a semi-arid desert environment, the preserve also includes an upland seasonal wetland, and a coastal sand dune ecosystem that boasts various rare and endemic plant populations. Predators such as axis deer (*Capra hircus*), rats (*Rattus spp.*), mongoose (*Herpestes a. auro punctatus*), and feral cats (*Felis catus*), roam the region and negatively impact native plants and ground nesting bird populations (MLT 2012–2017).

Plant Species

There are at least five endangered plant communities and one plant federally labeled as a “species of concern” that have been observed within the Mokio Preserve (Table 1). The preserve is also home to six native plants and two indigenous plant species. Most of these plants grow near the coastal area and sea cliffs, however the awiwi is known to grow at Pu‘u Ka‘eo and the Ka‘a Wetland. Six plant species have been observed at nearby locations such as Mo‘omomi and Ka Lae o ka ‘Īlio (‘Īlio Point) or are known to thrive in habitats similar to those in Mokio Preserve, and may be present in the area but have not yet been observed (MLT 2012–2017). Invasive plant species such as kiawe, lantana, and non-native grass dominate the landscape and make up around 95% of the vegetation of the Mokio Preserve.

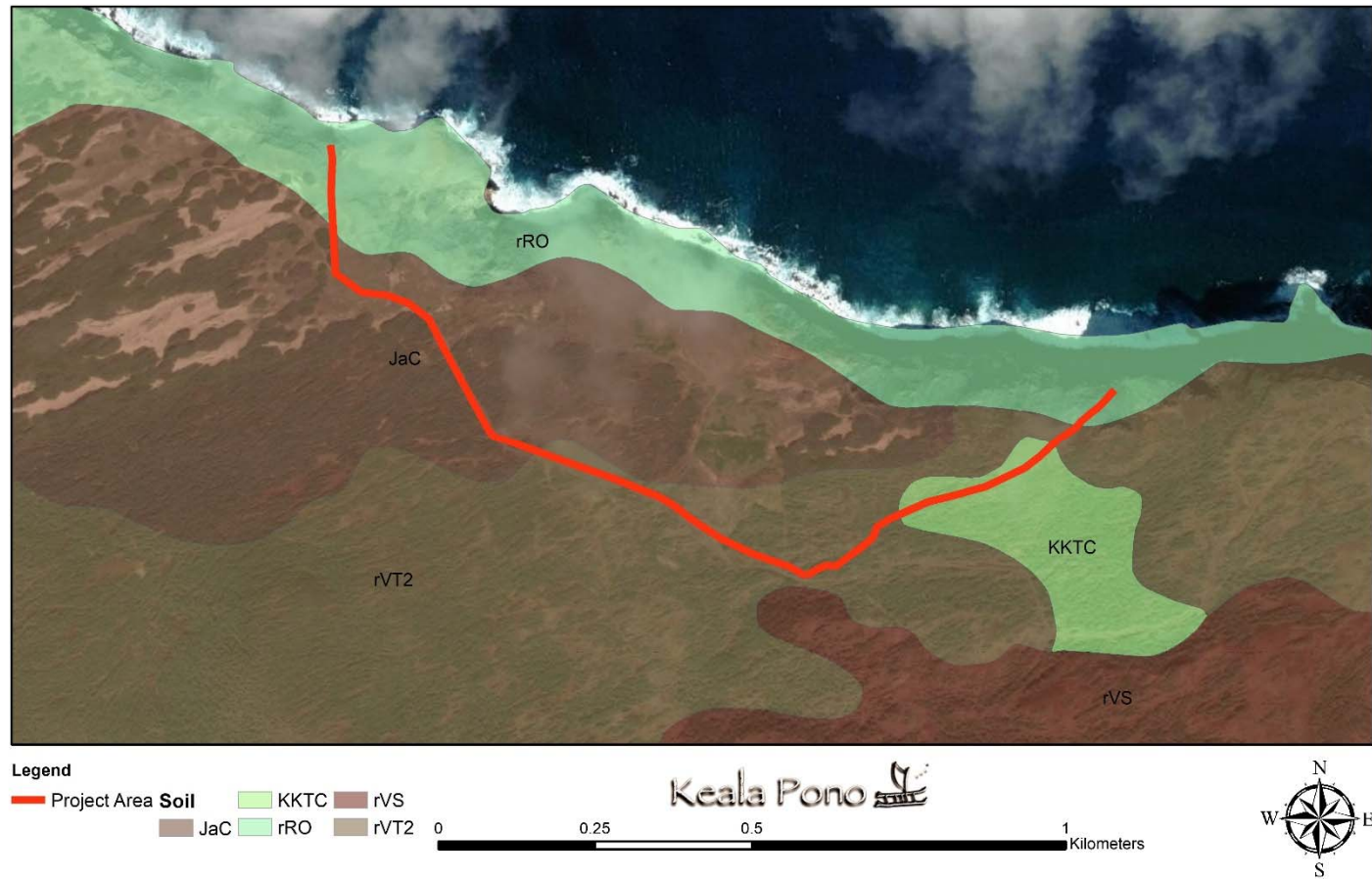


Figure 6. Soils in the vicinity of the project area (data from Foote et al. 1972).

Table 1. Plant Species Found within the Mokio Preserve (Reproduced from MLT 2012–2017)

Common Name	Scientific Name	Federal Status	Location
Alena	<i>Boerhavia acutifolia</i>		
Alena	<i>Boerhavia repens</i>		
‘Akia	<i>Wikstroemia oahuensis</i>		
‘Akia	<i>Wikstroemia uva-ursi</i>		
Akiaki	<i>Sporobolus virginicus</i>		
Akoko	<i>Chamaesyce degeneri</i>		
Akoko	<i>Chamaesyce skottsbergii</i>	Endangered	Found from Pueoao to Anapuka. Last observed at ‘Īlio in 1913.
Akulikuli	<i>Sesuvium portulacastrum</i>		
‘Aweo‘weo	<i>Chenopodium</i>		
Awiwi	<i>Centaurium sebaeoides</i>	Endangered	Found near Pu‘u Ka‘eo and Ka‘a Wetland.
Enaena	<i>Pseudographalium sandwicensium molokaiense</i>		
Hinahina	<i>Heliotropium aromalum</i>		
Hinahina kahakai	<i>Nama sandwicensis</i>		
	<i>Panicum fauriei</i>		
Ihi	<i>Portulaca lutea</i>		
‘Ihi‘ihi lauakea	<i>Marsilea villosa</i>	Endangered	Growing at several locations totalling roughly an acre near Anapuka. Said to be the largest cluster in all of the Hawaiian Islands.
‘Ilima	<i>Sida fallax</i>		
Kakonakona	<i>Panicum torridum</i>		
Kipukai	<i>Heliotropium curassavicum</i>		
Makaloa	<i>Cyperus laevigatus</i>		
Mau‘u akiaki	<i>Fimbristylis cymose</i>		
Naupaka kahakai	<i>Scaevola taccada</i>		
Nehe	<i>Melanthra integrifolia</i>		
Ohai	<i>Sesbania tomentosa</i>	Endangered	Found near Anapuka
Ohelo kai	<i>Lycium sandwicense</i>		

Table 1. (continued)

Common Name	Scientific Name	Federal Status	Location
Pa‘u o Hi‘iaka	<i>Jacquemontia ovalifolia</i>		
Pili	<i>Heteropogon contortus</i>		
Uhaloaa	<i>Waltheria indica</i>		
	<i>Ipomoea tuboides</i>		
	<i>Schiedea globosa</i>		
	<i>Tetramolopium sylvae</i>	Species of concern	Found near Anapuka

Wildlife

A few endemic animals remain in the region, though some species appear seasonally. One of these observed at Mokio Preserve is the pueo, the Hawaiian short-eared owl (*Asio flammeus sandwichensis*). It is also possible that the Hawaiian hoary bat (*Lasiurus cinereus semotus*) may live in the preserve, however no studies have been carried out. The seasonal Ka‘a Wetland plays host to ghost shrimp and tadpole shrimp (*Triops cancriformis*) during rainy season.

Nearby, Mo‘omomi Preserve is a breeding and nesting area for the honu, Hawaiian green sea turtle (*Chelonia mydas*), and they are actively monitored by the Nature Conservancy staff and volunteers. It is believed that the females return to lay eggs on the same beach where she was hatched. Honu have been observed swimming offshore of the Mokio Preserve and are listed as threatened under the United States Endangered Species Act. The endangered Hawaiian monk seal is also seen off the Mokio coast and frequent the sandy beaches at Mo‘omomi.

The adjacent Mo‘omomi Preserve is also a known nesting location for wedge-tailed shearwater seabirds, or ‘ua‘u kani in Hawaiian (MLT 2012–2017). Likewise, the Mokio Preserve is a feeding, roosting, and nesting area for nine species of native seabirds including multiple nesting colonies of ‘ua‘u kani (Table 2). The noio, koa‘e ‘ula, Laysan albatross, and ‘iwa are a few of the seabirds that have been observed in Mokio.

The Undertaking

MLT and ABC are both 501(c)(3) non-profit organizations. The two entities are proposing to construct a new predator-proof conservation fence that will replace an existing ungulate fence. The new Mokio-Anapuka conservation fence will help to protect the coastal habitat, archaeological sites, and flora and fauna within the Mokio Preserve. A similar fence is already in place at Mo‘omomi Preserve, of which MLT manages restoration efforts for The Nature Conservancy. Planning and design of the fence were established to enhance the feasibility of predator eradication, minimize disturbance to the existing native coastal habitat, avoid known cultural sites, maintain the ongoing community subsistence access, and diminish the visual impact of the fence.

Table 2. Birds observed at Mokio Preserve (Reproduced from MLT 2012-2017)

Hawaiian Name	Common Name	Scientific Name	Notes
A	Brown booby	<i>Sula leucogaster</i>	Observed flying offshore from Anapuka
A	Red-footed booby	<i>Sula sula</i>	Observed flying offshore
‘Akekeke	Ruddy Turnstone	<i>Arenaria interpres</i>	Observed foraging
Hunakai	Sanderling	<i>Calidris alba</i>	Observed foraging
‘iwa	Great frigate bird	<i>Fregata minor</i>	Observed roosting
Kioea	Bristle-thighed Curlew	<i>Numenius tahitiensis</i>	Observed foraging
Koa‘e ‘ula	Red-tailed tropic bird	<i>Phaethon rubricauda</i>	Observed nesting attempts
Kolea	Pacific golden plover	<i>Pluvialis fulva</i>	Observed foraging
Noio	Hawaiian black noddy	<i>Anous minutus</i>	Observed nesting attempts
‘Ou	Bulwer’s petrel	<i>Bulweria bulwerii</i>	Observed nesting attempts
Ua‘u	Hawaiian dart-rumped petrel	<i>Petrodroma phaeopygia sandwichensis</i>	Endangered. Nocturnal audio observed.
Ua‘u Kani	Wedge tailed shearwater	<i>Puffinus pacificus</i>	Multiple nesting colonies
Ulili	Wandering Tattler	<i>Heteroscelus incanus</i>	Observed foraging
	Laysan albatross	<i>Phoebastria immutabilis</i>	Observed flying offshore

The three-sided fence alignment starts at a sea cliff near the western boundary of the parcel east of ‘Īlio Point and travels a little over 729 ft (.25 km) south (inland), then moves southeast for approximately 1,636 ft (.5 km) meeting the southern boundary of the parcel, travels along the parcel boundary due east for roughly 1,953 ft (.65 km) then heads north towards the sea cliffs for approximately 3,000 ft (.9 km). The total length of the fence line is roughly 1.40 mi (2.25 km) and covers an area of 1.02 ac. (.413 ha).

Fence installation requires clearing vegetation within a roughly 6 ft (1.83 m) corridor using hand tools and heavy equipment to move soil and rocks. The fence posts will be spaced about 6 ft (1.83 m) apart and extend to a maximum of 3.3 ft (1 m) below ground level.

The property is currently undeveloped and is utilized by the community for subsistence activities such as fishing, hunting, and gathering of ocean resources. Vegetation within the project corridor is sparse, consisting mainly of kiawe and grasses.

BACKGROUND

A brief historic review of the Mokio region is provided below, to offer a better holistic understanding of the use and occupation of the project area. In the attempt to record and preserve both the tangible (e.g., traditional, and historic archaeological sites) and intangible (e.g., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, the SHPD library, and online on *The Molokai Dispatch* website and the Waihona Aina, Huapala, and Ulukau databases. Archaeological reports and historical reference books were among the materials examined.

Mokio in the Pre-Contact Era

Information obtained for the traditional Hawaiian period includes place names and wind names, details on subsistence activities, as well as mo‘olelo, and ‘ōlelo no‘eau. Throughout this report, “traditional” refers to the Pre-contact period before 1778 Western contact, and “historic” denotes the time after 1778.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names “usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history” (Pukui et al. 1974:xii).

According to Harriet Ne, “Mokio is a fish, a small fish...makes a noise “piu.piu.piu” and schools of it in the water, when you look from the top [of the sea cliffs]. There’s a big school, you could hear the sound way up on the top when you were looking down” (McGregor 2010:12).

The current project area and the places around it are listed in *Place Names of Hawaii* (Pukui et al. 1974:12, 56, 59, 67, 71, 72, 74, 78, 79, 96, 98, 102, 108, 154, 158, 192, 197, 219), along with the meanings of their names. Information is quoted from Pukui et al. (1974) unless otherwise attributed.

Ana-puka...Shore cave...‘Īlio Pt., Moloka‘i. *Lit.*, cave with holes (fishermen tied their canoes in these holes).

‘Īlio...Point and quadrangle...west Moloka‘i...See Ka-lae-o-ka-‘Īlio...*Lit.*, dog.

Ka‘a...Hill and gulch... ‘Īlio Pt., Moloka‘i ...*Lit.*, rolling.

Kai-ehu...Point...Airport qd., Moloka‘i...A bluff shelter at the southeast end of the point was excavated by Bishop Museum archaeologists in 1953. It was used primarily by fishermen. A radiocarbon date of 1408 +/- 300 years was obtained from charcoal at the lowest level of the shelter...*Lit.*, sea spray.

Kaka‘a-‘u‘uku...Gulch...Airport qd., north Moloka‘i ...*Lit.*, small rolling. Rises at 1100 ft. elev. under Puu Nana, flows north to Kaawaloa Bay. Pukui et al. rendered Kaka‘a-‘u‘uku (the small rolling), perhaps a misreading. Perhaps Kākā-‘auku‘u? Called Kaka‘ako in Monsarrat (n.d.).

Ka-lae-o-ka-‘Īlio...Northwest Moloka‘i (also called ‘Īlio and Ka-‘Īlio... *Lit.*, the cape of the dog. (At the Kona point in a sea pool is the body of Anahulu, a supernatural dog that was changed to stone by Pele.)

Ka-lani...Beach...Airport qd., north Moloka‘i ...*Lit.*, the sky or the royal chief. Bluff at beginning of cliffs called Kalanai in Monsarrat (n.d.) Kahalekalani is now known as Kalani beach. (Kaimikaua 1991:141)

Ka-lua-ko'i...Land division and gulch...Airport qd., Moloka'i ...The largest ahupua'a on Moloka'i, with an area of 46,500 acres. *Lit.*, the adze pit (there are adze quarries on Mauna Loa extending over an area of 30 acres and also in the area just west of Mo'omomi.) Kaluakoi (kā-lu'ā-ko'i): the stone adz quarry. Land section, Molokai. (Andrews 1922)

Ka-pā-lau-o'a ...Headland...Airport qd., northwest Moloka'i.

Ka-wa'a-loa...Bay, Airport qd., north Moloka'i. According to Coulter, this is Ka-wai-loa (the long stream)...*Lit.*, the long canoe.

Ka-wai-hau...Bay... 'Īlio Pt., north Moloka'i ...*Lit.*, the ice water.

Ke-ala-pūpū-a-kiha ...Coastal area... 'Īlio Pt., north Moloka'i ...*Lit.*, the shell pathway of Kiha. (The Maui chief, Kiha-a-Pi'ilani, built a shell pathway near here).

Ke-one-lele ...Desert area... 'Īlio Pt., north Moloka'i ...said to have been a burial site... *Lit.*, the flying sand. "Site 30. Burials at Keonelele... 'the flying sand' is a desert strip of land beginning at Mo'omomi and extending W to Kaka'ako Gulch near Okoli ('Okole?) Hill." (Summers 1971) Sand dunes, Mo'omomi, Moloka'i. Extensive, active belt of largely unconsolidated dunes that extends from Mo'o-momi Beach almost completely across the western corner of West Moloka'i. The belt was formed by the trade winds blowing sand inland from the beach. Some of the older dunes have lithified to form calcareous sandstone. Also known as the Desert Strip. *Lit.*, the flying sand. (Clark 2002)

Mokio... Two points, 'Īlio Pt. and Kamalō, Moloka'i

Mo'o-momi...Beach and land area, Airport qd., Moloka'i...1. Bay, beach, dive site, recreation center, surf site, Mo'omomi, Moloka'i. Narrow calcareous sand beach at the head of Mo'omomi Bay fronting the Hawaiian Home Lands recreation center. The dive site and surf site are off the pavilion. 2. Coast, Mo'omomi, Moloka'i. General name for the 3 miles of calcareous sand beaches from the Hawaiian Home Lands recreation center to the sea cliffs at Keonelele. 3. Conservation area. Established in 1993 by Hui Malama o Mo'omomi, a group of Moloka'i residents who were concerned over the serious depletion of the ocean resources at Mo'omomi, especially fish, lobster, and 'opihi. The conservation area is not a Department of Land and Natural Resources' Natural Area Reserve or Marine Life Conservation District. Mo'omomi Bay is in the center of the area that extends east to Nihoa near the base of the Kalaupapa Trail and west to 'Īlio Point. (Clark 2002:253)

Pu'u-ka-'eo...Dome (3,702 feet high), Kamalō, Moloka'i....*Lit.*, the stone promontory.

Pueo-ao...Beach, 'Īlio Pt., north Moloka'i....*Lit.*, daylight owl.

Wai-a-kanapō...Coastal area... 'Īlio Pt., Moloka'i....*Lit.*, water of Kanapō (perhaps the name of a person or place.)

Wind Names

A general wind name for Kaluako'i is Kumuma'oma'o, an easterly wind (Nakuina 2005). There is also the Kaiaulu wind of Keonelele (Kīa'imakani et al. 1862): "Mai ka'ai pa Kaiaulu la e Keonelele." In addition, the winds of Moloka'i were recited by Kuapaka'a at the urging of his father, Paka'a, and a wind specific to nearby Mo'omomi was noted:

He kuapa ko Moomomi...

The kuapa is of Moomomi...

(Fornander 1918–1919:100–101)

Ma ke kuapa maluna mai o Moomomi...

(Ka Hae Hawaii 1861)

Subsistence and Traditional Land Use

The ahupua'a of Kaluako'i literally means, the "the adze pit." In this ahupua'a, high quality basalt was used to make adzes and other tools. It is well known that lithic quarries occurred on select sites in the Mokio Preserve, notably at Kealapūpūakiha and Pu'u Ka'eo. Evidence of lithic tool production at Kaluako'i was summarized by Dixon et al. (1994) as quarry and workshop areas, habitation compounds, and possible agricultural terracing for dryland agriculture.

