

# **A 'Ikena I Kai (Seaward Viewsheds): Inventory of Terrestrial Properties for Assessment of Marine Viewsheds on the Main Eight Hawaiian Islands**



**U.S. Department of the Interior  
Bureau of Ocean Energy Management  
Pacific OCS Region  
August 18, 2017**

Cover image: Viewshed among the Hawaiian Islands.  
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# **Nā ‘Ikena I Kai (Seaward Viewsheds): Inventory of Terrestrial Properties for Assessment of Marine Viewsheds on the Eight Main Hawaiian Islands**

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**U.S. Department of the Interior  
Bureau of Ocean Energy Management  
Pacific OCS Region  
August 18, 2016**

## **DISCLAIMER**

This study was funded, in part, by the US Department of the Interior, Bureau of Ocean Energy Management, Environmental Studies Program, Washington, DC, through Interagency Agreement Number M13PG00018 with the US Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries. This report has been technically reviewed by the ONMS and the Bureau of Ocean Energy Management (BOEM) and has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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## **CITATION**

Watson TK, Hoomanawanui K, Thurman R, Thao B, Boyne K. 2017. Na 'Ikena I Kai (Seaward Viewsheds): Inventory of Terrestrial Properties for Assessment of Marine Viewsheds on the Eight Main Hawaiian Islands. US Department of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA. OCS Study BOEM 2017-022. 137 pages, with appendices.

## **ACKNOWLEDGMENTS**

### **Note on Orthography and Translation**

It is the practice of Honua Consulting to use diacritical markers when using the Hawaiian language as encouraged by our kūpuna (elders), enabling proper pronunciation and translation. When quoting historical sources, those sources are cited precisely as written, no diacritical markings are added if none are used in the original materials. Literal translations are liberally provided in this publication as this document is intended for a wide audience unfamiliar with the Hawaiian language. It should be noted the Hawaiian language is an official language of the state of Hawai‘i under the Hawai‘i State Constitution.

## Executive Summary

The State of Hawai‘i and the remainder of the United States are committed to finding ways of reducing dependencies on fossil fuels, which requires exploration of renewable energy options. One of these options includes offshore renewable energy. Understanding the locations and types of significant archaeological and cultural resources is essential for the preservation of these sites. Archaeologically and culturally significant sites should be considered and avoided when planning for offshore renewable energy development. Some considerations, among others, include resources and areas that are important to the cultural history of the Hawaiian Islands as well as resources and areas important to contemporary Native Hawaiian communities.

As part of the larger project, Maritime Cultural Resources Site Assessment in the Main Hawaiian Islands, Honua Consulting conducted independent research at the State of Hawai‘i Historic Preservation Division and related collections to develop a report and digital file of terrestrial properties that may be visually affected from offshore renewable energy siting. The data collected included historic and archaeological information related to all properties, including those properties nominated to – or eligible for listing on – the National Register of Historic Places, compiled into a geographic inventory, and presented in this report. Additionally, the Contractor drew from a breadth of Hawaiian language resources to develop a wholly unique thematic inventory consisting of two subcategories. The first subcategory is “akua viewsheds” or viewsheds that are significant through their historic association with spiritual figures or deities. The second subcategory is “ali‘i viewsheds,” which are viewsheds that are culturally significant through their association with Hawaiian chiefs. While there is some overlap between the categories, the latter category was primarily developed through Hawaiian language resources, chants, mo‘olelo (stories) and other products of Native Hawaiian intangible cultural heritage, highlighting the value of both native language and oral history resources in identifying culturally significant places.

The result is a new paradigm in approaching the identification of significant sites in Hawai‘i and a truly helpful baseline for assessing how renewable energy projects may impact historic viewsheds. The methodology employed herein is one to model, as it demonstrates that use of federal and state registers alone is largely insufficient in identifying places of historic significance to indigenous populations. This study offers a highly productive alternative, and while it does not presume to have identified every site with its limited time and resources, it has certainly provided its audience with a wholly unique and insightful perspective into how Hawaiian cultural viewsheds are shaped and valued using the full breadth of Hawaiian historical resources available today.

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## Abbreviations and Acronyms

Approx.:	Approximately
BOEM:	Bureau of Ocean Energy Management
BPBM:	Bernice Pauahi Bishop Museum
CFR:	Code of Federal Regulations
famsl:	Feet above mean sea level
GIS:	Geographic Information System
HIHWNMS:	Hawaiian Islands Humpback Whale National Marine Sanctuary
HRS:	Hawai’i Revised Statutes
HVNP:	Hawai’i Volcanoes National Park
ICH:	Intangible Cultural Heritage
KM:	Kilometer
M:	Meter
Mi.:	Mile
NEPA:	National Environmental Policy Act
NHPA:	National Historic Preservation Act
NH:	Natural Heritage

## **Abbreviations and Acronyms (Continued)**

NHL:	National Historic Landmark
NOAA:	National Oceanic and Atmospheric Administration
NPS:	National Park Service
N.R.:	National Register
NRHP:	National Register of Historic Places
OCS:	Outer Continental Shelf
OCSLA:	Outer Continental Shelf Lands Act
ONMS:	Office of National Marine Sanctuaries
POCS:	Pacific Outer Continental Shelf [Office]
SHPD:	State Historic Preservation Division [Hawai'i]
SIHP:	State Inventory of Historic Places
TCH:	Tangible Cultural Heritage
TCP:	Traditional Cultural Property
UNESCO:	United Nations Educational, Scientific and Cultural Organization
U.S.:	United States
U.S.C.:	United States Code
UTM:	Universal Transverse Mercator

# 1 Background

The State of Hawai‘i has mandated a goal of achieving 70% clean energy by 2030. In order to meet this goal, development of offshore renewable energy resources and construction of inter-island transmission cables will be necessary. With passage of the Energy Policy Act of 2005, the Bureau of Ocean Energy Management (BOEM) has assumed jurisdiction for some types of renewable energy development on the Outer Continental Shelf (OCS), and is required under multiple statutes (Outer Continental Shelf Lands Act (OCSLA) of 1978, National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) of 1966) to take into consideration the impacts of OCS activities on archaeological and cultural resources and traditional cultural properties.

Understanding the types and locations of significant archaeological and cultural resources is essential to their preservation and consideration during planning for offshore renewable energy development. This includes, among others, resources and areas important to the archaeology and history of the Hawaiian Islands, as well as resources and areas important to Native Hawaiian<sup>1</sup> communities, both historical and modern. As planning and development for offshore renewable energy projects increases, the potential for impacts to underwater and terrestrial archaeological, cultural, and historical resources, and traditional cultural properties, will increase as well. These impacts can include physical disturbances to archaeological sites, burial grounds and traditional use areas, as well as viewshed impacts to sacred places from offshore siting.

BOEM, an agency of the U.S. Department of the Interior, is charged with the responsibility of considering the effects of its actions on cultural resources that are listed or eligible for listing on the National Register of Historic Places (NRHP). This program arose out of a variety of legislation enacted to ensure proper management and protection of the nation’s cultural heritage. The most pertinent of these laws are the NHPA (as amended), the NEPA, and the OCSLA. To achieve compliance with these laws, BOEM has completed baseline studies in its different regions to better understand the potential for, and types of, cultural resource sites that might be located within its jurisdiction (c.f., Pearson et al. 2003<sup>2</sup>; TRC 2012<sup>3</sup>); no such effort has yet been undertaken for the Hawaiian Islands. BOEM also entered into an interagency agreement with the National Oceanic and Atmospheric Administration’s (NOAA) Office of National Marine Sanctuaries (ONMS) to develop a proactive best-practices tool for characterizing tribal cultural landscapes along the West Coast of the United States (Ball et al. 2015). A similar tool is critical to understanding and identifying areas of importance to Native Hawaiian communities.

This project – Maritime Cultural Resource Site Assessment in the Main Hawaiian Islands – will provide critical information to BOEM in support of its offshore historic preservation responsibilities. The project has three primary components: develop an inventory of submerged cultural resources on the Hawaii OCS; develop an inventory of terrestrial properties on the eight main Hawaiian Islands that could be affected visually by offshore renewable energy siting; and develop a best-practices tool for characterizing indigenous cultural landscapes. This information is necessary under Section 106 of the NHPA, which requires federal agencies to apply the National Register Criteria to properties that may be affected by a federal undertaking. The information will also be used to support reviews under NEPA and other federal laws.

As planning and development for offshore renewable energy projects increase, the potential for impacts to marine and terrestrial archaeological, cultural, and historical resources will also increase. These impacts may include physical disturbances to archaeological sites, burial grounds, and historic and traditional cultural properties. Certain cultural and archaeological properties on shore are significant, in part, for their ‘ikena ma kai (seaward facing viewsheds). More importantly, these viewsheds can be negatively impacted by offshore siting of renewable energy development.<sup>4</sup>

Viewshed analysis is necessary under Section 106 of the NHPA (54 United States Code (U.S.C.) Section 300101 *et seq.*; hereafter referred to as the Section 106 process), which requires federal agencies to “take into account the effect of an undertaking on any historic property.” The information will also be used to support reviews under the NEPA and other federal laws.

## 1.1 Objectives

The objective of this effort was centered on developing a document-based inventory of selected land-based historic and archaeological properties in the eight main Hawaiian Islands that could be adversely impacted by the alteration of the view to the ocean. The islands included in this site assessment are: Hawai‘i Island, Kaho‘olawe, Kaua‘i, Lāna‘i, Maui, Moloka‘i, Ni‘ihau, and O‘ahu. Selected properties are defined by criteria from the NRHP, or the Register. Properties must be eligible for, or listed on, the Register, gaining significance in part from their viewshed toward the sea. Work included:

- Identification of the NRHP listed and eligible historic and archaeological properties—limited to the properties that have a reasonable view of the ocean from normal areas of access. A reasonable view of the ocean means that no special effort must be made to see the ocean (e.g., removal of trees or buildings); normal area of access means that no special effort is required to access the offshore viewshed (e.g., standing on the roof of a structure, climbing nearby trees). It was determined that only areas with public access would be included in this study, where public access is defined and protected under Hawai‘i State law, Hawaii Revised Statutes (HRS) §115-4<sup>5</sup> and HRS §115-5<sup>6</sup>. Generally, under State law, HRS § 46-6.5, it is the responsibility of the counties to manage and maintain public access across the state.<sup>7</sup> Military property<sup>8</sup>, private property where no regular cultural access is provided, state property where special access is required, and areas within the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS)<sup>9</sup> have been excluded from this study as a result of lack of normal access.
- Identification of those properties where the view or viewshed is a justification for the listing (i.e., those properties that would be impacted by an offshore facility within the viewshed).
- Creation of a standardized profile for each location that incorporates relative information that could be accessed through a Geographic Information System (GIS) interface provided on government equipment. Such data must include, but are not limited to: site trinomial, locational coordinates (includes the coordinate system used to record the site and converted geographic NAD83 coordinates in decimal degrees to at least six decimal places), site size, basic description, date range, cultural affiliation, and National Register status (e.g., either nominated, eligible, contributing, district).

- Submission of status reports to ONMS at the end of each calendar month, and a brief discussion of completed tasks, sample draft products when relevant, status of product development, and upcoming events.
- Compilation of inventory data in standardized format, including any existing photos of the locations that may be publicly available. Standardized data will allow the Government to more easily load the information into a GIS project so that information about each site can be accessed later.
- Summarization of all data collected during the course of the project with a narrative report that documents the efforts made. This report is available to the public and contains only non-sensitive<sup>10</sup> information. The report includes a discussion of the repositories examined, methodology used during the investigation, and discussion of the selected properties within the project area.

## **1.2 Deliverables**

The Contractor conducted independent research at the State of Hawai‘i Historic Preservation Division (SHPD) and related collections to develop a report and digital file of terrestrial properties that could be visually affected from offshore renewable energy siting. The data collected includes historic and archaeological information related to all properties, including those properties nominated to-or eligible for-listing on the NRHP.

### **1.2.1 Significance Evaluation of Cultural Properties**

The NHPA, Title 54 of the U.S.C. Section 300101 et seq. and its implementing regulations (36 CFR 800 - Protection of Historic Properties), establish the guidelines for the preservation of historic properties and resources through the United States and any properties in which the U.S. may have jurisdiction, whether through the use of U.S. funds or an impact of U.S. action. Section 106 of NHPA requires federal agencies to consider the impact of any such undertakings.

NHPA established the NRHP, which is a compiled listing of a myriad of sites protected under federal law. The NRHP is designed as “an authoritative guide to be used by federal, state, and local governments; private groups; and citizens to identify the nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment” (36 Code of Federal Regulations (CFR) 60.2). To be eligible for listing in the NRHP, a property typically must be at least fifty years old (or have reached fifty years old by the project completion date) and possess significance in American history and culture, architecture, or archaeology to meet one or more of four established criteria for evaluation (36 CFR 60.4). These criteria are specified in law as follows:

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

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

- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period or method of construction, or that present the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded, or may be likely to yield, information important in prehistory or history.

The Code of Federal Regulations then sets forth “Criteria Considerations,” which state:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or
- A cemetery that derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- A reconstructed building, when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or
- A property achieving significance within the past 50 years if it is of exceptional importance.

Historic resources eligible for listing in the NRHP are considered “historic properties,” and may include buildings, sites, structures, objects and historic districts. A potential historic property less than 50 years of age may be eligible under NRHP Criteria Consideration G if it can be demonstrated that sufficient time has passed to understand its historic importance (NPS 1990).

### **1.2.2 Integrity Evaluation**

To be eligible for listing in the NRHP, a property must also have integrity, which is defined as “the ability of a property to convey its significance.” Within the concept of integrity, the NRHP

recognizes seven aspects or qualities that, in various combinations, define integrity: feeling, association, workmanship, location, design, setting and materials (NPS 1990).

### **1.2.3 Hawai‘i’s Traditional Heritage: Natural and Cultural Resources**

Hawai‘i’s Traditional Heritage is comprised of both natural and cultural elements. Natural elements include the geology, flora, and fauna of the islands. The cultural elements or cultural resources include access to and use of the natural elements, as well as material remains of past human activities, from both historic and pre-European contact (pre-1778 A.D.). Cultural resources also include traditional cultural sites, such as areas used for ceremonies or other cultural activities that may leave no material traces, and may have on-going use important to the maintenance of cultural practices.

For cultural resources qualifying as historic properties, protection is afforded under the NHPA, which defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register, including artifacts, records, and material remains relating to the district, site, building, structure, or object.” The criteria for evaluating eligibility for listing on the NRHP are listed in the previous section.

If a cultural resource can be demonstrated to meet the criteria for listing on NRHP, it may qualify as a listed historic property. Therefore, direct and indirect impacts to that historic property should be avoided and mitigated appropriately. Additionally, NEPA requires consideration of cultural resources.

### **1.2.4 Cultural History and Uses**

One of the most important tenants of a Native Hawaiian worldview is located in a dualistic philosophy rooted in the inseparable relationship between the ‘āina (land) and the kai (sea). The Kumulipo (literally, “source of deep darkness”) is a Hawaiian cosmogonic genealogy that recounts the emergence of the universe, including geological and other natural phenomenon, and all forms of life, both flora and fauna, aquatic and terrestrial. The Kumulipo is organized into sixteen wā (epochs, periods of time): plant, animal, and akua (gods or deities) are born in the first eight wā, kanaka (humans) in the second. From the birth of the first corals and aquatic life to the birth of kanaka, each wā contains the birthing of paired life forms, one from the ‘āina and one from the kai (Beckwith 1972). Kumulipo reflects a Hawaiian worldview that kanaka are the younger siblings to and descendants of nature. It is a Polynesian concept that the kaikaina (younger siblings) care for and respect the kua‘ana (older siblings), as the kua‘ana cares for and protects the kaikaina. This reciprocal relationship between nature and humans is reflected in the concept of mālama ‘āina (to cherish, care for the environment), a remarkable ecosystem management approach that evolved to a high state of practices in pre-western times and continues to be a model of cultural best practices for environmental management within the Native Hawaiian community today.<sup>11</sup>

Therefore, it is not surprising that a vast array of sites and locations that support cultural practices, access, traditions and use that benefit from and support a mālama ‘āina and ecosystem-based management practices are found throughout the Hawaiian archipelago.

Moreover, such cultural activities and practices serve as the foundations of three strands of Hawaiian cultural heritage: tangible cultural heritage (TCH), intangible cultural heritage (ICH), and natural heritage (NH). TCH resources are physical sites and locations where Hawaiian culture was and often continues to be practiced. TCH resources include heiau (temples of religious worship; various types). ICH resources are performance or human-related practices that include: hula (dance), mele (song), oli (chants), mo‘olelo (histories, stories), mo‘okū‘auhau (genealogies), and other oral histories and traditions. NH resources are naturally occurring geological and environmental resources utilized for cultural practices that require little or no human intervention in preparing the resource for use. An excellent example of a Hawaiian NH site is Kīlauea and Mauna Loa volcanoes. Collectively known as Hawai‘i Volcanoes National Park, the park became a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage site in 1987, listed under NH criteria, specifically its geological and ecological universal world value.

A list of Hawaiian cultural heritage vocabulary containing examples of all three categories of terms is found in Appendix 2.

A wide array of cultural resources and sites, including nā ‘ikena kai (seaward facing viewsheds) are found throughout the Hawaiian Islands. While many of these sites may not fit the requirements and are thus not eligible for NRHP designation, some cultural resources are nonetheless protected under NHPA and NEPA. Therefore, these should be documented, treated with the same considerations, and any potential adverse impacts mitigated accordingly. The following section discusses Hawaiian concepts of viewsheds and provides specific examples of nā ‘ikena kai via a viewshed inventory.

## **2 Viewshed Inventory**

### **2.1 Introduction**

The Native Hawaiian worldview of the natural world is a holistic one, not only containing an interwoven view of island, ocean, and atmosphere, but the physical and spiritual aspects of the world. This concept is embedded and reflected in kanaka interactions with the environment and in cultural practices in multiple ways, beginning with ‘ōlelo Hawai‘i (Hawaiian language), which includes an immense vocabulary describing every aspect of nature. A sophisticated method of species classification, and a system of recording and transmitting knowledge, are just two brief examples of such a worldview translated into cultural practice.

In this way, Native Hawaiians recognize remarkably distinct and separate elements of earth, sea, and sky, while engaging fluidly and seamlessly across them. Thus, nā ‘ikena kai embodies all three: a point on land where the ocean is visible through the atmosphere. The connection between kanaka and all three elements is critical in certain Hawaiian cultural practices, such as traditional land and resource management.

Traditional Hawaiian land and resource management combined an expert understanding of Hawai‘i’s ecology with strong spiritual beliefs, resulting in a sustained and prosperous society. Evidence of such practices are codified through a dense collection of information, ranging from primary sources such as oli, mele, and mo‘olelo, to secondary written accounts by Native Hawaiians and outside observations by explorers, missionaries, and settlers from the period of western contact (1778) forward. Prior to the arrival of the American Calvinist missionaries in 1820, there was no indigenous written language in Hawai‘i.<sup>12</sup> Thus, traditional Hawaiian knowledge of place was carefully memorized and consciously transferred from one generation to the next, mapped through oli, mele, mo‘olelo, inoa ‘āina (place names), and ‘ōlelo no‘eau (proverbs).

The ocean has a significant presence when experienced from an island. In Hawaiian culture, Kanaloa is the primary deity of the sea, one of the major four male gods of traditional times; the other three gods are Kāne, Kū, and Lono. The ocean and shore are critical environments for Native Hawaiians; an important source of sustenance, recreation, transportation, inspiration, spiritual practice, and healing. Thus, nā ‘ikena kai are important to recognize and protect.<sup>13</sup> In this way, viewsheds have significant value and purpose. Cultural practices associated with nā ‘ikena kai included the spiritual (communication with gods and ancestors), political (planning military strategy in battle), recreational (surfing), healing (gathering medicinal and healing plants from the sea), and natural resource management (managing fisheries).

Local information and practices in specific ahupua‘a (traditional land division) or other designated localities are important to recognize as the local communities are likely to assign additional significance to an area, based on their specific knowledge of the use and history of such a place. Local knowledge often also incorporates traditional indigenous knowledge. Unfortunately, such knowledge does not qualify a location for inclusion on the NRHP, making it more challenging when trying to protect such sites. However, when planning future activities, it is important to research and include such knowledge regarding a place’s significance as determined by the local community of that place.

## **2.2 Methodology and Presentation of Inventory**

### **2.2.1 Methodology**

Historian and Hawaiian language scholar M. Puakea Nogelmeier wrote: “For generations, knowledge about Hawai‘i has been limited at every level by scholarship that accepts a fraction of the available sources as being sufficient to represent the huge collection of material that actually exists. Over a century of documentation by Hawaiian writers has been ignored or dismissed...” (Nogelmeier 2010). This study looks to contributing to correcting this unfortunate trend.

Thousands upon thousands of examples are archived in oral and literary traditions, demonstrating the significance of place or wahi pana (places made legendary because of significant events associated with such places) in Hawaiian cultural practice. Such events are most commonly associated with akua, kupua (demi-gods or cultural heroes) or ali‘i (chiefs). Some accounts of such events are considered, for example, as fictitious from a western perspective, but historically valid from a Native Hawaiian one. In fact, the word mo‘olelo means

both story and history and traces its root meaning to oral tradition (mo‘o ‘ōlelo is a “succession of words” or a reference to oral tradition).<sup>14</sup> In this way, many geological features across the archipelago are associated with the legendary deeds of akua. One example is the Kualoa region of O‘ahu. The small island located just off shore at Kualoa Beach Park is commonly referred to in contemporary times as “Chinaman’s Hat,” but is actually named Mokoli‘i (little lizard). The plain that the park is built upon is Kualoa (long back), and the small valley next to the plain is Hakipu‘u (broken hill). One of two large fishponds along the shore spanning Hakipu‘u and Kualoa is called Mōli‘i (variant of “little lizard”).

In the mo‘olelo of Hi‘iakaikapoliopole, the youngest and favorite sister of the Hawaiian volcano goddess Pele, the giant mo‘o akua (lizard deity) named Mokoli‘i blocks Hi‘iaka’s path as she travels through the region and refuses to move, so they battle. Hi‘iaka slays Mokoli‘i; his large body is strewn across the plain (kua loa), his broken back (haki pu‘u) the valley, his tail stretched out into the sea, the little (li‘i) tip of the mo‘o’s tail jutting out of the sea (Ho‘omanawanui 2014).

Because what constitutes significance is subjective, based on the values, beliefs and practices of a culture, many significant wahi pana in Hawaiian culture are unrecognized (formally and informally, by state or federal entities) outside of a culturally-specific context. This has created challenges to get significant places recognized and protected, particularly when crossing land, sea, and atmospheric boundaries.

As Native Hawaiian geographer Kamanamaikalani Beamer wrote, “palena [land boundaries] were not mapped on paper during the time of Mā‘ilikūkahi [the O‘ahu chief credited with the creation of the ahupua‘a system], but maintained on the ground and in the minds of maka‘āinana [working class] and ali‘i [chiefs]” (Beamer 2014). This is part of what geography-trained Hawaiian language professor Kapā Oliveira identifies as “Kanaka geographies,” which are dependent upon “connections to ‘āina, and ancestral knowledge systems” (Oliveira 2014). Beamer, Oliveira, and Hawaiian literature professor Ku‘ualoha Ho‘omanawanui’s work draws on primary Hawaiian language sources, and Oliveira and Ho‘omanawanui in particular highlight mele and mo‘olelo as important sources of geographical information, including inoa ‘āina (place names) and specific geological features. Before the introduction of writing in the 19th century, mele and mo‘olelo were carefully memorized and verbally transmitted through performances of song, chant, and dance.<sup>15</sup>

While this study utilized the methods employed by similar studies conducted across the United States for searching federal and state registries of historic places, it also expended tremendous resources exploring Hawaiian language sources. It is estimated that the Hawaiian language archive exceeds one million typed pages (Nogelmeier 2010), of which only a very small fraction has been utilized in Hawai‘i’s modern cultural resource management discourse. Use of Hawaiian language resources revealed significant gaps in the existing registries and therefore, a thematic inventory was created to organize the large amount of information gathered from these resources.

## **2.2.2 Presentation of Inventory**

The inventory is divided into two general sections: a thematic and a geographic inventory. The thematic inventory is a collection of viewshed locations identified by their significance in the

intangible cultural heritage (ICH) of the Native Hawaiian people; these are sites identified because they appeared in mo‘olelo about akua, kupua or ali‘i from the traditional, pre-western contact (1778) period. The geographic inventory is a systemic review of all coastal areas with normal access that has been cross-referenced with the ICH, NH, and TCH databases and assessed for integrity and significance where appropriate. This geographic inventory includes all historic and archaeological sites listed on the State and National Registers that have a clear or potential viewshed and were not excluded from consideration per the eligibility standards set forth in Section 1.1.

The thematic definition of “viewshed” is expanded to incorporate intangible Hawaiian cultural heritage, which, like most indigenous ICH, is often non-linear and non-literal. Recognizing that the goal of this study is to develop both a methodology and inventory that serves as an effective guide in helping agencies and other parties to identify culturally significant viewsheds, it was critical to establish two points:

1. Most state and federal inventories are generally insufficient in encompassing the breadth of sites indigenous peoples consider significant; and
2. An indigenous worldview often differs from a western one. Therefore, this study aims to address both of these issues through the development of a definition of viewshed that allowed for closer alignment with prevailing indigenous epistemologies and a survey of resources beyond those available in state and federal databases.

Considering the time and resource limitations of the study, the goal was to develop an effective model that can be utilized with additional resources when applicable projects arise. Acknowledging that studying cultural resources often involves the collection and management of sensitive information, this study considers indigenous knowledge and the concept of kapu (sacred, private), and noa (free from restriction), and thus includes only publicly available (published) resources (Ho‘omanawanui 2014).

Both primary and secondary source materials in the Hawaiian language and in English were consulted. Archival materials include but are not limited to: oral traditions such as mele, mo‘okū‘auhau, and mo‘olelo. Hawaiian language sources include newspapers, books, and unpublished manuscripts (available in various archives and libraries). Other primary source materials used include: the Māhele database, land court, census and tax records (including oral and written testimonies), vital statistics records, family histories, previously published or recorded ethnographic interviews and oral histories, community studies, maps and photographs, correspondence, newspapers or almanac articles, and journals. Secondary source materials, such as historical, sociological and anthropological texts and manuscripts, and similar published and unpublished materials were also consulted. Other materials that should be examined include prior land use proposals as well as court and administrative decisions and rulings, which pertain to a study area.

In the future, additional research of historical documents, and interviews with lineal and cultural descendants will be instrumental in procuring information about a project area’s transformation through time, and relevant changing uses. At such time, protocols implementing the concepts of kapu, noa, and kuleana (responsible actions, behavior, and decision-making) for the purpose of

safeguarding and protecting community participants and the information they share should be instituted.

To this end, in addition to this report on Hawaiian viewsheds, BOEM also commissioned a report on Native Hawaiian cultural landscapes that develops a framework for working with Hawaiian organizations to, among other things, identify and collect information related to the siting of renewable energy projects. This framework will address the handling of sensitive information, such as the location of spiritual sites, fishing sites, and other sites that may not be publicly known (Van Tilburg et al. 2017). The framework will also address management of this information.

The following section identifies Hawaiian cultural viewsheds related to akua, kupua, and ali'i, and thus makes up the thematic inventory of resources. This inventory is not intended to be comprehensive, only demonstrative. Localized application of the methodology at individual areas of project site placement is encouraged.

### **3 Nā 'Ikena Akua (Akua Viewsheds)**

This report presents the thematic inventory in two parts: Nā 'Ikena Akua and Nā 'Ikena Ali'i. Part I, Nā 'Ikena Akua, is a listing of viewsheds related to Hawaiian deities and demi-gods. Part II, Nā 'Ikena Ali'i, is a listing of viewsheds relevant to specific ali'i and historical events.

What is specifically important about identifying akua viewsheds is that major deities and many demi-gods have kino lau (body forms), which manifest in nature. For example, the four main male deities are not only associated with specific elements of nature, such elements are also kino lau of these akua. Ocean-related kino lau of Kanaloa include sea creatures, such as nai'a (dolphin), koholā (whales), and the ocean itself. These are balanced by land-based kino lau such as 'uhaloa (*Waltheria indica*, a medicinal plant), mai'a (banana), and the island of Kaho'olawe (Kanahele 2007).

#### **3.1 Pelehonuamea: an Example**

An example of how knowledge of Hawaiian akua is important to understanding cultural viewsheds is provided here with Pelehonuamea (Pele), the female deity of the Hawaiian volcano. Pele traveled extensively across the Hawaiian Islands, beginning with her arrival from Kahiki (Tahiti; foreign lands outside of Hawai'i), and her landing on each of the main islands in a particular order. One reason for her extensive travels is her search for a suitable home to tend her volcanic fires. A subsequent outcome of detailing her travels is to provide culturally-important information about significant wahi pana on each island associated with Pele because it is a landing site, a resting site, a geological formation, an introduced plant species or cultural practice associated with her. The interconnection between terrestrial, marine, and atmospheric spheres are deeper in Hawaiian culture than they initially appear. The interconnection between kanaka, 'āina and kai is further reinforced in the understanding that mo'olelo is a tangible and intangible cultural heritage resource, which is key in research on places under consideration for any kind of development.

### **3.1.1 Mai Kahiki Mai: Pele travels from Kahiki to Hawai'i**

As recent research on Pele by Dr. Ku'ualoha Ho'omanawanui demonstrates, there are numerous versions of the mo'olelo constituting thousands of pages of written record. Most of these are in the Hawaiian language and the majority of them have never been translated or published in English. Mo'olelo contain hundreds of oli, mele, hula, and other culturally important types of traditional indigenous knowledge, awaiting further recovery and use (Ho'omanawanui 2014). Thus, what is presented here is merely a brief summary for illustrative purposes only.

In several versions of the mo'olelo, Pele is a woman who travels from Kahiki on a canoe steered by her kaikūnane manō (shark-brother) Kamohoali'i, accompanied by a large entourage of other relatives (primarily uncles and siblings). They arrive at the islands of Ka'ula, then Ni'ihau, the northwestern point of the main Hawaiian Islands. They land at several sites and interact with kama'āina (residents) of different areas, and make their way down the island chain, Pele stopping here and there along the way, digging to find a suitable place to make her home and tend her volcanic fires. She is unsuccessful, hitting water everywhere she digs, until she arrives on the island of Hawai'i, successfully settling at Kīlauea volcano, and making her home in the crater of Halema'uma'u. The following map (Figure 1), created by Ho'omanawanui, documents this journey and the places Pele landed and visited (Ho'omanawanui 2014).

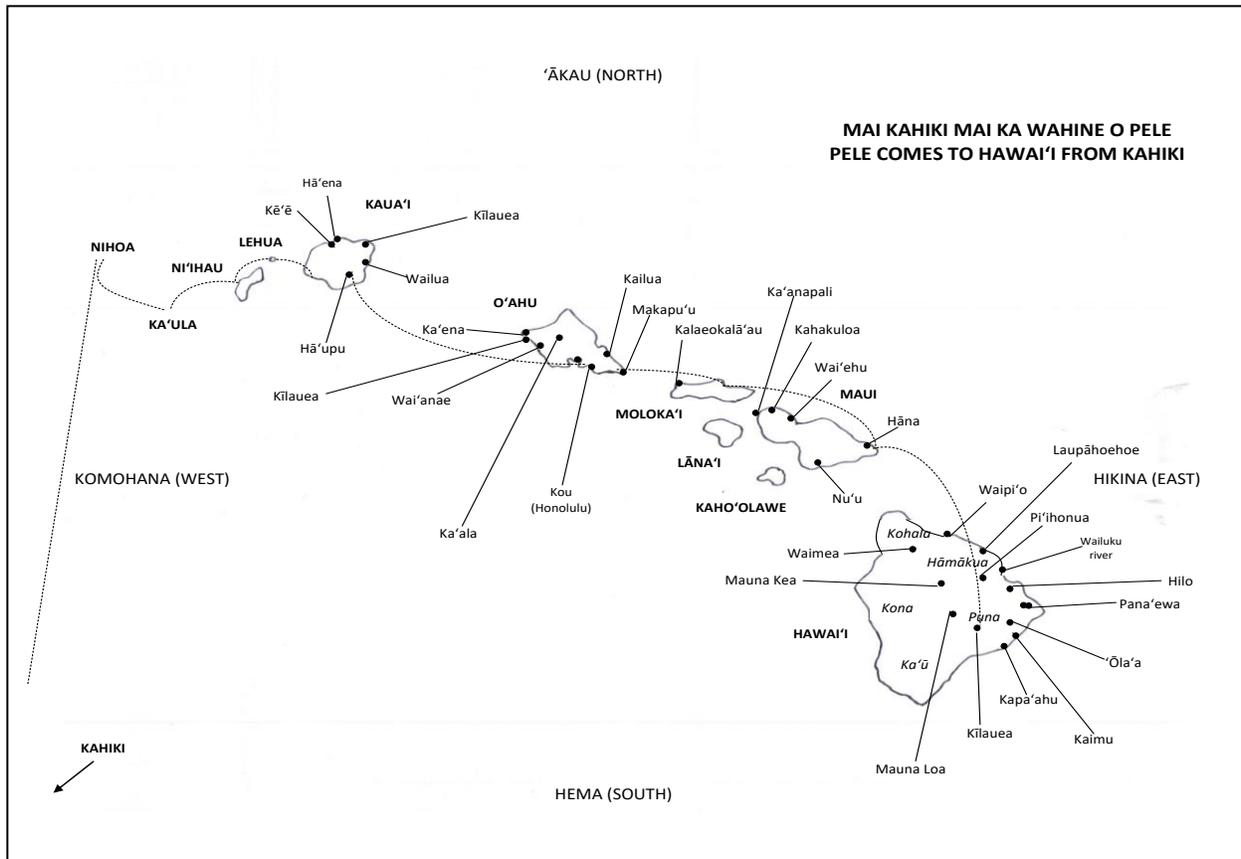


Figure 1: Pele's Journey from Kahiki to Hawai'i Island (Ho'omanawanui 2014)

The wahi pana, including canoe landing sites (i.e., where she landed), residential sites (i.e., where she resided), places Pele visited, and geological features she is credited with creating, are all associated with her search for a home, and are included in the following list of locations (Table 1), taken from Ho'omanawanui's *Voices of Fire* (2014). These places are presented in the order of Pele's migration down the island chain (see Figure 1).

**Table 1. Significant locations on the islands**

Island	Location	Significance
<b>Ka'ūla</b>	Unspecified	Digs a large crater here.
<b>Ni'ihau</b>	Unspecified	Landing site; befriends the ali'i wahine Kaoahi.

**Table 1. Continued**

<b>Island</b>	<b>Location</b>	<b>Significance</b>
<b>Kaua‘i</b>	Pu‘uopele	<i>Lit.</i> Hill of lava. Area above Waimea, west Kaua‘i associated with Pele’s visiting there.
	Nōmilu	<i>Lit.</i> Whirlpool. Also Honomilu. Cinder cone and fishpond about 20 acres in size created by Pele. When the volcano erupts, sulphur can be smelled here. A salt gathering place; salt offerings made to Pele here.
	Kīlauea	<i>Lit.</i> Spewing and spreading (of lava). Land area, north Kaua‘i, Halele‘a district, named for Pele visiting and digging for a home here; one of three Kīlauea, the other two being on O‘ahu and Hawai‘i island.
<b>O‘ahu</b>	Āliapa‘akai	<i>Lit.</i> Salt pond. A salty pond at Moanalua, O‘ahu created by Pele.
	Kīlauea	Small cove at Keawa‘ula, O‘ahu created by Pele.
	Lae‘ahi (Lē‘ahi)	<i>Lit.</i> Forehead of the tuna fish. A volcanic hill on the south side of O‘ahu, now called “Diamond Head,” created by Pele who stayed here for a time.
	Pūowaina	<i>Lit.</i> Hill for placing human sacrifices. Volcanic hill on the south side of O‘ahu, now called “Punchbowl,” created by Pele who stayed here for a time.
<b>Moloka‘i</b>	Kauhakō	<i>Lit.</i> Dragged large intestine of a chief. Brackish water crater dug by Pele on the Kalaupapa peninsula searching for a home; finds water and abandons her efforts.
	Kawela	<i>Lit.</i> The heat. Pele stayed here for a time.
<b>Maui</b>	Haleakalā	<i>Lit.</i> The house of the sun. Volcano; in one mo‘olelo, Pele creates Haleakalā, in another, she battles with her sister Nāmakaokaha‘i, where she is defeated and her bones rest. Her spirit travels on to Hawai‘i Island, where she is also responsible for a number of lava flows.
<b>Hawai‘i</b>	Keahialaka	<i>Lit.</i> The fire of Laka. Pele’s arrival point in Puna, Hawai‘i island. From here she makes her way upland and inland in her search for a suitable home.

**Table 1. Continued**

<b>Island</b>	<b>Location</b>	<b>Significance</b>
<b>Hawai‘i (continued)</b>	Pu‘ulena Crater	<i>Lit.</i> Yellow (sulphur) hill. Second crater created by Pele (after Malama) in her search for a home on Hawai‘i island.
	Kalaunui‘ōhua	<i>Lit.</i> The great number of servants; name of an ancient ali‘i of Hawai‘i. Third crater created by Pele in her search for a home on Hawai‘i Island.
	‘Ōhuanui	<i>Lit.</i> Large ‘ōhua fish; a great number of servants. Forth crater created by Pele in her search for a home on Hawai‘i Island.
	Kīlauea	Largest of craters created by Pele in her search for a home on Hawai‘i Island; the active volcano where Pele makes her home.
	Kīlauea‘iki	<i>Lit.</i> Little Kīlauea. A portion of the active volcano created by Pele in her search for a home on Hawai‘i island; where Pele makes her home.
	Halema‘uma‘u	<i>Lit.</i> House of ‘ama‘uma‘u fern. The large crater at Kīlauea; where Pele makes her permanent home.

The large number of wahi pana associated with Pele across the Hawaiian archipelago are typical of akua and ali‘i, who frequently travel from island to island and place to place. Nā ‘ikena kai are important from both the perspective of seafarers and navigators looking for terrestrial landmarks to navigate to the next location, and vice versa (looking out from terrestrial locations to the sea and across the sea to other terrestrial reference points). Thus, the ocean provides a clear viewplane to successfully navigate from place to place.

Pele is certainly not the only akua figure who is integrally connected to Hawaiian viewsheds. The following list of akua and kupua figures is compiled from a range of primary Hawaiian language archival and other sources (Table 2). The name of each akua or kupua figure is listed in the left column, a description of their significance in the center, and the places they are associated with in the right-hand column.

**Table 2. Nā 'Ikena Akua**

<b>Akua</b>	<b>Description</b>	<b>Primary Location Marine Viewshed Association</b>
<b>'Ai'ai</b>	<i>Lit.</i> Dependent. Son of Kū'ula and Hinapukui'a, who established ko'a (fishing shrines where fish come to feed) throughout the islands. 'Ai'ai created the custom of offering two fish on the ko'a, one dedicated to Kū'ula, and one to Hinapukui'a.	Hāna, Maui; locations of fishing ko'a throughout the islands
<b>Ha'eha'e</b>	This younger brother of the famous navigating ali'i Moikeha, sails from Tahiti to Hawai'i. They land at the easternmost point of Puna, then sail on to Hilo. Later, the cape is named for him and is marked by a red stone. In another mo'olelo, one of Kumukahi's two wives, the other being Makanoni; both wives also have stone forms there. The movement of the sun's rising points back and forth between the stones marks the seasons (Fornander 1916-20).	Ha'eha'e, Puna, Hawai'i
<b>Hainakolo</b>	Daughter of the deities Kūwahailo and Hina, sister of Olopana (Fornander 1916-20).	Waipi'o, Hawai'i
<b>Halelehua</b>	<i>Lit.</i> Lehua house. Female ocean deity who lives in Ka'ie'ie channel between Kaua'i and O'ahu. From Kaua'i.	No associated viewshed
<b>Haluluiekekihiokamoku</b>	<i>Lit.</i> Thunderous roar at the outer edge of the island. Legendary human-devouring bird from Kahiki who has a human kino lau (Fornander 1916-20).	No associated viewshed
<b>Haumakapu'u</b>	Deity worshipped by fishermen and fishpond caretakers (Malo 1951).	No associated viewshed
<b>Haumea</b>	A powerful female deity; form of the earth mother Papahānaumoku; goddess of fertility. Reborn multiple times. Often the wife of Wākea and Kanaloa; first traveled to Hawai'i with the male deities Kāne and Kanaloa. Mother of many of the most powerful female deities, such as Pele and Kapō'ulakīna'u, from different parts of her body (Fornander 1916-20).	No associated viewshed
<b>Hauwahine</b>	The female mo'o deity of the marshlands of Ka'elepulu and Kawainui, Ko'olaupoko, O'ahu. Worshipped by fishermen. Provider of fish; punished owners of the associated ponds if they were oppressive to the poor (Fornander 1916-20).	Kaelepulu and Kawainui marshes, Ko'olaupoko, O'ahu

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Hi‘iakaikapoliopele</b>	<i>Lit.</i> Entwined in the bosom of Pele. Youngest and most favored sister of the female volcano deity Pele. There are as few as eight to as many as 40 other Hi‘iaka sisters, none as renown as this sister, who is often just called Hi‘iaka. She travels to Hawai‘i from Kahiki with her family. Befriends Hōpoe, becomes deity of hula. Travels to Kaua‘i for her sister Pele to fetch Pele’s dream lover, the Kaua‘i chief Lohi‘au, battling obstacles along the way (Ho‘oulumāhie 2013; Emerson 1915).	Kīlauea, Kea‘au, Puna
<b>Hina</b>	<i>Lit.</i> Prostrate, gray. Major female deity found throughout Polynesia as Sina, ‘Ina. Arrives to Hawai‘i with Kū (Tū elsewhere in Polynesia). Associated primarily with kapa (quilt) making, childbirth, and healing (Fornander 1916-20; Desha 2000).	No associated viewshed
<b>Hinahele</b>	<i>Lit.</i> Traveling Hina. Female deity worshipped by women and fishermen (Malo 1951).	No associated viewshed
<b>Hinaikamalama</b>	Also Hina‘aiikamalama. <i>Lit.</i> Hina of the moon, Hina who rules the moon. Female deity born in the sea of Kahikihonuakele (Tahiti land of navigators). She escapes her cruel husband ‘Aikanaka and goes to the moon where she becomes a goddess of kapa. In her escape her leg is injured, and she is known thereafter as Lonomuku (lame messenger). She is also an island floating on the sea who becomes a gourd bailer for the canoe, and is thus known as Hinaikekā (Hina the bailer). Mother of Hinaikeahi (Hina in the fire). In some versions, a grandmother, in others a mother, and in some others a sister of the demi-god Maui. Associated with Hina‘ōpūhalako‘a (Hina stomach passing coral) (Fornander 1916-20; Desha 2000).	Hinahānaiikamālama
<b>Hinapukui‘a</b>	<i>Lit.</i> Hina gathering fish. Wife of Kū‘ula, mother of ‘Ai‘ai. Associated with the reef areas. Worshipped by fisherwomen who gathered seafood on the reefs.	Hāna, Maui
<b>Ka‘ahupāhau</b>	Female shark deity of Pu‘uloa (now Pearl Harbor), sister to the male shark deities Kānehunamoku and Kamohoali‘i, wife of the shark deity Kūhaimoana. An ‘aumakua (family god) for some Native Hawaiians today.	Pu‘uloa, O‘ahu (destroyed)

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Ka‘ehuikimano o Pu‘uloa</b>	<i>Lit.</i> The little red shark of Pu‘uloa (long hill, now Pearl Harbor). A shark god of Puna, Hawai‘i, born of humans at Pānau, Puna. He was named for the reddish (‘ehu) hair and possible skin color of the shark goddess Ka‘ahupāhau who lived at Pu‘uloa, Kona, O‘ahu. He was raised on ‘awa ( <i>Piper methysticum</i> ) mixed with breast milk.	Puna, Hawai‘i
<b>Kaholiakāne</b>	Also Kaholeakāne. <i>Lit.</i> The sprout of Kāne. Akua manō of the ali‘i nui Kalani‘ōpu‘u at the time of Kamehameha I’s rise to power. The shark lived in a cave at Puhi, Kaua‘i. Associated with the akua manō (shark) Kua.	Puhi, Ha‘ikū, Kaua‘i
<b>Kahuaka‘iapā‘oa</b>	Also Kaleiapā‘oa, Pā‘oa. “The great friend of Pele’s lover, Lohi‘au. When Hi‘iaka at Hā‘ena restored Lohi‘au to life, Kaua‘i, a messenger was sent to tell Pā‘oa, on a trip to Ni‘ihau. After Pele killed Lohi‘au, his spirit summoned Pā‘oa to Kīlauea, where he met Pele and her sisters, succumbed, and spent three days with Pele. Pā‘oa bear the same name as Pele’s divining rod with which she tested the suitability of Nihoa, and various places on O‘ahu and Maui for her excavations” (Fornander 1916-20; Pukui and Elbert 1971).	Hā‘ena, Kaua‘i; Ni‘ihau; Nihoa; Papahanau-mokuākea
<b>Kamapua‘a</b>	<i>Lit.</i> Pig child. Pig kupua who lives in the verdant forest lands. Most closely associated with Kali‘uwa‘a, Ko‘olauloa, O‘ahu and Kapōlei, Kona, O‘ahu. Battles the volcano goddess Pele, the ali‘i Olopana, and Lonoka‘eho. Kino lau include: kukui, sweet potato, ‘āma‘u fern, kukae pua‘a grass, mullet (pua‘a kai), pua‘a hulu ‘ole ( <i>lit.</i> hairless pig; the young leaves of the kalo shoots) and the humuhumunukunukuahupua‘a fish (Kame‘eleihiwa 2003).	Kaliuwa‘a, Ko‘olauloa, O‘ahu, Pu‘uokapōlei, Kona, O‘ahu
<b>Kamohoali‘i</b>	<i>Lit.</i> The chiefly candidate; the royal moho ( <i>Pennula sandwichensis</i> , rail) bird. Male fishing deity. Akua manō, navigator, and brother of Pele who resides in the sea surrounding Kaho‘olawe (Ho‘oulumāhie 2013; Desha 2000).	Kaho‘olawe

Table 2. Continued

<b>Akua</b>	<b>Description</b>	<b>Primary Location Marine Viewshed Association</b>
<b>Kana</b>	Kupua born in the form of a rope on the island of Maui. He could stretch his body from Moloka‘i to Hawai‘i and wade into the deep sea. His exploits and adventures account for “gashes, ledges, and footprints on the islands.” He restored the sun, and with his brother Nīheu, rescued his mother Hina who was held captive by a Moloka‘i chief (Malo 1951; Pukui and Elbert 1971).	Maui
<b>Kanaloa</b>	One of the four primary male deities in Hawai‘i and across Polynesia (Tangaroa, Ta‘aroa). Ocean god. Companion of Kāne. Kino lau include: the ocean, marine animals, and banana (Fornander 1916-20).	Ocean
<b>Kāne</b>	<i>Lit.</i> Male. One of the four primary male deities in Hawai‘i and across Polynesia (Tāne). Associated with sunlight, fresh water, and forests. There are more than 70 known epithets for Kāne. Kino lau include: water-bearing plants such as kalo, palapalai fern and maile; pueo; lightning, thunder, rainbows, sun, winds, and fire. Vegetation with kala (forgiveness) in its name, such as pua kala and limu kala, and the kala fish are also kino lau of Kāne. Associated with the ocean deity Kanaloa; both came from Kānehūnāmoku (Kāne’s hidden island). The twenty-seventh night of the lunar month was sacred to Kāne (Desha 2000; Fornander 1916-20).	No associated viewshed
<b>Kāne‘āpua</b>	<i>Lit.</i> Fishtrap Kāne. Male fishing god most closely associated with Kaunolū, Lāna‘i where a nearby islet is named for him. A brother of Wahanui, a voyager bound for Kahiki, passed Kaunolū point, and Kāne‘āpua called out to him to stop. Wahanui replied that his canoe was full, but Kāne‘āpua raised a storm, so Wahanui stopped to pick him up. Kāne‘āpua quieted two kupua hills, Paliuli (dark cliff) and Palikea (white cliff) that clashed together, destroying canoes. He is a kupua with a bird kino lau (Pukui and Elbert 1971).	Kaunolū, Lāna‘i

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Kānehoalani</b>	<i>Lit.</i> Royal companion Kāne. An important form of Kāne, the principle male deity of sunlight, forests, and freshwater. A father or ancestor of Pele. A mountain behind Kualoa, O‘ahu, is named for him. Kapapa island in Kāne‘ohe Bay in the sea at Kualoa is one of Kānehoalani’s female counterparts (Desha 2000; Pukui and Elbert 1971).	Kualoa, O‘ahu
<b>Kānehunamoku</b>	<i>Lit.</i> Hidden island Kāne. An ‘aumakua who carried away the bodies of his worshipers when they died. Kāne and Kanaloa lived on a mythical island of the same name that was believed to be visible off Hāna, Maui, on certain days; some called it a beautiful floating cloud (Pukui and Elbert 1971; Fornander 1916-20).	Hāna, Maui
<b>Kānekoa</b>	<i>Lit.</i> Warrior Kāne. Male fishing deity.	No associated viewshed
<b>Kānekōkala</b>	<i>Lit.</i> Porcupine fish Kāne; thorny Kāne. Male fishing deity.	No associated viewshed
<b>Kānemakua</b>	<i>Lit.</i> Male parent. Male fishing deity.	No associated viewshed
<b>Ka‘ōnohiokalā</b>	<i>Lit.</i> The eyeball of the sun. A sky-dwelling god who conducted the souls of dead chiefs (see Kūwahailo). Also a supernatural being who lived in the sun. He was taken to Paliuli as a prospective husband for Lā‘ieikawai. They went to the sun to live, but on a later journey to the earth he was unfaithful, and Lā‘ieikawai banished him to become the first wandering spirit or ghost (Pukui and Elbert 1971).	Paliuli, Puna, Hawai‘i
<b>Kapō‘ulakīna‘u</b>	Alternatively called Kapō, Kapōkohelele (“Kapō and the flying vagina”). <i>Lit.</i> the red-spotted eel night. Powerful female deity of hula and ‘anā‘anā (life and death-dealing arts) who was a daughter of Haumea and older sister of Pele. She traveled to Hawai‘i from Kahiki, and made her way down the archipelago from Ni‘ihau to Moloka‘i where she settled at Maunaloa. Her hula kino lau include: halapēpē, which is why it is used to adorn hula kuahu (Pukui and Elbert 1971).	Maunaloa, Moloka‘i; Kalihi, O‘ahu; Koko Head, O‘ahu

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Kapō‘ulakīna‘u continued</b>	Saved Pele from being raped by Kamapua‘a by sending her flying vagina (kohe lele) as a lure. Kamapua‘a followed this to Kohelepelepe (now Koko Head), Kona, O‘ahu, which still retains its shape. Later Kapō‘ulakīna‘u hid it in Kalihi Valley.	
<b>Kau‘i</b>	<i>Lit.</i> Attractive. Brother of Lepeamoā. Born at Wailua, Kaua‘i. Grows quickly to adulthood by bathing in a special spring. Goes to O‘ahu and meets his sister; returns to Kaua‘i to assist his father in defeating the evil akua Akuapehu‘ale.	Wailua, Kaua‘i
<b>Kauila</b>	<i>Lit.</i> The lightning. Female deity with a honu (turtle) kino lau and an ‘aumakua for people of Punalu‘u, Ka‘ū, Hawai‘i.	Punalu‘u, Ka‘ū, Hawai‘i
<b>Kawelo</b>	<i>Lit.</i> The fluttering (like a flag). Kupua figure born at Hanamā‘ulu, Kaua‘i, who killed ‘Aikanaka’s warriors and finally drove ‘Aikanaka into exile. ‘Aikanaka was a Kaua‘i ali‘i who had abused Kawelo’s parents (Kamakau 1961; Fornander 1916-20). Also a species of fish and sweet potato.	No associated viewshed
<b>Keali‘ikau o Ka‘ū</b>	Male shark deity who protected the Ka‘ū people from other sharks. Cousin of Pele, son of Kua. Had a relationship with a young woman of Waikapuna, Ka‘ū, who gave birth to a beneficent green shark (Pukui and Elbert 1971).	Ka‘ū, Hawai‘i
<b>Keaomelemele</b>	<i>Lit.</i> The golden cloud. Female deity associated with the golden colored clouds and sky at sunrise and sunset.	Waolani, Nu‘uanu, O‘ahu
<b>Kū</b>	<i>Lit.</i> Standing upright. One of the four main male deities found throughout Polynesia (Tū, Tuwhirimātea). Male deity associated with warfare, agriculture, and healing. Manifested in many forms. Kino lau include: coconut, breadfruit, and ‘ōhi‘a lehua.	No associated viewshed

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Kua</b>	<i>Lit.</i> Back(bone). An akua manō of Ka‘ū, Hawai‘i, considered an ancestor to Hawaiians of that region. Along with the akua manō Kaholiakāne, he raised a storm between Kaua‘i and O‘ahu in order to prevent the marriage of their divine relative, Pele to the Kaua‘i ali‘i Lohi‘au. Possibly shortened from Kua a Wākea (Kua, son of Wākea).	Ka‘ū, Hawai‘i
<b>Kūhaimoana</b>	Also Kūheimoana. Akua manō, brother of Pele, who lived at Ka‘ula islet northwest of Ni‘ihau, where he decided to stay as Pele migrated down the archipelago from Kahiki to Hawai‘i. He was said to be thirty fathoms long and to be the husband of Ka‘ahupāhau (Pukui and Elbert 1971).	Ka‘ula
<b>Kumukahi</b>	‘Aumakua of kōlea (plovers). Younger brother of the famous navigating ali‘i from Tahiti, Moikeha. Sailing from Tahiti to Hawai‘i they landed at the easternmost point of Puna, then sailed on to Hilo. Later, the cape was named for him and marked by a red stone. Two of his wives, Ha‘eha‘e and Makanoni, also have stone forms there. The movement of the sun’s rising points back and forth between the stones marks the seasons (Pukui et al. 1974; Fornander 1916-20).	Kumukahi, Puna, Hawai‘i
<b>Kū‘ula</b>	<i>Lit.</i> Red Kū of the sea. Also known as Kū‘ulakai. Male deity worshipped primarily by fishermen. Husband of Hinapukui‘a, and father of ‘Ai‘ai, who instructed him in the construction and establishment of ko‘a. All fishing stone images and shrines were named for him.	Hāna, Maui; coastal and ocean areas of all islands
<b>La‘amaikahiki</b>	Son of legendary Tahiti voyaging ali‘i Moikeha and Kapō. After a time living in Hawai‘i, Moikeha misses his son, and sends his younger son Kila to Tahiti to find his older brother and bring him back to Hawai‘i. Kila is successful in his quest after offering a human sacrifice on his father’s heiau, and marking it by beating Moikeha’s sacred drum, Hāwea. La‘a accompanies him to Hawai‘i, and he is thereafter known as La‘amaikahiki (sacred one from Tahiti). When he arrives at Wailua, Puna, Kaua‘i, he brings his akua, Lonoika‘ō‘ūali‘i and the sacred pahu drum called Hāwea with him, which is installed at the heiau of Holohokū in Wailua.	No associated viewshed

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<p><b>La‘amaikahiki</b> <b>continued</b></p>	<p>La‘amaikahiki is the first to bring an akua to Hawai‘i from Tahiti.</p> <p>He lives on Kaua‘i for a time before voyaging to Kahikinui on the southeast side of Maui, naming Kahikinui for his homeland, Tahiti. He then sails across the channel and lives on Kaho‘olawe for a time, before returning to Tahiti. The channel Kealaikahiki (the path to Tahiti) between Kaho‘olawe and Lāna‘i thus carries this name.</p> <p>Upon hearing of Moikeha’s death, he decides to return to Hawai‘i to retrieve his bones. He lands at Kailiki‘i in Ka‘ū, Hawai‘i. When the people hear the drumming of Hāwea, they come and see La‘amaikahiki’s canoe, thinking it is the canoe of Kūpūlupulu. They offer hospitality and provisions, and La‘amaikahiki continues sailing up the western coast to Kona. He then continues on until reaching Kaua‘i, where he lives for a time, teaching the art of hula, which spreads across the islands from Wailua, Kaua‘i. He later returns to Tahiti, taking Kila and Moikeha’s bones with him, returning them to Kapa‘ahu, their homeland, where the brothers live out their days (Fornander 1916-20).</p>	<p>No associated viewshed</p>
<p><b>Lanikāula</b></p>	<p>Kāula (prophet) who lived in the area of a famous kukui grove called Lanikāula, east Moloka‘i (Fornander 1916-20).</p>	<p>Moloka‘i</p>
<p><b>Lea</b></p>	<p>Also known as Hinakūwa‘a and Laea. Female deity of canoe makers. Wife of Kūmokuhāli‘i, sister of Hinapuku‘ai who sometimes assumed her form. Both had ‘elepaio (flycatcher) kino lau to help canoe makers choose proper logs (see Hinapuku‘ai) (Malo 1951; Pukui and Elbert 1971).</p>	<p>No associated viewshed</p>
<p><b>Lepeamoā</b></p>	<p><i>Lit.</i> Chicken comb. Born as an egg to her parents in Wailua, Kaua‘i, she was sent to Kapālama, O‘ahu to be raised by her grandparents. She was born a kupua with human and chicken kino lau; as a hen, her tail feathers were a spectrum of every color. She enjoyed surfing off Kou, and catching he‘e (squid) for her parents. When she was surfing, a rainbow hovered above her.</p>	<p>Kapālama, Kona, O‘ahu</p>

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Lono</b>	<p><i>Lit.</i> Messenger. One of the four primary male deities in Hawai'i and in other parts of Polynesia (Rono, Ro'o, Oro, Rongo). Traveled to Hawai'i from Kahiki with Pele. A deity associated with weather, clouds, winds, the ocean, agriculture, and fertility; also a god of healing.</p> <p>Kino lau include kukui, pigs, and the pig kupua Kamapua'a. Principle deity of the Makahiki season (October-February) to which ho'okupu (sprouts) were gathered and redistributed. Linked to hula via a female counterpart Laka. Over 50 epithets for Lono are known (Fornander 1916-20; Pukui and Elbert 1971).</p>	No associated viewshed
<b>Lonoika'ō'ūali'i</b>	<p><i>Lit.</i> Lono the supreme chief. A ki'i (carved image) form of Lono (messenger) brought by the chief La'amaikahiki (son of Moikeha) from Ra'iātea, near Tahiti to the sacred heiau of Wailua, Kaua'i. The kupua Māui asked him to lengthen the night so that Māui could kill Pe'ape'amakawalu (bat with eight eyes). His kapu were the torch and loulou (loulou palm) kapu (Fornander 1916-20; Pukui and Elbert 1971).</p>	Wailua, Puna, Kaua'i
<b>Lonoikamakahiki</b>	Male deity of the annual Makahiki season (October-February) (Fornander 1916-20; Pukui and Elbert 1971).	No associated viewshed
<b>Lonoka'eho</b>	<p><i>Lit.</i> Lono the stone. A chief from Kahiki with eight heads who pierced the cliff at Kānehoalani, Kualoa, O'ahu, and severed Kahuku from Kahipa. Kamapua'a, who called on his plant kino lau to entangle Lonoka'eho's eight stone foreheads, killed him (Pukui and Elbert 1971).</p>	Kānehoalani, Kualoa, O'ahu
<b>Makapu'u</b>	<p><i>Lit.</i> Bulging eye. Female cousin of the Pele family, possibly a mo'o, who lived at Makapu'u, Ko'olaupoko, O'ahu. Guardian of 'uhu (parrot) fish.</p>	Makapu'u, Ko'olaupoko, O'ahu
<b>Mālei</b>	Female fishing deity worshipped by fishermen; possibly a mo'o. Kīa'i of uhu (parrot) fish and all red and speckled fish along the Ka'iwi coastline of east O'ahu (Makapu'u to Hanauma bay). Līpoa seaweed was placed on ko'a when prayers were offered for successful fishing (Pukui and Elbert 1971). Relative of Pele family.	Ka'iwi coast, Ko'olaupoko, O'ahu

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Moananuikalehua</b>	<p><i>Lit.</i> The great goatfish of the lehua blossom. A female deity who accompanied Pele from Kahiki who made her home in the Ka‘ie‘ie channel between Kaua‘i and O‘ahu. Her kino lau includes: a beautiful woman, a lehua tree laden with (red) blossoms, and a red moano (Parupeneus multifasciatus, goat fish) fish.</p> <p>When the kupua trickster Māui tried to unite the Hawaiian Islands, Moanonuikalehua and others secured his magical hook, Manaiakalani, to a large rock, Pōhaku o Kaua‘i (rock of Kaua‘i) off of Ka‘ena point, O‘ahu. Māui instead caught Moano’s fish kino lau and sacrificed it on a heiau. Her spirit returned for a time to Kahiki, but later returned to Kaua‘i, O‘ahu, and finally to ‘Ōla‘a, Hawai‘i (Pukui and Elbert 1971).</p>	Ka‘ie‘ie channel
<b>Nāmakaokaha‘i</b>	<p><i>Lit.</i> The eyes of Kaha‘i. Kaha‘i (Tafa‘i) is a voyaging chief found in many places throughout Polynesia and is associated with long distance sailing.</p> <p>An older sister of Pele born from her mother Haumea’s breasts. In one mo‘olelo, Pele migrates to Hawai‘i from Kahiki because of a quarrel with Nāmakaokaha‘i. When she follows Pele to Hawai‘i, she brings the kauna‘oa vine to Mānā and the pahapaha seaweed lei to Polihale, Kaua‘i. The shrine there was called Kalanikeleikakai (the royal chief sailing on the sea). At Kalanipu‘u, Nāwiliwili, Kaua‘i, she planted the ‘awa papa (a variety of Piper methysticum) and the mai‘a ‘ili pakapaka (a rough-skinned banana). She fought Pele on Maui; Pele escaped with her life, but left some of her bones at Nāiwiopēle (the bones of Pele) near Hāna. She also is said to have married ‘Aukelenuiaiku (Pukui and Elbert 1971; Ho‘oulumāhie 2013).</p>	Polihale, Waimea, Kaua‘i; Nāwiliwili and Kalanipu‘u, Kona, Kaua‘i; Haleakalā, Maui
<b>Pāhulu</b>	<p><i>Lit.</i> Nightmare. A female deity of ‘anā‘anā of Lāna‘i whose ghostly family was vanquished by Ka‘ululā‘au, or in some versions by the Moloka‘i kaula Lanikaula.</p> <p>A male akua or chief of evil spirits killed by Ka‘ululā‘au; his soul enchanted certain fish (especially weke or goatfish), which caused nightmares to those who ate the fish (Pukui and Elbert 1971).</p>	Lāna‘i

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Palila</b>	<p><i>Lit.</i> A variety of native honeycreeper found only on Mauna Kea. Male kupua of Kaua‘i born as a cord, thrown out, and rescued by his grandmother, Hina. He felled a forest of trees with a single stroke, forming a hole at Waihohonu (deep water), Kaua‘i. He threw his club from Kaua‘i to O‘ahu, piercing the shoulder of the giant Olomana (forked hill), slicing him in two; one side became Mahinui (great champion) by the sea; the peak Olomana remains today. He slew a terrorist, Kamaikaāhui (tie the bunch), at Waipahu, O‘ahu. He later killed warriors of Hāmākua, Hawai‘i and became the ruling chief of Hilo (Pukui and Elbert 1971).</p>	<p>Kaua‘i; Waipahu, O‘ahu; Mahinui, Ko‘olaupoko, O‘ahu; Olomana, Ko‘olaupoko, O‘ahu; Hāmākua, Hawai‘i; Hilo, Hawai‘i</p>
<b>Pele</b>	<p><i>Lit.</i> Lava. Hawaiian volcano deity who travels from Kahiki (Tahiti) with an entourage of family members. She travels down the island chain, searching for a home to tend her volcanic fires, settling at Halema‘uma‘u, Hawai‘i. Her mother is Haumea; her father is alternately Kūahailo and Moemoe‘a‘aui‘i.</p> <p>Other names include: Pele‘aihonua (earth-devouring lava), Haumea, and Pelekeahi‘āloa (Pele, the fire forever burning). Epithets include: Ka wahine ‘ai pōhaku (the stone eating woman) and ka wahine ‘ai lā‘au (the forest devouring woman). Kino lau include: a beautiful young human woman, an old crone woman, and all forms of lava, molten and solid. Geographic formations throughout the islands, including lakes, craters, and unique stone features are attributed to her (Ho‘oulumāhiehie 2013; Desha 2000).</p>	<p>Kīlauea, Hawai‘i</p>
<b>Pīkoiaka‘alalā</b>	<p><i>Lit.</i> Pīkoi (snare) of the crow. A male kupua born at Wailua, Kaua‘i. His father was an ‘alalā (native crow) and his mother was an ‘iole (rat); his sisters were ‘ōpe‘ape‘a (bats). He was carried out to sea and arrived at Kou (now Honolulu), O‘ahu where he won contests in rat-shooting and in riddling. Kino lau: human and rat (Pukui and Elbert 1971).</p>	<p>Wailua, Kaua‘i; Mānoa, O‘ahu</p>

Table 2. Continued

Akua	Description	Primary Location Marine Viewshed Association
<b>Pīmoē</b>	Kupua with an ‘ulua (crevalle) fish kino lau who was hooked by the kupua Maui in his efforts to unite the Hawaiian islands. Maui warned his older brothers, who were with him in the canoe, not to look back. But they did and saw a canoe bailer, which they placed in the canoe. It changed into a beautiful woman, Hinaikekā. While they struggled to embrace her, the fish slipped away (Pukui and Elbert 1971).	Ocean; Maui
<b>Poli‘ahu</b>	<i>Lit.</i> Clothed bosom [referring to the snow on Mauna Kea]. Female deity of Mauna Kea; kino lau is snow. When the Kaua‘i chief ‘Aiwohokupua arrived on Hawai‘i in his search for Lā‘ieikawai, the two fell in love, and became engaged; ‘Aiwohikupua invited her to Kaua‘i to be married. But when she arrived, Hina from Hāna, Maui, who had previously defeated ‘Aiwohikupua in a game of kōnane (checkers), also arrived, claiming ‘Aiwohikupua for herself. Poli‘ahu acquiesced, but then sent alternating waves of heat and cold to disturb them until they separated. She then returned to Mauna Kea where she remains. In another mo‘olelo, she took Kāne’s son Kahānaiakeakua (the foster child of the gods) from his wife, but eventually lost him. In spite of her beauty and powers, she always lost out and remained alone (Pukui and Elbert 1971; Hale‘ole 1919).	Mauna Kea, Hawai‘i
<b>Waka</b>	<i>Lit.</i> Sharp; to flash. A female mo‘o guardian who resided at Paliuli, a verdant forest in the uplands of Puna, Hawai‘i. Her kino lau includes human, lizard, spider, owl, and eel forms. As kahu to Lā‘ieikawai, she had a house thatched with feathers prepared for her. As guardian of Hinaikekā, or equated with her, she floated as a gourd in the sea and was taken into Wākea’s canoe.	Paliuli, Puna, Hawai‘i
<b>Wakakeakaikawai</b>	<i>Lit.</i> Waka (flash) in the shadow of the water. Female mo‘o deity who steals Pele’s lover Puna‘aikoā‘e, and a battle between Pele and Waka ensues; Pele defeats and kills Waka and Puna‘aikoā‘e. Waka ends up drowning in a brackish water fishpond in Keaukaha, Loko Waka, that still bears her name. The battle between them are the reason for many lava flows from Ka‘ū throughout Puna, Hawai‘i. Kino lau include: a spider, a lizard, an owl.	Loko Waka, Keaukaha, Hilo, Hawai‘i; Kaualehu-Punalu‘u, Ka‘ū, Hawai‘i

## 4 Nā 'Ikena Ali'i (Ali'i Viewsheds)



Figure 2: Historic photograph of Pololu Valley, Kohala Coast, Hawai'i Island. Birthplace of Kamehameha I. Photograph Hawai'i State Archives. Call number: PP-29-11-030 (no date).

Nā 'Ikena Ali'i are viewsheds related to selected Hawaiian ruling chiefs and their affiliates<sup>16</sup>. What is specifically important about identifying ali'i viewsheds is not only the historical significance of physical locations of important events, but the spiritual, cultural, and emotional impact such locations have for Native Hawaiian people. Important kinds of 'ikena ali'i related to ali'i include birth places (Figure 2), residential sites (permanent and temporary), sites of worship, important canoe landings, battle fields, training camps, recreational fields, and burial grounds.

### 4.1 Pāka'a and Kūapaka'a: An Example

An important example of how knowledge of Hawaiian ali'i and their achievements are key to understanding cultural viewsheds is provided here with the mo'olelo of Pāka'a and Kūapāka'a, and the ipu makani (wind gourd) of their ancestress La'amaomao. Kūapāka'a's grandfather Kūanu'uana was a kahu 'iwikuamo'o (keeper of the bones; attendant) in the royal court of high chief Keawenuiā'umi, son of ali'i 'Umi, grandson of Līloa, ancestors of the great ali'i Kamehameha I. The mo'olelo of Pāka'a and Kūapāka'a is important to consider because of the extensive travel across the Hawaiian Islands, starting with Kūapāka'a's grandfather Kūanu'uana. His travels begin at Waipi'o, Hawai'i a significant valley because it was the home of high-ranking ali'i for generation. Kūanu'uana travels from Waipi'o, Hawai'i to Lāhainā, Maui, then

Waikīkī, O‘ahu, and finally settled for a time at Kapa‘a, Kaua‘i, after touring the island. Each of these are significant wahi pana as they are the residential wahi of high ranking ali‘i of each island, well documented in a variety of oral and written mo‘olelo. The famous surf breaks of Lāhainā and O‘ahu are named, and descriptions of the chiefs surfing these breaks and enjoying themselves is also mentioned.

Kūanu‘uanu meets and marries La‘amaomao, a woman from Kapa‘a. After he is called back to Waipi‘o to Keawenuia‘umi’s court, La‘amaomao stays behind to raise their son Pāka‘a, named for Kūanu‘uanu’s chief Keawenuia‘umi. When Pāka‘a comes of age, he travels around the island of Kaua‘i with the ali‘i Pa‘iea, and then goes with him to the other islands. His mother La‘amaomao gifts him with the ipu makani, and teaching him all the names of the winds of the islands and the accompanying oli makani (wind chants) before he departs with Pa‘iea for their tour. They go to O‘ahu and Maui before ending up at Keawenuia‘umi’s court in Waipi‘o.

After Kūanu‘uanu dies, Pāka‘a takes his place. But after a time, two men of the court become jealous and plot against him. Losing favor with Keawenuia‘umi, Pāka‘a departs for Hilo, and then makes his way to Moloka‘i, where he takes up residence. He marries a Moloka‘i woman, Hikauhi, and they have a son they name Kūapāka‘a. As he grows up, Pāka‘a passes on his knowledge of the winds and oli makani, as well as the kuleana (responsibilities) of the kahu iwikuamo‘o.

Keawenuia‘umi misses Pāka‘a and orders a search party to find him. When Pāka‘a hears of this, he prepares his son Kūapāka‘a to help delay the ali‘i on Moloka‘i, and they end up getting revenge on the two men who plotted against Pāka‘a and failed to properly care for their ali‘i nui. In the end, the two men are killed, Pāka‘a is reunited with the ali‘i nui and restored to his rightful place in Keawenuia‘umi’s court, and Kūapāka‘a becomes his heir.

A number of place names are given throughout the travels across the Hawaiian archipelago undertaken by Kūanu‘uanu, Pāka‘a, and Kūapāka‘a. These place names extend from Waipi‘o on the far eastern island of Hawai‘i to Waimea, Kaua‘i on the far west. Ka‘ula factors into a dream shared by Keawenuia‘umi and Pāka‘a as an important hō‘ailona (symbol, sign), although they never actually traveled there. Most importantly, the intimate details of the wind names associated with specific places are provided. This is significant for several reasons. One reason is that, while winds are “tangible” in that they can be felt, they are “intangible” in that they are not themselves seen, or are a permanent part of the geography. Thus, winds factor into the culture and are important to consider as part of the ICH and relevant to nā ‘ikena (‘āina, uka, and kai). Another reason is that many wahi have more than one wind name, and some locations such as Anahola and Wainiha, Kaua‘i and Hālawa, Moloka‘i have fourteen or more winds, which is extraordinary for such relatively small areas.

A subsequent outcome of detailing their travels is to provide culturally important information about significant wahi pana on each island associated with Pāka‘a and Kūapāka‘a. Because of their associations with landing sites, residential sites, and cultural practices, such as the ability to call the winds, it is not provided with such detail in most other mo‘olelo (Pele and Hi‘iaka mo‘olelo being an exception). It is a reminder that the interconnection between terrestrial, marine, and atmospheric spheres are deeper in Hawaiian culture than they initially appear, the

interconnection between kanaka, ‘āina, and kai is further reinforced, and the idea that mo‘olelo as a tangible and intangible cultural heritage resource is key in research on places under consideration for any kind of development.

The following table (Table 3) lists the important ali‘i figures in the left-hand column, a description of their significance and history in the center, and the places they are associated with in the right-hand column.

**Table 3. Nā ‘Ikena Ali‘i**

<b>Ali‘i</b>	<b>Description</b>	<b>Primary Location Marine Viewshed Association</b>
<b>Aihakoko</b>	Son of Hawai‘i Island ali‘i ‘Umiālīloa and Pi‘ikea; when an attendant of his was killed by Maui ali‘i Kihapi‘ilani, Aihakoko went sailing in mourning and landed at Kapa‘ahu, Kama‘ole, Kula, Maui; thus this place became known as Kaluaoakhikoko (the pit of Aihakoko) (Fornander 1916-20).	Kalua-o-Aihakoko, Kula, Maui
<b>Alapa‘inui (1725-1754)</b>	Son of Hawai‘i ali‘i Kauauanuiāmahi and Kalanikaulelewi; brother of Ke‘eaumoku. Lived on Maui during the reign of Kalaniku‘ihonoikamoku (half-brother of ali‘i wahine Keku‘iapōiwa). Known as a great warrior ali‘i. When Alapa‘inui invaded Maui, his fleet landed at Mokulau, Kaupō (Fornander 1916-20; Kamakau 1961).	Hawai‘i Island; Maui
<b>Ho‘olaemakua</b>	Ali‘i of Hāna, Maui after the death of Maui’s ali‘i‘aimoku, Pi‘ilani. Defends the fortress at Ka‘uiki hill in Hāna from invading forces and fights off canoes landing at Kihahale, Kahuakole (Sterling 1998).	Hana, Maui
<b>Ka‘ahumanu (1768-1832)</b>	Daughter of Ke‘eaumoku II, born in Hāna, Maui. Her name is derived from her great warrior ali‘i ancestor. Kamehameha I’s favorite wife. After Kamehameha’s death, she rose to political power, and was instrumental in the overthrow of the ‘Aikapu, which forever changed Hawai‘i’s traditional social, political, and religious system. She became Kuhina Nui (premier) under the reigns of Kamehameha II and III until her death in 1832 (Fornander 1916-20; Desha 2000; Kamakau 1961).	Hāna, Maui

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<b>Ka'eokūlani (1761 – n.d.)</b>	Kaua'i's ali'i nui during the rise of his brother Kahekili's reign over Maui. Instrumental in pushing Kahekili to invade Kamehameha I. The brothers combined forces and engaged in the first known naval battle in Hawai'i, using western weaponry. The battle against Kamehameha I's forces took place in the waters off Waipi'o, Hawai'i, and was named Kepuwaha'ula'ula (Battle of the Red Mouth Gun) (Fornander 1916-20; Kamaku 1961).	Ni'ihau, Kaua'i, Maui
<b>Kahekili (Kahekilinui'ahumanu) (1737 – 1794)</b>	Son of Maui ali'i nui Kekaulike and Kekū'iapōiwanui; brother of Kamehamehuni. One of the most celebrated warrior ali'i in Hawaiian history. At the height of his power, he ruled over Maui, Moloka'i, and O'ahu. Known as a mō'i lele kawa (leaping ruler) for his death-defying leaps from high cliffs into water, particularly at Pu'u Keka'a, Ke'anae, and Pu'u Koa'e, Kahakuloa, Maui, a point of departure for souls to the spirit world.  In one battle, he stopped at Moloka'i enroute to O'ahu from Maui to secure fresh fish provisions, landing at Ho'olehua and Kaluako'i (Fornander 1916-20; Desha 2000; Kamakau 1961).	Maui
<b>Kakuhihewa</b>	Son of Kihikapuamanu'ia and Kaunuia Kānehoalani. Born at the sacred birthing stones in Wahiawa, where 48 high-ranking ali'i attended his piko-cutting ceremony. This 16th century ali'i nui is O'ahu's most celebrated ali'i, mentioned in many mo'olelo, his reign characterized by great peace and prosperity. The epithet for O'ahu is O'ahu a Kakuhihewa (O'ahu of Kakuhihewa) (Fornander 1916-20; Kamakau 1961).	'Ewa, O'ahu
<b>Kala'imāmahu (c. 18th century)</b>	Kona ali'i loyal to Kamehameha (Fornander 1916-20).	Kona

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Kalākaua, David La'amea (1836-1891)</b></p>	<p>Son of ali'i nui Kapa'ākea and Keohokalole. One the the four siblings poetically referred to as Nā Lani 'Ehā (the royal quartet): Miriam Likelike, Lydia Lili'uokalani, William Pitt Leleioku and Kalākaua.</p> <p>Won the second (and last) election of the Hawaiian Monarchy, after losing to William Charles Lunalilo two years earlier. Kalākaua's focus on commerce and business, combined with his interest in culture, arts, and science, made him a very progressive, forward thinking monarch who worked towards the benefit of his people. Kalākaua was an avid traveler and the first head of state to successfully travel around the world, meeting with heads of state from Japan to Europe. When Kalākaua died in 1891, his sister, Lili'uokalani, ascended to the throne.</p>	<p>Statewide</p>
<p><b>Kalanikūpule</b></p>	<p>Son of Maui ali'i Kahekili, the last ruler of Maui before being defeated by Kamehameha I.</p> <p>In one battle, Kalanikupule and Kaeokulani landed their canoes at Kauanakakai, Moloka'i and then at Waihe'e and Waiehu (Kamakau 1961).</p>	<p>Maui</p>
<p><b>Kalani'ōpu'u</b></p>	<p>Son of Hawai'i Island ali'i as a child of Ke'eaumoku and Kalaninui'īamamao, and mother Kamaka'īmoku; combined, Kalani'ōpu'u traces his genealogy through some of the most powerful Hawai'i Island ali'i, an exceptional heir to the Alapa'i dynasty.</p> <p>By conceiving a child with the Maui ali'i wahine Kalolapukaohonokawailani (related to Kaku'iapōiwanui, Kahekili's mother, and ali'i nui Kekaulike), Kalani'ōpu'u forged an important bond between Maui and Hawai'i islands.</p> <p>In 1776, Kalani'ōpu'u landed his forces from Kiheipuko'a at Keālia to Kapa'ahu, between Kalepolepo and Ma'alaea. Kalani'ōpu'u defeated the ali'i of Lāna'i before sailing to Honokohau, Maui for provisions.</p>	<p>Hawai'i Island (all); Kihepuko'a (to Kapa'ahu), Maui</p>

**Table 3. Continued**

<b>Ali'i</b>	<b>Description</b>	<b>Primary Location Marine Viewshed Association</b>
<b>Kalani'ōpu'u continued</b>	<p>From there he continued on to Kahakuloa, west Maui, and landed at Kamakualoa.</p> <p>Kalani'ōpu'u saw Lono approaching them on the sea of Ha'alua, at Wailua, Ko'olau, Maui. He battled Kahekili at Wailuku, his army landed at Keone'ō'io; there were so many canoes, they reached Honua'ula. However, their forces were defeated by Maui's.</p> <p>Kalani'ōpu'u met with his high chiefs in 1780 in Waipi'o valley, Hawai'i, where he declared that upon his death his oldest son, Kīwala'ō would ascend to power, his son Keōuakū'ahu'ula (Keōua) would receive land, and his nephew Kamehameha I would become ali'i of Kohala and the kahu of Kūkā'ilimoku and all heiau associated with him (Kamakau 1961).</p>	Hawai'i Island (all); Kihepuko'a (to Kapa'ahu), Maui
<b>Kalua'apana Keaweāheulu</b>	Uncle of Kamehameha, an ali'i of Kona, Hawai'i loyal to Kamehameha.	Kona
<b>Kamanawa</b>	<p>One of the sacred royal sons of Keawepoepoe and Kanoena. Kona ali'i loyal to Kamehameha I. During an invasion of Maui where Kalani'ōpu'u's forces are defeated, he sends his young son, Kīwala'ō, to beg for the lives of the Hawai'i Island warriors. Kamanawa and Kame'eiamoku are sent to accompany him.</p> <p>Kame'eiamoku and Kamanawa are depicted on the Hawaiian kingdom's coat of arms later appropriated by the State of Hawai'i as its official seal (Kamakau 1961).</p>	Hawai'i Island
<b>Kame'eiamoku</b>	See Kamanawa.	Hawai'i Island

Table 3, Continued

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Kamehameha I (c. 1753-1819)</b></p>	<p>Son of ali'i Keōua and Keku'iapōiwa, originally named Pai'ea. He was born at Kapākai, Kokoiki, near 'Upolu point, Kohala, Hawai'i. Immediately following his birth, the infant child was taken by canoe to Mo'okini heiau, then to the remote 'Āwini Valley where he was raised in secret. As a young warrior, Kamehameha lifted the Naha stone, a 5,000-pound rock located in Hilo. An ancient prophecy said whoever could lift the stone would rule over all the Hawaiian Islands.</p> <p>Kamehameha was present when his uncle, Hawai'i ali'i nui Kalani'ōpu'u, boarded Captain Cook's ship, HMS <i>Resolution</i>, off Hāna, Maui in 1778. The vessel later traveled to Kealakekua Bay in 1779, when Cook again met up with Kamehameha.</p> <p>In a battle at Pu'u Koa'e, Maui, Kamehameha I defeated Kapakahili at Pu'umaile. Kamehameha later landed at Halehaku and built temporary shelters there. Later, Kamehameha's forces landed at Kalepolepo; a kapu was placed on the nearest stream, and it was thus called Waikapu (forbidden water).</p> <p>Kamehameha invaded the districts of Hāna and Kipahulu by sending his younger brother, Kalanimalokulokuikapo'okalani (Keli'imaka'i), to Kipahulu at Lelekea, where he fought with Kalanikūpule's men.</p> <p>Kamehameha sailed from Hawai'i and landed at Hāna, his canoes stretching from Hamoa to Kawaipapa and Waikaahiki, extending to Pueokahi, Mokuhano, Nāniuakāne, Kaihalulu, 'Aleamai, and Haneo'o. In the battle of 'Īao, Maui, Kamehameha's large peleleu canoe fleet covered the shores from Keone'ō'io to Olowalu along Maui's southeast shores. After this battle, where Kapakahili died, Kamehameha moved his fleet to Kahului on the north-central shore, where his canoe fleet landing extended from Kahului to Kalae'ili'ili at Waihe'e to below Pu'uhele and Kamaka'ilima, all the way to Hopukoa.</p>	<p>Statewide</p>