Paradoxically, Dixon et al. (1994) propose the possibility of agricultural intensification in the Kaluako'i area, a place lacking adequate rainfall and a place far away from the taro-rich windward valleys of east Moloka'i, which were well known for their intense agricultural production. It has been presumed that the adze quarries of Kaluako'i were for manufacturing tools to be exported and used in taro production in the east valleys of Pelekunu, Wailau, and Hālawā. The unexpected discovery of a cluster of workshop/habitation compounds with possible agriculture terracing may suggest a more concentrated exploitation of lithic resources and dryland crops than was previously hypothesized. In other words, lithic tools were being produced not only for the wet windward valleys but also for use in the Kaluako'i area itself. This revised interpretation, suggests that long standing models that postulate cultural marginality in southwest Moloka'i may need refinement (Dixon et al. 1994).

During her island-wide survey of Moloka'i, Summers lists only two cultural sites in the Mokio area—one is a possible heiau and the other is an adze quarry site, both located at Pu'u Ka'eo (1971:45–46). Her study does however mention multiple fishing ko'a and temporary fishing shelters throughout Kaluako'i, including at nearby 'Īlio, Kalani, and Mo'omomi. The presence of these sites illustrates that the northwest coast, though lacking reliable freshwater resources, had a noteworthy offshore fishing ground still frequented by locals today.

Handy et al. (1991) make no mention of Mokio or Anapuka, because the area was probably not suitable for cultivation of crops. However, they do relate that "Kaluako'i folk were sweet-potato planters and deep-sea fishers" (Handy et al. 1991:514, Remy n.d.). They go on to describe the traditional infrastructure of the ahupua'a:

Even before it was deforested, Mauna Loa was a sweet-potato rather than taro-planting area. The fact that the original and most sacred school of hula was there adds weight to evidence that the hula was part of the cult of rain making. (Handy et al. 1991:512)

There were many fishermen's shrines (ko'a), and many temple sites (heiau) in Kaluako'i, and holua slides, bowling places, and a "quarry for konani" (checkers-stones). The people lived on the shores, and paved trails led to their potato patches in the uplands. One such trail nearly a mile long led to the 'uala plantation of Paka'a... (Handy et al. 1991:514)

Phelps (1941 in Handy et al. 1991:518) noted that 'uala and fish were the main food sources for residents of west Moloka'i, but that there were no yam or sweet potato fields in the region of the project area:

For Pala'au (Apana 2), Kaluakoi, and Punakou, Ho'olehua, and Naiwa, planting areas for yams and sweet potatoes cannot be delimited (deliniated?) but it is known that these were grown in that general area and were, with fish, the staples of the inhabitants. In northwest Kaluakoi, in an area roughly bound by the sea on the north from Ka Ilio to Mo'omomi, on the west by the sea from Ka Ilio to Kawakiuiki on the south by a line running from Kawakiuiki to Pu'u Pili (perhaps even to Mauna Loa), thence to Mo'omomi on the east, I doubt if there were either plantings of any kind or inhabitants.

Pāka‘a and his son, Kūapāka‘a established remarkable sweet potato fields during the reign of Hawai‘i Island chief Kewaenuiaumi (15th–16th centuries). The father and son planted six fields of sweet potato to honor and represent the six districts of their home island, Hawai‘i. The fields were said to have been shaped like each of the districts of Hawai‘i Island (Handy et al. 1991).

Stokes, after his 1909 survey stated, “This part of the island [Kaluako‘i] does not give any evidence of a dense population...It is probable that formerly, as now, coasts were periodically visited by the inhabitants of the rest of the island for the purpose of fishing, the waters there yielding very abundantly” (cited in Summers 1971:40).

William Bonk conducted archaeological excavations in West Moloka‘i for his 1954 master’s thesis (Bonk 1954). Based on his excavations, Bonk concluded that the Kaluako‘i Ahupua‘a was of significance to early Native Hawaiians for its adze quarries and extensive fishing resources. He wrote:

Streams are ephemeral in nature, flowing for a short period of time after rain...Sea-cliffs dominate the northwest coast, but in no instance do they reach the heights of these previously mentioned for the northeast coast. Sand dunes are found in the Moomomi Beach area. They extend inland in a southwesterly direction and are composed of both consolidated and unconsolidated material. Near Ilio Point, at the extreme northwestern extremity of the island, and along the coast east of Moomomi dunes are also found. (Bonk 1954:11)

A conclusion which comes to the fore, as a result of this investigation of west Molokai, is that the contents of the sites excavated bear out what we had every reason to expect, that this was a decidedly marginal land for the inhabitants of Molokai. Fishing and the quest for adze stone brought people into the area, and fighting probably sent refugees into it, but temporarily. The small population of Molokai must have found ample room on the richly watered and larger land of east Molokai. Only a few fishermen families seem to have found it worth while to build homes on west Molokai. Being a distant, bare region, except for fishing, the wanderers into it would go lightly burdened and would not tarry longer than to obtain their fish or stone. They therefore would have a strong incentive not to loose(sp?) the few, vital things they took with them, and would not be much concerned with the manufacture of articles while camping in shelters. Hence the relatively few artifacts, in number or kind, as compared with sites on Oahu and Hawaii. (Bonk 1954:139)

Nā Mo‘olelo

As mentioned earlier, Hawaiian place names were connected to traditional stories through which the history of the places was preserved. These stories were referred to as “mo‘olelo, a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or prosaic. Mo‘olelo were repositories of cultural insight and a foundation for understanding history and origins, often presented as allegories to interpret or illuminate contemporary life... Certainly many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language” (Nogelmeier 2006:429, 430). Still, a number of traditional stories managed to be recorded as Hawaiian society transitioned from an oral culture to a written one, and among these were several versions of stories connected to areas near Mokio and Anapuka. Many legends regarding Moloka‘i referred to Kaluako‘i and the western part of the island even though most of the population resided in the east (Cooke 1947:117–123 in Handy et al. 1991:514).

One mo‘olelo was found that pertains to the project lands specifically. This tale was related during oral history interviews and speaks of the makahiki runners who had to catch fish at Mokio as part of the race. A few legends mention prominent locales nearby the project area. These include the legend

of Umi-a-Maka who was victorious because he heeded his kahuna; reports of how the Kalaina Wawae footprints came to be; and accounts of a major battle in which Mo'omomi played a part.

Makahiki runners

In an interview with Philip Spalding III on March 2, 1988, a story was related regarding the route taken by runners in the Makahiki, which involved a series of tasks including catching fish at Mokio:

He would go and start at Ho'olehua, register there, the chief would say the names of those that was going to participate. Then he would go down to Mokio, you know, the point by Ka Lae o ka 'Ilio and there he would get the supply of food and...Have you ever been to Mokio?...Have you looked down to the water?...Have you seen?...Mokio is a fish, a small fish...makes a noise 'piu.piu.piu' and schools of it in the water, when you look from the top [of the sea cliffs]. There's a big school, you could hear the sound way up on the top when you were looking down. And he would get a supply of mokio for him. And of course, he would have to go himself, and go down the pali get. Throw a net once, enough for him. And then he would catch them, and then he would cook it by Ka Lae O Ka 'Ilio, then gather some 'opihi from there. Then he would go down to Kawakui. He'd get to Kawakui then there's certain lobster hole on the mauka side, the north side of there and he would get his lobster... (McGregor 2010:12)

Umi-a-Maka

In the story of Umi-a-Maka, there was a boy who was skilled in mokomoko, boxing, living near Naaukahihi at "the flying sands" (ke one lele) of Kawahuna. This boy challenged the champion Umiamaka to his choice of game. The game of 'ulu maika was chosen by him and the time set for the play. Umiamaka was not as strong as the boy from Naaukahihi, but he followed the advice of his kahuna. The boy from the north shore paid no heed to his kahuna knowing that he was the stronger of the two. When it came time for the contest Umiamaka hid with a black pig on the route his opponent would take to the game. When Umiamaka heard the joyful noises of his opponent's people he pinched the black pig he was holding and made it squeal. At the noise, the god's deserted the people of Mo'omomi and they turned into kauila trees there at the gulch below Kukui on Maunaloa. The next day no people from the north showed up and Umiamaka was declared the victor.

Ia makou e kaalo nei mawaho pono o Punakou, kuhikuhi aku la au ia Maunaloa, kahi o na kanaka o Palaaui huli makani (ma ka aoao akau o Molokai) i hooliloia ai i poe laau kauila. Wahi a ka moololo a kekahi poe kahiko no keia wahi: I kekahi wa loihi i kaahope aku, aia hoi, e noho ana ma Kawailoa, maluna aku o Puu Ilii, he opio maamaa i na ike mokomoko, a o ke pookela o kana mau ike, o ia no ka ulumaika. O Umi-a-maka ka inoa o keia opio. E noho ana no hoi oia me kana wahine, i kulike no ke ano me kona. Ka u'i nohonohea i na maka onaona ume lilo ka manao o ke kanaka puni ai pua-kihei lehua makanonou.

Aia hoi, ma ia manawa no, e noho ana ma Palaaui huli makani, kokoke i kahi kai kuono o Naaukahihi i ke one lele o Kawahuna, he kanaka opio kelakela no hoi ma na ike mokomoko o kela me keia ano, elike no hoi me Umiamaka. Oia nei hoi, he oi ae ka ikaika me ko keia kaaka. Kakaikahi ka poe o ko Umiamaka wahi i ike i keia mea. No laila, i ka wawa ana o ko Umiamaka piha ike mokomoko, au hoounaia mai la i ona la he elele, e hoike mai ana no ka makemake o ke ahikanana o kela kaha a hoopapa ai laua, a na ia nei no hoi e koho ka alaua paani e hookuku ai. Ua hoko no hoi keia i ka ulumaika, a ua hooholoia ka manawa no ka hakoko ana.

Oiai ua mau ahikanana nei i hoomaamaa mau ana, elike no hoi me ke ano o ko ke au kahiko poe malama kapu akua, me ka hilinai paulele nui maluna o ka mana o na akua, pela no keia mau opio i ui aku ai i ko laua mau kahuna. Ua a'o ai i ko Umiamaka kahuna iaia, e malama loa i kana mau kuhikuhi, oiai, "ke hoike nei ke akua iaia, aole i lihi launa aku kona ikaika

i ko kona hoa mokomoko; aka, ke hooko oia i na kuhikuhi apau, e loa no ka lanakila maluna o ka hoa paio.

Ia wa hookahi no, ke hoike la no hoi ke kahuna o kona hoa paio, he oi ae kona ikaika i ko Umiamaka, nolaila, aohe kahalua ana. He hooluhi makehewa wale wale iho no ka hoopapau ana ma na mea like ole no ka hoomakaukau ana no ka mokomoko. Nolaila, ua hoopalaleha oia, a ua noho palaka.

No Umiamaka hoi, ua hoolohe oia i ka kona kahuna. Ua huli oia a loa kana wahi puaa hiwa paa, a i ka hiki ana i ka wa o ka hookuku ua pii aku la o Umiamaka a i ke poo o kahi owawa malalo aku o ka puu o Kukui, e kokoke la i ka piko o Maunaloa, pee. Maluna pono o ua wahi owawa nei ke ala e pii mai ai o ko kela aoao a iho ma ka aoao malalo nei.

Hoomanawanui o Umiamaka ahiki no hoi i ka hapalua po, o ua po pouli haalele loa no hoi. Lohe koliuliu aku nei keia i ka hauwawa mai o ka leo kanaka. O ka poe keia o ua hoa paio nei ona. Lilo ke kapu o ka huakai hana i mea ole ia lakou. O ka hula me ka uwauwa haakei wale iho la no ka hana. Ia lakou i hooko mai ai, ke hoomanawanui nei hoi keia i ke kalokalo i kona mau akua, me ka paa puliki malie no i kahi puaa ana. I ko ia nei ike ana ike aku i ka enemi ona, upiki iki iho nei keia i kahi puaa ana. O ko ia la alala ae la no hoi ia. Ia wa koke no, i puhee ai na akua o ua hoa paio nei ona, a lilo ana lakou apau i poe kumulaau kauila. O ko ia nei pea iho la no hoi ia a hoi ana i kauhale, me ka ike ole o kahi poe o kona wahi. O ke kahuna wale no ka mea i ike. I ke ao ana ae, kakali aku nei ka lehulehu, a o ka hoea ole mai o ka hoa hookuku ona, a hala loa ka manawa, hooho ae ae nei no hoi ka poe, ua lilo ke eo iaia.

He nui wale aku na mea e pili ana ia Maunaloa me ka ululaau kauila. Eia i ka poe ike lapaau o ke au kahiko ka oi aku o ka paanaau. (Coelho 1922 09/14)

Kalaina Wawae

Stokes related the story he heard on Moloka'i regarding the origin of the footprint petroglyphs at Keonelele.

...Kalaina, a prophetess (or as the narrator quaintly expressed it, a crazy woman) lived at Moomomi nearby. One day she went to the trail and made two box-like hollows in its surface. The next day she called the people to the place and showed them her work. "See what I have done. Bye and bye people will come from the sea with feet like these." It is said that this announcement was a prophecy of the arrival of the boot-wearing Caucasian. On this account the place has since been known as Kalaina wawae, Kalaina's feet.

Following this event, visitors from other parts of Molokai and the other islands of the group have been accustomed to leave their marks in similar form when traveling along the road. This account was received from one man. (Stokes 1909:62-65)

Daniel Kekahuna, a Ho'olehua homesteader, expressed what he had heard about the story of Kalaina Wawae in an interview with Kepa Maly and Scott Adams in 1996.

DK: The most important one under there, it's under the DLNR, I think now. Is where they get the Ka Laina Wāwae.

KM: 'Ae, Ka Laina Wāwae. You are familiar with that place?

DK: I know that place. I took my wife.

KM: You can see the foot prints inside the stone?

DK: It's not human foot prints.

KM: What kind?

DK: You see the name Ka Laina, it means line. But it was this lady's name, Ka Laina, that is her name. They were all down Mo'omomi at that time. There were a lot of people living there.

KM: So a lot of people lived down there?

DK: Yes.

KM: So in the ancient times, before the white man?

DK: Oh yes. I would say in the 1700s, 1800s, but more in the 1700s. See, this lady she could foresee the future. So she made cast of a foot print, and then the sand was still soft at that time. So she put one, she pound 'em, the print of a foot. Then she took 'em and pounded again... ..So I tried to find out about it. And old man Joe told me, "Boy, Ka Laina, that's the lady's name, and this foot print, she made a cast, and she pounded it in." Get some small kind. I think the smallest is four inches. And the Hawaiian baby won't get a four inch foot print. So down there is important. And Pu'u Kalani is another one that has a hōlua slide.

KM: 'Oia?

DK: Pu'u Kalani is down Mo'omomi side...

KM: ...How come Ka Laina made the foot prints?

DK: She could foresee the future. So when she made it, she said "Eventually, people will come, and walk that place." So some of the foot prints, Hawaiians never had shoes. But you look at the foot prints, it looks like they had shoes and get heels, because the back part is deeper. So she predicted that people would be walking there.

KM: So the idea was that she made it coming from makai, going mauka?

DK: Right.

KM: So people coming from the ocean and come across and walk on top the 'āina.

DK: Right. And they go up towards Keonelele. And what she predicted came true. (Maly and Maly 2003, v. 2:1092-1094)

Battle with O'ahu

Kuali'i, the king of O'ahu was living at Hilo when he learned of the trouble on Moloka'i. Several battles had been fought and there was continual conflict between the chiefs of the windward side and the chiefs of the leeward side.

The cause of all the trouble was this: The chiefs on the Koolau side of Molokai were anxious to get possession of Kekaha, a stretch of country from Kawela to Maamomi [sic]; and the reason why these chiefs were so desirous of getting possession of this section of country was on account of the fishing. But the chiefs of Kekaha, knowing the value of these fishing grounds, were determined to hold on to them; so this determination on their part caused a general internal conflict at this time. (Fornander 1916-1917:416+)

Kualii left Hilo and ultimately arrived at Kamalo with his canoes and men. Paepae, a chief of Kekaha, landed at Kamalo at the same time and sought the help of Kualii.

I have come to entreat you to come to our rescue. The chiefs of Koolau have taken up arms against us with the intention of taking away from us our lands from Kawela to Maamomi. Because of this desire on their part we have had several disputes and a battle is about to commence. A minor engagement has already taken place, however, in which we were

beaten. The majority of the chiefs are encamped on the top of Maunaloa. (Fornander 1916-1917)

Kuali'i agreed to help the chiefs of Kekaha and the canoes proceeded to Kaunakakai. The chiefs met there in Kaunakakai before leaving for Mo'omomi. The men sailed the canoes around West Moloka'i, while Kuali'i and the Moloka'i chiefs walked over the land to Mo'omomi. At Mo'omomi the chiefs boarded the canoes and set sail for Kalaupapa where Kuali'i and his men defeated the Kalaupapa chiefs.

The battle continued when the other chiefs of Ko'olau arrived with their men. Following these battles, Kuali'i "made a new division of the lands" and left Paepae and his wife Manau in charge of Moloka'i before going live at Kailua on O'ahu (Fornander 1916–1917).

‘Ōlelo No‘eau

Just one 'ōlelo no‘eau was found that refers to Kaluako'i; although none could be found for Mokio or Anapuka specifically, one saying mentions Kealapūpūakiha within the Mokio Preserve. The following Hawaiian proverbs and poetical sayings provide further insight to traditional beliefs and practices of these lands.

Keala pūpū i Moloka'i.

The path of seashells of Moloka'i.

Among the noted things made by Kihaapi'ilani, ruler of Maui, was a paved road lined with seashells at Kaluako'i, Moloka'i. (Pukui 1983:181)

Kaumaha i ka nulu Kaluakoi.

Laden with the summer showers is Kaluakoi.

Kaluakoi gets rain only in the summer time. (Judd 1988:56)

Mokio in the Historic Era

This section presents information on Māhele-era land tenure, descriptions and maps from early visitors to Hawai'i, and the history of deer on the island. Together, this information helps to paint a picture of what the Mokio area was like in the 18th to 20th centuries and gives us a better understanding of the region today.

Early Historic Accounts

There are very few mentions of the Mokio area in early accounts, however Kaluako'i and west Moloka'i are often noted. In the summer of 1854, French naturalist Jules Remy traveled to the island of Moloka'i. During his time there he made a number of excursions to study plants. Even though people tried to discourage him from traveling to the west end of the island, Remy went anyway. He describes the ride on horseback from Waialala, above Kalae, to the area around Mo'omomi.

June 22, 1854 - Thursday

Kalae to Kaluakoi

The western end of Molokai comprises a sort of district called Kaluakoi, of relatively considerable extent, easily accessible and easy to travel over, but the soil of which is too poor to attract people to live on it; and they also told me it was like a desert, and advised me not to visit it. All the more reason for me to judge it with my own eyes.

I separated myself from my personnel [at Waialala], whom I sent on to follow the abbe and to await me on the shore of Kaunakahakai, and at 9 o'clock I mounted my horse,

accompanied by the three best riders in the country. The rain which fell gently since the morning gradually stopped and the sun shined forth with as fine effect as one could wish. We descended from the plateau by a gently inclined slope, leaning a little to the right, to the northwest. Out of one house situated at the edge of a winding ravine came a good man carrying a present for me of small dried fish. The pili grass which we trampled was bedecked with blue convolvulus. In the middle of a watermelon patch young people were playing noisily; at my approach the girls fled or hid in the shrubbery, while the boys gazed at me fixedly, gaping. Soon we reached the height of the escarpments which I had seen from Kalaupapa; here we rode for some time through stretches of bushes and scrub land: woody violets of the same species as that found on Niihau, called here pamakani, several comositae looking the same as those found on Niihau; wild celery (makou) which is very abundant; a Portulacaceous, etc., etc. (Remy 1893)

Remy goes on to discuss all the plants he saw as he rode through the Mo‘omomi sand dunes and then up the Keonelele slope, bypassing the project area to the south and continuing to Mauna Loa.