Table 3. Continued

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Kamehameha II, Kalaniliholihoikekapu'iolani (1797-1824)</b></p>	<p>Eldest son of ali'i Kamehameha I and Keōpūolani born in Hilo. Became mō'i after Kamehameha I's death in 1819. Participated in the overthrow of the 'Aikapu instigated by his mother and kuhina nui Ka'ahumanu. Subsequently, war broke out between Liholiho's forces and those of the the rebel ali'i led by Kekuaokalani, who was also the kahu of Kamehameha's war god Kūkā'ilimoku. Using western weapons fired from ships offshore at Kuamo'o, south Kona, Kekuaokalani, where his wife Manono, and their forces were all killed in battle (Kamakau 1961; Desha 2000; Fornander 1916-20). Liholiho and his wife Kalama never had children. They traveled to Brazil and then London, England, where they contracted measles and died abroad in 1824.</p>	<p>Statewide</p>
<p><b>Kamehameha III, Kauikeaouli (1814-1854)</b></p>	<p>Second son of Kamehameha I and Keōpūolani; when his older brother Liholiho died in 1824, Kauikeaouli ascended the throne at age 11. His hānai mother Ka'ahumanu was Kuhina Nui who ruled in his stead. Later during his reign, Hawai'i's first constitution was enacted (1840); in 1852, Hawai'i's government was transformed into a constitutional monarchy. After Hawai'i's sovereignty was threatened by British Captain George Paulet in 1842, the Māhele, a system of private land ownership was enacted in 1848. Under Kamehameha III, Hawai'i attained a nearly universal literacy rate. In 1837, he married Kalama; they had two children who died in infancy. Kamehameha III died in December 1854 at the age of 41 (Kamakau 1961; Fornander 1916-20).</p>	<p>Statewide</p>

Table 3. Continued

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Kamehameha IV, Alexander Liholiho 'Iolani (1834-1863)</b></p>	<p>Younger son of ali'i Mataio Kekūanā'oa and Kīna'u; hānai son of Kauikeaouli and Kalama was declared heir to the throne at a young age. He ascended the throne in 1854 at the age of 20, after Kauikeaouli's death. A year later, he married Emma Rooke, Kamehameha I's great grandniece. Together they had one child; Albert Edward Kauikeaouli Kaleiopapa a Kamehameha. Alexander Liholiho and Emma supported the Anglican Church coming to Hawai'i and established the Queen's Hospital to provide better healthcare for Hawaiians. Alexander died from chronic asthma on November 30, 1863; he was 29.</p>	<p>Statewide</p>
<p><b>Kamehameha V, Lot Kapuāiwa (1830-1872)</b></p>	<p>Oldest son of Mataio Kekūanā'oa and Kīna'u; older brother of Alexander Liholiho; hānai to Hoapili and Nāhi'ena'ena. Before ascending to the throne in 1893, after the death of his brother Alexander Liholiho, Lot served on the Privy Council and in the House of Nobles. He was also the Minister of the Interior and the Chief Justice of the Supreme Court. When he came to power, Lot refused to uphold the Constitution of 1852, instead he held a constitutional convention, insisting a new constitution be drafted.</p> <p>On August 20, 1864, he officially signed the new constitution into law and took an oath to uphold and protect it. His named heir, Victoria Kamāmalu, died during his reign.</p> <p>When he failed to name another heir upon his death in 1872, the kingdom chose the next mō'i through an elective process, the first in the nation (Kamakau 1961).</p>	<p>Statewide</p>
<p><b>Kauholanui</b></p>	<p>Son of ali'i Kahoukapu and La'akapu, who followed his father Kahoukapu, mō'i of Hawai'i island, to Keone'ō'io, Maui, where he exercised royal authority in Honua'ula, Maui (Sterling 1998).</p>	<p>Honua'ula, Maui</p>
<p><b>Kawelookalani</b></p>	<p>Ali'i of Kona, Hawai'i, loyal to Kamehameha (Desha 2000; Kamakau 1961).</p>	<p>Kona, Hawai'i</p>

Table 3. Continued

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Ke'eaumoku Pāpa'iahehe (1736-1804)</b></p>	<p>Son of ali'i Keawepoepoe and Kūma'aikū. One of the first Kona ali'i loyal to his nephew Kamehameha I beginning in his rise to power. Led the battle of Moku'ōhai in Ke'ei, south Kona in 1792. Father of Ka'ahumanu with Nāmāhāna'i Kaleleokalani, sister of Maui ali'i nui Kahekili. Two other daughters include Kaheiheimālie and Nāmāhāna Pi'ia, who later married Kamehameha I. His oldest son, Ke'eaumoku (George Cox Ke'eaumoku) served as Governor of Maui, and his younger son Kuakini (John Adams Kuakini) served as Governor of Hawai'i and O'ahu. His great-grandsons were Lot and Alexander Liholiho (Kamehameha IV and V) and Lunalilo (William Charles Lunalilo) all ruled as mō'i of the Hawaiian Kingdom from 1855-1874. Died from ma'i 'ōku'u (a disease believed to be cholera) during Kamehameha I's preparation to invade Kaua'i on March 21, 1804 (Kamakau 1961; Fornander 1916-20).</p>	<p>Kona, Hawai'i</p>
<p><b>Keawemauhili (1710-1790)</b></p> <p><b>Keawemauhili (continued)</b></p>	<p>Son of ali'i nui Kalaninui'iamamao and Kekaulikeikawēkiuokalani, an ali'i of Hilo. Regarded as the "Keawe i wililua, wili laupu'u i ke kapu" (the Keawe chief doubly braided in sacredness), a name bestowed upon him because of his highest ranking nī'aupi'o status, as the Hawai'i ali'i 'ai moku Keawe was both his maternal great-grandfather and his paternal grandfather. One of the most sacred ali'i of Alapa'i's royal court.</p> <p>When his half-brother Kalani'ōpu'u died in 1781, Keawemauhili joined his nephew Keōuakūahu'ula under Kīwala'ō in the battle against Kamehameha I at Moku'ōhai, Ke'ei, south Kona. He conspired against Kamehameha I since his birth (Desha 2000; Kamakau 1961; Fornander 1916-20).</p>	<p>Hilo, Hawai'i</p>
<p><b>Keawenuia'umi</b></p>	<p>Keawenuiā'umi sailed from Hilo to Kapu'ekahi in Hāna, Maui, before sailing to Kahului and Wailuku (Desha 2000; Kamakau 1961; Fornander 1916-20).</p>	<p>Hilo; Hāna</p>

Table 3. Continued

Ali'i	Description	Primary Location Marine Viewshed Association
<b>Kekaulike</b>	<p>Also called Kalaniku'ihonoikamoku. Son of Maui ali'i Kauluhea; ali'i nui of Maui who ascended to power following his father's death. He had five wives, and fathered 15 children of high rank, including sons Kamehamehanui and Kahekilinui'ahumanu, and daughter Nāmāhana.</p> <p>After Kekaulike died, the Maui ali'i landed their canoes at Kapa'āhu (Kama'ole) at the pit of Aihakoko in Kula, and carried his body as far as Haleki'i in Kukahu (Desha 2000; Kamakau 1961).</p>	Maui
<b>Keli'imaika'i, Kalanimālokulokui-kepo'okalani (c. 1765-1809)</b>	<p>Younger and only full brother of Kamehameha; Kona ali'i was loyal to Kamehameha. Married his half-sister Ki'ilaweau, and they had Kekuaokalani. Later married the ali'i wahine Kalikookalani, and had a daughter, Ka'ōana'eha. Gained a reputation as a kind ali'i after seizing the Hāna-Kīpahulu Keli'imaika'i, northeast region of Maui, and treating the people there fairly.</p>	Kona, Kohala
<b>Keōuakūahu'ula</b>	<p>Younger son of Kalani'ōpu'u, ali'i of Puna and Ka'ū, Hawai'i. Fought against Kamehameha I (Desha 2000).</p>	Puna and Ka'ū, Hawai'i
<b>Kiha[a]pi'ilani</b>  <b>Kiha[a]pi'ilani (continued)</b>	<p>Son of Maui ali'i Pi'ilani and Lā'ielohelohe; father of Kamalalawalu. Different mo'olelo describe Kihapi'ilani's knowledge and interaction with the ocean areas around Maui. In one, he describes the small harbor of Wailuaiki in the Ko'olau district of Maui.</p> <p>In another he rides a surfboard from Honolulu across the Pailolo channel to Wailua, Moloka'i. In another he flees to Lāna'i from Maui, later returning to Maui and landing at Kapoli in Ma'alaea. Another time he sails past the point of Pa'a at Mu'ole'a where poisonous seaweed grows, landing in Kawaloa, with canoes just off Pukui'ula and Kapohue (Sterling 1998).</p>	Maui

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Kīwala'ō (c. 1760-1782)</b></p>	<p>Eldest son of Hawai'i ali'i Kalani'ōpu'u and Kalola, a high ranking ali'i wahine of Maui. As a young boy, Kīwala'ō is sent by his father to beg for the lives of his warriors, who were soundly defeated on Maui. Because of his young age, he was accompanied by the royal twin ali'i Kamanawa and Kame'eiamoku.</p> <p>In 1775 he married Keku'iapōiwa Liliha, and they had a daughter, Keōpūolani, who later became one of Kamehameha I's most sacred wives, and mother of Kamehameha II and III.</p> <p>When Kalani'ōpu'u died in 1782, Kīwala'ō, who had been named his heir, ascended to power. However, his cousin Kamehameha I was given custody and care of Kūkā'ilimoku, the feathered war god. The cousins later battled for control over Hawai'i island; Kamehameha I defeated Kīwala'ō in the battle of Moku'ōhai in Ke'ei, south Kona, and Kīwala'ō's body was offered in sacrifice to the war god Kūkā'ilimoku (Kamakau 1961; Fornander 1916-20).</p>	<p>Maui</p>
<p><b>Kūali'i</b></p>	<p>Chief of O'ahu born around 1640. He was raised in Mokoli'i. His birthplace is commonly misattributed to Kalapawai, Kailua, but should be noted as Waiomuku, Waiahole. When all the chiefs gathered in Kalapawai, Kailua they asked "Where are you from, naua?" to which he replied, "At Waiomuku, land by the sea shore, naua" (Sterling and Summers 1978).</p> <p>His birth ceremonies were conducted at Alala Heiau in Kailua, O'ahu. During the battle of Kawaluna he defeated Kona forces to assert his right to consecrate the sacrifice of Kawaluna heiau at Waolani (Sterling and Summers 1978).</p>	<p>O'ahu</p>

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<p><b>Lili'uokalani, Lydia Loloku Walania Wewehi Kamaka'eha (1838-1917)</b></p>	<p>Daughter of Caesar Kapa'akea and Keohokālole. One of four royal siblings collectively known as Nā Lani 'Ehā (the four heavenly ones) that included her brothers, David Kalākaua and William Pitt Leleiohoku, and sister, Miriam Likelike. The four siblings attended the Royal School and were noted to be exceptionally bright and musically gifted; Lili'uokalani was the most prolific.</p> <p>Lili'uokalani ascended the throne in 1891 after the untimely death of her brother Kalākaua. At the request of the people, Lili'uokalani set out to implement a new constitution. Her actions threatened the power gained by the foreigners in the government, and were quickly met with a coup d'eta by a group of 13 foreigners, on January 17, 1893. The "Committee of Safety" as they called themselves, had gained support of the U.S. Minister to Hawai'i, who authorized the landing of the Marines in Honolulu. Lili'uokalani yielded the throne in protest until the situation could be resolved, in order to prevent war and loss of life.</p> <p>Having proper knowledge of international law and Hawai'i's standing in the Family of Nations, Lili'uokalani was confident the U.S. would undo the illegal actions of the foreigners. However, the U.S. failed to act within its own and international laws, illegally annexing Hawai'i in 1898. Thus, Lili'uokalani was the last sovereign to rule over the independent nation of Hawai'i (Lili'uokalani 2013).</p>	<p>Statewide</p>
<p><b>Līloa (14th or 15th century)</b></p>	<p>Ali'i nui of Hawai'i, son of Kihanuilulumoku and Waioea. Born and lived at Waipi'o, Hawai'i, the political center of Hawai'i during his reign. Married to Piena; they had a son, Hakau. With the Maui ali'i wahine Haua they had a daughter, Kapukini. He later had a son with 'Akahiakuleana, named 'Umi. Līloa met 'Akahiakuleana enroute from Waipi'o to Koholālele, Hāmākua, for the purpose of dedicating his heiau, called Manini, there.</p>	<p>Hawai'i Island</p>

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<b>Līloa (continued)</b>	He was considered a very religious chief who maintained a peaceful and productive reign. Responsible for building the famous heiau Paka'alana in Waipi'o. One of the rich ocean products of Waipio Līloa purportedly loved was the 'ama'ama crab (Titcomb 1972). Upon his death, he named Hakau his heir, and 'Umi the caretaker of all the heiau and akua, particularly Kūkā'ilimoku, the feathered image of the war god (Fornander 1916-20).	Hawai'i Island
<b>Lonoikamakahiki</b>	Lonoikamakahiki arrived on shore in Hāna, Maui in the ahupua'a of Wananalua at the canoe landing of Punahoa to Kamalalawalu's royal residence (Fornander 1916-20).	Hāna, Maui
<b>Lunalilo, William Charles (1835-1874)</b>	Son of ali'i Kana'ina and Kekauluohi. His mother was later titled Ka'ahumanu III because of her position as Kuhina Nui in the kingdom. Lunalilo was the first ever elected mō'i in the Hawaiian kingdom, as Kamehameha V had died without naming an heir.	Statewide
<b>Moikeha (c. 15th-16th century)</b>	<p>Son of Mulieliali'i; grandson of Maweke, an ali'i from Tahiti.<sup>17</sup> Brother of Kumuhonua (older) and Olopana (younger). Married to Kapo, and together they had a son La'amaikahiki. Lived at Moa'ulanuiākea in Tahiti. After a relationship with Olopana's wife Lu'ukia soured, Moikeha sailed for Hawai'i with an entourage, arriving in Hilo. They continued on to Kohala, and then Hāna, Maui. Then, they continued on to Lāna'i, and Moloka'i (off of Kawela), where he saw Kakakauhanui fishing off Lā'au point, so they sailed their canoe there.</p> <p>They continued on to O'ahu, and then to Kaua'i, arriving at Wailua in Puna. It was dark by the time they arrived, so they moored offshore until daybreak. The kama'āina gathered and saw the chiefly canoe, as they prepared to surf at Makaīwa, including Ho'oipoikamalanai and her sister Hina'ū'ū, daughters of the ali'i there.</p>	Wailua, Kauai

**Table 3. Continued**

Ali'i	Description	Primary Location Marine Viewshed Association
<b>Moikeha (continued)</b>	<p>They both took Moikeha as a partner.</p> <p>With Ho'oiipoikamalamai, Moikeha had several sons, Umalehu, Kalalea, and Kila; with Hina'ū'ū he had two sons, Kekaihawewe and Laukapalala (Kamakau 1961; Desha 2000). He later missed his eldest son La'a, and sent Kila to Tahiti to fetch him. When they returned, La'a was known as La'amaikahiki (Sacred one from Tahiti).</p> <p>After Moikeha's death, Kila became the ali'i nui of Kaua'i; Moikeha's bones were deposited in the sheer cliffs about Hā'ena. Later La'amaikahiki returned to fetch Kila and Moikeha's bones, and they returned to Kapa'ahu, Tahiti, where Moikeha's bones were permanently laid to rest.</p>	Wailua, Kauai
<b>Peleiōholani (c. 17th century)</b>	<p>Son of Kūali'i and Kalanikahimakeiali'i. Ruling chief of Kaua'i from 1730-1770. At one point, Peleiōholani ruled over Ni'ihau, Kaua'i, O'ahu, and Moloka'i. In a battle on Maui, he landed at Honokohua (Sterling 1998).</p>	Ni'ihau, Kaua'i, O'ahu and Moloka'i
<b>Pi'ikea (c. 16th century)</b>	<p>Daughter of Maui ali'i Pi'ilani and Lā'ieloheloheikawai. Had two 'aumākua, Hāpu'u and Kala'ihauola. Wife of Waipi'o, Hawai'i ali'i 'Umiālīloa. Together she and 'Umiālīloa had two children, Kumalaenuiā'umi and 'Aihakoko (Kamakau 1961; Fornander 1916-20).</p>	Maui
<b>Pi'ikea (c. 16th century)</b>	<p>Son of Kawaokaohēle and Kepalaoa; 15th ruling ali'i of Maui, first ali'i to rule over the entire island. Father of Pi'ikea, wife of 'Umiālīloa. Because of this, 'Umiālīloa supported Pi'ilani's son Lonoapi'ilani in battle (Kamakau 1961; Fornander 1916-20).</p>	Maui
<b>'Umiālīloa (c. 16th century)</b>	<p>Son of the ali'i nui of Waipi'o, Hawai'i Līloa and 'Akahiakuleana. Famous for uniting all of the moku of Hawai'i Island (Kamakau 1961; Fornander 1916-20).</p>	Hawai'i Island

## 5 Geographic Viewsheds

The Archipelago of Hawai‘i is roughly 2,575 kilometers (km) (1,600 miles or mi.) long and contains more than 130 islands. This study focuses on the eight largest islands at the southeastern end of the island chain. The islands are presented in alphabetic order. Archaeological sites or historic properties on each island are discussed within the confines of the moku (district), ahupua‘a (traditional land division), and/or park where they are located. For each site summary, common site names are provided followed by designated State Inventory of Historic Places (SIHP) numbers. If the site is listed on the official Hawai‘i State Register, then a date of when it was added will follow the SIHP number. Sites that are listed on the National Register (N.R.) include a registration number and date of listing. Each site summary also includes approximated geographic coordinates, elevations, time period, and recommended significance criteria. Archaeological sites were researched using the State Library, University of Hawai‘i at Mānoa, Hamilton Library, SHPD library, National and State Register nomination forms, and Internet sources.

This study mainly focuses on the “pre-contact” (pre-1778) era, which is a traditional Hawaiian time period. The study also includes some sites from the “post-contact” time period, which is defined by the arrival of Captain Cook in 1778. The “historic” time period is defined as any site that has been in existence for longer than 50 years ago. Past archaeological studies throughout the state once hypothesized that Hawai‘i was first inhabited as long ago as A.D. 300. Cultural sites on Hawai‘i Island, particularly in the South Point region (Ka Lae), on O‘ahu within Bellows Air Force Base, and in Hālawā Valley on Moloka‘i found some of the earliest radiocarbon dates in the archipelago. However, recent re-dating of these sites has found Hawaiian use and occupation of the island occurred more recently, ranging between A.D. 1000 to 1260 (Dye 2011; Kirch 2011; Reith et al. 2011). Due to improvements in modern radiocarbon dating practices, most sites in Hawai‘i will need to be re-dated. Therefore, the date ranges provided throughout this section should be considered relative and not absolute.

There are hundreds of thousands of archaeological sites documented throughout the Hawaiian Islands. This section of the report focuses heavily on sites listed on the State and National Registers and also includes well-known archaeological sites not found on the registers with a reasonable viewplane and relatively easy access. This study does not contain all such sites; however, a good faith effort has been made to include as many sites as possible using current available knowledge and keeping within the time frame allotted for the project. All the information provided herein is publicly available, although not widely available. It should be used responsibly and with discretion, as these sites are historic and many sacred in nature. Due care should be taken to protect their locations as to mitigation any unintended increase in visitor traffic or vandalism. All sites presented below should be considered for any adverse impact that would be caused by offshore renewable energy construction.

## 5.1 Hawai'i Island

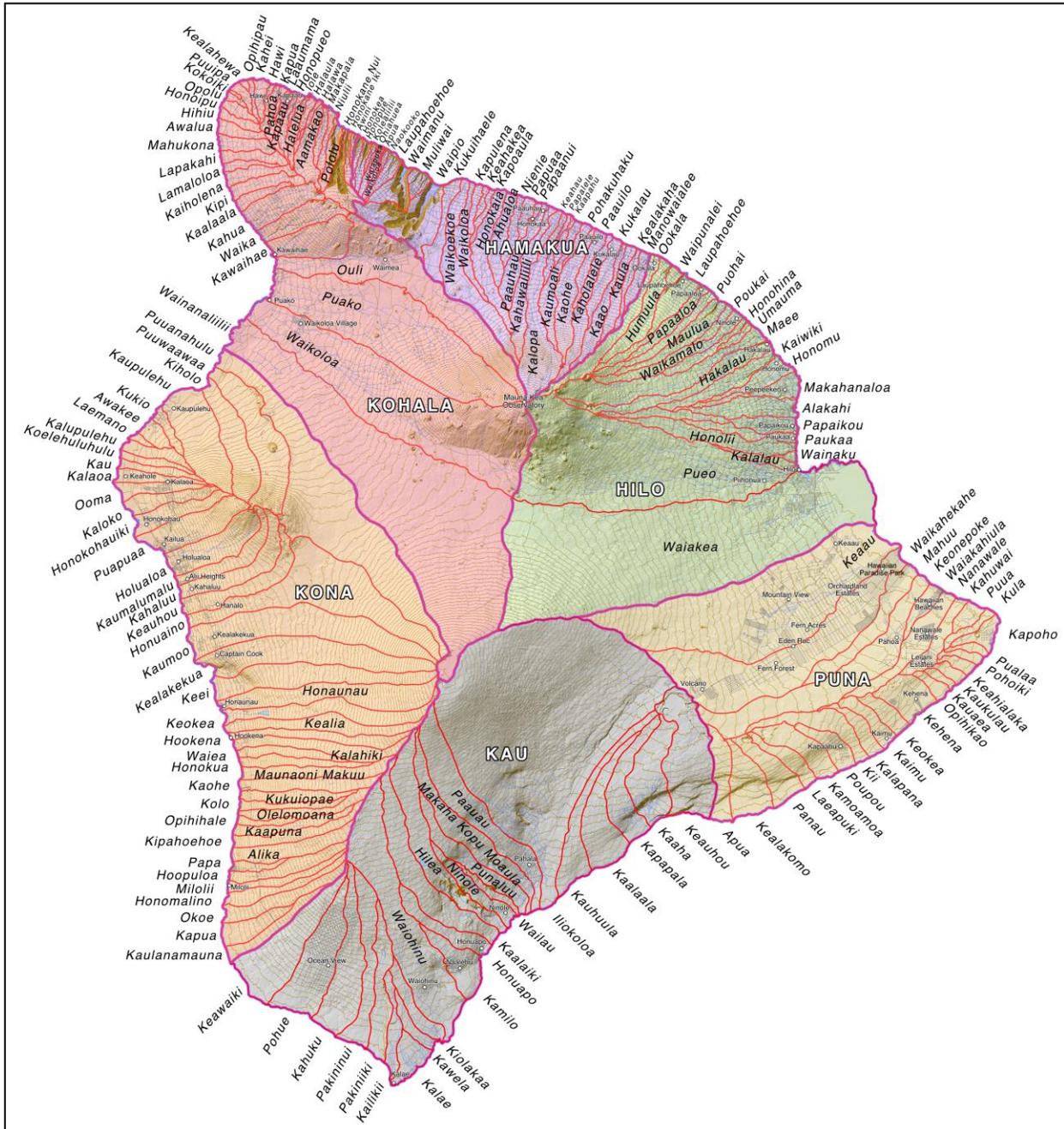


Figure 3: Hawai'i Island Moku (Source: IslandBreath.org) The island is divided into its moku by color. All of the following figures depicting the additional Hawaiian Islands are also divided into their moku.

Hawai'i Island (Figure 3) is the largest Hawaiian island and is the southernmost landmass of the United States. The island is roughly 10,432 km<sup>2</sup> (4,028 mi<sup>2</sup>) or 153 km (95 mi.) long north-south and 127 km (79 mi.) wide east-west. Hawai'i Island is divided into six moku, clockwise from the northern point, the districts include Kohala, Hāmākua, Hilo, Puna, Ka'ū, and Kona. Hawai'i Island is composed of five shield volcanoes, clockwise from the northern point they include

Kohala, Mauna Kea, Kīlauea, Mauna Loa, and Hualālai. Of the largest, Mauna Kea (Pu‘u Wēkiu or Pu‘u Kukahau‘ula) is roughly 4,205 meters (m) high (13,796 feet or ft) and Mauna Loa rises to 4,169 m (13,677 ft). “Mauna Kea” translates to “white mountain”, referring to its snow covered peak. It is also known to the Hawaiian people as Mauna-a-Wakea, the Mountain of Wakea (Sky Father). “Mauna Loa” translates to “long mountain” signifying its lengthy profile which traverses the southern portion of the island (Ulukau 2004). Kīlauea Volcano is one of the world’s most active volcanoes and is the only volcano currently producing lava in Hawai‘i. However, Mauna Loa and Hualālai are also active. Mauna Kea and Mauna Loa can be seen from several of the main Hawaiian Islands and were a beacon for traditional Hawaiian navigation practices.

Hawai‘i Island maintains a strong cultural history. Several highly significant cultural sites have been preserved for perpetuity with public access and an open viewplane. Hawai‘i Island is known to be the home island of several famous chiefs including Kamehameha the Great, it was the site of many battles, and was a valued source for natural resources such as lithic (stone) materials. Hawai‘i Island is also the location of Captain Cook’s landing in Kealahou Bay in 1778 and his death in 1779.

#### **5.1.1.1 *Hawai‘i Volcanoes National Park, State and National Register of Historic Places***

The Hawai‘i Volcanoes National Park (HVNP) encompasses Mauna Loa and Kīlauea Volcanoes within the south-central and southeast portions of Hawai‘i Island. HVNP was established in 1916, then recognized as an International Biosphere Reserve in 1980, and became a World Heritage Site in 1987. The scenic value of the park includes “nearly 30 miles of coastline with its spectacular seascapes and many ancient habitation sites” (Ladd 1974b). The park includes portions of Kona, Hāmākua, Hilo, Puna and Ka‘ū Districts and includes some of the most significant and unique cultural landscapes in the state, including Ka Lua o Pele (Kīlauea Crater, SIHP #50-10-52-5502, N.R. #74000291 [1974]) (Apple 1973c); ‘Ainapō Trail (Menziess Trail, SIHP #50-10-50-5501; N.R. #74000290 [1974]) (Apple 1973b); and the 1790 Footprints (SIHP #50-10-61-5505; N.R. #74000351 [1974]). The park also includes a large complex of archaeological sites known as the Puna-Ka‘ū Historic District. The following sites have an open viewplane and reasonable access.

#### **5.1.1.2 *1790 Footprints, SIHP #50-10-61-5505; N.R. #74000351 (1974)***

Hawai‘i Volcanoes National Park, Ka‘ū District, Kapapala Ahupua‘a, Island of Hawai‘i  
UTM: 19.3584800, -155.3630700, Long/Lat: 192131N, 1552147W  
Elevation: Approx. 2,900 feet above mean sea level (famsl)  
Period: A.D. 1750-1799  
Significance: Criteria A (event) and D (informational content)  
Type: Landscape

Within an approximately 17.33 km<sup>2</sup> (4,282 acre) area within the Keamoku lava flow, are scattered fossilized footprints representative of men, women, children, and hogs imprinted in hardened ash (Apple 1973a). The footprints were made shortly after the A.D. 1790 eruption of

Kilauea and are linked to Hawaiian families traveling through the Kau desert with Chief Keoua Kuahuula's army after battling with warriors of King Kamehameha.

A study conducted from 1998 to 2000 documented 1,773 footprints representing a minimum of 441 individuals (Nakamura 2003). The footprints were found to extend outside the boundaries of the National Park. Other traditional Hawaiian features in the preserve area, including surface structures, trail systems, and recovered artifacts attest to the importance of the site for gathering of faunal and lithic resources and as a main throughway in pre-contact and post-contact time periods.

A viewing center showcasing a segment of the footprints can be visited via a 1.61 m long (1 mi.) foot trail located approximately 14.48 km (9 mi.) southwest of the park headquarters. This site is associated with goddess Pele, Kamehameha the Great, and wars of the Big Island.

### **5.1.1.3 Puna-Ka'ū Historic District SIHP #50-10-62-5503; N.R. #74000294 (1974)**

Hawai'i Volcanoes National Park, Pāhala

Period: A.D. 1000-1825

Significance: Criteria A (event) and D (information potential)

Type: Village, Agriculture, Fishing, and Landscape

The Puna-Ka'ū Historic District contains “over 300 sites, including village complexes, temple sites, cave shelters, petroglyph fields, and coastal trails” (HHF 2014). The complex includes components from pre-contact through historic ranching time periods. Multiple site complexes are included within the Historic District, including the Keahou Landing and Village Complex (50-HV-75 to -78, -82) Lae'apuki Village (50-HV-323 to -332), Pu'uloa Petroglyph Field (50-HV-225) and others (Ladd 1974b). Modern natural disasters, such as tsunamis and volcanic eruptions, have affected several traditional Hawaiian villages of the district, including Kamoamo Village (50-HV-242, 50-HV-300 to -322), Poupou-Kauka Village Complex (50-HV-250 to -275), Ka'ili'ili Village (50-HV-288 to -294), and Kealakomo. Of the remaining sites within the Puna-K'ū District, Waha'ula Heiau is the most significant.

### **5.1.1.4 Waha'ula Heiau, 50-HV-276 to -283 and 50-HV-284 to -289**

Hawai'i Volcanoes National Park, Puna District

Also called 'Aha'ula (“sacred assembly”) (Pukui et al. 1974:218)

UTM: 19.3275000, -155.0319444; 191939N, 1550155W

Elevation: 12-39 famsl

Period: A.D. 1275-1770

Significance: Criteria B (persons) and D (information potential)

Type: Hawaiian Religious/Political Architecture

Waha'ula Heiau (“red mouth temple”) contains two very large stone wall enclosures. The heiau is said to have been constructed by Pā'ao, a highly influential foreign chief from Kahiki who brought new forms of stringent kapu practices and temple rituals. The temple was used by Kamehameha the Great as a heiau luakini kaua (sacrificial war temple). Archaeological

excavation within the heiau revealed the temple was likely remodeled at least three times spanning from A.D. 1275 to 1770 (Ladd 1972).

## **5.1.2 Hāmākua District**

### **5.1.2.1 Mauna Kea Adze Quarry, SIHP #50-10-23-4136 (1981); N.R. #66000285 (1962 National Historic Landmark NHL)**

Also called the Keanakāko‘i Crater Adze Quarry  
Mauna Kea Ice Age Natural Area Reserve  
UTM: 19.4001556, -155.2639228; 192401N, 1551550W  
Elevation: 10,000-13,000 fmsl  
Period: A.D. 1000-1499  
Significance: Criteria A (event) and D (informational content)  
Type: Lithic Industry/Processing/Extraction

The Mauna Kea Adze Quarry is located just beneath the summit of sacred Mauna Kea. The site is the largest lithic procurement site in the Pacific Basin, extending approximately 20 km<sup>2</sup> (7.72 mi<sup>2</sup>) in total size (Cleghorn et al. 1985; Mills et al. 2008). The site complex also includes religious shrines or ahu, trails, rockshelters, and petroglyphs. Geochemical analysis of the quarried stone and resulting lithic materials have been used to trace the wide use and exchange of this material throughout the Hawaiian Islands.

## **5.1.3 Ka‘ū District**

### **5.1.3.1 Mahana Archaeological District, SIHP #50-10-76-10,230 (1986); N.R. #86002802 (1986)**

Mahana Bay, Nā‘ālehu  
UTM: 18.9360132, -155.6464702; 185610N, 1553847W  
Elevation: Unknown  
Period: A.D. 500-1900  
Significance: Criterion D (informational content)  
Type: Village, Agriculture, and Recreation

The Mahana Archaeological District is located about 4.5 km (2.8 mi.) northeast of South Point and consists of multiple sites with various features and analyzed artifact assemblages (Hunt 1976). The features include residential postmolds and a canoe mooring. Artifacts include fishhooks, bone pendants, basalt-glass tools, and faunal remains of chicken and pigs. The overall interpretation of Mahana Bay argues evidence for a transition from a marine ecosystem to a terrestrial ecosystem emphasizing cultivation, animal husbandry, and development of social stratification (Hunt 1976; NPS 2009). A series of Hydration-Rind Dates for the site dates the area to A.D. 1000 to 1900 (Hunt 1976). Mahana Bay is dominated by the mountain peak, Pu‘uomahane, and contains a green sand beach, Papakōlea.

### **5.1.3.2 Manukā Bay Archaeological Complex**

Manukā State Wayside Park, Manukā Natural Area Reserve, Keawaiki

UTM: 19.0772469, -155.9019399; 190438N, 1555407W

Elevation: Unknown

Period: A.D. 1500-1799

Significance: Criterion D (informational content)

Type: Art and Recreation

Manukā Bay is located at the boundary of South Kona and Ka‘ū districts. The archaeological complex is situated on the north side of the bay and includes petroglyphs [SIHP #50-10-71-2146 (1981), N.R. #73000656 (1973)], a hōlua slide (SIHP #50-10-71-3660), a habitation complex, and a trail system (Cox and Stasack 1970; Emory 1970; NPS 2009). Hōlua is described as:

Certain pastimes were restricted to the chiefs, the most spectacular being holua sledding. A track of rock, layered with earth and lade slippery with grass, was made for tobogganing on a narrow sled. The sled or papa consisted of two narrow and highly polished runners, ...[about] seven feet in length, and from two to three inches deep. The two runners were fastened together by a number of short pieces of woods varying in length from two to five inches, laid horizontally across the runners. The contestants grasped the sled, ran a few yards to the brow of the hill or starting place, and throwing themselves forward, fell flat on the sled, and slid rapidly down the hill. Those who rode the farthest were considered the victors. This sport was extremely dangerous and only experts participated. (Schumacher 1962)

### **5.1.3.3 South Point Complex, SIHP #50-10-76-4140; N.R. #66000291 (1962, 1966)**

Ka Lae National Historic Landmark District, South Point Park, Na‘ālehu, Ka Lae

UTM: 18.9147222, -155.6844444; 185453N, 1554104W

Elevation: 6-20 fmsl

Period: A.D. 1000-1749

Significance: Criterion D (information potential)

Type: Habitation, Hawaiian Religion, Fishing, Agriculture, and Burial

South Point (Ka Lae) is known as an ancient canoe mooring and fishing destination. Some of the earliest radiocarbon dates recorded for the Hawaiian Islands were recovered from this area. The South Point Complex includes the Pu‘u Ali‘i Sand Dune site, the Makalai Cave Shelter, Kalalea Heiau, and Pohakuokeau Stone as well as mooring holes and salt pans (Horwitt 1970).

### **5.1.3.4 Wai‘ahukini Rockshelter (Site H8)**

Ka Lae National Historic Landmark District, South Point Park

Period: A.D. 1300-1770s

Significance: Criterion D (information potential)

Type: Habitation, Fishing

Wai‘ahukini is located approximately 4 km (2.49 mi.) northwest of South Point, near Pali o Kūlani. Wai‘ahukini includes a large site complex of some 125 sites including stone structures and multiple rockshelters (Kirch 1985). A grouping of large stone residential structures, known as the “chief’s complex” is attributed to Kalaniopu‘u (Site HA-B22-140). Wai‘ahukini Rockshelter (H8) was excavated in the 1950s by Bishop Museum archaeologists. Re-dating of charcoal samples found the site was utilized from A.D. 1300-1700s (Mulrooney et al. 2014).

#### **5.1.3.5 *Ki‘i Petroglyphs, SIHP #50-10-76-3598 (1984); N.R. #84000919 (1984)***

Also known as 50-HA-B17-007

UTM: 59500N, 467000E

Elevation: Unknown

Type: Art, Religion

The site is located approximately 0.8 km (0.5 mi.) north of Lae-o-Kamilo near a coastal trail and consists of approximately 50 units of human figures on pahoe-hoe lava (Cox and Stasack 1970; Emory 1970). Only a very small number of petroglyphs have been dated. Petroglyphs have been radiocarbon dated as early as the 13<sup>th</sup> century (Stasack et al. 1996).

#### **5.1.4 Kona District**

The northern portion of Kona District is part of the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) and therefore should not be considered for project development. However, as a good faith measure, this study attempts to provide a comprehensive list of significant sites for the district.

#### **5.1.5 North Kona**

##### **5.1.5.1 *Hale Halawai o Hōlualoa, SIHP #50-10-37-7234 (1986); N.R. #87000794 (1987)***

Also known as Living Stones Church, Hōlualoa Stone Church, Hōlualoa Meeting House, Kailua-Kona

UTM: 19.6397222, -155.9955556; 19382N, 1555944W

Elevation: Approx. 8 fmsl

Period: 1850-1874

Significance: Criteria A (event), Criteria C (site engineering)

Type: Historic Religion, Architecture

Hale Halawai O Hōlualoa is a 9.14 m by 18.29 m (30 ft by 60 ft) historic church built in the 1850s with coral limestone and lava stone, making it one of the more rare stone structures in Hawai‘i (Smith 1986). The site is located in Kailua-Kona on the North Shore of Hōlualoa Bay across from Kāmoa Point. The structure contains an old cemetery with graves dating to the 1820s, at the time of the very first Hawaiian Christians. Hale Halawai O Hōlualoa also contains two papamu game boards and three salt evaporation stones (Ho‘okuleana 2011; Smith 1986).

### **5.1.5.2 Hōlualoa 4 Archaeological District, SIHP #50-10-37-23,661 (2003); N.R. #05000542 (2005)**

Also known as Kāmoa Point-Keolonāhihi Complex (SIHP #50-10-37-2059), Keakealaniwahine Residential Complex, and Kaluaokalani

Kailua-Kona, Hōlualoa 4 Ahupua‘a, Palau‘eka

UTM: 19.6013889, -155.9758333; 193605N, 1555833W

Elevation: 1-3 famsl

Period: A.D. 1300-1900

Significance: Criteria A (event), B (person), C (distinct type), and D (info content)

Type: Hawaiian Religious/Political Architecture, Royal Domestic Habitation

The Hōlualoa Archaeological District includes two site complexes. The site includes Keolonāhihi State Historical Park, a 0.049 sq km (12 acre) area on the seaward side of Ali‘i Drive and Keākealaniwahine Complex National Historic Site, encompassing 0.065 km<sup>2</sup> (16 acres) inland of the roadway. The two sites are considered one large royal center that was utilized by successive royal families for multiple generations that spanned from A.D. 1300 (Keolonahihi), A.D. 1600 (Keakamahana and Keakealaniwahine), and A.D. 1780 (Kamehameha I) (Yent 2003a; Yent 2003b). The land was purchased by the state in 1980, however only limited vegetation clearing has been done. The site is currently covered in vegetation and is slated for the formation of a future state park (HHF 2014). The two complexes contain a multitude of archaeological sites including religious, habitation, and burial features (Yent 2003a; Yent 2003b).

### **5.1.5.3 Kāmoa Point Complex, SIHP #50-10-37-2059; N.R. #83000247 (1983)**

Also known as Keolonāhihi Complex, Kāmoa Keolonahihi Point Complex; Hōlualoa 4 Archaeological District, Keākealaniwahine Residential Complex, and Kaluaokalani, Kailua-Kona

UTM: 19.604722, -155.9783333; 193602N, 1555834W

Elevation: 1-3 famsl

Period: A.D. 1300-1824

Significance: Criteria A (event), Criteria B (person), Criteria C (architecture), Criteria D (information potential)

Type: Hawaiian Religious/Political Architecture, Royal Domestic Habitation

Kāmoa Point Complex is located along the southern edge of Hōlualoa Bay and is a popular surfing location, both today and historically (Yent 2003a; Clark 1985). In fact, Kāmoa Point is thought to be where King Kamehameha I learned warfare techniques and practiced surfing. The site is also associated with Keolonāhihi, who was thought to be either the daughter or niece of the priest Pa‘ao. With her husband Aka, they constructed the complex at Kāmoa (Yent 2003a). In John Strokes’ 1906 survey of heiau on the Island of Hawai‘i, he located three heiau at Keolonāhihi: Keolonāhihi Heiau, Hale‘a‘ama Heiau, and Haleokekupa Heiau. Since then, several more heiau have been discovered along with canoe sheds, wells, springs, bathing pools, and ponds (Yent 2003a; Clark 1985). Later additions to the site area included the “10-foot high walls of chiefess Keakealaniwahine’s home, dating back to about 1650” (HHF 2014). The

Keākealaniwahine Complex includes some five heiau and a pu‘uhonua (place of refuge). Chiefess Keākealaniwahine is one of only two women known to have ruled the Big Island; the other ruling woman was her mother, Keakamahana. Chiefess Keakealaniwahine was also the great-great-grandmother of Kamehameha I (HHF 2014).

**5.1.5.4 Kaloko-Honokōhau National Historical Park, SIHP #50-10-27-4138; N.R. #78003148 (1962 NHL, 1978)**

Kaloko-Honokōhau National Historical Park, between Honokōhau and Kaloko, Kailua-Kona  
UTM: 19.6808319, -156.0306932; 194051N, 1560150W

Elevation: 2-7 famsl

Period: A.D. 1000-1499

Significance: Criterion D (informational potential)

Type: Village

The Kaloko-Honokōhau National Historic Park was established in 1970 and includes habitation complexes, burials, fishponds, Pu‘uoina Heiau, fishing shrines, a hōlua slide, and several petroglyphs (Cordy et al. 1991; Carson and Rieth 2008; Ladd 1968; Soehren 1981). Fishponds include Kaloko, Aimakapā, Alanaio, and ‘Ai‘opio fish trap.

**5.1.5.5 Honokōhau Settlement, SIHP #50-10-27-4138; N.R. #66000287 (1962 NHL, 1966)**

Kaloko-Honokōhau National Historic Park, Kailua-Kona  
Keahole Point

UTM: 19.6808319,-156.0306932; 194051N, 1560150W

Elevation: 2-7 famsl

Period: A.D. 1499-1000, A.D. 1000-500

Type: Hawaiian Religious/Political Architecture, Aquaculture/Fishponds

The Honokōhau Settlement consists of burials, habitational sites, religious shrines, heiau, fishponds, and petroglyphs (Ladd 1968; Soehren 1981; NPS 2008). In 1970, the Honokōhau Settlement became part of the Kaloko-Honokōhau National Historic Park.

**5.1.5.6 Kamakahonu National Historic Landmark, SIHP #50-10-27-7002 (1993); N.R. #66000288 (1962 NHL, 1996)**

Also called the Residence of King Kamehameha I

On the northwest edge of Kailua Bay (formerly called Kamakahonu Bay), Kailua-Kona

UTM: 19.6396623, -155.9978771; 193823N, 1555952W

Elevation: 2-7 famsl

Period: A.D. 1800-1900

Significance: Criteria B (person) and D (informational content)

Type: Royal Domestic Habitation, Hawaiian Religious/Political Architecture

Kamakahonu National Historic Landmark includes the land where Kamehameha the Great lived just prior to his death. The only remaining structures on the property are the reconstructed ‘Ahu‘ena Heiau and the mortuary platform of Kamehameha I.

**5.1.5.7 ‘Ahu‘ena Heiau National Historic Landmark, SIHP # 10-27-7002; N.R. #66000288**

Kamakahonu National Historic Landmark  
Kaahumanu Place, Kailua-Kona  
UTM: 19.6422222, -156.0002778; 193832N, 1560001W  
Elevation: 4-13 fmsl  
Period: A.D. 1500-1900  
Significance: Criteria A (event), B (persons)  
Type: Hawaiian Religious/Political Architecture

‘Ahu‘ena Heiau is part of the Kamakahonu National Historic Landmark that includes the former residence area of King Kamehameha I, located on the northwest edge of Kamakahonu Bay (“the turtle eye”) (Dunbar 1985). Kamakahonu was an early royal center called Lanihau and was utilized by Kamehameha I beginning around 1813 until his death in 1819 (Wisniewski 2007). Kamehameha II (Liholiho), other chiefs, retainers and craftsmen, several storehouses and work sheds also inhabited the land surrounding Kamakahonu Bay (Dunbar 1985). King Kamehameha restored ‘Ahu‘ena Heiau, bringing the temple to approximately 45.7 m by 36.6 m (150 ft by 120 ft) in size. It is thought ‘Ahu‘ena was likely a luakini heiau, however, Kamehameha re-dedicated it as a Lono or agricultural-type heiau during his reign (Dunbar 1985). It is said that the abolishment of the kapu system in 1819 occurred at Kamakahonu Bay, through the act of Liholiho publically breaking the kapu of men eating separately from women. Subsequently, the property was lived on by Chief Kuakini who converted the land into a fort, known as Fort of Kailua, and constructed a two story dwelling on the site. The property exchanged hands many times and fell into disrepair. In 1978, following an archaeological investigation and review of early historic drawings and accounts, the site was “recreated on a two-thirds scale replica of the original,” and the area was designated a National Historic Landmark (KHS 2005:4).

**5.1.5.8 Hulihe‘e Palace, SIHP #50-10-28-7001 (1981); N.R. #73000653 (1973)**

Kailua Bay, Kailua-Kona  
UTM: 19.6422222, -155.9972222; 193832N, 1555950W  
Elevation: 8 fmsl  
Period: 1838-1899  
Significance: Criteria B (persons), Criteria C (site engineering)  
Type: Historic Religion, Royal Domestic Habitation, and Architecture

Hulihe‘e Palace is a two-story, rectangular building located near the center of Kailua Bay. The palace was built in 1838 for Governor John Adams Kuakini. Later, Princess Ruth Ke‘elikolani lived in a hale pili on the grounds (KHS 2005). The palace was a summer house for King Kalākaua and Queen Kapi‘olani, who renovated the home in 1884 (Riconda and Fox 1972). The

site was restored by the Daughters of Hawai‘i in 1927, opened as a museum in 1928, and was placed on the National Register of Historic Places in 1973 (Wisniewski 2007).

#### **5.1.5.9 Kahalu‘u Bay-Keahou Sacred Sites**

The eastern coastline of the Big Island contains a condensed patchwork of archaeological sites. Within the ahupua‘a of Kahalu‘u and Keahou are a multitude of highly significant and well-preserved sites:

##### **5.1.5.9.1 Kahalu‘u Bay Historic District, SIHP #50-10-37-4150; N.R. #74000713 (1974)**

UTM: 19.5805339, -155.9670210; 193450N, 1555801W

Elevation: Unknown

Period: A.D. 1500-1760

Significance: Criterion D (information potential)

Type: Hawaiian Religious/Political Architecture, Art and Recreation, Aquaculture and Fishponds

Kahalu‘u was an important royal center and residence from the mid-17th century. It was the residence of Lonoikamakahiki from around A.D. 1640 to 1660 and successive rulers Alapa`inui, Kalani`ōpu`u, and Kamehameha from around A.D. 1740 to 1760 (KVBID 2011). The area contains Ku‘emanu Heiau, the large residential complex of Lonoikamakahiki, the Keawaiki canoe landing, fishponds (Waikua‘ala and Po‘o Hawai‘i), and the remnant of a large, stone breakwater known as Paokamenehune. Petroglyphs along the coastline can be viewed at low tide and are thought to depict the defeat of Kamalalawalu of Maui by Lonoikamakahiki. Historically, Kahalu‘u was home to Governor John Adams Kuakini and King David Kalākaua. Archaeological sites are often grouped with those within Keahou Ahupua‘a, directly south of Kahalu‘u (Newman 1974).

##### **5.1.5.9.2 Keahou Sacred Sites**

Keahou Bay

UTM: 19.5788889, -155.9713889; 193444N, 1555817W

Elevation: Unknown

Period: A.D. 1400-1900

Significance: Criteria A (event), B (person), and D (informational content)

Type: Hawaiian Religious/Political Architecture, Royal Domestic Habitation, Art and Recreation

Keahou Sacred Sites includes multiple heiau, a hōlua slide, and the royal birthplace of Kamehameha III [Kauikeaouli Stone, SIHP #50-10-37-4383 (1978), N.R. #78001018 (1978)] (Cummins 1973). The Keahou Hōlua Slide National Historic Landmark [SIHP #50-10-37-1669, N.R. #66000290 (1962, 1966)] is one of the best preserved and longest hōlua slides in the State. The slide measures approximately 393.2 m (1,290 ft) long and at one time would have stretched some 1.22 km (4,000 ft), emptying into He‘eia Bay (Schumacher 1962). Heiau include Hāpai Ali‘i, Ke‘ekū, Kapuanoni, and Mākole‘ā.

**5.1.5.9.3 Hāpai Ali‘i Heiau SIHP #50-10-37-3817, Ke`ekū Heiau SIHP #50-10-3818, and Mākole`ā (also known as Ke`ekūpua`a Heiau, SIHP #50-10-37-3819)**

Keahou Sacred Sites

Also referred to as Hapaiali‘i Heiau (Hāpai Ali‘i); also referred to by the names Ke`ekū or Mākole`ā Heiau is also known as Ke`ekūpua`a Heiau

Period: A.D. 1411-1465

Type: Hawaiian Religious/Political Architecture, Art

These heiau are situated in near proximity to one another. Hāpai Ali‘i and Ke`ekū Heiau were built nearly side by side at sea level and become almost immersed during high tide. The three heiau have been restored by the Kamehameha Investment Corporation with assistance from archaeologists, experts in uhaū humu pōhaku (dry stack masonry), cultural practitioners, Native Hawaiians, local residents, and local students. Hāpai Ali‘i Heiau has been radiocarbon dated to have been initially constructed around A.D. 1411 to 1465 (HHF 2014). It was found that the temple corners of Hāpai Ali‘i Heiau are aligned to the setting sun’s path. When viewed by standing behind a particular stone, the winter solstice, equinox, and summer solstice are in alignment. Petroglyphs can be seen at low tide carved into the pāhohoe on the makai side of Mākole`ā Heiau.

**5.1.5.10 Kalaoa Permanent Housing Site, SIHP #50-10-27-10,205; N.R. #92001552 (1992)**

Also known as 10-27-10,205; HA-D15-12

Kailua-Kona

UTM: 2183750N, 808330E

Elevation: Unknown

Period: A.D. 1500s-1800s

Significance: Criteria C (architectural type) and D (information potential)

Type: Domestic Residence

The Kalaoa Permanent Housing Site 10,205 is located in northern Kailua-Kona and is within lands of the Natural Energy Laboratory of Hawai‘i Authority (NELHA) (Cordy 1988). The site is interpreted as a commoner’s permanent single dwelling, measuring roughly 30.5 m by 36.6 m (100 ft by 120 ft). The site consists of a house platform, a small platform, a small rectangular midden area with an L-shaped wall, and a larger platform. These features are thought to represent a single sleeping area, two special purpose structures, and a possible men’s house (Cordy 1988). Based on volcanic glass dates, the site was utilized during the A.D. 1500s-1800s (Cordy 1988).

**5.1.5.11 La‘aloa Bay**

Also referred to as White Sands, Magic Sands, or Disappearing Sands

La‘aloa Bay Beach Park, La‘aloa

UTM: 19.5945663, -155.9721762; 193540N, 1555820W

Elevation: Unknown

Period: Pre-contact

Type: Hawaiian Religious/Political Architecture, Recreation, and Fishing

La‘aloa Bay contains a public beach known for its disappearing sands during winter months as well as several archaeological sites. The area includes Haukalua heiau, a stone platform thought to be a kahua hale or hale foundation, a canoe landing, a papamu game board, poho palu (bait mortars), and a Ku‘ula (fishing deity stone) (Clark 1985). The site area is not included on the State or National Registers.

#### **5.1.5.12 Pu‘u Wa‘awa‘a**

Known as a source of volcanic glass

UTM: 19.7366667, -155.8861111; 194412N, 1555310W

Elevation: 480-1,575 famsl

Period: Pre-contact

Significance: Criterion D (information potential)

Type: Lithic Industry/Processing/Extraction

Pu‘u Wa‘awa‘a was a rich resource for volcanic glass, used as a staple cutting material during pre-contact times. The material has been traced to areas throughout Hawai‘i (McCoy et al. 2011).

#### **5.1.6 South Kona**

##### **5.1.6.1 ‘Āhole Hōlua Complex, SIHP #50-10-65-2133; N.R. #73000655 (1973)**

UTM: 19.1394444, -155.9163889; 190822N, 1555459W

Elevation: 10-50 famsl

Period: A.D. 1500-1799

Significance: Criterion D (Informational Potential)

Type: Hawaiian Sport and Recreation

The ‘Āhole Hōlua Complex is located in South Kona, just south of Miloi‘i, on a bluff overlooking Pu‘u Hinahina Bay. The hōlua slide is constructed on a steeply sloping hillside. The slide runs for approximately 60 m (196.9 ft) and is 2.5 m (8.2 ft) wide (Newman 1972a). The site includes one of the best-preserved hōlua slides in the Hawaiian Islands. Hōlua was a sport where people would use wooden sleds to slide down the steep, smooth surface of the structure. The top of the hōlua provides a level running platform used by the participants to gain speed before launching themselves down the slope. Stone features, referred to as “gallery terraces,” are adjacent to the slide where the sport could be easily viewed. Other features include platforms, walls, stepping stone trails, shelters, and walled enclosures (Newman 1972a). The ground surface surrounding these features was covered in food refuse (marine shell, animal bone, kukui nut, and coconut fragments). Additionally, a walled potential house site is situated near the base of the hōlua.

**5.1.6.2 Kealakekua Bay State Historical Park, SIHP #50-10-47-7000; N.R. #73000651 (1973)**

Also called Kelakekua Bay State Historical and Underwater Park, Captain Cook

UTM: 19.4805556, -155.9288889; 192850N, 1555544W

Elevation: Unknown

Period: A.D. 1500-1900

Significance: Criteria A (event), B (person), and D (informational content)

Type: Village, Royal Domestic Habitation, Religious Ceremony, and Battle Site

Kealakekua Bay includes the villages of Nāpo‘opo‘o and Ka‘awaloa. Ka‘awaloa Village is important as a residence of Chief Kalaniopu‘u. Kealakekua Bay is known for associations with multiple important persons in Hawai‘i’s history. Kealakekua Bay was the location of the Moku‘ohai Battle in 1782. The bay is also famous for being the location where Captain Cook landed in 1779 on his third voyage; a monument commemorates the occasion. Other significant cultural resources within the area include the Pali Kapu of Keōua (sacred cliff), Hikiau Heiau State Monument, Helehelekalani Heiau, royal houses of Kamehameha I, the house site of Hewahewa, a great wall, and a pond (State Parks 1997). Hikiau was a luakini heiau maintained by Kamehameha Pai‘ea. Hikiau is the site where the son of Kalaniōpu‘u, Kīwalaō, was sacrificed as Kamehameha absorbed the rule of Hawai‘i Island.

**5.1.6.3 Pu‘uhonua O Hōnaunau National Historical Park, SIHP #50-10-47-4137; N.R. #66000104 (1966)**

Also known as City of Refuge National Historical Park and Hōnaunau Historic District

20 miles south of Kailua-Kona, Kailua-Kona, Ahupua‘a of Honaunau, Keokea, and Kiilae

UTM: 19.4090314, -155.8996777; 192433N, 1555359W

Elevation: 52-171 fmsl

Period: A.D. 1200-1926

Significance: Criterion D (information potential)

Type: Royal Domestic Residence, Village, Hawaiian Religious/Political Architecture, and Recreation

Pu‘uhonua O Hōnaunau includes former ali‘i palace grounds, surrounding villages, and a coastal area of refuge (Kirch 1985). There are more than 320 features within the site complex (Ladd 1974a). A pu‘uhonua, or place of refuge, area is located along the coast and is bordered by a massive stone wall called the “Great Wall”. The Great Wall was built around A.D. 1550 and is over 304.8 m (1,000 ft) long, 5.49 m (18 ft) wide, and 3.66 m (12 ft) high (Ladd 1974a). The Great Wall defines the perimeter of the pu‘uhonua and encompassing heiau. The pu‘uhonua was for people who broke kapu (sacred law), vanquished soldiers, and families during wartime. Several important structures are located within this site. ‘Āle‘ale‘a Heiau, located within the pu‘uhonua, was excavated and stabilized in 1963. The study found the heiau was built in six stages, beginning around A.D. 1400 (Ladd 1974a).

#### **5.1.6.4 Hale o Keawe**

Pu'uhonua O Hōnaunau National Historical Park  
UTM: 19.4244444, -155.9150000; 192528N, 1555454W  
Elevation: 0  
Period: A.D. 1650-1819  
Significance: Criterion D (information potential)  
Type: Hawaiian Religious/Political Architecture

Hale o Keawe was built around A.D. 1650 as a royal mausoleum. It is the main heiau within the pu'uhonua and was famously sketched by Rev. William Ellis in 1823. "The limits of the original stone platform were re-established in 1967 and the temple house with its associated images were completely restored" (Ladd 1974a:5). The site is approximately 2023 square meters (sq m) (0.5 acres) in size.

#### **5.1.7 Kohala District**

The entire west boundary of Kohala District is part of the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) and therefore should not be considered for project development. However, as a good faith effort a comprehensive list of sites for Kohala District is provided.

##### **5.1.7.1 Kohala Historic Sites State Monuments**

The Kohala Historic Sites State Monuments include Mo'okini Heiau and Kokoiki (Kamehameha I Birth Site) located on the northern tip of Hawai'i Island.

##### **5.1.7.1.1 Mo'okini Heiau National Historic Landmark, SIHP #50-10-01-2328 (1981); N.R.#66000284 (1962 NHL, 1966)**

Kohala Historic Sites State Monument, 'Upolu  
UTM: 20.2608333, -155.8794444; 201539N, 1555246W  
Elevation: Approx. 3 fmsl  
Period: A.D. 1000-1824  
Significance: Criteria A (person), C (site type), and D (informational content)  
Type: Hawaiian Religious/Political Architecture, Village

Mo'okini Heiau (temple of "many mo'o or many lineages") is perhaps one of the most infamous heiau of Hawai'i. The heiau is said to have been constructed by Pā'ao, a priest from Kahiki (Hawaiian homeland), or possibly the High Priest Kuamo'o and then later rebuilt by Pā'ao and is thought to be the earliest luakini (sacrificial) heiau in Hawai'i (NPS n.d.(a)). The walls of the shrine are estimated to have been 9.14 m (30 ft) high at one time, forming a parallelogram with sides ranging from 81.38 m (267 ft) to 34.14 m (112 ft) long. The site was designated as Hawai'i's first National Historic Landmark in 1963. Kamehameha I was born at Kokoiki, very close to Mo'okini Heiau.

### **5.1.7.2 Lapakahi Complex, SIHP #50-10-02-2245; N.R. #73000654 (1973)**

Lapakahi State Historical Park, North Kohalā, Mahukona

UTM: 20.1716667, -155.9005556; 201018N, 1555402W

Elevation: 13-43 fmsl

Period: A.D. 1500-1924

Significance: Criterion D (informational content)

Type: Village, Agricultural, Religion, Ceremonial, and Fishing

The Lapakahi Complex is located within the Lapakahi State Historic Park and stretches 1.61 km (1 mi.) along the coast and 6.44 km (4 mi.) inland to Kohala Ridge (Clark 1985; Newman 1972b). The Lapakahi Complex is situated across several ahupua‘a including Pu‘ukole, Lapakahi, Koea, Koaie, and Koaieae (Newman 1972b). From the summer of 1968 to 1970, intensive archaeological research was conducted by the Department of Anthropology of the University of Hawai‘i to collect information about Koai‘e fishing village (Clark 1985; Kirch 1985). Results from the study showed that Koai‘e served as the center of population and coastal cultural activity until the late 1800s when it was abandoned (Clark 1985). The complex contains habitation sites, religious sites, stone enclosures and platforms, and the Lapakahi Field System (Newman 1972b). The Lapakahi Field System was built around A.D. 1400 and was aggressively expanded after A.D. 1500 (Kirch 1994).

### **5.1.7.3 Puakō Petroglyph Archaeological District, SIHP #50-10-11-4713 (1982); N.R. #07000513 (1983), N.R. # 83000248 (2007)**

Holoholokai Beach Park, Mauna Lani Resort, Puakō

UTM: 05201670E, 2209720N

Elevation: Approx. 3 fmsl

Period: A.D. 1000-1900

Significance: Criterion D (informational potential)

Type: Art, Religious Landscape, and Ceremonial

The Puakō Petroglyph Archaeological District is located along the Kohala coast at Holoholokai Beach Park. The site consists of over some 3,000 units of petroglyphs on approximately 0.943 sq km (233 acres) of pahoehoe (Lee 1997a; Lee 1997b). Previous archaeological research done by the Bishop Museum (1964), Tuggle (1982), Cox and Stasack (1970), Kirch (1973, 1979), Tomonari-Tuggle (1982), and Welch (1984) refer to Puakō as a boundary marker, or related to a trail known as the Kāea Trail (Lee 1997b). The petroglyphs consist of anamorphic and geometric objects, as well as some carvings that may refer to genealogy, family, and ‘aumākua. Petroglyphs representing the god Lono also indicate a reference to the makahiki season (Lee 1997a; Lee 1997b). Based on the style of the design, the site is suggested to date to the pre-contact time period. Dates from the southern part of Kohala suggest the site may date around A.D. 1000, while AMS radiocarbon dates associated with two petroglyphs at Puakō obtained dates around A.D. 1400 (Lee 1997b; GoHawaii 2015).

#### **5.1.7.4 Pu'ukoholā Heiau National Historic Site, SIHP #50-10-05-4139; N.R. #07001173 (1966)**

Also known as Pu'ukohola Historic District, N.R. #66000105 (1972)

North end of Hawai'i off I-26, 1.45 km (0.9 mi.) southeast of Kawaihae, Kawaihae

UTM: 20.0305556, -155.8241667; 200150N, 1554927W

Elevation: 6-20 fmsl

Period: A.D. 1750-1824

Significance: Criteria A (event), C (site type), and D (information potential)

Type: Hawaiian Religious/Political Architecture, Domestic Government Residence, Art and Recreation, Landscape

Kamehameha Paiea (Kamehameha I) built Pu'ukoholā Heiau for the war god, Kūka'ilimoku. The heiau was built around 1791 and measures approximately 76.2 m (250 ft) in length by 30.48 m (100 ft) in width. Kamehameha the Great's kahu foretold that if the temple were built and dedicated to Kūka'ilimoku that he would successfully unify the Hawaiian Islands. In 1810, the prediction was confirmed when Kamehameha successfully conquered the islands. The Kingdom then lasted for 83 years until the illegal overthrow of the Hawaiian monarchy in 1893.

Pu'ukoholā Heiau was commemorated in 1928 as a Historical Landmark (NPS 2015). The heiau was declared a registered National Historic Landmark in 1966. In 1972, it was upgraded to a congressionally authorized National Historic District. The district also includes the John Young Homestead (SIHP #50-10-05-2296), Mailekini Heiau (turned into a fort during Kamehameha I), and Hale o Kapuni (submerged heiau off the coast).

Other important cultural and archaeological sites in Kohala District include Kīholo State Park Reserve, the Kohala Field System, and various fishponds. Fishponds include: Kahapapa and Ku'uali'i near 'Anaeho'omalu Beach (Waikoloa Beach Park); as well as Kahinawao, Kalahuihua, Ka'ai'opio, Hope'ala, Manoku, Lahuipua'a, and Waipuhi.

#### **5.1.8 Puna District**

No sites within the Puna District were selected for this study due to recent volcanic activity, which has restricted highway access to the area. This area will need to be researched prior to any considerations for placement of offshore renewable energy structures in view of Puna District.

## 5.2 Kaho‘olawe

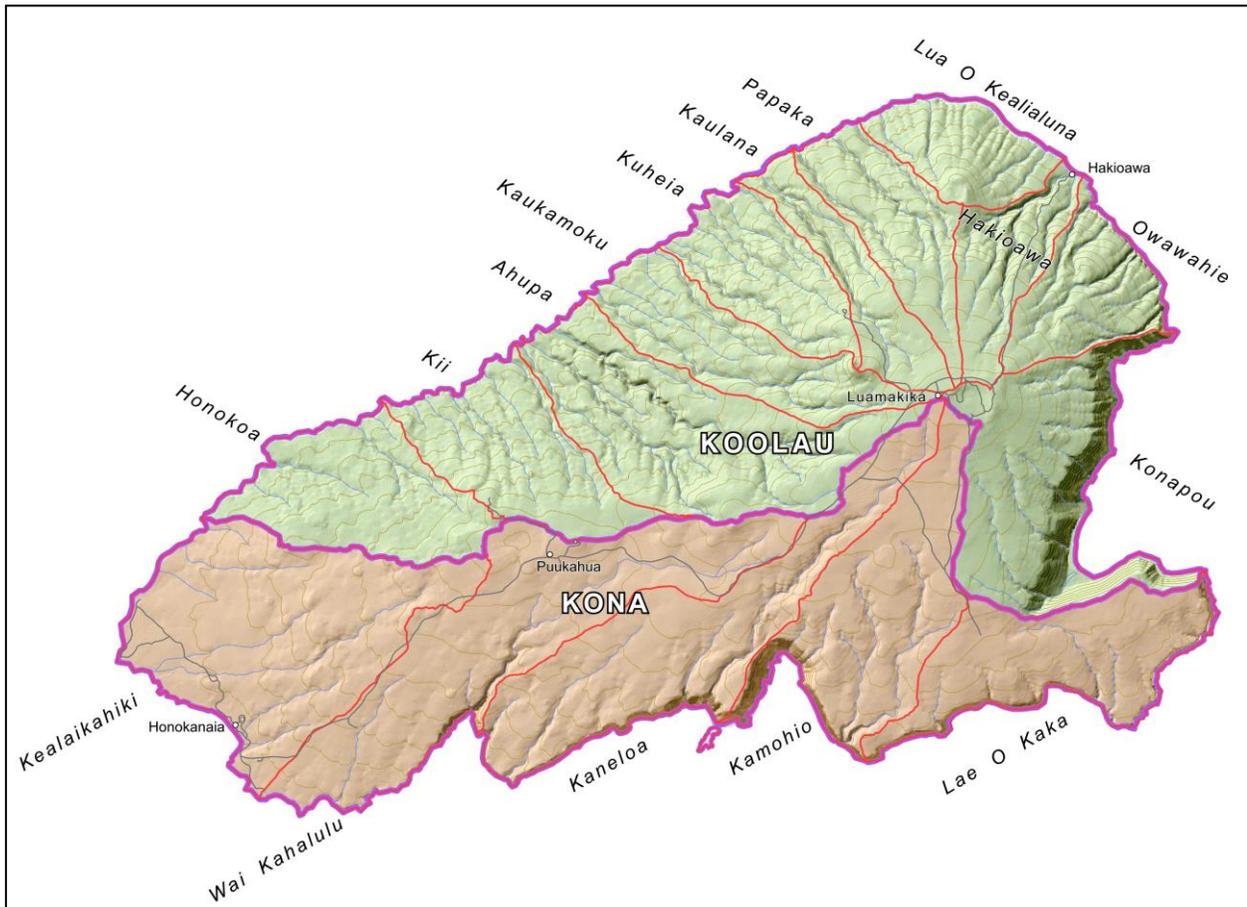


Figure 4: Kaho‘olawe Moku (Source: IslandBreath.org)

Kaho‘olawe is the smallest of the eight major Hawaiian Islands, measuring roughly 11 miles long by 6 miles wide and encompassing approximately 45 square miles (116 square kilometers) (ABC Hawai‘i, Mita and Peebles 1994). The name “Kaho‘olawe” can be translated to “the taking away [as by currents]” (Ulukau 2004). The island of Kaho‘olawe was important to traditional Hawaiians for fishing resources, setting off on long-distance voyages, religious ceremony, and procurement of volcanic glass lithic materials.

In the 1940s the U.S. Navy began using Kaho‘olawe (Figure 4) as a bombing target. In 1981, the entire island was listed on the National Register for Historical Places and designated the Kaho‘olawe Archaeological District (N.R. #81000205). The south and east sides of Kaho‘olawe are visible from Maui and Lāna‘i Islands and bound by a National Marine Sanctuary Area. The west side of the island is visible from O‘ahu.

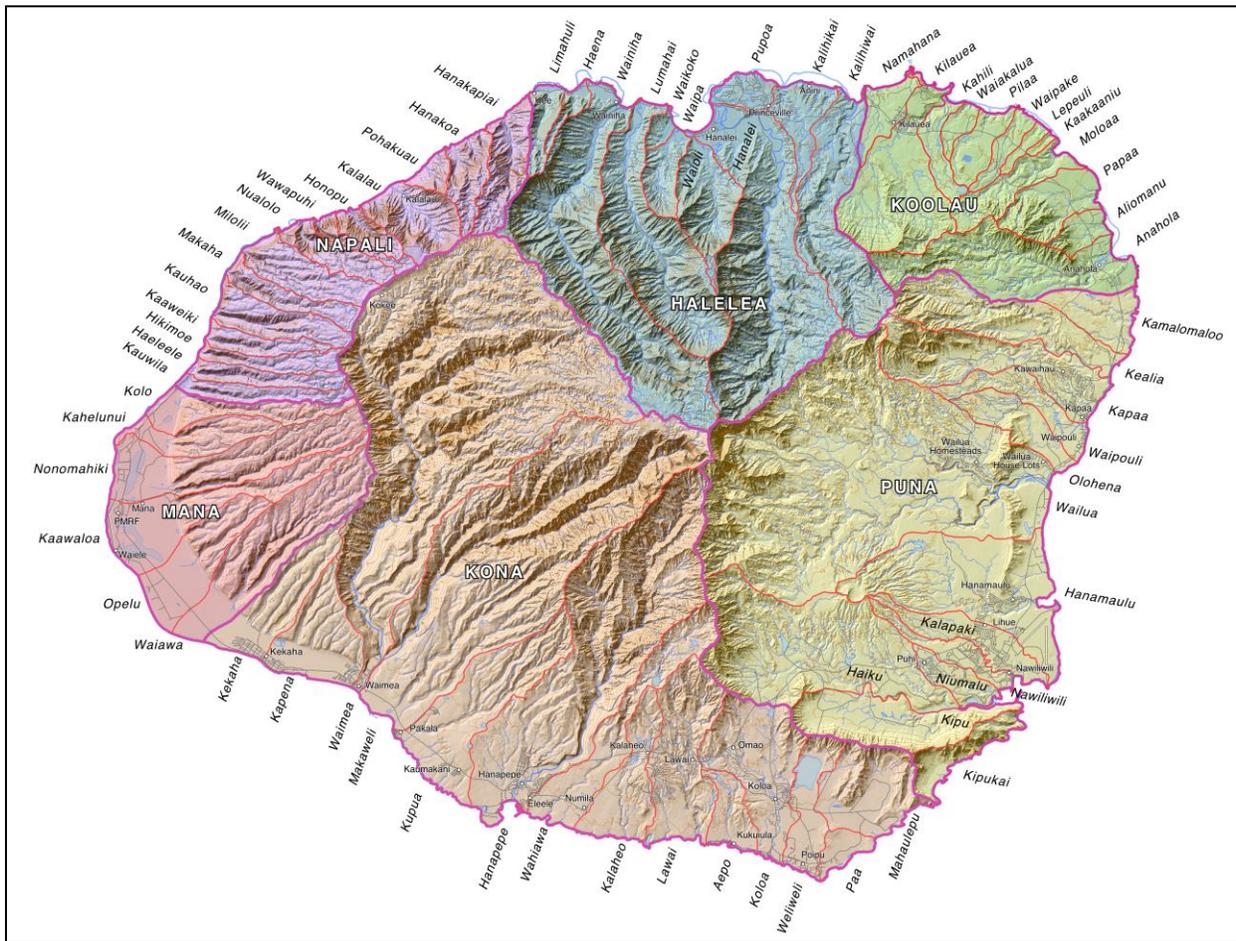


Figure 5: Kaua'i Moku (Source: IslandBreath.org)

### 5.3 Kaua'i

Kaua'i (Figure 5) is the fourth-largest island of the Hawaiian chain, measuring approximately 53.1 km (33 mi.) long by 40.2 km (25 mi.) wide and encompassing around 1,422 km<sup>2</sup> (549 mi<sup>2</sup>) (Mita and Peebles 1994). Mount Wai'ale'ale ("overflowing water"), located in the center of the island, is the tallest mountain on the island at 1601 m (5,253 ft) and the wettest spot on earth. Kaua'i is divided into six districts: Haleale'a ("joyfull house"), Kona ("leeward"), Ko'olau ("windward"), Mana ("power"), Nā Pali ("the cliffs"), and Puna ("coral"). The north coast of Kaua'i is part of the HIHWNMS, including lands adjacent to Haleale'a District and the northwest portion of Ko'olau District. This report does not present all of the significant sites throughout Kaua'i because many of the sites have been incorporated into community developments and golf courses, which has compromised the integrity of the cultural setting. Some of the sites are also located on private lands, which makes them inaccessible for this study.

### 5.3.1 Halele‘a District

#### 5.3.1.1 *Hā‘ena Archaeological Complex, SIHP #50-30-02-1600 (1984); N.R. #84000257 (1984)*

Hā‘ena State Park

Park UTM: 22.2247222, -159.5836111; 221329N, 1593501W

Elevation: 0-25 famsl

Period: A.D. 1200-1900

Significance: Criterion D (informational potential)

Type: Village, Agriculture, Fishing, Burial, Hawaiian Religion, Landscape

Hā‘ena State Park is located on the far west coast of Halele‘a District. Hā‘ena State Park contains one large continuous archaeological site, the Hā‘ena Archaeological Complex. The archaeological complex extends more than 4 km (2.94 mi.), between Wainiha River and the eastern border of Nā Pali Ahupua‘a, and is approximately 500 m (1,640 ft) wide (Griffin et al. 1977). Archaeological features include house sites, enclosures, lo‘i plots (irrigated agriculture), ‘auwai (ditches), heiau, and rich sub-surface cultural layers. The park also contains several caves, “sea cut caverns passable only by watercraft, lie along the pali and above the alluvial flats and beach that the people of Hā‘ena occupied and farmed since at least A.D. 1200” (Griffin et al. 1977).

#### 5.3.1.2 *Ka‘ulu Pā‘oa Heiau*

Also referred to as Ka Ulu a Paoa, Kaulupā‘oa, Kaulupaoa Heiau

Located below Kē‘ē cliff, Hā‘ena State Park, Hā‘ena Archaeological Complex

UTM: 22.2227778, -159.5877778; 221322N, 1593516W

Elevation: Unknown

Type: Hawaiian Religious/Political Architecture

Ka‘ulu Pā‘oa Heiau is a large rectangular stone platform with several associated terraces. It is suggested that the temple may be a luakini heiau (Griffin et al. 1977). The terraces of Ka‘ulu Pā‘oa Heiau advance up the adjacent hillside to Ka‘ulu o Laka.

#### 5.3.1.3 *Ka‘ulu o Laka Heiau*

Also referred to as Ka Ahu a Laka and Ka Ulu o Laka

Located below Kē‘ē cliff, Hā‘ena State Park, Hā‘ena Archaeological Complex

UTM: 22.2227778, -159.5877778; 221322N, 1593516W

Elevation: Unknown

Type: Hawaiian Religious / Political Architecture

Ka‘ulu o Laka means “the inspiration of Laka” (goddess of hula). Ke Ahu a Laka (“altar of Laka”) is associated with goddess Pele and was the location where the handsome chief Lohi‘au became enamored by her. Ka‘ulu o Laka Heiau is an earthen terrace set adjacent to the vertical

Kē'ē cliff (Kirch 1996). The terrace facing is built of well stacked stone, two to three feet high. The terrace was used for hula and has been referred to as “Lohi'au's dancing pavilion” (Griffin et al. 1977). Ka'ulu o Laka was one of the most famous hālau hula in the islands and continues to be used and respected by hula groups today.

#### **5.3.1.4 Lohi'au House Site**

At beginning of Kalalau Trail, Hā'ena State Park, Hā'ena Archaeological Complex  
UTM: 22.2225000, -159.5852778; 221321N, 1593507W  
Elevation: 0  
Type: Habitation

The Lohi'au House Site is a large 24.4 m (80 ft) terrace that is faced with stones to a height of 2.59 m (8.5 ft) (Griffin et al. 1977). The construction style used in the terrace facing is noted as being unusual for Hawai'i. A likely pre-contact trail, the Nā Pali Trail, is observable between Ka'ulu'a Paoa Heiau and Lohi'au's house, where there is also an 'auwai that flows from a natural spring into a taro fishpond.

Other Important Sites in Halele'a District, Kaua'i: The expansive Hanalei Valley in Hanalei Ahupua'a has traditionally been a loci for taro cultivation, with archaeological evidence suggesting its field complexes were greatly expanded in the 16th century A.D. (Kirch 1985). Historically, the valley was converted to rice farming, however in modern times, the valley has once again become a dominant source for taro.

### **5.3.2 Kona District**

#### **5.3.2.1 Cook Landing Site, SIHP #50- 30-05-9303 (1988); N.R. #66000298 (1962, 1966)**

Waimea Canyon State Park, West Shore of Waimea River  
UTM: 21.9380556, -159.6486111; 215617N, 1593855W  
Elevation: 6-20 famsl  
Period: A.D. 1778 and A.D. 1750-1799  
Significance: Criterion B (person)  
Historic Person: Cook, Capt. James  
Type: European Contact

This site commemorates the first landing of Captain James Cook in the Hawaiian Islands on January 20, 1778. A statue stands in the general area of Cook's landing, however the landscape has changed and the location likely does not reflect the actual landing location (Levy 1978a). The ethnographic accounts produced by the crewmembers provide the first recognized European documentation of Hawai'i.

### **5.3.2.2 Hanapēpē Salt Pond, SIHP #50-30-09-49 (1988)**

Hanapēpē Salt Pond Beach Park  
Hanapēpē Bay UTM: 21.9003380, -159.5936850; 215401N, 1593537W  
Elevation: Unknown  
Period: Pre-contact to Present  
Significance: Criteria D (information potential)  
Type: Natural Resource Production/Procurement

Hanapēpē (“crushed bay”) is on the south shore of Kaua‘i. The site area contains a large, level, red soil surface where individual salt ponds have been created. The site was created by “accessing underground saltwater from a deep ancient source through wells and transferring the saltwater to shallow pools called wai kū, then into salt pans that [were] shaped carefully with clay from the area” (Ho‘okuleana 2012). The salt is mixed with ‘alaea, naturally occurring red dirt from Wailua. The red salt is used in Hawaiian ceremonies for cleansing and blessing as well as medicinal purposes.

### **5.3.2.3 Hō‘ai Heiau**

Also referred to as Ho‘ai Heiau  
Hō‘ai Park, Kōloa Ahupua‘a, Po‘ipū  
UTM: 21.8852778, -159.4769444; 215307N, 1592837W  
Elevation: 6-20 fmsl  
Period: A.D. 1500-1871  
Significance: Criteria A (person) and Criteria D (information potential)  
Type: Hawaiian Religious/Political Architecture, Aquaculture/Fishpond

Hō‘ai Heiau is located on Hō‘ai Bay on the south shore of Kaua‘i. Hō‘ai Bay was the 1871 birthplace and royal residence of Prince Johah Kūhiō Kalanianaʻole. Hō‘ai Heiau has five stone platforms, earthen terraces, and a large stone enclosure (Kirch 1996). A fishing shrine and small fishpond are along the shore.

### **5.3.2.4 Kaneiolouma Heiau, SIHP #50-30-10-3886 to -3893**

Poipu Beach Park Mauka Preserve, Waiohai, Kōloa  
Also known as 50-Ka-B04-002  
UTM: 215232.5N, 1592711.1W  
Elevation: Approx. 5 fmsl  
Period: Pre-contact  
Significance: Criterion D (information potential)  
Type: Hawaiian Religious/Political Architecture, Agriculture, Aquaculture/Fishponds

Kaneiolouma Heiau is an 11-acre complex that includes stone enclosures, house platforms, cooking areas, terraces, altars, shrines, taro patches, ‘auwai ditches, a stream, and large fishponds (Hui Malama o Kaneiolouma 2010). The site was nominated to the National Register by the Kaua‘i Historic Preservation Review Commission; it is currently unclear whether the site has

been approved yet. Hui Malama O Kaneioulouma, who plans to rehabilitate the complex as a public cultural preserve, is caring for Kaneioulouma Heiau.

### **5.3.2.5 Kōloa Field System**

Spans Kōloa and Po‘ipū Ahupua‘a

UTM: 21.8792665, -159.4441300; 215245N, 1592639W

Elevation: Unknown

Period: A.D. 1400-1900

Significance: Criterion D (information potential)

Type: Agriculture, Habitation, Religion, and Art

The Kōloa Field System covers several hundred acres of land and includes multiple site numbers. The Kōloa Field System is an agricultural/habitation complex of stone enclosures, house platforms, habitation caves, heiau, and extensive ‘auwai networks, ponded fields, terraced plots, mounded fields, and a petroglyph site (Hammatt et al. 1978; Hammatt et al. 2005). Water was diverted from Waikomo Stream through ‘auwai to feed downslope fields. Primary occupation of the site was found from A.D. 1400 to 1600, however utilization of the area continued through the post-contact time period.

### **5.3.2.6 Fort Elizabeth National Historic Landmark, Waimea, SIHP #50-30-05-1000 (1981); N.R. #66000299 (1962)**

Also called Russian Fort and Fort Elizabeth State Park, Waimea

UTM: 21.9386111, -159.6663889; 215619N, 1593959W

Elevation: Approx. 10 fmsl

Period: A.D. 1816-1864

Significance: Criteria A (event), C (construction), and D (information potential)

Type: Post-Contact Military Infrastructure, Village

Fort Elizabeth is a Russian-style star-shaped fort built near the mouth of the Waimea River in 1816. The fort measures approximately 91.44 to 137.16 m (300 to 450 ft) in cross dimension and the outer walls vary from 7.62 to 13.72 m (25 to 45 ft) thick and 6.1 m (20 ft) high (Levy 1978c). Within the fort are foundation remnants of the magazine and armory, barracks, guardroom, and other buildings (Kirch 1996). Surrounding the fort was a factory, gardens, and residences. The fort represents a short period of time of Russian influence on Hawai‘i. A Russian trader, Dr. Georg Anton Scheffer, was sent to Hawai‘i by the governor of the Russian-American Company based in Sitka, Alaska to retain the cargo of a sunken Russian vessel. Dr. Scheffer and Kaumuali‘i, the paramount Chief of Kaua‘i, quickly made a partnership and signed an agreement, which gave Russians certain trading and economic rights on Kaua‘i and O‘ahu. It is said Kaumuali‘i intended for Scheffer to assist him in overthrowing King Kamehameha. Scheffer built an earthen fort at Hanalaei Kaua‘i followed by the stronger and more impressive fort at Waimea from 1816-1817. In May of 1817, “acting on orders from Kamehameha, Kaumuali‘i expelled the Russians” (Levy 1978c). In 1820, a 21-gun salute was fired when the brig *Thaddeus* arrived with the son of Kaumuali‘i, who had been attending school in the United States (Levy

1978c). The fort was occupied by Hawaiian troops until around 1853 and was dismantled in 1864 (McCoy 1972).

### **5.3.3 Nā Pali District**

The district of Nā Pali contains numerous archaeological and cultural sites of importance, however the entire area is accessible only by sea, air, or long arduous hiking trails. The district is encompassed within the Nā Pali Coast State Park and the Nā Pali Coast Archaeological District (SIHP #50-30-01-3200 [1984]), N.R. #84000266 (1984). Archaeological features include house sites, terraces, irrigation systems, and well preserved artifacts that were likely utilized as early as A.D. 1200.

### **5.3.4 Puna District**

#### **5.3.4.1 Wailua Complex of Heiau National Historic Landmark, SIHP # 50-30-08-0502; N.R. #66000297 (1962, 1966 NHL)**

Wailua River State Park, National Historic Landmark (1962), Lihue  
Park UTM: 22.0452778, -159.3586111; 220243N, 1592131W

Elevation: 3-220 famsl

Period: A.D. 1000-1499

Significance: Criteria A (event), B (persons), C (site type), D (info potential)

Type: Landscape, Hawaiian Religious/Political Architecture

The Wailua Complex of Heiau is located adjacent to the largest river in the state, the Wailua River. The Wailua River Valley was home to high-ranking ali'i of Kaua'i and was considered a highly sacred landscape. The Wailua River State Park was established in 1954, the Wailua Complex of Heiau National Historic Landmark was designated in 1962, and the site was placed on the National Register in 1966. The Wailua Complex includes Malae Heiau (SIHP #50-30-08-104), Hikinaakalā Heiau (Place of Refuge called "Hauola"), Petroglyphs (SIHP #50-30-08-105), Holoholokū Heiau and Royal Birthstones Pōhaku Ho'ohānau and Pōhaku Piko (SIHP #50-30-08-106), Poli'ahu Heiau (SIHP #50-30-08-107), and the Wailua Bellstone (Dunbar 1988c). All of these cultural sites except one, Malae Heiau, are contained within the Wailua River State Park.