Farther on we galloped over a sandy soil, where grew side by side a heliotrope (*hinahina*), a gnaphalium (*enaena*) which is tomentose in nature, a scaevola with yellowish flowers. On the same kind of soil I saw vast spaces entirely covered with frutescent, shrubby, leguminosae (*ohai*), spreading over the ground, with flowers of a superb red color; these were without a doubt, a kind of agati but differing from species seen on Kauai and on Niihau, which grows up to form large bushes and even small trees, instead of the one here which forms branches which are literally apliqueed on the sand as if buried in the sod.

We galloped without slackening our pace between the sea, which we saw on our right, and the rounded hillock called Maunaloa, which was on our left. We ascended a long hill with whitish compact terrain, on which grew frutescent solanaceae, three species of euphorbia, a crawling chenopodium, a labinate with linear leaves, and lichens in profusion. At the bottom of the hill were traces of former cultivation and of huts in ruins. Next was the great sandy plain covered with turf and thinly scattered plants: a hydrophyllaceae, a gentian, and a lepidium. (Remy 1893)

The plants that Jules Remy mentions in his travels to the west of the island are included in his listing reproduced in Table 3.

Archaeologists, as well as other historians, have consistently referred to the west end of Moloka‘i as a wasteland, described as “a desert strip” (Wentworth 1925), “dreary and barren” (Vancouver 1798 in Bonk 1954), “destitute of water” (Vancouver 1789), and a “naked dreary barren waste” (Menzies 1920). Kamakau called Kaluako‘i “a desolate land, a land of famine” (1961). It seems, however, that not everyone shared these opinions and some people were very happy to live in such conditions. When Remy visited the west end of the island in 1854 he found two very content couples living there:

The Shore of Kaluakoi

At 3 o’clock, after having for a long time leaned steadily to the left, we arrived at the edge of the sea, facing the island of Oahu, from which we could make out in the west-northwest a small hilly area. As far as the eye could see on the flat shore where we were, there were only three small isolated huts. We went towards the least shabby of these, with the intention of spending the night. It was occupied by two fishermen and their wives, two couples who were very simple and good-hearted. All that they had in the way of provisions, - some poi, sweet potatoes, and salted fish - they placed before us. Seeing that I was unable to drink the brackish water, which they were accustomed to drink, one of the women ran to fetch

Table 3. Plants in the Project Region ca. 1893 (after Remy 1893)

Remy	Family	Genus	Species	Variety	St. John Page #
1	pili	Gramineae	<i>Heteropogon</i>	contortus	p. 31
2	convolvus	Convolvulaceae	<i>Ipomoea</i> Sp.		p. 284
3	watermelon	Cucubitateae	<i>Citrullus lanatus</i>		p. 334
4	pamakani	Violaceae	<i>Viola robusta</i>		p. 238
5	compositae	Compositae			p. 348
6	makou	Cornaceae	<i>Peucedanum sandwicense</i>		p. 265
7	portulacaceae	Portulacaceae	<i>Portulaca</i> Sp.		p. 156
8	hinahina	Boraginaceae	<i>Heliotropium anomalum</i>		p. 288
9	enaena	Compositae	<i>Gnaphalium sandwicensium</i>		p. 358
10	scaevola	Goodeniaceae	<i>Scaevola Taccada</i>	<i>serica naupaka</i>	p. 347
11	ohai	Leguminosae	<i>Sesbania tomentosa</i>		p. 193
12	solanaceae	Solanaceae	<i>Solanum nelsoni</i>		p. 301
13	euphorbia	Euphorbiaceae	<i>Euphorbia</i> Spp.		p. 210
14	chenopodium	Hydrophyllaceae	<i>Chenopodium pekeloii</i>		p. 150
15	hydrophyllaceae	Hydrophyllaceae	<i>Nama sandwicensis</i>		p. 287
16	gentian	Gentianaceae	<i>Centaurium sebaeoides</i>		p. 278
17	lepidium	Cruciferae	<i>Lepidium o-waihiense</i>		p. 166

All page numbers refer to Harold St. John's *List and Summary of the Flowering Plants in the Hawaiian Islands*, Pacific Tropical Botanical Garden. Memoir No. 1 Lawai. 515 pp

from the sand of a hillock a reddish liquid which I found more potable, but it, nevertheless, made me nauseated. Almost at once I felt sick at my stomach which filled me with disgust for the hospitable hut, also infested and infected with cockroaches, not to speak of other vermin. At the risk of sleeping under the stars, I decided to push on farther. In taking leave of my hosts, whose lot seemed to me much to be pitied, I advised them to start removing their penates to some more habitable place. Ah! How far from the mark we were! They replied to me with a sort of animosity, as if they doubted my good sense: **“Why should we think of changing the place of our abode? What place could be better than right here, where the sky almost never sends us rain, and where the sea gives us fish in abundance?”** [emphasis added]

South to Papohaku

At 4:30 p.m. I took leave of these happy mortals to travel to the south... (Remy 1893)

George Cooke settled on Moloka'i in 1908 with his family. He soon moved into the position of manager for the Molokai Ranch after his father bought up the stock in the company. In his book, he recounts early life on the ranch and how they would “break” new mules at Mo'omomi, east of the project area.

At the beginning of our agricultural experiments, we had work mules available. Some of these had already been sold to the sugar plantations. Later, the light weight mares, unsuited for raising riding stock, were bred to a small jack. The light weight mules were much in demand by the sugar plantations for use as pack mules along the Hamakua coast of Hawaii.

The method of training these mules as pack animals was to drive them to Moomomi. Here they were blindfolded and, after the pack saddles were cinched, a bag of sand was loaded on each side. The blindfolds were removed and, after a few cavortings, the mules were tamed down enough to be led back to Kualapuu, where our main camp was located. Their loads of sand were used for concrete. By this method 'two mynahs were killed with one pohaku (stone).' (Cooke 1949:55–56)

Cooke also wrote about burials at Keonelele being from a shipwreck on the western shore of the island. He wrote that John Puaa told him they were Chinese "coolies."

In the middle of what is now Keonelele pasture, there are many skeletons buried in a sandhill about a quarter of a mile from where the road to Ka Lae o ka Ilio crosses the drifting sands. These are the remains of Chinese coolies who were being transported by sailing vessel from China to the west coast of South America. Their ship was wrecked near Kamakaipo. Those who escaped inland died of hunger and thirst. Their bodies were collected by the Hawaiians and buried in the sandhills. This was told to me by John Puaa, a former luna (foreman) of our ranch. (Cooke 1949:106–107)

Daniel Kekahuna also discussed the Keonelele burials in an interview with Kepa Maly and Scott Adams in 1996. His details are very similar to those in Cooke's book cited above.

KM: And then below, that's Keonelele where the sand is pushed up?

DK: Yes.

KM: Keonelele is an important place?

SA: Today, the whole area they call Keonelele, eh?

DK: Yes, but it's not.

KM: So just the low side?

DK: Yes.

SA: Where are the skeletons?

DK: Down there. See where those white dunes are?

KM: Yes.

DK: All inside there, that's burial grounds. They say it's all Hawaiians, but I believe some were the Chinese coolies. Because they were bringing the Pākes to Hawai'i. They came as far as Kepuhi, I think it was, then they had a ship wreck. So they tried to walk, but they couldn't find water. But get water down there. The old Hawaiians, they knew where the water was. The Pākes didn't know, so they died inside there. (Maly and Maly 2003, v. 2:1092–1094)

In Kepa Maly's interview with Lawrence Joao, Sr. in 1996, "Braddah" Joao provides interesting details regarding the burials in the Mo'omomi area.

KM: Yes, let's talk about that. [referencing point on map of Moloka'i] ...In your youth, Māhana like this had old Hawaiian places too?

LJ: Oh yes, yes. But you can hardly see that already, because how many years cattle have been moving on top of that land.

KM: So the land is all...?

LJ: Everything is smashed down. And the closer you go down to the beach now; you go down to Mo‘omomi side, so places over grown with kiawe, you can't see anything inside there.

KM: But underneath still has sites, yet?

LJ: Oh yes. Even get the heads over there with the round hole inside the skull, and with the lead... Hawaiians had no more lead before. Somebody must have slaughtered them. But I never heard my father them, or any body say that somebody murdered these people.

KM: So that's Hawaiian graves?

LJ: Yes...

KM: ...So this Keonelele, Mo‘omomi, was a known burial area?

LJ: Sure! That's all sacred. (Maly and Maly 2003, v. 2:1102)

Māhele Land Tenure and Land Ownership

The change in the traditional land tenure system in Hawai‘i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission and paid a commutation fee.

“Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land ownership” (Moffat and Fitzpatrick 1995). Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850.

The Mahele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom --- the government, the chiefs, and the *hoā‘āina*. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups... Following the Mahele, the only group with an undefined interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Beamer 2008:194–195)

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for lands that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to *kama‘āina* totaling only about 30,000 acres and recorded in ten large volumes.

Today, Kaluako‘i is a single *ahupua‘a* land division, but it seems that Kaluako‘i was previously considered a *kalana*. According to Robert King, at the time of the Mahele, “...the *ahupuaas* of Kaluakoi 1, Kaluakoi 2 and the *ili* of Punakou, in the west end of the island were said to be in the

kalana of Kaluakoi” (1935). Chinen informs us that a kalana land division was simply a geographic subdivision, while ahupua‘a were land divisions that were personally administered by individuals.

“The largest unit or division of land was, naturally, the island. Each island was then divided into a number of districts called “mokus.” These districts or mokus were geographical subdivisions only, and no administrators were assigned to them. ...The unit next smaller to the district was the kalana. This, too, was a geographical subdivision only, and is not of much importance today.

A moku was divided for landholding purposes into units called “ahupuaas,” each of which was ruled by either a chief or a konohiki. The ideal ahupuaa extended from the sea to the mountains, enabling the chief of the ahupuaa and his followers to obtain fish and seaweeds at the seashore, taro, bananas, and sweet potatoes from the lowlands, and forest products from the mountains.” (Chinen 1958)

Within the kalana of Kaluako‘i, the ahupua‘a of Kaluako‘i 1 and 2 were held by Kupa and J. Stevenson, respectively. Both individuals returned their ahupua‘a to the Hawaiian Government at some point during the Māhele (Soehren 2010).

Five kuleana claims were presented to the Land Commission by residents of Kaluako‘i during the Māhele, all of them living along the southern coastline and not near the project area. None of these claims were awarded by the Land Commission and the entire kalana of Kaluako‘i remained with the Hawaiian Government (Hawaiian Kingdom 1846–1848, pp. 274–275, 313–314).

Around this time, John Wesley Coulter notes that “nearly all the western half of the island was uninhabited. There the semi-arid climate precluded successful agriculture” (Coulter 1931). His map illustrates the distribution of the population on Moloka‘i in 1853, three years after the Kuleana Act was introduced. The map depicts Kaluako‘i and the entire western half of the island as an area without any inhabitants at that time (Figure 7).

Charles Meyer described the succession of ownership of Kaluako‘i between the Māhele and its acquisition by Charles Reed Bishop in 1875, however he may be mistakenly attributing ownership to the ali‘i personally rather than to the Hawaiian Government.

This section of Molokai belonged to the Kamehamehas following the Great Mahele (land tenure revision by Kamehameha III) in 1848. This land was owned by Kamehameha IV and later by his brother, Kamehameha V. When Kamehameha V died in 1872 this land was willed to High Chieftess, Princess Ruth Keelikolani, a half sister of Kamehameha IV and V and a cousin of Bernice Pauahi Bishop. The West Molokai Section is known today as the Kaluakoi lands and these lands were given to Mr. Charles R. Bishop in 1875 as he was the husband of Bernice Pauahi Bishop, the daughter of Paki and Konia, and the last descendant of the Kamehameha dynasty. (1982:6)

In 1875, Charles Reed Bishop obtained a Land Grant from the Hawaiian Government as a Royal Patent (L.G. Number 3146) and purchased the entire 46,500-acre ahupua‘a of Kaluako‘i for the sum of \$5,000 (See Appendix). The Royal Patent deed shows that Charles Reed Bishop purchased the

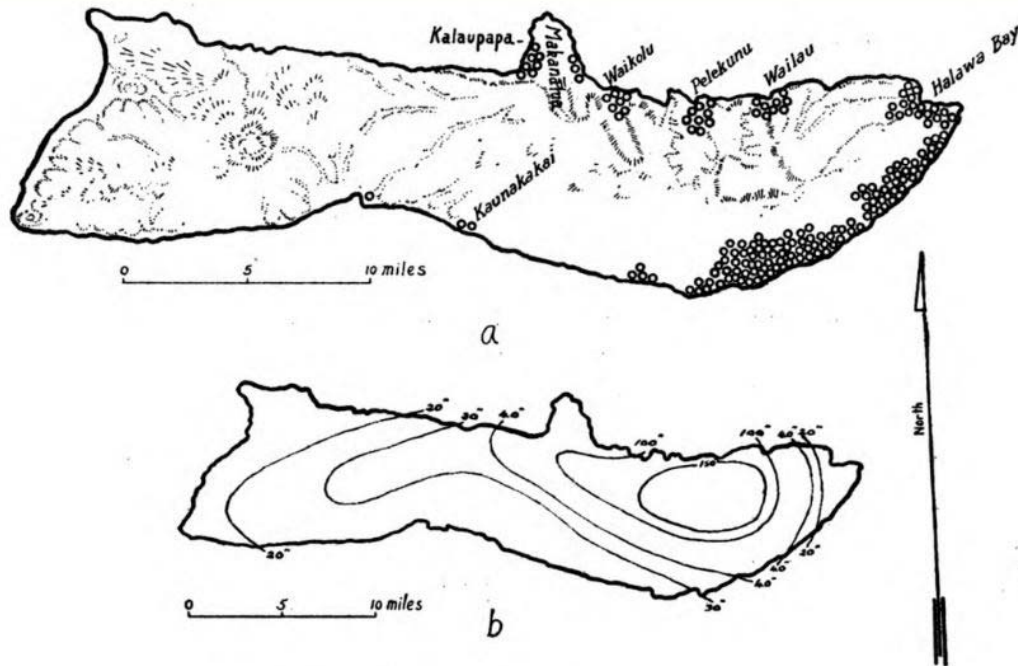


Figure 7. Map that depicts the population of Moloka'i in 1853 (Coulter 1931). Each dot represents 20 people.

ahupua'a of Kaluako'i for approximately 11 cents an acre. In the Bureau of Conveyances, the Book of Grantors for 1893 records the transfer of ownership of lands, leaseholds, and livestock of Royal Patent Grant 3146 of Kaluako'i, Moloka'i from Charles Reed Bishop to the Trustees of Bernice Pauahi Bishop Estate on November 14, 1893. Difficulties with the ranch eventually prompted Bishop Estate to sell the property.

When the ranch seemed greatly burdened by problems such as frequent droughts, and loss of cattle and sheep due to sickness and poor reproductive performance, Mr. Bishop decided to have the Trustees of the Bishop Estate sell the Kaluakoi lands and reinvest the proceeds. (Meyer 1982:106)

One of the earlier articles discussing the potential sale of the Molokai Ranch appeared in the *Hawaiian Star* on December 21, 1897 (Figure 8). The plan to start a sugar plantation was even proposed at that time.

The *Pacific Commercial Advertiser* ran an article in the January 7, 1898 issue, describing the announced sale of Molokai Ranch (Figure 9). It is interesting to see the detailed listing of lands, including the 46,500-acre Kaluako'i parcel (Royal Patent 3146) which had been purchased from the Hawaiian Government by Charles Reed Bishop in 1875.

On February 2, 1898, the Bishop Estate ranch lands, totaling over 60,000 acres by then, were sold at public auction for \$251,000 to Arthur Daggett McClellan, described in the newspapers as a wealthy capitalist from Boston. The auction was reported in both *The Evening Bulletin* and *The Hawaiian Star* the same day (Figures 10 and 11). The *Pacific Commercial Advertiser* ran the story the following day (Figure 12). McClellan purchased the property for the Hartwell Company (*Hawaiian*

DECEMBER 21, 1897.

WANT TO BUY THE RANCH

HAWAIIAN CAPITALISTS MAKE A
GOOD OFFER.

For the Bishop Ranch on Molokai—
Will Start a Sugar Plantation—Trustees May Sell.

The trustees of the Bishop estate are considering the proposition of selling the big ranch on Molokai belonging to the estate, at public auction.

They have put an upset price on the property of \$150,000, and are now waiting to hear from the attorneys to whom was submitted for interpretation a provision in Mrs. Bishop's will concerning the ranch. There is every reason to believe that a favorable answer will be received from the counsel.

An offer has already been made to the trustees for the property by Hawaiian capitalists. The amount of this offer is the same as is required as the upset price. From what can be learned at this early period the would-be purchasers contemplate starting a sugar estate, providing water can be secured by wells.

The Bishop ranch comprises about two-thirds of the island of Molokai. There are in the neighborhood of 96,000 acres owned in fee simple, while thousands of acres of land are leased. The ranch is well stocked and well equipped. The late Robert W. Meyer, formerly superintendent of the Molokai leper settlement, was in charge of the big estate at the time of his death. George J. Campbell is superintending the ranch at the present time.

Should the sale go through, the lands owned in fee simple, leases, the stock, buildings and everything in connection with the ranch, will be included in the upset price named.

The trustees are in meeting this afternoon and perhaps the Molokai ranch matter will come up.

Figure 8. *Hawaiian Star* article from 1897 12/21.

MOLOKAI RANCH

It Is to Be Offered at Auction
Here Feb. 2.

DECREE READY TO SIGN

Trustees to Have Consent of Court.

A Great Estate — Lands and
Stock—Upset \$150,000.

In the Court for the First Circuit this morning, Judge W. L. Stanley will sign the decree authorizing the sale of the Mo'okai ranch of the Bishop estate. This is the most extensive property put upon the market in the Islands for many years, if there ever was such an offer before. The trustees, with the consent of the Court, will have the sale at auction in Honolulu on the 2d of February.

The Molokai ranch comprises nearly 80,000 acres of land in fee simple and more than 20,000 of crown lands under lease for thirty years from January 1, 1888. There are more than 23,000 head of live stock on the place. Here is a description in detail of the property:

	Estimated Area—Acres.
Royal Patent 3146, Ka'uakoe	46,500
L. C. A. 11216, Nalwa and Leles	5,909
Royal Patent 6824, L. C. A. 7755½, Kahanui, Royal Patent 2557, Kipu and Manowainui	2,450
Royal Patent 3533, Kaulakakai	5,213
(Except 27 acres reserved for Homestead lots).	
L. C. A. 7779b, Makakapaia	1,425
L. C. A. 8559b, Apana 28, Kawela uplands	7,700
L. C. A. 2937, Iloli	70
The above areas are approximately only.	

Crown Lands under lease for a term of thirty years from January 1st, 1888, at a rental of \$1,200 per annum.

	Estimated Area—Acres.
Palau and Leles (3 Apanas)	11,258
Ka'amaula	6,747
Kapaakea	2,178
Approximately.	
Estimated number of cattle...	4,500
Estimated number of sheep...	14,500
Estimated number of horses...	170
Estimated number of goats...	4,000

The 2d of February will be on a Wednesday and the sale will be at noon at the mauka entrance to the Judiciary building. It will be in charge of Henry Smith, Commissioner. Maps of the property will be shown at the Bishop Estate offices, near the Bishop & Co. bank on Merchant street. The upset price will be \$150,000.