#### **5.3.4.1.1 Poli'ahu Heiau, SIHP #50-30-08-107**

Wailua Complex of Heiau National Historic Landmark, Wailua River State Park

UTM: 22.0461613, -159.3553913; 220246N, 1592119W

Elevation: 67-220 famsl

Type: Hawaiian Religious/Political Architecture, Landscape

Poli'ahu Heiau is a walled and stone paved rectangular enclosure. The heiau measures approximately 76.8 m by 59.4 m (252 ft by 195 ft) and ranges between 1.5 and 1.8 m (5 and 6 ft) tall with 1.5 m (5 ft) thick walls (Bennett 1931; Dunbar 1988c). Based on its large size and prominent location, the temple may have been a luakini heiau. Foundations, fallen uprights, pits,

and other architectural features are observable on the surface of the temple (Kirch 1996). Poli‘ahu Heiau is located on a bluff overlooking the Wailua River, ‘Ōpaeka‘a Stream, and all the sites are within the Wailua River State Park and Wailua Complex of Heiau National Historic Landmark. The companion temple to Poli‘ahu is Malae Heiau, which is one of the largest heiau on Kaua‘i measuring 83.2 m by 98.8 m (273 ft by 324 ft) and extending approximately 8094 sq m (2 acres) in size. Poli‘ahu Heiau has been cleared of vegetation and is maintained through a Curation Agreement between the State and the Kapa‘a First Hawaiian Church. The heiau has views to the ridgelines that form the borders of Wailua Ahupua‘a, Nounou and Kālepa, as well as the mountain peak, ‘A‘āhoaka (State Park Brochure). ‘Ōpaeka‘a Falls is just inland from Poli‘ahu Heiau, and Mauna Kapu (“sacred mountain”) overlooks the site from the south.

#### **5.3.4.2 Kukui Heiau, SIHP #50-30-08-108 (1986); N.R. #86002746 (1987)**

Also known as ‘A‘A Kukui

North shore of Wailua Bay, Alakukui Point

UTM: 21.0597222 -156.8430556; 210335N, 1565035W

Elevation: 23-75 famsl

Period: A.D. 1000-1749

Significance: Criteria C (site type) and D (information potential)

Type: Hawaiian Religious/Political Architecture, Landscape

Kukui Heiau is not considered part of the Wailua Complex of Heiau National Historic Landmark. Kukui Heiau is located on the north shore of Wailua Stream, at Lae Alakukui, and it “boasts a spectacular perspective on Wailua Bay” (Kirch 1996). Kukui Heiau is a double-walled stone enclosure. There has been considerable rock removal from the stone walls, however relatively intact portions suggest the temple walls stood around 1.5 m (5 ft) high and the remaining walls range from 1.5 to 6.7 m (5 to 22 ft) thick, built with use of large slabs of lava rock (Bennett 1931). Excavations at Kukui Heiau found the site was likely built between the 12th and 15th centuries A.D. (Bordner and Davis 1977).



alphabetically in this section. The entire island is surrounded by an HIHWNMS. Two of the most significant archaeological sites within Lāna‘i are presented below.

**5.4.1.1 Kaunolū Village National Historic Landmark, SIHP #50-40-98-25 (1994); N.R. #66000303 (1962)**

Also referred to as Kaunolu Village and Kaunolū Village-Kealiakapu Complex, Ka‘a, Kona District

UTM: 20.8041667, -156.9144444; 204815 N, 1565452W

Elevation: Approx. 390-1,280 fmsl

Period: A.D. 1400-1880

Significance: Criteria A (person), C (site type), and D (information potential)

Type: Village, Landscape

Kaunolū Village is situated along the bank of Kaunolū Gulch, adjacent to Kaunolu Bay, on Lana‘i’s south shore. The village is “protected by Palaoa Point and Kaneapua Island from the heavy swells that typify most of the south coast of Lana‘i” (Dunbar 1988b). The site measures approximately 313,938 m<sup>2</sup> (77.58 acres) and consists of some 49 sites including house platforms, stone shelters, animal pens, garden patches, a well named “Paa”, Halulu Heiau, a large number of petroglyphs distributed along a half-mile section of the west bank of the village, and several fishing shrines (Dunbar 1988b; Dixon et al. 1992). Kaneapua Island is also often associated with Kaunolū. The site was a religious center, an elite residential community for Maui and perhaps Big Island ali‘i, and possibly a district capital. It is thought the site was first used mainly for fishing and marine resources and then was subsumed into the larger Maui polity in the 16th century, with its largest population in 18th century (Dixon et al. 1992). Halulu Heiau was used as a place of refuge during Kalaniopuu’s raid on Lana‘i in 1779 (Thrum 1923).

Based on oral history, Kaunolū Village likely spans from around A.D. 1400 to the mid-1870s. The site is legendary for associations with Hawaiian deities and royalty. According to legend, the ancient gods Kane, Kanaloa, and their brother Kaneapu‘u lived at Kaunolū. In the 1400s, Kakaē and his brother Kalaalaneo had joint rule over Maui and Lana‘i. Kalaalaneo banished his son, Kaululaau, to Kaunolū. Kiha-a-Pi‘ilani, the brother of a 16th century paramount chief, took refuge at Kaunolū. In 1778, Hawaiian Island King Kalaniopu‘u and Kamehameha I conquered Maui and Lāna‘i and created a military outpost and residence within the site area (Dunbar 1988b).

**5.4.1.2 Pu‘upehe Platform, SIHP #50-40-98-19 (1986); N.R. #86002745 (1986)**

Also known as No. 50-La-19; BPBM No. 50-La-A3-1; BPBM No. 50-La-A3-4

Sweetheart Rock, Kupapau Puupehe, “Tomb of Puupehe”, Pu‘upehe Rock, “Owl Trap Hill”

UTM: 20.7343518, -156.8902481; 204404N, 1565325W

Elevation: 7 fmsl

Period: A.D. 1000-1499

Significance: Criteria D (information potential)

Type: Landscape, Hawaiian Religious/Political Architecture

Pu‘upehe Platform is roughly 1.83 m (6 ft) wide, 6.4 m (21 ft) long, and 0.91 m (3 ft) high and consists of a 20.32 centimeter (8 inch) by 45.72 centimeter (18 inch) upright stone located in the northern center of the platform (lanaimagazine.com; Emory 1924). The platform is located on a triangular lava tower located roughly 45.72 m (150 ft) off the peninsula that separates Mānele Bay and Hulopoe Bay (Emory 1924; Kaschko and Athens 1987). The site is within the 1.25 km<sup>2</sup> (309 acre) Mānele-Hulopoe Marine Life Conservation District. The site is often associated with Pehe, the beautiful daughter of Uaua, a chief of the King of Maui. Pehe is thought to have been buried in the platform by her husband Makakehau (Triposo 2015). A study done by Emory in 1924, uncovered remains of bird bones and eggshells under and around the vicinity of the platform. Emory suggested that the platform may have been a shrine, dedicated to the god of bird catchers (Emory 1924).

## 5.5 Maui

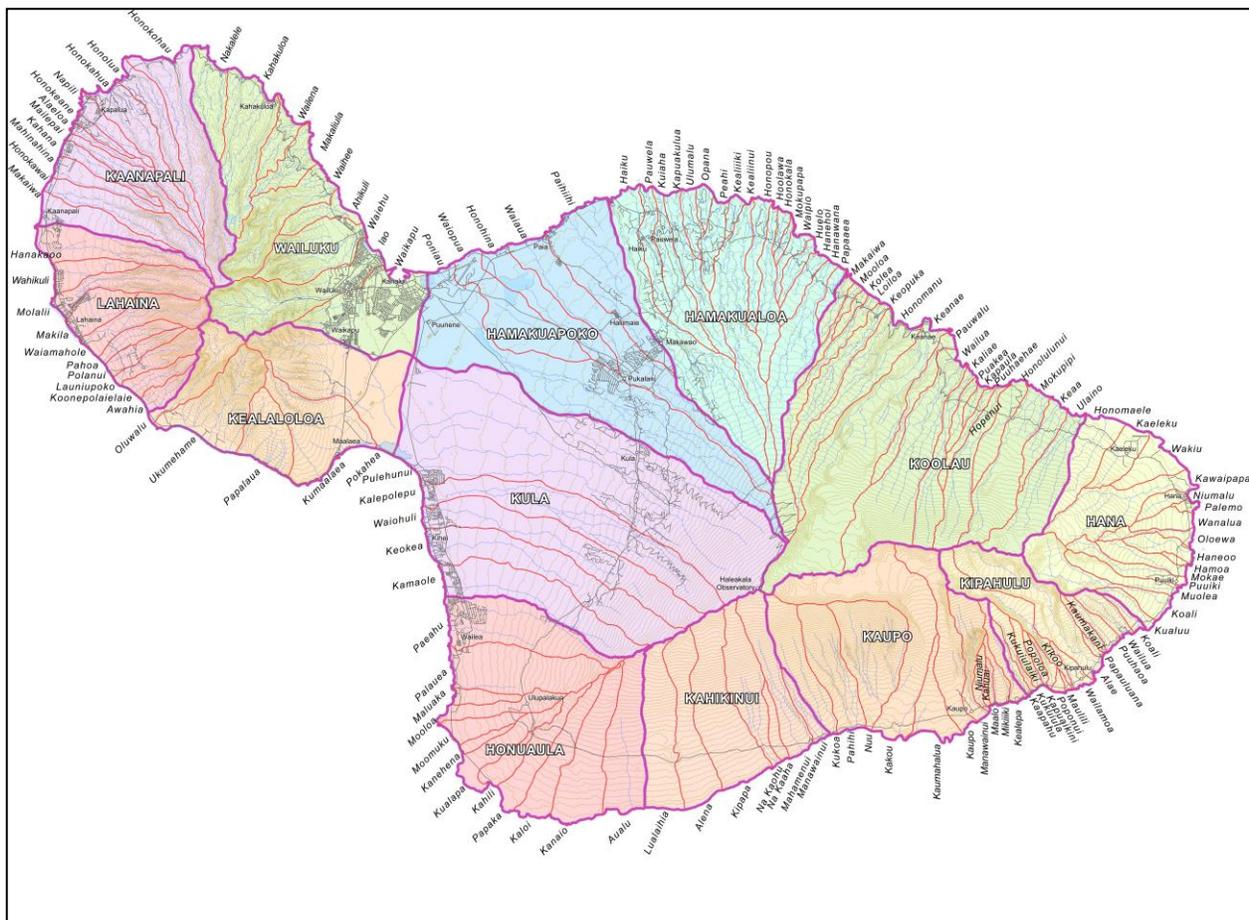


Figure 7: Maui Moku (Source: IslandBreath.org)

Maui (Figure 7) is the second largest island of Hawai‘i, measuring approximately 77.25 km by 41.84 km (48 mi. by 26 mi.) and consisting of roughly 12,887 km<sup>2</sup> (728 mi<sup>2</sup>) (Mita and Peebles 1994). The island is made of two large volcanoes, Haleakalā and Pu‘u Kukui. Maui is divided into a number of districts. The entire west side of Maui borders the HIHWNMS.

## 5.5.1 Hana District

### 5.5.1.1 Haleakalā National Park

UTM: 20.7101489, -156.0775803; 204237N, 1560439W

Elevation: 10,023 famsl

Haleakalā (“house of the sun”) rises to 3,055 m (10,023 ft) and the viewplane includes the volcanic peaks of the Big Island to the southeast and the islands of Kaho‘olawe, Lāna‘i, Moloka‘i, and O‘ahu. Haleakalā Crater is the largest crater in the state, encompassing roughly 50.89 km<sup>2</sup> (12,575 acres) and rising to approximately 922.93 m (3,028 ft) (Mita and Peebles 1994). Haleakalā was last active in 1790.

Other cultural sites in Haleakalā National Park include Kīpahulu in Hana. Kīpahulu includes the Pools of ‘Ohe‘o or the Seven Sacred Pools which is known as a location used by Hawaiian ali‘i.

### 5.5.1.2 Honokalani Village, SIHP # 50-13-1230 (1985); N.R. #85003333 (1985)

Also known as Wai‘ānapanapa Archaeological Complex

Wai‘ānapanapa State Park, spans ahupua‘a of Ka‘eleku, Honokalani and Wakiu

Honokalani UTM: 20.7894444, -156.0088889; 204722N, 1560032W

Elevation: 28-92 famsl

Wai‘ānapanapa State Park UTM: 20.7869444, -156.0008333; 204713N, 1560003W

Elevation: 1-3 famsl

Period: A.D. 1600-1900

Significance: Criteria A (event) and C (site type)

Type: Village, Hawaiian Religious/Political Architecture, Funerary, and Landscape

Honokalani Village includes Ohala Heiau, Kaukeali‘i Heiau, Wai‘ānapanapa Pool and anchialine pools with connecting lava tubes. The area also includes a black sand beach, a spot known for cliff jumping, and a blowhole. Ohala Heiau can be accessed by a three quarter mile hike along the King’s Trail, a traditional Hawaiian stepping-stone trail begun by King Kahekili and completed around A.D. 1550 by King Pi‘ilani (MauiGuidebook 2015). Stone mounds, lava tubes, rock shelters, petroglyphs, a papamu game board, a walled enclosure, terraces, platforms, and animal pens are found throughout the site area (Connolly 1974).

### 5.5.1.3 Pi‘ilanihale Heiau National Historic Landmark, SIHP #50-50-13-100; N.R. #66000300 (1964, 1966 NHL)

Also called Pi‘ilani Heiau

Wai‘anapanapa State Park, Pacific Tropical Botanical Park, West Honomaele

UTM: 20.8075000, -156.0430556; 204827N, 1560235W

Elevation: Unknown

Period: 1500-1749

Significance: Criteria A (event) and C (site type)

Type: Hawaiian Religious/Political Architecture, Agriculture, Landscape

Pi'ilanihale Heiau is the largest heiau in Hawai'i, measuring 89 m by 174 m (289 ft by 565.5 ft) with the north wall towering at 13.4 m (43 ft) high. The immense size of the structure suggests it was a luakini heiau; however, Dr. Sinoto of the Bishop Museum has suggested Pi'ilani Heiau was a residential area for a high chief or even King Pi'ilani himself. It is unknown when Pi'ilani Heiau was constructed and if his descendants built it in honor of him or if he built the heiau himself. The heiau is also often associated with Kahekili. Pi'ilani Heiau contains a multitude of internal sub-features including walls, depressions, enclosures, platforms, mounds, upright stones, and midden deposits. (Dunbar 1987b).

## 5.5.2 Kahikinui District

Several heiau, villages, and site complexes are located within Kahikinui District, however they are on private lands and are therefore not easily accessible to the public.

## 5.5.3 Kaupu District

### 5.5.3.1 *Lo'alo'a Heiau National Historic Landmark, SIHP #50-50-16-101; N.R. #66000301 (1962, 1966 NHL)*

North of Kaupō

UTM: 20.6433333 -156.1247222; 203836N, 1560729W

Elevation: 159-522 famsl

Period: A.D. 1730, 1801 and 1700-1824

Significance: Criteria A (event), B (person), C (site type), D (info)

Type: Hawaiian Religious/Political Architecture, Agriculture

Lo'alo'a Heiau ("pitted heiau") measures 35.05 m by 152.4 m (115 ft by 500 ft), encompassing approximately 5,666 m<sup>2</sup> (1.4 acres) (Dunbar 1987a). The east side of the Lo'alo'a Heiau is thought to have been used as a luakini heiau while the west side may have been the hale o papa (women's place of worship) or a papahola (courtyard where the commoners attended the heiau services). The site contains multiple pits throughout. Cattle have disturbed the west side of the heiau and the remains of a dismantled stone wall are present along the south side and east end. Remnants of a house site, including enclosures and artifacts, are adjacent to the heiau. Lo'alo'a Heiau overlooks the city of Kaupō in Maui. Based on oral traditions, Lo'alo'a Heiau was likely built in A.D. 1730 by Kekaulike, King of Maui and was then rededicated by Kamehameha I in 1801.

## 5.5.4 Ko'olau District

### 5.5.4.1 *Lanikele Heiau*

Nahiku Ahupua'a

UTM: 0.8141667, -156.0625; 04851N, 1560345W

Elevation: Unknown  
Period: Pre-contact to Present  
Significance: Criterion D (information content)  
Type: Hawaiian Religious/Political Architecture

Lanikele Heiau is a stone enclosure with associated terraces (Kolb 1991). The site is located on a bluff overlooking the ocean. It is thought the temple was a navigational heiau.

#### **5.5.4.2 Wailua Valley**

Ke‘anae Ahupua‘a  
UTM: 20.8374957, -156.1240053; 205015N, 1560726W  
Elevation: Approx. 3-5 famsl  
Period: Pre-contact to Present  
Significance: Criterion D (information content)  
Type: Agriculture

Wailua Village contains extensive coastal taro lo‘i fields.

#### **5.5.5 Kula District**

##### **5.5.5.1 Kalepolepo Fishpond, SIHP #50-50-09-1288 (1996); N.R. #96001503 (1996)**

Also known as Ko‘ie‘ie Fishpond and Ka‘ono‘ulu Kai Fishpond  
Kalepolepo County Park, S. Kihei Rd., Ka‘ono‘ula Ahupua‘a  
UTM: 20.7631967, -156.4593244; 204548N, 1562734W  
Elevation: 0  
Period: A.D. 1400-1899  
Significance: Criteria A (event), B (person), C (site type), and D (info potential)  
Type: Aquaculture, Fishing

Kalepolepo Fishpond is located on the shore of Ka‘ono‘ula on Ma‘alaea Bay. The site is a loko kuapā (walled fishpond adjacent to the ocean), situated on a fringing coral reef and is approximately 12,140.6 m<sup>2</sup> (3 acres) in size (Donham 1996). The fishpond wall is 334 m (1096 ft) long, around 1 m (3.28 ft) high, and between 2 and 9 m (6.56 and 29.5 ft) wide. The wall is constructed of basalt boulders coral and basalt cobble infill and contains a makaha on the south side. Kalepolepo Fishpond was stocked with ‘ama‘ama (mullet) and awa (milkfish).

The fishpond was active from A.D. 1400-1700 and had multiple repairs done by various Hawaiian and Maui royalty such as Chief Kauholanuimahu in the A.D. 1400s, ‘Umi a Liloa (High Chief of Hawai‘i Island), Kekaulike (the mo‘i of Maui), Kamehameha I, and Governor Hoapili in the 1840s. Kalepolepo was also linked to Hapakuka Hewahewa who controlled and lived in Kalepolepo between 1837 and 1848. Other significant persons associated with the site include David Malo and Captain John Halstead, who operated a trading house next to the fishpond and had regular visits from Kamehamehas III, IV, and V (Donham 1996).

## 5.5.6 Lahaina District

### 5.5.6.1 *King Kamehameha III's Royal Residential Complex (Moku'ula), SIHP #50-50-03-2967 (1994); N.R. #97000408 (1997)*

Also known as Mokiula, Loko Makuhinia, Hale Piula

Moku'ula UTM: 20.8698396, -156.6804028; 205211N, 1564049W

Elevation: 3 famsl

Loko Mokuhinia UTM: 20.8722222, -156.677500; 205220N, 1564039W

Elevation: 1-3 famsl

Period: A.D. 1837 and 1650-1874

Significance: Criteria A (event), B (person), and D (info)

Type: Domestic Governmental Residence, Hawaiian Religious/Political Architecture, Agriculture, Aquaculture, Fishing, and Landscape

King Kamehameha III's Royal Residential Complex encompasses approximately 49,776 sq m (12.3 acres) and consists of Hale Pi'iula, a 32 m by 12 m (105 ft by 39.4 ft) two-story western style coral block palace, Mokuhinia Fishpond, and Moku'ula, a 1-acre islet, which once held traditional grass houses, a large stone building used as both a residence and royal mausoleum, and a wooden pier (Klieger 1997). Due to the lack of funding, Hale Pi'iula was only used for state receptions or official meetings with the legislature. Moku'ula was the traditional home for the Maui and Hawai'i Island royalty from King Pi'ilani in the 16th century to King Kamehameha III during 1837 to 1845. Moku'ula was also the grotto of a royal protector deity in the form of a giant lizard (mo'o) named Kihawahine or Mokuhinia who was the deified daughter of Maui king Pi'ilani. Until 1947, Moku'ula was the royal mausoleum for the Hawaiian Island royalties and was the final resting place for Kamehameha III's mother, two of his children, his sister Princess Nahi'ena'ena, the former governess of O'ahu, Liliha, and Kaumuali'i the last independent king of Kaua'i, as well as several of Kamehameha III's other family members. In 1947, Princess Bernice Pauahi Bishop had the royal remains moved from Moku'ula to the adjacent churchyard, Waine'e Church (Wai'ola Church). At present, King Kamehameha III's Royal Residential complex, including Hale Pi'iula, Moku'ula, and Mokuhinia Fishpond, are no longer standing, and they are currently under the Malu'ulu o Lele and Kamehameha Iki County Park. However, restoration is planned to remove imported fill that covers the site and to re-create the royal compound.

Additional Archaeological Sites of Interest within Lahaina: Black Rock (Pu'u Keka'a) at Ka'anapali Beach. Oluwalu Petroglyphs, where around 100 petroglyphs -including human and animal forms and a crab-claw sail- are carved into a vertical cliff face of Kīlea Hill (Kirch 1996). Oluwalu was also the location of a European attack on the island inhabitants in A.D. 1790. In retaliation for the theft of a small boat, Captain Simon Metcalfe of the trading ship *Eleanora*, fired cannons into a large group of Hawaiian canoes killing more than 100 people.

## 5.5.7 Wailuku District

### 5.5.7.1 *Haleki'i-Pihana Heiau State Monument, SIHP #50-50-04-592 (1985); N.R. #85002972 (1985)*

Also known as Wailuku Heiau Complex, Wailuku

Haleki'i Heiau UTM: 20.9083333, -156.4950000; 205430N, 1562942W

Elevation: 29-95 famsl

Pihana Heiau UTM: 20.9061111, -156.4961111; 205422N, 1562946W

Elevation: 35-115 famsl

Period: A.D. 1750-1824

Significance: Criteria A (event), B (person), and D (information potential)

Type: Landscape, Hawaiian Religious/Political Architecture

Haleki'i Heiau and Pihana Heiau (Pi'ihana Heiau) are located on 41,278 m<sup>2</sup> (10.2 acres) of land built on a lithified sand dune ridge on the west side of I'ao Stream, overlooking the Wailuku Plain. Haleki'i Heiau is 125 m (410 ft) north of Pihana Heiau and measures 100 m (328.1 ft) (N/S) by 50 m (164 ft) (E/W), with boulder alignments; circular depressions lined with basalt rocks, and stacked basalt walls. Pihana Heiau measures 90 m (295.3 ft) (N/S) by 80 m (262.5 ft) (E/W), with circular alignments of boulders, rectangular rock piles, and rock mounds. Pihana Heiau is thought to have been a luakini heiau, while Haleki'i Heiau was more of a community temple. Both heiau have links to the ruling kings of Maui and Hawai'i from around A.D. 1750 to 1819. King Kamehameha I invoked his war god at Pihana Heiau after his success in the battle of I'ao in A.D. 1790. Liholiho (Kamehameha II) rededicated Pihana Heiau to the gods of his father after being established as the heir to Kamehameha's kingdom. Keopuolani, wife of Kamehameha I, mother of Liholiho (Kamehameha II) and Kauikeaouli (Kamehameha III), and a kapu (taboo) chiefess of divine rank were all born here. Kamehameha Nui was temporarily laid to rest on Pihana before being reburied in Moloka'i and Kahekili himself resided in Pihana around A.D. 1765. Kekaulike, father of Kahekili, died at Haleki'i Heiau in A.D. 1736. These important heiau have commanding views of Central Maui (Yent 1985).

### 5.5.7.2 *'Iao Valley State Monument*

'Iao Valley State Park, Wailuku

Needle UTM: 20.8841746, -156.5510559; 205303N, 1563304W

Elevation: 2,215 famsl

Type: Sacred Royal Site, Religion

'Iao Valley contains Kuka'emoku or the 'Iao Needle, a 365.76 m (1,200 ft) high rock formation tucked into the valley summit. The Valley was closed to all but the high chiefs and priests. 'Iao Valley was the final scene of the Kepaniwai o 'Iao battle between warriors of Kamehameha the Great and Maui's Chief Kalanikūpule. The battle began at Kahului Beach where Kamehameha's warriors pushed Maui forces into 'Iao Valley.



Ali'i Fishpond is a loko kuapā that once spanned 186,155 m<sup>2</sup> (46 acres) in size but has greatly shrunk due to mangrove growth. Ali'i Fishpond is being restored and maintained through the non-profit group Ka Honua Momona (“the fertile land”) and through assistance with Hana High and Elementary School's building program on Maui, Ma Ka Hana Ka 'Ike (Wu 2011). The groups are helping to build an office, restrooms, a traditional hale, and a performance platform. The groups are also helping to restore the nearby Kaloko'eli Fishpond (behind the Moloka'i Shores condominiums). Ka Honua Momona secured a 35-year lease for both fishponds along with the nearly 6070 m<sup>2</sup> (1.5 acres) of adjacent Hawaiian homestead land (Wu 2011).

#### **5.6.1.2 Hōkūkano-‘Ualapu‘e National Historic Landmark, N.R. #66000304 (1962, 1966 NHL)**

‘Ualapu‘e Ahupua‘a

Period: A.D. 1500-1800

Significance: Criteria A (period), B (person), C (site type), D (info potential)

Type: Agriculture, Aquaculture, Animal Husbandry, and Hawaiian Religious/Political Architecture

The Hōkūkano-‘Ualapu‘e Complex includes six heiau and two fishponds (NPS 2014). This site complex “contains more heiau and fishponds than any other comparable area in Hawai‘i” (Dunbar 1988a). The heiau include Kukui (SIHP #50-60-04-322-169), Pu‘u ‘Olelo (SIHP #50-60-04-322-174), Kaluakapi‘ioho (SIHP #50-60-04-322-175), Kahokukano (SIHP #50-60-04-322-177), Pakui (SIHP #50-60-04-322-178), Kalauonakukui (SIHP # 50-60-04-322-181), and ‘Ili‘ili‘ōpae (SIHP #50-60-04-322-200)(HawaiiWeb.com 2014a). The fishponds include Keawanui (SIHP #50-60-04-322-163) and ‘Ualapu‘e (SIHP #50-60-04-322-185). The site complex has an open viewplane of the southeast coast of Moloka‘i as well as the neighboring islands of Maui, Lāna‘i, and Kaho‘olawe.

The National Park Service (NPS) website offers the following information:

Kukui Heiau (20,400 square feet) and Kalauonakukui Heiau (9,600 to 10,625 square feet) are thought to have been agricultural heiau possibly dedicated to Lono. Pu‘u ‘Olelo Heiau is approximately 10,730 square feet in size, has an enclosed courtyard, and was most likely a luakini. Kaluakapi‘ioho Heiau, at approximately 4,464 square feet, is believed to have been associated with Kumuko‘a, an important chief of the district where the heiau is located. Kahokukano Heiau (16,800 square feet), thought to be a fish heiau, is associated with Kaohele, a famous warrior and athlete, and Kumuko‘a, a Moloka‘i chief. Pakui Heiau (15,725 square feet) appears to have been a luakini. In addition, Pakui Heiau is thought to have been a pu‘uhonua (place of refuge) used by people seeking asylum in times of war or fleeing punishment for violating kapu (religious, political, and social laws). Iliiliopae Heiau is possibly the oldest religious site on Moloka‘i and is the second largest heiau in the Hawaiian Islands. Built sometime in the 1300s, this large structure was a fortress school for kahuna (priests, sorcerers, magicians, ministers, and master craftsmen). Over time, Iliiliopae Heiau served various functions based on

changing religious practices and political regimes and at various times was a luakini heiau dedicated to Ku and a heiau dedicated to Lono. It probably remained in use until the early 1800s. (NPS 2014)

‘Ili‘ili‘ōpae Heiau is the largest heiau on Moloka‘i, however the site can only be accessed with permission from the landowner and requires a ten minute hike. Of the other listed sites, Kukui Heiau, Keawanui Fishpond, and ‘Ualapu‘e Fishpond are most easily accessible (Dunbar 1988a, NPS 2014).

#### **5.6.1.2.1 ‘Ualapu‘e Fishpond, SIHP #50-60-04-322-185 (1993)**

National Historic Landmark

Hōkūkano-‘Ualapu‘e Complex

UTM: 21.0593515, -156.8316793; 210334N, 1564954W

Elevation: 0

Period: A.D. 1500-Present

‘Ualapu‘e Fishpond is located on the southeast shore of Moloka‘i. It is thought the fishpond was originally 89,031 m<sup>2</sup> (22 acres) in size (NPS 2014). The fishpond wall is made of coral and basalt and ranges from 2.44 to 5.79 m (8 to 19 ft) wide. The fishpond was considered one of the best on Moloka‘i and was known for the fatness of its fish. The fishpond has continued to sustain ‘ama‘ama or mullet (*Mugil cephalus*). The walls of the fishpond have been heavily impacted by the tsunamis of 1960 and 2011. The fishpond has developed a Hawaiian Learning Center where people can visit, participate in restoration, and learn about Hawaiian culture. The Hawaiian sailing canoe, Hokule‘a stopped at ‘Ualapu‘e Fishpond in 2012 to learn about the site and assist in restoration (Molokaimatt 2012).

#### **5.6.1.2.2 Keawanui Fishpond, SIHP #50-60-04-322-163**

Also referred to as Mikimiki and Hinau Pond

National Historic Landmark

Hōkūkano-‘Ualapu‘e Complex

UTM: 21.0546672, -156.8502062; 210317N, 1565101W

Elevation: 0

Period: A.D. 1500-Present

Keawanui Fishpond is the largest fishpond on Moloka‘i. It is thought that at one time the fishpond covered 295,421 m<sup>2</sup> (73 acres) (NPS 2014). The fishpond wall averages 1.83 to 2.13 m (6 to 7 ft) in width. The site was possibly constructed around A.D. 1575, by ali‘i ‘ai moku Lohelohe and remained in operation until the early 1960s. Keawanui Fishpond has been restored and is maintained by the non-profit organization, Hui o Kuapā, founded in 1989. The site is used as an educational resource to teach students about Native Hawaiian culture and fishpond technology.

### **5.6.1.3 Kawela Bay Archaeological Area, SIHP #50-80-02-2899**

East of Kaunakakai, Kewala Ahupua‘a and Makakupai‘a Iki Ahupua‘a  
Kakahai‘a National Wildlife Refuge  
General UTM: 21.0649582, -156.9484949; 210354N, 1565655W  
Period: A.D. 1500-1800

Kawela, located on the south shore of Moloka‘i, contains narrow gulches and canyons. The only flowing stream is found in Kawela Gulch, therefore traditional agriculture in this area is centered around Kawela Stream and its alluvial floodplain. The coastal plain of Kawela supported multiple fishponds and was the site of several great battles. A battle occurred in the 1730s when O‘ahu soldiers under Chief Kapi‘iohokalani (Kapi‘ioho o kalani) invaded Moloka‘i and battled against soldiers and chiefs of Moloka‘i as well as warriors of Chief Alapa‘inui (Alapa‘i) of Hawai‘i who had been visiting Maui (Murakami-Siu et al. 2012). Chief Kapi‘iohokalani was killed at Pu‘u Kauwa. In the mid-1790s, after Kamehameha I conquered Maui he focused on Moloka‘i, waging the Battle of Pukuhiwa or the Battle of Coconut Grove. A vast fleet of war canoes stretched along the coast from Kawela, past Kaunakakai to the area known as Kalama‘ula. “The Pukuhiwa Battleground along this coast is still littered with stones slung from slingshots during the battle” (HawaiiWeb 2014b).

Thirty-five sites in Kawela Ahupua‘a are listed on the National Register. Documented sites in Kawela include: a wall attributed to Kamehameha V (Sites T-20 and T-42-3, SIHP #50-60-04-706, N.R. #82000174 [1982]), a konohiki residential complex (Sites T-81, -100, -101, -105, -142, SIHP #50-60-03-717, N.R. #82000160 [1982]), agricultural fields with kama‘aina dwellings (Site T-180, SIHP #50-60-04-712, N.R. #82005184 [1982]; (Site T-108, SIHP #50-60-03-713, N.R. #82000163 [1982]), habitation dwellings (Site T-10, SIHP #50-60-04-702, N.R. #82000152 [1982]; Site T-134, SIHP #50-60-03-718, N.R. #82000166 [1982]; Site T-19, SIHP #50-60-04-705, N.R. #82000154 [1982]), petroglyphs (Site T-12, SIHP #50-60-04-704, N.R.#82000153 [1982]), religious structures (Sites T-155 and -158, SIHP #50-60-03-721, N.R. #82000168 [1982]; Site T-88, SIHP #50-60-04-707, N.R. #82000161 [1982]; Site T-78, SIHP #50-60-03-723, N.R. #82000170 [1982]; Sites T-5, T-122, T-178, SIHP #50-60-04-142, N.R. #82000150 [1982]), a hōlua slide (Site T-28, SIHP #50-60-04-701, N.R. #82005175 [1982]), a fishing site and burial mound (SIHP #50-60-04-144, N.R. #82000156 [1982]), and additional burial sites (Site T-57, SIHP #50-60-03-720, N.R. #82000157 [1982]). A 882,215 m<sup>2</sup> (218 acre) area including Kawela Gulch and surrounding ridges have been recommended to be designated as a cultural preserve as it contains the core concentration of habitation, agricultural, and religious sites within Kawela.

### **5.6.1.4 Kawela Pu‘uhonua, SIHP #50-60-04-140 (1982); N.R. #82000155 (1982)**

Period: A.D. 1500-1749  
Significance: Criteria A (event), C (site type), D (information potential)  
Type: Defense, Religion, and Landscape

The Pu‘uhonua in Kawela is located on a high steep bluff, with a commanding view of the ahupua‘a. The location is thought to provide a natural fortified defense from invaders. “At

various points along this ridge small stone terraces and platforms were constructed as fighting stages, and caches of slingstones have been found” (Kirch 1985:273). The pu‘uhonua would have served as a place of refuge where people could flee during battles.

## **5.6.2 Pala‘au District**

### **5.6.2.1 Nanahoa Complex, SIHP #50-60-03-01 (1981)**

Pala‘au State Park

UTM: 21.1744444, -157.0080556; 211028N, 1570029W

Elevation: 1,526 famsl

Nanahoa Complex includes Kauleo Nānāhoa, a phallic-shaped stone located within Pala‘au Park. The stone is approximately 304.8 m (1,000 ft) in elevation and overlooks Kalaupapa National Historic Park. The stone is said to enhance female fertility when touched. A lookout nearby provides a view over the Ko‘olau District, including Kalaupapa Peninsula.

## **5.6.3 Kaluako‘i District**

### **5.6.3.1 Southwest Moloka‘i Archaeological District, SIHP #50-60-01-803 (1985); N.R. #86002811 (1986)**

West and Southwest Slopes of Mauna Loa, Kaluako‘i Ahupua‘a

UTM: 210758N, 1564413W

Elevation: Unknown

Period: A.D. 1000-1499

Significance: Criteria A (event) and D (information potential)

Type: Village, Hawaiian Religious/Political Architecture

The Southwest Moloka‘i Archaeological District is within the Kaluako‘i Ahupua‘a. Kaluako‘i (“the adze pit”) refers to the abundant adze quarries of Mauna Loa, which extend over an area of approximately 121,406 m<sup>2</sup> (30 acres) (Pukui et al. 1974). The Southwest Moloka‘i Archaeological District includes hundreds of sites (Major 2006). Sites include adze quarries (‘Amikopala), heiau (‘Amikopala, Hale o Lono, Kalalua, Kahalep-o-haku, Kaluakau, Kanalukaha, Kapuhikani [-51], Ku-k-u-k-u, Waiahewahewa, Waiakane, Wai‘eli), ko‘a (Hakina, Kamaka‘ipo [-55], Kaunal-a, Keawakalae [-59]), fishponds (Naninanikukui), a foundation of Paka’s house site (Kolo), and habitation sites (-47 through -50, -52 through -54, -56).

Through consultations for the Community-Based Master Land Use Plan for Moloka‘i Ranch, a cultural committee discussed preservation of sites on Moloka‘i and proposed a Cultural Conservation and Management Zone to include a number of historic cultural sites and complexes.

### **5.6.3.2 ‘Amikopapa Adze Quarry**

‘Amikopapa Adze Quarry is located on the summit and southern slope of Mauna Loa. The site covers approximately 0.12 km<sup>2</sup> (12 hectares) of land (Cleghorn et al. 1985). Quarried areas largely include basalt boulders exposed along the mountain slope. The site area also contains religious sites, residential structures, and agricultural features. The site area has a “commanding view of the south shore, Lana‘i, Maui, Kaho‘olawe and, on clear days, all the way to Hawai‘i Island, some 200 km distant” (Weisler 2011). Weisler et al. (2006) studied lithic materials from quarry sites throughout Kaluako‘i Ahupua‘a, finding the sites to date between A.D. 1400-1650.

### **5.6.3.3 Hale o Lono**

Hale o Lono is located on the southwest shore of Moloka‘i. The site is associated with the akua Lono and the Makahiki festival. “In ancient times, at the rising of the Makali‘i (Plaeides Constellation) kahuna gathered at Kapu‘upo‘i, the easternmost tip of Moloka‘i in an opening ceremony. They would then travel along the coastline to the destination where they closed their ceremony and then Makahiki with its games and other practices began” (McGregor and McNamara 2006).

Additional Sites in Kaluako‘i Ahupua‘a Include: Na‘iwa, the only intact Makahiki grounds in the islands, recently donated to the Moloka‘i Land Trust; Ka‘ana, the birthplace of the hula, also recently donated to Moloka‘i Land Trust; Kalaina Wawae footprints; Keawa Ka Lani (SIHP #50-60-01-60); and Mo‘omomi Adze Quarry.

## **5.6.4 Ko‘olau District**

The Ko‘olau District of Moloka‘i contains some of Hawai‘i’s most significant and well-researched sites in the islands. The Ko‘olau District is bordered by some of the highest vertical cliffs in the world, making access to the area quite difficult. Beginning in 1866, Kamehameha V designated the Kalaupapa Peninsula of the Ko‘olau District as a colony for people with Hansen’s Disease (leprosy). Traditionally, Hawaiian families had extensively utilized the land for over 900 years (NPS 2014). The Kalaupapa Peninsula became a National Park in 1980, however a permit must be secured to access the area. The requirement of a permit does not allow for reasonably easy access. For these reasons Kalaupapa National Park and the entire Ko‘olau District of Moloka‘i were not included in this study.

## **5.6.5 Hālawā District**

### **5.6.5.1 Hālawā Valley**

Hālawā Ahupua‘a  
UTM: 21.1581194, -156.7401838; 210929N, 1564425W  
Elevation: 7-23 fmsl  
Period: A.D. 1400-1800  
Significance: Criterion D (information potential)

Type: Village, Agriculture, and Hawaiian Religious/Political Architecture

Hālawā Valley is a lush valley on the northeast coast of Moloka‘i. The valley includes an ancient village with house sites, heiau, hearths, enclosures, ‘auwai and agricultural features, and abundant artifacts. The valley has been studied on several occasions and was once considered one of the oldest sites in Hawai‘i. Recent re-dating of Hālawā Valley indicates the area was settled around A.D. 1400 (Kirch and McCoy 2007). Two government trails, known as ala nui, run up the north and south sides of the valley providing pedestrian access to the valley.

## 5.7 Ni‘ihau

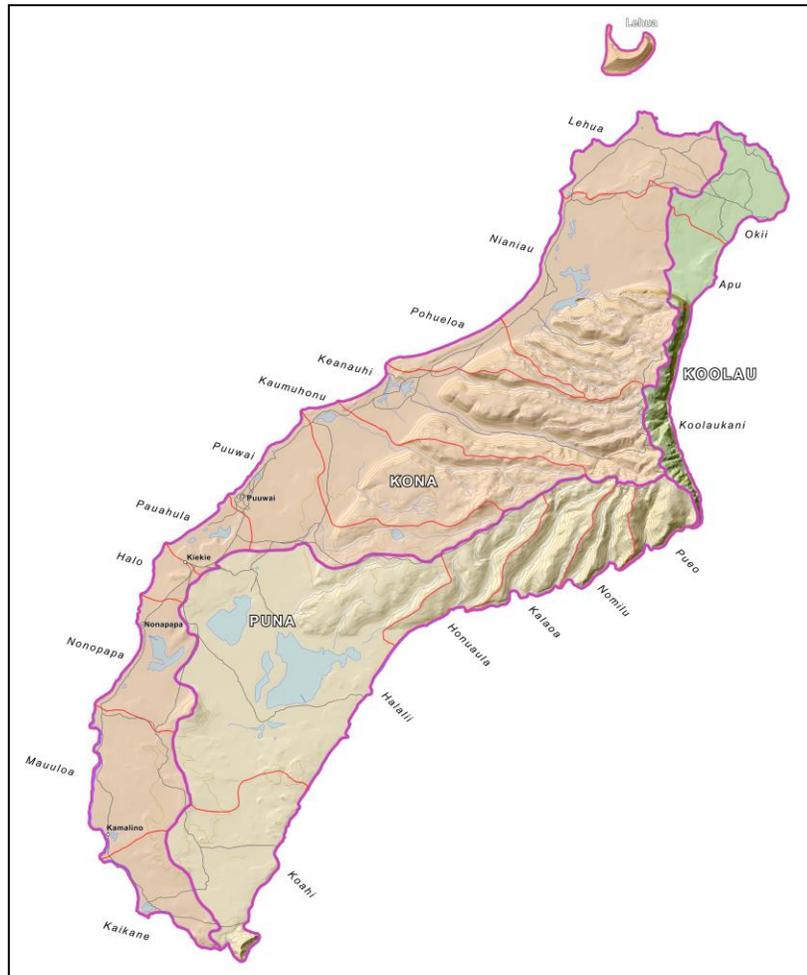


Figure 9: Ni‘ihau Moku (Source: IslandBreath.org)

Ni‘ihau (Figure 9) is a small island of roughly 181.3 km<sup>2</sup> (70 mi<sup>2</sup>). The island is located approximately 27.4 km (17 mi.) off the westward or leeward side of Kaua‘i. The island has been privately owned since the 1860’s and is therefore referred to as the “forbidden island”. Ni‘ihau was purchased from King Kamehameha IV by Mrs. Elizabeth Sinclair and is now cared for by her descendants, the Robinson family. The island has very little to no development and has

maintained traditional Hawaiian lifeways, customs, and language. Portions of the island have been used for cattle ranching and U.S. military. In 1912, J.F.G Stokes recorded four *heiau* and a small fishing shrine on Ni‘ihau, however very little else is known of the traditional sites on the island (Bennett 1931:, cited in Kirch 1985). Due to the island’s restricted access, no archaeological sites were investigated for this study.

## 5.8 O‘ahu

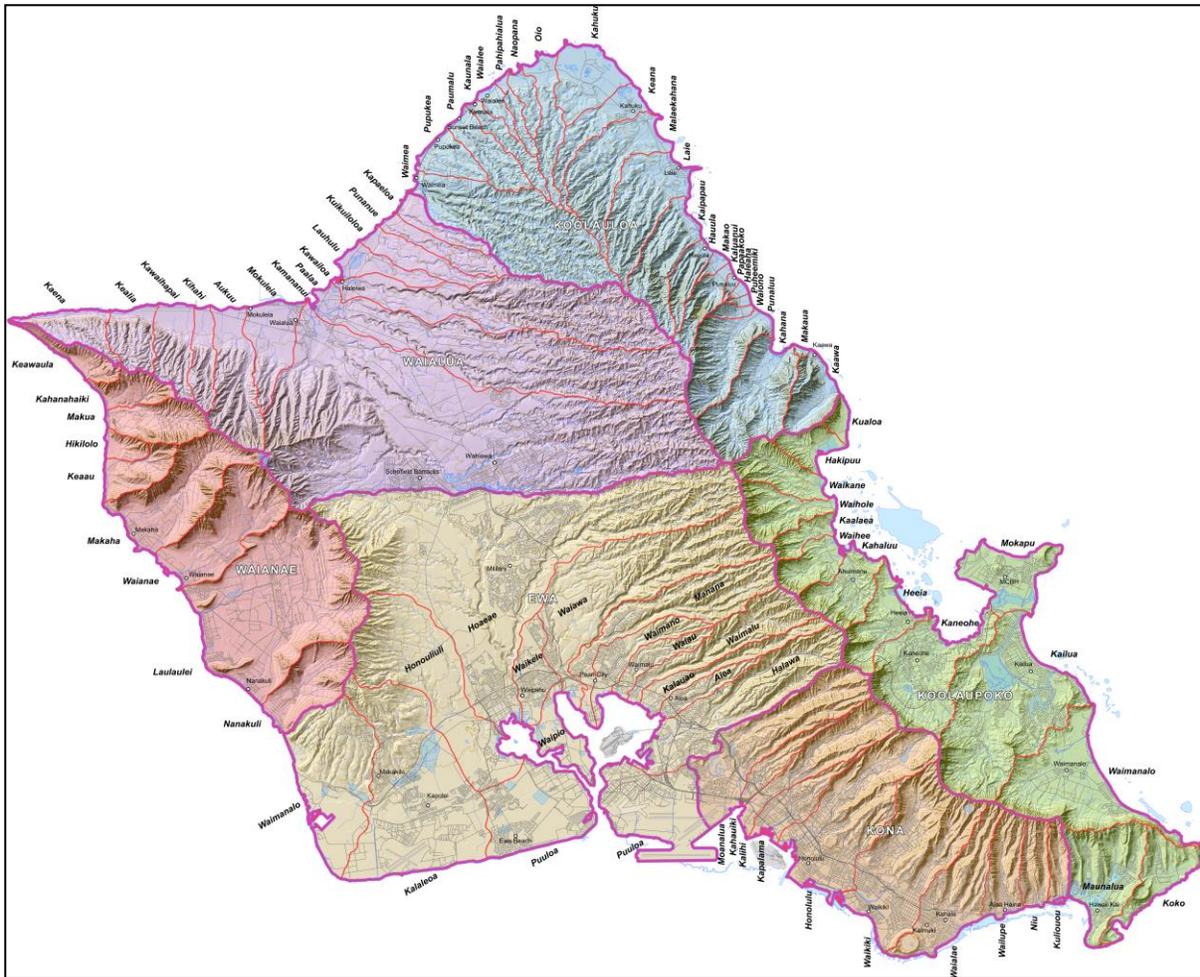


Figure 10: O‘ahu Moku (Source: IslandBreath.org)

O‘ahu (Figure 10) is the third largest island of Hawai‘i, measuring approximately 70.8 km (44 mi.) long by 48.3 km (30 mi.) wide, including 1,537 km<sup>2</sup> (593 mi<sup>2</sup>) (Mita and Peebles 1994). O‘ahu contains portions of two shield volcanoes which formed the island; existing portions are referred to as the Ko‘olau and Wai‘anae Mountain Ranges. The tallest mountain on O‘ahu is Mount Ka‘ala in the Wai‘anae Range, at 1,224 m (4,017 ft) (Mita and Peebles 1994). O‘ahu is divided into six districts, and counterclockwise from the south, the districts include (with their corresponding colors in relation to Figure 10): Ewa (“crooked,” yellow), Kona (“leeward,” orange), Ko‘olaupoko (“short Ko‘olau,” green), Ko‘olauloa (“long Ko‘olau,” blue), Waialua

(purple), and Waianae (“mullet water,” red). There are two HIHWNMS areas on O‘ahu: (1) extending along the majority of the Ko‘olaupoko District coastline and the northeast portion of Waialua District, and (2) extending from Diamond Head State Monument along the southeast coast to Makapu‘u Point.

## **5.8.1 Ewa District**

### **5.8.1.1 Keaīwa Heiau, SIHP #50-80-09-107 (1979); N.R. #72000413 (1972)**

Keaīwa Heiau State Recreation Area, ‘Ewa

UTM: 21.3997222, -157.9080556; 212359N, 1575429W

Park Elevation: 128-420 famsl

Period: A.D. 1500-1900

Significance: Criterion A (event)

Type: Hawaiian Religion, Medicinal Training, and Healing Heiau (Heiau Ho‘ola)

Keaīwa Heiau is located within a 1.55 km<sup>2</sup> (384 acre) park. The heiau is thought to be a Heiau Ho‘ola or medicinal type of heiau where lapa‘au (medicinal arts) was practiced (Watts 1971c; HSP 2013). The heiau is thought to have been built in the 16th century, during the reign of Chief Kākuhihewa (Thrum 1906). Keaīwa is translated as “the mystery” and is “said to be the name of an early priest and to refer to his mysterious healing powers” (Pukui et al. 1974). The heiau is one large terrace that measures approximately 30.48 m (100 ft) NE/SW by 48.77 m (160 ft) SE/NW and is surrounded by a 1.2 m (4 ft) tall rock wall that is approximately 1.5 m (5 ft) thick (McAllister 1933; Sterling and Summers 1978). The heiau faces south and overlooks Pearl Harbor (Pu‘uloa). Some damage has been caused to the heiau by rock removal and commercial agriculture. The Keaīwa Heiau State Recreation Area opened in 1951. Soon, thereafter, the site was restored. It is documented that several stone features were built within the heiau that may not have been original elements of the site (Kirch 1996).

### **5.8.1.2 Okiokilepe Pond, SIHP #50-80-13-0143; N.R. #73000673 (1973)**

Also referred to as Oneokalepa, Okiokalipi, Oneokalepa, or Okeokalepa, Pu‘uloa, Pearl Harbor

UTM: 21.3391094, -157.9755020; 212021N, 1575832W

Elevation: 1-3 famsl

Period: A.D. 1500-1924; Significance: Criterion D (information potential)

Type: Aquaculture/Fishing

Okiokilepe Pond is located within Pearl Harbor, traditionally called Pu‘uloa, in a narrow channel leading from the Pacific Ocean into the West Loch (Kaihuopalaai), across from Waipio Peninsula. Okiokilepe is one of the only surviving fishponds within Pearl Harbor. The fishpond is also unique in that the approximately 61 m (200 ft) long fishpond wall is constructed of stacked coral blocks rather than typical basalt stone construction (Watts 1971e). The site is recorded as being in good condition, however the site integrity has been somewhat compromised by the presence of oil contamination and naval debris against the fishpond wall and within the pond.

Additional sites in Ewa District, Pu‘u Kapolei: The former location of Pu‘u Kapolei Heiau and a rockshelter where Kamapua‘a and his family lived. The organization ‘Ahahui Kapolei is currently making an effort to restore the cultural landscape from Mauna Kapu to Ko Olina.

## **5.8.2 Kona District**

### **5.8.2.1 Diamond Head State Monument**

Also referred to as Pu‘u Lē‘ahi, Lae‘ahi, Kaimana Hila  
Park UTM: 21.2672222, -157.8150000; 211602N, 1574854W  
Elevation: 7-292 famsl  
Crater Summit UTM: 21.2613010, -157.8047419; 211541N, 1574817W

Diamond Head State Monument is located on the southeast shore of O‘ahu. Diamond Head is a tuff crater that covers roughly 1.03 km<sup>2</sup> (255 acres) and is a maximum of 171.3 m (562 ft) deep (Mita and Peebles 1994). A tunnel provides vehicular access into the crater. A steep hike up the rim of the crater achieves access to the summit. Traditionally, several heiau were built on and in the near vicinity to Diamond Head. From the summit the entire southeast and southwest coastlines of O‘ahu can be viewed. In the late 1800s to early 1900s Diamond Head was built into a military command center.

### **5.8.2.2 Hanauma Bay**

Hanauma Bay Nature Preserve, Marine Life Conservation District  
UTM: 21.2687398, -157.6931190; 211607N, 1574135W  
Elevation: 0

Hanauma Bay is part of the HIIHWNMS area, Marine Life Conservation District, and a State Underwater Park. The bay is approximately 408,732 m<sup>2</sup> (101 acres) in size and contains a broad shallow coral reef. Hanauma Beach was a canoe landing from neighboring Moloka‘i Island. Hanauma was used as a royal retreat, enjoyed by Kamehameha the Great’s wife, Queen Ka‘ahumanu, as well as Kamehameha V, and other royalty. From a lookout above the bay, Mo‘okua o Kaneapua, there is an exceptional view of Moloka‘i, Lāna‘i, west Maui, and Haleakalā (James 2010).

### **5.8.2.3 Kapaliokamoa (Pele’s Chair)**

Also referred to as the Queen’s Chair  
Adjacent to Ka Iwi State Scenic Shoreline  
Above Queen’s Beach, south of Makapu‘u

Kapaliokamoa is a large rock formation situated prominently on the coastal end of Ka Iwi Ridge. Kapaliokamoa is translated to “cliff of the chicken” (James 2010). The site is associated with Pele, as the point from which she left O‘ahu for Moloka‘i and Lāna‘i. The view from Kapaliokamoa provides a pristine view to Moloka‘i and Lanā‘i. The inland area from Hanauma

Bay to Makapu‘u is being considered for a State Park, while the coastal area is adjacent to the HIHWNMS.

#### **5.8.2.4 Nu‘uanu Pali Lookout**

Nu‘uanu Pali State Wayside, Ko‘olau Range  
UTM: 21.3675676, -157.7939701; 212203N, 1574738W  
Elevation: 1,200 feet  
Period: A.D. 1795  
Significance: Criterion A (event)

The Nu‘uanu Pali is a 304.8 m (1,000 ft) precipice that overlooks windward O‘ahu. The Nu‘uanu Pali is the final setting in the brutal Battle of Nu‘uanu that occurred in 1795. The battle occurred between O‘ahu warriors and the invading army of Kamehameha the Great and led to the unification of the Hawaiian Islands.

#### **5.8.2.5 Pūowaina, SIHP # 50-80-14-1300**

Also called Puowaena, Puu-o-waina, Pu‘uwainau  
Punchbowl National Memorial Cemetery of the Pacific, National Register (1976)  
UTM: 21.3152778, -157.8486111; 211855N, 1575055W  
Elevation: 83-272 famsl

Punchbowl Crater is located in downtown Honolulu and measures approximately 250,905 m<sup>2</sup> (62 acres) and 42.67 m (140 ft) deep (Mita and Peebles 1994). The rim rises 140.5 m (461 ft) above sea level with a view of Pearl Harbor, Diamond Head, and Honolulu (HHF 2014). Pūowaina (“hill of placing [human sacrifices]”) is where offenders of the kapu system were sacrificed, until around 1809 (James 2010; Pukui et al. 1974). A major battle between island chiefs occurred on Pūowaina in 1795. Cannons were installed by 1816 and were used against Royalists in 1895. On January 4, 1949, the crater became a 461,342 m<sup>2</sup> (114 acre) National Memorial of the Pacific cemetery for U.S. service men and women and their families.

#### **5.8.2.6 Queen Emma's Summer Home (Hanaiakamalama), SIHP #80-14-9904; N.R. #72000420 (1972)**

Queen Emma Museum, 2913 Pali Hwy. Upper Nu‘uanu Valley, Honolulu  
UTM: 21.3391667, -157.8419444; 212021N, 1575031W  
Elevation: 110-361 famsl  
Period: A.D. 1848, 1857-1885  
Significance: Criteria B (person) and C (site type)  
Type: Domestic Government Architecture/Royal Household

The house was built in the late 1840s and was a home first for John G. Lewis and later for John Young II (Keoni Ana), who named the property Hanaiakamalama (“the foster child of the night”) (Wisniewski 2007; Pukui et al. 1974). Queen Emma and her husband, Kamehameha IV,

inherited the home in 1857 and used it as a summer weather retreat (Riconda 1971). Following the queen's death, the house fell into disrepair. The Daughters of Hawai'i restored the home and have maintained it as a museum since 1915 (Wisniewski 2007). The house overlooks Honolulu Harbor.

Additional Sites in Kona District Include: Makapu'u Beach Park, Pāhoa Heiau, Kalauhaehae Fishpond (Lucas Pond), Kānewai Fishpond, and Paiko Lagoon.

### **5.8.3 Ko'olauloa District**

#### **5.8.3.1 Huilua Fishpond, SIHP #50-80-06-301 (1979); N.R. #66000295 (1962, 1966 NHL)**

National Historic Landmark

Ahupua'a 'O Kahana State Park, Kahana Bay

UTM: 24.5841932, -175.7384072

Elevation: 0

Period: A.D. 1200-1499

Significance: Criterion D (information potential)

Type: Aquaculture, Fishing

Huilua Fishpond is part of Ahupua'a 'O Kahana State park and is built within Kahana Bay, on the northeast coast of O'ahu. The fishpond measures about 245 m by 100 m (804 ft by 328 ft), with a basalt fishpond retaining wall along the north and west boundaries (Hommon and Bevacqua 1973). At the southwest corner of the fishpond, near the mouth of Kahana Stream, the fishpond has been modified to include two concrete sluice gates with iron bars. The northwest corner of the fishpond contains a complex of walls and channels designed to utilize the natural tides (Hommon and Bevacqua 1973).

#### **5.8.3.2 Kahuku Habitation Area, SIHP #50-80-02-1038; N.R. #72000424 (1972)**

Also known as Site F4-16, Kahuku

UTM: 21.7119767, -157.9839349; 214243N, 1575902W

Elevation 2-7 famsl

Period: A.D. 1500-1900

Significance: Criteria D (information potential)

Type: Habitation, Agriculture

The site is a coastal habitation site that consists of an exposed midden layer containing an extensive range of gastropod and bivalve mollusks, faunal bone of fish, rat, bird, and pig, charcoal, and fire-cracked basalt (Davis 1982). Surface artifacts collected include basalt tools and flakes (coarse-grain and dense), hematite fragments, coral abraders, and ground bone points (Davis 1982). The site has also been suggested to have agriculture use, but there is little evidence of this (Davis 1982).

### **5.8.3.3 Maunawila Heiau, SIHP #50-80-05-287**

Hau‘ula Ahupua‘a

UTM: 24.6396767, -175.7847712

Elevation: 100-260 famsl

Period: A.D. 1500-1800

Type: Hawaiian Religious/Political Architecture, Landscape

Maunawila Heiau is a 36,422 m<sup>2</sup> (9 acre) complex of traditional Hawaiian features that include a heiau, stone mounds, alignments, terraces, a large pit, a rockshelter, and other features (Thurman 2014). Oral tradition associates Makuakamana, a prophet from Kahiki, as a caretaker of heiau within the area, and thus potentially Maunawila Heiau. Archaeological studies found the initial construction of Maunawila Heiau dates to A.D. 1500. The Hau‘ula Community Association, Ko‘olauloa Hawaiian Civic Club, and school groups have recently cleared the heiau of vegetation, which has provided a viewplane to the ocean. The land is owned by the Hawaiian Island Land Trust and is open to the public.

### **5.8.3.4 Pu‘u o Mahuka Heiau, SIHP #50-80-01-249 (1981); N.R. #66000292 (1962, 1966 NHL)**

Pu‘u o Mahuka State Historic Site, National Historic Landmark (1962)

Pūpūkea Road, overlooking Waimea Bay

Puu o Mahuka Heiau State Park

UTM: 21.6447222 -158.0619444; 213841N, 1580343W

Elevation: 260 famsl

Period: A.D. 1700-1799

Significance: Criteria A (event) and D (information potential)

Type: Hawaiian Religious/Political Architecture

Pu‘u o Mahuka Heiau (“hill of escape”) is the largest heiau on O‘ahu. Archaeological studies at Pu‘u Mahuka Heiau indicate the heiau measures approximately 50 m (164 ft) north-south by 177 m (581 ft) east-west, with two large enclosed courtyards, with a third smaller enclosure on the downslope end (Yent 1991, Kirch 1996). The site also includes two associated enclosures (SIHP #50-80-01-2502 and -3951) that are located 80 m (262 ft) and 130 m (426.5 ft), respectively, to the west of Pu‘u o Mahuka (Levy 1978b, Yent 1991). The highest “upper court” enclosure was possibly built around A.D. 1600 and the temple then expanded over the next hundred years to include the other structures (NPS n.d.(b)). The site is known as a location for chiefly births and is also thought to be a luakini war temple. The temple is associated with the famous kahuna Kaopulupulu. The heiau overlooks Waimea Bay and the northern shoreline of O‘ahu to Ka‘ena Point. Signal fires were used to communicate between Pu‘u o Mahuka and heiau at Wailua on Kaua‘i (Taylor 1958 quoted in Estioko-Griffin 1986).

On May 12, 1792, after a skirmish between Native Hawaiians and crew of Captain Vancouver’s supply ship *Deadalus*, three men were killed. It is thought that the three men were brought to Pu‘u o Mahuka Heiau to be sacrificed.

Additional Sites within Ko'olaupoko Include: Hanawao Heiau [SIHP #50-80-06-293 (1981)] in Punalu'u Ahupua'a, Kapa'ele'ele Ko'a [SIHP #50-80-06-298] in Kahana Ahupua'a, Kauhi'imakaokalani (Crouching Lion, SIHP #50-80-06-303) in Kahana Ahupua'a, and Pele's Followers (SIHP #50-80-01-255) in Pūpūkea Ahupua'a.

#### **5.8.4 Ko'olaupoko District**

##### **5.8.4.1 He'eia Fishpond, SIHP #50-80-10-327, N.R. #73000671 (1973)**

Adjacent to He'eia State Park, Kāne'ohe Bay

UTM: 21.4360620, -157.8078745; 212610N, 1574828W

Elevation: 0

Period: A.D. 1500-1900

Significance: Criterion C (site type) and D (informational potential)

Type: Aquaculture, Fishing, and Industry/Processing/Extraction

He'eia is one of the best-preserved fishponds in Hawai'i. It is a loko kuapā and has a massive arched seawall that extends over 1,524 m (5,000 ft), enclosing approximately 356,123 m<sup>2</sup> (88 acres) (Kirch 1996). He'eia Fishpond has views of Kāne'ohe Bay, Mokoli'i (Chinaman's Hat), Kapapa Island, and Moku o Lo'e (Coconut Island) (Watts 1971b).

##### **5.8.4.2 Kahalu'u Fishpond (Kahouna Fishpond), SIHP #50-80-10-319; N.R. #73000668 (1973, 2007)**

Also called Kahalu'u Pond, Kāne'ohe

NW of Laenani St. off Kamehameha Hwy., Kahalu'u

UTM: 21.4589200, -157.8357053; 212732N, 1575009W

Elevation: 0

Period: A.D. 1500-1924

Significance: Criterion D (information potential)

Type: Aquaculture, Fishing

Kahalu'u Fishpond is a 169,968 m<sup>2</sup> (42 acre) loko kuapā. McAllister (1933) described the pond as having a wall 1,200 feet in length with two outlets and a guardhouse. He designated the fishpond as Site 319. It is thought Kamehameha III once owned the pond. The pond maintains the two original makaha and two additional openings have since been created (Wong 1988). Restoration work has taken place on the retaining wall in several areas. A small nursery pond is also preserved.

##### **5.8.4.3 Kahalu'u Taro Loi (Ahuimanu Taro Complex), SIHP #50-80-10-1165; N.R. #73000669 (1973)**

W of western end of Hui Kelu St., Kahalu'u Ahupua'a

General UTM: 21.4520501, -157.8344178; 212707N, 1575004W

Elevation: 3-10 fmsl

Period: A.D. 1500-1900, Significance: Criteria A (event) and C (site type)  
Type: Agriculture

The Kahalu‘u Taro Loi site is located adjacent to Ahuimanu Stream, approximately 274 m (900 ft) west of Hui Kelu Street and 482.8 m (0.3 mi.) northeast of Kahuku Airport Road (Watts 1971a). The site encompasses around 101,171m<sup>2</sup> (25 acres) of land and contains 18 wetland terraces. The terraces are faced with stacked basalt stones to a height of 2 to 2.5 m (6.5 to 8 ft). The terraces range from 5 to 10 m (16 to 33 ft) in length (Newman 1972d).

#### **5.8.4.4 *Kawa‘ewa‘e Heiau, SIHP #50-80-10-354; N.R. #72000427 (1972)***

Located in Kāne‘ohe  
UTM: 21.8461700, -160.2175520; 215046N, 1601303W  
Elevation 98-322 famsl  
Period: A.D. 1000-1799  
Significance: Criterion D (information potential)  
Type: Hawaiian Religious/Political Architecture

This heiau is where Chief ‘Olopana brought Kamapua‘a to be sacrificed, but he escaped (Pukui et al. 1974). Hui O Pikoiloa, a grass-roots organization, has fought to help protect and preserve the site. The site consists of one large enclosed structure measuring 36.5 m by 77 m (120 ft by 253 ft) with a small terrace on the northern side and walkways surrounding the walls.

#### **5.8.4.5 *Kualoa Ahupua'a Historical District, SIHP #50-80-06-528; N.R. #74000718 (1974)***

Kualoa Regional Park, Kualoa Ahupua‘a  
Kamehameha Hwy., Kāne‘ohe  
UTM: 21.5161111, -157.8416667; 213058N, 1575030W  
Elevation: 4-13 famsl  
Period: A.D. 1750-1799  
Significance: Criteria A (event) and Criterion D (information potential)  
Type: Agricultural Landscape, Village, and Hawaiian Religious/Political Architecture

Kualoa was formerly considered one of the most sacred areas of O‘ahu and is associated with multiple Hawaiian myths. Kualoa was a locale for the Makahiki procession and is thought to have been a pu‘uhonua or place of refuge. Many of the structures that once existed have been removed due to ranching and military activities, however the land is still held as sacred (Newman 1973).

Kāne‘ohe Bay is also highly associated with voyaging traditions. Mo‘ikeha, a chief, and his family are known to have frequented the area.

#### **5.8.4.6 Mokoli'i**

Also called Chinaman's Hat

UTM: 21.5093761, -157.8295469; 213034N, 1574946W

Elevation: 0-134 famsl

Mokoli'i ("the little lizard") is a small island just offshore of Kualoa Park (Pukui et al. 1974). The island is named after a giant lizard that was slain by goddess Hi'iaka. The island is said to be the tail of the lizard. Traditionally, the island was utilized for volcanic glass lithic procurement. Historically, the island is referred to as "Chinaman's Hat" for its shape.

#### **5.8.4.7 Leleahina Heiau, SIHP #50-80-10-0329; N.R. #73000672 (1973)**

South of Haiku Plantation Dr., He'eia

UTM: 21.42464, -157.82841; 212529N, 1574942W

Elevation: Approx. 50 famsl

Period: A.D. 1500-1900

Significance: Criterion C (site type)

Type: Hawaiian Religious/Political Architecture, Historic Burials

Leleahina translates to "altar for Hina" (Pukui et al. 1974). Leleahina Heiau is located in He'eia Ahupua'a and is positioned on a hilltop near the foot of the Ko'olau Range. The heiau is located within the Haiku Plantations subdivision, however the site maintains an unobstructed view of the ocean. The heiau measures approximately 33.5 m by 35 m (110 ft by 115 ft) and consists of two large earthen platforms (Watts 1971d). A historic cemetery enclosed by thick stone walls was built on the top terrace, likely utilizing stones from other features of the heiau. Although the site contains modifications, it is still in relatively good condition.

#### **5.8.4.8 Mōkapu Peninsula Fishpond Complex, SIHP #50-80-11-1002**

Also referred to as Nu'upia Ponds

Kāne'ohe Marine Corps Air Station, Mōkapu Peninsula

Mokapu Point UTM: 21.3755556, -157.7166667; 212232N, 1574300W

Mokapu Peninsula: 21.4436420, -157.7471924; 212637N, 1574450W

Elevation: 1-3 famsl

Period: A.D. 1500-1799

Significance: Criterion D (informational content)

Type: Aquaculture, Recreation

Mōkapu translates to "taboo district" and referred to Mōkukapu ("sacred district"), a place where Kamehameha met with his chiefs (Pukui et al. 1974). The fishpond complex was determined eligible for the National Register in 1984, however it is not listed on the State or National Registers. Mōkapu now serves as the Kaneohe Marine Corps Air Station.

#### **5.8.4.9 Mōli'i Fishpond, SIHP #50- 80-06-0313; N.R. #72000429 (1972)**

Southeast of Kamehameha Hwy., between Kualoa and Johnson Rds., Hakipu'u

UTM: 21.5103343, -157.8456831; 213037N, 1575044W

Elevation: 0

Period: A.D. 1500-1900

Significance: Criterion D (information potential)

Type: Aquaculture, Fishing

Mōli'i Pond is located on the shore of Hikipu'u Ahupua'a and is adjacent to Kualoa Ahupua'a, on the northern rim of Kāne'ohe Bay. The pond contains an approximate 1.22 km (4,000 ft) long stone stacked wall that encompasses nearly 505,857 m<sup>2</sup> (125 acres) of shallow waters (Martin 1971). The construction of Mōli'i Fishpond is mythologically attributed to the menehune. The fishpond has been in continuous operation throughout Hawaiian history as a catchment for mullet and other fish varieties.

#### **5.8.4.10 Pahukini Heiau, SIHP #50-80-11-0359; N.R. #72000426 (1972)**

Also called Mo'okini

SW of Kapaa Quarry, Kailua

Period: A.D. 1500-1749

Significance: Criterion A (event)

Type: Hawaiian Religious/Political Architecture

Pahukini Heiau overlooks the town of Kailua and Kawainui Fishpond on the northeast side of O'ahu, just southwest of Kapa'a Quarry Road. The heiau has nicely constructed stonewalls that enclose a rectangular area measuring approximately 36.6 m by 54.9 m (120 ft by 180 ft), with an additional and possibly later structure on the north side measuring 9.75 m by 11.5 m (32 ft by 38 ft) (Watts 1971f). Pahukini Heiau is considered a Heiau Luakini or sacrificial heiau (Thrum 1906). The site has been undercut by a modern quarry and has been said to be difficult to access and covered in vegetation. Pahukini translates to "many drums" (Pukui et al. 1974).

#### **5.8.4.11 Ulupō Heiau, SIHP #50-80-11-371 (1981); N.R. #72000425 (1972)**

Also called Ulu Po Heiau

Ulupo Heiau State Historical Site, Kailua Ahupua'a

UTM: 21.3891667, -157.7555556; 212321N, 1574520W

Elevation: Unknown

Period: A.D. 1500-1799

Significance: Criterion D (information potential)

Type: Hawaiian Religious/Political Architecture

Ulupō is translated to "night inspiration" (Pukui et al. 1974). Ulupō is a square terrace platform measuring approximately 42.7 m (140 ft) in width, with a terrace face built more than 9.1 m (30 ft) high (Kirch 1996). The heiau construction is attributed to the menehune who passed stones hand over hand for many miles. A stone lined spring at the northwest edge of the heiau was used

to bathe pigs prior to their sacrifice (Kirch 1996). The heiau is built above Kawainui Marsh and had a commanding view to the ocean.

Additional Sites within Ko‘olaupoko Include: Kukuipilau Heiau [N.R. #84000254 (1984)] in Kailua and Waikalua Loko Fishpond in Kāne‘ohe.

### **5.8.5 Wahiawā District**

Wahiawā is the central district of O‘ahu. This district holds one of the most important sites on O‘ahu, the Kukaniloko Birthstones State Historic Site (SIHP #50-80-04-218; N.R. #73000674 [1973]). The site is renowned for being a place for royalty births. The ocean is not viewable from this site and therefore it is not included within the scope of this study.

### **5.8.6 Waialua District**

#### **5.8.6.1 Kupopolo Heiau, SIHP #50-80-01-241; N.R. #73000657 (1973)**

Waimea

UTM: 21.638611, -158.0697222; 213819N, 1580411W

Elevation: Approx. 30 famsl

Period: A.D. 1700-1799

Significance: Criterion D (information potential)

Type: Hawaiian Religious/Political Architecture

Kupopolo Heiau consists of two stone terraces, divided by a large basalt wall (Loo 1973). The heiau has been cleared of vegetation and is currently under archaeological investigation by the University of Hawai‘i-Mānoa through a North Shore Field School. Kupopolo Heiau is associated with Kapulupulu, a priest that lived during the time of Kahana. The vicinity of the heiau includes fishing shrines, a shelter cave, and petroglyphs (Loo 1973).

#### **5.8.6.2 Loko Ea Fishpond**

Also referred to as Lokoea

Kawailoa Ahupua‘a

UTM: 21.5951730, -158.1020594; 213543N, 1580607W

Elevation: 0

Period: A.D. 1500-1900

Significance: Criterion D (information content)

Type: Aquaculture/Fishpond, Agriculture

Loko Ea is a royal fishpond created by natural freshwater springs.

Additional Sites in Waialua Include: Anahulu Valley in Kawailoa Ahupua‘a, Waimea Valley in Waimea Ahupua‘a, and Mokaena Heiau in Kuokala overlooking Kaena Point.

## 5.8.7 Wai‘anae District

### 5.8.7.1 *Wai‘anae District, SIHP #50-80-07-1181; N.R. #74000720 (1974)*

UTM: 21.4666667, -158.1666667; 212800N, 1581000W

Elevation: 88-289 fmsl

Period: A.D. 1200-1900

Significance: Criterion D (information potential)

Type: Village, Hawaiian Religious/Political Architecture

The district of Wai‘anae has been placed on the National Register. Wai‘anae is situated on the seaward end of the ridge that separates Mount Ka‘ala, the highest point on O‘ahu at 1,224 m (4,017 ft), and three valleys that extend westward to the Wai‘anae shore creating the valleys of Mākaha, Pōka‘ī, and Lualualei (Newman 1972c). Wai‘anae District consists of Kamaile Heiau, and Kuka‘auai Cave Shelter, making it one of the remaining clusters of habitational sites on O‘ahu with midden deposits and habitation areas (Newman 1972c).

### 5.8.7.2 *Kū‘ilioloa Heiau*

Pōka‘ī Bay, Mikilua Beach Public Park

Kū‘ilioloa Heiau is built on Kane‘īlio Point, which is surrounded on three sides by water. The heiau includes three platforms, elevating in height towards the end of the point (Sterling and Summers 1978). Disturbance to the heiau has been attributed to WWII Army activities in 1954 (Sterling and Summers 1978).

### 5.8.7.3 *Mauna Lahilahi*

Mauna Lahilahi Beach Park, Mākaha

UTM: 21.4603379, -158.2132959; 212737N, 1581248W

Elevation: 230 fmsl

Period: Pre-contact

Significance: Criterion D (information potential)

Type: Religion, Village, and Arts

Mauna Lahilahi is a large cliff situated along the coastline of Mākaha. The location is a well-known fishing spot and lookout. Archaeological features at the site include stone structures, petroglyphs, and small funerary caves.

Additional Sites in Wai‘anae Include: Ka‘ena Point Complex, SIHP #80-03-1183 (1988), Kane‘aki Heiau in Mākaha, Kamaile Heiau between Wai‘anae and Mākaha Valleys, Kamohoalii (Kahoalii), Kāneana Cave, the Kea‘au Talus Sites Archaeological District [N.R. #86002808 (1987)], Kūka‘au‘au Cave, Nioiula Heiau [SIHP #50-80-08-149 (1978)] in Lualualei, Punapōhaku Complex, and Ukanipo Heiau [SIHP #50-80-03-181; N.R. #82002502 (1982)] (Hommon 1980) in Mākaha.

## 6 Significant Natural Heritage Features and Viewsheds

In addition to the specific viewsheds listed within the geographic viewsheds there are also two noteworthy categories of large landscape features throughout the islands: ocean channels and mountains. Brief descriptions are provided below.

### 6.1 Channels – Nā Kai ‘Ewalu (The Ocean Channels)

“Nā Kai ‘Ewalu” is a poetic reference to Hawai‘i. Ocean channels connect the islands and provide pathways for inter-island travel. The channels (as illustrated in Figure 11) are as follows:

1. **‘Alenuihāhā** (Hawai‘i/Maui)
2. **‘Alalākeiki** (Maui/Kaho‘olawe)
3. **‘Au‘au** (Kaho‘olawe/Lāna‘i)
4. **Pailolo** (Moloka‘i/Maui)
5. **Kalohi** (Moloka‘i/Lāna‘i)
6. **Kaiwi** (Moloka‘i/O‘ahu)
7. **Ka‘ie‘iewaho** (O‘ahu/Kaua‘i)
8. **Kaulakahi** (Kaua‘i/Ni‘ihau)

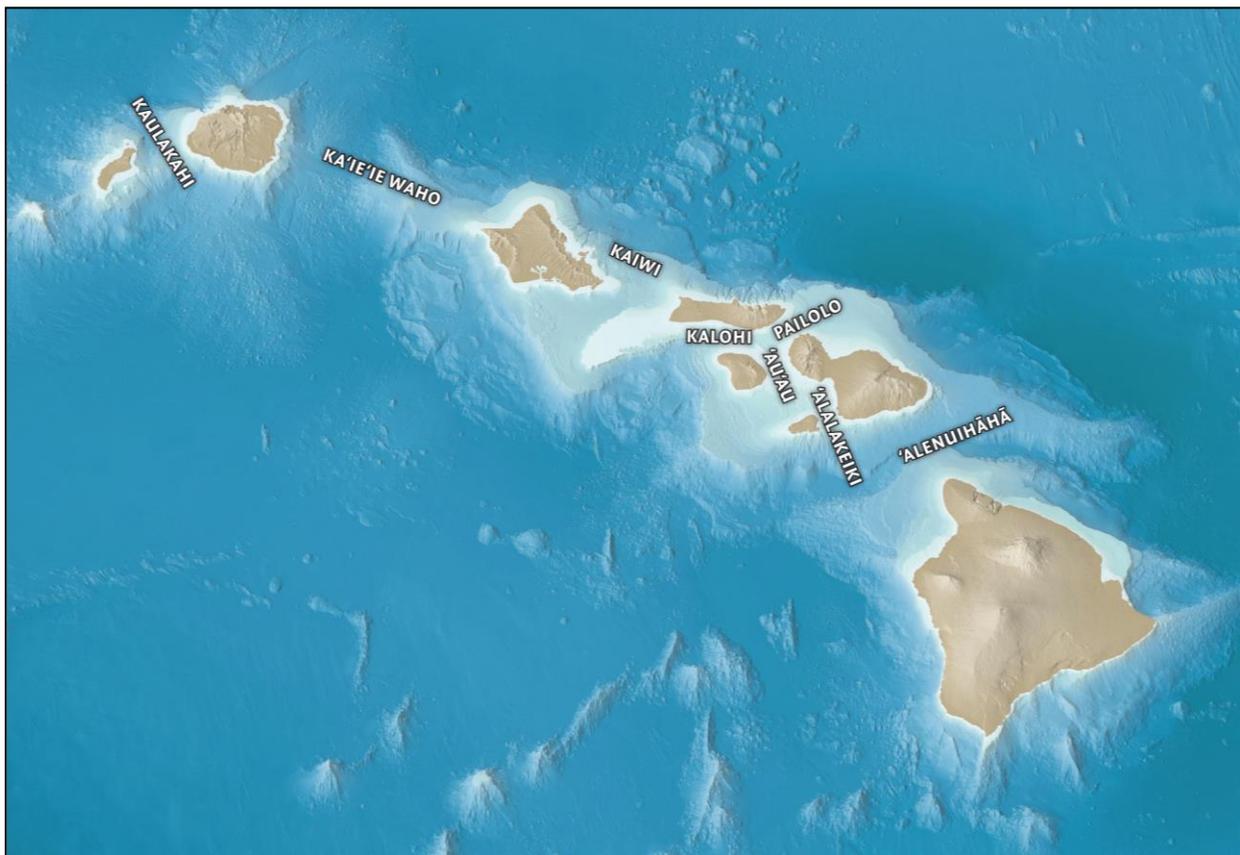


Figure 11: Nā Kai ‘Ewalu

Hawaiians utilized inter-island waterways regularly as part of their pre-contact lives. As such, the channels often played significant parts in historical narratives. The names of the channels were as known and referenced as the islands themselves. There is another channel between Kaho‘olawe and Tahiti named “Kealaikahiki,” literally “the road to Tahiti.” Prior to foreign contact, Pacific Islanders traveled throughout the Pacific and an underwater trench guided the route between Hawai‘i and Tahiti, likely the source of the many narratives of Pele and her clan who traveled between Hawai‘i and Tahiti. Significance of each channel varies between channels and even specific locations within the channel.

Native Hawaiians also celebrate the channel in chant and song, as in the following chant “Mele o Nā Kai ‘Ewalu” by Kumu Hula Manu Boyd released in 1995:

**Mele o Nā Kai ‘Ewalu (Song of The Eight Seas)**

Ki‘eki‘e Hawai‘i i luna o ka kai o ‘Alenuihāhā  
 Ho‘olono ‘o Maui i ke olohia a ‘Alalākeiki  
 He keiki mailani ‘o Kaho‘olawe na Kanaloa  
 E kuhikuhi mau aku i Kealaikahiki  
 Hiki a‘e ana i Lāna‘i i ke kai ‘o ‘Au‘au  
 ‘Au aku iā Pailolo, aia lā ‘o Moloka‘i ē

Hawai‘i stands majestically over ‘Alenuihāhā  
 Maui hears the resonance of ‘Alalākeiki  
 Kaho‘olawe is the exalted child of Kanaloa  
 It gestures toward Kealaikahiki  
 On to Lāna‘i in the sea of ‘Au‘au  
 Forging ahead towards Pailolo, behold Moloka‘i

Kai ‘ale hānupanupa o Kaiwi,  
 huli ho‘i i ka pohu la‘i o O‘ahu  
 ‘Oni mālie Ka‘ena i ka māpuna hoe  
 a Ka‘ie‘iewaho  
 Ma loko mai ‘oe i Kamāwaelualani i Kaua‘i  
 Alo ana Ni‘ihau i ke ehū o Kaulakahi  
 ‘Akahi a lana mai ka no‘ono‘o  
 I ke kau mai a ka lā i ka mole ‘olu o Lehua

Kaiwi’s waves surge,  
 turn towards O‘ahu’s serenity  
 Where Ka‘ena is poised to paddle out  
 to Ka‘ie‘iewaho  
 Kamāwaelualani Kaua‘i bids welcome  
 Ni‘ihau bears the sea mist of Kaulakahi  
 My concentration is now at ease  
 With the setting sun at Lehua

‘O ka wai huna o ka pāo‘o ka‘u i ‘ike ai  
 He nani, ha maika‘i wale nō ia  
 Pāhola mai nei ‘o Hawai‘i pae ‘āina  
 O ka laulā Hanohano o Nā Kai ‘Ewalu  
 Kama ‘ia a pa‘a ke aloha ua pono  
 Aloha kākou a pau loa!

I have witnessed the hidden waters of the pāo‘o  
 Splendid, perfect  
 The islands of Hawai‘i are laid forth  
 It is the glorious expanse of Nā Kai ‘Ewalu  
 Love is bound correctly  
 Aloha to us all!

The channels between the islands are valued NH sites, encompassing vast viewsheds inclusive of at least one and often multiple neighboring islands. These NH sites inspired intangible cultural heritage traditions throughout the writing of songs, chants, stories, and perpetuation of customs and practices like sailing, padding and other spiritual practices.

The siting of structures within the channels could diminish and degrade the spiritual integrity of the channels, impacting the ability of practitioners to perpetuate customs like songwriting, chanting, story-telling and other oral traditions that are inspired by natural landscapes and viewsheds.

## 6.2 Sacred Mountains – Nā Kuahiwi ‘Elima

Equally important as the inter-island channels are sacred mountains and their viewsheds. The most famous mountains in Hawai‘i are Nā Kuahiwi ‘Elima, the five mountains. The five mountains refer to the five mountains of Hawaii Island. These are often misidentified as Kohala, Hualālai, Mauna Kea, Mauna Loa and Kīlauea, but Kīlauea is actually a caldera and not a mountain, and tradition identifies Haleakalā, which is physically located on the island of Maui as the fifth mountain of Hawai‘i Island. The best traditional reference of this is the mele Nā Kuahiwi ‘Elima by practitioner Helen Desha Beamer.