Terms Cash; or at the option of the purchaser not more than two-thirds

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Terms Cash; or at the option of the purchaser not more than two-thirds of the purchase money to be secured by mortgage on said premises for a term not exceeding five years, drawing interest at the rate of six per cent per annum.

All moneys payable in Gold Coin of the United States of America, and deeds at the expense of the purchaser. Sale subject to confirmation by the Circuit Court of the First Circuit.

At periods for several years efforts have been made to have this ranch placed upon the market. Several syndicates and individuals have expressed the intention of bidding. One combination—perhaps all of them—is said to have the project of conducting the ranch as a modern stock and dairy farm well under organization.

Figure 9. *Pacific Commercial Advertiser* article from 1898 01/07.

Star, February 2, 1898). The new Molokai Ranch Company was incorporated on February 5, 1898 with Alfred S. Hartwell as president. The Book of Grantors for 1898 records the transfer of ownership of lands, leaseholds, livestock, and brand of Royal Patent Grant 3146 from Bishop Estate to Molokai Ranch Co. Ltd. that same day. Other members of the ranch were Arthur D. McClellan, Alfred W. Carter, W. R. Castle and Olaf Sorenson. No stock in the company was offered for sale (*Hawaiian Star*, February 5, 1898). From February 5, 1898 to present, Royal Patent Grant 3146 of Kaluako'i has continued to be owned by Molokai Ranch, although the ownership of the ranch itself has transferred several times.

Molokai Ranch and the Project Area

George P. Cooke describes how Molokai Ranch was formed in 1898 by a group of five men. The American Sugar Company Limited (ASCO) was incorporated by Judge Alfred S. Hartwell and

Alfred Carter (who were partners in the Molokai Ranch), and Charles M. Cooke, George H. Robertson, and George R. Carter. At this point, the Molokai Ranch stockholders exchanged their stock for shares in the new American Sugar Company. Charles M. Cooke came to own the entirety of Molokai Ranch in December 1908 after he bought out the interests from his partners, a decade after the founding of ASCO. His son, George P. Cooke took on the role of manager of the ranch that same year. According to George P. Cooke, the sugar company failed when the pumps installed in surface wells to irrigate the cane fields depleted the fresh water supply and started to pump salt water (Cooke 1949:1–8).

The Cooke family owned Molokai Ranch for almost 80 years until the late 1980s. It was operated as a family corporation, separate from Castle and Cooke. George Cooke served as manager of the ranch for 35 years, from 1908 through 1943. Under his tenure it became the second largest cattle ranch in Hawai‘i and a major producer of beef. The pastures in the west end of Molokai Ranch were stocked primarily with cattle and sheep. Lindgren mentioned that this area of the island had lush grasses, but cautioned that overgrazing had already destroyed the forest at Mauna Loa (1900).

Libby McNeill & Libby Company acquired a lease from Molokai Ranch to establish a pineapple plantation on any lands of Kaluako‘i five hundred feet above sea level (asl). In February 1923, the first field of 977 acres was planted. Due to the distance to Kaunakakai over undeveloped roads, Libby decided to construct camp buildings and houses on ranch land in the Mauna Loa area. Libby built a cable landing on Pu‘u Kaiaka, and materials were hauled from ship to shore using a winch to construct Mauna Loa town (Cooke 1949:90–91).

In 1939, the ranch reorganized as Molokai Ranch Co., Ltd. During World War II on July 17, 1944, Molokai Ranch leased 1,500 acres to the U.S. military to use for training exercises and target practice. A small installation was constructed at ‘Īlio Point. In 1949, the lease was extended through June 1965. Spent bombs were found during the survey of Northwest Moloka‘i conducted by Marshall Weisler in 1987. He notes that these spent bombs can be seen from ‘Īlio Point to Mo‘omomi and as far inland as Kaiaka, including the project area, and that fragments were found at Kealapūpūakiha (Weisler 2009:3).

In 1968, Molokai Ranch formed the Kaluako‘i Corporation as a joint venture with The Louisiana Land and Exploration Company (LLL). LLL was to provide a contingency for the ranch’s west end lands. In 1972 Dole Corporation acquired Libby, McNeill, and Libby and closed down the Mauna Loa pineapple plantation three years later. The Kaluako‘i Resort opened in 1977 and included a hotel, golf course, and condominiums. In 1978, the Molokai Ranch Wildlife Park opened for safari-like tours on the ranch lands.

In 1980 LLL separated its interest from Molokai Ranch and exercised its option over the west end lands from Kaluako‘i to Kawakiu. These lands were sold to Tokyo Kosan in 1987. Operating as Kukui (Moloka‘i), Inc. the company subdivided its property and developed the Papohaku Ranchland Subdivision. The ranch diversified its investments into mainland commercial property. It also sold the lands from Hale O Lono to Kaupoa to an individual investor from Las Vegas for \$21 million. Within a week this investor sold the lands to Alpha U.S.A. for \$35 million. When the investments made by Molokai Ranch failed, its stock was bought by Brierley Investments, Limited, who became its sole stockholder in 1987.

When Tokyo Kosan went bankrupt, it sold Kukui (Moloka‘i) Inc., which owned the now closed Kaluako‘i Resort and Golf Course and the adjacent lands over to Kawakiu, back to the ranch, or more specifically, its parent company, Brierley Investments. Alpha U.S.A. also sold the lands it had purchased back to the ranch for \$12 million. It is the shoreline area of this parcel that had been owned by Alpha U.S.A. being proposed for rezoning for the Lā‘au Point Rural-Residential Development.

FEBRUARY 2, 1898.

MOLOKAI RANCH IS SOLD

Some Lively Bidding at the Judiciary Building.

Finally Knocked Down to A. D. McClellan for Two Hundred and Fifty-one Thousand and Dollars.

There was a very large attendance at the sale of the Molokai ranch property at the Judiciary building at noon today and capitalists were as plentiful as flies in one of the trams. Acting President Cooper was there as were the other three members of the Cabinet and the Chief Justice and his two associates on the bench. In the crowd were noticed B F Dillingham, Chas S Desky, W F Allen, J A McCandless, H W Schmidt, J S Walker, J A Hasinger, J I Dowsett, Geo R Carter, Judge A W Carter, J Marsden, Cecil Brown, H M von Holt, Judge Stanley, C A Brown, Theo H Davies, A Hocking, Mark Robinson, Robert Lewers, Col McLeod and many others prominent in business and government circles.

Promptly at noon Auctioneer Morgan read off the terms and conditions of the sale and description of the property included in the ranch. He was followed by Commissioner Henry Smith who gave notice on behalf of the trustees of several small parcels of land which were excluded from the sale, having previously been deeded to the late R. W. Meyer. Mr. Smith also stated that the trustees reserved two acres at Kaunakakai for fifty years to be used as a public landing place and, lastly, that the trustees sold only such rights as were vested in them and would give no covenants in the deed.

The auctioneer then announced that he was ready for bids, following it up with the announcement that \$150,000, the upset price, had been bid.

Judge Carter asked whom by and the auctioneer held that he was not obliged to give the name of the bidder.

Judge Carter insisted that he was and offered the upset price himself.

The auctioneer entertained the bid but immediately afterwards said \$151,000 had been offered.

Judge Carter again insisted on his right to hear the bid made and to know who was bidding against him.

Mr. Morgan again ruled against him and refused to disclose the name of the bidder.

W. A. Kinney, counsel for the Bishop Estate, who was present was appealed to but refused to interfere, saying that any rights would be preserved by entering a protest, which was done.

The bidding then went between Judge Carter and his unknown opponent by raises of \$1000 at a time until \$210,000 had been offered. By that time the unknown bidder had been discovered by most of those present to be C. S. Desky, who raised his next bid to \$215,000. Judge Carter dropped out of the bidding at this point and a stranger took it up, raising Mr. Desky another \$1000.

Desky quickly raised \$5000 and the stranger another \$1000 and thus it went on until Mr. Desky made his last bid of a quarter of a million dollars. The stranger promptly raised the bid to \$251,000, and Mr. Desky said his limit had been reached. The property was then knocked down to the stranger, who gave his name as A. D. McClellan.

Mr. Desky refused to state for whom he was bidding, other than that it was for Bruce Waring & Co., but it is generally understood that he represented a syndicate of local capitalists.

Mr. McClellan, who bought the property, is a wealthy capitalist of Boston, who arrived here just two days ago. He was here about a year ago and looked over the property. He is said to be the gentleman in whose interest Judges Hartwell and Carter have been acting of late.

Figure 10. *Evening Bulletin* article from 1898 02/02.

THE HAWAIIAN STAR.

HONOLULU, H. I., WEDNESDAY, FEBRUARY 2, 1898.

THE BIDDING WAS LIVELY

THE MOLOKAI RANCH BROUGHT
\$251,000.

Arthur D. McClellan Purchases It for
the Hartwell Company—Charles S.
Desky was Strong Opposition.

The Molokai ranch was sold at noon today to Arthur Daggett McClellan, for \$251,000. Charles S. Desky, representing a strong company of capitalists, was in the race for the property up to the last moment, but when he offered \$250,000 he reached his limit, and allowed the successful bidder to take the big ranch for a sum that was but one thousand dollars higher.

When Auctioneer Morgan climbed up on top of a chair in front of the Judiciary building this noon to call for bids, there were some two or three hundred of the city's most representative men in attendance. Special Commissioner Henry Smith read to the assemblage the various bits of properties that had previously been sold by the trustees of the Bishop estate, as well as the several small grants that had been made from time to time. He then pointed to the map which was suspended in the hall and explained the property that was offered for sale. There were over 60,000 acres in fee simple and about half that number of acres held in lease. At least one-third of the purchase price would be required in cash and the other two-thirds to be secured by mortgage and payable within five years' time.

Mr. Morgan then called for bids. Judge Alfred W. Carter mentioned the upset price, \$150,000, as a starter. Charles S. Desky bid \$135,000. Judge Carter raised a thousand and Mr. Desky saw him. Then Judge Carter wanted to know who was bidding, and the auctioneer replied that he would learn that when the property was sold. But the judge insisted that he had the right to know and entered a protest. Attorney Kinney for the trustees noted the protest.

The bidding then went on, the price rising steadily one thousand dollars at a time. When it reached \$196,000, Mr. Desky jumped to \$200,000. But this did not discount Judge Carter and he went one thousand higher. Desky mentioned \$205,000, and Carter said \$206,000. Desky unhesitatingly went to \$210,000, and Carter bid \$211,000.

At this stage of the bidding Mr. McClellan, who was standing near Judge Carter, held a hasty conference, and the former continued the bidding. Mr. Desky went to \$250,000, and Mr. McClellan promptly named \$251,000. The bidding then stopped and the property was knocked down to the highest bidder.

Figure 11. *Hawaiian Star* article from 1898 02/02.

THE RANCH IS SOLD

**A. D. McClellan of Boston
Pays \$251,000 for It.**

**Large Real Estate Deal—Rapid Bid-
ding Runs Price Up—Mr. Desky's
Quarter Million.**

A quarter of a million dollars land deal was made yesterday when Henry Smith sold at auction, in front of the Judiciary building, that piece of property known as the Molokai ranch, belonging to the Bishop estate. The upset price was \$150,000. The property sold for \$251,000, just \$1,000 more than C. S. Desky had bid. Beginning at \$5,000 advance on his opponent's figure, Mr. Desky had gradually come down to \$1,000 a raise.

Jas. F. Morgan officiated as auctioneer. The sale began at noon as it was advertised and drew a large crowd of business men and capitalists, many of whom were there, not to buy, but because of their interest in such a large land deal. The price at which the ranch sold represented only a part of the money to be invested, as it will take a small fortune to run the ranch and put it in condition.

It had been understood on the streets for some time that a number of men had banded themselves together to obtain possession of this valuable property. It was said that the combination was ready to put up a handsome amount rather than lose the ranch.

When the sale began on the announcement of the auctioneer that he had been offered an upset price of \$150,000, Judge A. W. Carter insisted that the name of the bidder be given in order that the others who were after the property might know whom they were fighting. It was his opinion that he was the bidder himself and he again offered the same price. The auctioneer accepted the bid but stated at once that he had been offered \$151,000, and called for other bids when Judge Carter again insisted that the name of the opposing bidder be given. The sale went on and the name of the unknown bidder was not given.

C. S. Desky also entered the field against Judge Carter. The bidding was confined to these two and they soon ran the bid up to \$225,000, at which price, Judge Carter dropped out of the field. It looked for a moment as if Mr. Desky would get the ranch at that figure, but Mr. A. D. McClellan, who arrived on the Australia from Boston and whose interests Judge Carter has been representing, began bidding against Mr. Desky as soon as Judge Carter had finished.

The price was soon run up to \$250,000. This was Mr. Desky's figure and he went no higher. The ranch was then knocked down to Mr. McClellan for \$251,000.

Figure 12. *Pacific Commercial Advertiser* article from 1898 02/03.

Brierley Investments itself was totally reorganized in the 1990s when the Far Eastern stock markets collapsed, and with a purchase of a large stockholding by the Asian-based group, the Hong Leong Group, and the Guoco Group. In December 2002, seeing that Molokai Ranch had operations that went beyond ranching, the corporation changed its name to Moloka‘i Properties Limited (MPL). Around the same time, the parent corporation changed its name to BIL International Limited. In 2007, BIL International changed its name to Guoco Leisure Limited to reflect the aspirations of the parent company to become a leisure/hotel investment company.

In April 2008, MPL, still known locally as Molokai Ranch, gifted the 1,769-acre Mokio Preserve to MLT. MPL drafted a Letter of Agreement to transfer the lands that year, however it was not until 2013 that the fee simple transfer was finalized (*The Moloka‘i Dispatch* 2013). In 2009, while waiting for the deed, MLT signed a 99-year lease in order to initiate environmental and archaeological surveys, develop management plans, and start conservation efforts (*The Moloka‘i Dispatch* 2013).

Historic Maps

Historic maps help to paint a picture of the Mokio region in years past and illustrate the changes or lack of change that has taken place in the area. The earliest map found for the study area are Hawaiian Government Survey maps from 1886 (Figure 13). It shows place names along the coast, as well as topographic features like Ka‘eo Hill and the extent of sand deposition inland. A historic trail is depicted running east to west and crossing over the fence line into the Mokio Preserve before turning south. During a review in 2010 by the Moloka‘i Planning Commission and Maui County Department of Planning, MPL recognized the existence of this trail and stated in a letter that “the use of this historic trail, on foot, through lands owned by Moloka‘i Properties Limited for customary and traditional practices is affirmed” (MLT 2012–2017). This historic trail is also visible on a government survey map from 1897 (Figure 14). The trail seems to begin in Mo‘omomi, heading around the makai side of Ka‘eo Hill, crossing the project area, and turning south to skirt the west shore. Like the former map, this one also shows place names along the coast and the sand zone.

A water resource map of the island of Moloka‘i illustrates the extent of the sand, which runs through the majority of ‘Īlio Point, across the fence line into the western part of the fenced-in area (Figure 15). The northernmost part of ‘Īlio Point consists of coral, and a hill named ‘Kanewai’ inland from the fence line is shown. Major landmarks are once again labeled along the coast, however few details of the project lands are provided. A 1922 USGS quad shows the topography of the region and labels Kanewai and Ka‘eo hills with an elevation of 293 ft asl and 584 ft asl, respectively (Figure 16). A storage tank and a few roads are depicted, however the region has few new developments.

On a 1947 geologic map, the project area falls predominantly on unconsolidated calcareous dunes (Pd), and lava flows of olivine basalt, basalt, and picrate-basalt (Twb) (Figure 17). Kanewai and Ka‘eo hills are marked as a cinder and spatter cones at the vent of a lava flow (Twc). The entire coastline east of the fence is covered in basalt dikes which were formed in the feeding fissures of lava flows (red lines). The dikes are particularly consolidated at Mokio Point. A pipeline runs parallel to Kawakui Road, ending just southeast of Ka‘eo Hill.

The final map presented also dates to 1952 and outlines the Coast Guard Reservation boundary line at ‘Īlio Point (Figure 18). The undeveloped dirt road running along the southern edge of the fence line is already in place at this time. This road goes into the Coast Guard Reservation property where it splits into two, one road ending after just a short distance at the northern coastline of Keonehānau, while the second traverses the point to the western coastline.

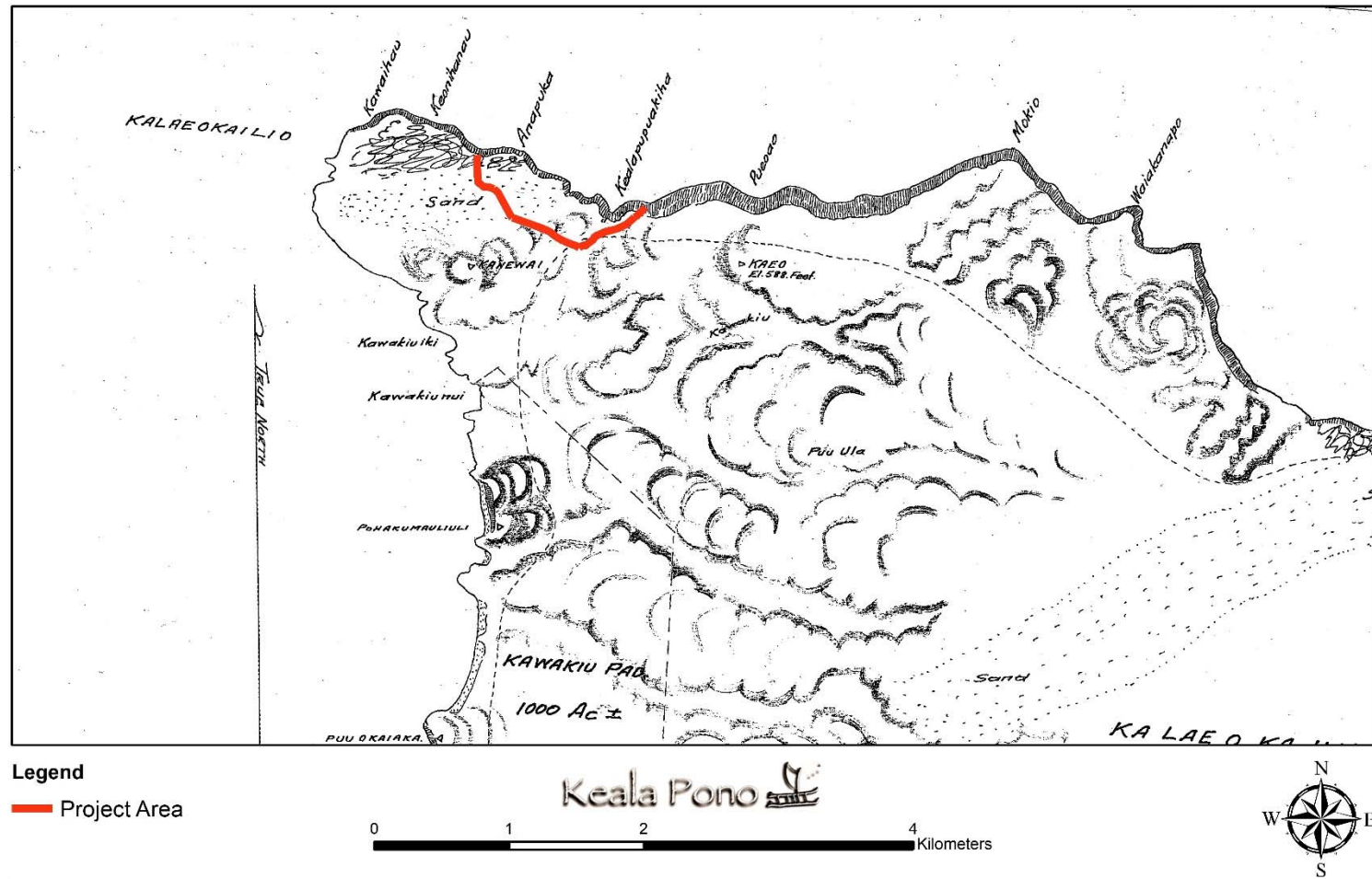


Figure 13. Portion of Hawaiian Government Survey map (Monsarrat 1886).

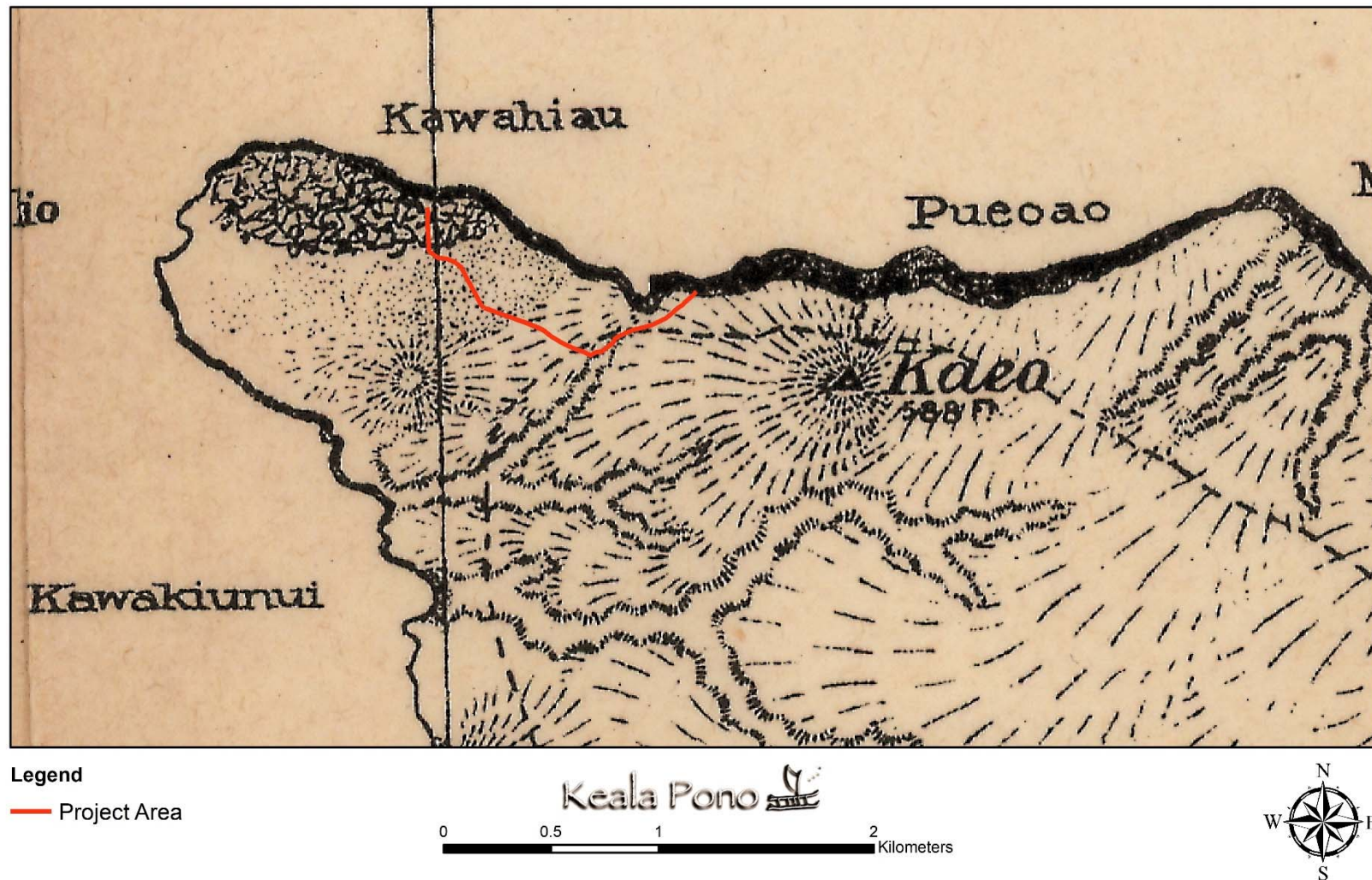
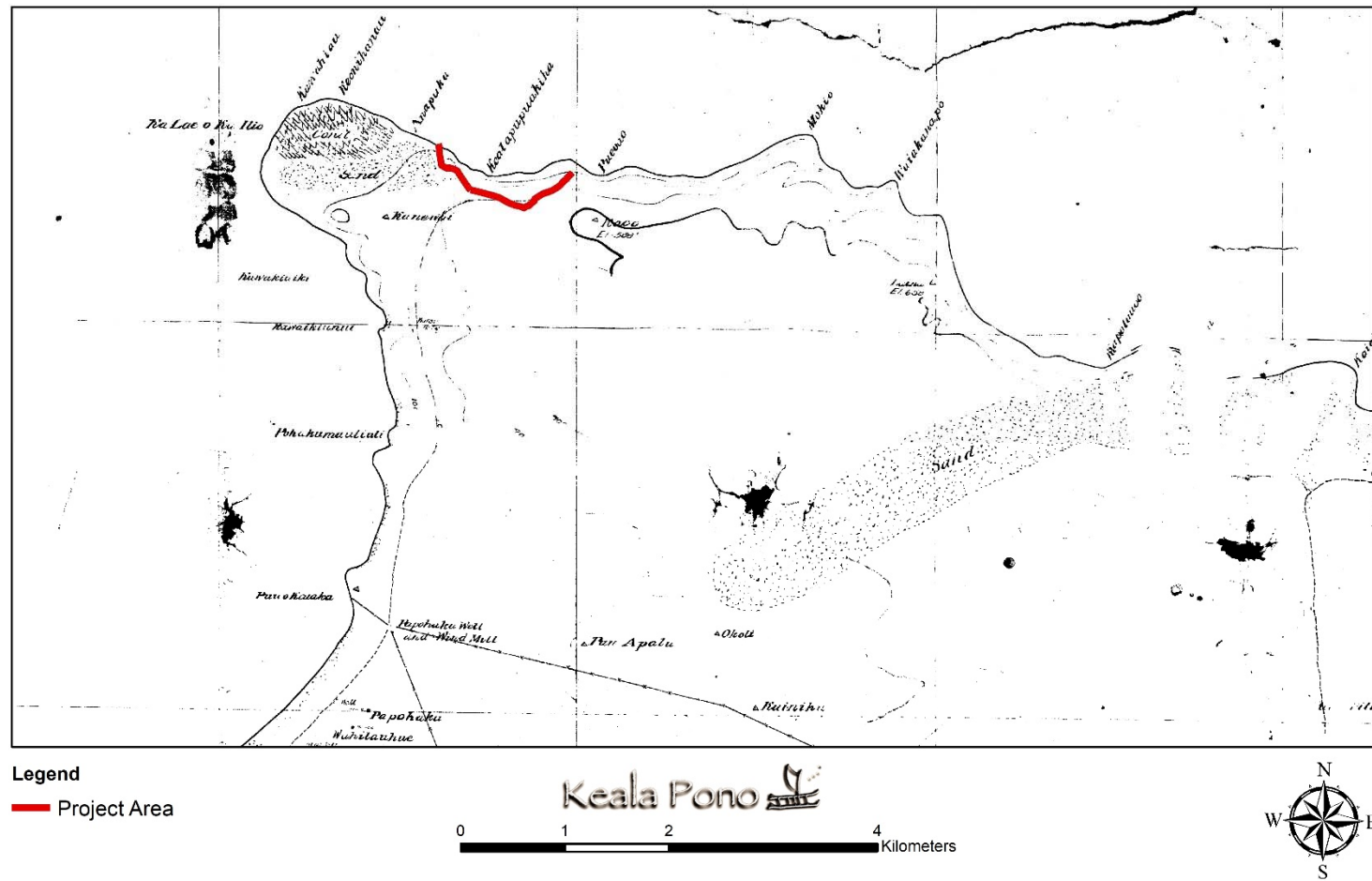


Figure 14. Portion of Hawaiian Government Survey Map of Moloka'i (Alexander 1897).



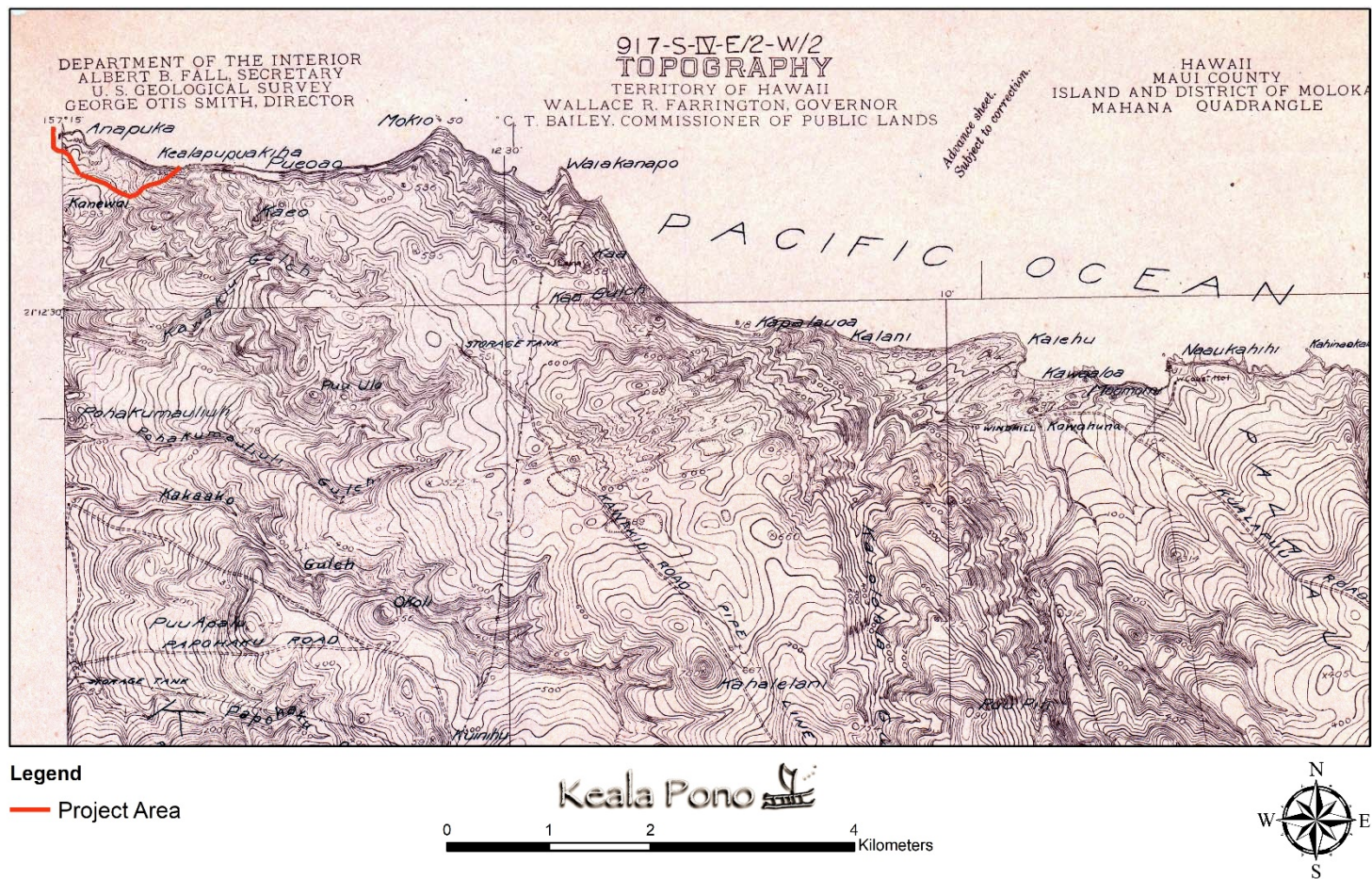


Figure 16. Portion of Mahana Quadrangle (USGS 1922).

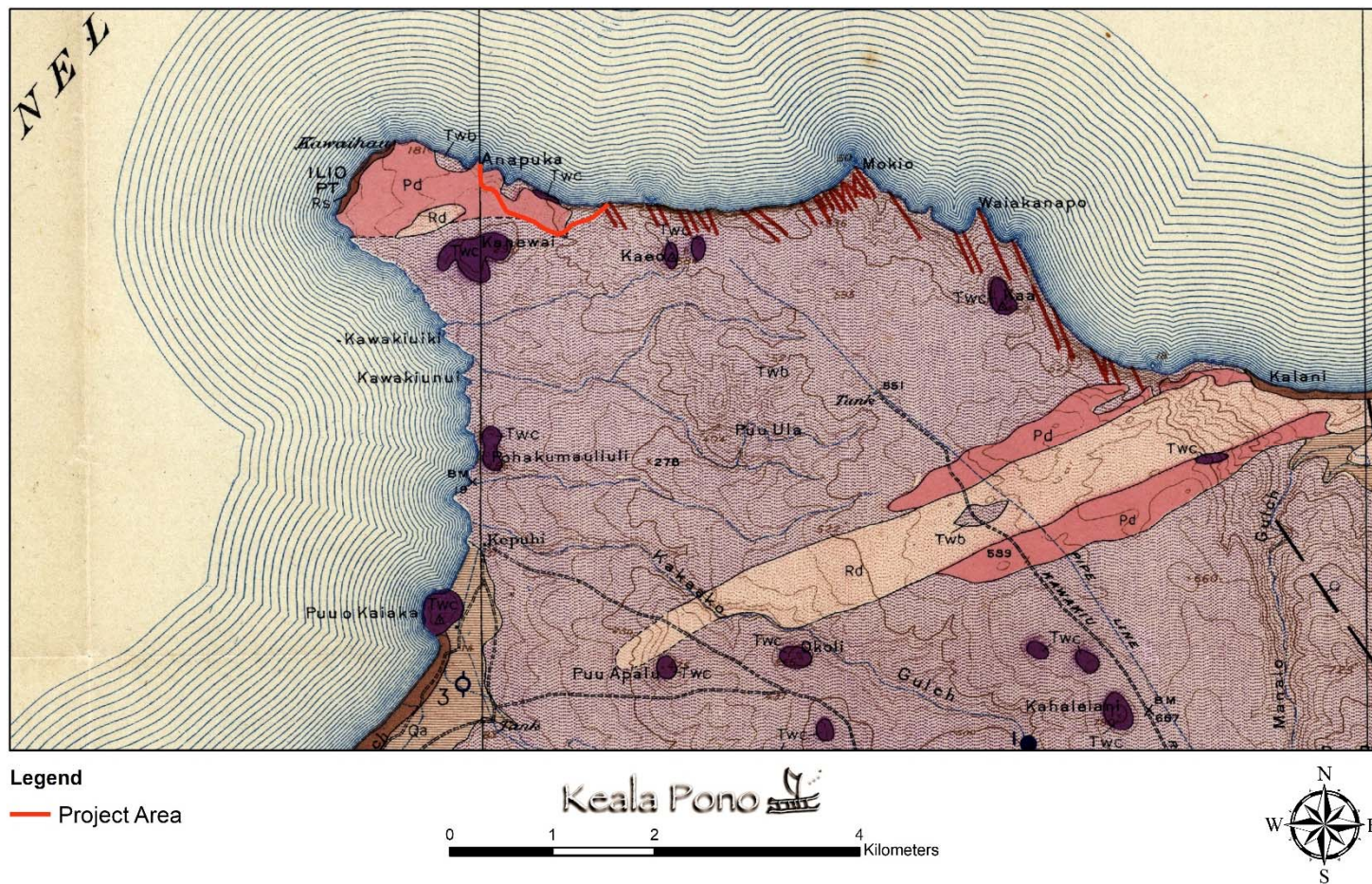
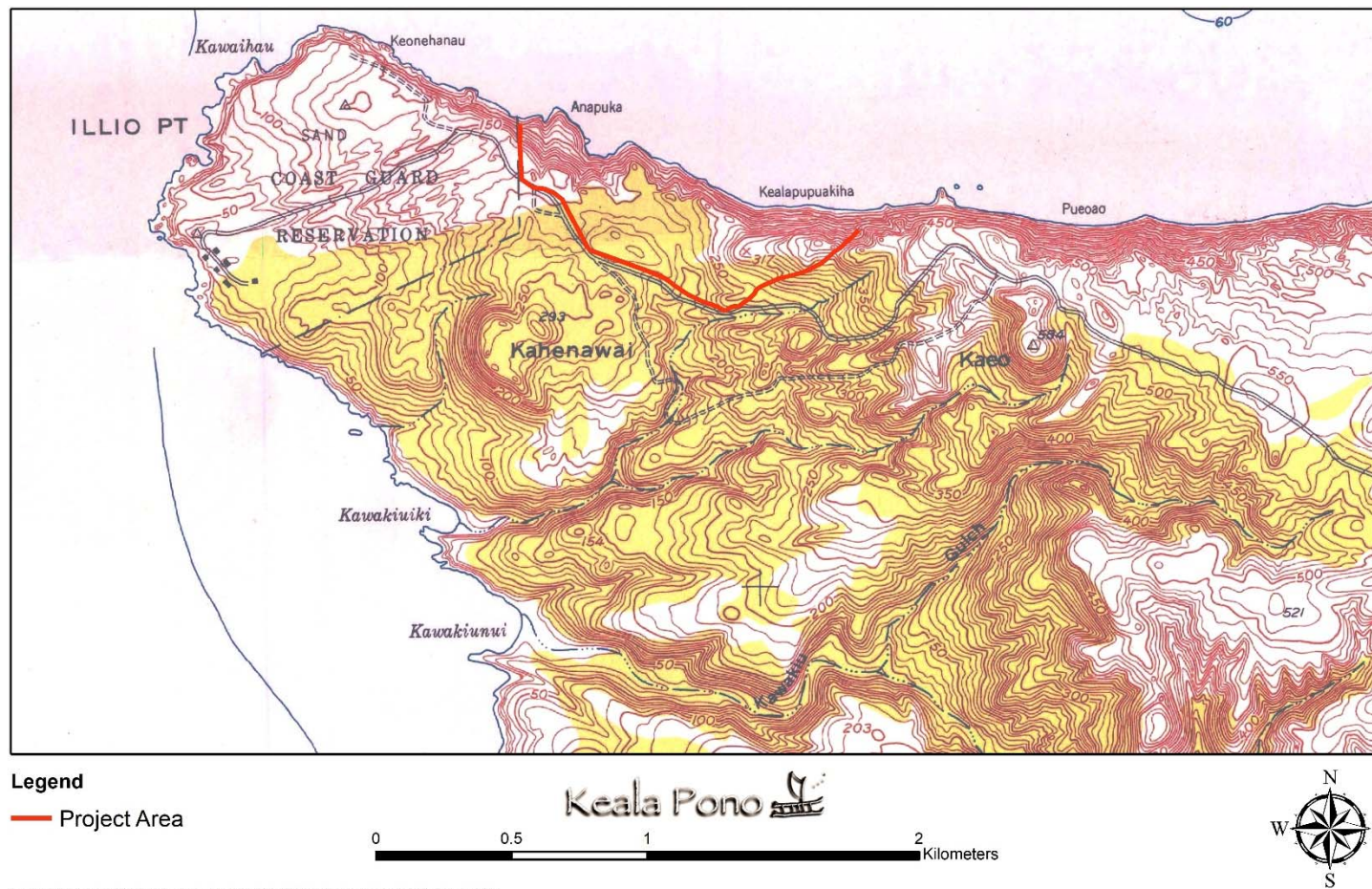


Figure 17. Portion of a geologic and topographic map of Moloka'i (MacDonald 1947).



Layer Credits: USGS Topographical Ilio Point Quadrangle Map 1952

Figure 18. Portion of 'Īlio Point Quadrangle map (USGS 1952).

Hawaiian Language Newspaper Articles

Two obituaries for the same woman who died in 1932 were the only newspaper clippings found that mentioned Mokio by name. Note: Articles appearing in the Hawaiian newspapers generally did not contain diacritical marks (‘okina and kahakō), and are presented here as found.

Figure 19 shows an obituary including the places that the deceased had loved to travel in life. The seashore at Mo‘omomi is addressed, as well as the long sands of Kaawaloa [probably Kawa‘aloa], and the point of Mokio.

E Hoolēhū e ka aīna o ka Hoo-
pūlāpū i hookumu māna i Boko ou
e Hāwāli aloha. O Molokai-nui-a-
Hina e, aole loa ana oukou e ike
hou iāia, a lōhe hou hoi i nā leo
aloha o ko mākou mama. E nā ao-
kai e Moomomi e, o ke one loa o
Kaawaloa o ka lāe onī ae i ke kai o
Mokio, aloha wale ia nāu eke i ko
mākou mama e hele ai. E ke aīa-
kahi o Mōlokaī o Kaunakakai, e ke
aīa loa o nā Kaimiloloa, o Kawela o
Makoleia, o Puakōloa, o Kamalo,
ola mau aīa aīa iā māu eke i ko
mākou mama e nāue ai, ua hau
kōna behi hou ana mā iā māu wāli.
O Pukoo, o Kupeke, he mau aīa
ia e hele pu iā ai, a nā nā kule iā
ua oīa mau aīa aloha kahi e ko mā-
kou mama aloha e hele hou ana i ke
aīakahi ou e Molokai-nui-a-Hina e.

Figure 19. Obituary that mentions Mokio (Mahiai 1932 02/23).

The obituary shown in Figure 20 ran on February 25, 1932 and is for the same person as the previous one from February 23, 1932. In it, Mo‘omomi is named as the place that their loved mother traveled to, the long sand of Kawa‘aloa, and the point jutting out into the sea at Mokio.

KE ALAKAI O HAWAII
POAHA, FEB. 25, 1932

E Hoolēhū e ka aīna o ka
hoopūlāpū i hookumu iā ai o
Molokai-Nui-a-Hina, aole loa ou-
kou e ike hou ana i ko mākou
mama aloha, a lōhe hou hoi i
kōna leo aloha.
E Moomomi e, o ka kahakā a
ko mākou mama aloha e hele ai
o ke one loa o Kaawaloa, o ka
lāe onī ae i ke kai o Mokio, aloha
ia mau kahakā a ko mākou ma-
ma aloha e nāue ai, ua pau ko-
na kaalo hou ana mā iā māu ka-
hakā.
O ke Alakāhi o Molokai, o
Kaunakakai i ke aīa loa o Kaimi-
loloa, e Kawela e o Makoleia,
o Puakōloa, o Kamalo, o ia mau
aīa aīa nā kai aloha a ko mā-
kou mama e hele ai.
O Pukoo a Kupeke he mau aīa
ia e hele pu iā ai, a nā nā kule
pakaua oīa mau aīa aloha a ko
mākou mama aloha e hele pu ai,
ua pau kōna behi hou ana i ke
Alakāhi ou e Molokai-Nui-a-
Hina e.

Figure 20. Obituary that mentions Mokio (Mahiai 1932 02/25).

The Introduction of Deer

The story of deer on Moloka'i is not easy to establish since different sources report conflicting "facts," but it seems likely that they arrived on Moloka'i in 1867. They were placed under the King's protection and by the turn of the century had become so numerous as to warrant an eradication attempt in the mountains.

Hunting for deer and feral goats and pigs on Meyer lands and in the Forest Reserve on Moloka'i dates back to around 1867 when axis deer (*Axis axis*) were first imported from India as a gift from the Hawaiian Consul in Hong Kong to Kamehameha V. A *Hawaiian Gazette* article of December 17, 1867 notes that Kamehameha V was very interested in obtaining these speckled Indian deer. Dr. William Hillebrand, a doctor and botanist who traveled to Calcutta, arranged for shipment of eight deer from the upper Ganges. Of these, three bucks and four does survived the voyage.

An article from the *Pacific Commercial Advertiser* dated December 21, 1867 reports on the spectacle:

"These really beautiful animals, the spotted Indian deer brought by the Lock Na Garr, which lies at market wharf, have been visited by many of our residents the past week. On Wednesday one of the hinds gave birth to a fine kid, as healthy and frisky as if born in his own mountain home. It is a male, and the officers of the ship have named him Kamehameha VI. As this ship goes to sea tomorrow, the deer will be transferred to the King's yacht, and taken to Molokai, where we hope they will rapidly increase and stock the whole island." (Meyer 1982:241)

Several other sources describe the arrival of the animals and how they quickly spread:

Wild deer are abundant here despite long killing of them by hired hunters because they were formerly a threat to crops and even to general vegetation. The animals are descended from some spotted Indian deer shipped to Kamehameha V from Hong Kong in 1867. Seven does and a buck were put aboard the British vessel "Loch-Na-Garr" and dispatched to Honolulu, but one doe died, perhaps of seasickness, on the long voyage. The remaining six, with their lordly buck, were sent on the king's yacht "Kamaile" to the royal estate on Molokai. One of the does gave birth, on this inter-island passage, to a fine kid whom the facetious officers of the yacht promptly nicknamed Kamehameha VI. (Clark 1953:256–257)

As the property on Molokai belonged to King Kamehameha V, he placed a kapu (prohibition) on the deer. The deer increased under this protection. They sought the mountain areas as their habitat because they were crowded out by the large herds of cattle that ranged on the low lands. In this highland area in thirty years the deer increased to a great number. The American Sugar Co., Ltd. engaged Theodore Meyer to build a forest fence to keep the cattle from entering the forest. This however did not keep out the deer. (Cooke 1949:68)

Island sportsmen are familiar with the deer hunting on the west end of Molokai. These shy, spotted animals have their origin in Japan. On a tour through the Orient in 1869 the Duke of Edinburgh was presented with a herd of deer by the Mikado. The surplus, six does and one buck--part of a sizeable herd intended for the London zoo--were set free on Molokai by King Kamehameha V. Living under the rigid protection of a strict "kapu" they flourished in the mountain areas just above Kalae. As an indication of their great fertility, just 30 years later the American Sugar Company hired two professional hunters to thin their numbers. Nearly 4000 animals were killed in the forest reserve. (Judd 1936:6)

Sometime around the turn of the 20th century, likely 1898 or 1900, two professional hunters from the mainland were employed by Molokai Ranch (then ASCO) to eradicate the deer from their lands in the mountain. The number of deer reportedly killed ranges from 1,000 to 4,000, 8,000, to as high as 10,000. The following accounts inform on the deer situation on Moloka'i during the historic period:

...in 1898 deer on Molokai became so prolific that hunters from the Mainland were employed to reduce the deer population in order to protect the forests.

...According to George P. Cooke, A.W. Carter was authorized in 1898 by the Directors of the American Sugar Company, Ltd. to hire two professional hunters from California to shoot off the deer. These men were paid forty dollars per month and were allowed to sell the skins. Approximately 10,000 deer were killed in a two-year period.

Henry Pendergast Meyer, youngest son of R.W. Meyer and an excellent marksman, was asked by the two mainland hunters to help rid the forests of the deer. Because the islands of Kauai, Maui and Hawaii were the main sugar plantation areas, deer were not shipped to these islands for fear that they would decimate the sugar crops.

After 1915 the deer migrated to the west end of Molokai to the drier section, reducing the herd in the forest lands. This migration was probably due to the unlimited hunting with hunting dogs in the forest lands. The west end of Molokai was owned by Molokai Ranch, Ltd., and hunting was restricted.” (Meyer 1982:241)

When I [George C. Munro] took over the management of the Molokai ranch in 1899 two hunters with hounds were engaged in killing the deer on the borders of the rain forest. We could not hope to exterminate the deer on Molokai as there were other landowners there who wished to perpetuate them - the deer on Molokai - for a food supply and later for hunting concessions. (*Elepaio* 1970:14)

Deerslayer Bill Has Real Record

Maui was amazed at word coming from Molokai early in 1900 of the activities of one “Deerslayer Bill” and his partner. “Deerslayer Bill” was no fictionary hero of dime store novel fame but a real hunter, who with his partner had been employed for the past two years by the American Sugar Company.

For their services in killing off the deer that overran the island they received \$60.00 a month and the skins of all the animals they killed, and by the early months of 1900 they had more than 8000 skins to show for their labors. They had been offered \$1.25 apiece or \$10,000 for the lot, but were holding out for \$1.50 apiece for the skins. (Maui News 1928:4)

In November 1898, A.W. Carter was authorized by the Directors of ASCO to obtain the services of two professional hunters from California to shoot off the deer. These men were engaged at forty dollars per month with perquisites and were allowed to sell the skins. It is commonly reported that these two men, in the year in which they operated, killed between three thousand, five hundred and four thousand deer. (Cooke 1949:68)

Three bucks and four does (hinds) were in the original band of deer, and these were released on Molokai, where they readily took to the mountains. They increased so rapidly that, in 1898, the American Sugar Co. imported two professional hunters from California to try to reduce their numbers. It is said the California hunters shot twenty-five deer a day and used only the skins, discarding the meat. The hunters' cabin is still standing at Maunahui, although almost falling apart. (Cooke 1964:72)

Previous Archaeological Studies

Nine archaeological or archival, projects have been conducted in the vicinity of the project area (Table 4). Where enough information was provided, archaeological sites and project locations are illustrated in (Figure 21). The most comprehensive of the previous archaeological studies is a compilation of Moloka'i sites and associated mo'olelo by Summers (1971). Two sites are documented within Mokio Preserve, while two additional sites are located in the adjacent parcel at 'Īlio Point. For many of the sites listed in her book, Summers (1971) relied almost exclusively on the unpublished report by Stokes (1909) for the Bishop Museum. The following discussion provides information on archaeological investigations that have been carried out in the vicinity of the project lands, based on reports found in the SHPD library in Kapolei, Hawai'i and also from the personal collections of the authors. Archaeological sites mentioned in the text are listed in Table 5.

The earliest archaeological study that included west Moloka'i is the island-wide heiau survey completed by Stokes (1909). Two sites were identified near the project area, Ka'eo Heiau, and a fishing shrine at 'Īlio Point. Both of these sites are also listed in Summers' (1971:45–46) survey of Moloka'i. Stokes was shown the heiau on top of Ka'eo Hill, but recorded that the fragmentary platform “seemed to be a natural outcropping of stone due to erosion” (Stokes 1909:29). The ko'a at Ka Lae o ka 'Īlio is located on the cliff, 65 feet asl and measures 11 ft by 9 ft with faced walls inside and out and a paved floor scattered with fish bone fragments. The walls are between 1.25 and 2.5 ft thick and up to 3 feet high on the northwest end, with a possible entrance on the southern wall. Four special stones, three inside, and one outside the structure are described in detail:

There are three ala stones lying on the pavement in a median line beginning on the east and extending just beyond the middle of the enclosure. The largest is long and sub-cylindrical, while the other two are flat. It would seem as if the long stone had originally been erected in the middle of the enclosure, as the fish-god (such stones were extensively used for the purpose) and the flat ala touching it on its eastern side served as an offertorium. The other flat ala near the wall, may have been another offertorium*. There was a fourth ala lying on the ground outside the walls and on the south. It had originally been long and subcylindrical, but had been broken, –at one time perhaps it had been unlucky or its votary and he had reacted in the usual way. (Stokes 1909:29–30)

*I am inclined to class this with the phallic pohaku eho, which were common on this part of Molokai, and indeed on other islands of the group of sea cliffs.

With the encouragement of Dr. Edward S.C. Handy and endorsed by the Bishop Museum, Southwick Phelps spent four months on Moloka'i conducting a regional study of the material culture and two months “in an examination of the literature pertaining to the island's history” (Phelps 1937:2). Phelps divided the island into three regions based on three geographic features: topography, the water supply, and the nature of the coastline. The project area was categorized as Region IIIB: fairly level, no constant streams and little rain and subdivided as “B” due to the generally steep coastline, deep offshore waters and strong tradewinds. Phelps did not record any archaeological sites in the Mokio-Anapuka area. The closest sites recorded are those at Mo'omomi.

George Cooke moved to Moloka'i in 1908 to work as assistant manager of the American Sugar Company (later renamed back to Molokai Ranch) and later became manager, a position he held for the next 40 years. During his years on the ranch Cooke collected lore and became familiar with many of the archaeological sites on Moloka'i. No sites are mentioned in the Mokio region, however Cooke did note a few sites at Mo'omomi. These include rock enclosures with ti plants growing within them, the “remnants of Ka Laina Wawae,” two caves a fisherman found in the ridges containing burials and lauhala baskets of salt, as well as the Keonelele burial area (Cooke 1949:106). Cooke was also an avid collector of artifacts that he found while in the field, though he kept no records. He states,

“from the top of Mauna Loa to Moomomi, many Hawaiian curios have been found in windswept and eroded areas, among these, adzes, mirrors, leho stones and sling stones” (Cooke 1949:121).

In the summer of 1952 William Bonk and Ronald Brown surveyed West Moloka‘i and recorded and mapped a number of shelters and house sites. While camping at Mo‘omomi, Bonk’s team under the direction of Kenneth Emory of the Bishop Museum, mapped and excavated nine sites, all less than a mile from the shoreline. The closest site to the project area is located at ‘Īlio Point. This natural shelter formed by erosion is located 20 ft below the meeting point between talus and cliff and is entirely protected from the elements, however there is no shade in the late afternoon (Bonk 1954:45). The shelter is 4.9 ft high, 22 ft wide, and 10 ft deep. The entrance of the shelter points west and had a surface scatter of shells and fish bones. Excavation was completed within and directly outside the cave entrance and produced heavy midden material with charcoal, ash, rocks, and artifacts. A total of 76 artifacts were collected from this site including three coral saws, a bone awl fragment, a cowrie shell scraper, coral files, abraders, bone and turtle shell fishhooks and fishhook blanks (Bonk 1954). Based on the artifacts uncovered, the shelter, which was also recorded by Summers (1971:46) is determined to have been used predominantly as a temporary shelter for fishermen.

Bird bones collected across Bonk’s (1952) nine excavation sites were used in a 1993 study regarding avian extinction and human predation (Weisler and Gargett 1993). Weisler and Gargett looked at archaeological evidence indicating the possible effects that humans had on endemic bird species. The human impacts that leave evidence in the archaeological record include habitat alteration and human predation.

The first archaeological work in the Gifted Mokio Lands parcel consisted of a reconnaissance-level survey funded by MLT and conducted by Marshall Weisler from August 2008 to April 2009. Several undocumented sites were added to the inventory of known archaeological sites at Mokio during this initial study. The Ka‘eo Quarry and Habitation Complex was previously documented by Summers, however the description was extremely brief, only mentioning that “MacDonald described an adz quarry on the hill as being...a thin flow of dense lava” (Summers 1971:45). The following are excerpts from Weisler’s study (2009:4–9):

Ka‘a Quarry (Site 806)

This is an excellent source of fine-grained basalt used for the manufacture of adze blanks and preforms. On top of Ka‘a cone on the east perimeter appears to be a shrine consisting of a small stone terrace with a commanding view east along the coastline. The main fine-grained basalt source is more than 100 m to the northwest in the lee of the hill with spectacular views along the north coast. Several habitation shelters and stone mounds are found atop the hill

Stone Mound (Site 2480)

This site is situated just west of Ka‘a Gulch at the top of the slope that forms the east side of the gulch. The stone mound is 1.7 m north-south by 1.6 m east-west and consists mostly of cobble-size rocks piled to a height of 30 cm (12 inches).

Ka‘a Gulch Midden (Site 812)

This scatter of shellfish and basalt and volcanic glass flakes measures about 6 m east-west by 8 m north-south and is situated on the west side of Ka‘a Gulch mouth at the cliff edge.

Terrace at Ka‘a Gulch Mouth (Site 811)

Situated on the west side of Ka‘a Gulch near the bottom of the gulch is a stone-faced earthen terrace measuring about 4 by 4 m with dense concentrations of ‘opihī eroding out of the cultural deposit.

Kealapupuakiha Habitation Complex and Quarry (Bishop Museum Site Mo-B6-100)

This large habitation complex consists of a large windbreak wall (known locally as “Stone Wall”) situated near the cliff edge and several small shelters, a low shrine, and eroding middens upslope to the east, and about 100 m northwest is another group of more substantial shelters situated near the cliff edge to about 30 m inland. At the time of site visit, dense kiawe covered the adjacent area obscuring at least one structure. The basalt source is located down a steep trail below the cliff edge and an exposed yellow sulfur layer. The source consists of light blue rock forming a small scree slope immediately below the intact dense layer of rock.

Ka‘eo Quarry and Habitation Complex (Bishop Museum Site Mo-B6-22)

This is the largest site complex in the Mokio parcel and it is located on the two dominant hills that comprise Pu‘u Ka‘eo. The quarry is located west of the dirt road where dense concentrations of adze manufacturing debris are confined primarily to two eroded terraces, although adze blanks and preforms are scattered over a much larger area. Across the road to the east is a low enclosure, which may have been used for gardening purposes. On the highest north hill are several shelters, some of which are associated with adze making debris.

Lithic Source (Site 2481)

The site is located southeast of the group of tall radio towers...Consisting of very large basalt flakes scattered more or less randomly across a wind-deflated soil surface, the lithics cover an area about 10.5 m north-south by 13.5 m east-west. All flakes are larger than 15 cm.

In 2010, an oral history study was conducted for the Mokio Preserve as part of the archaeological and cultural documentation of the lands gifted to MLT (McGregor 2010). The report found that Moloka‘i residents still use the area for subsistence activities such as fishing, hunting, and gathering. ‘Opihi gathering was noted from Kapalauoa to Mokio Point, moi fishing, ha‘uke‘uke and ‘a‘ama crab gathering along the coast, and deer hunting near Ka‘a Gulch. Ala hele traversing the area were also mentioned in addition to archaeological sites such as adze quarries, ko‘a, leho stones, and house sites. McGregor determined that the conservation, restoration, and managed access activities under the MLT will support the objective and policies of HRS Chapter 205A-2.

An archaeological reconnaissance survey was conducted for the current Mokio-Anapuka fence project (McElroy and Eminger 2020). Three archaeological sites were identified along the fence line corridor, designated as State Inventory of Historic Places (SIHP) 50-60-01-02584, 02585, and 02586. SIHP 50-60-01-02584 is a set of wooden fenceposts, six of which are still standing that are located on the western end of the fence line on the outside of the fence, but within the project corridor (Figures 22 and 23). This is near the boundary between the U.S. Coast Guard Reservation and the MLT parcel. The standing posts are approximately 10–24 cm in diameter and 120–235 cm tall. The posts are either natural cut kiawe or square hewn timbers of unidentified wood taxa. A community informant stated that the fence was constructed by ranchers to keep their cows from roaming into the ‘Ilio Point area, which was outside the ranch boundary. The fence follows this boundary as it is drawn on a 1952 map (Figure 24) and likely dates to this time or earlier. SIHP 50-60-01-02585 consists of a segment of cast concrete curbing and an associated ford and culvert located along the dirt road near the center of the fence line route on the outside of the fence, but within the construction buffer (Figures 25–29). The curb appears to divert water to a ford that crosses the dirt road and empties into an adjacent small gully. SIHP 50-60-01-02585 likely dates to the early 1950s when the Coast Guard Reservation was established. SIHP 50-60-01-02586 is a very sparse surface scatter of cultural material and midden (Figure 30), consisting of the butt end of an adze preform (Figure 31), a waterworn cobble, and pūpū‘awa shell (*Drupa* sp.) (one whole and one

Table 4. Archaeological Studies in the Project Vicinity

Author & Year	Location	Work Completed	Findings
Stokes 1909	Island-wide	Survey of heiau	First identified Ka‘eo Heiau and the ko‘a at ‘Īlio Point.
Phelps 1937	Island-wide	Survey	No sites recorded near project area.
Cooke 1949	Island-wide	Informal interest and documentation	Documented enclosures, caves, burials, petroglyphs, artifacts.
Bonk 1954	West Moloka‘i	Survey & excavation	Mapped and excavated nine sites, one of these is a shelter at ‘Īlio Point. 76 artifacts were collected during excavations of the shelter including fishhooks and fishhook blanks, coral saws, and a cowrie shell scraper fragment.
Summers 1971	Island-wide	Compilation	Documented four sites near the project area. Ka‘eo Heiau and Ka‘eo Adz Quarry are within Mokio Preserve. A ko‘a and a bluff shelter were identified at nearby ‘Īlio Point.
Weisler and Gargett 1993	Sites excavated by Bonk (1954)	Examination of avian bones	Looked at archaeological evidence for habitat alteration and human predation.
Weisler 2009	Mokio Preserve	Archaeological reconnaissance	Identified seven sites, including those previously documented by Summers (1971).
McGregor 2010	Mokio Preserve	Oral history report	Determined that the conservation, restoration, and managed access activities under the MLT will support the objective and policies of HRS Chapter 205A-2.
McElroy and Eminger 2020	Current project	Archaeological reconnaissance	Identified three archaeological sites: a set of wooden fenceposts; a segment of concrete curbing and two drainage culverts; and very sparse surface scatter of cultural material and midden.

Table 5. Archaeological Sites in the Project Vicinity

Site Number	Name	Description	Reference
50-60-01-02584	Wooden fenceposts	Set of historic wooden fenceposts, six of which are still standing.	McElroy and Eminger 2020
50-60-01-02585	Concrete curbing, ford, and culvert	Segment of historic concrete curbing, a ford that crosses a dirt road, and a drainage culvert.	McElroy and Eminger 2020
50-60-01-02586	Cultural material and midden	Very sparse surface scatter of cultural material and midden, consisting of an adze butt, a waterworn cobble, and pūpū‘awa shell.	McElroy and Eminger 2020
31	Possible Heiau at Ka‘eo Hill	Fragmentary platform noted to be a natural rock outcropping.	Stokes 1909; Summers 1971
32, 22	Ka‘eo Quarry and Habitation Complex	Largest site complex in the Mokio Preserve. Large number of scattered adze blanks and preforms, two eroded terraces, a low enclosure, and several shelters.	Summers 1971; Weisler 2009
33	Ko‘a at ‘Īlio Point	11 ft by 9 ft walled enclosure with a paved floor located 65 ft above sea level. Four ala stones were found, of which one may have originally been upright.	Stokes 1909; Summers 1971
34	Shelter at ‘Īlio Point	Natural rock shelter with the opening to the west. Initial excavation produced 76 artifacts from a heavy midden layer including charcoal, ash, and rocks.	Bonk 1954; Summers 1971; Weisler and Gargett 1993
100	Kealapūpūakiha Habitation Complex and Quarry	Expansive habitation complex with a large windbreak wall including numerous small shelters, a group of larger shelters, a low shrine, and eroding midden.	Weisler 2009
806	Ka‘a Quarry	Excellent fine-grained basalt source. Site includes several shelters, stone mounds, and a small stone terrace shrine at the top of Ka‘a Hill.	Weisler 2009
811	Terrace at Ka‘a Gulch mouth	4 m by 4 m stone-faced earthen terrace with an exposed ‘opihi concentration eroding from a cultural deposit.	Weisler 2009

Table 5. (continued)

Site Number	Name	Description	Reference
812	Midden at Ka'a Gulch	6 m by 8 m scatter of basalt and volcanic glass flakes and shellfish on the west side of Ka'a Gulch.	Weisler 2009
2480	Stone Mound	Stone mound just west of Ka'a Gulch measuring 1.7 m by 1.6 m and 30 cm high.	Weisler 2009
2481	Lithic Source	Many basalt flakes larger than 15 cm scattered over an area of 10.5 m by 13.5 m.	Weisler 2009

*SIHP numbers are prefixed by 50-60-02- unless noted otherwise

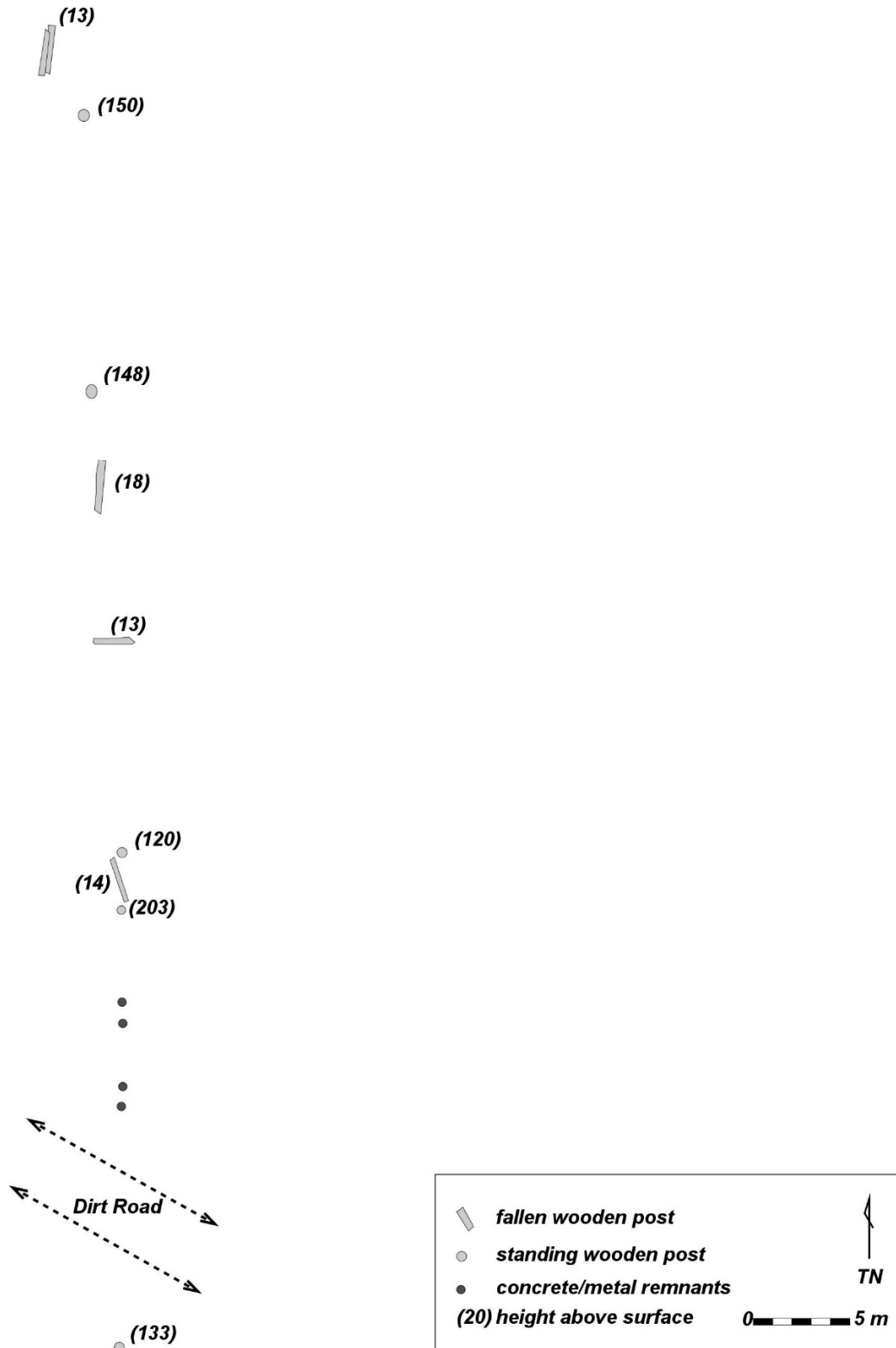


Figure 22. SIHP 50-60-01-02584 fence posts, plan view drawing.



Figure 23. SIHP 50-60-01-02584 fence posts; orientation is to the south.

fragment). The site encompasses a 13 x 3 m swath at the top edge of the cliffs near the east end of the proposed fence route, roughly on the line of the proposed fence. The site may have once included more cultural material and midden that have eroded away over the years and likely dates to pre-contact times when the region was used for stone quarrying and marine resource exploitation. Subsurface testing at SIHP 50-60-01-02586 consisted of six shovel test pits. Soil deposition was shallow and no cultural material or deposits were found. All three sites were assessed as not eligible to the National Register of Historic Places (NRHP) because they retain very little integrity. Nevertheless, the sites are significant under Criterion D because they have yielded important information on history or prehistory. McElroy and Eminger (2018) recommended that fence construction avoid the three sites and that the material of SIHP 50-60-01-02586 be collected, further recorded, and curated before fence construction.

Summary and Settlement Patterns

Located on the northwest coast of Moloka‘i, the Mokio-Anapuka region’s unique landscape supports a variety of plant and animal life, including endangered species. The well-watered windward areas of Moloka‘i were the first places settled on the island by humans. Much later, by what is termed the Late Expansion Period (AD 1450–1600), people began to venture into the dry leeward areas of the island. While it is not possible to account for the intangible qualities of human nature in the archaeological record, such as simple curiosity or the desire for adventure, what is reflected is the quest for quality stone for tools and the exploitation of the rich offshore fisheries at Mokio. These were the resources that probably motivated much of the activity along this coastline.

There is no evidence that the northwest region ever supported a large population, although it seems small groups occupied areas surrounding the quarry sites. Across the region, habitation sites typically consist of temporary shelters, however larger complexes consisting of several shelters are located at the Kealapūpūakiha and Ka‘eo Quarries. These high-quality rock exposures were utilized as a source of raw materials for tools, evidence of which occurs throughout the region.

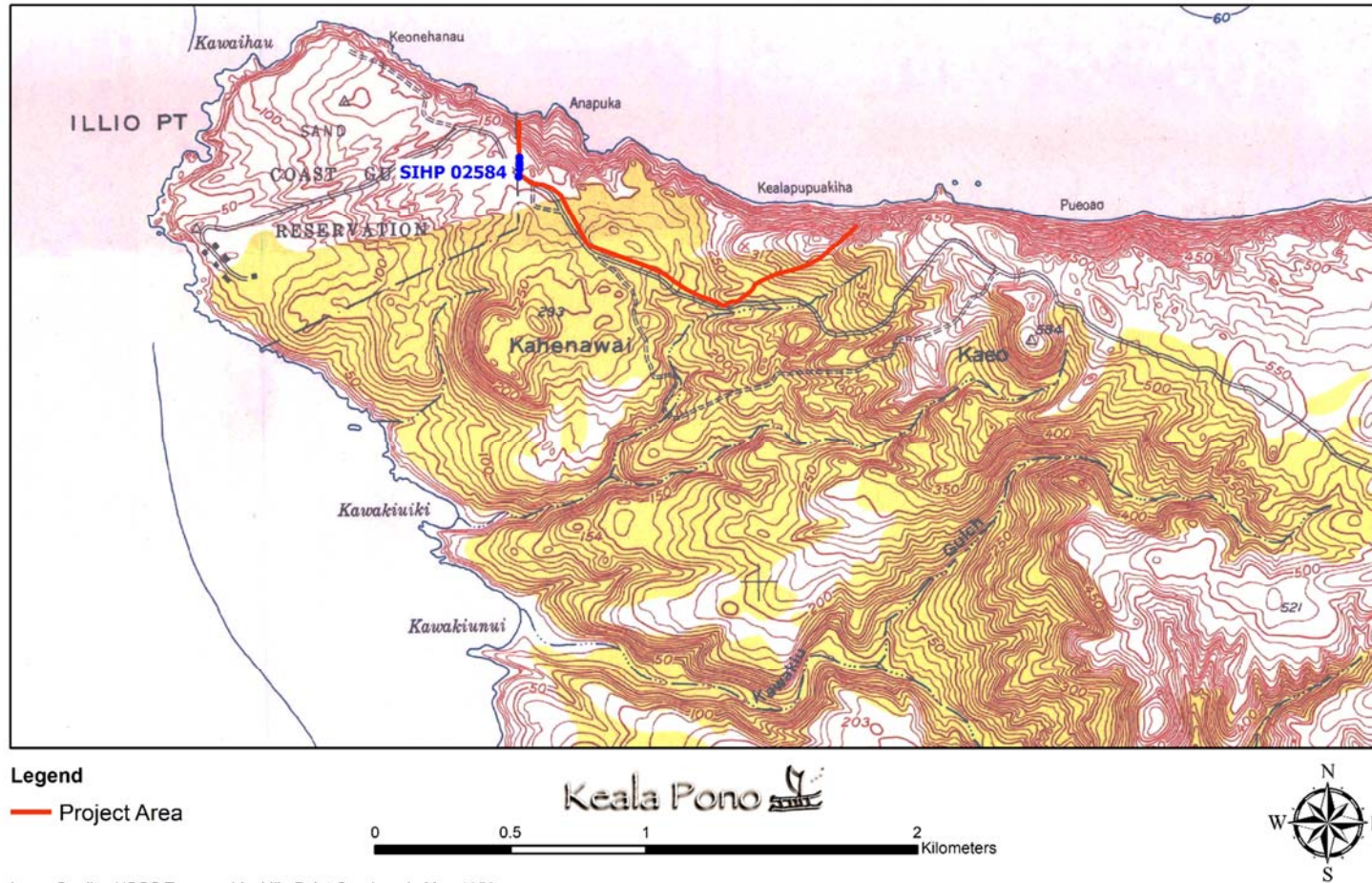


Figure 24. Portion of 'Īlio Point Quadrangle map (USGS 1952), showing location of SIHP 50-60-01-02584 fence posts.

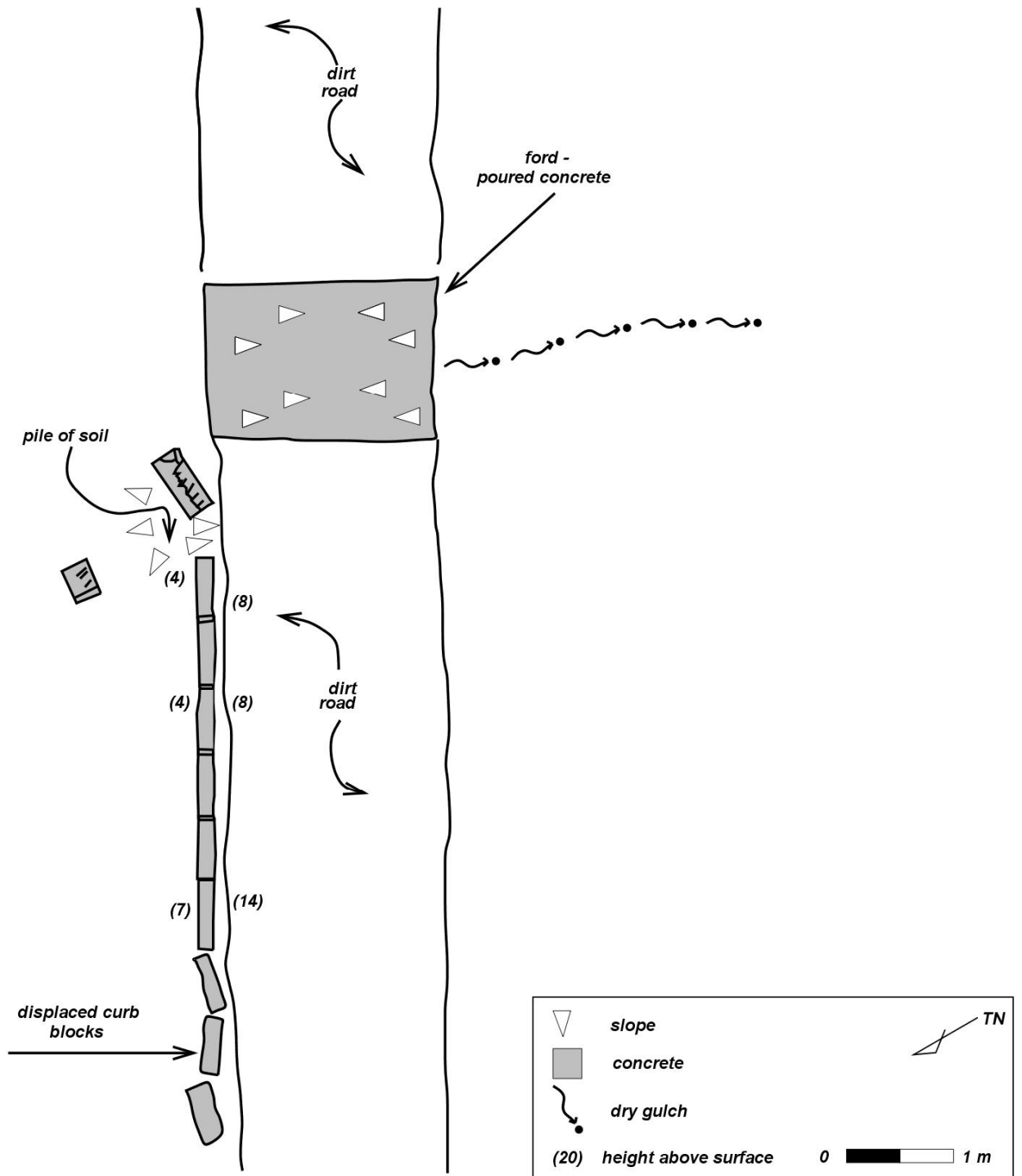


Figure 25. SIHP 50-60-01-02585 concrete curb and western culvert, plan view drawing.



Figure 26. SIHP 50-60-01-02585 concrete curb; orientation is to the northeast.



Figure 27. SIHP 50-60-01-02585 rock and concrete ford; orientation is to the north.

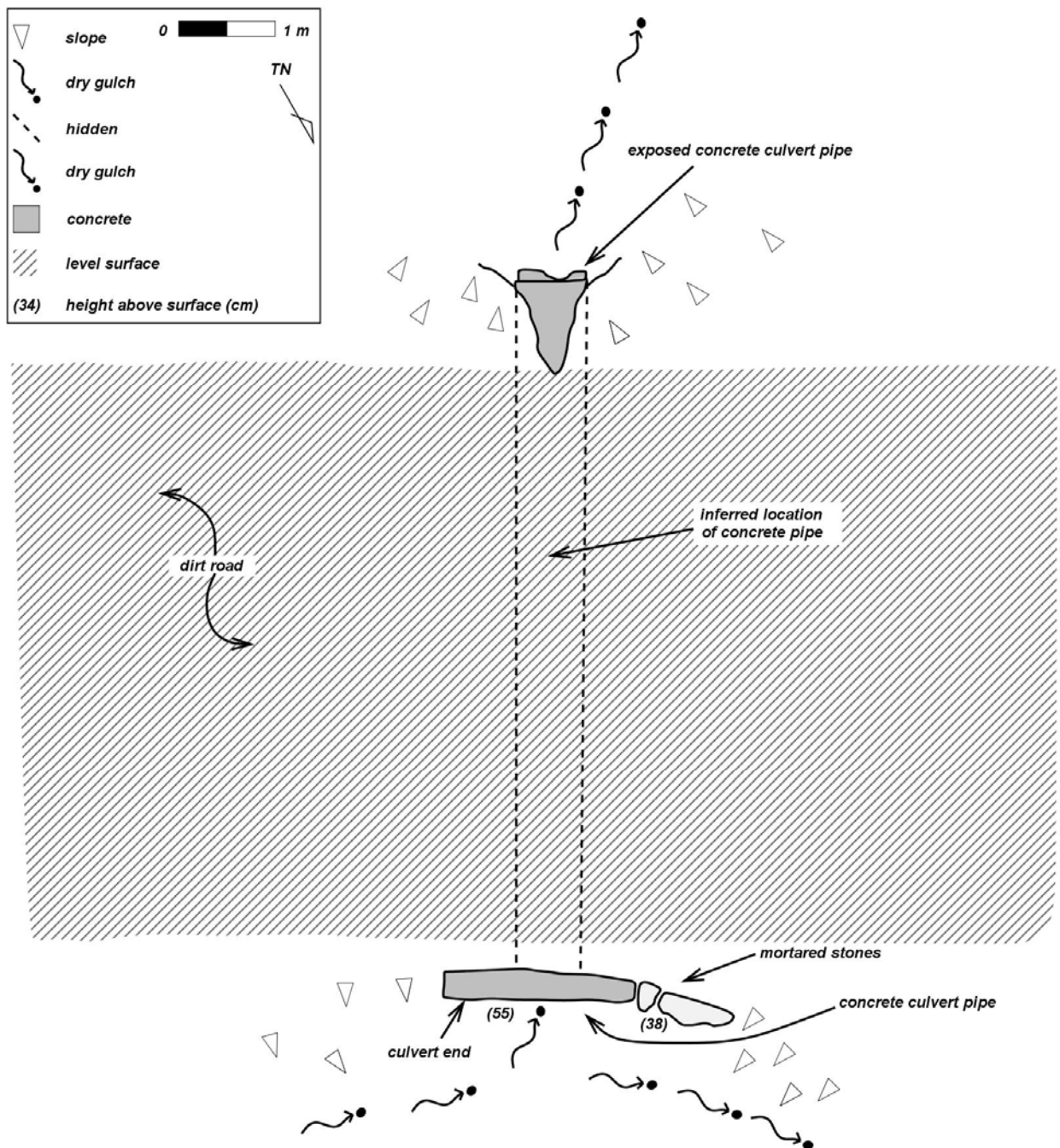


Figure 28. SIHP 50-60-01-02585 culvert, plan view drawing.



Figure 29. SIHP 50-60-01-02585 rock and concrete culvert; orientation is to the south.

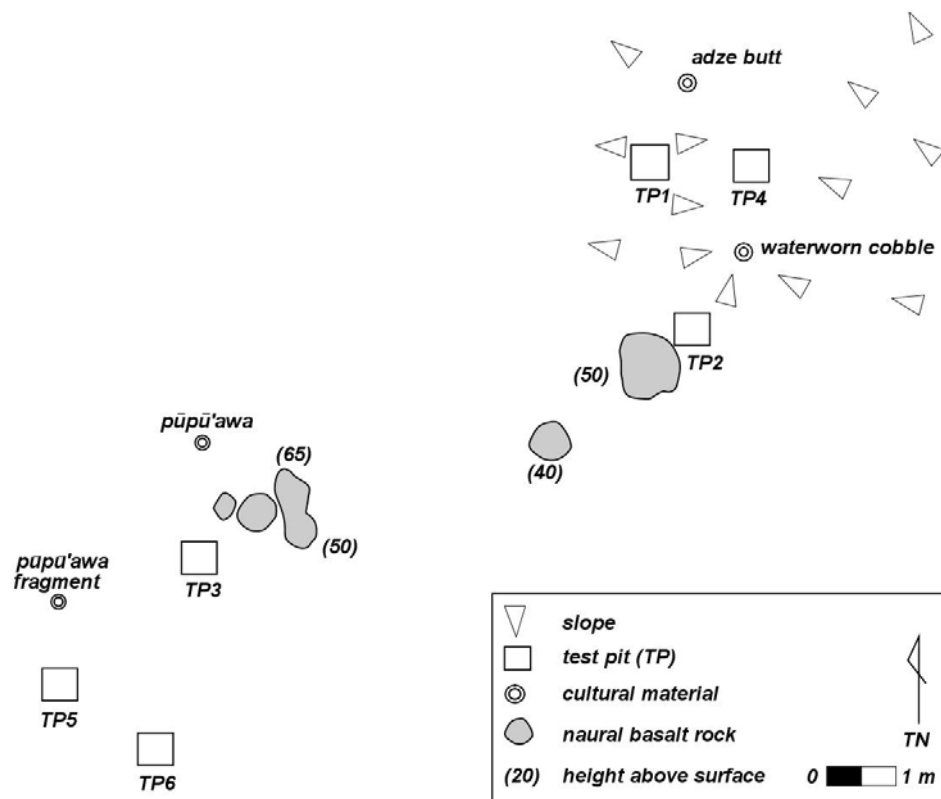


Figure 30. SIHP 50-60-01-02586 midden/artifact scatter, plan view drawing.



Figure 31. SIHP 50-60-01-02586 adze butt (below pointed end of north arrow), plan view.

The sea fishery would have been exploited during the calm summer months but impossible to access during the winter when the high surf is relentless. There is growing evidence that the birds of the area were a source of food, perhaps an important one if settlement persisted into the winter months. There are few early historic accounts that mention the Mokio area, however some visitors did traverse the west end of Moloka'i. Many of these accounts refer to the lands as a barren desert strip devoid of settlements and fresh water.

The Mokio area remained more or less abandoned in the 19th century. Further evidence from the Māhele supports this idea. There were no kuleana land claims submitted to the Land Commission for Mokio-Anapuka during the Māhele. For the whole of the Kaluako'i district, only five claims were submitted, but all of these were located along the south shore on the opposite side of the mountain, and none were awarded. Mokio and all of Kaluako'i, became Government land at that time and remained so until it was sold to Charles Reed Bishop in 1875 before becoming part of Bishop Estate and later sold at auction to Hartwell Company (Molokai Ranch) in 1898. Today, families continue to hunt, fish, and gather 'opihi and other marine resources at Mokio, mainly during the summer months.

Anticipated Finds

Kaluako'i was known as an area for the manufacture of adzes and supports several basalt quarries and lithic scatters. These have been found within the Mokio region, along with the material remains of adze making and shelters associated with that activity. Adze manufacturing remains that might be encountered within the project area include surface scatters of lithic material, such as basalt flakes, cores, and shatter, as well as artifacts such as adzes, adze preforms, and hammerstones. Shelters, surface scatters of midden, or subsurface cultural layers and firepits in association with these items might indicate encampments that were utilized for tool making.

Mokio is also renowned for its fisheries, and was known as a region of marine resource exploitation in the past. Fishing-related items have been found nearby at 'Īlio Point and might also occur within the project corridor. These might take the form of fishhooks or fishhook manufacturing debris, tools for making fishhooks such as coral and sea urchin spine files, sinkers, and marine shell and bone midden. Subsurface firepits and cultural layers might also be found along with these remains, and these may represent marine resource exploitation camps. The sand dunes at the adjacent Mo'omomi Preserve are known as a place for human burial, and these may be encountered, particularly in the western portion of the project area where Jaucas sand is present. It is possible that burials are present even though no evidence of human remains were found during the initial archaeological reconnaissance survey (McElroy and Eminger 2020).

PROJECT DESIGN

Archaeological monitoring in compliance with HAR §13-279-3 will be conducted for all ground disturbing activity on TMK: (2) 5-1-002:060 (por.) associated with construction of the conservation fence in the Mokio Preserve. Archaeological monitoring for all ground disturbance is recommended due to the presence of archaeological sites along the fence corridor and in the vicinity. Ground disturbance may include but is not limited to excavation for post holes and vegetation removal. If brush clearing does not involve ground disturbance, then this activity will not be monitored.

Project Personnel

A senior archaeologist, qualified under §13-281, HAR, will serve as principal investigator for the project. The principal investigator will be responsible for overall project organization and management, will ensure high standards for field sampling and laboratory analyses, may conduct field visits and direct supervision of field personnel as appropriate, and will review the content of the monitoring report. The archaeological monitor will have sufficient fieldwork experience in Hawai'i or have completed sufficient college-level coursework in Anthropology and Hawaiian Archaeology. If archaeological remains are identified, the monitor has the authority to halt ground disturbing activities in the immediate area of the find.

Fieldwork

Prior to fieldwork, the archaeological monitor and/or principal investigator will meet with the construction team to discuss the monitoring plan. The archaeologist will ensure that the construction team understands the purpose of the monitoring and that the monitor has the authority to halt construction activity.

Field recording and sampling will include, but are not limited to, the drawing of stratigraphic profiles, photography with a digital camera, and controlled excavation of exposed features. Soils will be described using Munsell Soil Color Charts (Munsell 2010), a soil texture flow chart (Thien 1979), and the U.S. Department of Agriculture soil manual (Soil Science Division Staff 2017). Stratigraphic profiles will be drawn, and deposits described in locations where cultural materials or deposits are located as well as areas where no archaeological properties are found. Natural sequences considered representative of the various portions of the project area will also be profiled. These profiled locations will be plotted on a project area map to be included in the archaeological monitoring report. Accurate map locations of test units, stratigraphic profiles, and archaeological features, deposits, and artifacts will be maintained.

Diagnostic cultural material will be collected unless size and/or weight are not practical for collection, in which case they will be documented in the field with digital photographs and a written description. Soil/sediment samples will be collected at the discretion of the archaeological monitor. Cultural finds will be mapped in profile and/or plan view as appropriate. Field recording and sampling are intended to mitigate any potentially adverse effects to cultural properties. Standards of documentation, recording, and analysis shall accord with HAR §13-279-5.

If human remains are discovered during monitoring, work in the vicinity of the remains will cease and the archaeological monitor will protect any exposed iwi, secure the area, and SHPD will be notified immediately. No further work will take place in the immediate vicinity until the burial discovery has been documented, consultations are completed, and further treatment and protection are planned, although work in other areas of the project site may continue. In the event of inadvertent discovery of non-burial historic properties, SHPD shall be consulted concerning appropriate mitigation measures. Any inadvertent discovery of burial historic properties will follow procedures

as indicated in HAR §13-300-40 and HRS Chapter 6E-43. All burial material will be treated as directed by SHPD.

Treatment of SIHP 50-60-01-02584, 02585, and 02586

During pedestrian archaeological reconnaissance for the Mokio-Anapuka Conservation Fence Project, three archaeological sites were observed and documented within the project corridor (McElroy and Eminger 2020). These sites were designated as SIHP 50-60-01-02584, 02585, and 02586 and include: 1) a series of wooden fence posts; 2) the remains of an old cement curb, ford, and culvert; and 3) a very sparse surface artifact and midden scatter. Prior to construction, the cultural material left in place at SIHP 02586 during reconnaissance should be collected, further recorded, and curated, as increased foot traffic in the area may damage or displace the material. The letter report states that the fence line plans be modified to avoid the three sites.

Post-Field Actions

The nature and scope of post-field actions will vary according to the results of the fieldwork. At minimum, if no archaeological remains are discovered, a report documenting the negative findings will be produced and submitted to SHPD. If archaeological remains are discovered, appropriate analyses will be conducted and reported.

Laboratory analyses of cultural material and soils will be conducted in accordance with the stipulations of this AMP. The results of laboratory analyses will be presented in the archaeological monitoring report, which will be prepared in accordance with HAR §13-279-5(6) and will follow the SHPD *Rules Governing Standards for Archaeological Monitoring Studies and Reports* (HAR §13-279-4). The specific procedures employed in laboratory analysis will vary according to the kinds of remains that are recovered. For example, artifacts will be measured, weighed, sketched or photographed, and identified. Faunal material will be weighed, counted, and taxonomically identified to the highest level of detail possible.

Materials not associated with human burials will be temporarily stored at the contracted archeologist's facility and will be turned over to the landowner at the close of the project. Disposition of collections will be decided by the landowner unless human remains are discovered, or archiving is requested, then SHPD must be consulted. Any departure from these provisions will be in consultation with and written concurrence from SHPD. Preparation of a final report shall conform with HAR §13-279. Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. The draft monitoring report shall be prepared and submitted to SHPD in a timely manner, within 60 days following the end of fieldwork. A revised final report will be submitted within 30 days following receipt of review comments on the draft report. Should human remains be identified, other letters, memos, and/or additional reports may be required.

SUMMARY AND RECOMMENDATIONS

In summary, archaeological monitoring will be conducted for ground disturbing activity associated with construction of a predator control fence on a portion of TMK: (2) 5-1-002:060 in the Mokio Preserve in Kaluako'i Ahupua'a, Kona District, on the Island of Moloka'i, Hawai'i. An archaeological reconnaissance survey of the fence corridor identified three cultural sites: a series of wooden fence posts; the remains of an old cement curb, ford and culvert; and a very sparse surface artifact and midden scatter. This archaeological monitoring plan sets forth standards and provisions for monitoring during fence construction, including treatment of the three archaeological sites located within the project boundaries. These sites should be avoided during construction, and the surface material from SIHP 50-60-01-02586 should also be collected, recorded, and curated prior to construction activities. Full-time archaeological monitoring will be carried out for all ground disturbance associated with construction of the conservation fence.

GLOSSARY

‘a‘ama	The edible crab <i>Grapsus grapsus tenuicrustatus</i> . ‘A‘ama also refers to relaxing or spreading, as in the fingers, as ‘a‘ama crabs were sacrificed so the gods would relax and accede to a request.
ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
‘āina	Land.
ala hele	Pathway, trail, road.
ali‘i	Chief, chiefess, monarch.
boulder	Rock 60 cm and greater.
Cellana	‘Opihi, or limpets, four types of which are endemic to Hawai‘i: <i>Cellana exarata</i> (‘opihi makaiauli), <i>C. sandwicensis</i> (‘opihi alinalina), <i>C. talcosa</i> (‘opihi ko‘ele), and <i>C. melanostoma</i> (no Hawaiian name). ‘Opihi are a prized food in Hawai‘i and considered a rare treat today.
cobble	Rock fragment ranging from 7 cm to less than 25 cm.
cowrie	Mollusks of the Family <i>Cypraeidae</i> , prized for their shells. Thirty-four species are known in Hawai‘i, five of which are endemic to the Hawaiian Islands.
Cypraea	Mollusks of the Family <i>Cypraeidae</i> , prized for their shells. Thirty-four species are known in Hawai‘i, five of which are endemic to the Hawaiian Islands. They are commonly known as cowrie shells.
‘eho	Stone piles to mark a land boundary, stone image, or pile of stones underwater used by fisherman to drive fish into their net. Pōhaku ‘eho are hot stones placed inside animals when cooking in an imu (underground oven).
hā‘uke‘uke	The sea urchin <i>Colobocentrotus atratus</i> , or helmet urchin, whose teeth were used in Hawaiian medicine.
heiau	Place of worship and ritual in traditional Hawai‘i.
hoa‘āina	Native tenants that worked the land.
honu	The general name for a turtle or tortoise.
hōlua	Traditional Hawaiian sled used on grassy slopes.
‘ili	Traditional land division, usually a subdivision of an ahupua‘a.
‘iwa	The frigate bird <i>Fregata minor palmerstoni</i> .
iwi	Bone.
kahakō	Macron.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kalana	A division of land smaller in size than a moku, or district.
kama‘āina	Native-born.
kapu	Taboo, prohibited, forbidden.
kauila	The name for two types of buckthorn trees native to Hawai‘i (<i>Alphitonia ponderosa</i> and <i>Colubrina oppositifolia</i>). Produced a hard wood prized for spear and a variety of other tool making.

kiawe	The algaroba tree, <i>Prosopis</i> sp., a legume from tropical America, first planted in 1828 in Hawai‘i.
ko‘a	Fishing shrine.
koa‘e	The tropic bird, particularly the white-tailed variety (<i>Phaethon lepturus dorotheae</i>). Tropic birds tend to inhabit cliffs on high islands.
kōnane	A traditional Hawaiian game played with pebbles on a wooden or stone board.
konohiki	The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.
kuleana	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
lauhala	Leaf of the hala, or pandanus tree (<i>Pandanus odoratissimus</i>), used for matting and basketry.
leho	Cowrie shell, <i>Cypraea</i> spp.; they were used as octopus lures in traditional Hawai‘i.
Māhele	The 1848 division of land.
makahiki	A traditional Hawaiian festival starting in mid-October. The festival lasted for approximately four months, during which time there was a kapu on war.
makai	Toward the sea.
mauka	Inland, upland, toward the mountain.
moi	The threadfish <i>Polydactylus sexfilis</i> , a highly prized food item.
moku	District, island.
mo‘olelo	A story, myth, history, tradition, legend, or record.
noio	Hawaiian noddy tern (<i>Anous tenuirostris melanogenys</i>).
‘okina	Glottal stop.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
pali	Cliff, steep hill.
pōhaku	Rock, stone.
pueo	The Hawaiian short-eared owl, <i>Asio flammeus sandwichensis</i> , a common ‘aumakua.
Pulapula	plant cutting.
pu‘u	Hill, mound, peak.
stone	Rock fragment ranging from 25 cm to less than 60 cm.
ti (kī)	The plant <i>Cordyline terminalis</i> , whose leaves were traditionally used in house thatching, raincoats, sandals, whistles, and as a wrapping for food.
‘uala	The sweet potato, or <i>Ipomoea batatas</i> , a Polynesian introduction.
‘ua‘u	<i>Pterodroma phaeopygia</i> , known commonly as the dark-rumped petrel, an endangered seabird.
‘ulu maika	Stone used in the maika game, similar to bowling.

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**APPENDIX: ROYAL PATENT NO. 3146: DEED SIGNED BY KING KALĀKAUA TO CHARLES
REED BISHOP IN 1875**

Containing 46,500 Acres, more or less:
reserving and reserving to the Hawaiian Government, all mineral or metallic mines of every description.

To have and to hold the above granted Land in Fee Simple, unto the said Charles P. Bishop
Bishop, His Heirs and Assigns forever, subject to the
taxes to be from time to time imposed by the Legislative Council equally upon all landed Property held in Fee Simple.

In Witness whereof, I have hereunto set my hand and caused the Great Seal of
the Hawaiian Islands to be affixed, at Honolulu, this Twenty first
1875
Na Hui Nui
He Kahuia Kahuia as a Governor
H. L. McHenry Kala Kahuia
Likihika Quarant