**Nā Kuahiwi ‘Elima** (The Five Mountains) - Words and Music by Helen Desha Beamer<sup>18</sup>

Hoihoi ka pi‘ina a‘o Waimea I ka paā mai a ke kēhau anu ‘Akahi ho‘i au a ‘ike maka I nā wailele pālua i ka pali a‘o Waipi‘o I nā wailele pālua i ka pali a‘o Waipi‘o	Happy the ascent to Waimea In the cool, breezy mist First sight I see The double waterfalls in the cliffs at Waipi‘o The double waterfalls in the cliffs at Waipi‘o
Kilakila Mauna Kea me kona nani Helu ‘ekahi o ke ki‘eki‘e Pili mai Mauna Loa mauna kamaha‘o Home noho a ka wahine Pele mai Kahiki Home noho a ka wahine Pele mai Kahiki	Majestic is Mauna Kea with her beauty Foremost and highest Close by is Mauna Loa, wondrous and awesome mountain Home where dwells the woman Pele from Tahiti Home where dwells the woman Pele from Tahiti
Hanohano Hualālai e kū mai la E ho‘ohiwahiwa ana a i nā Kona Aia la nā kuahiwi o Kohala Ke holo a‘ela mai uka a ke kai Ke holo a‘ela mai uka a ke kai	Majestic Hualālai rises Adorning all Kona There, the mountains of Kohala Run from the uplands to the sea Run from the uplands to the sea
Ma`ō aku o ‘Alenuihāhā Haleakalā o Maui o Kama Ha`ina ka puana i lohe ‘ia Mahalo i ka nani o nā kuahiwi ‘elima Mahalo i ka nani o nā kuahiwi ‘elima	Beyond Alenuihāhā (channel) Haleakalā of Maui of Kama Tell the theme that it may be heard Worthy admiration for the beauty of the five mountains Worthy admiration for the beauty of the five mountains

Source: Songs of Helen Desha Beamer - Helen Beamer and Annabelle Ruddle were traveling from Paniau to Kawaihae. Leaving Hilo early, they arrived in Āhualoa and could see parts of Waipi‘o and Waimanu with the waterfalls, Mauna Kea and Mauna Loa. When they arrived at Kawaihae, the melody and words to this song were complete. Copyright 1953 Harriett Magoon Translated by Mahi‘ai Beamer.

Helen Dasha Beamer was an early 20th century composer and hula dancer. The Beamer ‘Ohana has come to be one of the most prolific Hawaiian music composers and musicians in Hawai‘i.

Helen Desha Beamer came to compose one of the most iconic mele out of Hawai‘i and her mo‘opuna (descendants) continued that legacy.

Like most Hawaiian composers, Helen Desha Beamer was inspired by the ‘āina that sustained her and her people. Like many of her other songs, Nā Kuahiwi ‘Elima was written in order to map and celebrate parts of our ‘āina that are not only a part of the Hawaiian cultural/visual experience but have been and continue to be essential to the survival and sustenance of Kanaka Maoli.

Nā Kuahiwi ‘Elima was written while Beamer traveled from Paniau to Kawaihae, its lyrics specifically honor the majestic mountains: Waipi‘o, Maunakea, Maunaloa, Hualālai of Hawai‘i Island and Haleakalā of Maui. The lyrics demonstrate the intimate physical and spiritual relationship between Kanaka Maoli and their kuahiwi (mountains). The lyrics also display the importance of the viewsheds between islands. It should also be noted that each island has mountain peaks of importance. Nā Kuahiwi ‘Elima remain the largest and most note-worthy mountains largely due to the fact that Hawai‘i Island and the east side of Maui are the youngest (geologically) islands in the Hawaiian Island chain, therefore these mountains have been subject to the least erosion. Yet, each particular island community is likely to feel a connection to its own mountain and the viewshed associated with that particular mountain. Additional assessments should be localized and conducted accordingly, although it should be noted that in many areas throughout Hawai‘i, mountain peaks are areas not accessible via “normal access” due to dangerous conditions that limit access to the public or private ownership.

## **7 Significant Cultural Viewsheds Associated with Modern Events and Living Hawaiian Culture**

Properties eligible for the National Register are generally limited to properties that are at least fifty years old or associated with events at least fifty years ago. Yet, there are a limited number of events that occurred in seaward viewsheds within the last fifty years that should be noted for their significance, and they are described below.

### **7.1 Moloka‘i Hoe**

Since 1952, the Moloka‘i Hoe has represented the revival and popularization of traditional Hawaiian sports worldwide. In the years preceding the first races, Hawaiian sports and athletes were overly romanticized and the historical significance and purpose of sports, such as outrigger paddling, was nearly forgotten. Outrigger paddling was the competitive form of transportation and a means for survival. Native Hawaiians mainly subsisted off of fishing from outrigger canoes and canoes also provided the main transportation between the Hawaiian Islands, a key consideration when the island chain became united under King Kamehameha. Outrigger canoes stand as a cultural symbol of Hawaiian heritage, which is honored today by the Moloka‘i Hoe.

As the oldest and most prestigious race, the Moloka‘i Hoe embodies the rich values of the Native Hawaiians. Preparation, teamwork, and strategy are necessary components to participating in the

race as canoes face the punishing Ka 'Iwi Channel, known for its turbulent currents, gale force winds, and tremendous waves. The Moloka'i Hoe instills a respect for the ocean and for the Hawaiian people as seen through the attendance of over 1,000 participants annually. Although it is a new tradition, the Moloka'i Hoe invokes the traditional practices, allowing people from all over the world to experience Hawai'i's cultural heritage.

The exact route of the race has varied over the years, but generally the route runs from Hale o Lono or Kaunakakai on Moloka'i to Waikīkī. It is one of Hawai'i's most significant modern traditions. It is aired live on television annually. Paddling crews train year-round for the race. People come from all over the world to attend or participate. There are two races: one for men and one for women. Both races take place in the fall every year.

## 7.2 Hōkūle'a



Figure 12: Hōkūle'a approaches the O'ahu in 1972 (Source: Honolulu Star Bulletin)

In 1970, Hawaiian culture—specifically the ocean voyaging technology and navigation responsible for transporting Polynesians across the Pacific—was nearing extinction. Years of

cultural oppression had all but erased Hawaiian traditional knowledge. The construction and successful maiden voyage of *Hōkūle‘a* from Hawai‘i to Tahiti in 1975 catalyzed a period of restoration of the Hawaiian culture known as the Hawaiian renaissance (Figure 12).

The *Hōkūle‘a* is a traditional Hawaiian sailing canoe, specifically a wa‘a kaulua (double hulled canoe). Hawaiian artist Herb Kane traditionally designed it in the 1970s as he co-founded the Polynesian Voyaging Society in 1973. In 1975, *Hōkūle‘a* launched from Hakipu‘u, Kualoa for the first time. Without any master Hawaiian navigators, the Polynesian Voyaging Society recruited Master Navigator Mau Piailug from Satawal, a small island part of Yap, to lead the first voyage to Tahiti in 1976. Under Mau’s direction, *Hōkūle‘a* successfully navigated to Tahiti where over 17,000 people, half the island’s population, welcomed them. Equally large crowds also welcomed them home when they returned to Hawai‘i.

Forty years later, the Polynesian Voyaging Society continues to build upon the extraordinary legacy created by Herb Kane and Mau Piailug. By tracing the ancestral paths of the first Polynesian explorers, *Hōkūle‘a* cemented the ingenuity of the Polynesian people and inspired Hawaiians everywhere to rediscover their heritage (Baybayan and Kawaharada 1996).

The *Hōkūle‘a* was constructed over three years as an authentic replica of a Hawaiian sailing canoe. Her crew steers her without the aid of modern navigational tools and charts, instead they use wayfinding navigation based on astronomy and ocean patterns (Makemson n.d.). *Hōkūle‘a*’s voyages retrace the paths taken by ancient Polynesians, who settled Oceania from as early as 800 B.C. These routes symbolize the plethora of technology and knowledge accumulated by Polynesians before western contact. The successful voyages of the *Hōkūle‘a* across the world have inspired uninhibited pride in Hawaiians and Polynesian people everywhere, conveying the message that Polynesians are a smart, innovative, and resourceful people. The *Hōkūle‘a* and sea routes travelled today mark an important rediscovery of that heritage and have sparked an authentic “living culture” that encourages the people of Hawai‘i to reconnect with their environment, traditions, and culture.

Over the years and its many voyages, the *Hōkūle‘a* has utilized a number of different routes to leave from and return to Hawai‘i on their voyages. Since their initial establishment in the 1970s, additional voyaging canoes, like the *Makali‘i* or *E Ala E* have also returned to the water. The practice of traditional wayfinding continues to grow today across Hawai‘i. It is likely that Honolulu Bay on Maui, where they departed for their first historic voyage to Tahiti in 1976, would be eligible for the National Register (the bay also recently became a protected area) even though the activity took place less than 50 years ago. Yet, the best course of action would be for any potential plan to consult with the voyaging community to identify areas significant to historic and modern wayfinding activities.

### **7.3 Kaho‘olawe Landing**

During World War II, the U.S. Army declared martial law across Hawai‘i and designated Kaho‘olawe as a bombing range and place to train soldiers for the brutal war in the Pacific. Kaho‘olawe continued to be used as a live-fire training site after the end of WWII until 1976, when a group of nine civilians landed on Kaho‘olawe for the first time in 35 years. Inspired by

the resurgence of Hawaiian culture and sovereignty in 1970, the “first nine” or “Kaho‘olawe Nine” (K-9) believed that the U.S. Army was unjustly occupying and desecrating Hawaiian land. The protesters formed an association, known as the Protect Kaho‘olawe Association, and their actions sparked national interest in Native Hawaiian affairs and the growing Hawaiian sovereignty movement.

The continued bombing of Kaho‘olawe while protesters remained undetected on the island was deemed irresponsible by city and state officials. These circumstances set off a chain of events of emotional and political upheaval among the Hawaiian community that was to change Hawai‘i forever. This was the pivotal event that led to the cease order of all bombing of Kaho‘olawe and the return of the island to the Hawaiian people 20 years later. The landing site holds significance above and beyond its archaeological value, as a monument of the Hawaiian renaissance that began in the 1970s.

The initial landing continues to be a highly significant moment in Hawaiian history, inspiring following generations to dedicate themselves to the restoration of land, language, and culture. The route taken by the K-9 to get to Kaho‘olawe remains of great significance to the Hawaiian people—from Maui to Kaho‘olawe. The group would return multiple times to the island and eventually, the leader of the movement, George Helm, would lose his life along that route, as would Kimo Mitchell. The majority of the route is in the HIIHWNMS, and the remainder of the route is in the Kaho‘olawe marine reserve area. Though it is not currently on the National Register, it may be eligible despite the fact that the historic events that contribute to its significance took place less than 50 years ago. All matters related to Kaho‘olawe should involve the Kaho‘olawe Island Reserve Commission (KIRC), which is the governing board that oversees the island today. There are also additional stakeholder groups with deep connections to the island that should be consulted on matters that may impact the island or its viewsheds.

## 8 Conclusion

In his book *Mai Pa‘a I Ka Leo*, M. Puakea Nogelmeier quotes the great Native Hawaiian historian S. M. Kamakau: “He makemake ko‘u e pololei ka mo‘olelo o ko‘u one hanau” [I want the history of my homeland to be correct] (Nogelmeier 2010). This became the great challenge of this study, to ensure the history of Hawai‘i is told accurately and with integrity.

The methodology called for in the scope of work, which is utilized across the United States, revealed very few viewsheds that qualified under the specified conditions. In most places across the United States and the world, there would be no other option than this methodology. In Hawai‘i, native language archives are an option that should be utilized. Yet, upon reading the studies and nomination applications, it was clear very few used Hawaiian language resources. In this day and age, when over one million pages of these resources are made available via the Internet, there is no reason not to make the effort to close that discursive gap. Bridging this essential gap is what this study attempts to do with the time and resources made available. It was a difficult but extremely important task because the effort is replicable and transferable to other indigenous or tribal communities looking to integrate their traditional heritage and sites of significance within the NHPA regulations.

## 9 Endnotes

- <sup>1</sup> This document and its progeny shall employ the definition of Native Hawaiian as set forth in 54 U.S.C. Section 300313 of the NHPA which defines Native Hawaiian as “any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.”
- <sup>2</sup> Refining and Revising the Gulf of Mexico Outer Continental Shelf Region High-Probability Model for Historic Shipwrecks, Final Report; Volume I: Executive Summary (OCS Study MMS 2003-060); Volume II: Technical Narrative (MMS 2003-061); Volume III: Appendices (MMS 2003-062). Charles E. Pearson, Stephen R. James, Jr., Michael C. Krivor, S. Dean El Darragi, and Lori Cunningham.
- <sup>3</sup> Inventory and Analysis of Archaeological Site Occurrence on the Atlantic Outer Continental Shelf, (BOEM Study 2012-008). TRC Environmental Corp.
- <sup>4</sup> The term *viewshed* “refers to all points which could be connected by a straight line to [a] person[’s eye], without intersecting the Earth’s surface.” See “Petition by Appalachian Trail Conference to Federal Communications Commission,” *The National Environmental Policy Act and the Placement of Telecommunications Facilities Near National Scenic Trails*, at 2 n. 11 (Apr. 21, 1998) (cited in Vinch, *The Telecommunications Act of 1996 and Viewshed Protect for the National Scenic Trails*, *J of Land Use & Env Law*, Available at <http://www.law.fsu.edu/journals/landuse/vol151/vinch1.htm#FNT87> (1999)); *see also* 16 USC. § 460vv-b(c) (1994) (protecting viewshed of Winding Stair Mountain Recreation and Wilderness Area); 16 USC. § 90c-1(a) (1994) (protecting viewshed of North Cascades National Park); CAL. PUB. RES. CODE § 5907(e)(5) (West Supp. 1999) (\$25 million authorized for protection of critical viewshed along Big Sur coast); 20 ILL. COMP. STAT. 3905/1005 (West. Supp. 1999) (Alton Lake Parkway Corridor); NEV. REV. STAT. ANN. § 376A.010 (Michie 1993) (concerning taxes applicable to development of open spaces and protected viewsheds); N.Y. ENVTL. CONSERV. LAW § 44-0113 (15) (McKinney 1997) (protection of viewsheds along Hudson Valley Greenway).
- <sup>5</sup> §115-4 Right of transit along shorelines. The right of access to Hawai‘i’s shorelines includes the right of transit along the shorelines. [L 1974, c 244, §4; am L 1991, c 37, §2]
- <sup>6</sup> §115-5 Beach transit corridor defined. (a) The right of transit shall exist seaward of the shoreline and this area shall be defined as a beach transit corridor. For purposes of this section, "shoreline" shall have the same meaning as in section 205A-1. However, in areas of cliffs or areas where the nature of the topography is such that there is no reasonably safe transit for the public along the shoreline below the private property lines, the counties by condemnation may establish along the makai boundaries of the property lines public transit corridors which shall be not less than six feet wide. (b) Along beach transit corridors where the abutting landowner's human-induced, enhanced, or unmaintained vegetation interferes or encroaches with beach transit corridors, the Department of Land and Natural Resources may require the abutting landowner to remove the landowner's interfering or encroaching vegetation. [L 1974, c 244, §5; am L 2010, c 160, §3]
- <sup>7</sup> [§46-6.5] Public access. (a) Each county shall adopt ordinances which shall require a subdivider or developer, as a condition precedent to final approval of a subdivision, in cases where public access is not already provided, to dedicate land for public access by right-of-way or easement for pedestrian travel from a public highway or public streets to the land below the high-water mark on any coastal shoreline, and to dedicate land for public access by right of way from a public highway to areas in the mountains where there are existing facilities for hiking, hunting, fruit-picking, ti-leaf sliding, and other recreational purposes, and where there are existing mountain trails.
- <sup>8</sup> Public access granted under State law is preempted by the Supremacy Clause in Article VI of the U.S. Constitution and additionally by national/homeland security laws by which the military choose to exclude local communities from military and federal lands thereby denying the public and Hawaiian practitioners access to significant cultural resources and landscapes.

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- <sup>9</sup> The Sanctuary currently includes areas on six islands:
1. Hawai‘i: ‘ūpolu Point (north) to Keāhole (southwest).
  2. Maui: Honokahua (north) to Makena (south).
  3. Lāna‘i: (windward coast facing Maui and Moloka‘i).
  4. Moloka‘i: Hālawa (east) along southern shoreline to Hale o Lono (west) to Mo‘omomi (northern tip of west end).
  5. O‘ahu: Hālonā-Awāwamalu (east) to Lē‘ahi (south).
  6. Kaua‘i: Northern coastline from Kīlauea (northeast) to Nāpali (northwest).
- <sup>10</sup> Examples of sensitive information include 1) geographic information that if released to the general public would potentially cause harm to a resource due to overuse or overharvesting or a group of local stakeholders who currently rely upon the sustainable use of that resource for spiritual, subsistence, or economic purposes; 2) information related to traditional intellectual property of Native Hawaiians or other indigenous peoples including, but not limited to, food making practices, medicine making practices, fishing practices, trail routes, religious rites, and other activities that may not currently be available in other primary sources.
- <sup>11</sup> See Ho‘omanawanui’s “He Lei Ho‘oheno no nā Kau a Kau” (2005) for further information on this subject.
- <sup>12</sup> The missionaries of the ABCFM (American Board of Commissioners for Foreign Missions) were the first to create a written alphabet, lexicon, and enact a system of teaching literacy (reading and writing) in the Hawaiian language. For more information, see Kimura’s “Native Hawaiian Culture” in *Native Hawaiian Study Commission Report*, 1983, pgs. 173-224.
- <sup>13</sup> The interconnectedness of kanaka, ‘āina, and kai (people, land, ocean) came into full public view in 1997 with *Public Assess Shoreline Hawai‘i v. Hawai‘i County Planning Commission*. Public Access Shoreline Hawai‘i (PASH), a group comprised primarily of Native Hawaiian cultural practitioners, legally challenged the county of Hawai‘i government over permits issued to Nansay Hawai‘i to develop a sprawling resort slated to cover over 450 acres of shoreline at Kohanaiki, north Kona. In part, the development of the resort would cut off access to a significant portion of the shoreline, critical to access customary fishing grounds. It was a socio-political-cultural revolution where kumu hula (hula masters), fishermen and other Hawaiian practitioners came together to demand access to the ocean and its paramount male deity, Kanaloa. The Hawai‘i Supreme Court ruled in PASH’s favor, “effectively elevat[ing] the rights of Native Hawaiians to gather in traditional and customary ways to the same level of legal importance as the most basic and fundamental concepts in Western property law.”
- <sup>14</sup> The word *myth* comes from the Greek *muthos*, meaning “to speak, say,” and thus references oral traditions. The Hawaiian word *mo‘olelo* (story, history), comes from the combination of *mo‘o* (succession) and *‘ōlelo* (to speak, talk, word), and thus *mo‘o‘ōlelo* refers to oral tradition as well (Ho‘omanawanui 2014:38).
- <sup>15</sup> See Oliveira, *Ancestral Places, Understanding Kanaka Geographies* (2014) and Ho‘omanawanui, *Voices of Fire, Reweaving the Literary Lei of Pele and Hi‘iaka* (2014).
- <sup>16</sup> Affiliates to the ali‘i ‘ai moku, or paramount ruling chiefs over islands or large districts of islands include: kaukau ali‘i or chiefs who served as administrators, kahuna, spiritual advisors to the ali‘i and the professional class, and koa or military forces.
- <sup>17</sup> Part of the Ulu genealogy, one of two main genealogical lines in Hawai‘i (the other being Nanaulu) that descend from Ki‘i, the 12th generation from Wākea and Papahānaumoku. All ali‘i nui lineages trace their descent to one of these lines. The Ulu lineage belongs to the late migrations from Tahiti to Hawai‘i and is associated with Pā‘ao.
- <sup>18</sup> Accessed from Huapala Hawaiian Music and Hula Archives 2015.

## References

- Apple RA. 1973a. National register of historic places inventory nomination form for 1790 footprints, Hawai'i Island. Honolulu (HI): National Park Service.
- Apple RA. 1973b. National register of historic places inventory nomination form for Ainapo trail, Hawai'i Island. Honolulu (HI): National Park Service.
- Apple RA. 1973c. National register of historic places inventory nomination form for Kilauea crater, Hawai'i Island. Honolulu (HI): National Park Service.
- Ball D, Clayburn R, Cordero R, Edwards B, Grussing V, Ledford J, McConnell R, Monette R, Steelquist R, Thorsgard E, Townsend J. 2015. Characterizing Tribal Cultural Landscapes Analysis Guide. Cabrillo (CA): Bureau of Ocean Energy Management, Pacific OCS Region.
- Baybayan C, Kawaharada D. 1996. Polynesian voyaging society: voyaging manual. Honolulu (HI): Polynesian Voyaging Society.
- Beamer K. 2014. No mākou ka mana: liberating the nation. Honolulu (HI): Kamehameha Publishing.
- Beckwith MW (editor). 1932. Kepelino's Traditions of Hawaii. Honolulu (HI): Bernice P. Bishop Museum.
- Beckwith MW. 1972. The Kumulipo: a Hawaiian creation chant. Chicago (IL): The University of Chicago Press.
- Bennett WC. 1931. Archaeology of Kauai. Bulletin 80. Honolulu (HI): Bishop Museum Press.
- Bernice Pauahi Bishop Museum. 1964. Report of the Puako petroglyph field in the proposed state historic petroglyph park, Puako, South Kohala. Honolulu (HI): Bernice Pauahi Bishop Museum, Department of Anthropology.
- Bordner RM, Davis BD. 1977. Archaeological investigations at kukui heiau, Kaula'i island. Lāwa'i, (HI): Archaeological Research Center Hawai'i, Inc.
- Carson MT, Rieth T. 2008. Archaeological excavation at sites 50-10-27-2252, -2253, -2255, -2256 in Kaloko-Honokohau national historical park, Hawai'i island. Honolulu (HI): National Park Service.
- Clark JRK. 1985. Beaches of the big island. Honolulu (HI): University of Hawaii Press.
- Cleghorn PL, Weisler M, Dye T, Sinton J. 1985. A preliminary petrographic study of Hawaiian stone adze quarries. J. Polyn. Soc. 94(3):235-252.
- Cordy R. 1988. National register of historic places inventory registration form for Kalaoa permanent house site 10, 205, island of Hawai'i. Honolulu (HI): National Park Service.

- Cordy R, Tainter J, Renger R, Hitchcock R. 1991. An ahupua‘a study: the 1971 archaeological work at Kaloko ahupua‘a north Kona, Hawai‘i: archaeology at Kaloko-Honokohau national historical park. Honolulu (HI): Kaloko-Honokohau National Historical Park.
- Cox, JH, Stasack E. 1970. Hawaiian petroglyphs. Honolulu (HI): Bishop Museum Press.
- Cummins GT. 1973. National register of historic places inventory nomination form for Kamehameha III's birthplace, kauikeaouli stone, island of Hawai‘i. Honolulu (HI): National Park Service.
- Davis B. 1982. Archaeological reconnaissance of four proposed wind turbine sites at Kahuku, Oahu island. Honolulu (HI): Bernice Pauahi Bishop Museum, Department of Anthropology.
- Desha SL. 2000. Kamehameha and his warrior Kekuhaupi‘o. Frazier FN, translator. Honolulu (HI): Kamehameha School Press.
- Dixon B, Major M, Lazzaro D. 1992. Kaunolū: an archaeological inventory survey and mapping of state site 50-40-98-25, Kaunolū and Keāliakapu ahupua‘a, Lāna‘i, Hawai‘i. Honolulu (HI): Bishop Museum Press.
- Donham T. 1996. National register of historic places inventory nomination form for Kalepolepo fishpond, island of Maui. Honolulu (HI): National Park Service.
- Dunbar HR. 1985. National register of historic places inventory nomination form for Kamakahonu national historic landmark (residence of Kamehameha I, including ‘Āhu‘ena heiau), island of Hawai‘i. Honolulu (HI): National Park Service.
- Dunbar HR. 1987a. National register of historic places inventory nomination form for Loaloa heiau, island of Maui. Honolulu (HI): National Park Service.
- Dunbar HR. 1987b. National register of historic places inventory nomination form for Piilani heiau, island of Maui. Honolulu (HI): National Park Service.
- Dunbar HR. 1988a. National register of historic places inventory nomination form for Hokukano-Ualapue national historic landmark, island of Moloka‘i. Honolulu (HI): National Park Service.
- Dunbar HR. 1988b. National register of historic places inventory nomination form for Kaunolu village national historic landmark, island of Lana‘i. San Francisco (CA): National Park Service and Interagency Archaeological Service.
- Dunbar HR. 1988c. National register of historic places inventory nomination form for Wailua complex of heiau national historic landmark, island of Kaua‘i. Honolulu (HI): National Park Service.
- Dye T. 2011. A model-based age estimate for Polynesian colonization of Hawai‘i. *Archaeol. Oceania*. 46:130-138.

- Elbert SH, Pukui MK. 1979. Hawaiian grammar. Honolulu (HI): University Press of Hawai‘i.
- Emerson NB. 1915. Pele and Hiiaka: a myth from Hawai‘i. Honolulu (HI): ‘Ai Pōhaku Press.
- Emory KP. 1924. The island of Lanai: a survey of native culture. Honolulu (HI): Bishop Museum Press.
- Emory KP. 1970. Inventory of archaeological and historical sites in the districts of Kona and Ka‘u and in Anaehoomalu, south Kohala. Honolulu (HI): Bishop Museum Press.
- Estioko-Griffin A. 1986. Brief historical overview of Puu-o-Mahuka heiau, Pupukea, Koolauloa, Oahu. Honolulu (HI): Department of Land and Natural Resources.
- Fornander A. 1916-1920. Collection of Hawaiian antiquities and folklore, vol. 4-6. Thrum TG, editor. Honolulu (HI): Bishop Museum Press.
- GoHawaii. 2015. Puako petroglyph archaeological preserve, Hawai‘i island [Internet]. [cited 2015 June 11]. Available from <http://www.gohawaii.com/en/big-island/regions-neighborhoods/kohala-coast/puako-petroglyph-archaeological-preserve>.
- Green LCS, Pukui MK. 1936. The legend of Kawelo and other Hawaiian folk tales. Honolulu (HI): Territory of Hawai‘i.
- Griffin PB, Bordner RM, Hammatt HH, Morganstein ME, Stauder C. 1977. Preliminary archaeological investigations at Hā‘ena, Halele‘a, Kaua‘i island. Honolulu (HI): Archaeological Research Center Hawai‘i, Inc.
- Hale‘ole SN. 1919. The Hawaiian romance of Laieikawai. Beckwith MW, translator. Washington (DC): Government Printing Office.
- Hammatt HH, Bordner RM, Tomonari-Tuggle MJ. 1978. Archaeological and biological survey of the proposed Kīahuna golf village area, Koloa, Kona, Kaua‘i island, Hawai‘i. Lāwa‘i (HI): A.R.C.H.
- Hammatt HH, Cordy D, Rainalter U, Gomes P, Shideler DW, Folk WH. 2005. Archaeological inventory survey and data recovery of the Kiahuna golf village and KMP development project parcels in approximately 400 acres at Koloa ahupua‘a, Kona, Kaua‘i island. Kailua (HI): Cultural Surveys Hawai‘i.
- HawaiiWeb.com. 2014a. Iliiliopae heiau Molokai [Internet]. [cited 2015 May 1]. Available from <http://www.hawaiiweb.com/ililiopae-heiau.html#detaileddescription>.
- HawaiiWeb.com. 2014b. Kawela battle field Molokai [Internet]. [cited 2015 May 1]. Available from <http://www.hawaiiweb.com/molokai/kawela-battle-field.html#detaileddescription>.
- HHF (Historic Hawai‘i Foundation). 2014. Historic Hawai‘i foundation [Internet]. [cited 2014 December 2]. Available from <http://historichawaii.org>.

- Hommon RJ. 1980. National register of historic inventory nomination form for Ukanipo heiau, O‘ahu. Honolulu (HI): National Park Service.
- Hommon RJ, Bevacqua RF. 1973. Excavations in Kahana valley, O‘ahu 1972. Honolulu (HI): Bernice Pauahi Bishop Museum, Department of Anthropology.
- Ho‘okuleana. 2011. Royal footsteps along the Kona coast [Internet]. [cited 2015 May 1]. Available from [http://historickailuavillage.com/documents/Royal\\_Footsteps\\_Alone\\_the\\_Kona\\_Coast-Corridor\\_Management\\_Plan%201.pdf](http://historickailuavillage.com/documents/Royal_Footsteps_Alone_the_Kona_Coast-Corridor_Management_Plan%201.pdf).
- Ho‘okuleana. 2012. Hanapepe salt ponds [Internet]. [cited 2015 May 1]. Available from <http://totakeresponsibility.blogspot.com/2012/04/hanapepe-salt-ponds.html>.
- Ho‘omanawanui, Ku‘ualoha. 2014. Voices of fire: reweaving the literary lei of Pele and Hi‘iaka (first peoples: new directions in indigenous studies). Minneapolis (MN): University of Minnesota Press.
- Ho‘oulumāhie. 2013. The epic tale of Hi‘iakaikapoliopole. Nogelmeier P, translator. Enos S, illustrator. Honolulu (HI): University of Hawai‘i Press.
- Horwitt A. 1970. National register of historic places inventory nomination form for south point complex, island of Hawai‘i. Honolulu (HI): National Park Service.
- HSP (Hawai‘i State Parks). 2013. Hawai‘i state parks, department of land and natural resources, state of Hawai‘i [Internet]. [cited 2015 January 7]. Available from <http://www.hawaiistateparks.org/parks/oahu/keaiwa.cfm>.
- Huapala (Hawaiian Music and Hula Archives). 1997-2015. Mele index [Internet]. [cited 2015 May 1]. Available from <http://www.huapala.org/>.
- Hui Malama o Kaneioulouma. 2010. County of Kauai Kane-i-o-lo-u-ma heiau complex historical overview [Internet]. [cited 2015 May 1]. Available from [http://www.kaneioulouma.org/pdf/Overview\\_Report.pdf](http://www.kaneioulouma.org/pdf/Overview_Report.pdf).
- Hunt TL. 1976. Hydration-rind dates from archaeological sites in the South Point area: a contribution to Hawaiian prehistory. Honolulu (HI): Cooperative National Park Resources Studies Unit, University of Hawaii at Manoa, Department of Botany.
- James V. 2010. Ancient sites of O‘ahu: a guide to Hawaiian archaeological places of interest, revised edition. Honolulu (HI): Bishop Museum Press.
- Kahananui DM. 1984. Ka mooolelo Hawai‘i. Honolulu (HI): University of Hawai‘i Press.
- Kamakau SM. 1961. Ruling chiefs of Hawai‘i, revised edition. Honolulu (HI): Kamehameha School Press.

- Kame‘eleihiwa LK. 2003. Kamapua‘a: the Hawai‘i pig-god. Honolulu (HI): Bishop Museum Press.
- Kanahele P. 2007. E mau ana o Kanaloa, ho‘i hou – the cultural practices and values established at Kanaloa/Kaho‘olawe past and present. Honolulu (HI): Edith Kanaka‘ole Foundation.
- Kaschko M, Athens SJ. 1987. Archaeological inventory survey of the Hulopoe bay and Manele bay areas island of Lana‘i, Hawai‘i. Honolulu (HI): International Archaeological Research Institute, Inc.
- KHS (Kona Historical Society). 2005. Kona historical society’s historic Kailua village map. Kona (HI): Kona Historical Society.
- Kimura L. 1983. Native Hawaiian culture. In: Report on the Culture, Needs and Concerns of Native Hawaiians. 1:173-224. Washington (DC): Native Hawaiian Study Commission.
- Kirch PV. 1973. Archaeological reconnaissance survey of Kalauipua‘a and portions of Waikoloa, Lalamilo, and Anaeho‘omalua, south Kohala, Hawai‘i island. Honolulu (HI): Bishop Museum, Department of Anthropology.
- Kirch PV. 1979. Marine exploitation in prehistoric Hawai‘i. Pacific Anthropology, Record 29. Honolulu (HI): Bernice Pauahi Bishop Museum.
- Kirch PV. 1985. Feathered gods and fishhooks: an introduction to Hawaiian archaeology and prehistory. Honolulu (HI): University of Hawai‘i Press.
- Kirch PV. 1994. The wet and the dry: irrigation and agricultural intensification in Polynesia. Chicago (IL): University of Chicago Press.
- Kirch PV. 1996. Legacy of the landscape: illustrated guide to Hawaiian archaeological sites. Honolulu (HI): University of Hawai‘i Press.
- Kirch PV. 2011. When did the Polynesians settle Hawai‘i? A review of 150 years of scholarly inquiry and a tentative answer. Journal of Hawaiian Archaeology 12:3-26.
- Kirch PV, McCoy MD. 2007. Reconfiguring the Hawaiian cultural sequence: results of re-dating the Hālawā dune site (MO-A1-3), Moloka‘i island. J. Polyn. Soc. 116(4):385-406.
- Klieger PC. 1997. National register of historic places inventory nomination form for king Kamehameha III's royal residential complex, island of Maui. Honolulu (HI): National Park Service.
- Kolb M. 1991. Social power, chiefly authority, and ceremonial architecture in an island polity, Maui, Hawaii [dissertation]. University of California: Los Angeles.
- KVBID (Kailua Village Business Improvement District). 2011. Royal footsteps along the Kona coast, corridor management plan [Internet]. [cited 2015 May 1]. Available from

[http://scenicbyways.ehclients.com/files/Royal\\_Footsteps\\_Alone\\_the\\_Kona\\_Coast-Corridor\\_Management\\_Pla\\_\(1\).pdf](http://scenicbyways.ehclients.com/files/Royal_Footsteps_Alone_the_Kona_Coast-Corridor_Management_Pla_(1).pdf).

- Ladd EJ. 1968. Honokohau, Kona, Hawaii, a salvage report. Honolulu (HI): Bernice P. Bishop Museum, Department of Anthropology.
- Ladd EJ. 1972. Test excavations at Waha'ula: structure c; manuscript on file. Honolulu (HI): National Park Service, Pacific Area Office.
- Ladd EJ. 1974a. National register of historic places inventory nomination form for city of refuge national historical park, island of Hawai'i. Honolulu (HI): National Park Service.
- Ladd EJ. 1974b. National register of historic places inventory nomination form for Puna-Ka'u historic district, island of Hawai'i. Honolulu (HI): National Park Service.
- Lee G. 1997a. Petroglyph documentation projection Puako, Hawaii island, a preliminary report for the university research expeditions program. Los Osos (CA): University of California, Berkeley.
- Lee G. 1997b. The petroglyph sites at Puako, south Kohala, island of Hawaii. Honolulu (HI): Department of Land and Natural Resources, State of Hawai'i and County Planning Department.
- Levy B. 1978a. National register of historic places inventory nomination form for Cook's Landing, island of Kaua'i. Honolulu (HI): National Park Service.
- Levy B. 1978b. National register of historic places inventory nomination form for Puu o Mahuka Heiau. Honolulu (HI): National Park Service.
- Levy B. 1978c. National register of historic places inventory nomination form for Russian Fort, island of Kaua'i. Honolulu (HI): National Park Service.
- Lili'uokalani. 2013. Hawai'i's story by Hawai'i's queen, Lili'uokalani, an annotated edition. Honolulu (HI): Hui Hānai.
- Loo V. 1973. National register of historic place inventory form for Kupopolo heiau, O'ahu. Honolulu (HI): National Park Service.
- Major M. 2006. Revised burial treatment plan, Papohaku to Hakina, ahupua'a o Kaluako'i, island o Moloka'i (portions of TMK 5-1-02-030, 5-1-08-4 through 15, -19, and -23). Richmond (VA): Cultural Landscapes Hawai'i.
- Makemson MW. n.d. Hawaiian astronomical concepts [Internet]. [cited 2015 June 1]. Honolulu (HI): Polynesian Voyaging Society. Available from [http://pvs.kcc.hawaii.edu/pdfs/Hawaiian\\_astronomy\\_I.pdf](http://pvs.kcc.hawaii.edu/pdfs/Hawaiian_astronomy_I.pdf).
- Malo D. 1951. Hawaiian antiquities (mo'olelo Hawai'i). Honolulu (HI): Bernice P. Bishop Museum.

- Maly K, Maly O. 2007. E 'ike hou iā Lāna'i, to know Lāna'i once again: a historical reference and guide to the island of Lāna'i. Lāna'i City (HI): The Lāna'i Culture & Heritage Center.
- Martin BJ. 1971. National register of historic places inventory nomination form for Moli'i fishpond, island of O'ahu. Honolulu (HI): National Park Service.
- Maui Guide Book. 2015. Wai'anapanapa state park [Internet]. [cited 2015 May 1]. Available from <http://mauiguidebook.com/camping/waianapanapa-state-park>.
- McAllister GJ. 1933. Archaeology of O'ahu. Bernice P. Bishop Museum Bulletin 104. Honolulu (HI): Bernice P. Bishop Museum.
- McCoy MD, Mills PR, Lundblad S, Rieth T, Kahn JG, Gard R. 2011. A cost surface model of volcanic glass quarrying and exchange in Hawai'i. *J. Archaeol. Sci.* 38: 2547-2560.
- McCoy PC. 1972. Archaeological research at Fort Elizabeth, Waimea, Kaua'i, Hawaiian islands, phase I. Honolulu (HI): Bernice P. Bishop Museum, Department of Anthropology.
- McGregor D, McNamara S. 2006. Cultural impact assessment for the La'au point rural-residential development, Kaluako'i, island of Moloka'i. Honolulu (HI): University of Hawai'i Press.
- Mills PR, Lundblad SP, Smith JG, McCoy PC, Naleimaile SP. 2008. Science and sensitivity: a geochemical characterization of Mauna Kea adze quarry complex, Hawai'i island, Hawai'i. *Am. Antiquity.* 73(4):743-758.
- Mita R, Peebles D. 1994. ABC Hawai'i: an illustrated reference guide, everything to know about the islands. Honolulu (HI): Mutual Publishing.
- Molokaimatt. 2012. Hokule'a statewide sail 2012 - Keawanui fishpond, Molokai [Internet]. [cited 2015 May 1]. Available from <https://www.youtube.com/watch?v=Evj63NOfmmQ>.
- Mulrooney MA, Esh KS, McCoy MD, Bickler SH, Sinoto YH. 2014. New dates from old samples: a revised radiocarbon chronology for the Wai'ahukini rockshelter site (H8), Ka'u district, Hawai'i island. *J. Hwn. Archaeol.* 17-26.
- Murakami-Siu KP, Nash R, Everhart Y, Colon JN, Pritchard C, Bare K, Glenn D, Misaki E, Kallstrom R, Haase B. 2012. Kawela plantation 3-year watershed management plan fiscal years 2014-2016 (january 2014-december 2016), version july 6, 2012. Kawela (HI): The Kawela Plantation Homeowners' Association and The East Molokai Watershed Partnership.
- Nakamura JJM. 2003. Keonehelelei – the falling sands, Hawai'i volcanoes national park archaeological inventory of footprints national register. Honolulu (HI): National Park Service.
- Newman TS. 1972a. National register of historic places inventory nomination form for the 'Ahōle Hōlua complex, island of Hawai'i. Honolulu (HI): National Park Service.

- Newman TS. 1972b. National register of historic places inventory nomination form for Lapakahi complex, island of Hawai'i. Honolulu (HI): National Park Service.
- Newman TS. 1972c. National register of historic places inventory nomination form for Waianae district, island of O'ahu. Honolulu (HI): National Park Service.
- Newman TS. 1972d. National register of historic places inventory nomination form for Waikane taro flats, island of O'ahu. Honolulu (HI): National Park Service.
- Newman TS. 1973. National register of historic places inventory nomination form for Kualoa ahupua'a historical district, island of O'ahu. Honolulu (HI): National Park Service.
- Newman TS. 1974. National register of historic places inventory nomination form for Kahuluu historic district, island of Hawai'i. Honolulu (HI): National Park Service.
- Nogelmeier MP. 2010. Mai pa'a i ka leo, historical voice in Hawaiian primary materials, looking forward and listening back. Honolulu (HI): University of Hawai'i Press.
- NPS (National Park Service). n.d.(a). Mo'okini heiau, Hawi, Hawai'i [Internet]. [cited 2015 May 1]. Available from [http://www.nps.gov/nr/travel/Asian\\_American\\_and\\_Pacific\\_Islander\\_Heritage/Mookini-Heiau.html](http://www.nps.gov/nr/travel/Asian_American_and_Pacific_Islander_Heritage/Mookini-Heiau.html).
- NPS (National Park Service). n.d.(b). Pu'u o Mahuka heiau, park brochure [Internet]. [cited 2015 May 1].
- NPS (National Park Service). 1990. How to apply the national register criteria for evaluation. National Register Bulletin 15. Washington (DC): U.S. Department of the Interior.
- NPS (National Park Service). 1996. Guidelines for the treatment of cultural landscapes. Washington (DC): U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Heritage Preservation Services, Historic Landscape Initiative.
- NPS (National Park Service). 2008. Honokokau settlement, national historic landmarks program [Internet]. [cited 2015 May 1]. Available from <http://tps.cr.nps.gov/nhl/detail.cfm?ResourceId=179&ResourceType=Site>.
- NPS (National Park Service). 2009. Ala kahakai: national historic trail comprehensive management plan. Hawai'i County (HI): National Park Service.
- NPS (National Park Service). 2014. Hokukano-Ualapue complex, island of Molokai, Hawaii [Internet]. [cited 2015 May 1]. Available from [http://www.nps.gov/nr/travel/Asian\\_American\\_and\\_Pacific\\_Islander\\_Heritage/Hokukano-Ualapue-Complex.html](http://www.nps.gov/nr/travel/Asian_American_and_Pacific_Islander_Heritage/Hokukano-Ualapue-Complex.html).
- NPS (National Park Service). 2015. Puukohola Heiau [Internet]. [cited 2015 May 1]. Available from [http:// https://www.nps.gov/puhe/learn/historyculture/puukohola.htm](http://https://www.nps.gov/puhe/learn/historyculture/puukohola.htm).

- Oliveira, KRKN. 2014. Ancestral places, understanding kanaka geographies. Corvallis (OR): Oregon State University Press.
- Pukui MK, Elbert SH. 1971. Hawaiian dictionary. Honolulu (HI): University of Hawai'i Press.
- Pukui MK, Elbert SH, Mookini ST. 1974. Place names of Hawai'i, revised and expanded edition. Honolulu (HI): University of Hawai'i Press,
- Reith TM, Hunt TL, Lipo C, Wilmshurst JM. 2011. The 13th century Polynesian colonization of Hawai'i island. *J. Archaeol. Sci.* 38: 2740-2749.
- Riconda D. 1971. National register of historic places inventory nomination form for queen Emma summer palace, island of O'ahu. Honolulu (HI): National Park Service.
- Riconda D, Fox RM. 1972. National register of historic places inventory nomination form for Hulihee palace, island of Hawai'i. Honolulu (HI): National Park Service.
- Schumacher PJF. 1962. National register of historic places inventory nomination form for Keauhou holua slide, island of Hawai'i. Honolulu (HI): National Park Service.
- Smith NK. 1986. National register of historic places inventory nomination form for Hale Halawai o Holualoa, island of Hawai'i. Honolulu (HI): National Park Service.
- Soehren L. 1981. Archaeological reconnaissance: Kealakehe, North Kona, Hawai'i. Honolulu (HI): Bishop P. Museum.
- State Parks. 1997. Kealakekua state historical park, conceptual plan. Honolulu (HI): Department of Land and Natural Resources.
- Sterling EP. 1998. Sites of Maui. Honolulu (HI): Bishop Museum Press.
- Sterling EP, Summers CC. 1978. Sites of O'ahu. Honolulu (HI): Bishop Museum Press.
- Thrum TG. 1906. Heiaus and heiau sites throughout the Hawaiian islands, Hawaiian almanac and annual for 1907 [Internet]. [cited 2014 Oct 25]. Available from <http://evols.library.manoa.hawaii.edu/handle/10524/32420>.
- Thrum TG. 1923. Hawaiian annual for 1923: the reference book of information and statistics relating to the territory of Hawaii. Honolulu (HI).
- Thurman RMR. 2014. End of fieldwork report for the Maunawila heiau parcel, ocean education fellowship grant (project A), Hau'ula ahupua'a, Ko'olaupua district, O'ahu TMK: [1] 5-4-05:010. Honolulu (HI): Oceanic Archaeological Science and Educational Services.
- Titcomb M. 1972. Native uses of fish. Honolulu (HI): University of Hawai'i Press.

- Tomonari-Tuggle MJ. 1982. An archaeological reconnaissance survey of a parcel adjoining the Puako petroglyph fields, Puako, Hawai'i. Honolulu (HI): Waimea Hawaiian Civic Club and Mauna Lani Resort.
- Triposo. 2015. Pu'upehe platform: archaeological site in Hawaii islands humpback whale national marine sanctuary, United States [Internet]. [cited 2015 May 1]. Available from [http://www.triposo.com/poi/Pu27upehe\\_Platform](http://www.triposo.com/poi/Pu27upehe_Platform).
- Tuggle HD. 1982. National register of historic places inventory nomination form for Puako petroglyphs, island of Hawai'i. Honolulu (HI): National Park Service.
- Ulukau. 2004. Ulukau Hawaiian electronic library [Internet]. [cited 2015 May 1]. Available from <http://www.wehewehe.org/?l=en>.
- Van Tilburg H, Watson TK, Faria K, Hoomanawanui K, Ho-Lastiama I, Ritte W, Maly K, Nahoopii M, Horcajo K, Kaupiko K, Ball D. 2017. A Guidance Document for Characterizing Native Hawaiian Cultural Landscapes. Camarillo (CA): Bureau of Ocean Energy Management, Pacific OCS Region.
- Watts JH. 1971a. National register of historic places inventory nomination form for Kahaluu taro loi, island of O'ahu, Hawai'i. Honolulu (HI): National Park Service.
- Watts JH. 1971b. National register of historic places inventory nomination form for Kapapa island, Kāne'ōhe, island of O'ahu, Hawai'i. Honolulu (HI): National Park Service.
- Watts JH. 1971c. National register of historic places inventory nomination form for Keaīwa heiau, island of O'ahu. Honolulu (HI): National Park Service.
- Watts JH. 1971d. National register of historic places inventory nomination form for Leleahina heiau, island of O'ahu, Hawai'i. Honolulu (HI): National Park Service.
- Watts JH. 1971e. National register of historic places inventory nomination form for Okiokilepe pond, island of O'ahu, Hawai'i. Honolulu (HI): National Park Service.
- Watts JH. 1971f. National register of historic places inventory nomination form for Pahukini heiau, island of O'ahu, Hawai'i. Honolulu (HI): National Park Service.
- Weisler M. 2011. A quarried landscape in the Hawaiian Islands. *World Archaeol* 43(2):298-317.
- Weisler M, Collerson KD, Feng YX, Zhao JX, Yu KF. 2006. Thorium-230 coral chronology of a late prehistoric Hawaiian chiefdom. *J. Archaeol. Sci.* 33(2):273-282.
- Welch D. 1984. Archaeological reconnaissance of the area south of the Puako petroglyph archaeological district, south Kohala, Hawai'i island. Honolulu (HI): Bernice P. Bishop Museum, Department of Anthropology.
- Wisniewski RA. 2007. Hawaiian monarchs and their palaces (a pictorial history). Honolulu (HI): Pacific Basin Enterprises.

- Wong L. 1988. National register of historic places inventory nomination form for Kahouna (Kahaluu) fishpond, Kāneʻohe. Honolulu (HI): National Park Service.
- Wu N. 2011. Group restoring Molokai fishponds also builds an office [Internet]. [cited 2015 May 1]. Available from:  
[http://www.staradvertiser.com/features/20110725\\_\\_Group\\_restoring\\_Molokai\\_fishponds\\_also\\_builds\\_an\\_office.html?id=126101883](http://www.staradvertiser.com/features/20110725__Group_restoring_Molokai_fishponds_also_builds_an_office.html?id=126101883).
- Yent M. 1985. National register of historic places inventory nomination form for Halekii-Pihana heiau, island of Maui. Honolulu (HI): National Park Service.
- Yent M. 1991. Archaeological investigations at Puu o Mahuka heiau state monument (site 50-80-01-249) and nearby sites (50-80-01-2502 and 50-80-01-3951), Pupukea, Koolauloa, Oahu (TMK: 5-9-05:4, 21 and 68). Honolulu (HI): Department of Land and Natural Resources, Division of State Parks.
- Yent M. 2003a. National register of historic places inventory nomination form for Holualoa 4 archaeological district (state site no. 50-10-37-23.661), island of Hawaiʻi. Honolulu (HI): National Park Service.
- Yent M. 2003b. National register of historic place registration form for Hōlualoa 4 archaeological district, island of Hawaiʻi. Honolulu (HI): National Park Service.

## Appendix 1: Other Sources Referenced

### Hawaiian Newspapers

Table 4. Hawaiian Newspaper Sources

Title	Years	Notes, from Mookini, Esther. <b>The Hawaiian newspapers. Honolulu, Topgallant, 1974. (D=Daily, W=Weekly, M=Monthly)</b>
Ahailono o ka lahui, Ka	1890	D. Hawaiian/English for Nat'l Reform Party. Local news, European literature serialized.
Alakai o Hawai'i, Ke	1888	D, W. Hawaiian and foreign stories, local news, religious articles.
Alakai o Hawai'i, Ke	1919-1920	W. Local and foreign news, serialized stories, religious articles.
Alakai o Hawai'i, Ke	1928-1937	W. Hawaiian/English. Hawaiian stories serialized; foreign news; religious lessons.
Alakai o Hawai'i, Ke	1938-1939	1939-In English with Hawaiian section.
Alaula, Ke	1866-1873	Children's religious paper by the Hawaiian board.
Aloha aina	1895-1920	W. Succeeded Nupepa Puka La Aloha Aina 1893-95 and Nupepa Aloha Aina 1894-95.
Aloha aina oiaio, Ke	1896-1897	W.
Au hou, Ke	1910-1912	W magazine. Hawaiian folk stories, foreign stories serialized. Succeeded by Hawai'i Holomua.
Au okoa, Ke	1865-1873	W. Sponsored by Hawaiian government. Local/foreign news, letters, mele, Hawaiian stories. Merged w/ Nupepa Kuokoa in 1873.
Elele Hawai'i, Ka	1845-1855	Section Ka Elele E has government notices.
Elele oiaio, Ka	1908-1919	Semi-monthly, by Hawaiian Mission of the Church of Latter Day Saints.
Elele poakolu, Ka	1880-1881	W paper of W. M. Gibson. Hawaiian/English. Succeeded by Nupepa Elele Poakolu.
Hae Hawai'i, Ka	1856-1861	W. Serialized stories.
Hae Katolika, O Ka	1868-1871	Semi-monthly religious paper from Catholic Mission Press.
Hae Kiritiano, O Ka	1860-1863	M. From Catholic Mission Press; religious news, letters, lessons.
Hawai'i holomua	1892	W.
Hawai'i holomua	1892-93	W. Hawaiian/English.

**Table 4. Continued**

<b>Title</b>	<b>Years</b>	<b>Notes, from Mookini, Esther. The Hawaiian newspapers. Honolulu, Topgallant, 1974. (D=Daily, W=Weekly, M=Monthly)</b>
Hawai'i holomua	1892-1893	D. Hawaiian/English.
Hawai'i holomua	1894	Also called Hawai'i Puka La Holomua 1894-95.
Hawai'i holomua	n.d.	Microfilm retakes of various dates.
Hawai'i holomua	1912	"Hawai'i progressive", successor to Ke Au Hou.
Hoahana, Ka	1895-1902	M. Sunday School paper.
Hoku loa, Ka	1859-1864	M. Protestant missionary paper.
Hoku o Hawai'i, Ka	1906-1948	W, from Hilo. News and Hawaiian translations of English stories.
Hoku o ka pakipika	1861-1863	W. Ed. King David Kalakaua.
Holomua, Ka	1913-1914	W. International news, stories.
Home rula repubalika	1901-1902	Semi-weekly in Hawaiian/English.
Kahunao, Ke	1913-1921	Quarterly for ministers.
Kiai, Ke	1902-	Semi-weekly in Hawaiian w/English section.
Kilohana o ka malamala, Ke	1907-1919	W from Hilo.
Ko Hawai'i pae aina	1878-1891	W. Local and foreign news, foreign stories serialized. Merged w/ Nupepa Kuokoa 1891.
Ko Hawai'i pono	1873-1874	W. Local and foreign news, mele, foreign stories serialized.
Ko Hawai'i pono	1873-1874	W. Serialized foreign stories, mele, local and foreign news.
Koo o Hawai'i, Ke	1883	Bi-weekly. Patriotic Hawaiian articles, mele, foreign news & stories. Succeeded by Ola o Hawai'i.
Kui ka lono	1996-	Kula Kaiapuni o Anuenue.
Kumu Hawai'i, Ke	1834-1839	Semi-monthly. Published by missionaries.
Kuokoa	n.d.	See Nupepa Kuokoa.
Kuokoa home rula, Ka Nupepa	1901-1912	W, in Hawaiian and English. Foreign news; Hawaiian legends.
Kuu hae Hawai'i	1913	W. News of the legislature, local and foreign news, Hawaiian and foreign stories.
Lahui Hawai'i, Ka	1875-1877	W. Religious news and stories.
Lahui Hawai'i, Ka	1899-1905	D. Local, international news, foreign stories, Hawaiian legends.

**Table 4. Continued**

<b>Title</b>	<b>Years</b>	<b>Notes, from Mookini, Esther. The Hawaiian newspapers. Honolulu, Topgallant, 1974. (D=Daily, W=Weekly, M=Monthly)</b>
Lama Hawai‘i, Ka	1834	W. First Hawaiian language newspaper.
Lanakila, Ka	1909	W magazine, foreign and Hawaiian stories serialized.
Lau oliva, Ka	1871-1874	M. Official magazine of the Kawaiahao Church.
Lei momi, Ka	1893	D, and later W. Serialized foreign stories, mele, local and foreign news. Succeeded by Ka Makaainana.
Lei rose o Hawai‘i, Ka	1898	Semi-weekly; local and foreign news, serialized Hawaiian and foreign stories.
Leo o ka lahui, Ka	1889-1896	D. Hawaiian legends, foreign stories, news; English section from 1890.
Liberal	1892-1893	Semi-weekly Hawaiian and English; ed. R.W. Wilcox.
Lima hana, Na	1883-1884	M. Kawaiahao Church newspaper.
Loea kalaiaina, Ka	1897-1900	W of the Home Rule party.
Maka o Kana, Na	1992-	Hale Kuamoo, UH Hilo.
Makaainana, Ka	1887-1899	D, W from 1889. Local news. Anti-annexation.
Malamalama, Ka	1892-1898	UHM has 1898 only.
Manawa, Ka	1870	W. Editor King David Kalakaua. News.
Momi o Hawai‘i, Ka	1913	W magazine.
Maka o Kana, Na	1992-	Hale Kuamoo, UH Hilo.
Makaainana, Ka	1887-1899	D, W from 1889. Local news. Anti-annexation.
Malamalama, Ka	1892-1898	UHM has 1898 only.
Manawa, Ka	1870	W. Editor King David Kalakaua. News.
Momi o Hawai‘i, Ka	1913	W magazine.
Nai aupuni, Ka	1905-1908	D. Owned by Home Rule president; local and foreign news.
Nonanona, Ka	1841-1845	Semi-monthly from Mission Press; local news; govt notices; educational purposes.
Nuhou (Ka Nuhou Hawai‘i)	1873-1874	Semi-weekly, then weekly Hawaiian/English. Editor Walter M. Gibson.
Nupepa aloha aina, Ka	1894-1895	W. Succeeded Nupepa Puka La Aloha Aina. Succeeded by Ke Aloha Aina.

**Table 4. Continued**

<b>Title</b>	<b>Years</b>	<b>Notes, from Mookini, Esther. The Hawaiian newspapers. Honolulu, Topgallant, 1974. (D=Daily, W=Weekly, M=Monthly)</b>
Nupepa elele Poakolu, Ka	1882-1885	W. Local news, foreign stories, govt announcements. Successor to Ka Elele Poakolu; succeeded by Ka Elele Poaono.
Nupepa elele, Ka	1885-1892	W in Hawaiian/English; local and foreign news; govt announcements; foreign stories serialized.
Nupepa ka oiaio	1894-1896	W. In 1896 concurrent w/daily Ka Puka La Oiaio.
Nupepa kuokoa, Ka	1861-1927	W. founded by L.H. Gulick to oppose influence of Kamehameha V. In 1891 merged w/ Ko Hawai'i Pae Aina.
Nupepa Puka La Aloha Aina	1893-1894	D. Succeeded by weekly Ka Nupepa Aloha Aina. Hawaiian legends, foreign stories, local and foreign news.
Oiaio, Ka	1889-1896	D. Concurrently w/ Nupepa Ka Oiaio.
Ola o Hawai'i, Ke (Hilo)	1916-1919	W. Hawaiian and foreign stories, local and foreign news, letters.
Ola o Hawai'i, Ke (Honolulu)	1884	W. Hawaiian and foreign stories, local and foreign news.
Puuhonua o na Hawai'i	1917-1919	W, successor to Ka Puuhonua.
Puuhonua, Ka	1914-1916	W, succeeded by Puuhonua o na Hawai'i.

### **Online Databases**

Papakilo Database [Internet]. [cited 2015 May 1]. Honolulu (HI): The Office of Hawaiian Affairs. Available from <http://papakilodatabase.com/main/main.php>.

Ulukau. Hawaiian electronic library [Internet]. [cited 2015 May 1]. Available from <http://wehewehe.com>.

Huapala. 1997-2015. Hawaiian Music and Hula Archives [Internet]. [cited 2015 May 1]. Available from: <http://www.huapala.org/>

## Appendix 2: Hawaiian Cultural Heritage – A List of Important Terms

Hawaiian cultural heritage is comprised of three foundational strands: tangible cultural heritage (TCH), intangible cultural heritage (ICH), and natural heritage (NH). TCH resources are physical sites and locations where Hawaiian culture was and often continues to be practiced. TCH resources include: heiau, kū‘ūla (fishing shrines), and other physical cultural structures. ICH resources are performance or human-related practices that include: hula, mele, mo‘olelo, mo‘okū‘auhau, and other oral histories and traditions. NH resources are naturally occurring geological and environmental resources utilized for cultural practices that require little or no human intervention in preparing the resource for use.

The following list of terms is substantially enhanced and expanded from an original list developed by the State of Hawai‘i Office of Planning (SHOP). The hua ‘ōlelo (term) is listed on the left, with ka wehewehe ‘ana (definition and notes) on the right. Each hua ‘ōlelo is identified in the definition as an ICH, NH, TCH, or combination of two or more categories.

Unless otherwise noted, all words and definitions are from the Elbert and Pukui *Hawaiian Dictionary, revised edition* (1986).

**Table 5. Hawaiian Terms**

Hua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) ICH=Intangible, NH=Natural, TCH=Tangible
1. ahu	TCH. Heap, pile, collection, mound, mass; altar, shrine, cairn; a traplike stone enclosure made by fishermen for fish to enter; laid, as the earth oven. Cf. <i>ahu waiwai</i> , <i>ahuwale</i> , <i>O‘ahu</i> . <i>Ahu kele</i> , mud heap; muddy. <i>Ahu ka pula!</i> A heap of excreta [hence worthless; sometimes shortened to <i>ahu</i> only or to <i>e ahu ana!</i> <i>Ahu ka ‘ala‘ala!</i> A heap of squid ink! Not worth much! <i>Ahu wawā</i> , a great din). <i>Ahu ili</i> , a large inheritance or transfer [said of reward, vengeance]. <i>Ahu ‘ena‘ena</i> , a red-hot heap [an oven]. <i>Ahu kapanaha iā Hawai‘i ‘imi loa</i> (Beckwith 1932), a mass of wondrous things in deep-delving Hawai‘i. <i>ho.‘āhu</i> To pile, gather, accumulate, heap up; to lay away, as goods for the future; collect; collection, mound. <i>Fig.</i> , to resent, dislike. <i>Hale ho‘āhu</i> , storehouse, warehouse. <i>Lumi ho‘āhu</i> , storeroom. <i>E ho‘āhu anai kahuhūmaluna o kēlā po‘e</i> , heaping up anger against those people. (Proto Polynesian (PPN) <i>afu</i> .)

Table 5. Continued

Huua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) <b>ICH=Intangible, NH=Natural, TCH=Tangible</b>
2. ahupua‘a	<p>TCH. n. 1. Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief. The landlord or owner of an ahupua‘a might be a konohiki.</p> <p>2. The altar on which the pig was laid as payment to the chief for use of the ahupua‘a land.</p> <p>Established by Mā‘ilikūhahi, a high chief of O‘ahu, these land divisions served as socio-political divisions of resource management. Ahupua‘a typically extended into the ocean.</p>
3. alahele	<p>TCH. n. Pathway, route, road, way to go, itinerary, trail, highway, means of transportation. Ho‘okahi ala hele, one way [of a plane trip]. Pono ala hele, right of way. Kuleana ala hele e hiki aku ai, right of way of access. ‘O ka pono ko‘u alahele, my course is righteousness.</p>
4. ‘alihi	<p>TCH. n. 1. Cords or fine ropes threaded through marginal meshes of upper and lower edges of nets, to which floats and sinkers were attached; loops at the top of a kōkō net holding a calabash. See below and ‘upena ‘alihi. (Proto Central Polynesian (PCP) kalifi.)</p> <p>2. n. Horizon (sometimes qualified by lani or moana). Cf. <i>lihi</i>, edge.</p> <p>3. Deceit, trickery; to deceive, cheat. (AP)</p>
5. ana	<p>NH. 3. n. Karst, cave, grotto, cavern. Kokoke aku i kahi ana o ka pō (Green and Pukui 1936), near the cavern of the night /depths of the night. (PPN ‘ana.)</p>
6. ‘aumakua	<p>ICH. nvt. Family or personal gods, deified ancestors who might assume the shape of sharks, owls (as at Mānoa, O‘ahu and Ka‘ū and Puna, Hawai‘i), hawks (Hawai‘i), ‘elepaio, ‘iwi, mudhens, octopuses, eels, mice, rats, dogs, caterpillars, rocks, cowries, clouds, or plants. A symbiotic relationship existed; mortals did not harm or eat ‘aumākua (they fed sharks), and ‘aumākua warned and reprimanded mortals in dreams, visions, and calls. (Beckwith, 1932, pp. 124–43, 559; Nānā 38.) <i>Fig.</i>, a trustworthy person. (Probably <i>lit.</i>, ‘au 4, group, + makua, parent.) See <i>pulapula</i> 2. hō.‘au.makua To acquire or contact ‘aumākua.</p>
7. ‘auwai	<p>TCH. n. Irrigation ditch. Often used for Lo‘i and Loko I‘a</p>
8. awāwa	<p>NH. Valley, gulch, ravine. Cf. kuawa. ho.‘ā.wāwa To make a groove, furrow.</p>
9. hālāwai	<p>1. Meeting; to meet. ho‘o.hā.lā.wai To arrange a meeting.</p> <p>NH. 2. Horizon. Mai ka ho‘oku‘i a ka hālāwai, from zenith to horizon.</p>

Table 5. Continued

Huua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) <b>ICH=Intangible, NH=Natural, TCH=Tangible</b>
<b>10. heiau</b>	TCH. n. Pre-Christian place of worship, shrine; some heiau were elaborately constructed stone platforms, others simple earth terraces. Many are preserved today. Several types are listed below. Also heiau is a high place of worship.  Temples built near or at the shore were positioned there, in part, for their seaward view planes that were observed by kahuna, ali‘i and kånaka.
<b>11. hi‘ohi‘ona</b>	NH. n. Features, as of a face or landscape; sight, aspect.
<b>12. hi‘ohi‘ona ‘āina</b>	NH. n. Landscape
<b>13. historic walls</b>	TCH. Pā; paia (of house). Stone wall, pā pōhaku. Adobe wall, pā lepo. Wall of a fishpond, kuapā; pā puni (circular or surrounding). Sea wall, pani kai, pale kai. Interlocking stones, as in a wall, niho. Long, straight stone wall, kuaiwi (Ni‘ihau). Walled city, kūlanakauhale (kūnanakauhale) i pa‘a i ka pā. Pressed hard to the wall, pili pū i ka paia (in trouble).
<b>14. hō‘ailona</b>	ICH. kik/ham Symbol, sign, as in math. Dic. To symbolize, stand for.  Spiritual signs and omens over the ocean are important at religious/spiritual levels as well as day-to-day life practices. <i>Ānuenuē</i> (rainbows), <i>ao ‘ōpua</i> (cloud forms), <i>waiho‘olu‘u</i> (sky /ocean hues), <i>hikina a ka lā</i> (sunrise), <i>napo‘o o ka lā</i> (sunset), <i>kau mahina</i> (moonrise), <i>napo‘ona mahina</i> (moonset), <i>ua nālulu</i> (rain showers) and <i>lele manu i ka lewa</i> (the flight and elevation of seabirds) can be considered hō‘ailana that dictate the activities and restrictions of humans.
<b>15. hohonu</b>	ICH. nvs. Deep, profound; depth, soundings. He kanaka hohonu o ka ‘ike, a man with profound knowledge. ho‘o.hohonu To deepen. (Probably PPN fonu, full, as of liquid; PCP fofonu, deep.)
<b>16. ‘ilikai</b>	NH. n. 1. Surface of the sea.  2. vs. Horizontal. He kaha ‘ilikai, a horizontal line.
<b>17. [nā] ‘ikena i kai</b>	NH. Seaward vistas from any shore on any Hawaiian island include <i>nalu</i> (waves), <i>hāpapa</i> (reefs), <i>i‘a</i> (sea creatures), <i>au</i> (currents), <i>‘ehukai</i> (sea spray caused by makani or wind) and <i>manu kai</i> (sea birds). The horizon where the <i>honua</i> (earth) meets <i>lani</i> (sky) is identified in such terms as <i>Kahikimoe</i> , <i>Kūkuluokahiki</i> , <i>‘ilikai</i> , <i>‘alihilani</i> and <i>‘alihimoana</i> .
<b>18. kahakai</b>	NH. loc.n. Beach, seashore, seacoast, seaside strand. (Elbert and Pukui 1979) (Proto Eastern Polynesian (PEP) tafatai.)
<b>19. kahawai</b>	NH. Stream, creek, river; valley, ravine, gulch, whether wet or dry.

Table 5. Continued

Huua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) ICH=Intangible, NH=Natural, TCH=Tangible
20. kāheka	NH. Pool, especially a rock basin where the sea washes in through an opening and salt forms; salt pond.
21. kāhekaheka	NH. Plural and diminutive of kāheka; small sea pool or pools; artificial saltpan.
22. kai	NH. nvs. Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless. I kai, towards the sea. Makai, on the seaside, toward the sea, in the direction of the sea. O kai, of the lowland, of the sea, seaward. Nā kānaka o kai, shore dwellers. Nā kai ‘ewalu, the eight seas [a poetic expression for the channels dividing the eight inhabited islands]. Kai lalo, lower sea, i.e., western sea, where the sun sets. Ka mokupuni kai lalo, ‘o Kaua‘i, Kauai‘i, the island of the western sea. Kō a kai, people from the shore district. (PPN tahi, Proto Neutral Polynesian (PNP) tai.)
23. ki‘i pōhaku	TCH. Stone statue; petroglyph.
24. kilo i‘a	NH. A man who observes fish movements from a high place and directs fishermen; to so act.
25. ko‘a	TCH. 1. Coral, coral head. Also ‘āko‘ako‘a. Ke ko‘a mokumoku o He‘eia, the broken coral beds of He‘eia [an expression used in songs and chants referring to He‘eia, O‘ahu]. (PPN toka.) 2. Fishing grounds, usually identified by lining up with marks on shore. 3. Shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams, used in ceremonies as to make fish multiply; also built on bird islands and used in ceremonies to make birds multiply.
26. kuahiwi	NH. n. Mountain, high hill. (PPN tu‘asiwi.)
27. kualono	NH. 1. n. Region near the mountaintop, ridge.
28. kuamo‘o	ICH/TCH. Backbone, spine; road, trail, path (Mar. 1.3); custom, way (Mat. 10.5); canoe keel. Also iwikuamo‘o. (PCP tuamoko.)
29. kukulu o ka honua	ICH. Hawaiian astronomical concept, “the circle of the earth, or the “compass of the earth.” (Makemson)
30. kukulu o ka lani	ICH. Hawaiian astronomical concept, “border of heaven,” or “the circle of the heaven”. (Kamakau, <i>Ke Au Okoa</i> , Nov. 4, 1869 cited in Makemson)
31. kula	NH. Plain, field, open country, pasture. An act of 1884 distinguished dry or kula land from wet or taro land. Kōkula kai, shore dweller.
32. kulāiwi	ICH. nvs. Native land, homeland; native. Cf. <i>iwi</i> , ‘ <i>ōiwi</i> . Ku‘u home kulāiwi, my own homeland.

Table 5. Continued

Huua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) <b>ICH=Intangible, NH=Natural, TCH=Tangible</b>
33. kū‘ula	TCH. Fishing shrines. These ahu or rock and/or coral pilings were personal and very small, usually 3-4 feet in diameter. Their locations at abundant fishing numbered in the hundreds and were/are important shoreline features throughout Hawai‘i. Their locations were often discrete.
34. lani	<p>NH/ICH. 1. nvs. Sky, heaven; heavenly, spiritual. ‘Ai lani (1 Kor. 10.3), spiritual food. Mai ka lani nō ā ka honua, from heaven to earth (fig., suddenly, without rhyme or reason). (PPN langi.)</p> <p>2. nvs. Very high chief, majesty; host (Isa. 34.4); royal, exalted, high born, noble, aristocratic. This meaning is most common in personal names, as Lei-lani, royal child or heavenly lei; Pua-lani, descendant of royalty or heavenly flowers. Cf. kamalani, kuhilani. Ka-lani-ana-‘ole (name), the incomparably exalted one.</p> <p style="padding-left: 40px;">ho‘o.lani</p> <p style="padding-left: 40px;">a. To treat as a chief; to render homage to a chief; to act as a chief; to enjoy the position and prestige of a high chief.</p> <p style="padding-left: 40px;">b. Same as ho‘olanilani.</p> <p>3. n. Kinds of flowers.</p>
35. leina	<p>TCH. Spring, leap, bound; place to leap from. Leina-a-ke-akua, place where the spirits leaped into the nether world; <i>lit.</i>, leap of the gods. Leina-a-ka- ‘uhane (a place name on every island; leap of the soul. ho‘o.leina Same as leina; place to throw things, as a trash heap. Ka-ho‘oleina-pe‘a (place on Kaua‘i), place where kites are flown. Ho‘oleina moka (Dan. 3.29), dung heap. (PCP leina.). There are two on O‘ahu:</p> <p><i>Ka Lae o Ke ‘Ālohi</i> – Ko‘olaupoko, O‘ahu. Divides He‘eiauli and He‘eiakea.</p> <p><i>Ka Lae o Ka‘ena</i> – Waialua-Wai‘anae border. This prominent rock is on the Mokule‘ia side of Ka‘ena, O‘ahu’s westernmost point.</p>
36. leina a ke akua	See leina
37. leina a ka ‘uhane	See leina
38. leina ‘uhane	See leina
39. lo‘i	TCH. Irrigated terrace, especially for taro, but also for rice; paddy.
40. loko i‘a	TCH. Fishpond.
41. loko wai	NH/TCH. Fresh-water pond or lake; fountain. Fishpond system.

Table 5. Continued

Huua ‘ōlelo (Term)	Ka Wehewehe ‘ana (Definition and notes) ICH=Intangible, NH=Natural, TCH=Tangible
42. lua pele	NH. n. Volcano, crater. <i>Lit.</i> , volcanic pit.
43. luawai	NH. Source of water. See also luawai aniani, wai ‘eli, well.
44. luawai aniani	TCH. Artesian well. See also luawai, wai ‘eli, well.
45. lua pō	TCH. Grave. <i>Lit.</i> , night pit.
46. mala	TCH. Garden, plantation, patch, cultivated field, as māla ‘ai, māla kalo, māla kō, māla kūlina. (PPN ma‘ala.)
47. mauna	NH. 1. nvs. Mountain, mountainous region; mountainous. Mauna Loa (name), Long Mountain. (PPN ma‘unga.) 2. n. Kind of hard stone from which adzes were made.
48. mea ulu	NH. Native plants.
49. moana	NH/TCH. 1. n. Ocean, open sea, lake. (PPN moana.) 2. n. Campground, consultation place for chiefs. ho‘o.moana To camp, camp (see ex., <i>‘īpuka</i> ). Hele akula lākou ... ā ho‘omoana ma ‘Etama (Puk. 13.20), they want ... and encamped at Etham. 3. vs. Broad, wide, extended, expansive, spread out. ho‘o.moana To spread down, as mats.
50. moena	NH. Place for setting a fish net.
51. moku	NH. The base division of an island, commonly treated today as districts. Within each moku are multiple ahupua‘a. Mokupuni was the term for island, but it was typically used with larger islands, like Kaua‘i, O‘ahu, Maui, Moloka‘i and Hawai‘i Island. Mokupuni were then subdivided into moku.
52. mokupuni	NH. See moku
53. muliwai	NH. River, river mouth; pool near mouth of a stream, as behind a sand bar, enlarged by ocean water left there by high tide; estuary. (PPN muriwai.)
54. nohona mokupuni	ICH. Island lifestyle differs tremendously from continental lifestyle. The ocean plays a major role in daily life providing sustenance and recreation, both vital to the physical, mental, emotional and spiritual well-being of humans. The shore or beach is known as <i>kahaone</i> (sand place), <i>kahakai</i> (ocean place) and <i>pu‘uone/pu‘eone</i> (sand dune). Other terms indicating where ocean meets land are <i>‘aekai</i> , <i>‘aeone</i> , <i>lihi kai</i> , <i>lihi one</i> and more. Fishing, swimming, surfing, canoe racing, bathing and sailing are among Hawaiian ocean activities.
55. omo ‘ā	NH. Lava tubes; natural conduits through which lava travels beneath the surface of a lava flow, expelled by a volcano during an eruption.

Table 5. Continued

Huuā 'ōlelo (Term)	Ka Wehewehe 'ana (Definition and notes) ICH=Intangible, NH=Natural, TCH=Tangible
56. one	NH. Sand
57. one hānau	TCH. Place where one was born. <i>Lit.</i> Sands of birth.
58. pāpū	TCH. 1. n. Fort, fortress. <i>Lit.</i> , gun enclosure. Alanui Pāpū, Fort Street. 2. nvs. A plain, clear piece of ground; clear, unobstructed, visible, in plain sight, directly confronting. Pāpū like, level, even. Kū pāpū mai ka pali i mua o ka hale, the cliff stood directly visible in front of the house.
59. po'ailani	ICH. n. Horizon. <i>Lit.</i> , sky circle.
60. po'ina nalu	NH. Where a wave breaks; surf break (preceded by ka).
61. po'o wai	NH/TCH. Water source or head, dam. Cf. <i>'iole po'o wai</i> .
62. pu'e one	NH/TCH. Sand dune, sand bar. Ku'u ipo i ka he'e pu'e one (song), my sweetheart surfing [over the] sand bar [referring to the old sport of surfing up into the very mouth of a stream].
63. pu'uhonua	TCH. Place of refuge, sanctuary, asylum, place of peace and safety. Kūlanakauhale pu'uhonua (Nah. 35.11), cities of refuge.
64. pu'u one	NH. Sand dune, oft known to be a location for human burials.
65. punawai	NH. Also waipuna. Water spring. He pūnāwai e inu 'ia (FS 229), a spring with potable water. (PPN pu(u)naawai.)
66. uapo	TCH. Bridge, pier, quay, dock.
67. wahi ho'omana	TCH. Heiau (temples) are the high-level examples of this report's topic. Kahuna Kuhikuhipu'uone were experts in determining locations of heiau and other important structures. Heiau sites at the shore, near the shore or on inland slopes and mountains were selected for their view planes in all directions, with particular emphasis on the ocean. Kū'ula fishing shrines were positioned by expert lawai'a (fishermen) in abundant regions. Here, offerings of the first catch were left to appease the deities.
68. wahi kapu	NH/TCH/ICH. Sacred place.
69. wahi lawai'a	NH. N. Place of fishing.
70. wahi pana	NH/TCH/ICH. Legendary place.
71. wai 'eli	NH/TCH. Source of water, well. See also luawai, luawai aniani, well.
72. waihona 'āina	TCH. n. Landscape.
73. waipuna	NH. Also punawai. Water spring. He pūnāwai e inu 'ia (FS 229), a spring with potable water. (PPN pu(u)naawai.)

### Appendix 3: Glossary of Hawaiian Terms

The following list of terms were used frequently throughout this report. All definitions were compiled using Pukui and Elbert's *Hawaiian Dictionary* (1986).

Ahupua‘a	Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief.
‘Āina	Land, earth.
Akua	1. God, goddess, spirit, ghost. 2. Divine, supernatural, godly.
Ali‘i	1. Chief, chiefess, ruler, monarch. 2. Royal, regal. 3. To act as chief, reign.
‘Aumakua	Family or personal gods, deified ancestors who might assume the shape of sharks, owls, hawks, dogs, plants, etc. A symbiotic relationship existed; mortals did not harm or eat them, and the ‘aumakua warned or reprimanded mortals in dreams, visions, and calls.
‘Aumākua	Plural of ‘aumakua.
‘Auwai	Irrigation ditch, canal.
‘Elepaio	A species of flycatcher with subspecies on Hawai‘i ( <i>Chasiempis sandwichensis sandwichensis</i> ), Kaua‘i ( <i>C. sandwichensis sclateri</i> ), and O‘ahu ( <i>C. sandwichensis gayi</i> ).
Hālau	1. Long house, as for canoes or hula instruction; meeting house. 2. Large, numerous; much.
Heiau	Pre-Christian place of worship, shrine. Some heiau were elaborately constructed stone platforms, other simple earth terraces.
Honu	General name for turtle and tortoise.
Ho‘okupu	Sprout, growth.
Hua ‘ōlelo	Word, term.
Hula	A Polynesian dance form accompanied by chant or song.
‘Ikena akua	Viewsheds associated with gods/goddesses.
‘Ikena ali‘i	Viewsheds associated with chiefs/chiefesses.

‘Ikena ma kai	Seaward viewsheds.
Inoa ‘āina	Place names.
Ipu	1. The bottle gourd ( <i>Lagenaria siceraria</i> ), a wide-spreading vine, with large-angled or lobed leaves, night blooming flowers, and smooth green and mottled or white fruits varying widely in shape and size. Hawaiians have long used gourds as receptacles or for rattles for dances and drums. 2. General name for vessel or container, as dish, mug, calabash, pot, cup, utensil, urn, bowl, basin, pipe.
Ipu makani	Wind gourd.
Ka wehewehe ‘ana	Definition and notes.
Kahu ‘iwikuamo‘o	Backbone attendant, keeper of the bones.
Kahuna	1. Priest, sorcerer, magician, wizard, minister, expert in any profession. 2. Royal advisor.
Kai	1. Sea, sea water, area near the sea. 2. Tide, current in the sea.
Kaikaina	Younger sibling or cousin of the same sex, as younger brother or male cousin of a male, or younger sister or female cousin of a female.
Kaikūnane manō	Shark brother.
Kalo	Taro ( <i>Colocasia esculenta</i> ), a kind of aroid cultivated since ancient times for food, spreading widely from the tropics of the Old World. In Hawai‘i, taro has been the staple from earliest times to the present, and here its culture developed greatly, including more than 300 forms. All parts of the plant are eaten, its starchy root principally as poi, and its leaves as lū‘au.
Kama‘āina	1. Native-born, one born in a place, host. 2. Native plant. 3. Acquainted, familiar.
Kanaka	Human being, man, person, individual, party, mankind, population.
Kānāwai	1. Law, code, rule, statute, act, regulation, ordinance, decree, edict. 2. Legal, to obey a law, to be prohibited, to learn from experience.
Kanikau	1. Dirge, lamentation, chant of mourning, lament. 2. To chant, wail, mourn.

Kanu	To plant, bury; planting, burial.
Kapa	1. Quilt. 2. Tapa, as made from wauke or māmaki bark; formerly clothes of any kind or bedclothes.
Kapu	1. Taboo, prohibition. 2. Special privilege or exemption from ordinary taboo. 3. Sacredness, prohibited, forbidden, sacred, holy, consecrated. 4. No trespassing, keep out.
Kāula	Prophet, seer, magician.
Ki'i	Image, statue, picture, photograph, drawing, diagram, illustration, likeness, cartoon, idol, doll, petroglyph.
Kino lau	Many forms taken by a supernatural body, as Pele, who could at will become a flame of fire, a young girl, or an old hag.
Ko'a	1. Fishing ground, usually identified by lining up with marks on shore. 2. Shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams, used in ceremonies as to make fish multiply; also built on bird islands, and used in ceremonies to make birds multiply. 3. Coral, coral head.
Koholā	Humpbacked whale.
Kōlea	Pacific golden plover ( <i>Pluvialis dominica</i> ), a migratory bird which comes to Hawai'i about the end of August and leaves early in May for Siberia and Alaska.
Kua'ana	Term of address for older sibling or cousin of the same sex, or cousin of the same sex of the senior line of a family.
Kuahiwi	Mountain, high hill.
Kuleana	Right, privilege, concern, responsibility, title, business, property, estate, portion, jurisdiction, authority, liability, interest, claim, ownership, tenure, affair, province.
Kupua	Demigod or culture hero, especially a supernatural being possessing several forms.
Kū'ula	Any stone god used to attract fish, whether tiny or enormous, carved or natural, named for the god of fishermen. Heiau near the sea for worship of fish gods, hut where fish gear was kept with kū'ula images so that gear might be impregnated with kū'ula mana, usually inland and very taboo.
Lo'i	Irrigated terrace, especially for taro, but also for rice and paddy.

Lo‘i kalo	Ponds for wetland taro that are enclosed by banks of earth.
Loko kuapā	Fish pond made by building a wall on a reef.
Luakini heiau	Temple, church, cathedral, tabernacle. Large heiau where ruling chiefs prayed and human sacrifices were offered.
Mai‘a	All kinds of bananas and plantains.
Makani	1. Wind, breeze. 2. Windy, to blow.
Mālama ‘āina	To cherish and care for the land, environment.
Manō	Shark.
Mele	1. Song, anthem, or chant of any kind. 2. Poem, poetry. 3. To sing, chant.
Menehune	Legendary race of small people who worked at night, building fish ponds, road, temples. If the work was not finished in one night, it remained unfinished.
Mō‘ī	King, sovereign, monarch, majesty, ruler, queen.
Moku	1. District, island, islet, section, forest, grove, clump, fragment. 2. To be cut, severed, amputated, broken in two.
Mokupuni	Island.
Mo‘o	Lizard, reptile of any kind, dragon, serpent.
Mo‘o akua	Lizard god.
Mo‘okū‘auhau	Genealogy.
Mo‘olelo	Story, tale, myth, history, tradition, literature, legend, journal, log, yard, fable, essay, chronicle, record, article.
Mo‘opuna	1. Grandchild, great-niece or –nephew, relatives two generations later, whether blood or adopted. 2. Descendant.
Nai‘a	Porpoise, dolphin.
Nī‘au-pi‘o	Offspring of the marriage of a high-born brother and sister, or half-brother and half-sister.
Noa	Freed of taboo, released from restrictions, profane, freedom.

‘Ohana	Family, relative, kin group, related.
‘Ōlelo Hawai‘i	The Hawaiian language.
‘Ōlelo no‘eau	Proverb, wise saying, traditional saying.
Oli	Chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill at the end of each phrase; to chant thus.
Oli makani	Wind chants.
Pali	Cliff, precipice, steep hill or slope.
Pu‘uhonua	Place of refuge, sanctuary, asylum, place of peace and safety.
‘Uhaloa	A small, downy, American weed ( <i>Waltheria indica var. americana</i> ), with ovate leaves and small, clustered yellow flowers.
Wā	Period of time, epoch, era, time, occasion, season, age.
Wa‘a	Canoe, canoemen, paddlers.
Wa‘a kaulua	Double canoe.
Wahi pana	A sacred and celebrated/legendary place.

## Reference

Pukui MK, Elbert SH. 1986. Hawaiian dictionary. Honolulu (HI): University of Hawai‘i Press. 572 p.



### **The Department of the Interior Mission**

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under US administration.



### **The Bureau of Ocean Energy Management**

As a bureau of the Department of the Interior, the Bureau of Ocean Energy Management's (BOEM) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS) in an environmentally sound and safe manner.

### **The BOEM Environmental Studies Program**

The mission of the Environmental Studies Program (ESP) is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments.