

FINAL ENVIRONMENTAL ASSESSMENT PROPERTY ACQUISITION FOR KAHULUI HARBOR

District of Wailuku, County of Maui
Tax Map Key: (2) 3-7-011:017 portion, (2) 3-7-011:019 portion,
and (2) 3-7-11:023

VOLUME III OF IV



Proposing Agency:
STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION

November 1, 2019

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Kahului Harbor

Historic Resources Evaluation

Mason Architects, Inc.

May 2018

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INTRODUCTION

The Hawaii Department of Transportation (HDOT) is considering the acquisition of several abandoned and/or underutilized structures in Kahului to make way for future harbor improvements, and some of the structures are planned for demolition. This inventory survey report was prepared by Mason Architects, Inc. (MAI) to identify, inventory, and evaluate the buildings in the vicinity of the proposed harbor improvements under Section 6E-8 of the Hawaii Revised Statutes (HRS) and its governing Hawaii Administrative Rules (HAR). Some buildings included in the survey are not part of the proposed acquisition, but are included because of a common history.

Prior to implementing any demolition, the agency intends to coordinate directly with Maui County, the State Historic Preservation Division (SHPD). If a federal action (such as federal funding, permit, etc.) is identified as part of the project, HDOT will separately address Section 106 of the National Historic Preservation Act of 1966 (NHPA) and Section 4(F) of the U.S. Department of Transportation (DOT) Act of 1966.

INVENTORY SURVEY DESCRIPTION

MAI, under the direction of EKNA Services, was contracted to inventory and evaluate seventeen structures for their historic significance under the National Register Criteria. This report is the summary of the archival research and field work conducted to assess the historic significance of all seventeen structures,

¹ The nomination form for this proposed district was developed by the State Historic Preservation Division as part of a 1974 statewide

with special notations for eleven structures currently planned for demolition.

This survey was not scoped to establish boundaries for a potential historic district at Kahului Harbor. However, if a historic district were to be proposed in the future for the Kahului harbor area, a number of the properties surveyed under this project would be included as contributing elements. These include a concentration of 9 resources that fall within the National Register Data Categories for the Commerce and Transportation Areas of Significance. The 9 structures are the Molasses Storage Tanks 1-3, Storage tanks 5 & 6, Pump house, the Roundhouse, Auto truck garage and repair shop, and Truck repair bays. These are united historically by their development as parts of an industrial complex at the harbor and represent an important part of the history of Kahului and Maui.

A comprehensive survey would need to be undertaken of the overall harbor area to identify an accurate district boundary, and the appropriate contributing and non-contributing resources to the district. This work would be in conjunction with the existing "Kahului Historic District," which is not a formally designated historic district, but is registered under State of Hawaii Inventory of Historic Places' (SIHP) Site 1607.¹

METHODOLOGY

Initial documentary research was performed in Honolulu, prior to fieldwork. Cultural survey reports, Historic American Buildings Survey (HABS), environmental reports, archival newspaper articles, archival maps, and photographs were referenced to understand the historical background of the

inventory, and covers the central, coastal section of the town of Kahului. It is not on the State or National Register of Historic Places.

Kahului Harbor area and the historical significance of the structures.

On-site field investigations were conducted the week of February 11, 2013. Arrangements were made with the current owner, Alexander & Baldwin, and all of the buildings were surveyed in their current condition. The National Register of Historic Places (NRHP) criteria were applied to each building to evaluate historic significance.

PERSONNEL

Joy Davidson, AIA, a historical architect with Mason Architects Inc., performed the documentary research, performed the field survey, and co-wrote the first draft of the survey. Ms. Davidson received a Doctorate in Architecture and a Masters Certificate in Historic Preservation from the University of Hawaii in 2002. Historian Dee Ruzicka co-authored the report, and performed additional historical research. Dee Ruzicka received his M.A. in American Studies with a specialization in Historic Preservation from the University of Hawaii in 1999 and has been with MAI for over 15 years. Polly Tice, Research Section Director and architectural historian, reviewed the findings and edited the draft and final reports. Ms. Tice received her M.S. in Historic Preservation from Columbia University in 2003. Both Mr. Ruzicka and Ms. Tice meet the Secretary of the Interior's Professional Qualification Standards for architectural history.

² The nomination form for this proposed district was developed by the State Historic Preservation Division as part of a 1974 statewide inventory, and covers the central, coastal section of the town of Kahului. It is not on the State or National Register of Historic Places.

PROPOSED PROJECT

DOT Harbors is proposing the acquisition of and improvements to the area shown on Figure 1 map in green. A total of eleven structures are proposed for demolition within this area. Previously designated or registered historic resources are located in the vicinity of this proposed project. These are:

- The "Kahului Historic District", which is not a formally designated historic district, but is registered under State of Hawaii Inventory of Historic Places' (SIHP) Site 1607;²
- Kahului Harbor, "which includes the piers, wharves, breakwaters, and associated structures that make up the active harbor facility,"³ was designated a historic property (Site 2953) by SHPD;
- The Kahului Railroad Administration Building, which was added to the National Register of Historic Places on May 17, 2016.

A total of seventeen buildings and structures were included in this inventory survey. These are listed in the Key/Table accompanying the map in Figure 2, and in more detail in the NRHP Summary Table on page 33. Descriptions and photographs are presented in the NRHP Evaluation section.

³ Welch, David, et al., Archaeological and Cultural Impact Assessment of Cultural Resources at Kahului Harbor, 2004. Page 17

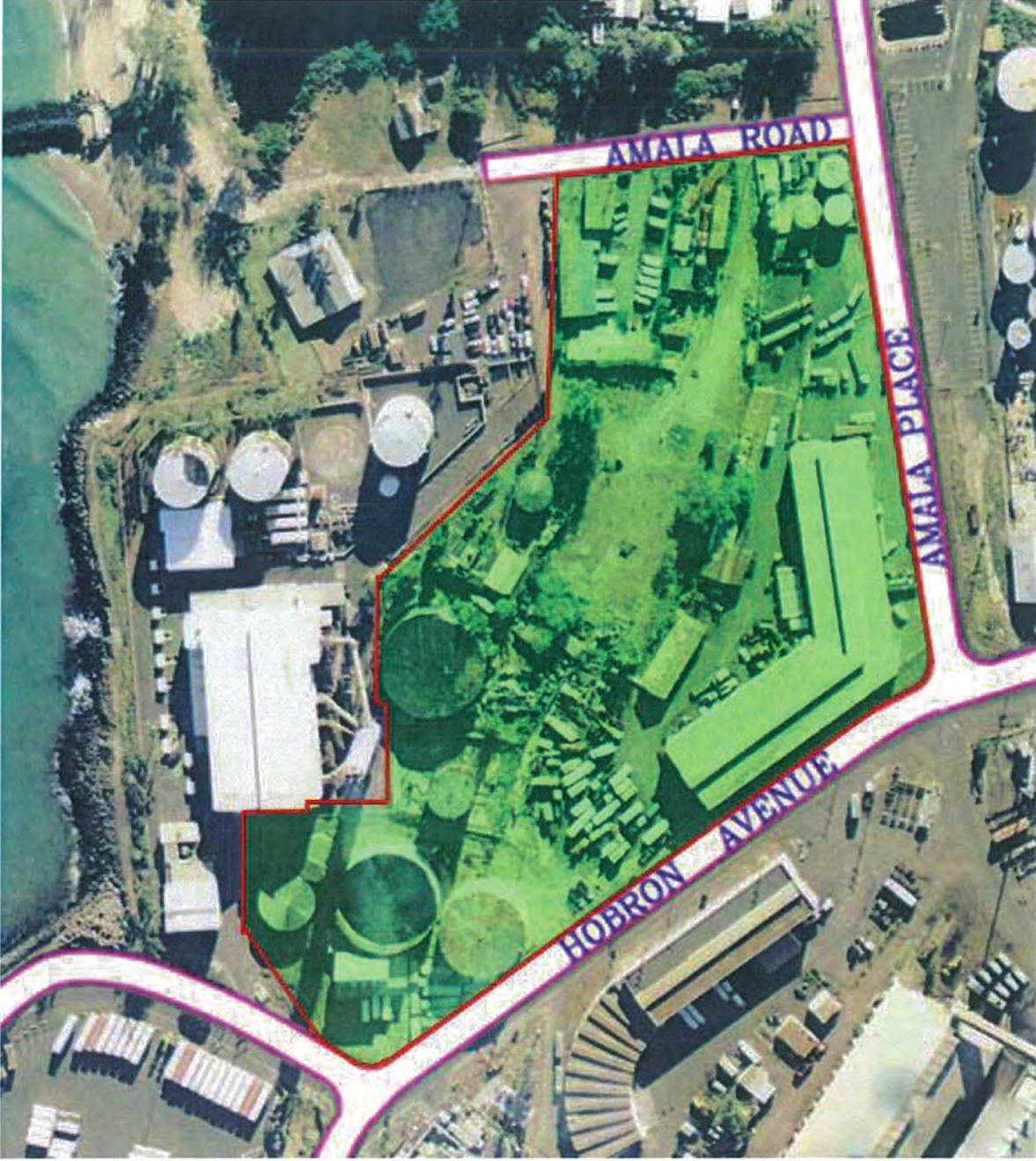


Figure 1: Proposed Acquisition Area (green)

| # | Current Name |
|----|-----------------------------------|
| 1 | Molasses storage tank |
| 2 | Molasses storage tank |
| 3 | Molasses storage tank |
| 4 | Pump-house |
| 5 | Storage tank |
| 6 | Storage tank |
| 7 | Auto truck garage and repair shop |
| 8 | Truck repair bays |
| 9 | Order of Kamehameha I Hall |
| 10 | Storage Tank |
| 11 | BEI Tank |
| 12 | BEI Tank |
| 13 | Bike Rental Shop |
| 14 | Alexander & Baldwin Building |
| 15 | Roundhouse |
| 16 | Kahului School |
| 17 | Kahului Railroad Admin. Building |

| Legend |
|-----------------------------------|
| Red = Eligible/Historic |
| Green = Not Eligible/Not historic |

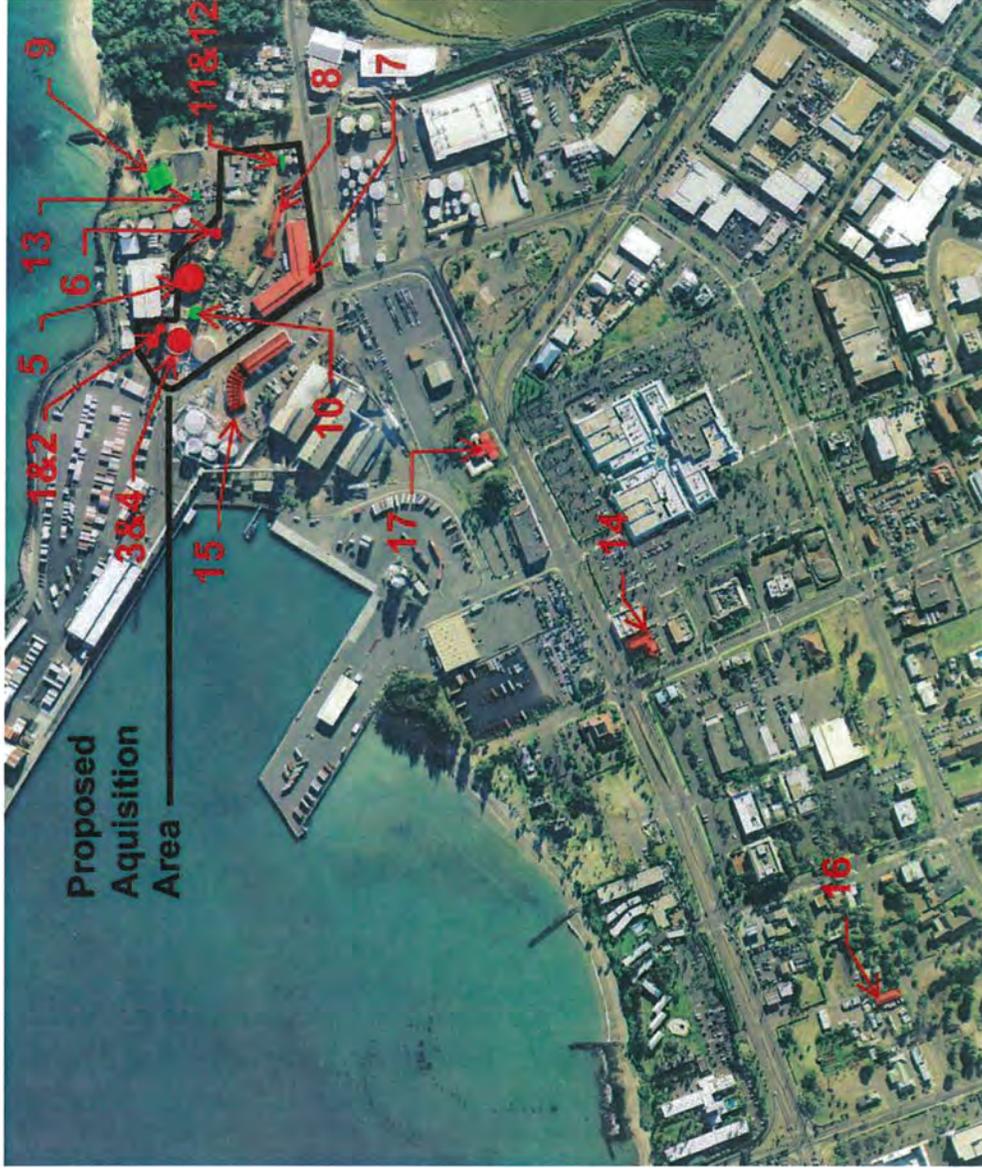


Figure 2: Kahului Harbor Aerial View of Buildings Surveyed

HISTORICAL BACKGROUND

The buildings and structures surveyed relate to several overarching historical themes - the Kahului Railroad, Sugar and Molasses, and Fuel Oil - discussed below.

KAHULUI RAIL ROAD, 1881-1966

The Kahului Rail Road Company (K.R.R.) was the first common carrier railroad in Hawaii. It was incorporated in 1881 from its predecessor, the Kahului and Wailuku Railroad, and it operated until 1966. K.R.R. was the driving force behind the development of Kahului Harbor; its transportation of sugar molasses, and pineapple from Maui plantations to the harbor were decisive in the island's business development and in the growth of Kahului. K.R.R. operations were centered on its 200 acre rail yard and shop complex at Kahului Harbor that contained a roundhouse, shops, storehouses, and rail office. K.R.R. was responsible for much of the early 20th century development of harbor facilities and wharfs in Kahului. In 1925, K.R.R. began to operate a truck fleet for some of its hauling. K.R.R. changed its name to Kahului Trucking & Storage, Inc. after rail operations ceased in 1966. The eligible surveyed properties listed below relate to the Kahului Rail Road historical theme:

- Roundhouse
- Auto truck garage and repair shop
- Truck repair bays
- A&B Building
- Kahului Railroad Administration Building

SUGAR AND MOLASSES STORAGE AND LOADING, 1881-1999

From its earliest harbor improvements, an important focus of K.R.R. harbor facilities was with its primary customer, the sugar industry. With the construction of breakwaters and deeper draft wharfage, Kahului Harbor became the preferred Hawai'i transit point for shipping sugar. Molasses storage tanks were in use there from at least 1911. In 1942, Kahului Harbor was the first site in Hawaii to make bulk shipments of sugar, using large bulk storage sheds, and conveyor loading of loose sugar into cargo ships. The eligible surveyed properties listed below relate to the Sugar and Molasses Storage and Loading historical theme:

- Molasses Storage Tanks (1-3)
- Pump-house
- A&B Building

FUEL OIL STORAGE, CA. 1900-1963

Fuel oil storage was an important early component of the infrastructure at Kahului Harbor. Oil storage tanks totaling 80,000 barrels of bunker oil for fueling steam engines were built by 1914. These oil tanks, owned by Union Oil Co. (later Standard Oil of California) were located near the base of the east breakwater. Through about 1930, Kahului Railroad increased the oil storage facilities at the harbor as part of a "three way agreement between Alexander and Baldwin [agents for Kahului Railroad], the Standard Oil Co. of

California, and the Kahului Railroad Company.”⁴ This expansion included a bunker oil storage tank [ca. 1916] adjacent to the Maui Electric Co. generating plant, and a facility located southeast of the present-day intersection of Hobron Avenue and Amala Place that was built sometime before 1927. Both the oil storage tank and the facility are shown as properties of “Standard Oil Co. of California” on a 1927 Sanborn Map. The facility contained storage tanks for kerosene, diesel, and gasoline, with underground piping to the wharf at Pier 1. Diesel was also piped underground from the facility to a KRR fueling point at the railyard north of the facility.⁵

Beginning in the late 1920s, several changes occurred at K.R.R. that would have increased the company’s need for diesel and gasoline fuel. In 1925 the company began truck transportation service, in 1929 the last steam locomotive was acquired – subsequent locomotives would all be diesel powered, and in 1936 they began passenger service by bus. The trucks and buses would have been diesel or gasoline. By the end of World War II K.R.R. trucking operations owned 129 trucks and trailers and seven tank trailers, and the bus transportation division ran sixty buses. One diesel locomotive was acquired in 1930, two in 1936, and two more in 1947. Only four steam locomotives remained in operation in 1940. By 1950, K.R.R.’s reliance on diesel locomotives was virtually complete, with only one steam locomotive that was retained for use during the peak harvest season. That year K.R.R. also acquired the diesel-electric rolling stock of

⁴ Arthur L. Dean, Alexander and Baldwin, Ltd. And the Predecessor Partnerships. (Honolulu: Alexander and Baldwin, Ltd.). 1950. P. 166.



Map 1: 1955 USGS Topographic Map of Kahului Hawaiian Commercial & Sugar Co., as that plantation phased out its railroad division.⁶

Although K.R.R. bus transportation was ended in August 1952, trucking was cut back in July 1954, and rail operations were discontinued in May 1966, the growth of other Maui businesses, an increasing number of private vehicles, and expanding air transportation increased the demand for petroleum fuel on Maui. Kahului “developed into the major

⁵ Hawaii Department of Accounting and General Services (HIDAGS). Registered Map #3056, “Kahului Harbor and Approaches,” September 1941.

⁶ Robert A. Ramsey, “The Kahului Railroad.” *The Railway and Locomotive Historical Society*. Bulletin no. 102. 1960. P. 27-34.

commercial, industrial, and transportation center of Maui.”⁷ During the 1970s an overwhelming majority of goods arriving on Maui passed through Kahului Harbor, including all liquid petroleum fuel. By 1972, liquid bulk petroleum products accounted for most of the cargo tonnage arriving at Kahului Harbor, and were among the cargo types expected to show the greatest growth in shipping in the coming years.⁸ Construction of bulk liquid fuel tanks at Kahului Harbor during those years was likely in response to this growth. The eligible surveyed properties listed below relate to the Fuel Oil Storage historical theme:

- Storage Tanks (5, 6)
- A&B Building

PUBLIC EDUCATION IN KAHULUI, 20TH CENTURY

Early 20th century Kahului was a relatively small, industrial port town. Railroad lines from numerous plantations converged at the harbor, where sugar (and later pineapple) was shipped off-island to other markets. As such, the industrial town had little need for extensive housing or schools. The Kahului School, established in 1900, was built out as a small, one room school by 1906 (no longer extant). As Kahului grew, the school was expanded to accommodate a total of 275 students. By the late 1920s, several structures, including a two-story concrete 15-classroom building (no longer extant), were added to the campus. The Kahului School Classroom Annex Building E was built in 1939 to fulfill a need for additional space as the school was leasing three classrooms from a nearby Japanese School.⁹ During

World War II, the Navy built Kahului Naval Air Station (NAS) on land leased by HC&S. (Today this site is occupied by the Kahului International Airport.) Kahului NAS and Puunene NAS brought with them an influx of service members to Maui.

In the post-war years, between 1949 and 1963, A&B replaced over 60 plantation camps with one large residential development in Kahului, called “Dream City.” Dream City provided land ownership and homes for sugar plantation workers and radically changed the face of Kahului. Plantation workers and their families moved into Kahului in droves from plantations and the need for more classroom space grew.

In 1958, HC&S gave Maui County 23 acres of land at Lono and Hina Avenues for a new school, which opened in 1959. The older Kahului School was retained however, and by the early 1960s accommodated students who moved to Kahului when plantation villages closed at Paia and Kaunoa. The old Kahului School became Lihikai School.

A new school was built in 1965 at Papa Avenue and Maalo Street. Lihikai School students were moved to this campus, and its remaining buildings were moved, put to new uses, or remained unoccupied. In the late-1990s, the campus began being dismantled, and the property was used as a base yard for buses. The eligible surveyed properties listed below relate to the Public Education in Kahului historical theme:

- Kahului School Classroom Annex Building E

⁸ Ibid. P. 1-3.

⁹ Dee Ruzicka, *HABS HI-555, Kahului School Classroom Annex Building*, 2011.

⁷ HDOT, Harbors Division, “Bulkhead and Other Improvements, Kahului Harbor, Environmental Impact Statement, Revised.” (Honolulu: Hawaii Department of Transportation). February 1977. P. 1-1.

NRHP EVALUATION

NATIONAL REGISTER OF HISTORIC PLACES CRITERIA

The following criteria are designed to guide the states, federal agencies, and the Secretary of the Interior in evaluating potential entries for the National Register.

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

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

NATIONAL REGISTER CRITERIA CONSIDERATIONS

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 fifty 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. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- b. 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
- c. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
- d. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or
- e. 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
- f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
- g. a property achieving significance within the past 50 years if it is of exceptional importance.

EVALUATIONS

Seventeen properties were surveyed in this inventory. Each of the properties surveyed is discussed individually in its respective inventory form below.

While all properties are associated with Kahului Harbor in varying degrees, not all of them are located within the proposed acquisition area. Only eleven of the properties surveyed are found within the boundaries of the proposed acquisition area, as shown in the aerial view map Figure 2. An additional three properties (Order of Kamehameha I Hall, Bike Rental Shop, and Roundhouse) are located on or adjacent to the working harbor, while three others (Alexander and Baldwin Building, Kahului School, and Kahului Railroad Administration Building) are within one and four blocks away from the harbor.

Of the seventeen properties surveyed, a total of four were evaluated (or previously determined) as individually eligible for listing on the NRHP: Roundhouse, Kahului Railroad Administration Building, the Alexander & Baldwin Building (outside of the acquisition area), and the Kahului School Building (outside of the acquisition area). Eight properties were evaluated as eligible as contributing elements to a potential Kahului Harbor Historic District; five storage tanks and the pump house located on the harbor property in a group; Auto Truck Repair Shop, and Truck Repair Bays, located on the property in a separate group.

The remaining five properties were evaluated as not eligible for the NRHP: the Order of Kamehameha I Hall was the only property over fifty years of age that was evaluated as not eligible,

nor contributing to a potential historic district. The building did not have significance under any of the National Register criteria.¹⁰ The remaining four not eligible properties are: two sets of BEI Tanks, the Tosco Tank, and the Bike Rental Building. These were evaluated as not eligible. All less than fifty years in age, they lack exceptional importance under National Register Criterion Consideration G.

AREAS OF SIGNIFICANCE

All of the properties that were evaluated as eligible, either individually, or contributing to a potential larger district, were eligible under two National Register Areas of Significance: Commerce and Transportation. Although not all of the properties are located within the boundaries of the working harbor, all were associated with one or more of three themes important to Kahului Harbor (discussed above), all of which can be considered sub-themes of the Areas of Significance. These themes are Kahului Railroad, Sugar and Molasses Storage and Loading, and Fuel Oil Storage.

COMMERCE

The six tanks (molasses and fuel oil) and pump house are associated with the trading of goods that was carried out during the first half of the 20th century. Molasses was a by-product of sugar production that had value as an export commodity; and fuel oil was an import commodity with great importance as an energy source for the Island. The ability to store both, at the Kahului Harbor yard of the Kahului Rail Road Company, resulted in their profitable

Department of Planning and Permitting, City and County of Honolulu. June 23, 2014.

¹⁰ State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division, Letter LOG: 2014.01899, DOC: D0614JLP16. To Glenn M. Okimoto, Director of Transportation,

marketing and contributed to the economic prosperity of Kahului.

TRANSPORTATION

The four buildings of the Kahului Rail Road Company are associated with the operations of the railroad, the first common rail carrier in the territory and the last operating rail road in the State of Hawaii. These repair garages, round house, and administration building served as a focus of the community's rail transportation system. The Kahului Rail Road was a major factor in the operation of many of Maui's sugar plantations. Its transport of sugar from mill to the docks at Kahului Harbor was important for the development of the plantations and for the economic prosperity of Maui.

INVENTORY FORMS

1. MOLASSES STORAGE TANK

DESCRIPTION: This bulk molasses storage tank, constructed ca. 1914,¹¹ is approximately 20m in diameter and sits directly adjacent to a similar, yet smaller tank. It was constructed by the Kahului Railroad Company to improve bulk molasses storage and transfer in the Kahului Harbor area.

The tank is constructed of steel siding plates riveted together in staggered horizontal bands.

CONDITION: Due to local environmental conditions, all of the tank's steel elements are heavily rusted. The roof in most locations has completely collapsed and the interior is exposed to the elements.

ELIGIBILITY: (EC) This tank is significant as a contributing element at the local level under Criterion A for its association with the history of sugar and molasses storage and loading in Kahului.

The tank retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.



Figure 2: Molasses Storage Tank (1)

¹¹ Sanborn Insurance Map Co. 1914.

2. MOLASSES STORAGE TANK

DESCRIPTION: This bulk molasses storage tank, constructed ca. 1914,¹² is approximately 14m in diameter and sits directly adjacent to a similar, larger tank. It was constructed by the Kahului Railroad Company to improve bulk molasses storage and transfer in the Kahului Harbor area.

The tank is constructed of steel siding plates riveted together in staggered horizontal bands.

CONDITION: Due to local environmental conditions, all of the tank's steel elements are heavily rusted. The roof in most locations has completely collapsed and the interior is exposed to the elements.

ELIGIBILITY: (EC) This tank is significant as a contributing element at the local level under Criterion A for its association with the history of sugar and molasses storage and loading in Kahului.

The tank retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.



Figure 3: Close-up of exterior rust at Molasses Storage Tank (2)



Figure 4: Molasses Storage Tank (2) right

¹² Sanborn Insurance Map Co. 1914.

3. MOLASSES STORAGE TANK

DESCRIPTION: This bulk molasses storage tank, constructed ca. 1911¹³, is directly adjacent to a pump house. It was constructed by the Kahului Railroad Company to improve bulk molasses storage and transfer in the Kahului Harbor area.

The tank is constructed of steel siding plates riveted together in staggered horizontal bands.

CONDITION: Due to local environmental conditions, all of the tank's steel elements are heavily rusted. The structure has been abandoned for several years and currently has no roof.

ELIGIBILITY: (EC) This tank is significant as a contributing element at the local level under Criterion A for its association with the history of sugar and molasses storage and loading in Kahului.

The tank retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.



Figure 5: Molasses Storage Tank (3)



Figure 6: Interior of Molasses Storage Tank (3)

¹³ Cultural Surveys Hawaii, Inc., (Draft) *An Archaeological Literature Review*, 2009, p. 55.

4. PUMP HOUSE

DESCRIPTION: The pump house was constructed ca. 1911¹⁴ and is directly adjacent to the bulk molasses storage tanks. It was constructed by the Kahului Railroad Company and contained pumps, valves, and piping for filling molasses storage tanks from rail cars or trucks and for pumping molasses into the transport tanks of cargo ships. It is a steel framed structure with corrugated metal siding and roofing.

CONDITION: The building is in fair condition and the street facing portion is currently in use.

ELIGIBILITY: (EC) The Pump house is significant as a contributing element at the local level under Criterion A for its association with the history of sugar and molasses storage and loading in Kahului.

The structure retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This structure is proposed to be acquired and then demolished.



Figure 7: Pump-House (4) from Hobron Avenue



Figure 8: Pump-House (4) adjacent to Tank (3)

¹⁴ Cultural Surveys Hawaii, Inc., (Draft) *An Archaeological Literature Review*, 2009, p. 55.

5. STORAGE TANK

DESCRIPTION: This is a large storage tank constructed ca. 1916.¹⁵ The tank was constructed to improve bulk fuel storage and transfer at the Kahului Harbor. It is constructed of steel siding plates riveted together in staggered horizontal bands. The roof framing is large timber members in a radial pattern.

CONDITION: Due to local environmental conditions, all of the tank's steel elements are heavily rusted. The structure has been abandoned for several years and currently has a large hole in the north side.

ELIGIBILITY: (EC) This tank is significant as a contributing element at the local level under Criterion A for its association with the Historic Context Fuel Oil Storage, ca. 1900-1963. During the period of 1910-1930 the Kahului Railroad increased its fuel oil storage capacity at the harbor under an agreement with the Standard Oil Co.

The tank retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.



Figure 9: Storage Tank (5) from north side



Figure 10: Storage Tank (5) from south side

¹⁵ Cultural Surveys Hawaii, Inc., (Draft) *An Archaeological Literature Review*, 2009, p. 56.

6. STORAGE TANK

DESCRIPTION: This is a small storage tank constructed ca. 1926.¹⁶ The tank was constructed to improve bulk fuel storage and transfer at the Kahului Harbor. It is constructed of steel siding plates riveted together in staggered horizontal bands.

CONDITION: Due to local environmental conditions, all of the tank's steel elements are heavily rusted. The south half of this tank has collapsed.

ELIGIBILITY: (EC) This tank is significant as a contributing element at the local level under Criterion A for its association with the Historic Context Fuel Oil Storage, ca. 1900-1963. During the period of 1910-1930 the Kahului Railroad increased its fuel oil storage capacity at the harbor under an agreement with the Standard Oil Co.

The tank retains integrity of setting, feeling and association because of industrial setting and surrounding tank grouping.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.

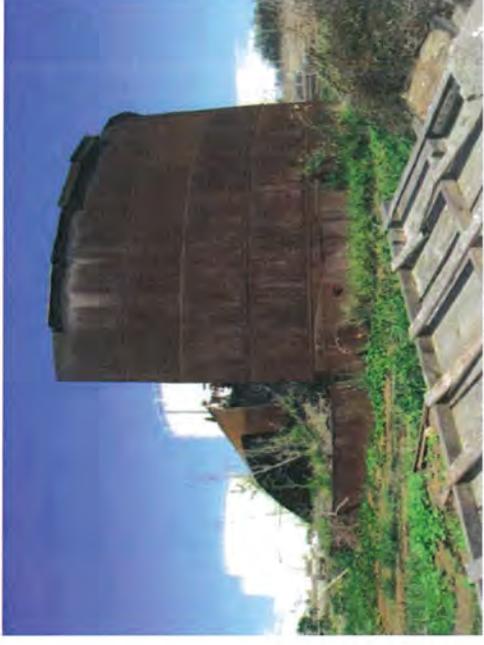


Figure 11: Storage Tank (6) partially collapsed



Figure 12: Storage Tank (6) intact side

¹⁶ Sanborn Insurance Map Co. 1927.

7. AUTO TRUCK GARAGE & REPAIR SHOP

DESCRIPTION: This building was constructed in 1929¹⁷ as an auto truck garage and repair shop. The garage portion of the building serves as a storage warehouse currently operated by the Kahului Trucking & Storage Company who has served the general freight and dump truck industry in Maui since 1909.

The garage is a framed building sheathed with corrugated metal. The building is elevated on a concrete foundation to match the height of railroad freight cars to facilitate freight on and off loading.

CONDITION: Good, currently in use

ELIGIBILITY: (EC) This building is significant as a contributing element at the local level under Criterion A for their association with the operations of the Kahului Railroad Company, 1881-1966.

The building retains integrity of setting, feeling and association due to adjacent railroad related structures.

PROPOSED ACTION: This structure is proposed to be acquired and then demolished.



Figure 13: Auto Truck Garage & Repair Shop (7) end elevation



Figure 14: Auto Truck & Repair Shop (7) front elevation

¹⁷ Cultural Surveys Hawaii, Inc., (Draft) *An Archaeological Literature Review*, 2009.

8. TRUCK REPAIR BAYS

DESCRIPTION: This set of truck service bays was constructed ca. 1934¹⁸ in two sections. It is situated north of the Auto Truck Garage & Repair Shop and parallel to the railroad sidings. Each of the repair bays is accessible from either the north or south by a separate set of doors.

The long narrow building is wood frame construction with corrugated metal siding and metal hinged doors.

CONDITION: This building is in extremely poor condition and is partially collapsed in some areas.

ELIGIBILITY: (EC) This building is significant as a contributing element at the local level under Criterion A for its association with the operations of the Kahului Railroad Company, 1881-1966.

The building retains integrity of setting, feeling and association due to adjacent railroad related structures.

PROPOSED ACTION: This structure is proposed to be acquired and then demolished.



Figure 15: Truck Repair Bays (8) front elevation, partially collapsed



Figure 16: Truck Repair Bays (8) rear elevation, partially collapsed

¹⁸ Cultural Surveys Hawaii, Inc., (Draft) *An Archaeological Literature Review*, 2009, p. 59.

9. ORDER OF KAMEHAMEHA I HALL

DESCRIPTION: The Order of Kamehameha I Hall is a wood framed meeting hall originally constructed ca. 1958,¹⁹ and subsequently modified with several additions. The roof over the original structure is a gable, with shed roofs over the add-ons. The exterior walls are tongue and groove, and v-groove plywood panels.

CONDITION: The building appears to be in fair condition.

ELIGIBILITY: (NC) Not associated with any specific events or the lives of significant people. It does not possess any distinctive characteristic nor is it likely to yield information important to Hawaii's history.

PROPOSED ACTION: No action; this structure is located outside the proposed acquisition area.



Figure 17: Order of Kamehameha I Hall (9) side view



Figure 18: Order of Kamehameha I Hall (9) mauka side

¹⁹ Hawaii State Archives, aerial photograph collection (var.).

10. STORAGE TANK

DESCRIPTION: This Tosco Storage tank was constructed ca. 1970²⁰ and is located in the area of the older molasses and fuel tanks. It is steel construction but does not possess the visible rivets seen in the older tanks. It is also considerably taller and has an access stairway on the exterior.

CONDITION: This tank appears to be in good and usable condition but was not accessible for close inspection.

ELIGIBILITY: (NP) This tank is less than 50 years old and does not possess the exceptional importance required to qualify for NR eligibility under NR Criteria Consideration G.

PROPOSED ACTION: This tank is proposed to be acquired and then demolished.

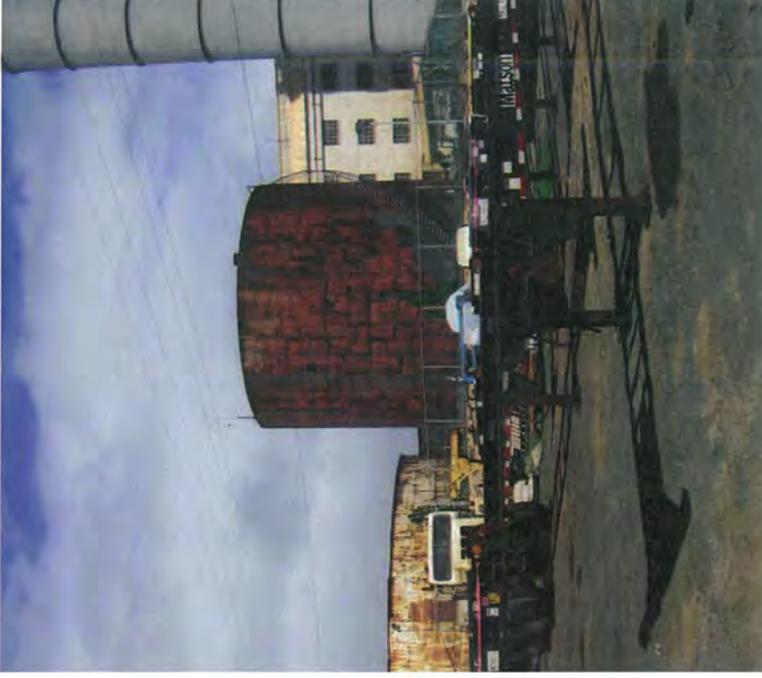


Figure 19: Storage Tank (10)

²⁰ The tank is not shown on an aerial photo taken January 4, 1965 (Hawaii State Archives, aerial photo PPA-35-1, 1CC31 dated January 4, 1965), but is shown on an aerial photo dated 1975.

11. BEI TANKS

DESCRIPTION: Four tall cylindrical storage tanks constructed of steel panels. These tanks are interconnected with piping close to the ground level. They were constructed ca. 1990.²¹

CONDITION: Good, and currently in use.

ELIGIBILITY: (NP) These tanks erected by chemical company BEI are less than 50 years old and do not possess the exceptional importance required to qualify for NR eligibility under NR Criteria Consideration G.

PROPOSED ACTION: These tanks are proposed to be acquired and then demolished.



Figure 21: BEI Tanks (11)



Figure 20: BEI Tanks (11)

²¹ The tanks are not visible on a Hawaii State Archives (HSA) aerial photograph dated 1987, but are shown on an HSA aerial photograph dated 1997.

12. BEI TANKS

DESCRIPTION: Three metal chemical storage tanks constructed ca. 1980.²²

CONDITION: Good, and currently in use

ELIGIBILITY: (NP) These tanks, erected by chemical company BEI ca. 1980, are less than 50 years old and do not possess the exceptional importance required to qualify for NR eligibility under NR Criteria Consideration G.

PROPOSED ACTION: These tanks are proposed to be acquired and then demolished.



Figure 22: BEI Tanks (12) at left

²² The tanks are not visible on a Hawaii State Archives (HSA) aerial photograph dated 1975, but are shown on an HSA aerial photograph dated 1987.



Figure 23: Cluster of three BEI Tanks (12)

13. BIKE RENTAL SHOP

DESCRIPTION: The Bike Rental Shop is a series of small, temporary and/or portable style sheds arranged in a grouping around a gravel parking lot, likely dating ca. 1990.²³

CONDITION: Good, and currently in use

ELIGIBILITY: (NP) These buildings are less than 50 years old and do not possess the exceptional importance required to qualify for NR eligibility under NR Criteria Consideration G.

PROPOSED ACTION: No action; these structures are located outside the proposed acquisition area.



Figure 24: Assorted Buildings which make up the Bike Rental Shop (13)



Figure 25: Assorted Buildings which make up the Bike Rental Shop (13)

²³ The sheds are shown on Hawaii State Archives aerial photographs of the mid-1990s.

14. ALEXANDER & BALDWIN BUILDING

DESCRIPTION: This 1931 building was designed by renowned local architect C.W. Dickey as the Baldwin Bank Building (later Bank of Hawaii). It is reinforced concrete with a classic clay tile "Dickey" roof. The front of the building has a porte-cochere which was a first for Hawaii bank design. The building has had some modifications and currently houses Alexander and Baldwin offices.

CONDITION: Excellent

ELIGIBILITY: (ES) This building is individually eligible under Criterion A for its association with the economic development of Kahului. It is significant under Criterion C as the work of a master architect, C.W. Dickey.

The building retains integrity of location, design, setting, materials, workmanship, feeling and association.

PROPOSED ACTION: No action; this structure is located outside the proposed acquisition area.



Figure 26: Alexander & Baldwin Building (14) front elevation



Figure 27: Alexander & Baldwin Building (14) oblique view

15. ROUNDHOUSE

DESCRIPTION: This eleven-car railroad roundhouse and car and machine shop was constructed in 1926²⁴ by the Kahului Railroad Company. There are two distinct sections of this concrete building, the semi-circular, single-story portion that once housed the turntable, and the adjacent, high-bay car and machine shop. The car and machine shop still retains several of its original multi-light windows.

CONDITION: This building is in fair condition and was still in use at the time of the survey. Some cracking of concrete was observed around the windows of the roundhouse.

ELIGIBILITY: (ES) This distinctive semi-circular building has railroad car bays set on the perimeter of the former site of a railcar turntable. It is individually eligible at the local level under Criterion A for its association with the historic context Kahului Rail Road, 1881-1966. It retains integrity of location, workmanship, materials, setting, feeling and association.

PROPOSED ACTION: No action; this structure is located outside the proposed acquisition area.



Figure 30:
Semicircular
portion of
Roundhouse (15)



Figure 28: Hobron Avenue elevation of the Roundhouse (15)



Figure 29: Machine Shop end of Roundhouse Building (15)

²⁴ Inscription on front façade.

16. KAHULUI SCHOOL

DESCRIPTION: The Kahului School Annex (Building E) is a wooden single-story classroom building with an irregular rectangular footprint. The building has a hip roof with overhanging eaves shiplap siding and a wood post and concrete pier foundation. It was built in 1939.²⁵

CONDITION: Poor

ELIGIBILITY: This building is significant under NR Criterion A for its association with the development of public education on Maui.

SPECIAL COMMENTS: (ES) This building was determined to be individually eligible for listing on the NR by the Maui Cultural Resources Commission on March 3, 2011.

PROPOSED ACTION: This structure is located outside the proposed acquisition area.



Figure 31: Kahului School Building E (16) front elevation

²⁵ Ruzicka, Dee. Historic American Building Survey, Kahului School Classroom Annex Building, No. HI-555, 2011.

17. KAHULUI RAILROAD ADMINISTRATION BUILDING

DESCRIPTION: This single-story concrete building was constructed in 1923. It is a T-shaped structure with decorative pilasters and a low sloped, hip roof covered with corrugated metal. The original wood double-hung windows are intact. Two L-shaped additions have been constructed on the site and they connect to the original building with covered walkways.

CONDITION: Good

ELIGIBILITY: (ES) This building, built in 1923, is individually listed on the National Register under Criterion A for its association with the operations of the Kahului Railroad Company, and under Criterion C as a good example of classical revival style architecture.²⁶

PROPOSED ACTION: No action; this structure is located outside the proposed acquisition area.



Figure 33: Kahului Railroad Administration Building (17)

²⁶ Hibbard, Don. National Register Nomination Form for the Kahului Railroad Administration Building. May 11, 2015.



Figure 32: Kahului Railroad Administration Building (17)

SUMMARY TABLE: NRHP EVALUATIONS, EFFECT, AND PROPOSED MITIGATION

| # | Bldg | Year | NRHP Eligible?* | Proposed Action | Effect | Proposed Mitigation |
|---|-----------------------------------|----------|--|-------------------------------------|--|---------------------|
| 1 | Molasses storage tank | <1914 | EC - Significant under NR Criterion A for association with the development of sugar and molasses storage and loading facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 2 | Molasses storage tank | <1914 | EC - Significant under NR Criterion A for association with the development of sugar and molasses storage and loading facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 3 | Molasses storage tank | <1911 | EC - Significant under NR Criterion A for association with the development of sugar and molasses storage and loading facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 4 | Pump house | <1911 | EC - Significant under NR Criterion A for association with the development of sugar and molasses storage and loading facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 5 | Storage tank | ca. 1916 | EC - This fuel oil tank is significant under NR Criterion A for its association with the development of fuel oil storage facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 6 | Storage tank | <1927 | EC - This fuel oil tank is significant under Criterion A for its association with the development of fuel oil storage facilities at Kahului Harbor. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 7 | Auto truck garage and repair shop | 1929 | EC - Significant under NR Criterion A for its association with the operations of the Kahului Railroad Company. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 8 | Truck repair bays | <1935 | EC - Significant under NR Criterion A for its association with the operations of the Kahului Railroad Company. | Demolition | Effect, with Proposed Mitigation Commitments | HAER documentation |
| 9 | Order of Kamehameha I Hall | ca. 1958 | NC - Not eligible; lacks significance associated with architectural distinction. It has no known association with an important historic person or event. | No action; outside acquisition area | No effect | N/A |

| | | | | | | |
|----|-----------------------------|-----------|--|-------------------------------------|-----------|-----|
| 10 | Tosco Storage Tank | ca. 1970 | NP – Not eligible; has no known association with an important person, event. Does not exhibit exceptional importance. | Demolition | No effect | N/A |
| 11 | BEI Tanks | ca. 1990 | NP – Not eligible; has no known association with an important person, event. Does not exhibit exceptional importance. | Demolition | No effect | N/A |
| 12 | BEI Tanks | ca. 1980 | NP – Not eligible; has no known association with an important person, event. Does not exhibit exceptional importance. | Demolition | No effect | N/A |
| 13 | Bike Rental Shop | ca. 1990s | NP – Not eligible; this cluster of temporary buildings has no known association with an important person or event. Does not exhibit exceptional importance. | No action; outside acquisition area | No effect | N/A |
| 14 | A&B Building | 1931 | ES - Significant under Criterion A for its association with the economic development of Kahului, and under Criterion C as the work of a master architect, William C. Dickey. This building was originally the Baldwin Bank Building. | No action; outside acquisition area | No effect | N/A |
| 15 | Roundhouse | 1926 | ES - Significant under NR Criterion A for its association with the operations of the Kahului Railroad Company. | No action; outside acquisition area | No effect | N/A |
| 16 | Kahului School (Building E) | 1939 | ES - Significant under NR Criterion A for its association with the development of public education on Maui. (Determined eligible for listing by the Maui Cultural Resources Commission on March 3, 2011.) | No action; outside acquisition area | No effect | N/A |
| 17 | K.R.R. Admin. Building | 1923 | ES - This building is listed on the National Register under NR Criterion A for its association with the operations of the Kahului Railroad Company, and under Criterion C as a good example of classical revival style architecture. | No action; outside acquisition area | No effect | N/A |

*Eligibility Abbreviations:

- ES = Eligible/Significant
- EC = Eligible/Contributing
- NC = Not Eligible/Not Contributing
- NP = Not Eligible/Out of Period
- UN = Undetermined
- XD = Demolished

FINDINGS: DETERMINATION OF EFFECT

As shown in the NRHP summary table, demolition is planned for eight historic buildings within the proposed acquisition area. Under HAR §13-275-7 (“Determining effects to significant historic properties”), the proposed work results in Effect, with Proposed Mitigation Commitments.

PROPOSED MITIGATION COMMITMENTS

Under HAR §13-275-8, “(Proposed) Mitigation,” it is recommended that the demolition of the historic buildings within the project area be mitigated with architectural recordation in an Historic American Engineering Record (HAER).

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APPENDIX E
Archaeological Assessment for the Maui Electric
Power Plant Subdivision

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**ARCHAEOLOGICAL ASSESSMENT
FOR THE MAUI ELECTRIC POWER PLANT SUBDIVISION PROJECT
(LOTS 1-A, 1-B, AND 1-C)
KAHULUI AHUPUA‘A, WAILUKU DISTRICT
ISLAND OF MAUI, HAWAI‘I
[TMK: (2) 3-7-011:017, 019 por., and 023]**

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September 2016
Revised February 2018
FINAL

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ABSTRACT

At the request of Mr. Dan Yasui of A & B Properties, Inc. (landowner), Scientific Consultant Services, Inc. (SCS) conducted an archaeological inventory survey (AIS) in advance of the Maui Electric Power Plant Subdivision. The 9.83 acre project area is located within the built environment of the existing Kahului Harbor in Kahului Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-7-011:017, 019 por., and 023]. The AIS yielded negative findings and is being reported as an archaeological assessment (AA).

An archaeological inventory survey was performed in order to identify potential historic properties (non-burial and burial), to assess the significance of any identified historic properties, to make a project effect determination, and to propose mitigation measures to address the project effect on historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284, as this is a private project, and HAR § 13-276. Please note no federal funding or federal permits are involved with the current project.

In an effort to comply with the HARs, five stratigraphic trenches, placed across the project area, were mechanically excavated. The stratigraphic trenches were placed in predetermined locations in consultation with the State Historic Preservation Division. Ground penetrating radar (GPR) was employed by One Call for the sole purpose of identifying and locating any previously unknown underground utilities or subsurface anomalies. GPR was not utilized to assess the presence/absence of subsurface cultural deposits but was used to place the five trenches in areas without utilities.

While historic properties have been identified within lands adjacent to, and surrounding the Kahului Harbor, the current excavations did not lead to the identification of any historic properties nor to the identification of any underground utilities or subsurface anomalies.

Based on the negative findings of the current archaeological inventory survey, no additional archaeological work is recommended for the current project.

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INTRODUCTION

At the request of Mr. Dan Yasui of A & B Properties, Inc. (landowner), Scientific Consultant Services, Inc. (SCS) conducted an archaeological inventory survey (AIS) in advance of the Maui Electric Power Plant Subdivision. The 9.83 acre project area is located within the built environment of the existing Kahului Harbor, owned by Maui Electric Company, Ltd, in Kahului Ahupua'a, Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-7-011:017, 019 por., and 023] (Figures 1, 2, and 3). The AIS yielded negative findings which are being reported as an archaeological assessment (AA) report.

Fieldwork was conducted between June 22, 2016 and July 20, 2016, by SCS Archaeologist Ian Bassford, B.A., under the direction of Michael F. Dega, Ph.D., Principal Investigator. The AIS was performed in order to identify and document historic properties, to gather sufficient information on these properties, to evaluate the significance of any newly identified historic properties, to determine the project effect on these properties, and to make mitigation recommendations to address possible adverse impacts to identified historic properties, pursuant to Hawaii Administrative Rules (HAR) § 13-284 and HAR § 13-276. In an effort to comply with the HARs, five stratigraphic trenches, placed across the project area, were mechanically excavated. The stratigraphic trenches were placed in predetermined locations, in consultation with the State Historic Preservation Division. Ground penetrating radar (GPR) was employed by One Call for the purpose of identifying and locating any previously unknown underground utilities or subsurface anomalies. While historic properties have been identified within lands adjacent to, and surrounding the Kahului Harbor, the current excavations did not lead to the identification of any historic properties nor to the identification of any underground utilities or subsurface anomalies

During the current AIS, five stratigraphic trenches, placed across the project area, were mechanically excavated. No historic properties or cultural materials were identified.

ENVIRONMENTAL SETTING

The island of Maui ranks second in size of the eight main islands in the Hawaiian Archipelago. Pu'u Kukui, forming the west end of the island (1,215 m above mean sea level), is composed of large, heavily eroded amphitheater valleys that contain well-developed permanent stream systems that watered fertile agricultural lands extending to

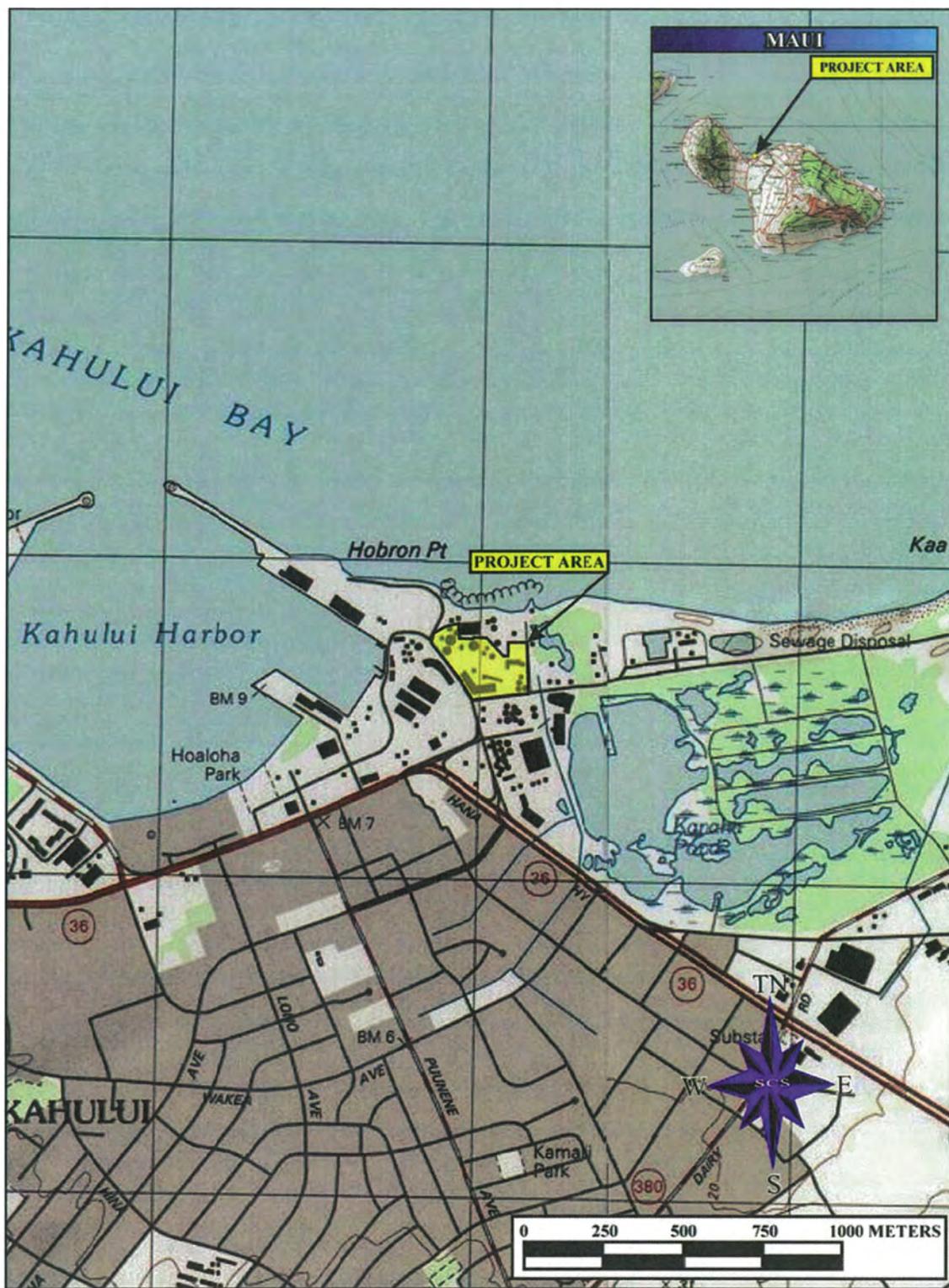


Figure 1: USGS Quadrangle (Wailuku, 1997; 1:24,000) Map Showing Project Area Location.

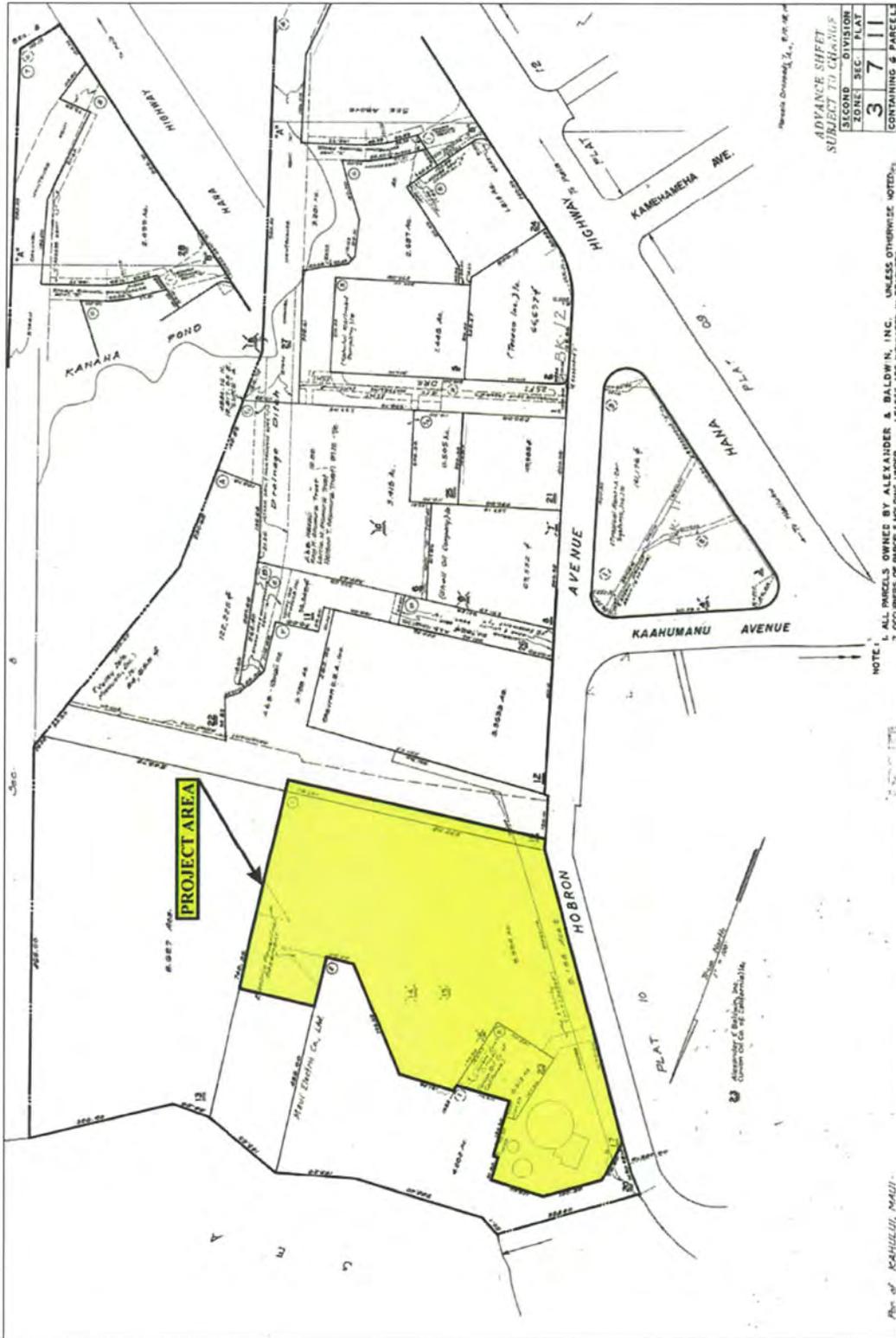


Figure 2: Tax Map Key [TMK: (2) 3-7-011] Showing Project Area Location.



Figure 3: Google Earth Image (2016; Imagery Date 1/12/2013) Showing Project Area.

the coast. The deep valleys of West Maui and their associated coastal regions have been witness to many battles in ancient times and were coveted productive landscapes. These are joined together by an isthmus containing dry, open country (*kula*) which contains the southern portion of Wailuku District.

PROJECT AREA LOCATION

The project area is located along the north coast of the island of Maui, immediately adjacent and east of Kahului Harbor. It is situated approximately between 316.8 ft. (96.5 m) and 1108 ft (338 m) from the shoreline at 3 feet (ft.) above mean sea level (AMSL). Hobron Avenue forms the western project area boundary; Amala Place forms the southern boundary; industrial land owned by A and B Properties forms the eastern project area boundary; and the MECO Power Plant forms the northern boundary.

SOILS

With the exception of the northeast tip of the project area, which is comprised of soils of the Beaches Soil Series (BS), the majority of the project area is within fill land (Fd) (Foote *et al.* 1972: Sheet Map 99; Figure 4). According to Foote *et al.* (1972:28), the BS deposits "...occur as sandy, gravelly, or cobbly areas...[that] are washed and rewashed by ocean waves." The BS deposit typically consists of light colored sand which originated as corals and marine shell. However, some BS deposits exhibit dark colored sand, as these materials originated from andesite and basalt. Areas comprised of BS deposits are most often utilized for recreational purposes, including resorts.

According to Foote *et al.* (1972: 31), soils of the Fill Land Series (Fd) occur in areas that have been filled with dredged material, material which was excavated from the upland regions, garbage, and or sugar mill refuse (*i.e.*, bagasse and slurry). Foote *et al.* (1972:31) states that areas comprised of Fd lands are most often filled with sugar mill refuse and, to a lesser extent, filled with dredged or excavated materials. In general, low lying coastal areas, marshes, etc. are covered with fill material which is spread over the area, which in most cases is used in the commercial production of sugar cane.

CLIMATE

(Armstrong 1983: 64), temperatures within the project area range from the low 50s to the mid-90s (degrees Fahrenheit), during the fall and winter months. During the spring and summer, temperatures range from the high 60s to the high 90s (degrees Fahrenheit).

According to the Giambelluca et al. (2013) Online Rainfall Atlas of Hawai'i, rainfall is seasonal with a Mean Annual Rainfall of 409.6 mm (16 in.). The majority of the rainfall (264 mm/10.3 in.) occurs within the fall and winter months (September through March) and a significantly lesser amount (62.5 mm/2.4 in.) in the spring and summer months (April through August).

VEGETATION

As the project area is located within an existing built environment no vegetation was present.

TRADITIONAL AND HISTORIC SETTING

Archaeological settlement pattern data indicates that initial colonization and occupation of the Hawaiian Islands occurred on the windward shoreline areas around c. A.D. 900, with populations eventually settling into drier leeward areas at later periods (Kirch 1985:87). Coastal settlement was still dominant, but populations began exploiting and living in the upland *kula* (plains) zones. Greater population expansion to inland areas did not occur until sometime during the 12th century and continued through the 16th century. Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-coastal reaches and in the uplands. Recent research within Wailuku Ahupua'a indicates that the area was likely settled between c. A.D. 1100 (Kirch 1985:142) and A.D. 1200 (Fredericksen and Fredericksen 1997).

Approximately 600 years ago, the Hawaiian population had expanded throughout the Hawaiian Islands to a point where large, political districts could be formed (Lyons 1903; Kamakau 1991; Moffat and Fitzpatrick 1995). During the pre-Contact Period (pre-1778), Maui was divided into twelve districts or *moku* (Sterling 1998:3). Following the Civil Code of 1859, the twelve districts were consolidated into four districts: Lāhainā, Wailuku, Makawao, and Hāna (*ibid.*). Traditionally, the division of Maui Island into districts (*moku*) and sub-districts was performed by a *kahuna* (priest, expert) named Kalaiha'ōhia, during the time of the *ali'i*

Kaka'alaneo (Beckwith 1940:383; Fornander 1919-20, Vol. 6:248) places Kaka'alaneo at the end of the 15th century or the beginning of the 16th century. Land was considered the property of the king or *ali'i 'ai moku* (the *ali'i* who eats the island/district), which he held in trust for the gods. The title of *ali'i 'ai moku* ensured rights and responsibilities pertaining to the land, but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The *maka'āinana* (commoners) worked the individual plots of land.

In general, several terms, such as *moku*, *ahupua'a*, *'ili* or *'ili 'āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua'a*) which customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua'a* were therefore, able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua'a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *'ili 'āina* or *'ili* were smaller land divisions next in importance to the *ahupua'a* and were administered by the chief who controlled the *ahupua'a* in which it was located (*ibid*:33; Lucas 1995:40). The *mo'o'āina* were narrow strips of land within an *'ili*. The land holding of a tenant or *hoa 'āina* residing in a *ahupua'a* was called a *kuleana* (Lucas 1995:61).

TRADITIONAL SETTLEMENT PATTERNS

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua'a*. During pre-Contact Period, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture that incorporated pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane, *Saccharum officinarum*) and *mai'a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *'uala* (sweet potato, *Ipomoea batatas*) were produced. This was the typical traditional agricultural pattern seen on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985). It must be noted that Handy (1940:105) stated that, "... the bounds of cultivation...were strictly drawn by limitation of water for irrigation." The word "*kula*" meant "open country or plain", according to Handy and Handy (1972:510), and was often used to differentiate between dry, or *kula* land, and wet-taro land. The height and size of Haleakalā to the east, prevents moisture from reaching its southern and western flanks, causing arid conditions throughout the region. "This is an essential characteristic of Kula, the central plain of

Maui which is practically devoid of streams. Kula was always an arid region, throughout its long, low seashore, vast stony *kula* lands, and broad uplands" [*ibid*:510]. As to the occupation of this vast plain, Handy and Handy stated:

Both on the coast, where fishing was good, and on the lower westward slopes of Haleakala a considerable population existed. So far as we could learn Kula supported no Hawaiian taro, and the fishermen in this section must have depended for vegetable food mainly on *poi* brought from the wet lands of Waikapu and Wailuku to westward across the plain to supplement their usual sweet-potato diet [*ibid*:511].

An early witness to its lack of productivity was George Vancouver. During Vancouver's second visit to Hawai'i in 1793, as a Captain, he anchored in Mā'alaea Bay. Vancouver (1984:852) described the area:

The appearance of this side of Mowee was scarcely less forbidding than that of its southern parts, which we had passed the preceding day. The shores, however, were not so steep and rocky, and were mostly composed of a sandy beach; the land did not rise so very abruptly from the sea towards the mountains, nor was its surface so much broken with hills and deep chasms; yet the soil had little appearance of fertility, and no cultivation was to be seen. A few habitations were promiscuously scattered near the water side, and the inhabitants who came off to us, like those seen the day before, had little to dispose of.

West of the current project area lies 'Īao Valley, one of the most important locations in the area for prehistoric activity. Connolly (1974:5) states that the pre-Contact valley ['Īao] had a large population base with "most people residing in a settlement near 'Īao Needle," just north of the project area. Supposedly, the subsistence base of this population consisted of fish and taro, with Kahului Harbor and the coast close by and *lo'i* systems lining 'Īao Valley's stream banks. Prehistoric ditches or 'auwai were utilized in taro cultivation (Connolly 1974:5). Sterling (1998:86) adds that two 'auwai within the valley:

...have existed immemorially and were evidently constructed for the purpose of irrigating kalo on the plains which stretch away to the northward and southward of the ['Īao] river. Several minor 'auwai have, since ancient times, tapped the river at different points lower down and spread the water through the lands in the gulch on either side of the river bed.

Handy in Sterling (1998:63) further notes that "...[f]rom Waihee and Wailuku Valley, in ancient times, was the largest continuous area of wet taro cultivation in the islands." Cheever (1851:124) writes: "the whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it."

Recent archaeological research (Fredericksen and Fredericksen 1997:52) has revealed that habitation sites along what is now Lower Main Street in Wailuku "are associated with the rich taro producing lands in the Lower Īao River flood plain, and the extensive cultivation systems present in Īao Valley." These habitation sites have been dated to the A.D. 15th through 17th centuries. The Īao Valley area was not only renowned for its agricultural base during the pre-Contact Period, but its ceremonial and political base as well (see also Cordy 1996; Donham 1996).

No discussion of Wailuku District is complete without mentioning the important *heiau* complex above Īao Valley near its seaward terminus. During the mid to late 18th century, the Halekii-Pihana *heiau* complex was supposedly designed by a Hawaiian named Kiha (Sterling 1998:89). These monuments, designated as State Site 50-50-04-522 are described as very important *heiau* within Hawaiian history. Yent (1983:7) notes the life cycle of the *ali'i* was represented here. It was the place where Kamehameha I's wife (Keōpuolani) was born, Kahekili lived, and Kekaulike died. Thrum (1909:46) reported that Kamehameha I evoked his war god at Pihana Heiau after his warriors defeated Kalanikupuli's forces during the Battle of Īao in 1790. The two *heiau* are primarily associated with Kahekili, who is connected with the Halekii-Pihana complex between c. A.D. 1765 and 1790, and Kamehameha, during his conquering of Maui in 1792 (Yent 1983:18). As stated, the area, in general, is known not only for its religious and/or ceremonial significance, but for its political prominence as well.

PRE-CONTACT PERIOD (PRE-1778)

According to Kamakau (1870 in Sterling 1998: 2), "...the ancient name of the island of Maui was Ihikapalaumaewa..." The island was renamed "...after a famous child of Wakea and Papa who became ancestor of the people of Maui" (*ibid.*). By the end of the 18th century, Fredericksen and Fredericksen (1997:52) state that politically, Wailuku [village] was known as a central settlement for high ranking chiefs and their retinue. Kahekili, chief of Maui, resided with his entourage in Wailuku.

In 1837, the village of Kahului consisted of twenty-six *pili*-grass houses living close to the sea and depending on fishing in the coastal waters for the majority of their food (Bartholomew and Bailey 1994). Kahului is also famous for the twin fishponds Kanahā and Mauoni where mullet was still harvested in the early 1900s (*ibid.*). According to Mrs. Roalie Blaisdel (in Stokes cited in Sterling 1998:87-88):

The construction of the ponds was initiated by Kapiiohookalani, the ruling *ali'i* of the islands of O'ahu and half of Moloka'i, using men from O'ahu, Maui, and Moloka'i to construct the ponds. According to legend, the line of workers extended from Makawela to Kanahā with the men standing so close together they were able to pass the boulders used in the construction of the fishpond walls from hand to hand. Before the construction of the ponds had been completed, Kapiiohookalani was killed at the battle of Kawela, Moloka'i by Alapainui, of Hawai'i Island. Kamehamehanui, the ruling *ali'i* of Maui oversaw the completion of construction of the fishponds. Once the ponds were built, Kamehamehanui placed a *kapu* (taboo) on the *kuapa* (wall) separating the two ponds. Kapiiohookalani was survived by two children; a young son named Kanahaokalani and a daughter named Kahamaluihiikeaoihilani. According to legend, Kahamaluihiikeaoihilani was of such high status, she was able to break Kamehamehanui's *kapu* and name the seaward pond Kanahā, in honor of her brother, and the other pond Mauoni, the name she used when traveling incognito.

Of interesting note is that according to Pukui *et al.* (1974:83), the *ali'i nui* Kiha-a- Pi'ilani is said to be credited with the construction of Kanahā Fishpond during the 1500s.

HISTORIC PERIOD

The project area extends around the eastern portion of Kahului Harbor in Wailuku Ahupua'a (see Figure 1). The development of Wailuku and Kahului Harbor itself is well documented in 19th-20th century government records, photographs, and maps. Sargent *et al.* (1988) provide in-depth study of the harbor, breakwater, and jetty structures, all of which are directly pertinent to the current project. This excellent report is summarized herein per the Kahului Harbor structures.

As the sugar industry developed in the mid-1800s, more and more land was leased or purchased for what had become an intensely profitable endeavor. Water was an issue, but in

1876, the Hamakua Ditch Company (Alexander and Baldwin) was formed and within two years was bringing water from the streams of Haleakalā to four plantations in East Maui (Dorrance and Morgan 2000).

Also in 1876, the Reciprocity Treaty's ratification notice arrived by steamer, along with Claus Spreckles, California's sugar magnate, who viewed the sugar situation and decided two years later to turn the dry plains of Maui into a garden of cultivated cane (Van Dyke 2008). By various questionable means, he was able to acquire half interest in 16,000 acres of land in Waikapū commons and was able to lease 24,000 acres of Crown Lands on the Wailuku plains in central Maui for \$1,000 (*ibid.*).

Having seen the success of the recently completed Hamakua Ditch now bringing mountain water to the otherwise dry, and unproductive East Maui fields, and having lost his battle to control this ditch water, Spreckles formed the Hawaiian Commercial Company and decided to construct a ditch system of his own on East Maui above the Hamakua Ditch, for his newly acquired land (Wilcox 1996). Spreckles' Haiku Ditch extended 30 miles, from Honomanu Stream to the Kīhei boundary and the water was used to irrigate his cane lands in the central Maui plains (*ibid.*).

In 1882, Spreckles reorganized his company into a California corporation, called Hawaiian Commercial and Sugar Company, or HC&S (Wilcox 1996). Later he constructed another water system known as the Waihee Ditch in West Maui. It brought water from 15 miles away, starting at an elevation of 435 feet, to Kalua where it emptied into HC&S Waiale Reservoir (*ibid.*).

The ensuing years brought trials and tribulations between Spreckles, his associates, and the Maui sugar planters, resulting finally in the 1898 sale of his HC&S stock, at an all time low, to James Castle in partnership with Alexander and Baldwin, and the departure of Claus Spreckles from Hawai'i (Dorrance and Morgan 2000; Wilcox 1996).

Thomas Hogan built the first western building, a warehouse, near the shoreline of Kahului in 1863 (Clark 1980). The dredging of Kahului harbor through the years filled in large sections of the ponds, eventually blocking the outlet to the sea.

As the sugar industry developed, Kahului became a cluster of warehouses, stores, wheelwright and blacksmith shops close to the harbor. A small landing was constructed in 1879

to serve the sugar company (Clark 1980). In the late 1800s, Kahului possessed a new custom house, a saloon, Chinese restaurants, a railroad and a small population of residents. Kahului's main focus was shipping. The 1900 bubonic plague outbreak destroyed much of the town as officials decided to burn down the Chinatown area in an effort to contain the epidemic. The Chinese, Japanese and Hawaiian residents were displaced by this action. To further insure isolation, authorities encircled the entire town with corrugated iron rat-proof fences which ended the spread of the plague (Bartholomew and Bailey 1994). The Kahului Railroad Company built a 1,800 foot long rubble-mound breakwater in 1910 and dredging of the harbor now allowed ships with a 25-foot draft to dock at the new 200-foot wharf (Clark 1980).

Henry Baldwin and Lorrin Thurston formed the Kihei Sugar Company in 1899, to grow cane on their ranch lands in south central Maui (Dorrance and Morgan 2000). It was sent to the mill at Pu'unēnē to be ground, but, although production was high, it was not enough to cover the costs (*ibid.*).

After the annexation in 1898, some of the planters on Maui, including Alexander and Baldwin, had decided to combine plantations to reap maximum profit. They formed the Maui Agricultural Company, a co-partnership that initially encompassed seven plantations and two mills. In 1904, five new plantations became part of the Maui Agricultural Company, as Kula Plantation Company, Makawao Plantation Company, Pulehu Plantation Company, Kailua Plantation and Kaliaui Plantation Company were newly formed by carving up the unprofitable Kihei Plantation land (Dorrance and Morgan 2000). Maui Agricultural Company merged with HC&S in 1948 (Dorrance and Morgan 2000).

Land use in Wailuku and Waikapū Ahupua'a in the mid-19th and early 20th century was largely devoted to the sugar industry. During the 1860s, the sugar business was growing, with plantations and mills at Wailuku, Waihe'e, Waikapū, and Ha'iku. Many of the plantation camps associated with these mills were centered in the Pu'unene, Kahului, and Wailuku area (see Denham *et al.* 1992:16). Hopoi Camp is said to have been located near Hopoi Reservoir. Hopoi Reservoir was constructed by at least by 1922, when references to Hopoi Camp occurred on an area map. Historic utilization of the Waikapū-Wailuku landscape near the project area focused on industrial-levels of cultivating sugar cane and pineapple. Water was channeled from traditional sources (*e.g.*, Waikapū Stream, western aquifers or springs) through plantation lands. Both local and imported workers operated on these plantation lands and the area maintained fair population density. These former sugar cane and pineapple lands are now being reclaimed through residential developments and industrial baseyards.

THE MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) established laws changing the traditional Hawaiian economy to that of a market economy (Kame'eleihiwa 1992:169-70, 176; Kelly 1983:45, 1998:4; Daws 1962:111; Kuykendall 1938 Vol. I:145). The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the *maka'āinana* (commoners) were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, *'okipū* (on O'ahu), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame'eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

Once Article IV of the Board of Commissioners to Quiet Land Titles was passed in December 1845, the legal process of private land ownership was begun. The land division, called the Māhele, began in 1848. As stated above, the lands of the kingdom of Hawai'i were divided among the king (crown lands), the *ali'i* and *konoiki*, and the government.

Once lands were made available and private ownership was instituted, native Hawaiians, including the *maka'ainana* (commoners), were able to claim land plots upon which they had been cultivating and living. Oftentimes, foreigners were simply just given lands by the *ali'i*. However, in the case of commoners, they would only make claims only if they had first been made aware of the foreign procedures (*kuleana* lands, land commission awards). These claims could not include any previously cultivated or currently fallow land, *okipu*, stream fisheries, or many other natural resources necessary for traditional survival (Kame'eleihiwa 1992:295; Kirch and Sahlins 1992). Awarded parcels were labeled as Land Commission Awards (LCAs). If occupation could be established through the testimony of witnesses, the petitioners were issued a Royal Patent number and could then take possession of the property. Commoners claiming house lots in Honolulu, Hilo, and Lahaina were required to pay commutation to the government before obtaining a Royal Patent for their awards (Chinen 1961:16).

During the Māhele, Wailuku District was declared Crown Land and numerous Land Commission Awards, approximately 180, were awarded within Wailuku Ahupua'a while approximately 100 were awarded for Waikapū Ahupua'a (Creed 1993). A handful of foreigners (*i.e.*, Anthony Catalena, James Louzada, E. Bailey) gained control of large parcels of lands that would later be used for mass cultivation of sugar. Significantly, the majority of LCAs were awarded to Hawaiians, a gauge that can be used to measure pre-Contact settlement (Creed 1993:38). These keep with the overall LCA pattern of the Wailuku area intimating taro cultivation in association with permanent residences. Such a pattern is historically documented from 1848, but likely extended deeper into the past.

According to the Waihona 'Aina Database 2016), two LCAs were located west of and adjacent to Kahului Harbor. Land Commission Award 420, located at the western end of the harbor, currently within TMK: (2) 3-7-001, was awarded to Kuihelani, Kamehameha's steward who was placed in charge of lands on O'ahu when Kamehameha returned to Hawai'i Island in 1812 (Gast 1973:325). This was a large award encompassing 743.4 acres in the land of Owaa and included a stone house with a *pili* thatch roof (Native Register 146V2, Royal Patent 1996). Victoria Kamamalu received LCA 7713:23, which consisted of the *'ili* of Kalua in Wailuku. These lands extended from TMK: (2) 3-7-008:018 along the shore of Kahului Harbor to at least TMK: (2) 3-07-008:027, bordering Pu'unene Avenue (Native Register 440-444v5). The records do not reflect land use. No LCAs appear to have been in close proximity to the current project area.

Breakwater Construction and Maintenance

In 1900, the Kahului Railroad Company constructed the original Kahului Harbor, which consisted of a berthing area, a dredged channel, and 400-foot long east breakwater. Multiple repairs and expansion have been done to the harbor since initial construction. In 1913, the first breakwater improvements were completed by the Corps of Engineers along a 400-foot extension of the east breakwater. In 1919, the Corp of Engineers constructed the west breakwater, which encompassed a length of 1,950 feet. Extensions to the east and west breakwaters were completed in 1931, to lengths of 2,766 feet and 2,315 feet respectively. Between 1931 and 1954 routine maintenance and repair involved restoration of the breakwater, at a cost of c. \$1,000,000. In October 1943, damage occurred to the east breakwater as approximately 45 tons of rock were dislodged and fell into the inner harbor area. Approximately 250 tons of rock was used to repair this portion of the breakwater. The west breakwater was damaged on April 1, 1946 by a tsunami, but details of the damage are limited. Multiple repair events to the harbor and walls

occurred from January 1947 to 1966; damage mostly caused by natural storms and high surf events. In 1966, a major rehabilitation project was undertaken, which consisted of repairing both breakwater heads, with extensive use of large (35-ton) tribars to reinforce the breakwaters. Storms in 1967 and 1969 required additional re-building. Maintenance and repair work was ongoing to the harbor and its breakwaters through the late 1980s and beyond, due to failings and requiring reinforcement using large tribars and reinforced concrete.

PREVIOUS ARCHAEOLOGY

In terms of general projects in the Wailuku environs, the earliest archaeological endeavors on Maui were undertaken by Thrum (1909) and Walker (1931), under the auspices of the Bishop Museum. Their data allows for a deeper understanding of the traditional use of the Wailuku area. More recent archaeological studies conducted around the perimeters Kahului Bay have led to the identification of cultural deposits containing remnants of the old Kahului Railroad Bed (State Site 50-50-04-3112), historic refuse, as well as early pre-Contact artifacts, midden, and scattered human remains (McGerty and Spear 2001).

As of more recent time, eight archaeological studies were identified as being the closest in proximity to the project area. The studies reported the identification of either historic artifacts, pre-Contact cultural remains, or both. Much of the pre-Contact material was identified over a meter in depth, and some reported cultural remains were located under layers of fill brought into the area in use for modern construction activities. Cultural remnants were also identified beneath aeolian deposits and partially lithified dunes.

The following is a list of reports of the aforementioned archaeological studies. More detailed historic information as to the terrestrial portion of the harbor area itself may be found in Johnson and Dega (2006) and Hunt *et al.* (2006).

Four sites were identified during an inventory survey for the Nisei Veterans Memorial Center (Fredericksen *et al.*, 1997), located approximately 1.5 miles west of the current project area and across the harbor from the current project area. State Site 50-50-04-3112, a remnant of the old Kahului Railroad Bed which was built in the 1880s; State Site 50-50-04-3119A, an historic refuse area probably associated with railroad construction and usage and which dated from the late 19th and early 20th centuries; and State Site 50-50-04-3120, an extensive pre-Contact site. State Site 50-50-04-3119B was located in subsurface strata c. 1.00 to 1.50 mbs, below the historic refuse area, and consisted of pre-Contact artifacts and marine shell midden. A

charcoal sample yielded an extremely early radiocarbon date of 1790 \pm 70 RCYBP. Phase I excavation resulted in other radiocarbon dates ranging from 310 \pm 100 RCYBP (90 to 110 cmbd) to 520 \pm 70 RCYBP suggesting a continuous use of the area for at least 200 years. During the Phase II data recovery, human remains were identified in a number of trenches. Associated cultural deposits were dated from AD 1200 to AD 1470. Additional burials were recovered during Phase III testing. It was further noted that State Site 50-50-04-3120 was probably impacted in its southeastern part by at least two separate modern construction activities. It was noted that several of the backhoe test trenches were not excavated deep enough to reach the undisturbed pre-Contact cultural deposit, which was in excess of two meters in depth at some locations. In addition, cultural layers occurring beneath deep deposits of lithified dune sand were suggested to have been erroneously interpreted as being much older than they actually were.

Scientific Consultant Services (Burgett and Spear, 1999), Inc. conducted archaeological monitoring during construction work on 5.443 acres at the Puunene Container Yard facility at Kahului Harbor. The facility area, which contained existing infrastructure, has been developed with paving and fencing, which borders the project area. However, additional improvements were planned in three phases, all of which were subject to archaeological monitoring. Phase I consisted of excavations for construction of a bridge. Phase II consisted of excavations for installation of a reinforced concrete pavement. Phase III consisted of excavations for installation of an asphalt pavement. Construction occurred intermittently over a seven-month period. Although portions of the project area had been previously disturbed, a partially *in situ* historic burial (State Site 50-50-04-5773) was identified, as well as numerous traditional and historic artifacts. Both traditional and historic-period activities were documented for the area, even though disturbance was high.

In 2007, Xamanek Researches (Fredericksen 2007) conducted an archaeological assessment (*i.e.*, archaeological inventory survey investigation with negative findings) of the Kanaha Industrial Subdivision II, located in TMK: (2) 3-7-011:028, located approximately 0.5 miles south of the current project area.

In 2008, SCS (Perzinski and Dega, 2009) conducted archaeological monitoring for the Wailuku Force Main sewer replacement around Kahului Harbor. In total, four archaeological significant sites were encountered during the duration of the project. The sites include one previously disturbed human burial (State Site 50-50-04-6610) located to the east near Hoaloha Park, one historic trash dump (State Site 50-50-04-6611), one historic road bed (State Site 50-50-

04-6612), and a portion of the historic Wailuku Railroad (State Site 50-50-04-3112) located on the *mauka* side of Kahului Beach Road near the Maui Arts and Cultural Center.

In 2010, SCS (Perzinski and Dega, 2015) conducted an archaeological assessment of approximately 1700 feet of shoreline along Kahului Harbor in Wailuku District, Island of Maui, Hawai'i [TMK: (2) 3-7-001]. No historic properties were identified.

EXPECTED FINDINGS

Based on all of the above background information, including the character of the shoreline in its present condition, expected findings of this Archaeological Assessment were as follows:

- (1) There was a low likelihood of finding traditional Native Hawaiian burials due to historic disturbance (related to road construction and previous harbor improvements) and lack of the natural sand deposits within the project area; sands were not visible in any natural bank cuts available for observation during the assessment;
- (2) There was low likelihood of finding subsurface evidence of traditional Native Hawaiian activities, including: hearths (*imu*), midden deposits, and other occupation debris (*e.g.*, stone tool waste, fishing camps);
- (3) There was a moderate likelihood of finding historic debris of various kinds, especially as fill or past dumping; sites and features related to historic roads or railroads were also possible;
- (4) There was virtually no likelihood of finding significant surface features or sites, since the project area is located on a heavily travelled road with the shoulder being used by fishermen and beach combers.

METHODS

The archaeological inventory survey fieldwork was conducted between June 22, 2016 and July 20, 2016, by SCS archaeologist Ian Bassford, B.A., under the direct supervision of Michael F. Dega, Ph.D., Principal Investigator. Following the demarcation of the project area boundaries, a 100% pedestrian survey was conducted. It was noted that the project area has been subjected to grading and filling episodes during the historic and modern development of the harbor which was evident in the eroded banks along the shoreline.

FIELD METHODOLOGY

Multiple tasks were completed during this project which was conducted between June 22, 2016 and July 20, 2016, by SCS Ian Bassford, B.A, under the direct supervision of Michael F. Dega, Ph.D., Principal Investigator. On June 29, 2016, a total of five stratigraphic trenches were predetermined, in consultation with SHPD. Trenches were placed in areas that were in open, undeveloped portions of the project area. In addition, GPR was employed in an effort to locate any previously unknown underground utilities or subsurface anomalies in the five locations selected for trenching. All five areas were clear.

First, a systematic pedestrian survey of the entire project area was conducted by the SCS archaeologist in order to identify and document any and all pre-and post-Contact archaeological surface features, assesses the nature and extent of landscape modification, and allowed for assessing areas amenable for testing. Following pedestrian survey, five (5) stratigraphic trenches were mechanically excavated, via backhoe, to basal into sterile substrate or the water table, whichever was encountered first, on July 18 and 19, 2016. Excavations were conducted under the guidance of Celine, of Enviro Services Hawaii, who was present to control and monitor for any known ground contaminates. Excavation was strictly controlled to help isolate and prevent any cross contamination. Plastic sheeting was placed on the ground and all excavated materials were then placed into three distinct piles: 0 to 1 ft., 1 to 3 ft. deep, and from 3 ft. deep to the base of excavation (BOE). None of the excavated sediments were screened as there were no artifacts or cultural deposits encountered during excavation. Upon completion of excavation, all trenches were photographed and one wall of each excavation was stratigraphically profiled thereby documenting all of the soil layers which were present. Tasks conducted in addition to the fieldwork include archival research, mapping, providing Munsell descriptions of stratigraphic trench profiles, drafting plan view maps, as well as analysis, interpretation, and reporting of all relevant data.

While the trench results did slightly vary, it was determined that the entire parcel had been subjected to a filling episode. This fill layer varied over the project area between 40 cm to 130 cm below surface. The base layer identified in all of the trenches consisted of soft aeolian sand, which when excavated, produced extremely unstable trench side walls which were very prone to collapse. Due to safety concerns, no trenches were excavated to depths exceeding 2.8 m below surface. Ground water was encountered in Stratigraphic Trenches 1, 2, and 3. No historic properties or cultural deposits were identified during the AIS process.

LABORATORY METHODS

Laboratory work included digital drafting of plan view maps and stratigraphic profiles for publishing and archival storage; no cultural material was collected therefore lab analysis, and documentation was limited to that listed above, and no cultural material was available for radio carbon dating for this project. All field notes, maps, and photographs pertaining to this project are currently being curated at the SCS facilities in Honolulu.

Soil colors were recorded using Munsell color charts, soil composition was recorded with the aid of the U.S. Department of Agriculture Soil Survey Manual on standard soil stratigraphy forms, and profiles were drawn. Overview photographs of individual stratigraphic trench profiles and the project area were taken with a 3.2 mega-pixel digital camera.

EXCAVATION RESULTS

A total of five (5) stratigraphic trenches were mechanically excavated, via backhoe, excavated across the 9.83 acre project area. As stated elsewhere in this document, the stratigraphic trench locations were predetermined in consultation with SHPD. The stratigraphic trench locations were placed on a Google Earth Image (2016) for easier viewing (Figure 5).

STRATIGRAPHIC TRENCH DESCRIPTIONS

Five locations were selected for testing across the project area (ST-1 through ST-5) (see Figure 5), in consultation with SHPD. A description of each trench is presented below, including descriptions of the stratigraphic layers, to scale stratigraphic profile drawings, and photographs of the stratigraphy of each trench (Figure 6 through Figure 20).

The stratigraphic trenches ranged in length from 5.0 to 5.7 meters (m), from 1.0 to 3.0 m in width, with depths ranging from 1.3 to 2.8 m below surface. The base layer of each of the five stratigraphic trenches consisted of soft sand, which when excavated produced extremely unstable trench sidewalls. Trench excavations were terminated upon encountering the water table (ST-1 through 3) or due to the collapsing trench walls which posed safety concerns ST-4 and ST-5). While the trenching results varied slightly, it was determined that the entire parcel had been subjected to a fill episode, with the depths of the fill deposit varying from 40 to 130 cmbs across the project area. A summary of the stratigraphic trenching data are presented in Table 1.



Figure 5: Google Earth Image (2016; Imagery Date 1/12/2013) Showing Project Area and Stratigraphic Trench Locations.

Table 1: Stratigraphic Trench Data.

| STRATIGRAPHIC TRENCH (ST) | LENGTH (IN METERS) | WIDTH (IN METERS) | DEPTH (IN METERS) | STRATIGRAPHY | BEARING | GPS COORDINATES | CULTURAL MATERIAL |
|---------------------------|--------------------|-------------------|-------------------|--|----------------|----------------------|--|
| ST-1 | 5.1 | 1.0 | 1.3 | <p>Layer I (0-10 cmbs) very dark gray (10YR 3/1, dry) compact gravely silt, plastic. Abrupt, smooth lower boundary. Recent trash throughout Layer I. Interpreted as recent fill.</p> <p>Layer II (10-40 cmbs) light brownish gray (10YR 6/2, dry) compact sandy silt, with coral gravel throughout, non-plastic. Abrupt, smooth lower boundary. Interpreted as a disturbed natural deposit.</p> <p>Layer III (40-130 cmbs) very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Natural stratum. Layer terminated at water table.</p> | 80/260° (Mag) | 0764090E 2312605N | No traditional or historic cultural materials or deposits present in trench. |
| ST-2 | 5.4 | 1.0 | 1.5 | <p>Layer I (0-10 cmbs) very dark gray (10YR 3/1, dry) compact gravely silt, plastic. Abrupt, smooth lower boundary. Recent trash throughout Layer I. Interpreted as recent fill.</p> <p>Layer II (10-40 cmbs) light brownish gray (10YR 6/2, dry) compact sandy silt, with coral gravel throughout, non-plastic. Abrupt, smooth lower boundary. Interpreted as a disturbed natural deposit.</p> <p>Layer III (40-150 cmbs) very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Natural stratum. Layer terminated at water table.</p> | 80/260° (Mag) | 0764118E 2312615N | No traditional or historic cultural materials or deposits present in trench. |
| ST-3 | 5.0 | 1.0 | 1.8 | <p>Layer I (0-10 cmbs) very dark gray (10YR 3/1, dry) compact gravely silt, plastic. Abrupt, smooth lower boundary. Recent trash throughout Layer I. Interpreted as recent fill.</p> <p>Layer II (10-60 cmbs) light brownish gray (10YR 6/2, dry) compact sandy silt, with coral gravel throughout, non-plastic. Abrupt, smooth lower boundary. Interpreted as a disturbed natural deposit.</p> <p>Layer III (60-180 cmbs) very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Natural stratum. Layer terminated at water table.</p> | 100/289° (Mag) | 0764023E 2312631N | No traditional or historic cultural materials or deposits present in trench. |
| ST-4 | 5.2 | 1.0 | 1.9 | <p>Layer I (0-12cmbs) very dark gray (10YR 3/1, dry) compact gravely silt, plastic. Abrupt, smooth lower boundary. Recent trash throughout Layer I. Interpreted as recent fill.</p> <p>Layer II (12-60 cmbs) dark brown (10YR 3/3, dry) Abrupt, smooth lower boundary. Recent trash throughout Layer II. Interpreted as a disturbed natural deposit.</p> <p>Layer III (0-190 cmbs) light yellowish brown (10YR 6/4, moist) non-plastic loose, well-sorted sand. Natural stratum.</p> | 345/165° (Mag) | 0764068E 2312669N | No traditional or historic cultural materials or deposits present in trench. |

| STRATIGRAPHIC TRENCH (ST) | LENGTH (IN METERS) | WIDTH (IN METERS) | DEPTH (IN METERS) | STRATIGRAPHY | BEARING | GPS COORDINATES | CULTURAL MATERIAL |
|---------------------------|--------------------|-------------------|-------------------|---|------------------|----------------------|--|
| ST-5 | 5.7 | 3.0 | 2.8 | <p>Layer I (0-22/40 cmbs) dark brown (10YR3/3, dry) loose silt, semi-plastic. Recent trash throughout Layer I. Very abrupt, wavy lower boundary. Interpreted as recent fill.</p> <p>Layer II (22/40- 130 cmbs) yellow (10YR 7/6, dry) loose, well-sorted sand, non-plastic. Abrupt, smooth lower boundary. Interpreted as a fill deposit.</p> <p>Layer III 130-140/180 cmbs) dark yellowish brown 10YR 4/4, dry) loose structure-less sand mottled with black (10YR 2/1, dry) loose structure-less sand. Abrupt, irregular lower boundary. Interpreted as a fill deposit.</p> <p>Layer IV (140- 280 cmbs) yellow (10YR 7/6, dry) loose, well-sorted sand with coral pebbles and cobbles. Disturbed natural stratum.</p> | 40/220° (Mag) | 0764033E 2312722N | No traditional or historic cultural materials or deposits present in trench. |

Stratigraphic Trench 1 (ST-1)

Stratigraphic Trench 1 (ST-1) measured 5.1 by 1.0 by 1.3 m and was oriented along an east/ west axis (80/260° magnetic north; Figure 6; see Figure 5). The trench was excavated to a maximum depth of 130 cmbs and exposed three stratigraphic layers (Figures 7 and 8). Layer I (0-10 cmbs) was a very dark gray (10YR 3/1, dry) compact gravely, plastic silt. Trash was present throughout layer I. Layer I exhibited an abrupt, smooth lower boundary and was interpreted as recent fill. Layer II (10-40 cmbs) was a light brownish gray (10YR 6/2, dry) compact sandy non-plastic silt, with coral gravel throughout. Layer II exhibited an abrupt, smooth lower boundary and was interpreted as a disturbed natural deposit. Layer III (40-130 cmbs) was comprised of very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Layer III was interpreted as a natural stratum and was terminated at the water table. No traditional or historic cultural materials or deposits were present in ST-1.

Stratigraphic Trench 2 (ST-2)

Stratigraphic Trench 2 (ST-2) measured 5.4 by 1.0 by 1.5 m and was oriented along an east/ west axis (80/260° magnetic north; Figure 9; see Figure 5). The trench was excavated to a maximum depth of 150 cmbs and exposed three stratigraphic layers (Figures 10 and 11). Layer I (0-10 cmbs) was a very dark gray (10YR 3/1, dry) compact gravely, plastic silt. Trash was present throughout layer I. Layer I exhibited an abrupt, smooth lower boundary and was interpreted as recent fill. Layer II (10-40 cmbs) was a light brownish gray (10YR 6/2, dry) compact sandy non-plastic silt, with coral gravel throughout. Layer II exhibited an abrupt, smooth lower boundary and was interpreted as a disturbed natural deposit. Layer III (40-150 cmbs) was comprised of very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Layer III was interpreted as a natural stratum and was terminated at the water table. No traditional or historic cultural materials or deposits were present in ST-2.

Stratigraphic Trench 3 (ST-3)

Stratigraphic Trench 3 (ST-3) measured 5.0 by 1.0 by 1.8 m and was oriented along a northwest/southeast axis (100/280° magnetic north; Figure 12; see Figure 5). The trench was excavated to a maximum depth of 180 cmbs and exposed three stratigraphic layers (Figures 13 and 14). Layer I (0-10 cmbs) was a very dark gray (10YR 3/1, dry) compact gravely, plastic silt. Trash was present throughout layer I. Layer I exhibited an abrupt, smooth lower boundary and was interpreted as recent fill. Layer II (10-60 cmbs) was a light brownish gray (10YR 6/2, dry) compact sandy non-plastic silt, with coral gravel throughout. Layer II exhibited an abrupt, smooth lower boundary and was interpreted as a disturbed natural deposit. Layer III (60-180



Figure 6: Photographic Overview of Stratigraphic Trench 1. View to North.

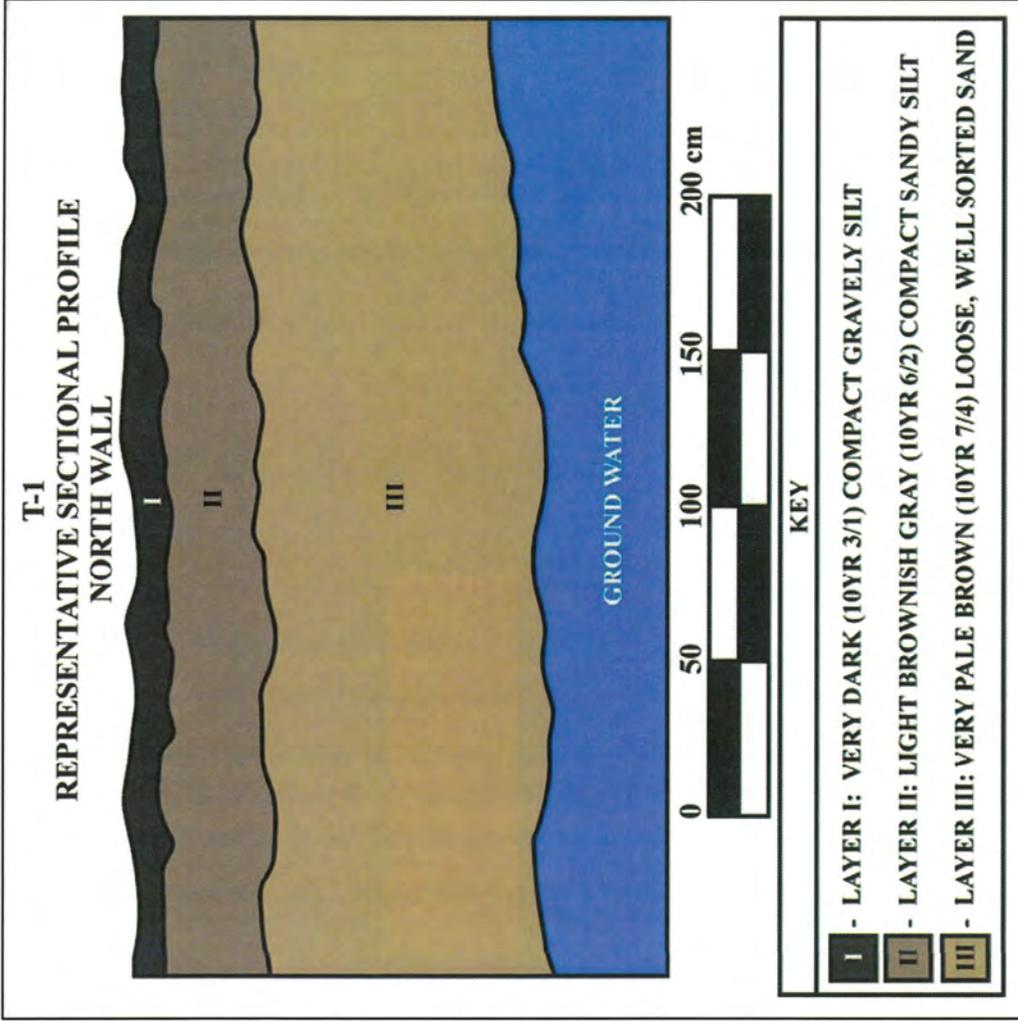


Figure 7: Profile Drawing of Stratigraphic Trench 1, North Wall.



Figure 8: Photograph of Stratigraphic Trench 1 North Wall Profile. View to North.



Figure 9: Photographic Overview of Stratigraphic Trench 2. View to West.

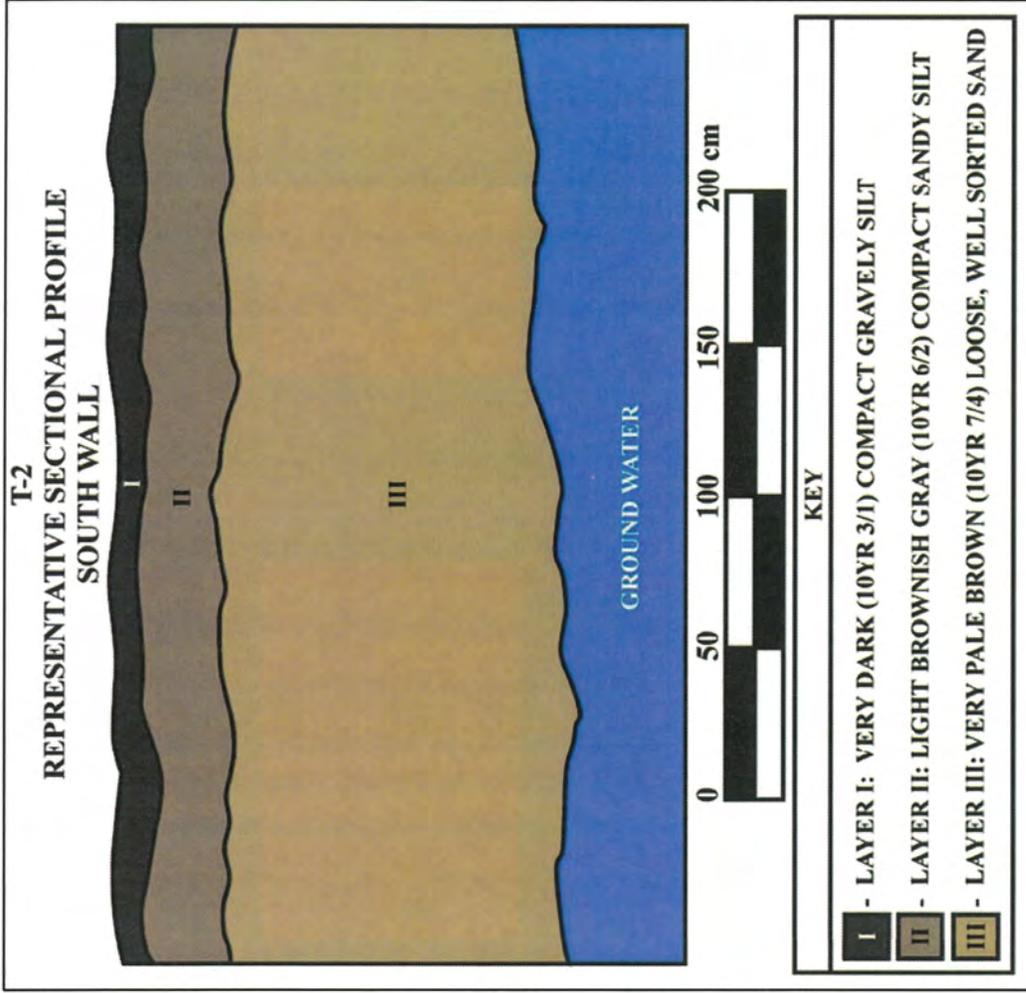


Figure 10: Profile Drawing of Stratigraphic Trench 2, South Wall.



Figure 11: Photograph of Stratigraphic Trench 2 South Wall Profile. View to South.



Figure 12: Photographic Overview of Stratigraphic Trench 3. View to East.

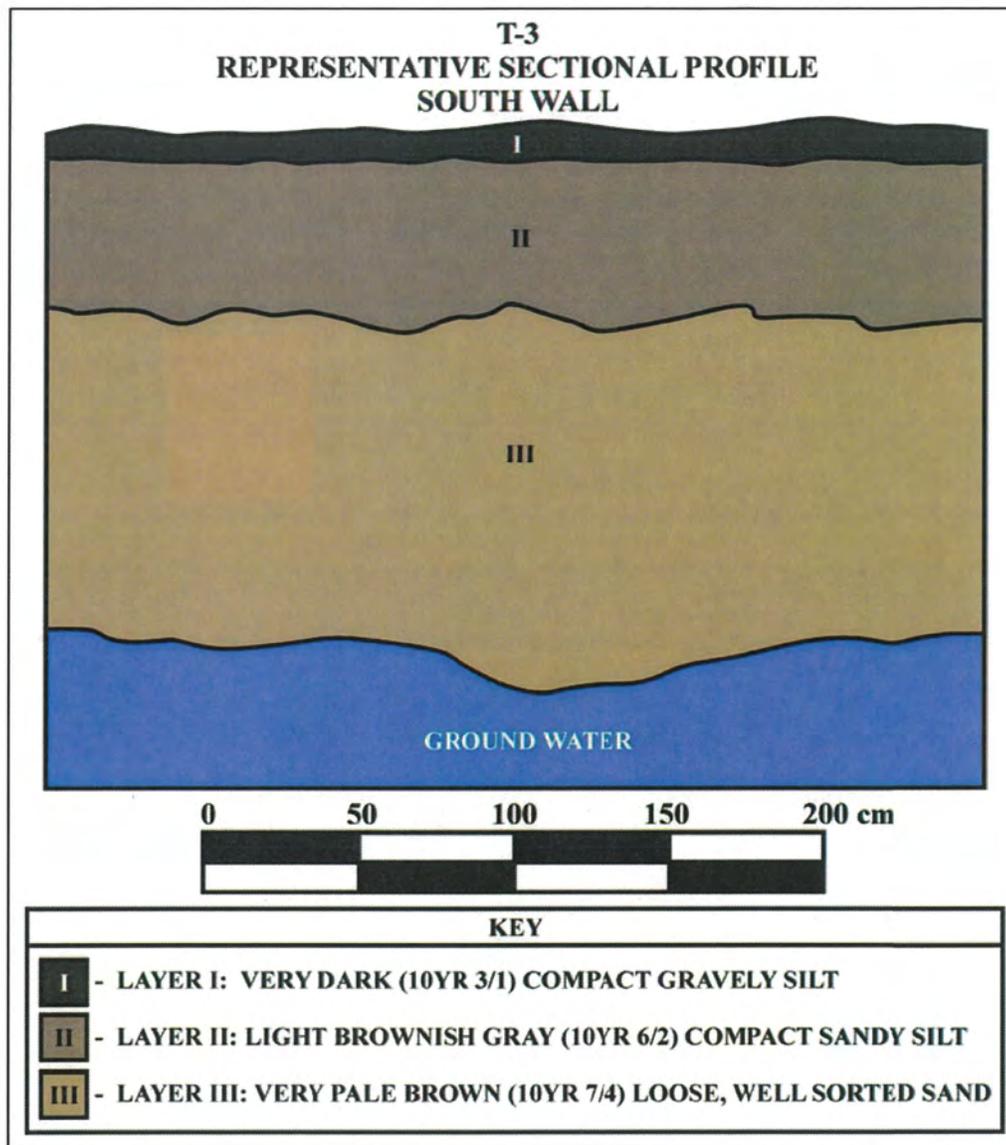


Figure 13: Profile Drawing of Stratigraphic Trench 3, South Wall.



Figure 14: Photograph of Stratigraphic Trench 3 South Wall Profile. View to South.

cmbs) was comprised of very pale brown (10YR 7/4, moist) non-plastic, loose, well-sorted sand. Layer III was interpreted as a natural stratum and was terminated at the water table. No traditional or historic cultural materials or deposits were present in ST-3.

Stratigraphic Trench 4 (ST-4)

Stratigraphic Trench 4(ST-4) measured 5.2 by 1.0 by 1.9 m and was oriented along a north/south axis (100/280° magnetic north; Figure 15; see Figure 5). The trench was excavated to a maximum depth of 190 cmbs and exposed three stratigraphic layers (Figures 16 and 17). Layer I (0-12cmbs) consisted of very dark gray (10YR 3/1, dry) compact gravelly, plastic silt. Layer I exhibited an abrupt, smooth lower boundary. Recent trash was present throughout Layer I. Layer I was interpreted as recent fill. Layer II (12-60 cmbs) was comprised of dark brown (10YR 3/3, dry). Recent trash was also present throughout Layer II. Layer II exhibited an abrupt, smooth lower boundary and was interpreted as a disturbed natural deposit. Layer III (0-190 cmbs) light yellowish brown (10YR 6/4, moist) non-plastic loose, well-sorted sand and was interpreted as a natural stratum. No traditional or historic cultural materials or deposits were present in ST-4.

Stratigraphic Trench 5 (ST-5)

Stratigraphic Trench 5(ST-5) measured 5.7 by 3.0 by 2.8 m and was oriented along a northeast/southwest axis (40/220° magnetic north; Figure 18; see Figure 5). The trench was excavated to a maximum depth of 280 cmbs and exposed four stratigraphic layers (Figures 19 and 20). Layer I (0-22/40 cmbs) was a dark brown (10YR3/3, dry) loose, semi-plastic silt. Recent trash throughout Layer I. Layer I exhibited a very abrupt, wavy lower boundary and was interpreted as recent fill. Layer II (22/40- 130 cmbs) consisted of a yellow (10YR 7/6, dry) loose, well-sorted sand, non-plastic. Layer II exhibited an abrupt, smooth lower boundary and was interpreted as a fill deposit. Layer III (130-140/180 cmbs) was comprised of dark yellowish brown 10YR 4/4, dry) loose structure-less sand mottled with black (10YR 2/1, dry loose structure-less sand. Layer III exhibited an abrupt, irregular lower boundary and was interpreted as a fill deposit. Layer IV (140- 280 cmbs) consisted of yellow (10YR 7/6, dry) loose, well-sorted sand with coral pebbles and cobbles and was interpreted as a disturbed natural stratum. No traditional or historic cultural materials or deposits were present in ST-5.

DISCUSSION AND RECOMMENDATIONS

During the pre-Contact Period, Wailuku District was a political center, rivaling the District of Hāna, and supported a substantial pre-Contact population, partially due to the abundance of water in the area. Wailuku District ranks as one of the two the major population



Figure 15: Photographic Overview of Stratigraphic Trench 4. View to South.

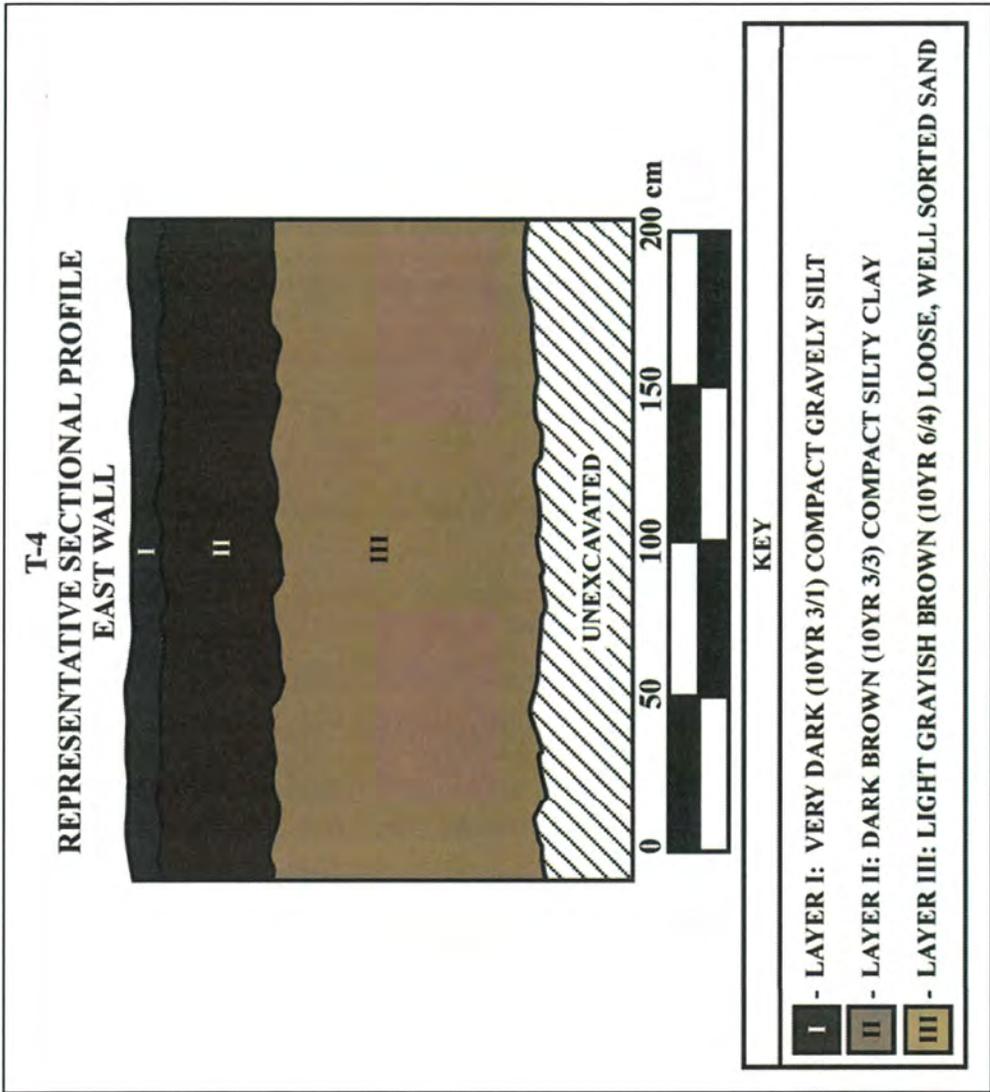


Figure 16: Profile Drawing of Stratigraphic Trench 4, East Wall.



Figure 17: Photograph of Stratigraphic Trench 4 East Wall Profile. View to East.



Figure 18: Photographic Overview of Stratigraphic Trench 5. View to East.

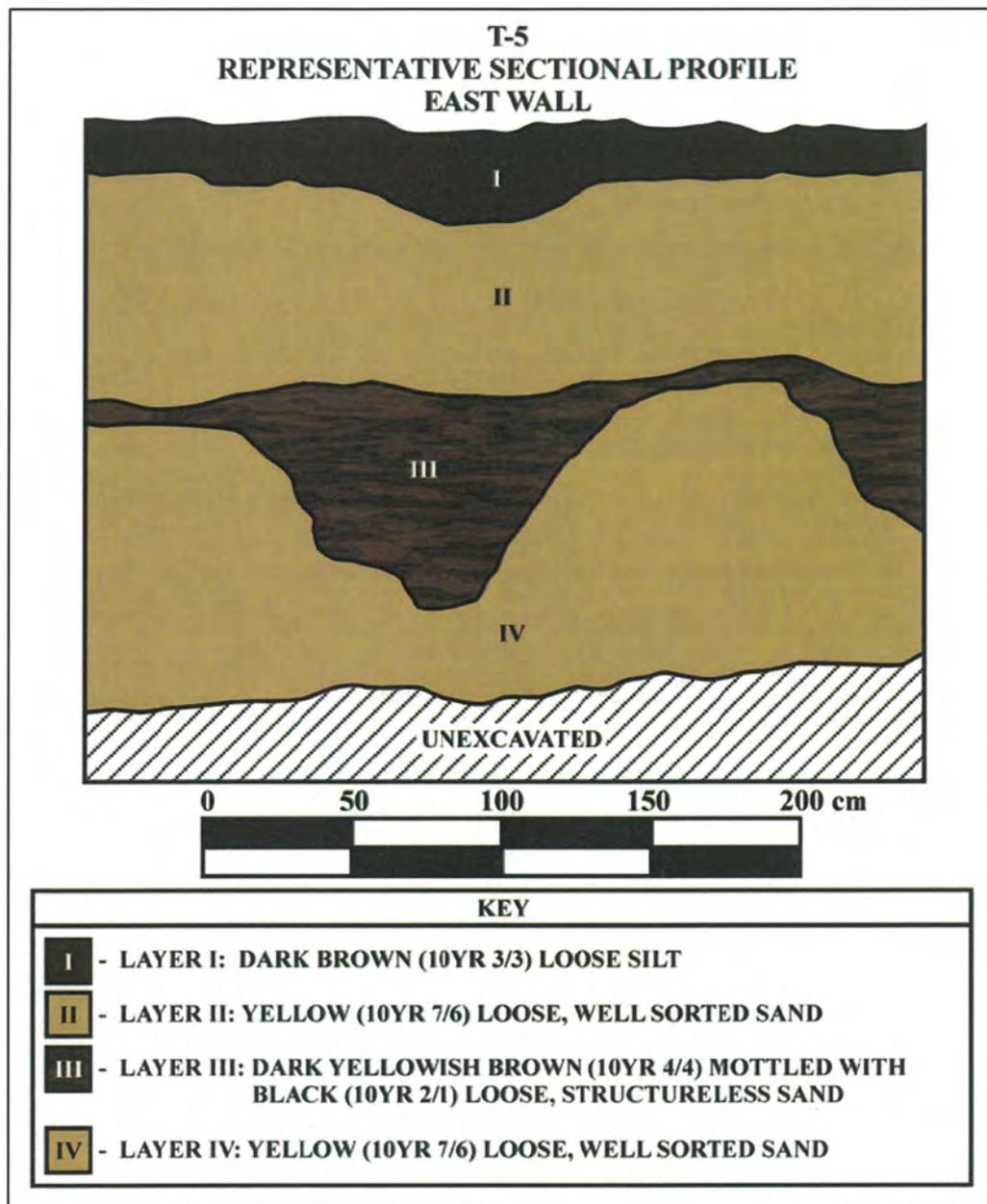


Figure 19: Profile Drawing of Stratigraphic Trench 5, East Wall.



Figure 20: Photograph of Stratigraphic Trench 5 East Wall Profile. View to East.

concentrations on Maui (Cordy 1981:198-199), with the Lāhainā District being the other major population center. Archaeological evidence of the cultural significance of the area includes numerous *heiau*, agricultural, and burial sites which have been documented throughout the region.

Previous archaeological work, also, reflects post-Contact disturbances, such as sugar cane cultivation and modern infrastructural development, including the Kahului Harbor, have impacted the archaeological record. The stratigraphy recorded during the current project documents indicates extensive subsurface disturbance throughout the study area. Such subterranean impacts are congruent with the construction of the Kahului Harbor and subsequent improvements in the area.

Although previous archaeology has documented historic properties, in the form human burials and cultural deposits, in the vicinity of Kahului Harbor, no archaeological features or deposits were identified either on the ground surface or in subsurface contexts during the current archaeological inventory survey. The absence of sites on the surface is attributed to ground disturbance associated with the previous and on-going construction activities at the Kahului Harbor. Based on the negative findings of the current archaeological inventory survey, which included subsurface testing, no additional archaeological work is recommended for the current project.

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APPENDIX F
Cultural Impact Assessment

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— *Final* —

**Cultural Impact Assessment
for the Kahului Harbor Acquisition, Kahului,
Wailuku Ahupua‘a, Maui, Hawai‘i**

Tax Map Key (2) 3-7-011:017 and 3-7-011:023



Prepared for:

EKNA Services, Inc.
615 Piikoi Street # 300
Honolulu, HI 96814

*INTERNATIONAL ARCHAEOLOGICAL RESEARCH INSTITUTE, INC.
JULY 2014*

—Final—
**CULTURAL IMPACT ASSESSMENT
FOR THE KAHULUI HARBOR ACQUISITION,
KAHULUI, WAILUKU AHUPUA‘A,
MAUI, HAWAI‘I
Tax Map Key (2) 3-7-011:017 and 3-7-011:023**

by

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International Archaeological Research Institute, Inc.

July 2014

Cover

Photo 1. Hale Nanea Meeting House for Royal Order
(All photos were taken by author unless otherwise specified)

EXECUTIVE SUMMARY

This Cultural Impact Assessment (CIA) is in response to a request from International Archaeological Research Institute, Inc. (IARII) for the Kahului Harbor Acquisition, Kahului, Wailuku Ahupua'a, Maui; TMKs (2)3-7-011:017 and 023. This CIA is part of an Environmental Assessment (EA) completed by EKNA Services, Inc., in compliance with federal and state requirements to identify and evaluate possible cultural impacts to cultural resources, cultural practices and access to resources and/or practices in advance of the acquisition of two parcels of land adjoining Kahului Harbor.

According to the final Development Plan (SSFM 2012:41), three possible parcels for acquisition were reviewed, all in proximity to each other and approximately 10 acres in size. They were compared for cost, constraints, and flexibility of use. Parcel B, consisting of Parcel B-1 (TMK [2]3-7-011:017, 9,994 acres) and Parcel B-2 (TMK [2]3-7-011:023, 2,233 square feet), was found to be most advantageous. The State of Hawai'i Department of Transportation Harbors Division intends to utilize State funds to purchase the two privately owned Alexander and Baldwin, Inc., parcels and the improvements thereon. Both parcels are located adjacent to and east of Pier 1, Kahului Commercial Harbor, between Hobron Avenue and Amala Place.

This CIA is in accordance with the State of Hawai'i Environmental Council *Guidelines for Assessing Cultural Impacts* (1997) and in compliance with Act 50 SLH 2000 (HB 28 H.D.1) as it amends the State of Hawai'i Environmental Impact Statement law (Chapter 343, HRS) to include "effects on the cultural practices of the community and State. [It] also amends the definition of 'significant effect' to include adverse effects on cultural practices." The *level of effort* for this CIA included ethnographic research (six oral history interviews) and analysis, a review of relevant historical and cultural literature and a CIA report.

There are several properties of cultural/historical value on the parcels that were identified in previous studies. One of these properties is the Hale Nanea meeting house that is used by the Chapter V Royal Order of Kamehameha, as well as by various community ethnic groups and the general public. It has been on a month-to-month lease. The ethnographic consultants expressed their sentimental and cultural value of the meeting house. However, efforts to contact an official spokesperson from the Royal Order were not successful. Members of three canoe clubs in the vicinity were interviewed; they expressed concerns regarding the canoe paddling water path fronting the project area on the north. It is part of the training, practicing and racing pathway. The dirt road on the eastern border of the project parcel is used as an access for fishermen, *limu* (seaweed) gatherers, and other beach goers and also serves as access to the meeting house and other current businesses in Parcels B-1 and B-2.

Recommendations include forming a small cultural advisory group to help with transition plans for cultural users of Hale Nanea meeting house, beach and offshore resources regarding future access and use of the area. The harbor expansion plans for the parcels will include removal of existing structures, which would include Hale Nanea and its traditional *imu* or underground ovens. Depending on consultation with the Royal Order, cultural mitigation could include the relocation of Hale Nanea meeting house and *imu* to Hoaloha Park. Since the dirt road is not part of the acquisition, access should remain available to fishermen and gatherers. Additionally, since there currently have not been any restrictions for canoe paddlers accessing the water fronting (north) Pier 1, there should not be any foreseeable restrictions of the canoe water path north of the project area in the future.

ACKNOWLEDGEMENTS

Without the ethnographic consultants this Cultural Impact Assessment could not have been done, therefore **Mahalo Nui Loa** goes out to them: Ms. Mary Akiona, Ms. Diane Ho, Ms. Karen Chun, Mr. Cliff Libed, Mr. Paul Kauhane Lu'uwai and Ms. Mary "Maizie" Cameron Sanford.

Very special mahalo to Maizie for sharing the history of her impressive family in several sessions and for the articles, photos, and books.

Mahalo to Mr. Foster Ampong for showing me around the project area - sorry we could not finish the interview; and mahalo to transcriber Se Ah Kee and tech advisor Jessica Orr.

MAHALO NUI LOA!

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INTRODUCTION

This report is in response to a request from International Archaeological Research Institute, Inc. (IARI) for the following service: Cultural Impact Assessment (CIA) for Kahului Harbor Acquisition, Kahului, Maui; TMKs (2)3-7-011:017 and 023. This CIA is part of an Environmental Assessment (EA) prepared by EKNA Services, Inc. The project area is identified in the CIA as Parcel B, sub-divided into Parcel B-1 (TMK [2]3-7-011-017) and Parcel B-2 (TMK [2]3-7-011-023).

This CIA is in compliance with Act 50 SLH 2000 (HB 28 H.D.1) (Appendix A) as it amends the State of Hawai'i Environmental Impact Statement law (Chapter 343, HRS) to include "effects on the cultural practices of the community and State. [It] also amends the definition of 'significant effect' to include adverse effects on cultural practices." The purpose of a CIA is to gather information about traditional cultural practices, ethnic cultural practices and prehistoric and historic cultural resources that may be affected by the implementation of a development project or undertaking in accordance with the State of Hawai'i Environmental Council *Guidelines for Assessing Cultural Impacts* (Adopted on November 19, 1997) (Appendix B). The level of effort for this CIA included ethnographic research (six oral histories) of people who are connected to these lands in various ways and an archival cultural/historical background review of the literature (including Internet research).

This report is organized into five chapters. Chapter 1 describes the project area in terms of location, in the context of *ahupua'a*, district and island, as well as a generalized description of the natural environment (e.g., geology, flora and fauna) and built environment (e.g., any current features). Chapter 2 explains the methods and constraints of this study. Chapter 3 summarizes a review of the historical and traditional (cultural) literature in the context of the general history of Hawai'i, the island of Maui, the traditional district or *moku* of Wailuku and local history of the *ahupua'a* (traditional sub-district land division) of Kahului. Chapter 4 presents the ethnographic analysis based on the supporting raw data (oral history transcripts) as it pertains to land, water and cultural resources and use in the project area and vicinity. It also includes background data of the ethnographic consultants. Chapter 5 summarizes the findings of this cultural impact study based on supporting data from Chapters 1 through 4 and presents a summary of finding, cultural impact assessment and recommendations.

Scope of Work

The CIA scope-of-work (SOW) (Appendix C) was based on the Environmental Council *Guidelines for Assessing Cultural Impacts* (1997) and focuses on three cultural resource areas (traditional, historical and ethnographic), conducted on two levels: archival research (literature/document review) and ethnographic data (oral histories):

- 1) conduct historical and other culturally related documentary research;
- 2) identify individuals with knowledge of the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or *ahupua'a*; or with knowledge of the area potentially affected by the proposed action [e.g., past/current oral histories];
- 3) identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and
- 4) assess the impact of the proposed action on the cultural resources, practices and beliefs identified.

Traditional resources research entailed a review of Hawaiian *mo'olelo* (stories, legends or oral histories) of late nineteenth and early twentieth century ethnographic works. Historic research focused on previous reports. Ethnographic research focused on current interviews with knowledgeable individuals.

Basis for Generating CIA Studies

The project was generated because the Department of Transportation, Harbors Division (DOT-Harbor) is proposing to expand Kahului Harbor by purchasing two parcels on the eastern border of the harbor. The map below (Figure 1) indicates the area to be purchased (outlined in red and marked “B”), which consists of two sub-parcels (Parcel B-1, TMK [2]3-7-011-017 and Parcel B-2, TMK [2]3-7-011-023).



Figure 1. Kahului Harbor Acquisition – Parcel B (EKNA 2013).

Project Location

The project is located on the island of Maui, in the *moku* or district of Wailuku in the *'ili kupono* (an *'ili* that is independent of any *ahupua'a*) of Wailuku (Alexander 1855) - now Wailuku Ahupua'a, in Kahului on the northeastern coastal area of Kahului Bay. A large portion of the *moku* of Wailuku comprises the isthmus between two shield volcanoes - Pu'u Kukui and Pu'u Haleakalā.

The island of Maui is 77 kilometers long and 42 kilometers wide, 1,902 square kilometers. The highest points on the island are Mt. Haleakalā (Red Hill) at 3,055 meters (m) or 10,023 feet above sea level and Pu'u Kukui of Mauna Kahalawai or the West Maui mountains at 1,764 m or 5,788 feet above sea level (Macdonald et al 1983:3; Juvik & Juvik 1998:308). The older volcano Mauna Kahalawai/Pu'u Kukui dates to 1.3 million years ago and the younger volcano Haleakalā or East Maui dates to approximately .75 million years ago (Clague in Juvik & Juvik 1998:43-44).

Additional descriptions below from the website of the School of Ocean and Earth Science Technology (SOEST 2013):

Maui has 193 km of general coastline that wrap the two main shields and the isthmus. The isthmus was created during the shield building stage of Haleakalā as lava flowed into West Maui and, is bounded by two embayments, one to the north [Kahului], and one to the south. Although the West Maui Volcano is extinct, Haleakalā is merely dormant having had its most recent rejuvenated eruption just over 200 years ago.... The central north side of the isthmus, at Kahului and Wailuku, has been developed as a hub of industrial activity and the coast is primarily a commercial deep-draft harbor and heavily constructed shoreline. Development extends for 4 km northeast along the low sloping lands of the West Maui Volcano. The narrow shoreline is largely backed by seawalls, residential neighborhoods, and in the case of Waihe'e and Waiehu Beach Parks, a golf course.

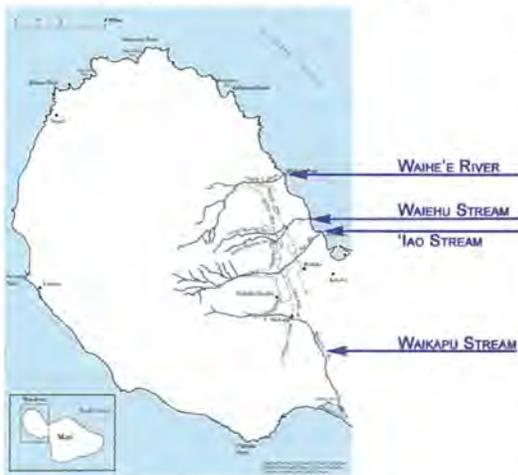
The *moku* or district of Wailuku (Figure 2) includes the *ahupua'a* from Wailuku to Waihe'e in the northwest as described by Fish & Wildlife Service (FWS-MNWRC 2012:6-2) below.



The Wailuku *moku* covers the entire isthmus between East and West Maui. This area was also referred to as Na Wai 'Eha, meaning "the four waters," and is named after the four major streams (Waikapū, Wailuku ['Īao], Waiehu, and Waihe'e) flowing in the windward portion of West Maui. Wailuku and its coastal environs are thought to have been initially settled around 1100-1200 CE.

Figure 2. *Moku* map of Maui (UTC 2011); arrow indicates project area.

Figure 3 illustrates where the famous Wailuku *moku* streams are located and Fischer (2013a) gives a cultural perspective in the following:



A thousand years ago, Hawaiians gathered at 'Īao Valley to celebrate and honor the bounty of Lono, god of agriculture, during the annual makahiki festival. More than a hundred years ago visitors began coming to witness the natural beauty of this valley. Today 'Īao Valley is recognized as a very special place for both its spiritual value and spectacular scenery.... 'Īao means 'cloud supreme' - the bank of clouds that often sits over the valley. These clouds bring the frequent rains that feed the streams in the valley. It is these waters that carved this spectacular landscape over the past 1.5 million years. The Hawaiian god Kane is the procreator and the provider of the life giving elements. He is the patron of *wai* (fresh water) and is often associated with clouds, rain, streams and springs. From the highest peak of Pu'u Kukui to the shoreline of Kahului Bay, the *ahupua'a* (land division) of Wailuku was a favorite place of *ali'i* (chiefs) and a ruling center of Maui. 'Īao Valley is part of this *ahupua'a* (Fischer 2013a).

Figure 3. Map of Na Wai 'Eha/Wailuku streams (EarthJustice 2013).

A former resident and now cultural practitioner from the Hawaiian Canoe Club (HCC) shared his memories of Kahului Harbor and the fresh water in the harbor (Parsons 2007):

Iokepa Naeole spoke of his own childhood growing up and around Kahului Harbor, and of his Hawaiian Outdoor Education (HOE) program-a hands-on program that teaches 16 children how to paddle, surf and fish. Naeole once told me that when 'Īao Stream ran to the sea without any diversions or concrete waterways, Kahului Harbor was fed by the fresh water of underground springs. His father said it was possible for a person to dive to the bottom, open his mouth and drink the upwelling fresh water.

Wailuku District is frequently mentioned in historical texts and oral tradition as being politically, ceremonially, and geographically important during traditional times (Cordy 1981, 1996; Kirch 1985). Wailuku was considered a "chiefly center" (Sterling 1998:90) with many of the chiefs and much of the area's population residing near or within portions of 'Īao Valley and lower Wailuku. The importance of the Wailuku district is reflected by the relatively large number of *heiau* (temple sites) that were reportedly present in Pre-Contact times. Oral traditions about these *heiau* provide examples of how religion tied into political power in the traditional Wailuku setting (FWS-MNWRC 2012: 6-1).

The project is in Kahului, the northern section of Wailuku *moku* between Kahului Bay/Harbor and Kanahā Ponds. Kahului has a total area of 16.3 square miles (42 km²), of which, 15.2 square miles (39 km²) of it is land and 1.2 square miles (3.1 km²) of it is water. The total area is 7.16% water. Kahului is in the Tropical wet and dry climate zone (Köppen classification *As*) with a dry summer season. Kahului is also one of the windiest places in the U.S. with an annual average wind speed of 13.7 miles per hour (mph) (Wiki-Kahului 2013). Kahului town was marginal compared to Wailuku town, and comprised of scattered fishing settlements (Frampton & Ward 2011:13) until modern residential and business zones were created in the 1950s.

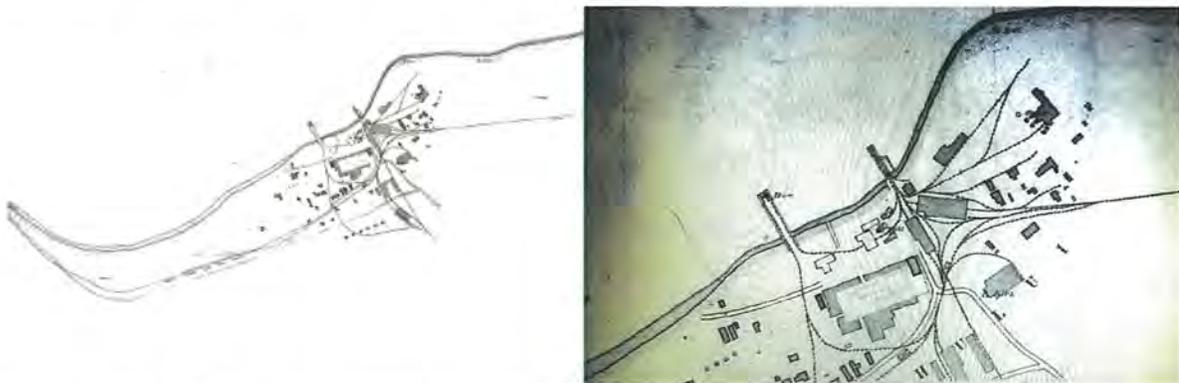
The following descriptions of Kahului bay and harbor are from the 2030 Master Plan report done by Cardno Tec (2009: IV-1, 2, 5):

The bay is bordered to the south and east by Maui's principal towns of Kahului and Wailuku. 'Īao Stream has meandered throughout the Kahului Harbor area in the recent geological past, cutting through ancient reefs and backfilling the stream valley with basalt sands, gravels, cobbles, and boulders. The shoreline bottom area consists of a fringing coralline platform made up of calcareous sediments varying in degrees of lithification from loose to well-cemented.

Kahului Harbor is a manmade port, dredged from naturally formed Kahului Bay. The harbor basin was constructed to be 2,050 feet wide by 2,400 feet long and has a project depth of 35 feet. The entrance channel is 660 feet wide and 40 feet deep.

Early development at Kahului Bay was swift and unorganized. In 1863, the first western building, a warehouse near the beach, was erected. This provided the impetus for the establishment of a small settlement near the harbor as sugar made its commercial debut and proved to be an economically viable crop. In 1879, to facilitate the loading and unloading of goods and passengers, the first small landing was constructed in Kahului Bay. By the turn of the 19th century, Kahului supported a new customhouse, a saloon, a Chinese restaurant, and a small but growing population. However, further development was temporarily curtailed when the Bubonic Plague infected Kahului in 1900 and the town was deliberately burned to the ground to destroy disease-infected rats. The rebuilding of Kahului town coincided with the evolution of Kahului Bay into a full-scale commercial harbor.

Kahului Harbor and associated town/city was established circa the 1850s when Samuel Alexander and Henry Baldwin started their successful sugar and pineapple ventures. Kahului was called Maui's "Dream City" because the plantations offered so many jobs (WPS 2013). Figures 4 to 7 below from the School of Ocean and Earth Sciences and Technology (SOEST 2002) depict its development through time.



Figures 4 and 5. USGS 1899 Map #2463/Flynn – [portion] Kahului Harbor with railroad and docks, but no breakwaters (adapted from SOEST 2002).



Figure 6. 1912 DCL Coast & Geodetic Survey Map #3271/Gauger [portion] Kahului Harbor with east breakwater, dock; algaroba trees, south (adapted from SOEST 2002).

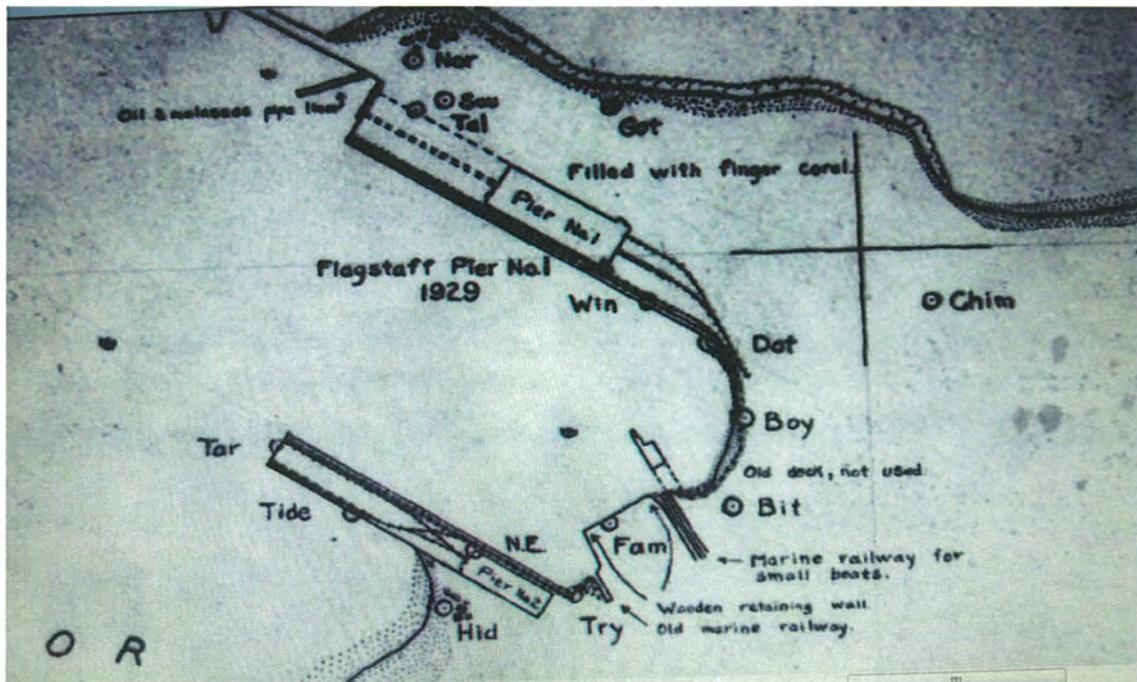


Figure 7. 1929 USGS Map #4465/Boothe [portion] – Kahului Harbor features and filled area (SOEST 2002).

Part of the impetus for the early development of the Kahului area was the growing needs of the sugar industry as noted on the Post Office in Paradise (POP 2001) website below:

Following adoption of a Reciprocity Treaty with the United States in 1876, Hawaii's emerging sugar industry boomed. On Maui, several significant plantations were located in the isthmus neighborhoods surrounding Wailuku, Ha'ikū, Makawao and Pā'ia. Getting sugar to the port at Kahului was sometimes difficult. The remedy was to construct a railroad connecting the port to the major plantations. Thomas Hobron succeeded with a narrow gauge railroad. The first train ran on July 17, 1879.

In 1881, the railroad was given the name of the Kahului Railroad Company. Service was extended eastward to Pā'ia by 1884 and included the Spreckelsville Plantation. The Kahului Railroad continued to operate through the balance of the 19th Century and well into the 20th Century. Hobron, who also was postmaster of Kahului, allowed mail to be sent free over the railroad. Later, in 1884, a subsidy of \$25 per month was paid for hauling mail. Mail carried on the railroad was in closed bags for delivery to postmasters along the route.

Before long the Kahului Railroad Company (KRR) and the Harbor also had to expand to meet the needs of industry as well as the growing population (Figure 8) as reported by Cardno Tec (2009:IV-5).

With the success of the sugar industry came the development of rail systems for transporting cane from fields to the harbor. Passenger cars were added to the rail system and in 1879 Thomas Hobron founded the Kahului Railroad Company (KRR), the first railroad in Hawaii that provided passenger service between the population centers at Wailuku and Kahului Harbor. The Kahului station was located southeast of the harbor at Hobron Point and tracks extended through Spreckleville as well as to the sugar mill at Pu'unēnē.

In 1901, KRR purchased its first tugboat, the *Leslie Baldwin*, to tow lighters to and from vessels. Harbor development was initiated three-years later by KRR, which was at the time a subsidiary of Hawaiian Commercial and Sugar Company (HCSC). Although Kahului Harbor has been the island's sole port of entry, until that time it was little more than a natural inlet, exposed to the prevailing winds and severe storms from the Pacific. Further, the population of Maui had grown to 27,920 and consisted of mostly immigrant Japanese and Chinese laborers contracted to work on the sugar plantations.

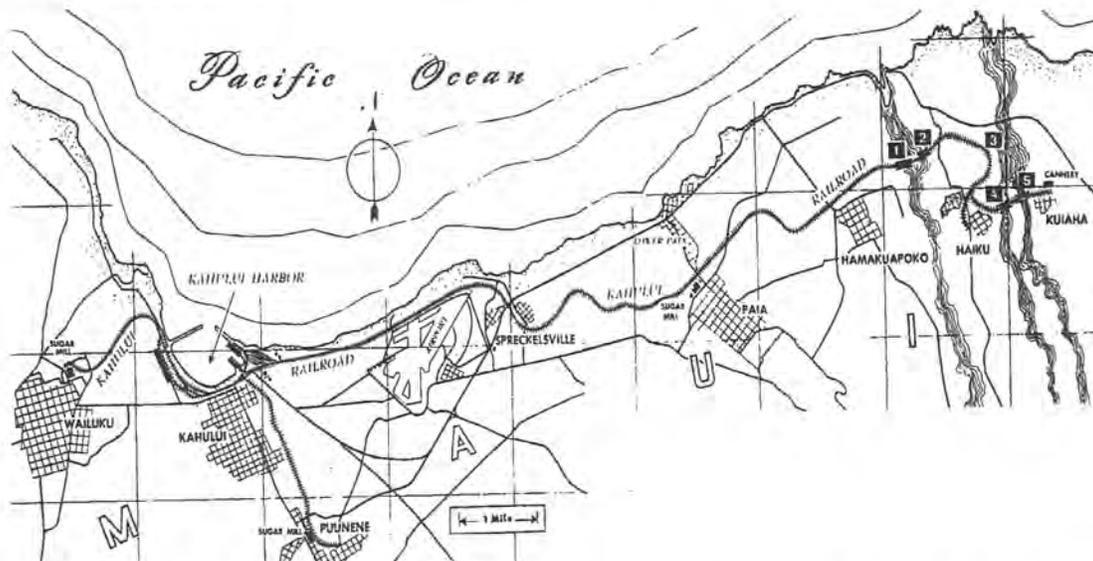


Figure 8. Map of Kahului Harbor Railway System and population areas (Cardno Tec 2009: IV-5/Fig. 4.3).

According to Cardno Tec (2009: IV-6), as a part of its expansion, KRR constructed a breakwater and wharf and dredged the harbor with the caveat that it would all be turned over later to the Territorial government.

To facilitate easier movement of cargo and passengers between islands and the mainland, KRR constructed 1,800 feet of breakwater and a dock basin for lighters. More than 300,000 cubic yards of material dredged from this project were deposited on the windward side of the breakwater. By 1910, breakwater construction, harbor dredging, and the installation of moorings and buoys amounted to \$164,909. An additional \$136,081 was spent on a wharf capable of berthing vessels up to 1,000 tons.

In 1910, KRR proceeded to obtain a license from the Territory of Hawaii to build a wharf for inter-island vessels. The Claudine Wharf, so-called in honor of the inter-island steamer of the same name, was built with the understanding that the terminal would be turned over to the territorial government at a later date. Accordingly, in 1924, KRR ceded all of its interests to the wharf and breakwater to the Federal government.

The breakwater construction continued from 1910 to 1931 (Cardno Tec 2009: IV-7):

Under acts of Congress in 1910, 1916, and 1927; the US Army Corps of Engineers (Corps) extended the east breakwater to a total length of 2,850 feet. They also built a 2,390-foot west breakwater with an entrance 660-feet wide and dredged the balance of the present harbor basin on the leeward side of the east breakwater. These harbor improvement projects were completed in 1931.

The Territory of Hawaii became involved with Kahului Harbor in the 1900s (Cardno Tec 2009: IV-9):

Around the turn of the century, the Territory of Hawaii also became involved in the development of Kahului Harbor. In 1917, the territorial government deepened the slip along Claudine Wharf. Between 1921 and 1924, the Territory directed the construction of the first 500-foot section of Pier 1 and the erection of a concrete pier shed that measured 132-feet wide and 374-feet long. After acquisition and demolition of Claudine Wharf, Pier 2 was constructed in increments beginning with a 627-foot section in 1927, and concluding with an extension to 891 feet in 1929. In addition, a steel-frame shed, 77-feet wide and 242-feet long was included in the initial stage of Pier 2 construction. Subsequent contracts awarded by the Board of Harbor Commissioners extended Pier 1 to 929 feet and the Pier 1 shed to 770 feet.

Today the port authority for Kahului Harbor is the State of Hawai'i's Harbors Division within the Department of Transportation. The State of Hawai'i owns and operates three piers in Kahului Harbor according to the World Port Source (WPS 2013) website:

Pier 1 is used to ship and receive conventional and containerized cargo and automobiles. It is also used to receive steel products, petroleum products, lumber, and coal. It ships molasses and bulk raw sugar. Kahului Harbor Pier 1 is also used for boarding passengers. Pier 1 in Kahului Harbor has berthing space of 411 meters (1350 feet) with alongside depth of 10.7 meters (35 feet) MLLW.

Matson Navigation Company manages a 13-acre storage area that includes 36 refrigerated container positions, at the rear of Kahului Harbor's Pier 1. Kahului Trucking and Storage Inc. had two molasses storage tanks with total capacity of 20 thousand tons. A manifold system and pipelines are used to receive petroleum products at Pier 1 in Kahului Harbor.

Pier 2 has berthing space of 272 meters (894 feet) with alongside depth of 8.2 meters (27 feet) MLLW. Kahului Harbor Pier 2 is used to ship and receive conventional and containerized general

cargo and automobiles and to receive lumber, bulk cement, and liquefied petroleum gas. An HEI Company affiliate, Young Brothers Ltd. operates a paved storage area of about 7.5 acres at the rear of Piers 2 and 3 that includes 28 refrigerated container positions. Doing business as The Gas Company, Citizens Utilities Services has storage tanks with total capacity for 12.5 thousand barrels of liquefied petroleum gas at Kahului Harbor's Pier 2. The Hawaiian Cement Corporation has two storage tanks with total capacity for 3.8 thousand tons of bulk cement.

Pier 3 has berthing space of 152 meters (500 feet) with alongside depth of 5.2 meters (17 feet) MLW. Pier 3 in Kahului Harbor is used for shipping and receiving conventional and containerized general cargo and automobiles. Kahului Harbor's Pier 3 also receives lumber, sand, and petroleum products, and steel products. Pier 3 is also used for mooring towboats and boarding passengers. Tesoro Petroleum Corporation operates six storage tanks with total capacity for 135 thousand barrels at Kahului Harbor's Pier 3. Shell Oil Company has a 27-thousand-barrel capacity storage tank at Pier 3, and Maui Electric Company has three storage tanks with capacity for 83.9 thousand barrels.

Kahului Harbor Piers (Cardno Tec 2009: IV-2; IV-3) (Figures 9 and 10) as of 2009:



Figure 9. Kahului Harbor piers (adapted from Cardno Tec 2009:IV-2/Fig. 4.2).

- Pier 1A: American Hawaii Cruise; U.S. Lines' *MS Independence*; Kahului Trucking & Storage's
- Pier 1B: Maui Land & Pineapple Company's tin plate ship;
- Pier 1C: Matson (cargo)
- Pier 1: Maui Electric Company's coal ship;
- Pier 2: Young Brother's Inter-island barge cargo operations; CSX Lines' overseas container shipments; The Gas Company's liquid bulk cargo shipments; Hawaiian Cement
- Pier 3: The liquid bulk (fuel) cargo operations of Tesoro, Chevron, and the Maui Electric Company; The dry bulk cargo (sand) operations of Hawaiian Cement and Ameron Hawaii

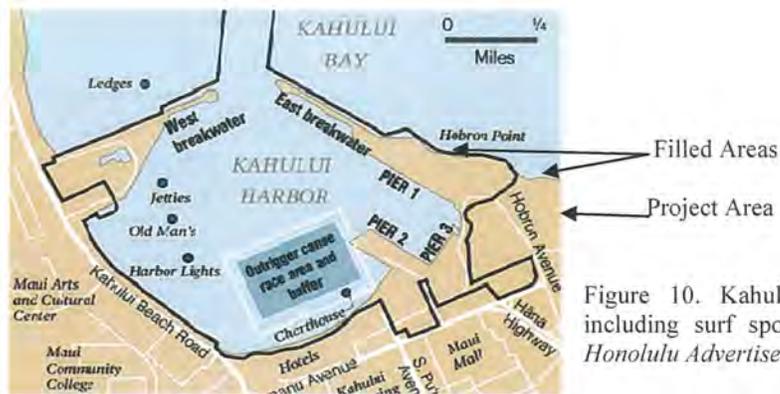


Figure 10. Kahului Bay/Harbor features including surf spots [left] (Adapted from Honolulu Advertiser 2008).

The following is from the Division of Land and Natural Resources (DLNR) Hawai'i Division of Aquatics Resources website (DAR 2012) summarizing the Kahului Harbor Fisheries Management Area:

Kahului Harbor is the primary port on the northern coast of Maui. The Fisheries Management Area (FMA) is bounded seaward by a line between the seaward edges of the breakwaters. Permitted activities shall not be construed as allowing activities within any portion of the harbor which may otherwise be prohibited by laws or rules of the Department of Transportation.

Permitted

- To use a bait net to take *nehu* and other baitfish, with a license.
- To use a net, except lay net, to take *akule* with a valid commercial marine license.
- To use a landing net to secure hooked marine life.
- To use a push or hand net while on shore to take shrimp or other marine life, provided the net, including handle, is no more than three feet in any dimension.
- To use up to ten crab nets not more than two feet in diameter to take crabs.
- To use a net to take mullet less than three inches fork length for stocking an aquaculture facility, with a license.

Prohibited

- To use any net, except as indicated in permitted activities above.
- To take or possess a total of more than 50 marine life per person per day, except baitfish or *akule* with the proper license.
- To snag any marine life.
- To use more than two poles with one line and up to two hooks per pole, each hook having only one point.

Fisher check stations

Individuals and groups entering the FMA to take marine life must follow check-in and reporting requirements posted at fisher check stations on site.

Project Setting – Natural and Built Environment

The project encompasses an area within Kahului in the *moku* and *ahupua'a* of Wailuku TMK: (2)3-7-011:017 and (2)3-7-011:023 (Figures 11 and 12; Section B) adjacent to the Maui Electric Power Plant and Kahului Harbor. The State of Hawai'i Department of Transportation, Harbors Division intends to utilize State funds to purchase two privately owned Alexander and Baldwin (A&B) parcels (Parcels B-1 and B-2; total 10.5 acres) and the improvements thereon. Both parcels are located adjacent to and east of Pier 1, Kahului Commercial Harbor, between Hobron Avenue and Amala Place.



Figure 11. Acquisition Map – Parcel B (EKNA 2013).



Figure 12. Project area 'B' (SSFM 2012:42/Fig 4.2).

The project parcels “B” were described in the final Development Plan report by SSFM (2012:42):

Reviews of historic properties and hazardous materials also show Parcel B as a preferred property. Parcel B has the greatest amount of usable land and became the preferred acquisition strategy. One major current user on Parcel B, KT&S, would need to be relocated. A&B indicated this was possible by moving it to Parcel A. Other businesses behind KT&S are on month-to-month leases and could be moved with notice, making those lands available for re-use. Several abandoned storage tanks would need to be de-commissioned, and one that is still in use would have to be moved. It is also recommended to purchase an adjacent “notch” area, which is a separate parcel, currently with a storage tank not in use. [Parcel B-1 (9.994ac); Parcel B-2 (2,230 sq ft)]

The project area is located on the northern coast of the isthmus area where the surrounding lands were historically associated with the sugar cane industry. However, the environment and ecosystem were very different prior to human settlement, as well as at Western Contact. According to Pratt and Gon III (1983:121) an ecosystem is a community of organisms interacting with its physical environment. The following segments describe the natural environments and ecosystems of the project area and vicinity.



Photo 2. Composite of coast or beach side of project lands; rock jetty on east end.

The parcels to be acquired are bordered on the north by the Pacific Ocean and small sandy beach and rocky area (Photo 2); to the east by a dirt road leading to the beach (Photo 3) (part of the road abuts a waterway to the Kanahā Ponds [Photo 4]) and access to various entities currently using the parcels; to the west, Hobron Avenue, to the south by Amala Place and to the east by a dirt road.



Photo 3. Dirt road to beach. Photo 4. Waterway off dirt road.

Before human settlement the project area would have been a pristine coastal/sandy beach, but has now been modified by human activity (Pratt and Gon III In Juvik and Juvik 1998:128).

Vegetation greatly influenced by proximity to ocean; many salt-tolerant species. Dwarf shrublands of *naupaka-kahakāi* (*Scaevola sericea*) most common; those dominated by *'ilima* (*Sida fallax*), *naio* (*Myoporum sandwicense*) or *hinahina* (*Heliotropium anomalum*) uncommon. Simple communities of *'ākulikuli* (*Sesuvium portulacastrum*), *'aki'aki* grass (*Sporobolus virginicus*), or the sedge *Fimbristylis cymosa* are widespread. Coastal forests of *hala* (*Pandanus tectorius*) in a few windward sites; wetlands of native seges now rare.

Prior to human settlement native fauna included sea turtles, monk seals, a variety of sea and land birds, and land snails; the only mammals were a couple species of bats. Today many of the native species are extinct or endangered. When early Polynesian voyagers settled on the main Hawaiian Islands they brought their culture, cultigens (flora and fauna), food and live animals. Their activity and introductions modified first the coastal and valley environments, then the forested and leeward zones. Early Polynesian introduced animals included the Southeast Asian pig (*Sus scrofa*), jungle fowl (*Gallus gallus*), dog (*Canidae*), and the Polynesian rat (*Rattus exulans*) (Juvik & Juvik 1998:126-127). The pigs, dogs, chickens and rats impacted the native flora and fauna; the lands were also modified to plant their introduced species. Coconut trees (*Cocos nucifera*), *kukui* or candlenut (*Aleurites moluccana*), *ti* (*Cordyline fruticosa*), *'ulu* or breadfruit (*Artocarpus* species) and *ko* or sugar cane (*Saccharum officinarum*), were introduced in coastal zones and *kula* zones. Later some mesic areas were converted from forests to dryland *kalo* (taro) (*Colocasia esculenta*) and *'uala* (sweet potato) agriculture (Pratt and Gon III In Juvik and Juvik 1998:127).

Handy (1940:159-160, in Sterling 1998:63) made the following observations:

On the northeast coast of western Maui it was only the shores and adjacent flatlands below the taro terraces of Waihee and Waiehu that were favorable for the combined enterprises of planting potatoes and fishing. The flat north coasts, eastward from Wailuku, had fishing settlements here and there in ancient times and presumably sweet potato plantations.... From Waihee to Waikapu there is much good land below and bounding the ancient terrace area on the *kula* and in the lower valleys which would be ideal for sweet potato culture, but it is said that little was grown in this section because there was so much taro.

After Western Contact many more species were introduced into the Hawaiian Islands. In the coastal areas *kiawe* (*Prosopis pallida* or algarroba/algaroba/mesquite) was introduced and literally took over the landscape in some areas; ironwood (*Casuarina equisetifolia*, horsetail *casuarina*) was also introduced. Cattle were introduced early and food lands were modified as pasturelands. Most coastal areas, particularly beaches continue to be used and altered by humans. Alien species such as rats, cats, mongooses, and dogs, all harass nesting turtles, waterbirds, and seabirds (Pratt and Gon 1998). Today the project area is primarily small to light industrial businesses and flora is sparse, consisting mainly of coconut, ironwood, *kiawe* and various shrubs and grasses.

Sugarcane became a mono-crop as plantations also modified the landscape; wetlands and fishponds were drained or modified for cattle grazing, sugar crops, development then urbanization (Pratt and Gon III In Juvik and Juvik 1998:127-128). And some former sugar lands were later converted to pineapple mono-crops or light industry.

The following photos of the project area (Parcels B-1 and B-2) by the author illustrates current vegetation in areas within the parcels - related site numbers from Hill et al., (2009) of Cultural Surveys Hawaii (CSH) are included for some sites.



Photos 5 - 7. Project area – Royal Order/community meeting house abuts the beach to the north (Site #12/CSH).



Photos 8-10. Various areas of the project area – vegetation very sparse.



Photos 11-13. Various areas of the project area – vegetation very sparse.



(Site #10/CSH 10) KT&S

Photos 14-16. Areas of the project area/off Amala Place – vegetation very sparse.



(Site #7/CSH)

Photos 17-19. Areas of the project area/off Hobron Avenue – vegetation very sparse.

Figure 13 is an aerial view of the project area from the *Kahului Harbor Development Plan* report (SSF 2012:47) identifying locations of historic features within the project parcels with CSH site numbers. The vegetation seen from this view is very sparse:



Figure 13. Project area historic sites (SSF 2012:47/Fig 4.4); little vegetation.

Kanahā Pond State Wildlife Sanctuary is a 143-acre (58 hectares [ha]) wetland in Maui, in near proximity to the project lands. It is a famous waterfowl sanctuary, home to three endangered Hawaiian bird species: the Hawaiian coot ('*alae*, '*alae ke'oke'o*) (*Fulica alai*), the Hawaiian duck (*koloa*) (*Anas wyvilliana*), and the Hawaiian (or black-winged) stilt (*ae'o*) (*Himantopus mexicanus knudseni*). Kanahā Pond was designated a state sanctuary in 1951 and a

National Natural Landmark in 1971 (Wiki-Kanahā). The ponds produced huge quantities of mullet until the early 1900s. The water used to be clean, and natural springs filled the pond which overflowed through an open ditch in Kahului Harbor. When the harbor was dredged in 1910 Mau'oni pond was filled and is now occupied by oil storage tanks and industrial areas. When Mau'oni Pond was filled, part of the overflow ditch was filled and this resulted in Kanahā Pond becoming less clear and drying up during the hot summers (Melgar 2002).



Figure 14. Aerial of Project Area (red outline) and Kanahā Pond (SOEST 2002).

Development plans for Kahului's 'Dream City' In Chris Hart & Partners, Inc (CHP 2006:8).

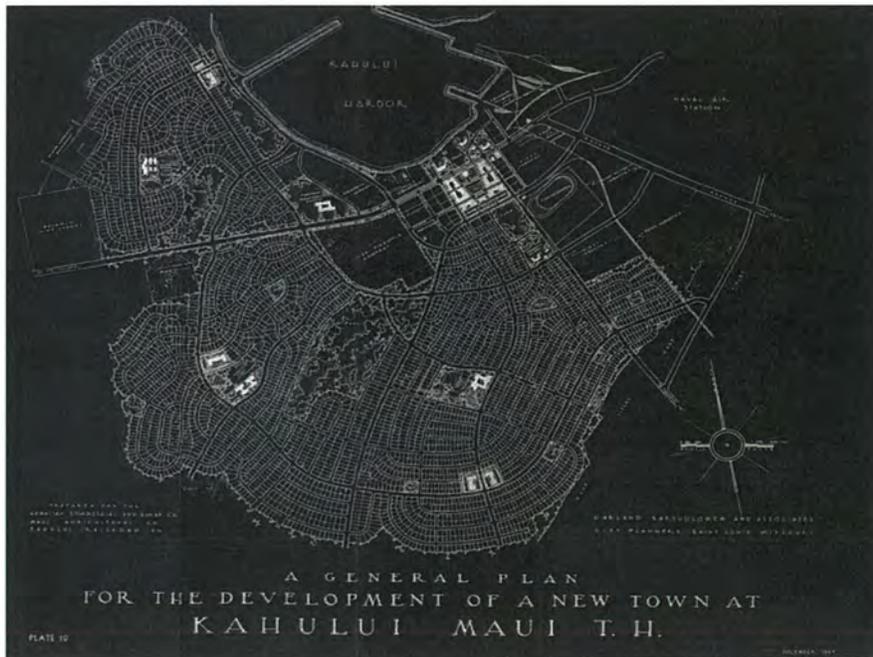


Figure 15. *Dream City Plan*, 1947 (from CHP 2006:8).

METHODS

This Cultural Impact Assessment was conducted from February 2013 to August 2013. The study consisted of three phases: (1) cultural and historical archival literature review; (2) ethnographic survey (oral history interviews), analysis of ethnographic data (past oral histories) and (3) report writing.

The personnel consisted of the author (ethnographer) who has a master's degree in Anthropology, with a graduate curriculum background in the archaeology track as well as anthropology theory, cultural resource management, ethnographic research methods, and public archaeology; an undergraduate curriculum background that included Hawaiian History, Hawaiian Language, Hawaiian Archaeology, Pacific Islands Religion, Pacific Islands Archaeology, Cultural Anthropology, as well as a core archaeology track, Geology, and Tropical Plant Botany; and ethnographic field experience that includes over 400 interviews to date.

This CIA is loosely based on *Grounded Theory*, a qualitative research approach in which "raw data" (transcripts and literature) are analyzed for concepts, categories and propositions. Categories were pre-selected as part of the overall research design. However, it is not always the case that these research categories are supported in the data. Categories were generated by forming general groupings such as "Land Resources & Use," "Water Resources and Use," and "Cultural Resources & Use." Conceptual labels or codes are generated by topic indicators (i.e., flora, fauna). In the *Grounded Theory* approach, theories about the social process are developed from the data analysis and interpretation process (Haig 1995; Pandit 1996). This step was not included in this cultural impact assessment as the research sample was too small.

The level of effort for this study included a broad archival research literature review and an ethnographic review and analysis (six interviews plus one partial). Primary source material included genealogies, oral histories and other studies and reports. Secondary source material included translations of 19th century ethnographic works, historical texts, indexes, various reports and Hawaiian language resources (i.e., proverbs, place names and dictionary).

The selection of the consultants was based on the following criteria:

- Had/has Ties to Project Location(s)
- Known Hawaiian Cultural Resource Person
- Known Hawaiian Traditional Practitioner
- Referred By Other People

The formal interview process included a brief verbal overview of the study. Then the ethnographic consultant was provided with a consent or 'agreement to participate' form to review and sign (Appendix D). An ethnographic research instrument (see Appendix E) was designed to facilitate the interview; a semi-structured and open-ended method of questioning based on the person's response ('talk-story' style). Each interview was conducted at the convenience (date, place and time) of each consultant. The interviews were conducted using a cassette tape recorder. The interviewees were allowed to choose where they wanted to have their interview conducted. Notes were also taken, but more attention was given to listening intently to the consultant. A *makana* or gift was given to each ethnographic consultant in keeping with traditional reciprocal protocol.

Ethnographic fieldwork or research depends on the availability and time of consultants; occasionally things just do not work out as planned. A list of ethnographic fieldwork constraints follows:

- The initial ethnographic “level of effort” or number of interviewees was not in accordance with a later assessment of the properties and tenants/leaseholders;
- More canoe club members were willing to be interviewed than other cultural practitioners;
- Two people did not show up for interviews;
- The spokesperson for The Royal Order-Chapter V did not return emails or phone calls in regard to the meeting house in the project property;
- One interview was interrupted and asked to be resumed on another day, however, the person’s schedule did not clear up. The interviewee asked if it could be completed by email, but that was not returned.
- The majority of the interviewees did not return any revised transcripts; only one person did.

The taped interviews were transcribed by a hired transcriber and edited by the ethnographic investigator. The consultants were emailed their interview transcripts, an explanation of the transcript review process, and a ‘release of information’ form. This process allows for corrections (i.e., spelling of names, places), as well as a chance to delete any part of the information if so desired or to make any stipulations if desired. The consultants were also informed of the two-week time limit for their review after which it will be assumed that the raw data can be selectively used. Five people did not return corrected/revised transcripts. One transcript was revised by the author with the interviewee dictating the revisions and additions.

The analysis process followed a more traditional method, as a qualitative analysis software program was not necessary. The interview was manually coded for research thematic indicators or categories (i.e., personal information; land resources and uses; site information-traditional and/or historical; and anecdotal stories). For the purpose of this CIA, it was also not necessary to go beyond the first level of content and thematic analysis. However, sub-themes or sub-categories were developed from the content or threads of each interview (e.g., land resources; cultural resources).

CULTURAL & HISTORICAL BACKGROUND REVIEW

The Cultural and Historical Background Review entailed a review of previous reports that included primary and secondary source literature. Examples of primary source material include maps, Land Court records, newspaper articles, genealogies, oral histories and other studies. Secondary source material includes translations of 19th century ethnographic works, historical texts, indexes, archaeological reports, internet research and Hawaiian language resources (i.e., proverbs, place names and Hawaiian language dictionary). A review of selected archival material is presented in this section.

Genealogies

The genealogies handed down by oral tradition and later recorded for posterity, not only give a glimpse into the depth of the Hawaiian culture of old, they provide a permanent record of the links of notable Hawaiian family lines. *Po'e ku'auhau* or genealogy *kahuna* (masters) were very important people in the days of old. They not only kept the genealogical histories of chiefs "but of *kahuna*, seers, land experts, diviners, and the ancestry of commoners and slaves ...an expert genealogist was a favorite with a chief." During the time of 'Umi-a-Li'loa, genealogies became *kapu* (forbidden) to commoners, which is why there "were few who understood the art; but some genealogists survived to the time of Kamehameha and even down to the arrival of the missionaries" (Kamakau 1992:242).

There are several chants from Hawai'i and other Polynesian islands referred to as migration chants that expand on the travels of ancient Polynesians and not only explain why they traveled from place to place, and where they traveled, they also give their genealogy illustrating how families are connected from one Polynesian island-nation to another. Examples are the chants and stories by Kamakau and Kepelino about Hawai'i-loa a famous ancient navigator and discoverer of the islands named after him (PVS 1999).

Surviving genealogies illustrate that the ruling families of each island were interrelated quite extensively. The chiefs of O'ahu, Kaua'i, Hawai'i, Maui and Moloka'i had one common ancestry. Families branched out, but conjoined several times in succeeding generations. O'ahu and Hawai'i's chiefs were linked as are Hawai'i and Maui chiefs, and Hawai'i's chiefs were linked to Kaua'i chiefs (Kamakau 1991:101; McKinzie, 1983:xxv). Not only were the chiefs or *ali'i* related to each other, they were also related to the commoners. In *Ruling Chiefs*, Kamakau states that "there is no country person who did not have a chiefly ancestor" Kamakau (1992:4). In the following passage Kamakau (1991:101) explains how some of the *ali'i* were connected:

It is said that the chiefs of Hawai'i island were from Maui and from O'ahu and Moloka'i between the times of 'Aikanaka and Hanala'anui. Thus 'Aikanaka was the chief of Koali and Mū'olea in Hāna; Hema, the chief of Ka'uiki in Hāna; Kaha'i, the chief of 'Īao in Wailuku; Wahieloa, the chief of Papauluana in Kīpahulu. Laka the chief was born at 'Alae in Kīpahulu, Maui; he ruled in Ko'olaupoko, O'ahu; the site of his house, Hale'ula, was at Waikāne, O'ahu.

Malo (1971:52) also wrote about the connection between the *maka'āinana* and the chiefs, stating that "Commoners and *alii* were all descended from the same ancestor, Wākea and Papa." This is evident in the genealogies. Genealogies were very important to the chiefs, because ranking was very important. The genealogies not only indicated rank, they ascertained a link to the gods. The following excerpt from Beckwith (1970: 11) explains the idea and importance of rank and the role of genealogies:

Position in old Hawaii, both social and political, depended in the first instance upon rank and rank upon blood descent—hence the importance of genealogy as proof of high ancestry. Grades of rank were distinguished and divine honors paid to those chiefs alone who could show such an accumulation of inherited sacredness as to class with the gods among men...a child inherited from

both parents.... The stories of usurping chiefs show how a successful inferior might seek inter-marriage with a chiefess of rank in order that his heir might be in a better position to succeed his parent as ruling chief...a virgin wife must be taken in order to be sure of child's paternity - hence the careful guarding of a highborn girl's virginity,

One could defend and/or prove their rank by knowing or having one's genealogist recite one's genealogy. "To the Hawaiians, genealogies were the indispensable proof of personal status. Chiefs traced their genealogies through the main lines of 'Ulu, Nana'ulu, and Pili, which all converged at Wākea and Papa (Barrère 1969:24). Two well-known genealogy chants are the *Kumuhonua* and the *Kumulipo*.

The *Kumuhonua* was first published by Fornander in 1878, in *The Polynesian Race* Vol. I was based on information from Kamakau and Kepelino. Kumuhonua, the man, was of the Nana'ulu line, and the older brother of Olopana and Mo'ikeha (McKinzie 1986:14-15). Barrère (1969) explains that some of the *Kumuhonua* legends were recorded by Kamakau and Kepelino between the years 1865 and 1869, however, the 'genealogy' of the *Kumuhonua*, published by Fornander, was given to him "to provide credibility to the legends...this 'genealogy' (was) constructed from previously existing genealogies--the *Ololo* (*Kumuhonua*) and the *Paliku* (*Hulihonua*), which are found in the *Kumulipo* chant (see Beckwith 1951:230-234) and interpolations of their own invention" (Barrère 1969:1).

Beckwith (1940:308) discusses the Kumuhonua Tradition in the following:

The Kumuhonua tradition, according to which Ho'okumu-ka-honua (Founding of the race), as his name implies, is the original ancestor, is recited on Molokai. Hawaii and Maui genealogists favor the O-puka-honua (Opu'u-ka-honua) or Budding-of-the-race. Oahu and Kauai follow the Kanehuli-honua (Over-turner of the race) ancestral line.

On the Kumuhonua genealogy a line of chiefs leads down from Kumuhonua, the first man descended from the gods, through Laka, or Kolo-i-ke-ao (Creeping toward the light), brother of Kolo-i-ka-po (Creeping toward the night), to Nu'u (Ka-hina-li'i) in whose time came the great flood known as the Sea-of-Kahinali'i, and thence to Lua-nu'u (Lu son of Nu'u), called also Kanehoia-lani, ancestor of the Mu and Menehune people; to Hawaii-loa, called Ke-kowa-i-Hawaii (The channel to Hawaii), and from him to Eleeleua-lani and from him to Ku-kalani-ehu and his wife Ka-haka-ua-koko, parents of Papa-hanau-moku the wife of Wakea. Malo calls Kumuhonua the father, through his wife Ka-mai-eli (The digger), of the root of the land (mole o ka honua), which may be interpreted as the rootstock of the race.

The following is an explanation of the Opuka-honua Genealogy; this genealogy is favored by Hawai'i and Maui genealogists, according to Beckwith (1940:308):

The Opuka-honua (Opu'u-ka-honua) genealogy opens with the coming to Hawaii, after the islands are already peopled, of the chief Opukahonua and his younger brothers Lolo-mu and Mihi and the woman Lana, and leads down to Papa and thence to the Kamehameha line. According to the Opukahonua legend the islands were fished up out of the ocean by the great fisherman Kapuhe'euanui (The large headed octopus).

Fornander version. Kapuhe'euanui lets down his fishline into the sea from Kapaahu and fishes up a piece of coral, which the *kahuna* Laulialamakua advises him to throw back into the sea with prayer and the sacrifice of a pig, at the same time pronouncing a name over the coral, and for each piece he throws there rises an island, first Hawaii, then Maui, then Oahu, and so on.

Barrère (1969:426) expounds on the Opuka-honua genealogy or Opuukahonua in Fornander's version: "Opuukahonua is found as Puukahonua in the *Kumulipo*, and is another "brother" of Liaikuhonua and Ohomalia; from Liaikuhonua comes Wākea and from Ohomalia comes Haumea or Papa."

However, Puukahonua is not in the Kumulipo genealogy as noted by Barrère (1969:427):

The genealogical line of Puukahonua is not followed in the Kumulipo. The Kumulipo continues after Papa and Wakea to Ki'i, father of two sons, 'Ulu and Nana'ulu (lines 1974-1975), and through the son 'Ulu to the ancestors of the high chief for whom the chant was composed. The Opuukahonua genealogy as given by Fornander was probably a creation for a chief in the line of Nana'ulu.

The Kumu-uli genealogy is used in Kaua'i and Maui genealogies according to Beckwith (1940:309).

The Kumu-uli genealogy, employed instead of the Kumuhonua on Kauai and Maui, is sacred to chiefs; to teach it to commoners is forbidden. The name is explained to mean "Fallen chief" (Ke-ali'i-kahuli) from *kumu* meaning "chief" in poetic diction and (*kah*)*uli*, "fallen." It resembles the Kumuhonua up to a certain point, but differs in that it opens with the gods Kāne, Kanaloa, Kauakahi, and their sister Maliu and wife Ukina-opiopia as ancestors of Huli-honua, and leads down through Laka instead of Pili to Wakea through Kahiko and his wife Kapulanakehau, instead of to Papa through her parents Ka-lani-ehu and Kahakauakoko. In the legend of Kualii it is quoted as the genealogical tree which leads down to Kamehameha. It names Kāne-huli-honua and his wife Ke-aka-huli-lani as the first parents after the group of gods named above. A variant on the twelfth branch of the Kumulipo says that at the close of the Ololo line were born Kumuhonua, Kāne, Kanaloa, and Ahukai, the last three represented as triplets.

Beckwith (1940:310-311) discusses the *Kumulipo* genealogy in the following:

The *Kumulipo* genealogy (Kumu-[u]li-po, Beginning in the darkness of night, that is, in the spirit world) is contained in a long chant of 2,077 lines divided into two periods, the first that of the *po* or spirit world, the second that of the *ao* or world of living men; that is, of ancestors who have lived on earth as human beings. The first part tells of the birth of the lower forms of life up through pairs of sea and land plants, fish and birds, creeping reptiles and creeping plants, to the mammals known to Hawaiians before the discovery by Europeans: the pig, the bat, the rat, and the dog. The second period opens with the breaking of light, the appearance of the woman La'ila'i and the coming of Kane the god, Ki'i the man, Kanaloa the octopus, together with two others, Moanaliiha-i-ka-waokele (Vast expanse of wet forest), whose name occurs in romance as a chief dwelling in the heavens, and Ku-polo-liili-ali'i-mua o-lo'i-po (Dwelling in cold uplands of the first chiefs of the dim past), described as a long-lived man of very high rank. There follow over a thousand lines of genealogical pairs, husband and wife, broken by passages containing myths familiar to us from other sources, those of Haumea, Papa and Wakea, Hina, and Maui.

The chant is said to have been composed about 1700 for the young chief Ka-I-i-mamao, son of Keawe-i-kekahi-ali'i-o-ka-moku, at the time he was dedicated in the *heiau* and given the burning (*wela*), honoring (*hoano*), and prostrating (*moe*) tapus which elevated him to the rank of a god. The child was born during the Makahiki festival and was hence given at birth the name of Lono-i-ka-makahiki. It is said that at the time of Captain Cook's arrival at Kealakekua Bay in 1789 during the Lono festival, when sacred honors were paid him in the heiau of Hikiau as the returned god Lono, this chant was recited by two officiating kahunas. It was given to Alapai-wahine, child by his own daughter, according to genealogists, of Ka-I-i-mamao and from her descended to the former king Kalakaua and his sister Liliuokalani who succeeded him. Kalakaua took an interest in genealogies and had the chant written down. When the German anthropologist, Adolf Bastian, visited the islands he studied the manuscript, recognized its importance, and made a partial translation into German which appears in his studies of sacred chants of Polynesia. In 1889 Kalakaua had his manuscript version printed, and this has become, in spite of many textual errors and alleged tampering with the original, the standard text for the Kumulipo. Liliuokalani's translation appeared in 1887.

Feher (1969) asks several notable Hawaiian scholars to write passages in his *Kumulipo: Hawaiian Hymn*

of *Creation-Visual Perspectives*. In the Introduction Momi Naughton states “The *Kumulipo* belongs to a category of sacred chants known as *pule ho‘ola‘a ali‘i*, ‘prayer to sanctify the chief,’ which was recited to honor a new-born chief (Feher, 1969:1). In her passage, Edith McKinzie states:

The *Kumulipo* is a historical genealogical chant that was composed by the court historians of King Keaweikekahiali‘iokamoku of the island of Hawai‘i about 1700 AD in honor of his first born son Kalani-nui-‘I-a-mamao. This important chant honors his birth and shows the genealogical descent of both the *ali‘i* (chiefs) and the *maka‘ainana* (commoners) from the gods, in particular Wakea... (Feher 1969:1).

In a passage by Roger T. Ames, he corroborates this idea and states that “what is of particular humanistic interest is the way in which the *Kumulipo* as a repository of cultural authority served Hawaiian society in transmitting its cultural legacy and organizing its community. In doing so it combines both a linear sense of temporal development and the richness of one particular moment in time” (Feher 1969:3).

The *Kumulipo* was an *inoa* or name chant for Ka-lani-nui-‘I-a-mamao, first born son of Keawe, who later became the father of KalaioPu‘u [Kalani‘opu‘u], ruling chief of Hawai‘i (Beckwith 1970:9). However, Johnson comments that “Malo remarks that the *Kumulipo* is important to both *ali‘i* (chiefly) and *maka‘ainana* (commoner) groups. It is also a means by which Polynesians as a whole may corroborate lineal ties to the Hawaiian people” (Feher 1969:2)

Edith McKinzie completed the first volume of *Hawaiian Genealogies* in 1983, based on genealogy articles translated from 19th Century Hawaiian newspapers such as *Ka Nonanona* and *Ka Nupepe Kuokoa* in the late 19th century and early 20th century. These articles were in response to a call to preserve the Hawaiian heritage. Some of the information came from Malo’s (1838) *Hawaiian History*, and in Fornander’s (1880), *The Polynesian Race* (Book 1) (McKinzie 1983:1).

We see prominent Maui *ali‘i nui* in the last verse of the *Sixteenth Era*, in Campbell’s (1997:78) *The Kumulipo: An Hawaiian Creation Myth*, which is a reproduction of Queen Lili‘uokalani’s translation.

Kawaukaohela was born, also Keleanuinohoanaapiapi,
The woman that lived at [with] Kalamakua,
From whence Laielohelohe was born and who married Piilani.
Piikea was born and married Umi;
Kumamaenui Umi, who owned those precipices from whence slaves were held.
Kumalaenui of Umi was the husband of KunuunuiPuawalau.
Their son, Makua, was the only high chief (*wohi* Kukahi) of the island.
Kapohelemai, his wife, whose rank as sacred *wohi* Alii and Honor.
So their heir I, the I of the Kingdom,
Whose power and right to execute,
And lord of the famed lands of Pakini,
Of the sliding Ohia and the weaving of the islands of Hawaii,
To Ahu—to Ahu of I, of Lono, of Lonoikamakahiki.

Youngblood (1992) found that he could draw on both Fornander and Beckwith’s translations of *The Kumulipo* to sketch a socio-political history of Hawai‘i (Youngblood 1992:34). In his re-creation he found that stemming from Wākea and Papa are two major Hawaiian genealogies: the *Nana‘ulu* and the ‘*Ulu*. The *Nana‘ulu* was the wellspring for the *ali‘i* of O‘ahu and Kaua‘i, while the ‘*Ulu* line supplied the chiefs of Maui and the Big Island.

Using thirty years to account for one generation, McKinzie determined that Wākea was born ca. AD 190; Umi-a-Līloa ca. 1450; Keawekehahiali‘iokamoku ca 1650, Kalanihūiikupuapaikalanui Keoua ca. 1710;

and Kamehameha I ca. 1740” (McKinzie, 1983:12). Volume Two of *Hawaiian Genealogies* was published in 1986 (1991) with information extracted from genealogical lists published in thirteen newspapers from 1858 to 1920. It compliments genealogies found in other works, such as Fornander’s (1880) *An Account of the Polynesian Race* and David Malo’s (1903) *Hawaiian Antiquities* (McKinzie 1986: v).

The following excerpt is from Kamakau’s article in *Ka Nupepa Kuokoa* October 7, 1865, and was translated by McKinzie (1986:18-19). It illustrates some of the mid-19th century sentiment regarding genealogies:

I na maka ‘āinana, he mea wai wai ole, no ka mea ua papa ko lakou mau makua o hoohalikelike, a hoohanau keiki o ke kuaaina a pii aku i na li‘i. Nolaila ia ao ole ia ai na keili a na makaainana, ma kahi makuakane a makuahine, a kupuna aku no.... Ia kakou i ka poe o keia wa, aole waiwai o keia mea he mooalii aole a kakou mau kuleana nui iloko. Aka, ma ko kakou noonoo iho he waiwai nui. Ua komo kakaou iloko, ua waiwai na li‘i na kupuna; a ua waiwai pu kakou i koo kakou ike ana. No ka mea, ua kapu i ka makaainana aole e ike i keai mea. Aka, no ka pii ana i ka naauao a me ke akamai o na keiki a na makaainana; nolali, ua noa na wahi kapu, ua pii waleia. O ke koeana mai o na kupuna oia kahi waiwai.

To the commoners, a genealogy was of no value because their parents forbid (sic) it lest comparisons should occur and country children be born and rise up as chiefs. Therefore, the children of the commoners were not taught beyond father, mother, and perhaps grandparents.... To us, the people of this time, there is no value of this thing of a chiefly lineage; we have no great interest in it. But in our thoughts it is of great value. We have entered into discussion of it; the chiefs valued the chiefs and ancestors; and we also value our knowledge of it. Because it was forbidden to the commoners, they were not to know this. However, due to the rise of wisdom and skill of the children of the commoners, therefore, all of the ranking privileges were no longer restricted; it was only lifted. What remains of the ancestors is something of value.

The following are tables (a work in-progress) of the genealogy of the Maui Royal Line extracted from several works. They illustrate the various family connections with all the island kingdoms or royal lines. The ruling chiefs of the various islands come from combinations of genealogies or branches. Most of the main individuals in Table 1 are in a loose chronological order, however, the multiple unions of a particular person is not necessarily in a chronological order, as much of that information was not provided in most cases. This annotated genealogy illustrates how interconnected the royal lines were, especially between Maui and O‘ahu and Maui and Hawai‘i Island kingdoms based on the works of McKinzie (1983, 1986); Kamakau (1992); Fornander (1969); Beckwith (1940); Barrère (1969); Keko‘olani (2010); Peleioholani (2011/original from the 1800s); MauiCulture (MC 2013); and Wikipedia-Maui Kings (2013). Table 2, is a genealogy of Victoria Kamāmalu who was awarded the lands of Kahului during the *Mahele*.

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines.

| Kane (k) | Wahine (w) | Keiki |
|---|--|---|
| (Beckwith's 1st Man version-below) [Malo refers to this as the Ololo line] [→ indicates skipped generations] | | |
| Kealiiwahi | Lailai | Kahiko |
| Kahiko | | Wakea |
| (Kamakau version of 1 st Man – below) [Malo refers to this version as the Paliku genealogy] | | |
| Kane-huli-honua/Kumuhonua/Kuluipo/Kumuuli/Hulihana and Keakahuilani were created by the gods Kāne, Kū and Lono... | | |
| Kane-huli-honua | Keakahuilani | Laka |
| Laka | Kapapaialaka | Kahiko |
| (Formander version of 1 st Man – below) | | |
| Kumu-Honua (First Man) | ? | Laka |
| " | ? | Kuluipo |
| " | ? | Kapili → Pa'ao |
| [In the <i>Kumulipo</i> version Kapili is the grandson of Kumu-Honua (Barrere 1961:422-423)] | | |
| (Rootsweb version-below) | | |
| Kumu-Honua (1 st Man) | Ke Ola Ku Honua/Lalo-Honua (1 st Woman) | |
| <i>(Kumulipo version)</i> | | |
| Ki'i | La'ila'i | Kamehaina |
| Kāne (god) | " | Halia (w) |
| Kamehaina (½ sibs) | Halia → | Puanue |
| Puanue | | Paliku & Ololo |
| Paliku → Ohomalia | → | Kahakauakoko (w) |
| " → Liaikuhinua | → | Kalaniehu (k) |
| " " | → | Kupulanakehau (w) |
| Ololo → | Kumuhonua (k) → | Kahiko |
| Kahiko | Kupulanakehau | Wakea |
| Kalaniehu | Kahakauakoko | Papa |
| Foundations k/w | | |
| Palipalihilo | Palialihia | Paliku |
| " | " | Ololo |
| " | " | Ololohonua |
| " | " | Kumuhonua-a-Palipalihia |
| Kumuhonua-a-Palipalihia (b/ca 320 BC) | Haloiho | Ahukai I/Ahukai-o-Kumuhonua (ca 252 BC) |
| " | " | Kane-o-Kumuhonua |
| " | " | Kanaloa-a-Kumuhonua |
| Ahukai-o-Kumuhonua | Holehana | Kapili |
| Kapili | Alonainai | Kawakupua |
| Kawakupua | Heleaeiluna | Kawahiko |
| Kawahiko | Kahohaia | Kahikolupa |
| Kahikolupa | Lukaua | Kahikoleikau |
| Kahikoleikau | Kupomakaikaelene | Kahikoleiulu |
| Kahikoleiulu | Kanemakaikaelene | Kahikoleihonua |
| Kahikoleihonua | Haakookeau | Haakoakoalaulani |
| Haakoakoalaulani | Kaneiakoakanioe | Kupo |
| Kupo | Lanikupo | Nahaeikekua |
| Nahaeikekua | Hanailuna | Keakenui |
| Keakenui | Laheamanu | KahianahinakiiAkea |
| KahianahinakiiAkea | Luanahinakiipapa | Koluanahinakii |
| Koluanahinakii | Hanahina | Limanahinakii |
| Limanahinakii | Onohinakii | Hikuanahina |
| Hikuanahina | Waluanahina | Iwahanakiiakea |
| Iwahanakiiakea | Lohanakiipapa/Umiwahinekiipapa | Welaahilaninui |
| Kahiko Laumea I | Kupulanakehau | Wakea (ca AD 166) |
| Wakea | Papa/Haumea | Hoohokukalani |
| " | " | Haloa I → Kalo |
| " | " | Kauakahi |
| " | " | Kaonohiula |
| " | " | Kaalewlewa |
| " | Hoohokukalani | Haloa II |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|-----------------------------|--------------------|--------------------------------|
| Haloa II | Hinamanaouluae | Waia |
| " | " | Huhune (w) |
| Waia (sibs) | Huhune | Hinanalo |
| " | " | Haunu'u (w) |
| Hinanalo (sibs) | Haunu'u | Haulani/Haulele (w) |
| Nanakehili/Kekai-hili | Haulani | Waia-loa |
| " | " | Hikawaakaunu (w) |
| Waia-loa (sibs) | Hikawaakaunu | Kio |
| " | " | Kamuoleilani (w) |
| Kio (sibs) | Kamuoleilani | Ole |
| " | " | Haihailuahea |
| Ole (sibs) | Haihailuahea | Kahiko Laumea II |
| " | " | Pupue (w) N. Nanaulu Tradition |
| " | " | Pupue (k) S. 'Ulu Tradition |
| Pupue | Kamahele | Manaku |
| Manaku | Hikohaale | Kahiko-a-Manaku |
| Kahiko-a-Manaku | Kae'a | Lukahakona |
| Lukahakona | Ko'ulamaikalani | Lu'anuu I |
| Lu'anuu I | Kawaamaukele | Hinakoula |
| " | " | Kuki'i/Ki'i |
| Kuki'i | Hinakoula | Nana'ulu |
| " | " | 'Ulu |
| " | " | Kapomaleolani (w) |
| 'Ulu | Kapu-nuu | Nanaele |
| Nanaele | Kahauomokuleia | Hina-a-Hinauu (w) |
| " | " | Nanailani |
| Nanailani (sibs) | Hina-a-Hinauu | Waikumaikalani |
| " | " | Kekaulani (w) |
| Waikumaikalani (sibs) | Kekaulani | Kaohikiula (w) |
| " | " | Kuheleimoana |
| Kuheleimoana (sibs) | Kaohikiula | Kaululena I (w) |
| " | Mapunaiaala | Wawena |
| Kanekakauhu | Kaululena I | Hinamanuia (w) |
| Wawena | Hinamanuia | Hinaakeka (w) |
| " | " | Akalana-a-Kahiki |
| Akalana-a-Kahiki (sibs) | Hinaakeka | Hinakapaikua (w) |
| " | " | Maui-mua |
| " | " | Maui-Kikii |
| " | " | Maui-waena |
| " | " | Maui-a-Kalana |
| Maui-a-Kalana | Hina-a-Kealoha | Nana-maoa |
| " | " | Hinaakeka |
| " | Hinakapaikua | Kahihioikalani (w) |
| Nana-maoa | " | Nana-kulei |
| Nana-kulei | Kehaukuhouna | Nanakaoko |
| Nanakaoko (nephew/aunt) | Kahihioikalani | Kapawa (b/Kukaniloko) |
| " | " | Heleipawa |
| " (nephew/aunt) | Hinamakanui | Kanikaniaula (w) |
| Heleipawa (½ sibs) | Kanikaniaula | Hinamaikalani (w) |
| " | " | Hulumanailani |
| Kikealana | Hinamaikalani | Hina-'ai-ka-malama |
| Hulumanailani (sibs) | Hinamaikalani | Aikanaka I |
| Aikanaka ca AD 746 (½ sibs) | Hinahanaiakamalama | Hinawaikoli |
| " (father/dau) | Hinawaikoli | Hema |
| " | " | Puna |
| Hema (voyages to Hahiki) | Hinamaikehoa | Kaha'i I |
| Kaha'i | Hina-ulu-ohia | Wahieola |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|--|-----------------------------------|-----------------------------------|
| Wahieola | Ho'olaukahili | Lakanohoikawehiwehi |
| (Kipahulu Chief b/Punalu'u, Ka'u) | | |
| Laka II | Hikāwaelena/Hikawaolena | Luanu'u II |
| (built heiau in Punalu'u to honor father) | | |
| " | " | Kapohuleiula |
| Luanu'u (Kauai ruling chief) (sibs) | Kapokulaiula | Ulumaikheoa/Popomalili |
| " | " | Ka'omea/Kamea |
| Kamea | Popomailili | Pohukaina |
| (some genealogist say he is son of Laamea not Luanu'u) | | |
| " | " | Huahuakapolei/Huahuakapali (w) |
| Pohukaina (sibs) | Huahuakapalei | Hua-a-Pohukaina (b/ca 966) |
| (Hua-a-Pohukaina was born in Kehoni, Lahaina; he died in Niua and was buried in 'Iao Valley) | | |
| " | " | Hikimokuleia (w) |
| Hua-a-Pohukaina (sibs) | Hikimolulolea (O'ahu) | Paunuikeanaina/Pau-a-Hua (ca 988) |
| (Pau-a-Hua was born in Ohikilolo, Waianae, Oahu – his mother was a chiefess of the area; he died in Kalae-o-ka-Laau, Maui and is buried in 'Iao Valley) | | |
| " | " | Kapohakia (w) |
| Pau (Maui Chief) (sibs) | Kapohaakia | Huanuikalala'ila'i |
| (This Hua-a-Pau was born at Kawelo, Oahu ca 1010) | | |
| " | " | Kapokulan/Moleai (w) |
| Pau | Kapalakuakalani | Paumakua-a-Lonoho'ohewa (O'ahu) |
| (This Paumakua-a-Lonoho'ohewa was born in Kuaaohē, Kailua, O'ahu and named after his great-grandfather, famous O'ahu voyaging chief Lonoho'ohewa who went to Kahiki; six generations later his descendant La'amaikahiki would also travel to Kahiki -- DK 2010) | | |
| Huanuikalalailai | Kapoea | Paumakua-a-Hua (Maui Chief) |
| " (sibs) | Kapokulani/Moleai | Kalanileo |
| " | " | Kuhelelani (w) |
| " | Ho'ohokukalani 2 | Manokalililani (w) |
| Paumakua-a-Hoohokukalani (Hawaii) | Manokalililani (Maui) | Haho (born in Waialua, O'ahu) |
| (There is difference in genealogies as to which Paumakua was father of Haho, the Maui Paumakua, the Oahu Paumakua or the Hawai'i Paumakua; Kamakau (1991) says the Maui-named Paumakua, but born where the O'ahu Paumakua was born; this genealogy line follows the Paumakua of Hawai'i line who marries Hua's daughter Manokalililani) | | |
| " | " | Kauilaanapa |
| Haho (Ali'inui of Hawai'i - 'Ulu line) | Kauilaianapa | Palena-a-Haho (ca 1120) |
| (One source claims Palena was born on Pu'u Ka'uiki, Hāna; his sons were born in Mokae; [(DK says born in Mokae, Hana)]) | | |
| Limaloa-Lailea | " | Hi'ilani/Hikawai-nui |
| Palena-a-Haho (ali'i nui) ½ sibs | Hikawai-nui (twin) | Hanala'anui |
| [Hana-la'a-nui was born at Mokae, Hana; he is the ancestor of Hawai'i Island chiefs: Lanakawai, La'au, Pili, Kalapana, Kua'iwa, Kiha I, Liloa, Hakau, Umi, Keawenuiaumi] | | |
| Palena-a-Haho | Hikawainui (twin) | Hanala'aiki |
| [Hana-la'aiki was born at Mokae, Hana; he is the ancestor of Maui Island chiefs] | | |
| Hanala'anui | Mahuia/Mahuialani | Lanakawai |
| " | " | Kalohialiokawai (w) |
| Lanakawai | Kukamolimolialoha | Pilika'aiea (Samoa?) |
| Hanala'aiki | Kapukapu/Mahuia | Maui Loa (b/Kaupo) |
| Maui Loa | Kauhua | Alo/Alau |
| (Maui Loa organized the chiefs of Maui under one rule with help of his uncle, Haho of Hawai'i Island, but "ceded" Hāna to Hawai'i as the district was more connected to Hawai'i Island chiefs – Maui Loa moved his Court from Hāna to Lahaina) | | |
| Alo /Alau | ? Moe-I-ekana/Moe-I-kaeaea (twin) | Kuhimana (k) |
| " | " | (twin) Kaumana I (w) |
| (According to another genealogy Maui-Loa was succeeded by his son, Alau and the generation of Maui kings passed as follows: Maui-Loa wed Moe-I-Kaeaea and had Kanemo-ku-Heali'i, who wed Keakahale and had Lono-Mai-Kalewa, who wed Kolu-Ku'i-Mulia and had Waka-Alana, who wed Kauai-Kapu and had Alo-I-Kahakau, who wed Puhia and had Kahekahoku, who established on Maui the worship of the Lizard-God La'a. Kahekahoku wed Maia-o-Ula and had Ma-pule-o-Ula, who wed Kamai-o-Kalani and had the warlike Paukei, who conquered the Kingdom of O'ahu and then wed the Princess Painalea of O'ahu and had Luakoa who lost the Kingdom of O'ahu, Luakoa wed the chiefess Hina-Apeape of Kona and had the twin brother and sister, Kuhimana and Kaumana; Chiefess Hina was the sister of Queen Hapae of Hawai'i and half-sister Ali'i Nui Kalapana, ruling chief of Hawai'i Island. | | |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|--|---------------------------------|---|
| Kuhimana sibs | Kaumana/Ka'ana | Kamalo'ohua |
| " | " | Waoha'akuna (w) → Ma'ilikūkahi on O'ahu |
| (When Kuhimana was killed at Battle of Kaeleiki a distraught Kaumana killed herself falling onto his corpse; they were buried together at 'Āao, Maui). | | |
| Kamalo'ohua | Kapu-I-Kaheke (sib of HI Queen) | Loe -Ua-Kane (k) |
| (Legends are connected to Kamalo'ohua (1) he was kidnapped by Kauai Mo'i Kalaunuihōua (2) arrival of fair-skin people.) | | |
| Loe-Ua-Kane | Waha'akuna/Waoha'akuna | Kahokuohua (<i>ali'i nui</i> of Molokai) |
| " | Wao-Haapuna (Kaupo) | Kahaoku-Ohua (k) |
| Kahokuohua (Molokai <i>ali'i nui</i>) | Hikakaiula (Hawai'i chfs) | Kapohanaupuni (w) (Hilo chfs) |
| " | " | Kaulaheanuiokamoku I |
| (According to Kamakau, Kaulaheanuiokamoku I was born at Kūkaniloko, Līhū'e, O'ahu) | | |
| Kaulaheanuiokamoku I (sibs) | Kapohanaupuni (Hilo chiefess) | Kakae |
| " (sibs) | " | Kaka'alaneo |
| (Kaka'alaneo and Kakae later ruled Maui jointly-Kakae's descendants ruled Maui; Kaka'alaneo's → O'ahu) | | |
| Kaka'alaneo (court in Lahaina) | Kaulua | Kaihiwalua |
| (Kaka'alaneo was famous for first planting breadfruit in Lahaina; he later banished his 2 nd son Ka'ulula'au to Lana'i for destroying the breadfruit trees; Ka'ulula'au rid Lana'i of all the E'epa making it safe to live there) | | |
| " | Kanikaniaula | Ka'ulula'au (banished to Lana'i) |
| " | ? | Wao (w) |
| (Wao later ordered Auwai-a-wao dug in Lahaina; still there today) | | |
| Kaihiwalua | Kahekilimanuāhumanu | Luaia (grandson of Kaka'alaneo) |
| Piliwale (Ewa/Līhū'e--O'ahu <i>ali'i nui</i>) | Paakanilea (Līhūe, Kaua'i) | Kūkaniloko (O'ahu Ruling Chiefess) |
| (Piliwale was the son of Kalona-iki and brother of LōLale who married Keleanuino'ana'api'api, aunt of Pi'ilani) | | |
| " | " | Kohepalaoa (Pi'ilani's mother) |
| Luaia (Maui ruling chief) | Kūkaniloko (O'ahu ruling chief) | Kalanimanuia (w) (O'ahu Mo'i) |
| (Kalanimanuia was also great granddaughter of Kaka'alaneo; she became O'ahu ruling chief after her mother Kūkaniloko died; she is famous for building fishponds in Pearl Harbor; her son is also famous for building monumental fishponds in the now Hickam/Honolulu Airport area) | | |
| Kakae ('Āo/Olowalu-Maui <i>ali'i nui</i>) | Kapohauola (maternal aunt) | Kahekilinuiāhumanu I |
| (Kakae's descendants would become the ruling chiefs of Maui; Kapohauola was also wife of Ehu, who was son of Hawai'i Mo'i Kua'iwa, whose father was Kalaunuihōua, and Kamanawa) (Kahekili I waged many wars on Maui and was said to have impoverished his kingdom because of it (MC); he was 2nd cousin of Luaia who married O'ahu ruling chiefess Kūkaniloko) | | |
| Kahekili I (Kāne-Hekili) | Haukanuimakamaka (Kauai chfs) | Kawaukaohēle (Pi'ilani's father) |
| (According to MC his name was Kawakanele which meant <i>Our-Days-of-Poverty</i> to commemorate this time; Kawau was 1 st cousin of O'ahu ruling chiefess Kalanimanuia who ruled after her mother Kūkaniloko died) | | |
| " | " | Keleanuino'ana'api'api |
| (Kelea was a famous Maui surfer who was "kidnapped" by warriors of O'ahu ali'i nui Lōlale, son of ruling chief Kalonaiki; she had three children with him before leaving him to go surfing again where she met up with Kalamakua son of Kalonanui, brother of Kalonaiki; they had Laielohelohe who was betrothed in her youth to cousin Pi'ilani – they are progenitors of the famous Maui royal dynasty.) [It is during the time of O'ahu ruling chief Maili-kukahi, father of Kalona-nui and Kalona-iki that Waikīkī becomes the ruling seat of O'ahu chiefs (Beckwith 1940:383), but the Lō-ali'i continue to reside in Līhū'e]. | | |
| Kawaukaohēle (Kawaukaohēle) | Kepalaoa/Kapalaoa (O'ahu) | Pi'ilani |
| [Pi'ilani The Great was the most renowned ruling chief of Maui which is often called <i>Na-Hono-A-Pi'ilani</i> ; he was the 130 th generation from Wākea; when his mother was being prepared for her nuptials her screams brought her attendants who saw a giant dragon lizard, a <i>kinolau</i> or form of Kū, mating with her – they were all struck blind and the subsequent child was named Pi'ilani <i>The Assent to Heaven</i> – this gave his descendants the tradition of divine descent and protection from being conquered except by a descendant of Kāne e.g. Kamehameha's birth of comet etc. signified the god Kāne (MC)] Kapalaoa mother of Pi'ilani was also the mother of Haua with Laea-Nui-Kaumanamana a <i>kahuna pule</i> of Pa'akalana Heiau at Waipi'o, Hawai'i – Haua became the wife of Liloa and had Kapulani-o-Liloa/Kapu-kini; and wife of 'Umi and had Keliokaloa, Mo'i of Hawai'i Island, Kapokini II and Keawenui-a-Umi who usurped/conquered his younger brother to become Mo'i; Kapalaoa was also the wife of Kaholi-a-Lale, son of Kelea, Pi'ilani's aunt, and chief Lō-Lale of Līhū'e, O'ahu] | | |
| Kalonanui (Waikīkī, b/Kūkaniloko) | Kaipuholuā | Kalamakua-a-Kaipūhōluā |
| (Kalonanui was son of O'ahu <i>ali'i nui</i> Ma'ilikūkahi & Kanepukoa and brother of Kalonaiki, Lō Ali'i of Kūkaniloko, O'ahu) | | |
| Kalamakua (Halawa/Waikīkī Chf) | Keleanuino'anaapiapi | Laielohelohe (b/r on O'ahu) |
| (Kalamakua was famous for building the <i>awwai</i> in Waikiki and Manoa; he was also <i>ali'i nui</i> of Halawa Ahupua'a) | | |
| Pi'ilani | Mokuahualeikea | Kauhiiluaapiilani |
| Pi'ilani (1 st Cousins) | Laielohelohe (O'ahu/Maui lines) | Lonoapiilani |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|---|---|--|
| " | " | Pi'ikea |
| (Pi'ikea married 'Umi-a-Liloa Hawai'i chief and helped younger brother Kiha wage war on brother Lono-a-Pi'ilani) | | |
| " | " | Kalaaheana II -- [Kihawahine] |
| " | " | Kiha-a-Pi'ilani |
| " | Kumunuikapokii | Nihokela → W.C. Lunalilo |
| " | Kuamookea | Kauhiuluapiilani |
| Lonoapiilani | Kealana'awauli | Ka'akaupē (w) |
| (Kealana'awauli was the great granddaughter of Kahakuakane, Ali'i Aimoku of Kaua'i) | | |
| " | ? | Moihala (w) → Sarai Hiwauli I'i |
| 'Umi-a-Liloa (½ sibs) | Kapukini-a-Liloa (3 rd wife) | Keli'iokaloa (eldest son) usurped |
| 'Umi-a-Liloa was the son Hawai'i Island <i>ali'i nui</i> Liloa (son of Kiha-nui-lulu-moku/Kiha I and Wai-o-lea a chiefess from 'Ewa, O'ahu as were her mother Ne'ula and grandmother La'a-kapu) and Akahi-a-Kuleana who was a descendant (7 generations) of a Hāna independent chief. Kū-ka'ili-moku was the feathered war god of Liloa; 'Umi's eldest son Keli'iokaloa succeeded him but later usurped by younger brother, Keawenuia'umi) | | |
| " | " | Kapulani |
| " | " | Keawenuia'umi |
| (Keawenuia'umi usurped older brother; became the father of Lono-I-kamakahiki) | | |
| 'Umi-a-Liloa (Hawai'i ruling chief) | Pi'ikea (Maui chiefess) | Aihakoko |
| " | " | Kumalaenuiaumi (Hilo <i>ali'i</i>) |
| (Kumalaenuiaumi was an ancestor of Kalākaua and Lili'uokalani) | | |
| 'Umi-a-Liloa (Hawai'i Is) | Ku'i-hewa-maka-walu | Papaikaniau I |
| Ho'olae (Kauiki, Hana Chief) | Kaululena (Waiakea Chfs) | Koleamoku |
| Nihokela (uncle/niece) | Ka'akaupē (dau/Lonoapiilani) | Pi'ilaniwahine (gd of Lonoapiilani) |
| Kihapiilani | Kumaka-Kui-Kalani (Hāna) | Kamalalawalu (Maui Chief) |
| " | Koleamoku (Waimea) | Kekauhiokalani |
| " | Umahauuleiohua | Kapuiholani Kuaimanuu |
| " | Hilima | Keaweau |
| " | " | Moemoe → Heleluhe family |
| (Kumalaenuiaumi - Hilo chief) | Kunuunuiwala'au | Maua - Hilo chief) |
| Kauhiokalani | Kauamanu | Makaku |
| Kamalalawalu | Kapu-kini-akua (father-Kona chief) | Kauhiakama (k) [Kamakau 1992:60] |
| Kamalalawalu (cousins) | Pi'ilaniwahine (Maui/Hilo/O'ahu) | Kauhiakama (k) [McKinzie 1986:12] |
| (Kamakau and McKinzie differ as to who the mother of Kauhiakama is—the children are grandchildren of the brothers Lono-a-Pi'ilani and Kiha-a-Pi'ilani according to McKinzie and secure the Royal Line of Maui) | | |
| " | " | 'Umikalakauehuakama (k) |
| " | " | Paikalākauakama (k) |
| " | " | Piilanikapu/Piilanikapokulaniokama (w) |
| " | " | Ka'unohohoikapelapuokakae (w) |
| " | " | Kekaikuihalaokeku'imanano (w) |
| Kauhiakama | Kapukini-2 (Kapukinia-a-Liloa/HI) | Kalanikaumakaowakea (Maui king) |
| [Kapukinia-a-Liloa was the granddaughter of Liloa and daughter of Hawai'i ruling chief Hakau and Kini-Laukapu; her first husband was her uncle Ruling Chief 'Umi-a-Liloa (son of Liloa) and their children were ancestors of Hawai'i Island ruling chiefs] | | |
| " | " | Kanea-Kauhi (w) |
| " | ? | Kauhi II |
| (Kauhi II is banished to Lana'i by his father Kauhiakama, while there he breaks up the bird bones of Lana'i chief Haloalena who collects the bones; Haloalena pleads with Kualii'i of O'ahu to make war on Maui for this act; Kualii'i listens to Kauhi's side and feels he innocently twisted his father's orders to start a war; Kualii'i is impressed with Kauhi's daring and takes him into his household and makes him a leader of his soldiers (Beckwith 1940:396). | | |
| [O'ahu <i>ali'i nui</i> Kualii'i takes a very high ranking Maui pi'o chiefess Ka-lani-kahi-make-i-ali'i as his wife; their son Peleioholani becomes a famous O'ahu ali'i nui who made O'ahu more prosperous than any other ruling chief since Mailikukahi (Beckwith 1940:396)]. | | |
| Kalanikaumakaowakea | sibs Kaneakauhi | Lonohonuakini |
| " | " | Pi'ilani II (w) |
| " | " | 'Umi-a-Liloa (w) [according to MC] |
| " | Makakuwahine | 'Umialiloa (w) [says McKinzie] |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|--|--------------------------------------|----------------------------------|
| Lonohonuakini | Kalanikauamakinilani (Hāna) | Kaulaheanuikamoku II |
| " | " | Lono-Maka-Honua (k) |
| " | " | Kalani-Mai-Heula [Heuila](w) |
| " | " | Kuhala (w) |
| [Kuhala was the great-grandmother of high chief Kalahuimoku II of Hāna and Kipahulu; he married Chiefess Kamehameha and had two daughters, Kahikikala and Kalani-Lehua who became wives of cousin Keōua Kalanikupuapa'ikalaninui Ahilapalapa/Keoua Nui who liked to visit Maui; Keoua and Kahikikala had a son Kalokuokamaile who is the eldest half-brother of Kamehameha I; Keoua was ordered back to Hawai'i by his father Kalani Kama Ke'eaumoku-nui son of Keawe'ikekahialii'iokamoku and half-sister Kalanikauleleiaiwi - royal daughter of ruling chiefess Keakealaniwahine of Hawai'i Island. Keoua had to leave his son and wives on Maui; he then married his cousin Kamakaehekuli daughter of the high chief Haee-a-Mahi of Hawai'i and the chiefess Kalelemaoli-o-Kalani of Maui; Keoua & Kamakaehekuli had a son Kaleimamahu who is the ancestor of the Lunalilo <i>ohana</i> (MC)] | | |
| (Keoua was ½ brother of Kalan'ioapu'u and father of Kamehameha I; he spent much time in his youth on Maui and with several wives had many significant children; wife Kahikikala of Hana <keiki Kalokuomaile>; Kalanilehua of Hana <NI>; Kalola <Kekuipoiva II>; Kamakaehekuli <Kaleimamahu/Kala'imamahu>; Manono <Ki'ilaweau>; Kekuipoiva II <Kamehameha I and Kealiimaikai>; and Akahi-a-Kawalu <Kaleiwohi> | | |
| Kaulaheanuikamoku II | Papaikaniau II (Hawai'i) | Kekaulike |
| " | " | Kaleiamaoli-o-Kalani (w) |
| " | Kalani-kau-lele-i-a-iwi (Hawai'i Is) | Keku'iapoiva Nui |
| " | " | Kahilipoilani |
| Lono-Maka-Honua | Kapoohiwi (Kalae, Moloka'i) | Kauakahiakua-o-Lono |
| [Kauakahiakua-o-Lono by his first wife, cousin Keku'iapoiva I of Maui had Kekelaokalani (w) who married the Haee-a-Mahi (k) of Hawai'i and had Keku'iapoiva II (w), mother of the Kamehameha I; Kekelaokalani also married Kamanawa the Great. They were the parents of Peleuli (w) who married Kamehameha I and had the Kahoanoku-Kinau (k) – father of Kekauonohi wife of Kamehameha II, Kaikoolani (k) and the Kaleikiliwehi (w); Kauakahiakua-o-Lono by his second wife High Chiefess Umiaemoku (also called Umiaenaku) of the Hawai'i House of the Mahi - had one daughter, Kānekapolei, who was the favored queen of Kalaniopu'u, King of Hawai'i – their children were Keoua-Kuahuula (k) of Hilo, and the Pauli-Kaoleioku (k) ancestor of the Princess Ruth Ke'elikolani and her cousin, the Princess Bernice Pauahi Bishop (MC)] | | |
| Kekaulike (1 st cousins) | Kahawalu (sis of Pele'i'oholani) | Kauhiamokuakama |
| (Kauhiamokuakama was the eldest son of Kekaulike and became his assistant; after his father's death the kingdom went to his younger brother whose mother was half-sister of his father therefore higher rank; <i>kahuna</i> advised him to fight his brother for his birthright; Kauhi asked his uncle Pele'ioholani ruling chief of O'ahu for help; brother Kamehamehanui asked his uncle Alapa'inui ruling chief of Hawai'i Island; after death of thousand of relatives on both sides they called a truce in Pu'unēnē; Kauhi ruled the Hāna district; Kamehamehanui ruled west Maui, Moloka'i and Lana'i) | | |
| Kekaulike | Holau | Manuha'aipo (Queen of 'I'ao) |
| (Holau was the daughter of high chief Kawelo-a-Aila and chiefess Kauakahialii-a-Kaiwi, descendant of Lono-I-Kamakahiki) | | |
| " | " | Ke-kau-hiwa-moku |
| " | " | Ka'eokulani |
| (Ka'eo became the high chief of Kaua'i and father of Ka'umu ali'i, last ruling chief of Kaua'i; Ka'eo was later killed on O'ahu by nephew Kalanikupule) | | |
| Kekaulike (½ sibs) | Keku'iapoiva Nui | Kamehameha Nui (Maui Mo'i) |
| " | " | Kalola (several noted husbands) |
| " | " | Kahekilinui'ahumanu II |
| (Kahekili II was born in Hāli'i'imaile; he was a fierce warriors and called the Iron King; he was last Mo'i of Maui) | | |
| " | " | Ku-ho'oheihei-pahu |
| Kekaulike (uncle/niece) | Ha'alo'u (Hawai'i/Maui) | Na-mahana-i-kaleo-nalani |
| (Ha'alo'u was the daughter of Hawai'i Island high chief Haee-a-Mahi, son of ali'i nui Kauauanui-a-Mahi and Kalanai Kalele-a-Iwi, and Maui chiefess Kaleiaomaoli-o-Kalani, full-sibling of Kekaulike; Ha'alo'u had two half sisters – Kamakaehekuli and Kekuipoiva II – same father; Haee was the younger half-brother of Alapainui, who was Hawai'i Island king when Kamehameha I was born; daughter Namahana became the mother of Ka'ahumanu) | | |
| " | " | Ke-kua-manoha (k) father of Boki |
| [(Boki was born Kamā'ule'ule, son of Kekuamaoha and Kamakahuikilani; younger brother of William Pitt Kalanimoku; Boki later was appointed governor of O'ahu and chief of the Wai'anae district; he ran a mercantile and shipping business and encouraged Hawaiians to gather sandalwood; he married Kuini Liliha, daughter of Ulumāheihēi Hoapili and Kalilikauoha, daughter of Kahekili II – they both traveled to England [1824] with Kamehameha II and Kamāmalu; Boki agreed with the breaking of the <i>kapu</i> and was the first chief to be baptized; he left Hawai'i in 1827 with cousin Kaleohano, son of Kauhiamokuakama eldest son of Kekaulike, to search for more sandalwood and never returned; there is evidence that they ended up in Samoa where his descendants live today (Wiki-Boki and pers comm with genealogist Analu Josephides)] | | |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|---|---------------------------------------|---|
| Kekaulike | ? | Ahia |
| " | ? | Nahulanui |
| " | ? | Naaikalani |
| " | ? | Manuailehua |
| " | Kane-a-Lae/Hoakalani (Molokai) | Kumuko'a (Molokai Chief) |
| (Kane-a-Lae was the last independent Ruling Chiefess of Molokai/she was also wife of King Keawe II/Keawe Nui-a-'Umi of Hawai'i Island; their son Kumuko'a married Kahawalu, first wife of Kekaulike and mother of Kauhī-aimoku-akama) | | |
| " | " | Ha'o II (Moloka'i Chief) |
| " | " | Awili (Moloka'i Chief) |
| " | " | Kaliloamoku (w) (Moloka'i Chiefess) |
| " (½ sibs) | Kahilipoilani | ? |
| Kamehameha Nui (sibs) | Kalola (Maui/Hawai'i) | Kalaniakuaioikikilo/Kalaniwaiakua (Kapu) w. |
| " | " | Kuakiniokalani |
| Kamehameha Nui | ? | Pe'ape'a-maka-walu (Kauiki, Hana) |
| " | ? | Kalani-ulu-moku |
| " | ? | Kalani-hele-mai-i-luna |
| Kalei'o-u'u/Kalani'opu'u (Hawai'i) | Kalola (Maui) | Kiwala'ō (Hawai'i ruling chief) |
| Keoua-kalani-kupua-i-kalani-nui | " | Liliha nui |
| Kiwala'ō (½ sibs) | Liliha nui | Kalani-kau-i-Ka'alaneo/Ke'opu-o-lani |
| Kahekili II (½ sibs) | Kau-wahine | Kalani-ku-pule |
| " | " | Ko'alaukani (k.) |
| " | " | Kalola II |
| " | " | Kau-lili-kauoha |
| " | " | Kalilipakauoha |
| Kahekili | Luahiwa (Moloka'i) | Manono Ka-ua-kapeku-lani |
| Kalanikupule | 'Ualapu'e (Moloka'i) | Kau-peka-moku |
| Ke'eaumoku (son of Keawepoepoe) | Namahana (Maui) | Pele-io-holani II |
| [Ke'eaumoku's sister was Kekela; their mother was Kalani-kau-lele-ia-iwi, ½ sister of Keawe] | | |
| Ke'eaumoku | Namahana'i | Kuakini |
| " | " | Ka'ahumanu |
| " | " | Opiia (Lydia Piia Namahana) |
| " | " | Kaheihimalie |
| " | " | Kahekili Ke'eaumoku III |
| Kamehameha | Ka'ahumanu (at 13yrs) | NI |
| Kamehameha I | Ke'ōpū-o-lani (Maui/Hawai'i) | Liholiho/Kamehameha II |
| " | " | Kauikeuoli/Kamehameha III |
| " | " | Nahi'en'ena |
| (Genealogy of Ka'ahumanu and Sibs - mix of Hawaii & Maui Genealogy) | | |
| Hawai'i Island connections | | |
| Liloa | Aihakoko (Hāna chf descendant) | 'Umi-a-Liloa (k) |
| 'Umi-a-Liloa | Ku'i-hewa-maka-walu | Papaikaniau I (w) |
| Kauakahilau | Kuluina | Lonoikahaupu (k) |
| Kaneikauaiwilani | Keakealanivahine | Kalanikauleleiaiwi (w) |
| Kauaia-a-Mahi | Kalanikauleleiaiwi | Ha'ae-a-Mahi (k) |
| Lonoikahaupu | Kalanikauleleiaiwi | Keawepoepoe (k) |
| Keawepoepoe | Kūma'aikū | Ke'eaumoku Pāpā'ahiahi (k) |
| (Ha'ae-a-Mahi, father of Ha'alo'u, and Keawepoepoe, father of Ke'eaumoku Pāpā'ahiahi are ½ sibs) | | |
| Maui-Hawai'i Island inter-connections | | |
| Lonohouakini | Kalanikauanakinilani | Kaulahea II (k) |
| Kaulahea II | Papaikaniau (Hawaii) | Kekaulike (k) |
| " | " | Kalelemauliokalani (w) |
| Ha'ae-a-Mahi (Hawai'i) | Kalelemauliokalani (sib of Kekaulike) | Ha'alo'u (w) (Maui) |
| Kekaulike (uncle/niece) | Ha'alo'u | Nāmāhāna'i Kaleleokalani (Maui) |

Table 1. Annotated Genealogy of the Maui Royal Line following the Ololo/Nana'ulu Lines (cont.)

| Kane (k) | Wahine (w) | Keiki |
|---|--------------------------|------------------------------|
| Ke'eaumoku Pāpā'ahiāhi (2 nd cousins) | Nāmāhāna'i Kaleleokalani | Ka'ahumanu (Maui/Hawai'i) |
| (Namahana was first married to her older ½ brother Kamehamehanui Ailua the Mo'i of Maui; after his death the reign went to his younger brother Kahekili II who expected ½ sister Namahana to marry him; she chose instead Ke'eaumoku, a "visitor" from Hawai'i Island who was in hiding because he took the side of Kamehameha I against Kīwala'ō - whom he killed - son of Kalola, full sister of Kahekili II and ½ sister of Namahana, and Keōua Kū'ahu'ula, cousin of Kamehameha I; Kahekili became suspicious of this union and spied on them - Namahana had lands in Waihe'e, but they moved their family to Hāna where Ka'ahumanu was born, to get away from Kahekili II. That was not safe so they eventually moved to Hawai'i Island at Kāhalu'u Bay; at 13 years of age her father gave Ka'ahumanu in marriage to Kamehameha I.) | | |
| Ke'eaumoku Pāpā'ahiāhi (2 nd cousins) | Nāmāhāna Kaleleokalani | Kalākua Kaheheimālie |
| (Kalākua also known as Hoapili Wahine married Kala'imamahu, ½ brother of Kamehameha I and had a daughter Kekāuluohi, mother of King Lunalilo; divorced him then married Kamehameha I and had two sons who died in infancy and two daughters, Kamāmalu who married Liholiho-Kamehameha II, and Kīna'u who had Alexander Liholiho-Kamehameha IV, Lot Kapuāiwa-Kamehameha V, and Victoria Kamāmalu-Ka'ahumanu IV; after Kamehameha I death she married Ulu māhehei Hoapili governor of Maui.) | | |
| Ke'eaumoku Pāpā'ahiāhi (2 nd cousins) | Nāmāhāna Kaleleokalani | Kahekili Ke'eaumoku 'Opio II |
| (Kahekili Ke'eaumoku 'Opio II or George Cox as he liked to be called, was appointed Governor of Maui by Kamehameha I and took over responsibilities of his father after his death; he took the name George after King George IV and Cox after sea captain Harold Cox; he had multiple wives one of whom was Grace Kama'iku'i Young, daughter of John Young and foster mother of Emma Rooke; he spoke English and befriended European and American traders and was one of the first to house Protestant missionaries who arrived in 1820; he also learned to read and write). | | |
| Ke'eaumoku Pāpā'ahiāhi (2 nd cousins) | Nāmāhāna Kaleleokalani | Nāmāhāna-o-Pi'ia (Lydia) |
| (Lydia was also married to Kamehameha I; but later Kamehameha I and Ka'ahumanu arranged for her to marry Gideon Peleioholani Laanui, grand nephew of Kamehameha I, who was ten years younger; Hiram Bingham married them in a Christian ceremony-they lived in Waialua, O'ahu; she also served as Governor of O'ahu. Gideon was born in Waimea, Hawai'i to Chiefess Kaohelani chiefess of Hāna, niece of Kamehameha I and heir to the lands of Hāna, Kīpahulu, and Kaupō and daughter of High Chief Kalokuokamaile and High Chiefess Kaloioikalani.) | | |
| Ke'eaumoku Pāpā'ahiāhi (2 nd cousins) | Nāmāhāna Kaleleokalani | Kuakini (John Adams) |
| (John Adams Kiiapalaoku Kuakini the youngest of the siblings chose his name after President John Quincy Adams; as a youth excelled in sports and canoeing; he was appointed the first governor of Hawai'i Island and served from 1829 to his death in 1844, however during a "rebellion" on O'ahu in 1833 he was appointed relief governor of O'ahu where he lived at Fort Honolulu, but later went back to Hawai'i Island; he had the "Great Wall of Kuakini" built to contain the cattle running wild in Kailua-Kona; he also had Hulihe'e Palace built in 1838). | | |
| Kamehameha I (3 rd cousins) | Ka'ahumanu | NI |

Table 2 lists the royal lineage of Victoria Kamāmalu, a descendant of Pi'ilani and Kekaulike of Maui and granddaughter of Kamehameha I. She was awarded the lands of Kahului.

Table 2. Lineage of Victoria Kamamalu (RP 7713) (McKinzie 1986:31; Spoehr 1987:8-9).

| Kane (male) | Wahine (female) | Keiki (offspring) |
|------------------------------------|------------------------------------|---------------------------|
| Kekaulike (descendant of Pi'ilani) | Ha'alo'u (Hawai'i/Maui lines) | Nāmāhāna Kaleleokalani |
| Ke'eaumoku Nui (Hawai'i Chief) | Nāmāhāna (Maui Chiefess) | Kuakini (k) |
| " | " | Kalākua (w) |
| " | " | Ka'ahumanu (w) |
| Kamehameha I (Hawai'i Chief) | Kalākua (Maui Chiefess) | Elizabeth Kina'u |
| " | " | Kamāmalu |
| " | Ka'ahumanu (Maui/Hawai'i Chiefess) | NI |
| " | Keōpūolani (Maui/Hawai'i Chiefess) | Liholiho |
| " | " | Kauikeaouli |
| " | " | Nahi'ena'ena |
| Mataio Kekuanao'a | Elizabeth Kina'u | Moses Kukuaiwa |
| " | " | Victoria Kamāmalu |
| " | " | Lot Kamehameha (K-V) |
| " | " | Alexander Liholiho (K-IV) |
| Alexander Liholiho (K-IV) | Emma Na'ea Rooke | Albert Edward Kauikeaouli |

The following quotation from the 'Genealogy of the Royal Descendants' living at the time of Queen Liliu'okalani further illustrates how the Hawaiian people were related: "The tillers of the soil were chiefly people. Rare indeed were the men and women who do not have their royal genealogy from ancient times up to this period" (McKinzie 1986:88).

Traditional Literature: *Mo'olelo*

The ethnographic works of the late 19th and early 20th century contribute a wealth of information that comprise the traditional literature - the *mo'olelo*, *oli*, and *mele* - as well as glimpses into snippets of time, and a part of the Hawaiian culture often forgotten. The *mo'olelo* or legends allow *ka po'e kahiko*, the people of old, the *kupuna* or ancestor, to come alive, as their personalities, loves, and struggles are revealed. The *oli* (chants) and the *mele* (songs) not only give clues about the past, special people, and *wahi pana* or legendary places, they substantiate the magnitude of the language skills of *na kupuna kahiko* (the people of old). The following sections give some explanation of the traditional literature.

Legends or *mo'olelo* are a great resource as well as entertaining. Leib and Day (1979: xii) state in their annotated bibliography of Hawaiian legends, that legends are a 'rough' history. They noted Luomala's idea of the value of myth and legend in studying a culture. According to Luomala, "to a specialist in mythology, a myth incident or episode is as objective a unit as an axe, and the differences and similarities of these units can be observed equally clearly and scientifically" work (Leib and Day 1979:xii). Leib and Day (1979:1) also expressed concern about authenticity, and sometimes found it difficult to determine if a legend was a primary or secondary source. The following definitions of terminology, including the Hawaiian classification of prose tales - *mo'olelo* or *ka'ao*. come from their work as follows:

| | |
|------------------|---|
| <i>Tradition</i> | used to refer to that which is handed down orally in the way of folklore |
| <i>Folklore</i> | a rather inclusive term, covering the beliefs, proverbs, customs, and literature (both prose and poetry) of a people |
| <i>Myth</i> | a story of the doings of godlike beings |
| <i>Legend</i> | deals with human beings and used interchangeably with 'myth' ... because the collectors and translators of the tales often failed to make the strict distinction themselves |
| <i>Ka'ao</i> | "pure fiction" |
| <i>Mo'olelo</i> | deals with historical matters and somewhat didactic in purpose... included tales of the gods, as well as tales of historical personages... many have recurring patterns, plots, and types of characters |

According to Leib and Day (1979) a substantial number of legends were collected and written in Hawaiian during the century following Cook's arrival in Hawai'i. A few accounts of the mythology were printed in the journals of missionaries and travelers, and a few of the Hawaiian lore were printed in languages other than English. About 1836 a movement was started under the influence of Reverend Sheldon Dibble, to write down in Hawaiian some of the material dealing with the native legendary history, customs, and other lore. Results of the research were published at the Lahainaluna press in 1838. A partial translation made by Rev. Reuben Tinker was issued serially in 1839 and 1840 - the first four installments appearing in *The Hawaiian Spectator* and the last four in *The Polynesian*. In 1841 the Royal Hawaiian Historical Society was formed at Lahainaluna. Some of their research and the earlier *Ka Moolelo Hawaii* were incorporated into Dibble's *History of the Sandwich Islands* (1843). After his death in 1843 his work was carried on principally by two of his outstanding native pupils, David Malo and Samuel M. Kamakau. Malo wrote his own *Moolelo Hawaii* about 1840 at the request of Rev. Lorrin Andrews, which was later translated by Emerson as *Hawaiian Antiquities*. In 1858 the Rev. John F. Pogue of Lahainaluna printed a third *Moolelo Hawaii*, based on the 1838 history, but including additional material. Kamakau did not print any of his material for thirty years (Leib and Day (1979:7, 8, 9).

The increase in the amount of Hawaiian folklore appearing in the native press in the 1860's and thereafter was at least in part the result of an organized effort to collect and preserve this material. At Kamakau's instigation a Hawaiian society was formed in 1863 to collect material for publication in the native press at the time, and also to aid Fornander's research. Fornander was the greatest collector of Hawaiian folklore. He credits as sources, several natives whom he sent on tours of the Hawaiian Islands to collect all available Hawaiian *mo'olelo*, as well as Kalākaua, Lorrin Andrews, Malo, Dibble, Dr. John Rae, Kamakau, Naihe, S.N. Hakuole (Haleole), Kepelino, and Remy. The culmination of this effort was Fornander's (1880) *An Account of the Polynesian Race: Its Origin and Migrations and the Ancient History of the Hawaiian People to the Times of Kamehameha I*. Fornander's collection remains the most important single source of Hawaiian legends (Leib and Day 1979:9-13).

In June 1865 Kamakau began publishing articles on traditions and legends in *Ka Nupepa Kuokoa*. His series of articles dealing with Hawaiian history, particularly from the late 18th century on, and especially of Kamehameha, appeared weekly in the same publication in October 1866. When the newspaper was discontinued in 1869, this series continued in *Ke Au Okoa* for nine months. Kamakau then wrote a series on ancient Hawaiian religion, customs, and legendary history in *Ke Au Okoa* until February 1871. All of his writings were in Hawaiian (Leib and Day 1979:8, 9).

Very little work was done in translating Hawaiian mythology into English until late in the 19th century. It was not until 1888, over a hundred years after the discovery of the Hawaiian Islands, that the first book in English dealing exclusively with Hawaiian mythology was printed: *The Legends and Myths of Hawaii* by King Kalākaua. However, it was more likely authored by former United States Minister to the Hawaiian Islands, R.M. Daggett (Leib and Day 1979:5, 7).

Thrum is one of the most frequently cited authorities on Hawaiian lore. He was born in Australia in 1842 and arrived in Honolulu in 1853. In 1875 he began publication of the *Hawaiian Almanac and Annual*, later known as *The Hawaiian Annual* or *Thrum's Annual*, which appeared yearly under his editorship until his death in 1932. Thrum's contribution was as editor, compiler, and publisher of translations, not translator. By providing a place for the publication of such material in his *Annual*, and perhaps by persuading authors to provide him with translations, he was instrumental in many stories appearing in printed form. Thrum wrote or rewrote a large portion of his own material (Leib and Day 1979: 17).

Thrum's first book *Hawaiian Folk Tales* was published in 1907 and consisted largely of tales that had previously been published in *Thrum's Annual*. Only 35 of the 260 pages were translated by Thrum, the rest were credited to Rev. A.O. Forbes, Rev. C.M. Hyde, William Ellis, J.S. Emerson, Mrs. E.N. Haley, N.B. Emerson, Mrs. E.M. Nakuina, Walter M. Gibson, Joseph M. Poepoe, and M.K. Nakuina. His second book *More Hawaiian Folk Tales*, published in 1923 was similar. A number were translations from Hawaiian language newspapers from half a century earlier, often with no translator cited. Translators credited were A. F. Knudsen, Henry M. Lyman, W. D. Westervelt, J. H. Boyd, and Lahilahi Webb. Some of the chapters were reprinted or abridged from the Bishop Museum translations of the *Fornander Collection*, of which Thrum was editor. His greatest work, *Fornander's Collection of Hawaiian Antiquities and Folklore*, was published by Bishop Museum in 1916 and 1920 in three volumes. The original editor was W. D. Alexander and most of the work was completed under his supervision. However, Alexander died in 1913 and Thrum was appointed to complete the production. Beckwith credits John Wise with the original translation of that work. In 1920 or 1921 Thrum completed another work "Ancient Hawaiian Mythology" which was never published (Leib and Day 1979: 18-19).

Leib and Day (1979:14) discuss a resurgence of collecting legends in the early 1900s in the following:

A great resurgence of interest in Hawaiian folklore began in the early twentieth century, in part caused by the annexation to the United States. People on the mainland wanted to know more about "their new

island possessions.’ The funds of the Bureau of American Ethnology were made available for Hawaiian studies i.e., Emerson’s *Unwritten Literature* and Beckwith’s *Laieikawai*. The most important twentieth-century translators of Hawaiian legends have been N. B. Emerson, Thomas G. Thrum, William D. Westervelt, William Hyde Rice, Laura C. S. Green, Martha Warren Beckwith, and Mary Kawena Wiggins Pukui. Emerson’s extensive notes were a major contribution to Hawaiian scholarship. Most of them explain the meanings of Hawaiian words. In many, Emerson alludes to legends, giving a number of them briefly and relating a few in some detail. Some of these probably do not exist anywhere else in print.

The following are excerpts of stories about various significant *ali’i nui* of Maui and other islands, who impacted Maui and greater Hawaii, beginning with some ancestral chiefs of Hāna. What becomes evident is how inter-related the chiefs or royal families were.

Hua lived in eastern Maui around AD 1170, and was known as the “robber baron that was censored by high priest Luahomoe” (Musick 1897:324). In *Tales and Traditions of the People of Old*, Kamakau (1991) discusses the infamous king Hua, but also clarifies the different Hua, their descendants and their relationships to Maui. In spite of his infamy, most of his descendants turned out to be commendable chiefs. Kamakau (1991) explained about Hua and his *’ohana*, and that *ali’i nui* often went by different names. Fornander (1880:80) also noted this: “according to ancient custom, it was very common for high chiefs to be known by several names.”

One Hua was from Lahaina, Maui, but was not the Hua who constructed the *heiau* Apahu’a in Waine’e next to Puako. This Hua was the son of Kapua’imanaku (Pohukaina) whose *heiau* was Luakona, near Kapo’ulu. Huanuiikalala’ila’i was born at Kewalo in Honolulu (Kamakau 1991:101) and Hua-a-Pohukaina also known as Hua-a-Kapua’i-manaku was born at Lahaina. He built the *heiau* of Honua’ula and Kuawalu at Ka’uiki, Hāna and was considered a war-loving chief. He lived at Wānanalua in Hāna. His son Pau-a-Hua also known as Pau-nui-i-ke-anaina, was born at Wai’anae, and later ruled from Ohikilolo to Keawaula on O’ahu. Another Hua, Hua-a-Pau also known as Hua-nui-i-ka-la-la’ila’i was born at Kewalo, O’ahu and was known as a good chief. His government was called *he aupuni la’i*, a peaceful government. He was a chief of Honolulu and Waikīkī (Kamakau 1991:148, 149; see also Sterling 1998:133).

According to legends, two of Hua-a-Pohukaina descendants, Hanala’anui and Hanala’aiki, became the progenitors of the Hawai’i and Maui royal lines. These were twin children of Hikawainui (w) and Palena-a-Haho (also born in Hāna, and son of Hawai’i Island *ali’i nui* Haho, who was the son of Paumakua-a-Hua of O’ahu. The twins were born in Kahinihini’ula in Mokae adjacent to Hāmoa Ahupua’a and certain districts of Maui were named after them. The following synopsis is from Kamakau (1991:101, 150-152).

Paumakua, chief of Ko’olau and Mokapu was the son of Hua-nui. He married his sister Manokapili-lani and they had a son Haho who was born in Wai’alua, O’ahu. Haho’s child was Palena-a-Haho...Palena [a-Haho] was born on the hill of Ka’uiki [sic], in Hāna, Maui at the site Hananaiku; he ruled and died on O’ahu...his grave is Kalua-o-Palena in Kalihi, O’ahu...Palena-a-Haho who with Hi-ka-wai-nui had the twins Hanala’anui and Hanala’aiki who were born at Kahinihini’ula, at Mokae and Hāmoa, [Hāna] and a certain *moku’āina* land was named after these boys...The twins were progenitors of Hāna people...and because of their good deeds...their descendants gave the land their names. This was after the division of the island into *ahupua’a*, *’okana*, and *moku’āina* – at the time when the island was divided by Kalai-haohia during the reign of Kaka’alaneo.... Hanala’anui was the ancestral chief for those of Hawai’i and Hanala’aiki for those of Maui.... [However] there is a dispute...Hanala’anui really belonged to Maui.... In the division and separation of the Maui ancestral genealogies, the line of succession of Maui chiefs was made clear. It can be found in the genealogy of Hanala’aiki to the time of Kahakili by turning to the ancient traditions of deeply versed persons. Here are made plain the places in which the chiefs were born, their deeds, and places in which their corpses were laid.

In Beckwith's (1970: 387, 389) version Haho is a Maui chief as follows:

Hanala'anui and Hanala'aiki. Maui chief Haho, son of Paumakua and grandson of Hua-nui-ka-la'ila'i [Haho was grandfather of the twins], was the traditional founder of the *Aha'ali'i* or ranking body of chiefs whom were distinguished by the use of the sacred cord called *aha*. They cultivated a metaphorical form of speech to conceal their words from the uninitiated.... Between the periods of Hua and Pi'ilani, that is, between Moikeha's time and that of Umi on Hawaii, the twins were born at Kahinihini in Mokae, Hāmoa [sons of Palena, son of Haho]. 'Little and big sacred one of Hāna' called Hana-la'a-nui and Hana-la'a-iki, from who respectively the chiefs of Hawaii and Maui are descended. From Kiha and his wife Koleamoku are descended the great Kaupō families of Ko'ō and Kaiuli. From them, Kahekili's wife Kauwahine, mother of Kalanikūpule, the last ruling chief of Maui, and of a daughter, Kailikaouha, who became the wife of the Maui chief Ulumehe'ihe'i Hoapili and mother of Liliha, beloved wife of Boki of sandalwood fame.

The following synopsis consists of excerpts from Fornander's (1880) *An Account of the Polynesian Race: Its Origins and Migrations*, and gives an overview of the various *ali'i nui* (ruling chiefs) of Maui, which Fornander refers to as "Moi." In the following excerpt Fornander (1880:80) notes the independent chiefs:

Among the Maui chiefs from the close of the migratory period, say La'amaikahiki to Pi'ilani, the contemporary of 'Umi and his father Liloa, not many names arrest the attention of the antiquarian student. The position of 'Moi' of Maui appears to have descended in the line of Haho, the son of Paumakua-a-Huanuikalalailai, though, judging from the tenor of the legends, East Maui, comprising the districts of Ko'olau, Hāna, Kīpahulu, and Kaupō, was at times under independent Moīs (sic). The legends mention six by name, from Eleio to Hoolae, the latter of whom was contemporary with Pi'ilani, and whose daughter [Koleamoku] married Pi'ilani's son, Kiha-a-Piilani. Their allegiance to the West Maui Moīs was always precarious, even in later times.

In the following excerpt Fornander (1880:80) discusses the reign of Kamaloohua and the Wailuku visitors during this period:

While Kamaloohua ruled over the greater part of Maui, a chief who was doubtless a near relation, and who was called Wakalana, ruled over the windward side of the island and resided at Wailuku. During his time tradition records that a vessel called "Mamala" arrived at Wailuku. The captain's name is said to have been Kaluiki-a-Manu, and the names of the other people on board are given in the tradition as Neleike, Malaea, Haakoa, and Hika. These latter comprised both men and women, and it is said that Neleike became the wife of Wakalana and the mother of his son Alo-o-ia, and that they became the progenitors of a light-colored family, "po'e 'ohana Kekea;" they were white people, with bright, shining eyes, "*Kanaka Keokeo, a ua alohilohi na maka.*"

In the following excerpt Fornander (1880:80) discusses three generations after Kamaloohua:

After the reign and times of Kamaloohua nothing worthy of note has been recorded of the Maui chiefs until we arrive at the time of Kakae and Kakaalaneo, the sons of Kaulaheanuiokamoku I [Kaulaheha I], three generations after Kamaloohua.... Kakae's brother, Kaka'alaneo, appears, from the tenor of the legends, to have ruled jointly with Kakae over the islands of Maui and Lāna'i. He was renowned for his thrift and energy. The brothers kept their court at Lahaina, which at the time still preserved its ancient name of Lele, and tradition has gratefully remembered him [Kaka'alaneo] as the one who planted the breadfruit trees in Lahaina, for which the place in after times became so famous.

Kaka'alaneo was a grand uncle of Pi'ilani; the following synopsis about Kaka'alaneo and Kūkanaloa are excerpts from Beckwith (1970). There appears to be a time-conflict with the arrival of the light-skinned foreigners. Fornander (1880) indicates they arrived during Ka-malo-o-Hua's reign, while Beckwith indicates the foreigners arrived four generations later during the time Kaka'alaneo.

Many legends mention the name of Kaka'alaneo (Kūka'alaneo, Ka'alaneo), who lived in the Lahaina district on the hill Keka'a [Black Rock of Sheraton Maui]. He also owned fishponds in the Hāna district on the opposite end of the island and planted a famous breadfruit grove in Lahaina. His wife was the Moloka'i chiefess whom Eleio found for him and who brought him the first feather cape ever seen on Maui, and by whom he had the mischievous son Ka'ulula'au who killed off the bad spirits [E'epa] on Lāna'i. In his day Lahaina was called Lele. According to tradition, a group of strangers (*haole*) who later played an active part in court life and whose names were (according to Kamakau), kept in memory as late as Captain Cook's day, arrived on Maui in Kaka'alaneo's time. Kūkanaloa and Kaekae (also Kakae) were the leaders of this group. The "last allusion" in this legend is a pun about chief Lōlāe of O'ahu who abducted the pretty chiefess of Maui, Kelea [sister of Pi'ilani's father], while she was out surfing and carried her away to O'ahu in the uplands of Līhu'e. She later left him for his cousin Kalamakua of 'Ewa [also Hālawā and Waikīkī], by whom she became mother of the high chiefess Laie-lohelohe (The drooping pandanus vine), who became the wife of her Maui cousin Pi'ilani. All these names appear in the chant linked with the coming of Kū-kanaloa, together with the names of a wife and son of Kaka'alaneo (Beckwith 1970:384-385). Along with the "Legend of Kukanaloa" is an accompanying *mele* that refers to Pi'ilani. This *mele* was probably after Kaka'alaneo's time because Pi'ilani was born much later.

Legend of Kūkanaloa. The strangers land first at Ke'ei in South Kona and then come on to Waihe'e, Maui, and land at a place called Ke-ala-i-Kahiki (The road to Kahiki). They are exhausted and the natives clothe and feed them. They are light-skinned with sparkling eyes. When asked after their homeland and parents they point to the uplands 'far, far above where our parents dwell' and show that they are familiar with bananas, breadfruit, mountain apple, and candlenut trees. The two leaders became Kaka'alaneo's property and there is no *kapu* place closed to them. They married chiefesses and some of their descendants are living today. They were called Kani-ka-wi and Kani-ka-wa, 'perhaps because their speech was as unintelligible as that of the *lale* birds that live in the hill' (Beckwith 1970:386). Pi'ilani and some of his family are mentioned in the following *mele* of this *mo'olelo*:

| | |
|--------------------------------------|--|
| <i>Puka mai o Kanikawi, Kanikawa</i> | Came Sharp-sound, Loud sound, |
| <i>O na haole iluna o Halakaipo,</i> | The strangers above Halakaipo |
| <i>Puka mai nei Kukanaloa,</i> | Came Kū-kanaloa |
| <i>Kupuna haole mai Kahiki</i> | The stranger forefather from Kahiki |
| <i>Puka mai nei Kakaalaneo</i> | Came Kakaalaneo, |
| <i>Me ke leo iki o Kakae,</i> | With the soft-voiced Kakae, |
| <i>O Kaulua is, o Kaihiwalua</i> | Kaulua (the wife), Kaihiwalua (the son), |
| <i>O Kelea, o Kalamakua,</i> | Kelea (the wife), Kalamakua (the husband), |
| <i>O Pi'ilani ia, o Laielohelohe</i> | Pi'ilani (the husband), Laielohelohe (the wife). |

According to Fornander (1880), Kakae was the son of Kaulaheanuiokamoku I, and the brother of Kaka'alaneo with whom he co-ruled Maui. He was also the father of Kahekiliniuihumanu I and Kaulaheanuiokamoku II, grandfather of Kawaokaohēle and Keleanuino'ana'api'api and great-grandfather of Pi'ilani of Hāna and Lahaina. The Maui royal line of ruling chiefs comes primarily from Kakae's descendants. The following synopses from Fornander (1880) reveal some of their history.

Kakae, Kahekili I, and Kawaokaohēle. Kakae's son was Kahekili I, who is known to have had two children, a son name Kawao Kaohēle [Pi'ilani's father], who succeeded him as Mo'i of Maui, and a daughter named Kelea-nui-noho-ana'api'api [Pi'ilani's wife's mother], who became the wife of Lō-Lale, son of Kalona-iki, and later of Kalamakua, son of Kalona-nui, of the O'ahu Maweke line. Fornander (1880:78-79) expounds on this genealogy in the following:

From the time of Mauiloa, third from Haho and contemporary with La'amaikahiki, to the time of Kaulahea I [father of Kakae and Kaka'alaneo] there must have been troublous times on Maui, and much social and dynastic convulsions, to judge from the confusion and interpolations occurring on the royal genealogy of this period. I have shown it to be nearly historically certain that the O'ahu and Maui Paumakuas were contemporary, and it will be seen in the sequel that it is absolutely certain that Kawaokaohele [Pi'ilani's father] on the Paumakua-Haho line was contemporary with Kalamakua, Piliwale and LōLale on the Maweke line of O'ahu chiefs, as well as on the O'ahu Paumakua line through Lauli-a-La'a; and yet the Maui royal genealogy, as recited at the court of Kahekili II at the close of the last century, counts thirteen generations between Mauiloa and Kaulahea I, or sixteen generations between Mauiloa and Kawaokaohele [Pi'ilani's father], whereas the Maweke and Oahu Paumakua genealogies count only seven from La'amaikahiki to Keleanuinoana'api'api [mother of Pi'ilani's wife La'ielohelohe], the sister of Kawaokaohele [Pi'ilani's father].

Fornander (1880:83-87) discusses Kawaokaohele, father of Pi'ilani in the following:

Kawaokaohele. During the reign of Kawaokaohele [Pi'ilani's father], the son of Kahekili I, and grandson of Kakae, the island of Maui appears to have been prosperous and tranquil. No wars with neighboring islands or revolts of turbulent chieftains at home have left their impress on the traditional record. Kawaokaohele's wife was Kepalaoa, whose pedigree is not remembered, but who was probably some Maui chiefess. Kawaokaohele was succeeded as Mo'i of Maui by his son Pi'ilani, who, through his good and wise government, and through his connection with the reigning chief families of O'ahu and Hawai'i, brought Maui up to a political consideration in the group which it never had enjoyed before, and which it retained until the conquest by Kamehameha I consolidated the whole group under one rule.

There are several legends of Keleanuinoana'api'api (Kelea), the sister of Kawaokaohele, aunt of Pi'ilani, and mother of La'ielohelohe, Pi'ilani's wife. Her story is one of intrigue, and romance, but also allegorizes the life and privileges of *ali'i nui* women. It further illustrates the interrelationships between the *ali'i nui* of the various islands. The following *mo'olelo* is extracted from Fornander's (1880:83-87, 90-91) "Story of Keleanui-Nohoanaapiapi."

The Story of Keleanui Nohoanaapiapi, sister of Kawaokaohele, begins in Hāna. The men of Chief LōLale of Līhu'e, O'ahu [now Schofield] were searching for a wife for him.... They went first to Moloka'i, then to Lāna'i, then sailed for Hāna intending to go to Hawai'i. While at Hāna they heard that Kawaokaohele, the Mo'i of Maui was stopping with his court and his chiefs at Hamakuapoko, regulating the affairs of the country, and enjoying the cool breezes of that district, and the pleasures of surf-bathing, and that with him was his sister Kelea, the most beautiful woman on Maui, and the most accomplished surf-swimmer.

They thought of a plan to win her confidence by going surfing with her, and challenging her to a race. On her third time out, they captured her, and took her into a waiting canoe to O'ahu. They took her to Chief LōLale of Līhue, O'ahu, son of O'ahu Moi Kalona-iki, and brother of heir-apparent Piliwale. "And as she did not commit suicide, it may be inferred that she became reconciled to her lot and accepted him as her husband. And as no invasion of O'ahu was ever attempted by Kawaokaohele, or vengeance exacted for the abduction of his sister, it is probable, though the legend says nothing about it, that the affair was diplomatically settled to the satisfaction of all parties." [Lō-Lale was a Lō Ali'i, who were guardians of the sacred birthing place of Kūkaniloko; chiefs born there were given first consideration if a new chief was needed to be replaced anywhere in the islands.]

Kelea and Lō-Lale had three children: Kaholi-a-Lale, who later married Kohipalaoa [Kohepalaoa], sister of Kūkaniloko, Mo'i of O'ahu after their father Piliwale's death; Luliwahine, and Lulikane. After several years and three children she informed Lō-Lale that she was leaving him, as was her privilege due to her high rank. He reluctantly gave his consent, but his grief was preserved in a

chant. While traveling around O‘ahu, Kelea met Kalamakua, chief of Hālawā, son of Kalona-nui and cousin of Lō-Lale. They marry and have a daughter La‘ielohelohe, who in her youth was betrothed to her cousin Pi‘ilani, son of Kelea’s brother Kawaokaohele.

There are other versions of that story. The following synopsis corroborates Fornander’s (1880) “Story of Kelea.” The genealogies indicate how *ali‘i nui* from all the islands were related, and the *mo‘olelo* also confirm this as indicated in the following story of La‘ielohelohe in Kamakau (1991:45-49).

The Story of La‘ielohelohe. Kalamakua was a good chief who cultivated large pond fields of Waikīkī. He married [Kelea] Keleanuino‘ana‘api‘api, a beautiful chiefess and sister of Kawaukahohele [children of Kahekili I], [Pi‘ilani’s father, also spelled Kawaokaohele] the *ali‘i nui* of Maui. She loved to surf at Hamakuapoko, Kekaha, and Wailuku.... The chiefs of O‘ahu, searching for a wife for Chief Lōlale, ruling chief of Līhu‘e, O‘ahu, when reaching Hāna heard about the beautiful Kelea, they wanted to obtain her for their chief. They found her at Hamakuapoko, and she proved to be an unsurpassed surfer of East Maui. They tricked her and kidnapped her to Wai‘alua, O‘ahu, where she was taken to Chief Lōlale at Līhu‘e. They had three children: Kaholialale, Luliwahine, and Lulikane, ancestral chiefs of O‘ahu. After ten years she asked her husband if she could go to ‘Ewa to go sightseeing and he agreed. On her travels she heard about the surfing of Waikīkī and asked her companions if she could go there and they agreed. She asked the *kama‘aina* for a board and she proved to be a very skilled surfer. The people cheered and cheered her. Chief Kalamakua was working in his fields and heard the shouts. He went to check and watched her from the shore. When he saw her skill and beauty he asked if she was Kelea. She said yes. He wrapped his *kihei* around her naked body and took her to a *kapu* place. She married Kalamakua. They had La‘ielohelohe, born at Helumoa and raised in Waikīkī. She was betrothed to Pi‘ilani, the son of the *ali‘i nui* of Maui [Kawaokaohele]. Her *akua* grandmothers Hapu‘u and Kalaiohauola took care of her. Later she voyaged to Maui to marry Pi‘ilani. They lived at Halehuki and had four children: Lono-a-Pi‘ilani, Pi‘ikea, Kala‘aiheana, and Kihapi‘ilani. La‘ielohelohe returned to O‘ahu for Kiha’s birth. He was born at ‘Apuakehau in Waikīkī—there is a rock there to mark the place.

Pi‘ilani, nephew of Kelea was a descendant of Hanala‘aiki of the ‘Ulu line as indicated in the genealogies and *mo‘olelo*. His parents were Maui *ali‘i nui* Kawaokaohele and Kepalaoa. Kawaokaohele was the son of Maui *ali‘i nui* Kahekili I and Kauai chiefess Haukanuimakamaka. During Pi‘ilani’s life and reign as *ali‘i nui* of Maui, he was a contemporary of Big Island *ali‘i nui* Liloa and his son ‘Umi-a-Liloa. However, there is no “Story of Pi‘ilani” by any of the early compilers of *mo‘olelo*. Fornander (1880) does note that during Pi‘ilani’s reign, and perhaps during that of his father, the Hāna chiefs acknowledged the “suzerainty” of the Mo‘i of Maui, and Pi‘ilani made frequent tours all over his dominions, enforcing order and promoting the industry of the people (Fornander 1880:87).

According to Fornander (1880), Pi‘ilani’s children with La‘ielohelohe were Lono-a-Pii, who succeeded him as Mo‘i of Maui; and Kiha-a-Pii, who was brought up to the age of manhood among his mother’s relatives on O‘ahu. Their daughter Pi‘ikea, became the wife of ‘Umi, son of Līloa, Mo‘i of Hawai‘i, and through her great-grandson, I, became the “ancestress of the present sovereign of the Hawaiian group, Kalākaua” (Fornander 1880:87). They had another daughter, Kala‘aiheana, who is not mentioned any further. With another wife, named Moku-a-Hualeiakea, a Hawai‘i chiefess of the Ehu family, Pi‘ilani had a daughter, Kauhi‘iliula-a-Pi‘ilani, who married Laninui-a-Kaihupee, chief of Ko‘olau, O‘ahu, and lineal descendant of Maweke through his son Kalehenui. And with still another wife, named Kunuunui-a-kapokii, whose pedigree has not been preserved, he had a son, Nihokela, whose eighth descendant was Kauwa, grandmother of the late King Lunalilo on his father’s side (Fornander 1880:87).

There are some modern references to Pi‘ilani unifying Maui by warfare (see Speakman 1978/1984; Kolb 1991:67). In Youngblood’s (1992:38) re-creation of Hāna’s history, in *On the Hāna Coast*, we see a peaceful Pi‘ilani in the following excerpts:

It is known that Kaka'e established a court at Lahaina about 1360 A. D. and that he was succeeded by a son, Kahekili I, who was in turn, succeeded by his son Kawao-kao-hele then his son and successor, Pi'ilani. The Hāna Coast came under their control, thus unifying Maui under one family of *ali'i*. Pi'ilani's rule is remembered as a time of unity, peace, prosperity and construction of public works, including at Le'eleku, the largest *heiau* in existence. Although Pi'ilani kept his court "Out There" in Lahaina and Wailuku, he maintained a home in Hāna. Even then it was a place of physical and spiritual refuge.

Pi'ilani ordered the construction of fishponds and irrigation systems for the taro fields, and he undertook the immense task of building a network of stone-paved roads, four to six feet wide, around and across the island. The job was continued by his son Kiha-a-pi'ilani, who extended the ribbon of coastal road first built in Hāna around West Maui and also up Kaupō Gap through the center. Kiha was followed by his son Kamalalawalu [by Kumaka], who is said to have sent his son to spy on the Big Island.... The Maui line passed to Kauhiakama...to Kalanikaumakao Wākea to Lonohonuakini to Kaulahea [II] to Kekaulike [II] to Kamehamehanui to Kahekili [II], the last of the Maui kings.

The next major story in *Ruling Chiefs* (Kamakau 1992), and also Thrum's *Hawaiian Annals* was the 'Story of Kiha-a-pi'ilani' - the youngest son of Pi'ilani's royal children. In Thrum's version (1916) of 'Traditions of Kihapiilani' he notes that there is a different version of the 'Umi/Kihapi'ilani story found in the *Polynesian* in 1840 "as told by natives" (Thrum, 1916:128-135).

The following story is based on Thrum's version (Thrum, 1916:129, 130). It gives a glimpse of Kihapi'ilani the man, as well as the conflict between his older brother and heir, Lono-a-Pi'ilani. Many of the references to 'Pi'ilani' we see today is actually a reference to his son, Kiha-a-Pi'ilani.

The Story of Kihapiilani. Kihapiilani was born and raised on O'ahu with his mother's family. He lived with his uncle and mother and wanted to know who his "real" father was and was told that his father was on Maui, so he wanted to go there and live with his father. She made ready the canoe, provided the food and said: 'Go, you will find your father keeping the *'awa kapu*, and no canoe will be allowed to land...if you reach Keawaiki at Lahaina...land on the beach, let all the men remain on board the canoe...but go yourself ashore to the large man sitting at the door of the house; he is your father, sit on his lap, and if he asks you whose boy you are, tell him you are his, I am Kihapiilani. If he places you at his left hand, that is your place; there is no land on that side; the right side is the place of lands. There will be two cups of *'awa*, the one in his right hand represents your elder brother Lonoapii, the other ourself. He will drink first the cup in his right hand, then that in his left; then take pieces of potato in his right hand and left hand and eat them in the same succession; then a banana in each hand, eating them in the same order; after which he will eat fish and poi, then the *kapu* will be ended. If he offers you the cup and potato and banana which are in his right hand you will be the heir; if not, you have no inheritance.'

Kiha found everything as his mother said upon his landing...he sat in the big man's lap...his father kissed him and seated him on his left, but the boy leaped over to the right side. The father said 'You have taken your elder brother's place' and without consent of his father he continued to sit there. The father put out his right hand to take the cup of *'awa*, but the son snatched it from him as he did with the potato and banana...he constantly conducted himself in this manner during the life of his father. At his death the lands were willed to the elder brother, who was angry with his brother Kiha for his efforts to obtain the birthrights.

After many conflicts and abuses from his brother, Kiha decided to rebel. They fought in the Wailuku valley near the present female seminary and Kiha was beaten---he and his guardian alone escaping. Kiha then returned to Lahaina to dwell. When he had grown a large following and he rebelled again, and was again beaten and all his people killed, together with his guardian.

Thrum (1916:131-135) continues the story of Kiha-a-pi'ilani:

He escaped to Moloka'i and rebelled again. They fought on a hill called Pakui where he escaped again. A friend gave him a canoe and together with his wife he fled to Lāna'i where he stayed two days. His friend said lets go to Maui...They arrived in East Maui and went into the woods where they were seen by some fishermen who reported it to the king on his arrival at Maui. The king sent his runner after him...his friend advised him to go and hide in Kula while he returned to the King. Kiha and his wife lived in Makawao. He stole kapa implements to make kapa, he stole potato tops to plant, but was still befriended by a man from Kīpahulu who invited them to live with him.

Kiha was later told to see a priest in Hamakuapoko who will see if the kingdom will be his. Then was told to go to see Hoko a priest in Keanae who would perform the same ceremony. He was then told to go to Hāna, to the priest Owao...[part of the plan was to take Kolea, Hāna chief Ho'olae's daughter as his wife—the priest advised his present wife to become their servant until he had gotten the kingdom, which she agreed]. The lands he asked for were: Honokolani [sic], Waipapa [?Kawaipapa] and Wānanalua. Her father said "no, if you take those lands you take the two hills which are celebrated in war; you will then be rebels". He was then advised to leave his new wife, take his old wife and go to Hawaii to see his sister Pi'ikea (Thrum, 1916b:132)

He told his story to 'Umi who told him we shall lose our labor in fighting with your brother. He will hear of your arrival here and will be taken with fear of me and die trembling. This happened; he died and left his kingdom to his sons. Kiha lived with 'Umi till the end of the year.

Then "they sailed to the war and landed at Hāna; all the chiefs and people and canoes of Hawaii, and the women and children. Landing a party at Hāmoa, they fought with Holai [Ho'olae] who drove them back to their canoes...[but] they took possession of Ka'uiki and put Holai to flight... Piimaiwaa soon found him and chased him among the *lauhala* trees until dark, when he killed him...

[In Kamakau's (1992) version, Ho'olae-makua was found at Kapīpiwai in the back of Nahiku. He was killed and his hands were brought to Kihapi'ilani as confirmation of his death. "Ho'olae-makua was killed because Kiha-a-Pi'ilani bore a grudge against him, his father-in-law, for not helping on his side...revengeful indeed was the haughty Oahuan!" (Kamakau 1992:31)]

The next morning they advanced by land and canoe until they reached Wailuku where they fought with the chiefs of Maui and put them to flight. The priests advised Kiha not to take the kingdom but to give it to the children of 'Umi [and Pi'ikea, his sister].

So Kumalae and Aihakoko were left in charge and 'Umi returned to Hawaii. Aihakoko eventually died after traveling to Lāna'i, and Molokai [on a funerary quest] after his guardian was killed. He ended up in East Maui where he died. After 'Umi died, Kiha sent Kumalae to Oahu, and took possession of Maui. He reigned a long time, oppressed the people, made a road of flat stones all around the island and finally died a natural death.

We see a very different view of the brothers, Lonoapi'ilani and Kihapi'ilani, and their conflicts in Kamakau's versions (1870, 1991, and 1992). Kamakau (1991:49) presents a brief overview of Kihapi'ilani in the following excerpt:

Kihapi'ilani was taken by the *kahuna* and raised at the *heiau* of Mau'oki at Kamo'ili'ili [Mo'ili'ili]. He was taught to be an orator and warrior. When he was twenty he was ordered home to become heir apparent, but when he got to Kalae on Moloka'i he found that his father Pi'ilani had died at Lahaina. The first-born Lono-a-Pi'ilani became the *ali'i nui* of Maui.

Kamakau wrote the following *Story of Kiha-a-Pi'ilani* in the newspaper *Ke Au 'Oko'a* on December 1,

1870, and included in *Ruling Chiefs* (1992). In this story we see the conflict between the brothers, and the various place names associated with Kihapi'ilani (Kamakau 1992:22-33).

The Story of Kiha-a-Pi'ilani. Pi'ilani died at Lahaina, Maui, and the kingdom of Maui became Lono-a-Pi'ilani's. He was the oldest son by La'ieloheloheikawai, next came Pi'ikea, Kalai'aiheana then Kiha-a-Pi'ilani. It was said that there were two heirs Lono and Kiha but Kiha wasn't present at his father's death because he was in O'ahu where he was born and reared. So it went to Lono. Pi'ilani commanded that Lono have the kingdom and Kiha dwell in peace under him. In the first years his reign was well and people content.

Lonoapiilani took care of Kiha and he cared for the people by giving them food. Then Lonoapii became angry with Kiha. They both farmed in the *ahupua'a* of Waihe'e. Lono's taro patch was smaller while Kiha's was bigger. Lono got angry and abused Kiha and they fought. Lono tried to kill Kiha so he fled in secret to Moloka'i to the fortress of Paku'i then later to Lāna'i...from there he sailed to Kapoli in Ma'alaea, and from thence to the upland of Honua'ula. Someone saw him and it was reported to Lono. Kiha fled to Lahaina where he was hunted, but the gods saved him.

He and his wife went to the gulch of Kuanu'u and round back to the boundary of Honua'ula and Kula to a place named Ke'eke'e. Later to Kula/Makawao--many people went there to play games and to go swimming in a pool called Waimalino as Kula and part of Makawao were waterless lands. During a famine Kiha cleared an immense patch of land for sweet potato.

Kamakau (1992:24-30) continues with the travels of Kiha around Maui and Hawaii Island and his continuing efforts to conquer Maui in the following:

Kiha went to Hamakuapoko and Hāli'imaile to ask for slips...a rainbow revealed his identity. He later went to Pa'ia for help, but was directed to Kaluko in the upland of Ke'anae, then to Lanahu in Wākiu, then by Weua-Lanahu to Kawaipapa to consult Kahu'akole at Waipuna'alaie. Kiha became a ward of Kahu'akole. He dwelt at Kawaipapa at a place called Kinahole. His wife's name was Kumaka whom he made his sister...

Hāna had a chief to govern it, Ho'olaemakua. It belonged to the ruling chiefs from ancient days, and the ruler was a descendant of the chiefs of Hāna. He belonged to a family that was noted for strong people, and Ho'olaemakua was numbered among them. He was small in size, but his hands had a very strong grip. Ka'hu'akole felt that if Ho'olaemakua sided with Kiha then war could be fought against Lono to take the kingdom from him. Ka'uiki was the strongest fortress there was.

Ho'olae had a daughter, Koleamoku, and Kahu'akole believed that when she became Kiha's wife her father would aid him.... Kiha's constant bathing reddened his cheeks to the color of a cooked crab and his eyes as bright as those of the *Moho'ea* bird. Kolea surfed at Keanini in the bay of Kapueokahi (Hāna Bay). Kolea fell for Kiha, but her father was against it because she was betrothed to the ruling chief Lono-a-Pi'ilani. Kiha told her that he was the son of Ka'hu'akole. When Kiha didn't show up at surfing [one day] she went to the upland of Waika'ahiki to Waikalooa and to Kawaipapa where she and Kiha got married. When news that Kolea had married the son of Kahuamoku (same as Ka'hu'akole) her father became angry and he disowned her.

They had a son named Kauhiokalani and he became ancestor to some chiefs and commoners. Kiha asked Kolea to take their son to Ho'olae to make amends...and to ask for some farm lands... 'If your father should offer you all of Hāna, do not accept. These are the lands for us: Honoma'ele, Ka'eleku, Kawaipapa, and the two Wānanalua.' Her father wanted to give her the district of Hana, extending from Pu'ualu'u to 'Ula'ino. She said these are the lands my husband asks for 'Honoma'ele, Ka'eleku, Kawaipapa, the two Wānanalua and Koali.'

He said "Your husband is no commoner. He is a chief, Kiha. Your child is a chief. I shall not take Kiha's part. I shall remain loyal to his older brother till these bones perish. Your husband

does not want farmlands for the two of you, but is seeking means to rebel against the kingdom. "The lands of Honoma'ele and Ka'eleku supply the 'ohi'a wood and 'ie'ie vines of [the forest of] Kealakona to build ladders to the fortress. Kawaipapa supplies the stones of Kanawao that are used in battle, and then the fortress will be well supplied. The Wānanalua lands hold the Ka'uiki fortress and the places below it. Koali is the fortress of Kue. I shall not take your husband's side."

Her father said he would give assistance only when Kiha was willing to abide under Lono's rule...then he took his grandson to raise. Kiha was angry when he heard this and wanted vengeance and to rule all of Maui. He decided to go to Hawaii to consult his brother-in-law, 'Umi-a-Liloa. Kiha's first wife [Kumaka] was a chiefess of Hāna and Kīpahulu. Kiha took her to Hawaii...they landed at Kohala, then to Maka'eo in Kailua where he told his entourage to wait for him while he visited his sister.

Kiha told 'Umi that his father had commanded that they share the kingdom of Maui, but his brother took it all for himself and wanted to kill him. 'Umi decided to help Kiha who had been wronged. Lono heard that war canoes were being built in great numbers. The *kaui* wood of Napu'u and Kahuku, the *o'a* and *koai'e* were being made into clubs to be used against Maui---they trembled in fear. After a year they were ready. When the first canoes reached Hāna, the last ones were still on Hawaii.... Ho'olae was at Ka'uiki building a tower and ladders to reach the top.... The first canoes reached Kīpahulu and [were] coming towards Kapueokahi [Hana Bay].... The Hawaii canoes hardly reached the spring of Punahoa when Ho'olae killed the men who manned the spring. The canoes were forced to land at Waika'ahiki...the men who landed at Kihahale walked to Waikoloa in front of Kawaipapa where they fought with slings.... Ho'olae stayed close to a rock now called Ho'olae Rock...and was victorious over the warriors of Hawaii who fled to open sea

The losing warriors of Hawaii sailed for Wailuaiki [sic] at Ko'olau. When the canoes reached Wailuaiki they were dismantled and set upright...then they headed for battle. Upon reaching 'Ula'ino, the fighting commenced at Makaolehua, and in 'Akiala, at La'ahana, at Kawaikau [old name for the Honoma'ele Stream], at Nenewepue, at Kameha'ikana's kukui tree, and all the way along to Honokalani and Wākiu, into the pandanus grove of Kahalaoweke, down to Pihele, to the flats of Kalani and the spring of Punahoa. Ho'olaemakua proved to be a worthy foe...and very clever - he set up the giant image called Kawalaki'i and dressed it in war apparel.

[In *Ka Hoku o Hawaii* (1909), it also mentions the black stones ('*eleku*) of Ka'eleku used in this battle between Ho'olaemakua and the Hawai'i warriors (Sterling 1998:121)].

Kamakau (1992:31) ends with the final battle and the death of Lono in the following:

Finally a warrior named Pi'imaiwa'a figured out the ruse of the *ki'i* and destroyed it. Ho'olae escaped. Kiha commanded that Ho'olae's daughter Kolea and her son not be hurt [Kolea was his second wife during his stay in Hāna]. Ho'olae was finally found in the back of Nahiku at a place called Kapipiwai and killed ("Revengeful indeed was the haughty Oahuan!" refers to Kiha born and raised on O'ahu] When Lono heard the news he trembled with fear of death and died in Wailuku. Kiha tried to find his body but it had been hidden. They sent for a prophet from Kauai to tell them where the corpse was buried. He said it was in Wailuku in a land called Pa'unui, but Kiha's men could not find it. Kiha divided the lands...'Umi left his son 'Aihako'ko' to remain with Kiha and he went back to Hawaii.

Beckwith (1970:387-388) first published her *Hawaiian Mythologies* in 1940. The following are excerpts from her version of the story of Kihapi'ilani.

Legend of Kihapi'ilani. The name of Kiha is preserved locally about the island of Maui in connection with his feats of leaping from a height into a pool of water, called *lelekawa*, and for the

famous paved road about the island with the building of which he oppressed the people. Men are said to have stood in line and passed the stones from seashore to upland. Parts of the road are still in place and may be followed where the trail cuts in a straight line up and down the deep gorges that break the windward slope of the island.

Kihapi'ilani was brought up on O'ahu, but when his uncle scolds him for wasting food he goes off to Lahaina to find his true father. He is dissatisfied to take the place of a younger son. After their father's death Lono takes pains to humiliate him. The brothers come to blows. Kiha is defeated and saves himself only by leaping off a cliff down the hill Pakui. He hides himself in the Kula district at Kalani-wai in the Makawao region with his wife Kumaka of a Hāna family of chiefs, whom he passes off as his sister....

He consults various *kahuna* as to the course he should pursue to win the rule from his brother. He goes back to O'ahu learns surfing and, returning to Hāna district, surfs with the daughter of Ho'olae [Chief of Hana]. The couple are repudiated by the father, but after a son is born, a reconciliation is effected and Kiha sends his wife to ask of Ho'olae such lands as will give him control of the fortress Ka'uiki.

Ho'olae recognizes at once that this is no common man to whom his daughter Kolea-moku has born a child, but the chief Kihapi'ilani. He nevertheless loyally refuses to desert his old chief Lono. Kiha retires to Hawaii and succeeds in winning 'Umi's cooperation through the influence of his sister Pi'ikea. After the death of Lono, 'Umi sends an army to establish Kiha in the succession. Ho'olae defends Ka'uiki for Lono's son and sets up a wooden image so huge as to frighten off 'Umi's men.... Eventually Pi'imaiwa [one of 'Umi's warriors] discovers the trick and they defeat Lono's warriors. Kiha has Lono's son put to death and asks that the lands may be made over to Pi'ikea's sons. The two lads come to Maui, but are despised and done to death and Kiha is established as ruler over his father's lands. It is his famous son Kama-lala-walu (son of eight branches) who gives the name Maui-of-Kama to the island.

In the Fornander's (1880:206-207) version of the "Story of Kihapiilani" we see that all the subsequent *ali'i nui* of Maui were descended from Kiha and Kumaka, sister of the Kawaiipapa chief, Kahuakole.

Story of Kihapiilani. Kiha, who thus forcibly succeeded his brother as Mo'i of Maui, had been brought up by his mother's relatives at the court of Kūkaniloko of O'ahu.... Having, as before related, through the assistance of his brother-in-law 'Umi obtained the sovereignty he devoted himself to the improvement of his island. He kept peace and order in the country, encouraged agriculture, and improved and caused to be paved the difficult and often dangerous roads over the Palis of Kaupō, Hāna, and Ko'olau - a stupendous work for those times, the remains of which may still be seen in many places, and are pointed out as the "Kipapa" of Kihapiilani. His reign was eminently peaceful and prosperous, and his name has been reverently and affectionately handed down to posterity.

Kiha had two wives - Kumaka, who was of the Hāna chief families, and a sister of Kahuakole, a chief at Kawaiipapa, in Hāna. With her he had a son named Kamalalawalu, who succeeded him as Mo'i of Maui. Koleamoku, who was the daughter of Ho'olae, the Hāna chief at Kauwiki...with her he had a son called Kauhiokalani, from whom the Kaupō chief families of Koo and Kaiuli descended. Kamalalawalu followed his father as Mo'i of Maui. He enjoyed a long and prosperous reign until its close, when his sun set in blood and disaster [when Kahekili lost to Kamehameha I].

[See also 'Traditions of Kihapiilani' In Thrum, *More Hawaiian Folk Tales* pp77-86.]

Kahekili II (1713-1794) was (at least) the seventh child of Kekaulike, ruling chief of Maui and his half-sister wife, Keku'iapoiwa Nui, who was also the half-sister of Alapa'i nui, ruling chief of Hawai'i Island. Kahekili II was born near Hāli'imaile. His older siblings included half-brother Kauhiaimokuakama (his mother was Kahawalu, cousin of Kekaulike and sister of Pelei'oholani, ruling chief of O'ahu); half-siblings Manuha'aipo (Queen of 'Ī'ao), Ke-kau-hiwa-moku and Ka'eokulani (Kaua'i ruling chief and

father of Ka'umu alii) – their mother was Holau, daughter of high chief Kawelo-a-Aila and chiefess Kauakahialii-a-Kaiwi, descendant of Lono-I-Kamakahiki of Hawai'i Island.

His older full-siblings included brother Kamehamehanui, ruling chief of Maui after the death of their father Kekaulike, and sister Kalola – wife of Kamehameha nui, Keoua and Kalaniopu'u, ruling chief of Hawai'i Island after the death of his uncle Alapa'i nui; his younger full sibling was Ku-ho'oheihē-pahu. Another younger half-sibling was Na-mahana-i-kaleo-nalani whose mother was Ha'alo'u – niece of Kekaulike, and Kauwahine daughter of Hawai'i Island high chief Haae-a-Mahi – son of *ali'i nui* Kauauanui-a-Mahi and Kalanāi Kalele-a-Iwi - and Maui chiefess Kaleiamaoli-o-Kalani, full-sibling of Kekaulike. Namahana was married to older half-brother Kamehamehanui until his death, then she married [2nd cousin] Ke-eaumoku of Hawai'i Island – they were the parents of Ka'ahumanu who married Kamehameha I.

Kahekili II married his half-sister, the chiefess Kauwahine; Kamakau (1991:41) has a passage about her:

In the year 1781, Kauwahine, a granddaughter of Kaiuli of the *ali'i* family of Kaupō, Maui, had a thought. She had mated with Kahekili, the *ali'i kapu*, and they had had four children, Kalanikūpule *mā* (his brother Koa-lau-kani and sisters Ka'ilikaūoha and Kalola II). They could be considered "cousins" *a ua hiki ke ho'ohoahānau*, of the children and grandchildren of Kalola I, the older sister of Kahekili. Kauwahine asked Kāneaehe the genealogists, "My children are *ali'i* are they not?" Kāneaehe replied, "I will die (if I answer you)," "You will not die," said Kauwahine. "Above is mine, below is mine, I am the wife of Kahekili. You will do nothing to cause your death." "I will die," repeated Kāneaehe. "Tell me!" demanded Kauwahine. Then Kāneaehe said, "There are only four chiefs." (The four were Kalola's children, Kalaniakua (w) by Kamehamehanui; Kiwala'ō (k) by Kalani'ōpu'u; Liliha (w) by Keōua, and the daughter of the last two [Kiwala'ō and Liliha], Keōpūolani.)

'Last Days of Ka-hekili II.' Kahekili was the last Mo'i of Maui although there were occasions when his son Kalanikūpule or his brother Ka-'eo-ku-lani took over in his place such as when he was on O'ahu. Kahekili became the ruling chief of Maui following the death of his older brother Kamehamehanui. He originally had his court in Lahaina as some of his ancestors did. However, when the royal or primary wife of Kamehamehanui – their half sister Namahana – decided to marry Ke'eaumoku, a Hawai'i Island chief, Kahekili moved his court to Wailuku (where Haleakala Motors is currently located) to spy on his sister who lived in Waiehu on lands that she owned. The couple (parents of Ka'ahumanu) eventually left Waiehu and fled for their safety to Hāna, then to Moloka'i, then to Hawai'i Island where Ke'eaumoku began supporting Kamehameha I. The following excerpts are from Kamakau's *Ruling Chiefs* (1992: 159-167 Chapter XIII; originally *In Ka Nupepa Ku'oko'a*, May 25, 1867) and gives a view of a small window of the "last days" (actually few years) of Kahekili's life.

When Ka-'eo-ku-lani, ruling chief of Kauai, heard how narrowly Ka-lani-ku-pule and the other chiefs of Maui had escaped death in the war on Maui, and how the waters of 'Āao had been choked with the bodies of the slain in this war, he was so perturbed that he set sail to war against Kamehameha. He set out with Pe'ape'a, son of Kameha-meha-nui, his counselor of war, Ki'iki'i, Kai-'awa, and chiefs, warriors, and paddlers, all well armed with muskets and weapons of all kinds, and with his two man-eating dogs. (He also took with him) Maka-'eha and Mr. Mare Amara, a man skillful in the use of arms who acted as his gunner. On O'ahu he met Ka-hekili, ruling chief over O'ahu, Moloka'i, Lana'i, and Maui, and persuaded him to join in a war against Kamehameha. Ka-hekili selected a type of soldier new to Oahu called "Cut in two" (*pahupu*), strange-looking men tattooed black from top to toe, with eyelids turned inside out and held up by props and only their eyeballs and teeth left in their natural state. They were led by Koi, Kuala-kia, and Manu-o-ka-iwi. Had the black negroes who came later to Nu'uaniu arrived at that time they might have been made favorites and given the lands of "Black waters" (Wai-pouli) and "Daubed black" (Hono-ma'ele)! Ka-hekili left his son, Ka-lani-ku-pule, to govern Oahu during his absence

and set out to accompany the ruling chief of Kauai, with his chiefs, both high and low, his warriors, the children of chiefs, and among them Ka-niu-‘ula, Ke-po‘o-uahi, the *pahupu*, and other soldiers newly picked from Oahu.

The war party landed at Kaunakakai on Moloka‘i, and when the Kauai chief saw for the first time, by the ovens they had left, the size of the camp which Kamehameha had occupied he said, “Where a big squid digs itself a hole, there crab shells are heaped at the opening.” Upon their reaching Maui, Ke-kua-po‘i-‘ula (former wife of Ka-hahana) died, a woman famous for her beauty. The army camped at Wailuku, and of Waiehu the Kauai chief remarked, “Here is the land of the warrior to whom Kamehameha owes his kingdom (alluding to Ke‘e-au-moku whose wife, Namahana, brought him the land of Waiehu). O Kauai! Stand up! This is the land where you shall leave your excrement!” The Kauai people were vulgar in their speech at best. Waiehu fell to Ki‘iki‘i and it was, alas! The Kauai people who ate the poi of Waiehu. The mouth that eats food should never throw stones at the producer (*I pono i kau a na waha, mai noho a pehi wale iho*). Ka-hekili gave some of the land of Maui to the ruling chief of Kauai [his brother] to be divided among his men, and Waiehu fell to Ki‘iki‘i. This caused discontent among the chiefs of Maui, who had thus to lose some of their land, and they rose against the Kauai chief [Ka‘eo is actually from Maui – son of Kekaulike]. A battle was fought at Paukukalo adjoining Waiehu while some of the people were out surfing. Koa-ku-kani was the hero of that day’s battle. You know him and the size of his feet. He was surrounded by the Kauai soldiers and in a perilous situation, but he dodged long and short spears and showed his courage in the fight that day.

Ka‘eo-ku-lani made a circuit of the north end of the island, came with all his people, and climbed the fortified hill of Ka‘uiki, and he twirled his war weapon (*la‘au kaua*), called Ka-mo‘o-lehua, and made a thrust upward believing he could reach the sky. Failing in this he remarked, “It is said of Hāna that the sky there is low; but it is too high for my weapon, the war-eater Ka-mo‘o-lehua, to touch. I fear therefore that my spear may not be able to strike down Kamehameha. O you of Kauai! chiefs, soldiers, warriors, and dear little ones, be strong, be brave! Drink the water of Waipi‘o and eat the taro of Kunaka!” Ka-hekili and his men set sail for Hawaii from Mokolau in Kaupo, and Ka‘eo-ku-lani from Hāna. They landed at Waipi‘o. There Ka‘eo-ku-lani carried out his vow. He wantonly destroyed everything in Waipi‘o. He overthrew the sacred places and the tabu threshold of Liloa; he set fire to Ka-hou-kapu’s sacred threshold of *nioi* wood and utterly destroyed all the places held sacred for years by the people of Hawaii. No one before him, not even Keoua who had passed through there the year before and destroyed the land and the food, had made such wanton destruction. Perhaps it was a sign of the downfall of the ancient tabus of Hawaii “by the kingdom of God.”

Ka-hekili in the meantime went to Halawa in Kohala where some desultory fighting occurred while Kamehameha was in Kona. Eight-eyed-bat (Pe‘ape‘a-maka-walu Ka-maka-uahoa), a son of Kameha-meha-nui, performed great feats of valor. It was said that Kamehameha himself could not have overcome him in combat. His strength is shown by his famous deeds. At Kahahawai he uprooted a *kou* tree; at Napoko he pulled up the ti plant of Mulei‘ula and Polipoli. He tore in pieces the banana-eating monster (*mu ‘ai mai ‘a*) of La‘auhaele. He rent the hairless one (*olohe*) of Pu‘ukapele, and did other wonderful feats. At Kohala he seized men by fours, lifted them up and broke their backs so that they fell lifeless. It was not until the close of the war that his death occurred at Kapelenui-a-Haho, while Ka-hekili and Ka‘eo-ku-lani were staying at Hāna and Pe‘ape‘a was living for a time on Ka‘uiki with his followers. One day as he fired off a gun a spark fell into a keg of powder, and an explosion followed which blew up the house and burned Pe‘ape‘a. He was carried still alive to Honokalani in Ka‘anapali and there he died. What a terrible disaster!

Ka-hekili sailed from Halawa and joined forces with Ka‘eo at Waipi‘o. When Kamehameha heard of this he consulted his counselors and those men who understood wise sayings, and they coined this phrase, “The fish have entered the net; they are gone into the bag.” Believing this to be true, Kamehameha set sail with his forces and blocked the entrance of Waipi‘o Bay. He had several double canoes and a sloop owned by Ka-me‘e-ia-moku on board of which were John

Young and Isaac Davis. Ka-hekili and Ka-'eo met the fleet off the Waimanu cliffs, and a fight took place at sea which ended indecisively with the loss of warriors on both sides. This battle, called Ke-pu-waha-'ula, took place in 1791. It was Ka-hekili's last battle. He and his men all returned to Maui and he died in 1793. Keoua was at this time still living, and Ka'i-ana and some of the men had gone to Ka'u to make war against him because they were unwilling or perhaps ashamed, to make war on Kamehameha....

On March 8 Vancouver left Kealakekua and sailed for Maui and on March 12 reached Lahaina. Here he met Ka-hekili, the ruling chief of Maui, a very old man at this time and strange in appearance because of his black tattooing. Vancouver told him to stop fighting and establish friendly relations with the chiefs of Hawaii. Ka-'ili-naoa spoke for him and said that Ka-hekili would agree to peace, but it was not right for the chiefs of Hawaii to raid Maui and rob and pillage without cause. Ka-hekili requested Vancouver, if he desired peace, to stay there all the time and guard him against further wars. Vancouver remarked that Kamehameha "had many chiefs in his following" (*nuinui ali'i* Kamehameha), [but because of his imperfect knowledge of the language he used the words, "is a great chief"]. Ka-hekili, thinking he referred to Kamehameha's rank, protested, saying, "Kamehameha has come up from nothing; I am a great chief." Vancouver answered, "Ho! you have few chiefs, he has many." "No, no! I am the great chief, he is not a chief!" All this time Ka-hekili was speaking of their respective ranks, Vancouver of the number of their followers, because he had seen Kamehameha's men and how many there were and how well equipped with arms. The chiefs of old were very jealous of each other. And because Vancouver had called him a "little chief" (*'u'uku ali'i*) Ka-hekili called his grandchild, Ahukai, who was named after the sea-sprayed land of Waialua, "The little chief" (Ka-'u'uku-ali'i). She was the daughter of Manono Ka-ua-kapeku-lani and of Ka-'ili-naoa, who was the daughter of Manoha'aipo, the daughter of Ke-kau-like with Holau, who was the daughter of Ka-ua-kahi-hele-i-ka-iwi....

After the battle of Ke-pu-waha-'ula'ula and the fighting along the cliffs of Hawaii, Ka-hekili returned and ruled Maui for three years and some months. In Ikiiki (May) he fell ill and, returning to O'ahu, died at Ulukou, Waikiki, in the month of Ka'aona at the age of eighty-seven. His bones were carried away by Ka-me'e-ia-moku and Ka-manawa and hidden in a secret cave, perhaps at Kaloko in North Kohala. Ka-hekili was a famous chief, a tabu chief, one who ruled men, and so sacred that whatever had touched his body was burned with fire [after he was through with it, so that no one else could use it]. He was a famous leaper from a cliff into water (*lelekawa*), sometimes from a height of 500 or 600 feet or even higher, and he could climb cliffs which no other person could ascend. He elected to have his skin black; one half of his body from head to foot was tattooed black, and his face was tattooed black, and this became an established law with him: Any person taken in crime who passed on his dark side, escaped with his life. He delighted in war and fought many battles with Ka-lani-'opu'u, with Puna, with the chiefs of Moloka'i, with Ke'e-au-moku, Mahi-hele-lima, and Ka-hahana, ruling chief of O'ahu, and in strife with Kamehameha. While he ruled over Maui, Moloka'i, Lana'i, and O'ahu he appropriated to himself the gods of these islands. Here are the names of the gods he worshiped as a means of keeping control of the government: Ku-ke-oloewa, Kuho'one'e-nu'u, Kalai-pahoa, Ololupe, Kameha'ikana, Kala-mai-nu'u, and Kiha-wahine, Haumea, and Wali-nu'u. These gods were deities whose heiaus were tabu and in which human sacrifices were offered. Ka-hekili was a man prudent in warfare and skilled in statecraft (*kalai'aina*) and oratory (*kaka'olelo*). He took the greatest delight in feats of strength. Rolling the *maika* stone was his favorite sport, and there were many *maika* courses constructed from Maui to Oahu. He liked solitude and would separate himself from the other chiefs and from his wives. He erected living quarters on high points of land and admitted only those who were special favorites. No woman entered his house, not even his wives; his house was set perhaps a quarter or half a mile from the house of his wife, and perhaps it was for this reason that he was so studious. He would go out at night to spy about, accompanied by his two favorite friends, Ka-hui and Ka-halawai. He did this in order to detect rebellion or conspiracy, to find out which men ate with their wives, whether men asked the gods for the life of the ruling chief when they drank 'awa, whether they were worshipers or not, whether they ate things sacrificed to the gods, and whether they were carousing at night and making false vows. He was

cruel to his enemies. Ka-umu-pika'o at Hana was a place famous for the roasting of chiefs and lesser chiefs. On Oahu he had even roasted tabu chiefs in the imu. His cruelty to chiefs and people on Oahu is notorious. But God punished him for his cruel deeds for, although he had many sons and daughters, none of his children produced a long line of descendants (*puko loa i ke ao*). He was nevertheless a religious man and heeded well the laws of his gods, and this is why he was victorious over his enemies, and it was for this reason that he had half of his body tattooed black like Kane-of-the-thunder (Kane-hekili) and Kane-hekili-nui-'ahu-manu, and he lived to a good old age.

There were several legends of foreign (*haole*) visitors to the islands in ancient times including Wailuku, Maui. The following were from Fornander *Collection* (vol 6-248; In Sterling 1998:64).

Among other southern families of note who arrive at the Hawaiian group during this migratory period (9-10th century), though now it is impossible to place them in their proper order, the legend mentions Kalana-nuunui-kua-mamao, and Humu, and Kamaunua-niho who came from Kahiki (the southern groups), and landed at Kahahawai in Waihee, Maui. Aumu soon returned to Kahiki, being discontented with Kalana, who had taken Kamaunuaniho for wife.

This period of great migrations, of national activity and restlessness and of grand enterprises, having passed, comparative quiet seems to have succeeded for several generations; and the mele and legends become silent upon the subject of foreign voyages or foreign arrivals until the time of Kakaalaneo, King of Maui and brother to the great grandfather of Pi'ilani – about fourteen generations from the present – at the close of the fifteenth or the commencement of the sixteenth century. The traditions as written down by S. M. Kamakau runs thus: "In the time of Kaka'alaneo several foreigners (*haole*) arrive at Waihe'e in Maui, two of whom only were or became remarkable, viz: Kukanalao and Pele, who was Peleie, and the name of the vessel was Konaliloha. They landed at Kiwe in the night and when discovered in the morning by the natives, they were taken to the village and fed and brought to the king and the chiefs who treated them kindly and made friends of them (*hoopunahele*) and admitted them to all the privileges of the *kapu*. They settled in the country, married some of the chief-women and became progenitors of both chiefs and commoners, and some of their descendants survive to this day." They were called Kanikawi and Kanikawa after the beautiful flowers of Haumea." – "Their speech sounded like a bird's, like the *lale* of the mountain, a chattering, vociferous bird." – "They said they came from Kahiki, from the very interior." "Their land was a fertile land with plenty of fruits and large animals." – "Their parents dwelt far inland (*uka*) on the side of the mountain, away up in the forest (*ukaliloloa, ikawaonahele*)." – "They were acquainted with the banana, the breadfruit, the ohia-applies, and the kukui nuts."

The tradition which refers to the wrecking and landing of the foreigners, (*haole*) – two men and one woman, at Keei, South Kona, Hawaii, in the time of Keliiokalao, the son of 'Umi-a-Liloa, before the middle of the sixteenth century, - is well known and has long been recorded. There is some obscurity however thrown over both this and the foregoing tradition, inasmuch as the name of the vessel ("Konaliloha") and of the principal personage (Kukanalao) are the same in both traditions, and also some of the attending circumstances. But whether it was only one and the same event, adopted – *mutatis mutandis* – on both islands, or two separate occurrences, the fact of the arrival, and the retention of that fact in the Hawaiian memory, are none the less established.

The following is a list of *mo'olelo* and sources from the *Hawaiian Legends Index Vol II and III* by the Hawai'i State Public Library System (HSPLS) (1989) that mention Kahului and Wailuku.

Kahului

Hina and the Wailuku River
(‘Iao)

In Westervelt, *Legends and Maui – a demi god of Polynesia*

Wailuku

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| Hina, the Helen of Hawaii | <u>In</u> Kalākaua, <i>Legends and Myths of Hawaii</i> (pp 69-94). |
| <i>Pele and Hiiaka</i> | Emerson, Nathaniel Bright |
| Story of Lonoikamakahiki | <u>In</u> Fornander, <i>Fornander Collections of Hawaiian Antiquities and Folk-lore</i> , v. 2 (pp 256-363) |
| Story of Kekuhaupio | <u>In</u> Fornander, <i>Fornander Collections of Hawaiian Antiquities and Folk-lore</i> , v. 2 (pp 256-363) |
| The Iron Knife | <u>In</u> Kalākaua, <i>Legends and Myths of Hawaii</i> (pp 177-205). |
| Kaiana, the last of the Hawaiian Knights | <u>In</u> Kalākaua, <i>Legends and Myths of Hawaii</i> (pp 383-408). |
| Defeat of the Alapa | <u>In</u> Nakuina, <i>Hawaii, its People, their Legends</i> (pp 59-60) |
| The battle of the owls | <u>In</u> Pukui, <i>The Water of Kane</i> (pp 216-218) |
| Tradition of Kihapiilani | <u>In</u> Thrum, <i>More Hawaiian Folk Tales</i> (pp 77-86) |
| First Foreigners | <u>In</u> Westervelt, <i>Hawaiian Historical Legends</i> (pp 93-99) |
| The Alapa Regiment | <u>In</u> Westervelt, <i>Hawaiian Historical Legends</i> (pp 125-142) |

'*Ōlelo no 'eau* or proverbial/traditional sayings usually had several layers of meanings. They reflected the wisdom, observations, poetry and humor of ancient Hawai'i; some of them referenced people, events or places. '*Ōlelo no 'eau* were compiled by Pukui between 1910 and 1960 with both translations and an explanation of their meaning (Williamson et al. In Pukui 1983: vii), which are often more *kaona* (hidden or double meaning) than obvious.

Kahului

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| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Ke kai holu o Kahului</i> The swaying sea of Kahului Refers to Kahului, Maui (Pukui 1997:185 #1722). |
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Nūnū lawe leka o Kahului</i> Letter-carrying pigeon of Kahului In 1893 carrier pigeons arrived at Kahului, Maui. One was brought to Honolulu and released with a letter tied to its neck. It flew back to Kahului. This was of such great interest to the people that a song was written and a quilt design (Pukui 1997:255 #2351). |
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Pākāhi ka nehu a Kapi'ioho.</i> The nehu of Kapi'ioho are divided, one to a person Kapi'ioho of Molokai had two ponds, Mau'onī and Kanahā, built on his land at Kahului, Maui. The men who were brought from Molokai and O'ahu to build the ponds were fed on food brought over from Molokai. The drain on that island was often so great that the men were reduced to eating <i>nehu</i> fish, freshwater ' <i>opae</i> and <i>poi</i> . The saying is used when <i>poi</i> is plentiful but fish is scarce and has to be carefully rationed (Pukui 1997:284 #2578). |

Wailuku

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|--|---|
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Ke inu aku la paha a'u 'Ālapa i ka wai o Wailuku</i> My <i>Ālapa</i> warriors must be now drinking the waters of Wailuku. Said when an expected success turns into a failure, This was a remark made by Kalaniōpu'u to his wife Kalola and son Kiwala'o, in the belief that his selected warriors, the <i>Ālapa</i> , were winning in their battle against Kahekili [brother of Kalola]. Instead they were utterly destroyed (Pukui 1997:184 #1711). |
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Na wai 'ehā</i> The four wai A poetic term for these places on Maui: Wailuku, Wai'ehu, Waihe'e, Waikapū, each of which has a flowing water (wai) (Pukui 1997:251 #2300). |
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Pili ka hanu o Wailuku</i> Wailuku holds its breath Said of one who is speechless or petrified with either fear or extreme cold. There is a play on <i>luku</i> (destruction), Refers to Wailuku, Maui (Pukui 1997: 290 #2647). |
| ' <i>Ōlelo no 'eau</i> Translation Meaning | <i>Wailuku I ka malu he kuawa</i> Wailuku is the shelter of the valleys Wailuku, Maui reposes in the shelter of the clouds and the valley (Pukui 1997:319 #2912). |

The names of the winds, rain and clouds are often mentioned in the *mo'olelo*: the winds of Wailuku Moku are noted in Sterling (1998:62):

The Four Winds

Wailuku's wind is the Makani-lawe-malie, the wind that takes it easy.
Waiehu's wind is the Makani-hoo'eha-ili, the wind that hurts the skin.*
Waikapū's wind is the Makani-ko-kololio, the gusty wind.
Waihee's wind is the Makani-kili-'o'opu.

*Love disturbance, M. K. Pukui

Rebecca Nuuhiwa, *Audio Collection HAW 84.2.1.*

The 'Flying Clouds of Wailuku' are noted in Sterling (1998:63):

Wailuku is the source of the flying clouds. It is a broad plain where councils are held (from A. Fornander, *Collection*, 4:304.)

Place Names of Kahului and Wailuku

Ancient Hawaiians named everything, from *pohaku* and *hale* to *wahi pana*, and roads and parcels of land. These names were preserved in the *mo'olelo* and many are still used today. The following table includes meanings and *mo'olelo* associated with places in Kahului and Wailuku; their citations are included:

Table 3. Place names in Kahului and Wailuku and their *mo'olelo*

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|-----------|---|
| Amala | Street. 'Armorer or blacksmith' (Hill et al. 2009:11). |
| Hale Ki'i | <i>Heiau</i> Site #44 N.N.W. of Pihana 350 feet on another sand dune. A large <i>heiau</i> of the same type as Pihana but it has resisted erosion more successfully. It shows massive wall facings in ruins of four |

terraces on the south side. Water-worn boulders are used in its construction. It measures 300 x 150 feet (W. M. Walker, 'Archaeology of Maui,' 1929:148 In Sterling 1998:78).

Heiau. It is not known when or by whom Hale Ki'i was built, but it may have been at the order of the Maui king Kahekili. Pihana Kalani is said to have been erected for him nearly 200 years ago. Hale Kii was originally adorned by rows of images which represented the various gods. The images were symbols believed to be imbued with man, or the supernatural power of the gods... (Charles C. Young, Historical Society Restores Maui Heiau, *Sunday Star-Bulletin*, Dec. 13, 1959, 25 In Sterling 1998:77) (Too late to be at all authentic - K.P. Emory In Sterling 1998:77)

'Ī-ao. Stream, valley, peak (2,250 feet high), park, and one-time sacred burying place of chiefs (Jarrett 22), Wailuku qd. (see Kūkaemoku); intermediate school, Wai-luku, Maui, Lane, *Lit.*, cloud supreme.

'Īao Valley is centrally situated in the Mauna Kahalawai range of mountains, now called West Maui... Facing 'Īao at its entrance Mauna Kāne is to the right and Mauna Leo is to the left of the highway. Ka-ne is the deity of creation in the Hawaiian Trinity, and the word Leo means "voice" or "The Voice of Ka-ne" who created 'Īao Valley as a sacred spot for the alii of Maui who possessed the Kapu (restriction) of the Rising Sun. The name 'Īao means "Of the Dawn," in reference to the rising sun giving new life each day to the spirits of mankind and to the earth. 'Īao is also the name of the planet Jupiter as a Morning Star (Ashdown 1960:4 In Sterling 1998:84).

Two Entrances. In the days of the ruling alii, 'Īao was a very restricted place. Its first entrance was Kawela, that area extending from about where the Kahului breakwater now is to the mouth of the 'Īao Valley stream, called Kapela River at that time and Wailuku River today. The second entrance to 'Īao Valley was Ma-nia-nia, the area where the plaque to the Battle of Kapaniwai o 'Īao and the Shrine of the Madonna now stand. No one except the Mo'i Alii (king), his priests and personal attendants could enter the valley at Maniania without permission (Ashdown 1960:4 In Sterling 1998:84).

Nearby, about where Haleakala Motors now is, was the residence of the ruling king (Ashdown 1960:4 In Sterling 1998:84).

Ka'a (Point) *Lit.*, "rolling" A shoreline promontory just east of Kahului Bay (Hill et al. 2009:11).

Kahalawai *Mauna* or mountain; West Maui mountains often referred to as Pu'u Kukui, its highest peak; the older of the two volcanoes that make up the island of Maui – the isthmus or saddle separates them.

Ka-hului. Bay and Town, elementary school, port, bay, railroad, and surfing area known as Kahului Breakwater (Finney 1959a:108), Maui. Probably *lit.*, the winning (Pukui et al. 1974:67).

Kahului Landing. After his (Kapa-kahili) death the fighting ceased, and Kamehameha and his chiefs went on to the principal encounter at Wailuku. The bay from Kahului to Hopukoa was filled with war canoes. For two days there was constant fighting in which many of the most skillful warriors of Maui took part, but Kamehameha brought up the cannon, *Lopaka*, with men to haul it and the white men, John Young and Isaac Davis, to handle it; and there was great slaughter. Had they fought face-to-face and hand-to-hand, as the custom was, they would have been equally matched. But the defensive was drawn up in a narrow pass in 'Īao, and the offensive advanced from below and drew up the canon as far as Kawelowelo'ula and shot from there into 'Īao and the hills about, and the men were routed. The victors pursued them and slew the vanquished as they scrambled up the cliffs. There was a great slaughter, but mostly among the commoners; no important chief was killed in this battle. "Clawed off the cliff" (*Ka-'uwa'u-pali*) and the "The damming of the water" (*Ka-pani-wai*) this battle was called...Ke-Ku'i-apo-iwa, Ka-lani-akua, and Ke-opu-o-lani were taken over at the pass in 'Īao Valley to Olowalu, where they met Ka-lola's party and sailed to Molokai (S.M. Kamakau, *Ruling Chiefs of Hawaii*, 148 In Sterling 1998:81).

After this victory (*Hamakualoa*) Kamehameha moved his fleet to Kahului, and hauled up his canoes from there to Hopukoa without opposition. After two days of preparation he marched on to Wailuku, where Kalanikupule awaited him with such forces as he had been able to collect (A. Fornander, *Account of the Polynesian Race*, 2:236 In Sterling 1998:81).

When Kamehameha's war canoes arrived from Hawaii, the sands of Kahului were covered with them and it was said that he canoes extended from this side of Kahului to Kalaeilili at Waihee and below Puuhele and Kamakailima (John H. Wise, Hookumuana o no Paemoku, *Ke Au Hou*, Dec. 6, 1911. MS SC Sterling 3.12.3 In Sterling 1998: 81).

Kaihuwa'a According to Sterling (1998), the native name for the Kahului region; Malo (1903:268) described the Kahului region as "flat and treeless" (Hill et al. 2009:11).

Kaluli *Heiau*, Site #42 Above Puohala Camp in the cane fields. Thrum says it was repaired in the time of Kahekili under the priest Keliopuupuu. Now totally destroyed (W. M. Walker, 'Archaeology of Maui' 1929:145 In Sterling 1998:75).

Through Kaleopuupuu's advice to Kahekili, the heiau of Kaluli in Puuohala, on the northern side of Wailuku was restored. While Kaleopuupuu performed his rites there he uttered a prophecy to Kahekili, "The fish have gone through the sluice gate and are caught in the fine meshed net".... In the year 1776, when Kamehameha was almost forty, the war canoes of Kalaniopuu and his son, Kiwala'ō, ventured forth from Kohala (Joseph Mokuoai Poepoe, 'Kamehameha I, The Conqueror of Hawaii,' *Ka Na'i Aupuni*, Dec 7, 1995 *MS SC Sterling 1.8.19* In Sterling 1998:75). (Kalani'opu'u was defeated at the battle of Ka-lae-o-ka-'ilio in Kaupo and returned to Hawai'i to rebuild his forces. At the same time Kahekili was strengthening his forces in anticipation of further attack.)

Ka-nahā Wildlife sanctuary and pond near Kahului, Maui, said to have been built by Chief Kiha-a-Pi'ilani, brother-in-law of 'Umi (HM 387) who lived about A.D. 1500, Nearly 500 native Hawaiian stilts (*āe'o*) have been counted here at one time, about a third of the known total. Some 50 kinds of birds have been seen here, including herons, geese ducks, owls, plovers, sandpipers, tattlers, coots, pheasants, and doves *Lit*, the shattered [thing] (Pukui et al. 1974:83).

Star name (Pukui and Elbert 1986); Sterling (1998) notes that salt was gathered at Kanahā. "When the sea rose the hollows in the rocks were filled." The story of the building of the ponds is further noted by Sterling (1998:87) (Hill et al. 2009:11-12).

SIHP #50-50-05-1783 (Hill et al. 2009:13).

Kealakaihonua *Heiau* in Waihe'e, is noted as belonging to "Koi, a certain dark-skinned (*paele*) native, prominent in the rank of Kahekili's chiefs, one of his generals and a priest of the Kaleopuupuu order. He it was who led the assault on the boat's crew of the *Daedalus* and murder of the two officers and a seaman, at Waimea, Oahu." (Kuokoa, May 18, 1867 - Thomas G. Thrum, 'Tales of the Temples,' *Hawaiian Annual for 1909*, 47. In Sterling 1998: 68).

Mau'oni Pond. One of the two fishponds located at the shore of Kanahā; SIHP #50-50-05-1783 (Hill et al. 2009:13).

A traditional story concerning the construction and dedication of the fish ponds named Mau'oni and Kanahā at Kahului appears in Sterling (1998: 87-88), based on an interview with Mrs. Rosalie Blaisdell in 1923 by J.F.G. Stokes (BPBM Anthropology Department archives, Group 7, 10.10.C9). According to the story, construction of the pond walls was begun by an O'ahu chief, but finished by Kamehamehanui, *mō'i* of Maui in the mid-1700's. The story established that Kapi'ioho'okalani, the original architect of the two ponds and onetime ruler of O'ahu and half of Moloka'i, was killed in battle before he could complete the construction of the pond walls. His daughter, Kahamaluihi, sought her brother, Kanahāokalani, and searched Moloka'i and Maui for

him. The pond walls were finished by Kamehamehanui, who placed a *kapu* on the bank, or *kuapa*, dividing the two ponds. The chiefess Kahamaluihi was born of such high rank that she was able to break the *kapu* by walking on the center *kuapa* of the ponds. Following this act, Kamehamehanui allowed her to name the ponds. She named Kanahā for her brother, and Mau'oni for the identity she travelled by to protect her status as a chiefess of the highest rank (Hill et al. 2009:13-14).

Na Poko On Maui the lands of Waikapū and Wailuku appropriated almost the whole of the isthmus so as to cut off half of the lands in the district of Kula from access to the sea. These two *ahupua'a*, together with Waiehu and Waihe'e, which were independent, belonging to no Moku, were called Na Poko, and have been formed into a district in modern times (W. D. Alexander, 'A brief History of Land Titles in the Hawaiian Kingdom' *Hawaiian Annual for 1891:106* In Sterling 1998:63).

Na Wai 'Eha It was at Kalepolepo that Kamehameha the Conqueror beached his canoes. If the oldest inhabitants of Ma'alaea claims this distinction for his port, believe him not. I have the facts from an eye-witness. The sea was dark with victorious canoes; Kamehameha landed at Kalepolepo, and a *kapu* was put upon the nearest stream. It became sacred to royalty, as was the custom and is known as Waikapu to this hour – that is, forbidden water. Presently the monarch began his march; and at the second stream a great battle raged, so those waters were called Luku. Luku – “to slaughter, to slay as in war, the destruction of many at once”... The enemy defeated and put to flight, and a third stream was called Ehu. Ehu – “to scare away, as hogs or hens,” or as faint-hearted and sore-footed foes. Waiehu is a meager rivulet that seems to have wasted away under the influence of this withering epithet. There over the hill and down into the dale of Waihee rushed the panic-stricken hosts. As for the word Hee, it may mean, probably does mean in this case, utter out, or to be dispersed in battle; and well they must have been who fled before Kamehameha, inasmuch as Waihee is the jumping-off place; after it-the deluge! That is the legend of the four waters, given me by one Paahao, of Waihee, who knew Kamehameha; whose hand I shook, which had been shaken by Kamehameha the great; who is the proud possessor of a pipe, the gift of the conqueror after he had buried the hatchet and was willing to smoke in peace. [The author gives him a cigarette to smoke.] ...One the contrary, it was a heartfelt Aloha, wafted to me from another country and another age, as it were; for Paahao smoked first pipeful with his old friend Captain Cook, and he was at that moment flourishing, like the bay-tree, in the one hundred and twelfth year of his age (C. W. Stoddard, *Hawaiian Life*, 1894:161 In Sterling 1998:63).

Paukūkalo *Lit.*, “taro piece.” This present-day shoreline community is located at the northernmost region of the Kahului Harbor [Bay]. The 'Īao Stream reaches the ocean at Paukūkalo, a region formerly heavily planted in *kalo* (wetland taro) (Hill et al. 2009:12).

Pihana Heiau Pihana-a-kalanī, wherein is the *heiau* of Haleki'i, Liliha and Kaloha – Luakini. A few traces of the foundation can easily be found. The Luapa'u (*Luapa'ū = refuse pit*) Liliha, once surrounding the *heiau*, has been filled up with stones. Tradition relates Kiikewa, the high chief who lived at the time of Kakae, the king of West Maui, built the Heiau of Pihana – every rebellious high chieftains of Maui were sacrificed at this *heiau*, but, no *alii* whose lineage was tainted were sacrificed on its alter, Liliha is the name of the Luapa'u (offal pit). Haleki'i is the *heiau* reserved for the females of high rank and is situated on the *makai* side of the bluff – Kalola is another name. The whole combined in general is Pihana. It is said there is a cave beneath Pihana, and Liliha is the mouth of the cave. Then follows a story of the sacrifice of a chiefess of high rank, Poloahilani – the last at Pihana.

After the battle of Hana, Kamehameha I and soldiers stopped at Naholo-ku (*Kaupo*), to visit the high chiefess Kalanikaukooluaole, a daughter of Kamehamehanui, whom he knew to be one of the chiefesses of exclusive tabu. Crossing the stream, he saw a young woman taking her bath, and asked the way to the house-which was indicated. At the house, the *kahu* said she was at the stream (the attendants had hidden). Kamehameha I felt he had been insulted, stamped his foot and exclaimed: *Ka! Ike iana 'lii o Maui ikapepeiao. Pshaw!* The Maui chiefs are recognized by their

ears. After the battle of 'Īao, he sent for the princess (to be sacrificed at Pihana). Poloahilani came instead, on the advice of the priest, and saved the life of the *alii*.

After the victory of Kamehameha I at Kepaniwai ['Īao], he observed the *kapu* at Pihana, the *kapu* of Kaloa-where in offering to his war god, he thought of the incident at Naholo-ku. On the priest's advice, he sent his messenger in haste for the princess' custodian. Sadly the priests were consulted and omens studied; lots were drawn between the princess and her foster-sister, the priests meanwhile chanting prayers. The princess drew the long straw, and her foster-sister the short one, thus pointing to their roads to tread.

After the custom of ancient Hawaii, custodians of royalty were chosen from near kin. Their duties were to rear their charges to the highest attainments, giving their all on all, even their very life blood without fear or murmur – it meant added honor to their prerogatives. Poloahilani with her attendant took the road through Hamakualoa, reaching Wailuku on the eve of the last Kaloa and in time for the *kapu heiau*. Thus she was sacrificed at Pihana Heiau to appease the gory thirst of the war god of Kamehameha I, the slayer of chiefs. The princess, accompanied by the priest, took the long route through Kahikinui, reaching Wailuku after the *kapu* was free. She lived incognito, burying her identity with the monument of an *ahu* at Lamalii, Wailuku. Poloahilani was the last sacrifice. Pihana was demolished by Kalanimakakaualii and Kauanaulu during Ka'ahumanu's proclamation, 1819 (J. F. G. Stokes Group 7 In Sterling 1998:75-76).

It is said of Pihana that on Kamehameha's invasion of Maui, in 1790, with an army of warriors which resulted in the defeat of Kalanikupule's forces in the celebrated battle of Pani-wai-o-Iao the conqueror invoked the blessing of his war god Kūka'ilimoku there at, and sacrificed upon its altars (Thomas G. Thrum, *Tales of the Temples, Hawaiian Annual for 1909*, 46 In Sterling 1998:77).

Site #43. West side of 'Īao Stream on the sand ridge about half a mile from the sea, about opposite the Wailuku Sugar Co.'s mill. A large heiau partly eroded away by the action of 'Īao Stream. Stokes in 1916 described it as follows: "This heiau occupied the top and upper slopes of a high lime-sand-dune, its floor being about 70 feet above the stream bed on the Southeast. The dune is one of a series paralleling the coast line of Wailuku bight. The dunes on the west, on one of which Pihana stands, are hardened on the surface for a depth of 2 to 6 feet, the underlying sand being loose. Probably since the heiau was built, floods in the stream (the bed of which was formerly more to the southeast) have cut through the hardened portion of the base of the Pihana dune, and are now gradually removing it together with the heiau.... The southwestern end of the dune is very precipitous, the floor of the heiau being about 60 feet above the ground at the foot of the terraces. The only local information obtainable was that the heiau had been built by Kahekili." There is some doubt as to whether the part of the heiau shown as B is really a part of the ancient structure. Mr. Stokes in 1916 made no mention of it, yet as shown in the plan it is centrally located with reference to the high platforms at the south so that it seems reasonable to assume that it was an open court connected with the heiau. It is bounded by low walls and has suggestions of a number of small enclosures at one side. The court measures 90 by 166 feet, whereas the undisturbed side of the heiau proper (A) is about 300 feet in length. This portion consists of high terraced facings built of large beach stones (W. M. Walker, 'Archaeology of Maui,' 1929:146-147 In Sterling 1998:76).

Travelling backwards and forwards along the east slope of the dune towards the N. end of the heiau, where the heiau stones were most abundant, human, pig and fish bones were found, and the trail led right up to the N. portion of the heiau, where 'ili'ili were abundant. At the North were mostly human bones, but some pig. A little to the South of this spot were two places where were quantities of burned bone. Mostly if not all of pigs. The 3 places were in line and near together. Rat bones were present.... To the S.W. several graves marked by stones from Pihana (J. F. G. Stokes, *Fieldstones*, MS SC Stokes Group 2.3.14-5 In Sterling 1998:76).

Pihana Heiau is believed to have been built on the advice of the high priest, Kaleopuupuu, who had been borrowed from Oahu by Kahekili in preparation for an expected attack by Kalaniopuu of

Hawai'i Island. In the ensuing battle, the invaders, including Kalaniopuu's favorite Alapa Regiment, were vanquished. This temple was a *luakini*, or sacrificial *heiau*. Human sacrifices were performed only on the most important occasions and at a *heiau* of the highest class. In 1790, Kamehameha I is believed to have made sacrifices here before defeating Maui in the Battle of Kepaniwai (Charles C. Young, Historical Society Restores Maui Heiau, *Sunday Star-Bulletin*, Dec. 13, 1959, 25 *In* Sterling 1998:77) (Too late to be at all authentic - K.P. Emory *In* Sterling 1998:77).

According to Kamakau (1992), the *tabu* chiefess Keopuolani, wife of Kamehameha I and mother of his royal children, was born at Pihana (Hill et.al. 2009:13).

Lit., "fullness" According to Pukui et al. (1974), stories of this Wailuku *heiau* includes it being built in a single night by the legendary race of *Menehune*, who brought the stones from Paukūkalo beach. Pukui also states that the [re]construction of this *heiau* has been attributed to the Maui chief, Kahekili. It is listed as Walker Site 43 (Hill et.al. 2009:12).

- Waiakamaheha Where the Kaahumanu church stands today stood the Heiau (temple) of Wai-aka-ma-keha (water reflecting like lightning), the stones of which were used by the early Protestant missionaries to erect Kaahumanu Church (Ashdown 1960 *In* Sterling 1998:84).
- Wai-ehu *Ahupua'a*. Land division, point, streams, village, beach, park, and golf course, Wailuku qd., Maui *Lit.*, water spray (Pukui et al. 1974:221).
- Wai-he'e *Ahupua'a*. Land section, village, school, canal, point, reef, river, sugar company, farm, trail, park, canyon, and water tunnels, Wailuku qd., Maui *Lit.*, squid liquid. (A mute, Ke-aka-o-Kū, the shadow of Kū, was told that his speech would be restored if he went to Kahiki to be married. On the way he was attacked by a huge squid which he killed and threw to Kaha-lu'u, O'ahu. Slime flowed over the land; hence the name [Sterling and Summers 5:64; Pukui et al. 1974:221]).
- Wai-ka-pū *Ahupua'a*. Land section, village, ditch, stream, park, sugar company, water tunnels, valley, Wailuku qd., Maui. *Lit.*, water [of] the conch. (A conch in a cave here could be heard everywhere in the Hawaiian Islands until it was stolen by a supernatural dog, Puapua-lenalena, yellow tail feathers.) (Pukui et al. 1974:223).
- Wai-luku *Ahupua'a*. Land division, elementary school, quadrangle, heights, city, point, sugar company, and stream, West Maui; site of the battle in the late eighteenth century in which the army of Ka-lani-'opu'u was nearly annihilated by Kahekili of Maui (Kuy.1:31; PH 57; RC 148.) See Ke-pani-wai, *Lit.*, water [of] destruction (Pukui et al. 1974:225).

The battle began at Wailuku...How the owls and men fought! The men and chiefs were destroyed; many men of the Four-Waters. Kapoi and his wife were also killed. Because the owls caused such destruction the place was called Wai-luku (Water-of-destruction) to this day. (W. H. Uaua, 'The Legend of the Battle of the Owls,' *Ke Au Okoa*, June 29, 1871, 3. MSC SC Sterling 3.12.3 *In* Sterling 1998:71).

Moku. Wailuku, the district to who the Hekuawa trees belong and the best of sugar growing lands. Therefore, O ye who dwell near the fishponds of Kanahā and Mauoni and who pull up the taro plants of Kahului [S. W. Nailiili, *E nohoanaoe e hoohlonokimaiana*, *Ke Au Okoa*, Nov. 6, 1863. MS SC Sterling 3.12.3. (Sterling 1998:71)]

The following excerpts note significant events and/or places in Kahului and Wailuku.

Battle of Kalai'ili'ili (Fornander, *Account of the Polynesian Race*, 2:148 *In* Sterling 1998:69):

After the death of Kamehamehanui, which happened about 1765, Ke'eaumoku took one of his widows for wife. This lady was Namahana, daughter of Kekaulike and his wife Ha'alou, and consequently half-sister of the deceased king and of his brother and successor, Kahekili. The latter was greatly displeased with the match....

At that time the large and fertile land of Waihee was in the possession of Namahana, and here she and her new husband took up their abode. They appear to have kept court in princely style, and thither gathered many of the gay and restless spirits of the time.... While this brilliant assembly were passing their time at Waihee, Kahekili had come over the mountain from Lahaina and was holding his court at Pihana and at Paukukalo in Wailuku, and the ill-will which the marriage of Ke'eaumoku and Namahana had engendered soon found an occasion to show itself.

Among the subordinate landholders in Waihee, occupying a subdivision of land called Ka'apoko, was a warrior named Kahanana. For some reason, now unexplained, this Kahanana had frequently been neglected when the chief of Waihee distributed fish, after fortunate catches, among the subordinates and warriors living on the land. Incensed at what he considered a studied neglect and insult, Kahanana donned his feather cape-the Ahu'ula- and his helmet-the Mahiole-and went in the night to Nuikukahi in Waiehu and killed three men belonging to Ke'eaumoku. An *emeute* [insurrection] arose, sides were taken, and the Kahanana party being supported by Kahekili, a general fight ensued, in which Ke'eaumoku and the Waihee party maintained their ground for some days, but were eventually overmatched, beaten, and obligated to flee. This battle is known in the regions as the battle of "Kalaiilili." The Waihee coterie of chiefs having thus been broken up, some fled over the Lanilili spur of the Eke Mountains into the Kaanapali district. Among these were Ke'eaumoku, his wife Namahana...and at Kaanapali they embarked for Molokai. [NOTE: Ke'eaumoku and Namahana were the parents of Ka'ahumanu]

Ka-lae-'ili'ili Battle (Kamakau, *Ruling Chiefs of Hawaii*, 83 In Sterling 1998:70):

In the year 1765 a quarrel arose among the descendants of the chief Ke-kau-like Ka-lani-ku'i-hono-i-ka-moku...The quarrel arose through a certain soldier for the guard named Kahahana who belonged to Ke'e-au-moku and lived at Ka'apoko within the district of Waihe'e. This man went every day to his plantation and when he returned at night his wife cooked the taro tops. The chiefs distributed fish to the people and left out this man and his wife. Now Waihe'e had good fishing in ancient times; there were maomao, a'ua'u, he'e, and 'ohua, besides fish that came at special seasons, like *nehu* and *pihā*, but the chiefs were constantly depriving the people of their fishing rights...Thus the battle began and lasted all that day and the next with loss on both sides, neither side having the advantage. Ka-lae-'ili'ili was the name of this battle. Ke'e-au-moku and the chiefs of Molokai fled, some by canoe and some by the mountains of Lanilili and Eke, to Ka'anapali.

Kalo Cultivation – 'Īao/Wailuku (E. S. C. Handy, *Hawaiian Planter*, 1940:108 In Sterling 1998:75):

This is the third [Wailuku] of "The Four Streams," the great torrent that drains the highest cloud-capped uplands of western Maui through deep 'Īao Valley. Much of the upper section of what is now the city of Wailuku is built on old terrace sites. Along the broad stream bed of 'Īao Valley extending several miles up and inland, the carefully leveled and stone-encased terraces may be seen. In the lower section of the valley these broad terraces now serve as sites for camps 10 and 6 of Wailuku Sugar Plantation, being utilized for house sites, garden, playgrounds, and roads. A little farther up, neat private homes and vegetable and flower gardens cover these old taro terraces; while at their upper limits the terraces are submerged in guava thickets. Here a few wild taros were found but I saw no terraces in 'Īao or Wailuku being used as flooded taro patches. It is significant that here, as at Waihee, the old terraces are adapted to market gardening (Chinese bananas, vegetables, and flowers) by Japanese and Portuguese gardeners.

Wailuku cultivation (H. T. Cheever, *Life in the Sandwich Islands*, 124 In Sterling 1998:75):

As you get into the valley and vega [sic] of Wailuku, you see numerous remains of old *kihapis*, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people, than now.... The whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it.

Wailuku Heiau [Re]Consecrated (*Kuokoa*, July 20, 1867 In Sterling 1998:64).

Of the Wailuku *heiaus* [sic] it is somewhat remarkable that of the seven we have been able to learn of in that section, five are named as [re]consecrated by Liholiho during his tour for this service during the year's stay of the "peleleu" fleet at Maui, viz: Pihana, Kaluli, Malumaluakua, Keakuku and Olopio, as also Kealakaihonua at Waihee. This was plainly in the line of a religious duty in connection with the proposed invasion of Kauai by Kamehameha, that the gods would favor his ambitions, for in the expedition was the high priest Puou, and Hewahewa his father, of the Paoa order of priesthood; Kuaiwa, and Holoilena of the Nahulu order, and Kapoukahi, diviner and *heiau* architect, as forming his Boards of Priests.

Wailuku Heiau (Thomas G. Thrum, 'Tales of the Temples', *Hawaiian Annual for 1909*, 45 In Sterling 1998:64).

It may be inferred that most of the *heiaus* [sic] in this section were war temples. The massiveness of Pihana, as shown in its ruins, as also the prominence of Kaluli in turbulous times confirms this. The time of their construction doubtless dates far back, and of their repair or reconstruction, Kahekili is credited with placing Kaluli in order on the instructions of the high priest Kaleopuupuu, (*Polynesian Race*, vol II p. 152) in anticipation of war with Kalaniopuu of Hawaii. And in the battle of Waikapu common when the Maui forces annihilated the invading army so that but two out of the 800 escaped alive, the only prisoner, a chief of Hilo, brought alive to Kahekili to be sacrificed at the heiau of Kaluli in honor of the victory, died of his wounds before he could be offered up to the gods. This was in 1776.

According to an 1853 map (Figure 16) there were no Hawaiian Villages in the project area.

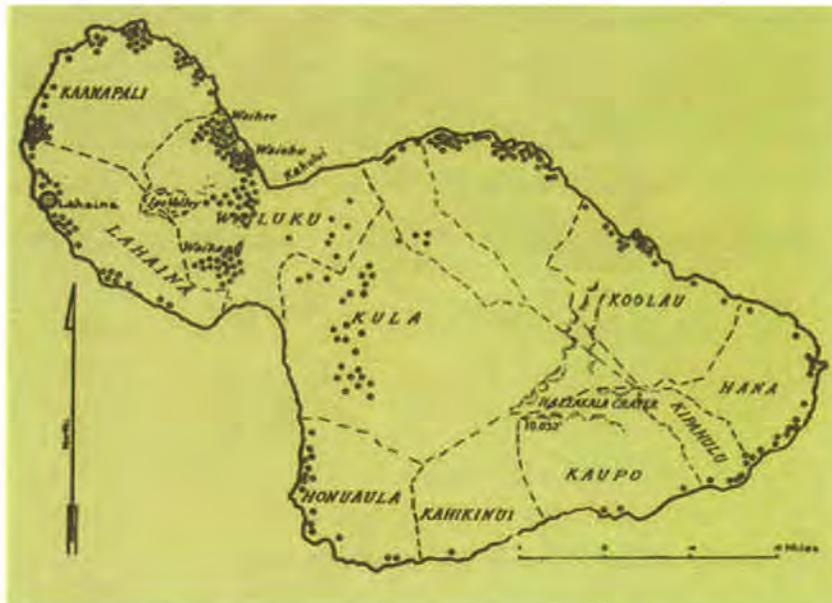


Figure 16. *Hawaiian Villages* 1853; none in project area (CHP 2006:2).

Early Historic References

By and large “Early Historic References” pertain to notable historic events and overviews of important places and land tenure within the project area and district. One of the most significant practices in the history of the Hawaiian people was their concept of the stewardship of the land. However, over time, these practices were replaced by more Western methods of land tenure and use, as the lands of Kahului went from the domain of the *ali'i nui* to the monarchy, to various individuals and entities. The history of land use in this area went from traditional land management and use (fishponds, fishing and gathering) to agricultural-related activities in the early 1800s to light industry, recreation and commercial industry today.

It was during the time of Kahaukapu of Hawai'i and Kaka'alaneo of Maui (also said to be the time the Spanish first came with Ku-kanaloa [Kamakau 1991:324]) that the division of lands is said to have taken place under a *kahuna* named Kalaihaohi'a. He portioned out the lands into districts, sub-districts, and smaller divisions, each ruled over by an agent appointed by the landlord of the next larger division, and the whole under control of the ruling chief over the island or whatever part of it was his to govern (Handy and Handy 1978:491; Beckwith 1970:383). Each island was divided into *moku* or districts that were controlled by an *ali'i 'ai moku*. Within the *moku* on each island, the land was further divided into *ahupua'a* and controlled by land managers or *konohiki*. The boundaries of the *ahupua'a* were delineated by natural features such as shoreline, ridges, streams and peaks, usually from the mountain to the sea, and ranged in size from less than ten acres to 180,000 acres (Moffat and Fitzpatrick 1995:24-29, see also Chinen 1958:3). But sometimes “only the line of growth of a certain tree or grass marked a boundary; and sometimes only a stone determined the corner of a division” (Chinen 1958:1). The ideal *ahupua'a*, from mountain to the sea, enabled a chief and his followers to obtain fish and seaweed at the seashore, taro, sweet potatoes and bananas from the lowlands, and forest products from the mountains. However, this more often than not, was not the case (Chinen 1958:3). *Ahupua'a* were also political sub-divisions for taxation purposes during the *Makahiki* period (Handy and Handy 1978:48).

Each *ahupua'a* was often divided and sub-divided several times over (i.e., *'ili, kuleana, mo'oa, pauka, kōele, kiha pai*), answerable to *ali'i* where the lesser division was located. However the *'ili kūpono* or the *'ili kū* was “completely independent of the *ahupua'a* in which it was situated...tributes were paid directly to the king himself” (Chinen 1958:4). Rights to lands were mutable or revocable; a ruling chief or any “distributor” of lands could change these rights if displeased, or as favors - usually after a victorious battle, and after the death of the *ali'i nui* or ruling chief (Chinen 1958:5). During the period 1839 to 1855, several legislative acts transformed the centuries-old Hawaiian traditions of *ali'i nui* land stewardship to the Western practice of private land ownership. In the first stage, King Kamehameha III (Kauikeaouli) divided up his lands among the highest-ranking *ali'i* (chiefs), *konohiki* (land managers), and favored *haole* (foreigners) (Chinen 1958:7-14; Moffat and Fitzpatrick 1995:11, 17). This historic land transformation process was an evolution of concepts brought about by fear, growing concerns of takeovers, and western influence regarding land possession. Kamehameha III, in his mid-thirties, was persuaded by his *kuhina nui* and other advisors to take a course that would assure individual personal rights to land.

One-third of all lands in the Kingdom would be retained by the king; another one-third would go to *ali'i* or chiefs as designated by the king. In 1846 he appointed a Board of Commissioners, commonly known as the Land Commissioners, to “confirm or reject all claims to land arising previously to the 10th day of December, AD 1845.” Notices were frequently posted in *The Polynesian* (Moffat and Fitzpatrick, 1995). However, the legislature did not acknowledge this act until June 7, 1848 (Chinen 1958:16; Moffat and Fitzpatrick, 1995:48-49), known today as The Great *Mahele*. “The *mahele* did not actually convey title to the various *ali'i* and *konohiki*; it essentially gave them the right to claim the lands assigned to them - these lands became known as the *konohiki* lands. The *konohiki* chiefs were required to present formal claims to

the Land Commission and pay a commutation fee, which could be accomplished by surrendering a portion of their land to the government.” The government could later sell these lands to the public in the form of Grants. Upon payment of the commutation fee, the Minister of Interior issued a Royal Patent to the chief or *konohiki*. The last one-third was originally designated to the *maka‘āinana*, but not acted on--instead it was set aside to the government, “subject always to the rights of the tenants” (Moffat and Fitzpatrick 1995:41-43; see also Chinen 1958:15-21).

‘Ili kūpono were the only *‘ili* (parcel) recognized in this process, all the *‘ili* and lesser divisions were absorbed into the *ahupua‘a* claim (Chinen 1958:20). In 1892 the legislature authorized the Minister of Interior to issue Royal Patents to all *konohiki* or to their heirs or assignees where the *konohiki* had failed to receive awards for their lands from the Land Commission. The Act further stipulated “that these Royal Patents were to be issued on surveys approved by the Surveyor General of the kingdom” (Chinen 1958:24; Moffat and Fitzpatrick 1995:41-43). Kamehameha III formalized the division of lands among himself (one-third) and 245 of the highest-ranking *ali‘i* and *konohiki* (one-third) between January 27 to March 7, 1848. He acknowledged the rights of these individuals to various land divisions in what came to be known as the *Buke Mahele* (“sharing book”) or The Great *Mahele*. These lands, however, were all “subject to the rights of native tenants” or *kuleana* lands, with reversionary rights to *ahupua‘a* and *‘ili kūpono* claimants if the tenant died without heirs (Chinen 1958: 29-30). The Great *Mahele* marked the end of the feudal system in the kingdom (Chinen 1958:15).

An online search of the Waihona ‘Āina website did not produce any information regarding Mahele, Royal Patents and Grants of Kahului, but a search for ‘Kaihuwaa’ (said to be native name for Kahului) did produce one claim: #03257C by Nahuina, which was awarded. However, according to Baker and Baker (1989:126) ‘Kahului’ was given as *konohiki* lands to Kapui. Welch et al. (2004:8) state that most of the lands around the harbor were granted to Victoria Kamāmalu, granddaughter of Kamehameha I.

The following excerpt by Fischer (2013b) may offer a clue about Kahului:

The history of Kahului, like much of modern Hawaii, is closely tied to the sugar industry. Prior to middle of the 1800’s, Central Maui was largely uninhabited. Henry Baldwin and Samuel Alexander purchased land near Makawao and started a sugar plantation, which was to expand greatly over the next century. As the plantation expanded, so did the area of what is today, Kahului. In 1880’s Kahului became the headquarters for Maui’s first railroad, built to haul sugar from the fields to the refinery and harbor - all of which were owned by Alexander and Baldwin. A squatter town grew up in the area, but was short lived when the bubonic plague epidemic of 1900 resulted in a decision to burn most of the town and kill the infected rats. The Kahului we know of today is a planned community developed in 1948 by the Alexander & Baldwin Sugar Company. Nicknamed “dream city” by the cane workers it [Kahului Town] was a much nicer place to live than the dreary barracks of the plantation camps. The town continued to grow with more homes, roads, stores and by the 1940’s the major airport serving the island of Maui. Today, Kahului is Maui’s major town.

Baldwins and Alexanders of Maui

The Baldwins and the Alexanders were two prominent families who had far reaching influence on the lives and industry of Maui including the Kahului-Wailuku areas. The two parcels proposed for acquisition in the project are owned by A&B Properties. The following are some Alexander and Baldwin stories and their connections to the project area.

Dr. Dwight Baldwin (1798–1886 second child of twelve children) and Charlotte Fowler Baldwin (1805–1873) were part of the fourth company of American missionaries in Hawai‘i arriving in 1831 (Alexander 1935). Dr. Baldwin was not only an ordained minister, he was also a physician who served fellow

missionaries, *ali'i* and the *maka'āinana*; first in Kohala and Waimea and all the way to Hilo. Then for health reasons he was transferred to Lahaina (Lyons n.d.; Wiki-DB 2011) in 1835 where they occupied the former Spaulding house (Alexander 1935). During the smallpox epidemic in 1853, Dr. Baldwin served as a government physician for Maui, Moloka'i and Lāna'i and is credited with keeping the disease at bay (JWC n.d). After seventeen years of service, Dr. Baldwin was granted (ca. 1853) 2,675 acres of land in the *ahupua'a* of Māhinahina and Kahana for farming and grazing (KR 2003: H-2). This later became part of the Baldwin Estate of lands in West Maui. The Baldwins had eight children: David Dwight Baldwin (1831–1912), Abigail Charlette (1833–1913), Charles Fowler Baldwin (1837–1891), Henry Perrine Baldwin (1842–1911), Emily Sophronia (1844–1891), Harriet Melinda (1846–1932) a son, Douglas Hoapili Baldwin, who died young in 1843 (Wiki-DB 2012) and a daughter Mary Clark (born after Abigail) who also died young (Sanford 2013).

In 1890 David Dwight Baldwin (1831–1912), the oldest son of Dr. Baldwin, was one of the first to plant pineapples on Maui; however, it was not until several decades later (1920) that pineapple became an economically viable crop. Pineapple as a commercial crop was first planted on O'ahu by Captain John Kidwell in Mānoa (Baldwin 1946:5).

Henry Perrine Baldwin (1842-1911), or 'H.P.', was born in Lahaina, the sixth of the eight children of Dr. Dwight Baldwin and Charlotte Fowler Baldwin. Henry grew up in Lahaina and was educated at Punahou. Although he first wanted to get a medical education, he started managing a rice plantation, then went into sugar. He first worked for his brother David Dwight, followed by a long-lasting



Samuel T. Alexander

partnership with his soon-to-be brother-in-law, Samuel Thomas Alexander (1836–1904), the son of Rev. William Patterson and Mary Ann McKinney Alexander. Samuel Alexander like H.P. Baldwin also grew up in Lahaina. Later Alexander went to the mainland for work and college, while Baldwin stayed on Maui to work for his brother raising sugarcane. After studying on the Mainland, Alexander returned and began teaching at Lahainaluna. He and his students successfully grew sugar cane and bananas. Christopher H. Lewers, owner of Waihee sugar plantation, heard of this feat and offered Alexander the manager's position of his plantation. Alexander hired Baldwin



Henry P. Baldwin

as his assistant, who at the time was helping his brother raise sugar cane in Lahaina. This was the beginning of a lifelong working partnership (A&B Properties 2013). In 1869 the partnership of Alexander & Baldwin (A&B) invested in twelve acres of land between Pā'ia and Makawao, followed soon after with the purchase of 559 acres of land. In 1870 they planted their first sugarcane and Baldwin married Alexander's sister. H.P. and Emily Whitney Alexander Baldwin had eight children: Henry "Harry" Alexander Baldwin (1871–1946), Maud Mansfield (Baldwin) Cooke (1872–1961), William Dwight Baldwin (1873-1943), Arthur Douglas Baldwin (1876-1954), Frank Fowler Baldwin (1878-1960), Fred Chambers Baldwin (1881–1905), Charlotte (Baldwin) Rice (1884–1938), and Samuel Alexander Baldwin (1885-1950). (Henry's older sister Abigail married Samuel and Emily's older brother William De Witt Alexander, who was a noted Hawaiian historian [Lyons v1:4] and teacher and president of Punahou School.)

In 1876 the partners started the 17-mile Hāmākua-Ha'ikū irrigation ditch that crossed several ridges and ravines to irrigate 3,000 acres of cane fields belonging to them and neighboring plantations. They competed with Claus Spreckels (see box below) for the first ditch of its kind. Alexander and Baldwin completed their ditch in two years, founding the Hamakua Ditch Company (aka East Maui Irrigation) the oldest subsidiary of A&B. Although H.P. Baldwin lost an arm in a mill accident, that did not deter him (Day 1984:7-8). He became famous when he climbed down a rope with only one arm into Maliko Gulch

(every day according to Sanford [2013]) to show his workers it could be done; they followed him thereafter (Day 1984:8; Wilcox 1996:60; Dorrance and Morgan 2000:59).

Alexander later moved his family to California (1883) and Baldwin ran the firm for almost thirty years (Day 1984:8). Other ventures of A&B included establishing the Hawaiian Sugar Company on Kauai (1889); acquiring control of the Hawaiian Commercial & Sugar Co. in Pu'unēnē and operating a fleet of vessels between Hawai'i and the mainland; these were eventually replaced by steamers of the American-Hawaiian Line, then the freighters of the Matson Navigation Co., a subsidiary of A&B until 2012 (Sanford 2013). From 1887 to 1903 H.P. Baldwin also served in the legislature; he devoted much of his income to community works (Day 1984:8).

Claus (aka Adolph Claus J.) Spreckels (1828-1908) was born in Germany; he left in 1846 for America where he became an industrialist in Hawai'i and California. In 1852 he married Anna Christina Mangels and had thirteen children (five lived to adulthood). Spreckels was involved in Hawai'i government and industry starting with the Kingdom during the era of Kalākaua to the Territorial years.

While in Hawaii, he purchased the *Pacific Commercial Advertiser* in 1880 and became a publisher. This paper later became known as the *Honolulu Advertiser* and, prior to its demise in 2010, was one of the largest newspapers in circulation in the United States. Spreckels' conservative, pro-monarchy slant caused him to fall from favor in the business community, and he eventually sold the newspaper. Claus Spreckels also lent his assistance to William Matson when he first founded Matson Navigation Company. Spreckels financed many of Matson's new ships including Matson's first ship called *Emma Claudina* named for Spreckels' daughter. Matson had been captain of a vessel, engaged chiefly in carrying coal to the Spreckels Sugar Refinery and later worked aboard the Spreckels family yacht (Wiki-CS 2013). Spreckelsville on Maui is named after him.

In 1900 Alexander & Baldwin incorporated as an agency for sugar plantations such as Hawaiian Commercial & Sugar Company (HC&S) and Maui Agricultural Company, Ltd., an A&B creation managed by H.A. Baldwin (Sanford 2013). In 1906 F. Baldwin succeeded his father H.P. Baldwin as manager of HC&S; and became both president and manager in 1911 when his father died. In 1908 HC&S and Maui Agricultural Company jointly organized East Maui Irrigation Company, Ltd. to manage their ditch system and divide water between them.

In 1917 Maui Agricultural Company, Ltd. built the first distillery in the U.S. for producing alcohol from molasses; the plantations' vehicles operated on molasses alcohol instead of kerosene or gasoline during World War I. The company also grew corn which they ground at their Ha'ikū factory, supplying the Territory of Hawaii. Maui Agricultural Company, Ltd. once had a thriving pineapple department; in 1932 the department became a part of Maui Pineapple Company. In 1948 HC&S and Maui Agricultural Company merged forming one of the largest sugar producers. The following year HC&S abandoned its Pu'unēnē railroad in keeping with the new trucking era.

HC&S had small but thriving dairy and beef cattle operations for many years; the cattle (Grove Ranch) were inherited from the Maui Agricultural Co. HC&S ranch department raised Aberdeen Angus cattle on 6,000 acres of land above Hāli'imaile. The dairy sold pasteurized milk for the first time in 1948, but HC&S sold its Pu'unēnē Dairy to Haleakala Dairy in mid-1951. In 1962 HC&S merged with and became a division of A&B. HC&S had three subsidiary companies, which became subsidiaries of Alexander & Baldwin: East Maui Irrigation Company, Limited; Kahului Railroad Company which it had owned since

1899; and Kahului Development Co., Ltd. HC&S president Asa Baldwin became a vice-president of A&B, Inc. Since 1965 the company had been modernizing its sugar equipment; between 1985 and 1990 their factories were completely computerized.

Maui's Pineapple Industry. David D. Baldwin was one of the pioneers of the pineapple industry on Maui (1890) in Ha'ikū (it had also been planted elsewhere on Maui), but it wasn't until 1903 that the Haiku Fruit & Packing Company, Ltd. was chartered; his younger brother H. P. Baldwin served as president and he became vice-president; son of H.P., Henry "Harry" Alexander Baldwin became Secretary and William A. Baldwin was appointed manager. In 1906 other companies were encouraged to plant for their cannery; these included Grove Ranch division of Maui Agricultural Co. (lower Ha'ikū); Haleakala Ranch Co., owned by H.A. and S.A. Baldwin (Sanford 2013), but it wasn't until 1920 that pineapple became a really viable crop (Baldwin 1938:8-13; 1946:5). There were several reasons for this such as incompetence, devastating rains of 1914, slumping mainland market (Baldwin 1938:10-13) and the lack of general knowledge about crop fertilization (Baldwin 1946:6-7).



Photo 22. Harry Baldwin

Several people in the Ha'ikū area tried their hands at growing pineapple but later gave up: James Lindsay (1897-1911), Clarence White (1906-1915) who sold his holdings to Harold W. Rice (1915) and Krauss (1912) (Baldwin 1946:5-11). In 1917 the Hawaiian Pineapple Co. sold its holdings in the Haiku Fruit & Packing Company to a Maui *hui* (partnership) headed by Harold Rice who also affected the joining of Ha'ikū and Maui Pineapple Company, a Japanese company located at Pauwela Village founded in 1910. Rice sold his stock the following year. The Company then ventured into Hāna, buying the Kīpahulu Sugar Company and planting pineapple in Mu'olea and Kīpahulu. This move however, was a complete disaster and by 1927 Hāna was abandoned. The Great Depression sealed their fate and the company was sold to Hawaiian Pineapple Company of Honolulu (Baldwin 1938:12-15).

In 1925 J. Walter Cameron was called from Honolulu to be the manager of the pineapple department of Haleakala Ranch Co. where they cultivated pineapple on marginal lands in Pulehu; four years later they separated from the ranch and incorporated as Haleakalā Pineapple Company. The Haleakalā fields and the Maui Agricultural Co. fields at Kaluanui and the Hāli'imaile section were very productive until the market slump late 1929. In April of the same year, Libby McNeil & Libby exercised their option and absorbed the Pauwela Pineapple Co. They began to discourage independent growers in favor of planting their own fields, as opposed to Hawaiian Pineapple Company of Ha'ikū who encouraged growers. By 1932 heavy losses and market depression led to a reorganization of Maui Agricultural Co., which merged with Haleakala Pineapple Co. and incorporated as Maui Pineapple Company Ltd. (MPC). MPC was headquartered at Hāli'imaile with J. Walter Cameron as manager. In 1934 MPC exercised an option regarding interest in the California Packing Corp. and bought out all the interests; this venture was financed by Alexander & Baldwin, Ltd., marketing agents and financial factors of MPC (Baldwin 1938:24-27).

In 1938 Maui County (Baldwin Packers-Lahaina [aka Honolua Ranch]; Maui Pineapple Company-Kahului; Hawaiian Pineapple Company (Ha'ikū and Molokai); Libby, McNeil & Libby (Ha'ikū and Molokai) and California Packing Corporation (Lāna'i) was producing half of the pineapple grown in the Territory of Hawaii. By 1941 MPC developed the contour planting system, which greatly improved production, but this was hampered by the drought of 1943-44 and World War II (WWII), when several key personnel joined various branches of the Service and wartime restrictions on materials prevented completing harvesting using a newly developed mechanized system (Baldwin 1946:16-20).

Maui Pineapple Company began in 1909 as the Keahua Ranch Company and became the Maui Pineapple Company in 1932. In 1962, the parent company A&B merged Maui Pineapple Company with Baldwin

Packers. In 1969 the Cameron family, descendants of H. P. Baldwin and his son Harry A. Baldwin, acquired Maui Pineapple Company, Ltd. (devoted to agricultural operations) in a "buy out" from parent company A&B, and later changed the company name to Maui Land & Pineapple Company, Inc. (ML&P) and went public. ML&P owned a multi-purpose processing facility in Kahului, Maui, where its fresh fruit packing and processing operations were consolidated. The facility also provided refrigerated storage, freight consolidation and warehousing to the greater Maui farming and agricultural community.

ML&P headquarters were located in Kahului, Maui with a satellite division, Kapalua Farms, located near Kapalua Resort, which was also owned by its parent Company (Wiki-MLP). In 1976 J. Walter Cameron died and his son Colin C. Cameron was elected Chairman of the Board of ML&P and its subsidiaries (KR 2003: RT; see also Bruce 8/29/78:4). Colin Cameron died in 1992 and his sister Mary C. Sanford was elected Chairman of the Board and Gary L. Gifford was named President and CEO of ML&P; in 1995 Donald A. Young succeeded Gary Gifford (KR 2003: RT).

Lives and activities changed during the war and Kahului Harbor and vicinity were no exception as discussed by Hill et al. (2009:23) below:

During World War II, the area along the shoreline west of Pier 2 contained 20 buildings either constructed or improved by the U.S. Navy as a base of operations for military shipping. Nine structures were built by U.S. Navy Construction Battalion (SeaBee) workers, and eleven structures were refurbished for military service (NARA 2008). Supplies for military bases including the 4th Marine Division camp at Kokomo, the 10th Amphibious Training at Mā'alaea, the Underwater Demolition Team training base at Kīhei, Naval Air Station Puunene and Naval Air Station Kahului were either transferred directly to each base, stored at the 18th Service Battalion Storage Depot at Kahului Harbor, or stored at an ammunition depot located above Makawao town.

A series of open-air ammunition storage areas were developed by the U.S. Navy in an uninhabited area of Maui northwest of the Kahului Harbor. The site was surrounded by a wire fence, ringed with 40-foot tall watch towers and guarded by a U.S. Marine Corps Tank Battalion Camp (NARA 2008).

Beginning in 1943, the 48th SeaBees and the 127th SeaBees constructed 40 corrugated steel Quonset huts arranged in a straight line along the western coastline of Kahului Harbor. Each structure was supported by a foundation of poured concrete and raised above grade on 4-foot concrete walls. Supplies arriving at Kahului Harbor were delivered to this depot by rail.

Hill et al. (2009:25) noted the tidal wave that affected Kahului Harbor and vicinity in 1946:

On April 1, 1946, the Kahului Harbor and NAS Kahului suffered serious damage after a tidal wave generated in the Aleutian Islands, Alaska, struck the north coast of the island of Maui. Kahului Harbor was left empty when the water receded. The Coast Survey tide gage recorded 5 waves with heights in excess of 9 feet during the first 90 minutes of the tsunami, two of the waves being greater than 11 feet (Green 1946).

Hill et al. (2009:29) also note post-World War II activities in Kahului:

All pineapple shipments from the Baldwin Packers cannery in Lahaina were trucked to the port of Kahului for shipment. The systematic closing of all military installations on the island of Maui saw the departure of about 15,000 men from "Maui's Own" 4th Marine Division. During October and November 1945, Marines of the 23rd, 24th and 25th Regimental Combat Teams, plus their attached support groups, boarded aircraft carriers docked at the port of Kahului for deactivation in California.

The following table highlights some of activities and events pertaining to Wailuku, Kahului Harbor and vicinity, and Maui industry based on archival data from previous sections of this report. Citations included only if not previously noted.

Table 4. Chronology of selected events and activities related to Kahului Harbor and vicinity.

| | |
|---------|---|
| 1781 | While residing at Wailuku, Maui chief Kahekili repulses an attack by Hawai'i Island chief, Kalani'opu'u; |
| 1790 | Kamehameha brings his war canoes from the island of Hawai'i and lands them on the beach at Kahului; he defeats Kahekili in the battle of Kepaniwai in 'Iao Valley; |
| 1837 | A visitor describes Kahului as a settlement of 26 <i>pili</i> grass houses (Cardno Tec 2009:IV-4); The missionary Richard Armstrong, stationed at Wailuku, describes in his journal a tidal wave that wiped out a village of 26 grass houses on the Kahului shore. Strong swimming and quick thinking enabled all but two of the villagers to survive—Armstrong writes admiringly of the rescue work he witnessed or heard about—but the villagers' homes and belongings were swept inland and smashed into a small lake, possibly Kanahā fishpond (<i>Maui News</i> 1937 <i>In</i> Welch et al. 2004:8); |
| 1839-55 | Legislative acts transform the centuries-old Hawaiian land stewardship traditions; the Great Mahele allows for Kamehameha III to redistribute lands – Crown/Kingdom, Konohiki, Kuleana, Government (the last category allows for land grants where non-natives can purchase lands); <i>ali'i</i> Victoria Kamāmalu is awarded Kahului; |
| 1849 | Hāli'imaile Plantation is started by Stephen Reynolds and Alfred W. Parsons on leased land; |
| 1850's | Kahului Harbor, a manmade port, is dredged from naturally formed Kahului Bay. The harbor basin is constructed to be 2,050 feet wide by 2,400 feet long and has a depth of 35 feet; the harbor and its associated lands are the foci as Kahului and the sugar and pineapple industries grow; |
| 1857 | Stephen Reynolds dies; Hāli'imaile Plantation bought by Charles Brewer II, who changes the name to Brewer Plantation; |
| 1860s | Thomas H. Hobron starts Grove Ranch on 3,000 acres in Hāli'imaile and Pā'ia; his Waihe'e Sugar Mill is managed by Samuel T. Alexander and his field boss is Henry P. Baldwin; |
| 1862 | Wailuku Sugar Company is organized by James Robinson & Company, Thomas Cummins, J. Fuller, and agent C. Brewer & Company (Wilcox 1996:122), on government grant lands of upland Wailuku (Gilmore 1936 <i>In</i> Hill et al. 2009:15); |
| 1863 | The first western-style building, a warehouse, is erected near the beach by Thomas Hogan – this provides the impetus for the establishment of a small settlement near the harbor as sugar makes its commercial debut and proves to be an economically viable crop; Brewer Plantation is sold to Judd, Wilder and Judd; |
| 1866 | Heir-apparent Victoria Kamāmalu Ka'ahumanu dies at 27 years (Day 1984:66); all of her lands are passed on to her father Mataio Kekūanā'oa, and then to her half-sister Princess Ruth Ke'elikōlani, who wills her lands to their cousin Princess Bernice Pauahi Bishop; |
| 1869 | Samuel T. Alexander and Henry P. Baldwin both resign from Waihe'e Plantation in the 1860s to establish their own plantation in Pā'ia (Gilmore 1936 <i>In</i> Hill et al. 2009:15); Alexander and Baldwin purchase 12 acres of Bush Ranch in Sunnyside area of Makawao for \$110 (A&B Inc. 2013); |

- 1870 Alexander and Baldwin purchase 559 acres of grazing land at Sunnyside down what is now Baldwin Avenue from Makawao, for \$8,000 known as Bush Ranch, formerly part of Haiku Sugar Co. – their property abutted Thomas Hobron’s Hāli’imaile Plantation (Murphy 2012; A&B 2013);
- Alexander and Baldwin produce their first crop of sugar cane (Lassalle 2003);
- 1870s Sanford B. Dole buys out mortgages of Grove Ranch and becomes one-fourth owner;
- 1871 James McKinney Alexander (second son of William P. and Mary Ann Alexander, younger brother of William DeWitt Alexander and Emily Alexander Baldwin) founds Seaside Farm half a mile east, past Kaunoa (Murphy 2012);
- 1873 Kimble’s Store is built near the beach (Welch et al. 2004:59);
- 1875 Pā’ia Plantation is established by Alexander and Baldwin – closed in 2000 (Lassalle 2003);
- 1876 H.P. Baldwin loses arm in mill accident;
- The Hamakua Ditch Company is organized and owned by the Haiku Sugar Company, T. H. Hobron/ Grove Ranch plantation, Alexander & Baldwin, and Samuel Alexander’s brother, James Alexander (Kuykendall 1967:64);
- The Hawaiian Kingdom and the United States adopt the Reciprocity Treaty;
- Hawai’i’s emerging sugar industry is booming. On Maui, several plantations are located in the isthmus neighborhoods surrounding Wailuku, Ha’ikū, Makawao and Pā’ia;
- A wheelwright/blacksmith shop is built near the site of the old Kahului saloon (Welch et al. 2004:59);
- Keпоikai, who lived at the Wailuku end of Kahului Bay, owned the fishing rights at Kahului (*Maui News*, 1900 In Welch et al. 2004:8);
- A tidal wave floods Kahului (Welch et al. 2004:59);
- 1879 Thomas Hobron builds a narrow gauge railroad running between the beach at Kahului and Wailuku. The first train runs on July 17, 1879;
- To facilitate the loading and unloading of goods and passengers, a small landing is constructed in Kahului Bay;
- 1880 Claus Spreckels establishes Spreckels Sugar Mill, and the town of Spreckelsville grows around the mill (Lassalle 2003);
- 1881 Thomas Hobron founds the Kahului Railroad Company (KRR). Passenger cars are added to the rail system and KRR becomes the first railroad in Hawai’i that provides passenger service between the population centers at Wailuku and Kahului Harbor. The Kahului station is located southeast of the harbor at Hobron Point and tracks extend through Spreckleville as well as to the sugar mill at Pu’unēnē; Hobron is also the Postmaster;
- 1882 Claus Spreckels acquires Royal Patent Grant (R.P.G.) 3343 for 24,000 acres of fee-simple lands on the Maui isthmus (Daws 1986 In Hill et al. 2009:15);
- Spreckels establishes Hawaiian Commercial & Sugar Company (HC&S) on lands that include a portion of Wailuku Ahupua’a;

- Spreckels engineers the Waihe'e Ditch (also called the Spreckels Ditch) to tap water resources from West Maui. The 15-mile-long ditch starts at the 435 foot elevation of Waihe'e Stream, and carries 60 million gallons of water (per 24-hour day) to the Wai'ale Reservoir at the 214 foot elevation of Wailuku (Wilcox 1996:122; Hill et al. 2009:16);
A new custom house is built at Kahului Bay (*Maui News* 1900 In Welch et al. 2004:10);
- 1883 Alexander and Baldwin formalize their partnership by incorporating their sugar business as the Pā'ia Plantation, also known at various times as Samuel T. Alexander & Co., Haleakala Sugar Co., and Alexander & Baldwin Plantation. (By spring of 1900, Alexander & Baldwin had outgrown the partnership organization and plans were made to incorporate the company, allowing the company to increase capitalization and facilitate expansion [A&B, Inc 2013]);
- 1884 KRR service is extended eastward to Pā'ia and includes the Spreckelsville Plantation;
The Kahului Railroad becomes a freight forwarder and subsidiary of the Wilder Steamship Company (Dean 1950 In Hill et al. 2009:17);
- 1888 Haleakala Ranch is established (HR 2013) on lands acquired by Charles Hog Alexander (son of William P. and Mary Ann Alexander), who died in 1885 as a result of a horse-riding accident. His widow Helen Thurston Alexander sold the lands to Edward Bailey – Lorrin Thurston put up half the money. They expanded the lands with the addition of Edward's brother and father's lands. Bailey and Thurston incorporated in 1888. H.P. Baldwin was brought on board as Treasurer (Murphy 2013);
By this date Spreckels plantation covered 28,000 acres, making it the largest sugar plantation in the world (Hill et al. 2009:16);
- 1889 Thomas H. Hobron dies in San Francisco (obituary in *Commercial Advertiser* September 14, 1889 from Library of Congress);
A consortium led by H.P. Baldwin buys the KRR from Wilder Steamship Company (Welch et al. 2004:9);
- 1890 David Dwight Baldwin starts Maui pineapple industry with plantings in Ha'ikū;
H.P. Baldwin is elected president of Haleakala Ranch;
- 1895 Wailuku Sugar Company takes over Waihe'e Plantation;
- 1897 The Spreckels-owned HC&S Company attempts a blockade of the Kahului wharf to drive the Wilder Steamship Company out of business. In order to outmaneuver the blockade, the directors of Alexander & Baldwin purchase the disputed 5.47-acre harbor-front parcel owned by Spreckels and create a partnership of other plantations to drive Spreckels out of business (Dean 1950 In Hill et al. 2009:17);
- 1898 Alexander and Baldwin purchase HC&S;
HC&S begins Lowrie Ditch project, planned by William J. Lowrie; the ditch traverses 21.9 miles from East Maui to the border of Kihei, bringing water to the arid lands south of Kahului (Thrum 1900 In Hill et al. 2009:18);
KRR begins construction on the East Breakwater;
- 1899 Alexander and Baldwin successfully take over the sugar interests of Claus Spreckels, and negotiate a friendly purchase of KRR (Dean 1950 In Hill et al. 2009:18);
- 1900 Bubonic plague infects Kahului and the town is deliberately burned to the ground to destroy disease-infected rats;

- Alexander & Baldwin, Limited, becomes a Hawai'i corporation when the Articles of Association and affidavit of the president, secretary and treasurer are filed with the treasurer of the Territory of Hawai'i. The Board of Directors include Joseph P. Cooke, Wallace M. Alexander, James B. Castle, Henry Baldwin, and Samuel Alexander (A&B Inc 2013);
- 1901 KRR purchases its first tugboat, the *Leslie Baldwin*, to tow lighters to and from vessels;
H.P. Baldwin hires an engineer to survey the harbor (Welch et al. 2004:59);
- 1902 HC&S start Pu'unēnē mill operation;
The McCandless Brothers are hired to drill 12 wells for new Pu'unēnē Mill (Hill et al. 2009:18).
- 1903 Haiku Fruit & Packing Company (HF&P) is established as a pioneer pineapple operation;
Maui Agricultural Company is formed from Ha'ikū and Pā'ia Plantations;
- 1904 HF&P builds a cannery in Ha'ikū;
Samuel Alexander dies after getting hit on the head from a falling boulder at Victoria Falls, Africa (A&B Inc 2013);
Harbor development is initiated by KRR, which is a subsidiary of HC&S;
A new roundhouse is built (Welch et al. 2004:59);
- 1905 A&B buys part of the Matson Navigation Company (KBR 2009);
Dredged harbor coral is used to fill and level much of the Kahului waterfront to create a more orderly business district. Early structures that are constructed near to or within this waterfront business district include the Baldwin National Bank of Maui (1906), the Puunene Store at Kahului (1908), and the Kahului Store (1916) (Hill et al. 2009:19);
Work on a 1,800 foot long eastern breakwater at Kahului Harbor is begun;
- 1906 The California and Hawaiian Sugar Company (C&H) is founded; it operated from 1921 to 1993 as an agricultural cooperative marketing association owned by the member sugar companies in Hawai'i (HARC 2013);
- 1907 KRR redesigns the layout of Kahului town (*Maui News* 1907 In Welch et al. 2004:11);
- 1908 Hamakua Ditch Company becomes East Maui Irrigation Co. – from Nahiku to Maliko (KBR 2009);
- 1909 Keahua Ranch Co. is incorporated (Maui Pineapple Company [MPC] started as Keahua Ranch);
- 1910 KRR obtains a license from the Territorial government to build a wharf for inter-island vessels. The Claudine Wharf, so-called in honor of the inter-island steamer of the same name, is built with the understanding that the terminal will be turned over to the territorial government at a later date;
The eastern breakwater is completed; over 300,000 cubic yards of fill have been deposited on the windward side of the breakwater, creating a landfill area of over 12 acres. The entrance to the harbor and the area alongside the pier are dredged to a depth of 35 feet (U.S. Army 1913:1412 In Hill et al. 2009:18);
A 40-foot tall lighthouse is established on the eastern breakwater (Welch et al. 2004:60);

- The federal government takes over responsibility for the harbor (Welch et al. 2004:60);
- The harbor handles 100,000 tons of outgoing sugar and incoming goods (Board of Harbor Commissioners 1920 In Hill et al. 2009:18-19);
- 1911 H.P. Baldwin dies; one son, Frank F. Baldwin, takes over as President-manager of HC&S and KRR, while another son, Harry A. Baldwin, becomes Haleakala Ranch president;
- 1912 Pineapple is planted at Honolulu Ranch/Baldwin Packers;
- 1913 KRR, under contract to the War Department, adds 75 feet to the eastern breakwater (Welch et al. 2004:60); the line for a western breakwater has been surveyed and charted, but construction awaits funding approval by the U.S. Congress;
- 1917 The Territorial government deepens the slip along Claudine Wharf; construction of a western breakwater begins, with KRR as the contractor (Welch et al. 2004:14);
- 1919 Kahului Bay basin and west breakwater dredging is completed; dredging of the harbor supplies ample material to fill in wetland areas along the harbor shoreline and south of the east breakwater in the vicinity of Kanahā Pond (Hill et al. 2009:20);
- 1920 Over 370,000 tons of outgoing sugar and incoming goods pass through Kahului Harbor (Board of Harbor Commissioners 1920 In Hill et al. 2009:19);
- 1921 Maui Agricultural Company has merged seven East Maui companies: Haiku Sugar Plantation, Pā'ia Plantation, Kailua Plantation, Kula Plantation, Makawao Plantation, Pulehu Plantation and Kalialinui Plantation;
- 1922 Construction on Pier 1 begins in May (Welch et al. 2004:60);
- 1923 February 3 tsunami causes some damage at Kahului Harbor (Hill et al. 2009:20);
- Claudine Wharf is closed for repairs in June (Welch et al. 2004:60);
- Pier 1 is completed and turned over to the Territorial government in August; the new pier has 500 feet of berthing space that is suitable for large steamers, which cannot be accommodated at Claudine Wharf; it is used for the first time in September (Welch et al. 2004:60);
- 1924 Haleakala Ranch grows pineapple for California Packing Company (CPC) (HR 2013);
- The Territorial government buys the Claudine Wharf for \$25,000 (Welch et al. 2004:61);
- The western breakwater loses 15 feet in a storm, adding up to a total loss from “surface washout” of 125 feet (Welch et al. 2004:61);
- The Los Angeles Steamship Company announces that two of its ships will make regular stops at Kahului Harbor, but the *City of Los Angeles* has continuing problems with docking at what the company considers an unsafe port (Welch et al. 2004:14);
- 1925 Hāli'imaile Store is built by Maui Agricultural Co.;
- Both east and west breakwaters are extended with more dredging (Hill et al. 2009:20);
- The Claudine Wharf piles give way, suspected to be the result of recent harbor dredging that caused ocean currents to erode sand around the piles (Welch et al. 2004:61);

- 1926 Kahului Cannery is built by CPC; MPC transports pineapple to this cannery;
KRR replaces its older wooden buildings around the harbor with new concrete buildings (Welch et al. 2004:61);
- 1927 U.S. Army Corps of Engineers further extends the east breakwater;
Demolition of the Claudine Wharf begins in May; its replacement, Pier 2, is completed in December (Welch et al. 2004:61);
- 1929 Keahua Ranch Co., Ltd., changes name to Haleakala Pineapple Co., Ltd.;
Haleakala Ranch Company and Keahua Ranch Co., Ltd., form Maui Pineapple Company;
- 1931 Pier 1 is extended to double its original length;
- 1932 Maui Pineapple Company, Ltd., is incorporated, and consolidates the pineapple operations of Haleakala Pineapple Co. and Maui Agricultural Co.;
- 1934 Maui Pineapple Company purchases Kahului Cannery from CPC;
- 1940s Various military activities are conducted at Kahului Harbor and vicinity;
- 1941 U.S. (Hawai'i) enters World War II; Kahului Harbor is shelled twice by Japanese submarines in the bay;
- 1942 KRR builds a 40,000-ton bulk sugar plant at the harbor (Welch et al. 2004:15);
- 1943 Naval Air Station Kahului is developed east of the harbor;
- 1946 April 1 - a tidal wave generated in the Aleutian Islands, Alaska, strikes the north coast of the island of Maui - Kahului Harbor is left empty when the water receded;
Samuel A. Baldwin becomes Haleakala Ranch president after the death of his brother, Harry A. Baldwin (HR 2013);
- 1948 Maui Agricultural Company (Pā'ia) merges with HC&S (Pu'unēnē) consolidating Alexander & Baldwin's sugar plantations on Maui under HC&S, with A&B owning 35 percent of the company stock;
- 1949 A residential and commercial master plan for "Dream City" is developed for the town of Kahului;
- 1950 Post-WWII switch from railroad to trucks and buses;
KRR locomotives are relegated to shuttling dockside cargo, such as fertilizer from Kahului Harbor to the Pacific Chemical and Fertilizer Company warehouse at Ka'ahumanu Avenue and Lower Main Street (Gilmore 1954 In Hill et al. 2009:29);
J. Walter Cameron becomes Haleakala Ranch president after the death of Samuel A. Baldwin (HR 2013);
- 1955 Pier 1 at Kahului Harbor is improved and expanded;
- 1960 150 acres of waterfront land adjacent to the Kahului Harbor are designated for light industrial use (Hill et al. 2009:29);
May 23 - Hotels, warehouses and the structures of the Kahului Shopping Center are heavily damaged when a tidal wave, originating along the coast of Chile, hits the Kahului area (Hill et al. 2009:29);

Table 5. List of Previous Archaeological Studies (cont.)

| Year | Author | Location | Type | Finding |
|------|--------------------|----------------|------------------|---|
| 1998 | Burgett & Spear | KH YB yard | monitoring | no historic properties |
| 1998 | Devereux & Hammatt | Maui C Park | monitoring | 5 sets of human remains. USMC supply depot, KRR track berm |
| 2004 | Welch et al. | Kahului Harbor | Arch Assess/CIA | prep for KCH 2025 Master Plan; identify historic properties and TCPs in compliance with Section 106 of NHPA (as amended) |
| 2009 | Hill et al. | Kahului Harbor | Lit Review/Field | historic impact; effect with mitigation; KCH SIHP 50-50-04-2953; 3 project parcels heavily modified over the past 125 years and surrounded by industrial parcels continually modernized; thirteen historic properties identified; structure CSH-2 is historically significant [not in current project area] |

Hill et al. (2009:62) summarize the history of the project area as follows:

A review of the historic documentation indicates that the present project area portion of the Kahului Harbor was extensively developed for railway access, fuel and molasses storage, freight storage and trucking, and bulk sugar storage beginning in the late 1880's. The project area was continually redeveloped to accommodate new technological advances, both in handling bulk sugar and during the transition from railroads to trucking. According to research conducted for this report, soils in this region of Kahului consist of coral and silt dredged from the ocean and deposited as fill. It is presumed that any surface pre-contact traditional or cultural historic properties in this portion of the Wailuku Ahupua'a have been obliterated, and that the closest undisturbed area within this portion of the Wailuku Ahupua'a lies to the southeast, within portions of Kanahā Pond not previously modified by the military.

Legend for some of the CSH sites cited in Figure 17 below (Hill et al. 2009:40):

| | | | |
|--------|------------------------------------|---------------------------|---------------------|
| CSH 6 | two small storage tanks | | |
| CSH 7 | large molasses tank and pump house | constructed prior to 1911 | abandoned |
| CSH 8 | large bulk fuel storage tank | constructed ca. 1916 | abandoned |
| CSH 9 | bulk fuel storage tank | constructed prior to 1930 | abandoned |
| CSH 10 | garage-auto/truck repair shop | constructed in 1929 | in use/storage |
| CSH 11 | garage-2 service bays | constructed prior to 1935 | unknown |
| CSH 12 | plantation meeting house | constructed in 1936 | used by Royal Order |

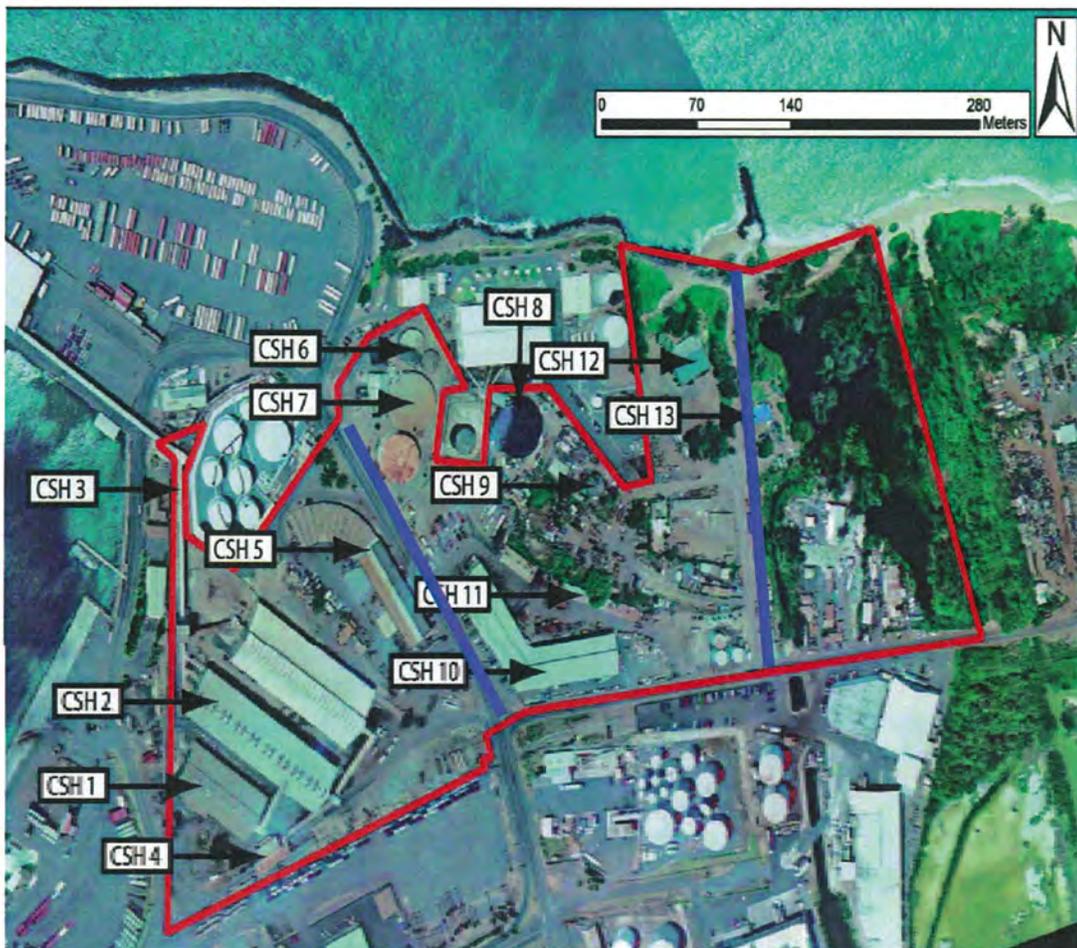


Figure 17. Historic properties within the project area located on a 1997 aerial; the CSH project area is outlined in red (Hill et al. 2009:40); CSH 6, 7, 8, 9, 10, 11, and 12 are in current project area – between blues lines (see Figure 13 above).

ETHNOGRAPHIC DATA REVIEW AND ANALYSIS

The Ethnographic Survey (oral history interviews) is an essential part of the Cultural Impact Assessment (CIA) because the ethnographic data helps in the process of determining if an undertaking or development project will have an adverse impact on cultural properties and practices or access to cultural properties and practices. The following are initial selection criteria:

- Had/has Ties to Project Location(s)
- Known Hawaiian Cultural Resource Person
- Known Hawaiian Traditional Practitioner
- Referred By Other People

The consultants for this CIA were selected because they met the following criteria: (1) consultant grew up, lives or lived in Kahului, Wailuku and vicinity; (2) consultant is familiar with the history and *mo'olelo* of Kahului, Wailuku and vicinity; or (3) consultant was referred by staff of Hawaiian Canoe Club or other consultants. Copies of signed "Consent" and "Release" forms are provided in (Appendix F and Appendix G).

In order to comply with the scope of work for this cultural impact assessment, the ethnographic survey was designed so that information from ethnographic consultants would facilitate in determining if any cultural resources or practices or access to them would be impacted by the implementation of the project (expansion onto A&B lands). To this end the following basic research categories or themes were incorporated into the ethnographic instrument: Consultant Background, Land Resources and Use, Water Resources and Use, Cultural Resources and Use; Anecdotal Stories and Project Concerns. Except for the 'Consultant Background' category, all the other research categories have sub-categories or sub-themes that were developed based on the ethnographic raw data (oral histories) or responses of the ethnographic consultants. These responses or clusters of information then become supporting evidence for any determinations made regarding impacts on cultural resources and/or practices including access.

Each person interviewed is asked to talk about their background; where they were born and raised, where they went to school and worked, and a little about their parents and grandparents. This category helps to establish their connection to the project area, their area and extent of expertise, and how they acquired their proficiency. In other words, how they meet the selection criteria. Ethnographic consultants either have family or personal ties to the project vicinity and/or are familiar with the history of the area.

Nine people were scheduled to be interviewed. Only six interviews were completed (Table 6); two of the nine were no shows; one of the nine provided a partial interview that was not completed. Five of the six ethnographic consultants were members of one of three canoe clubs located in the Kahului Harbor area.

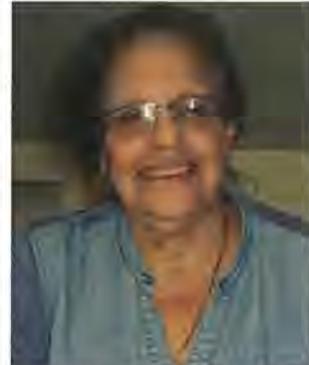
Table 6. Consultant Demographics

| Consultant | Born/Raised | Hawn | Lived/Lives | Work | Connection |
|----------------|---------------|----------|------------------------|-------------------------|---------------------------|
| Mary Akiona | CA | No* | Waiehu/Maui since 1962 | Ret/Vol/HCC | Canoe Club |
| Karen Chun | CA | No* | Maui since 1980s | Eng/Websites | Canoe Club |
| Diane Ho | Pa'ia | Pt. Hawn | Pa'ia | Atty | F/HC&S:M/KR Canoe Club |
| Paul Lu'uwai | Kiribati/Kula | Pt. Hawn | Maui | Teacher | Canoe Club |
| Cliff Libed | O'ahu | No** | Wailuku (over 32 yrs) | Sub-teacher/ CC&A-MC | Canoe Club |
| Maizie Sanford | Makawao | No | Makawao/Manoa/Kihei | Writer/CEO | A&B/Cameron |

*Husband/Children are Hawaiian; Ret=retired; Vol=volunteer; Eng=Engineer; Atty=attorney; F=father; M=mother; KR=Kahului Railroad; CC&A-MC=Commissioner on Culture & Arts-Maui County;**Pacific Islander; HCC=Hawaiian Canoe Club; HC&S=Hawaiian Commercial & Sugar Co.; CEO=Chief Executive Officer

There is always a danger of not allowing the consultant's "voice" to be heard; of making interpretations that are not theirs; and of asking leading questions. To remedy this, the "talk story" method is used and allows for a dialogue to take place, thereby allowing the consultant to talk about a general topic in their own specific way, with their own specific words. All of the excerpts used are in the exact words of each consultant or paraphrased to insert words that are "understood" or to link sentences that were brought up as connected afterthoughts or related additions spoken elsewhere in the interview. The following "Consultant Background" provides an overview of the consultant, as well as information about their families.

Mary Peckney Palakiko Akiona. My name is Mary Akiona; I was born (1946) and raised in San Diego, California. I moved to Hawai'i after I graduated in 1964 to Honolulu to live with my great-aunt who lived on O'ahu. After living there, I was working and going to school, I was on my own after a few months, had a job and a roommate, went to school at University of Hawai'i for a while, I ended up dropping out and just working. One of my co-workers at the bank was from Maui and I got to come here to Maui, Easter weekend, and I just fell in love with Maui. Those were the days when there were no traffic signals, I wanted to live in Maui but there were no job opportunities, I ended up moving to Maui, I met my ex-husband, Paul Akiona, my last name used to be Mary Palakiko, lot of people still call me that. I met my husband in Kona, and we ended up dating and moving to Maui in 1968. I've been in Maui since 1968, and I've seen a lot of changes since I came. We use to leave our car keys in the car, groceries, no one use to take anything, so I've seen some great changes.



My parents are Irwin and Dorothy Peckney. I'm the oldest of eleven children; my father was born in Chicago and my mother in Colorado. My parents met in San Diego that was a big jumping off point for WWII, that's where a lot of people met. My sister, Chris, the fifth one, she came to visit me when she was eighteen, she's five years younger, she was getting ready to leave for the states so we introduced her to my husband's cousin, Moki Keahi, and she ended up staying, got married to him and still here, a teacher in Lahaina so I have one sister here at least.

My ex-husband [Palakiko] and I moved to Kihei and when Kihei Canoe Club [established in 1973] started in 1975 they were looking for paddlers and my ex-husband used to paddle for Lahaina Canoe Club, and they said bring your wife because we don't have any women; I didn't even know how to swim. That's how I got started in 1975 with Kihei. I had two kids at that time, I have six total, I continued to paddle so my kids were raised at the beach; someone always watched them while I paddled. They all paddled, every single one of my kids paddled.

He's [Palakiko] still alive, he lives in Lahaina, and he's Hawaiian, Filipino. My kids are all very talented musically, my oldest boy plays music professionally, he's a contractor, but every Thursday he plays at the Kaanapali Beach Hotel. He has five kids and they all can play music. Charlie is off the grid, sort of independent guy, works when he needs to - he's a whatever kind of guy - he can play music. Markie plays piano, stand-up bass and bass, guitar, he plays for the *halau*, and his wife is with the *halau* that comes here [Pueo Pata] but she just gave birth and she's the *halau's alaka'i*, so they are on break. My ex-husband was adopted by his Grandfather, the second marriage, the family fishermen in Lahaina is Naleieha - the Naleieha were all fishermen. My daughter who lives on O'ahu is a total fisherperson, she loves fishing, my son Charlie goes out fishing all the time, he goes out fishing all the time, he's a total water person, they are all water people. It's in their blood, because their family was all fishermen, my ex-husband used to surround net, dive and surfing, he isn't in good health right now. I have one daughter and five boys.

I worked at Kaiser and left them and eventually came to work for the canoe club and then left that and before I retired I was doing auditing for insurance, Workers Comp and General Liability Insurance, working for a company that was based in California, I was doing that and they were sending me to California and that was getting old. I've never been there in my life, I got my Map Quest and GPS and traffic there is scary, I did not own a car in San Diego, I came here when I was eighteen and spent my whole life in Hawaii. I was driving down the freeway going I cannot believe I'm doing this, I'm sixty some years old and I must be out of my mind and I was in the Fresno area, than Oakland, it's such a bad area and I'd ask people and they'd say just don't be there after dark because it's really a bad place. I didn't know that, but finally I left. Since last year, actually almost two years, we've been babysitting; my husband is still working, working for the County, Liquor Department, runs the Lahaina Office. He could retire but he doesn't mind working, so I'm okay.

I eventually ended up at Hawaiian Canoe Club, I knew Diane Ho, and I was going to retire from paddling after my last kid and I couldn't do it, a single parent with six kids and Diane says, 'we'll watch your kids, you won't have to do nothing', as you can see I'm still doing a lot. My thing about Hawaiian Canoe Club as a single parent with six kids, struggling, working at Kaiser and part time on the weekends cleaning trying to survive; when my youngest son Richard was eight, he's a big kid, I thought I didn't know what to do with him the whole summer. I got him in the Kamali'i Program [at Hawaiian Canoe Club Cultural Program], which starts at 1:00 p.m., so I put him in summer school, on my lunch break I picked him up, fed him lunch and brought him to the Kamali'i program, which was free and still is free, except for excursions. He was in the Kamali'i program till 3:00 p.m. and paddled canoe after, I'd get down there at 5:00 p.m. and he'd hang out until I paddled. This was a life saver for me. The reason why I let him come here and paddle was we paddled in Kahului Harbor. I would have never let my eight year old kid go out there at [inaudible] and even though he can swim, I would have been scared.... I used to be the Executive Director [HCC], quite a while ago.

I paddle and I do the bookkeeping for the club and I'm also the Treasurer, the bookkeeping I get paid a little money for, but the Treasurer I do a lot of volunteer work. Today I'm down here because I'm in charge of the getting the new key pad locks on the doors, I had to meet the lock guy and hang out with my grandson, I had to bring him with me.

###

My name is Karen Chun, I was born (1950) in California and I've lived here for twenty years, I'm married to a Hawaiian, and I'm very much involved in paddling, and I've coached at a canoe club in the Harbor and also we have a club that comes out of Kanahā, so I spend a lot in the canoe paddling past or landing near the target property. My husband's name is Malama Chun, he's the paddle maker. He grew up in Hāili'imaile, his family is the Makena, Lono, Kailua Family. I'm a former game designer, and now do websites, but mostly I paddle. That's our passion. My first club was Malama Ula, which is now called Wailea Canoe Club, and then after I met my husband I moved to his canoe club, which is Na Kai Ewalu. Na Kai Ewalu is in the Harbor, it is part of the old Kahului Canoe Club, which was the first club in the harbor and then it split into Na Kai Ewalu and Hawaiian Canoe Club. My husband has been with them since he was about eighteen years old. We went to Na Kai Ewalu, which in the Kahului Harbor, and Ilima Kalama invited us over to coach with him at the Kihei Canoe Club, where he was head coach. So Ilima says I don't like being head coach so you guys be head coach, so we were there for a while. Then Na Kai Ewalu invited us back to coach, so we were head coach there for a while, and then during that time we kind of established our own canoe club, which is the "un-club" North Shore Renegades. So we are not HCRA Member, we don't do regatta, we just do distance races. After coaching two different clubs we



were over the drama and the paddletics. So that's what we do now, and I occasionally do regatta with Lae'ula O Kai, who is a canoe club out of Kanahā.

I went to school at UC Berkeley and UC Davis in the 60s - Northern California. I got my Bachelors and Masters Degree in Mechanical Engineering. I worked in various jobs, a lot of solar monitoring and passive cooling work for various companies then Reagan cut the budgets. Then I worked for Western Area Power Administration, which is a Federal Utility that runs most of the hydro power in California, The Central Valley Project, Shasta, Folsom, Whiskey Town. It was a great job, I was the person that ran all the simulations that determined what or project dependable capacity would be which is how much you can count on generating throughout the year. You had to take into account of fish requirements, the irrigation requirements, and the municipal water requirements, stream flows; it was a fun job. After that I was a consultant for the California PUC for a while. I was married to somebody who was born in Hawai'i and we'd come back a lot and then we were separated and then I met Malama.

###

My name is Diane St. Sure Ho, I was born in Pa'ia, Maui, Hawaii. I grew up in Pa'ia and Kahului Maui. I graduated from both Baldwin and Kamehameha, long story...then to University of Hawaii. I majored in education and I have a JD from the William S. Richardson School of Law. I am a practicing attorney – for 35 years. My father is Richard St. Sure and my mother is Sarah Shaw. My father worked for HC&S, my mother worked Kahului Railroad. I started padding at twelve years old. Harry Field and David Kahanamoku moved to Maui and John Lake started Hawaiian Canoe Club and he got them to start Kahului Canoe Club so they recruited on us kids from Kamehameha.... I went off to school and so forth, I guess John Lake died in that period of time, after in the sixties, it sort of fell apart; Harry Field died and Kahanamoku moved. The sport itself died on Maui, a little bit, it got resurrected in the early 1970s.... At first it was just kind of, we had no direction, we raced but you could race every race; we had no divisions. It became more formalized in 1975 or so, and I think they had their first championship regattas around 1975 or 1976. 1976 I went to law school and Kihei won the championship and I was at Na Kai Ewalu in 1975 when Na Kai won the championship.



###

My name is Cliff Libed, I was born (1948) and raised on O'ahu, went to Aiea High School, graduated from University of Hawaii, Manoa – majored in education and business. Been on Maui for over thirty two years, living always in the Wailuku area. Career wise I managed property for the State of Hawaii. I'm currently retired and am a substitute teacher - Baldwin and Maui High, 'Iao, Lokelani and Maui Waena Intermediate Schools. I've been involved in canoe clubs on Maui for twenty-three or twenty-four years. I was a race director for MCHCA and head coach for Na Kai Ewalu. I was also a member of Kihei Canoe Club. Commission on Culture and the Arts of Maui County - I'm a volunteer commissioner and our goal is to preserve artistic and cultural activities, I'm appointed to a five year term and we are moving into having more awareness for our cultural events and try to preserve them with the public and connection with cultural activities. We are not a commission where we are only looking for Hawaiian but for Chinese, Japanese, etc., and we want to become a conduit for information for the community.



###

My name is Paul Ka'uhane Lu'uwai, I was born (1963) in Kanton Island, South Pacific, now known as Kiribati Islands, raised in Kula. My family is from the Makena area, we are part of the Kukahiko Clan of Makena and Kionioi'o, we own Makena Landing. I belong to Protect Kaho'olawe 'Ohana (PKO), thirty-five years; I've been coaching here for thirty-one years, pretty much my home. I went to Kula Elementary, St. Anthony High School, Chaminade University, and finished up my Bachelors and Masters and University of Hawaii, Manoa. I have a sports medicine degree, a teaching degree and Masters in Curriculum and Instructions. After college I worked for Kamehameha Schools, Kapalama Campus for five years, I moved home and taught at Baldwin High for a year, Kalama Intermediate for three years, Lahaina Luna for one year, back to O'ahu and got my Masters. Taught at Farrington High School in health academy for two years and then back to Maui and I've been at King Kekaulike High School for the past seventeen years; I teach Health and PE. I've been coaching here (Hawaiian Canoe Club) for thirty-one years and I've been paddling for thirty-two. As far as I know we've always paddled in the harbor, we are the oldest club on Maui, fifty three years old now, my grandparents also paddled in the club - Angeline Lu'uwai and John Lu'uwai. They were friends with the Lake 'Ohana, Kumu Lake is the founder of our club and their children are still involved with our club, Merriam Lake and their siblings. They were drinking pals with them (the Lakes) back in the day, and they are all about the same age. My father did not paddle - he was in the military, was a worker, but of course I paddle, my brothers all paddle and all the children paddle here. My parents are Robert Lu'uwai and Helen Lu'uwai of Kula.



###



Photo 28. Coach Kauhane in HCC lobby



Photo 29. Coach Kauhane prepping students

My name is Mary Cameron Sanford; nicknamed “Maizie.” most people call me that. I was born in 1930. I grew up in a house called *Ke Amuenue*, which is just *mauka* of Kaluanui, off of Baldwin Avenue. I did not go to Makawao School, I went to Kaunoa, which was an English-standard school and felt like a better education. I was sent away to boarding school in 1942, and came back the next year. Then I graduated from Kaunoa in 1944, and then the rest of the time I was sent to school on the mainland. That was 8th grade. But I never went to Maui High School, which most people did, because I was sent to the mainland, much to my regret. The first school I was sent to was called Tenacre School, in Wellesley, Massachusetts. It was a boarding school, and they were strict, it was a nightmare. But I got a good education. Then after that I went to three years of high school at Dana Hall School, which was a much more pleasant experience. And since I was used to the east, I went to Smith College, Massachusetts and graduated from there in 1952. Then I came home, and basically was here. It was miserably cold! But when you’re young you don’t notice it that much except at Tenacre’s we weren’t particularly fed well. I didn’t have enough blankets on the bed, for instance, so I had to pile all my clothes on the bed. Things were the way they were. But I was terribly lonesome. When the war started, a lot of children or young people were sent to the mainland to relatives or to schools because their parents thought that there was going to be a Japanese invasion. My brother was already away at a boarding school, in Deerfield, Massachusetts. He was gone in the Fall of 1941. He liked that school.



A & B was started by my great-grandfather Henry Perrine Baldwin and great-grand uncle Sam Alexander - they started the company because of the plantation. They had a partnership bringing the ditch water over to the central plain. And then there was Kahului Railroad, which was right there on the Harbor... Henry’s brother Frank was the president of Kahului Railroad Co. The railroad I think was built by a Captain [Thomas] Hobron, who was married to my great-great grandmother. There were businessmen in those days who were entrepreneurs that started all of this [KRR]. It wasn’t my great grandfather or his brother that did it. They owned the land and the Kahului Railroad was also the one you had to apply to, to get anything for construction. For instance when Fred Baldwin Memorial Home was built [in Makawao], Kahului Railroad was the one that brought the materials there and everything else. The Kahului Railroad was an integral part of the business community. When I knew him, William Walsh was the head of Kahului Railroad [he resigned in 1948] – he was succeeded by C. H. “Buster” Burnett.

The only ride on the train I did was to get onto the *Maizie C*, a boat, the sampan that was built at the Maui Vocational School. The train tracks were extended over to the shed where the boat had been built and the boat was hauled along in a huge open car down to the harbor where it was launched. And I christened it and you can see the picture. I was six years old. I remember it so clearly, what a day! Riding along on the boat and that picture of me with the life preserver on, that was taken on the boat. Then getting off on the big platform, and all of these people, the bands, and the flags, it was very exciting. My grandfather had named it after me. He had commissioned the sampan because he needed it to transport cattle and horses, etc. back and forth to Kaho’olawe, where he had gone into partnership with Angus McPhee to raise cattle. Black Angus cattle were never used by Haleakalā Ranch. They were used at Grove Ranch across Kaluanui. There are so many different varieties and some do well in dry areas, like the surviving cattle from Kaho’olawe. Before animals were at Kaho’olawe, there was a lot more vegetation, and once the goats got there, goats (and the cattle) were destructive to grass and the little plants coming out. The trees could never grow back and without the trees to bring down the fog drip, they’re not going to get any water, and it just goes dry.

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[From a previous interview Jan 30, 2013]

My mother is Frances Baldwin Cameron. She was the daughter of Harry (Henry) and Ethel Frances Smith Baldwin. They lived first in Hamakuapoko and then they moved to *Kaluani*, which they built in 1917. My mother grew up there, partly, and then when my mother married my father, J. Walter Cameron, my grandparents built a house for them next door, which was named *Ke Anuenue*, very appropriately — there's lots of rainbows there, right on the edge of the rain belt. That's where I grew up. After my mother died, the house was sold to the Fords. It's out of our hands and it was remodeled.

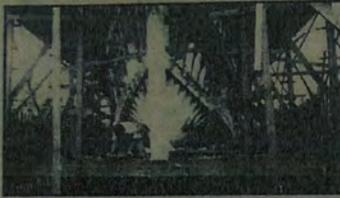
Harry [Henry Alexander] was the son of Henry Perrine (H. P.) Baldwin. H. P. was the son of Dr. Dwight Baldwin, who was the original missionary in the family. Dr. Baldwin was stationed in Lahaina. He had a number of children, but H. P. is my direct ancestor. H. P. had a lot of energy, a lot of business sense, and a lot of aloha. He was involved with a great deal of what went on, on Maui in the 1800s. He died in 1911. Besides being a sugar grower and politician (he was in the legislature during the days of the kingdom), he also was a great philanthropist. After he and his wife Emily Alexander had eight children, one son, Fred Baldwin, died of appendicitis, and they started the Fred Baldwin Memorial Foundation in honor of him.

There were six boys. Fred died, so there were five left. Only one, Arthur*, went to the mainland and never came back. But the others stayed. Harry, my grandfather, was the oldest. He and his youngest brother Sam [Samuel Alexander] were eventually co-owners of Haleakalā Ranch. And then there was Frank who had the H C & S plantation. Will [William Dwight] was a doctor but he didn't practice terribly long. He owned land in Haiku that had been in the family, one of their first homesteads. And he planted a lot of grapefruit and avocado trees and was interested in growing those. But as a doctor, during WWI he went on a Red Cross mission from Hawai'i to Vladivostok to help with the terrible conditions there. I wrote an article about that. It was very bad, they had an epidemic. There were all kinds of epidemics, they were very bad. The Trans-Siberian railroad would be full of cars of people dying. It was really quite something. This was after the war had ended. Everything was in chaos over there. [*Arthur graduated from Yale and Harvard; law firm Garfield McGregor & Baldwin – partner James Rudolph Garfield was son of U.S. President James Abram Garfield; James was with his father when the President was killed (Wiki-HPB 2012)].

Notes from Maizie

continued from page 1

place but most importantly as tour guide, horse handler and cook for Aiken's business of taking tourists to the top of Haleakala, an overnight trip. Idlewild was the staging area for the rugged ascent of the mountain.



A student helping to build the Maizie C at Maui Vocational School

My grandparents, Harry and Ethel Baldwin, had a vacation house at Olinda, next door to Idlewild. Ethel always loved her gardens wherever she lived. Hiroshi described in his autobiographical chapter in the "Arisumi Family Book" that in the summer Ethel hired him and his brothers Butch and John to work in her Olinda yard for 25¢ a day. "Not a bad wage," he said; in the 1920s plantation workers only got \$1.00 a day. Hiroshi stated, "It must have been her hobby to hire us and pay us 25¢ a day, although I don't think the three of us did a dime worth of work for her."

Another connection was Hiroshi's part in the building of the Maizie C. It was pretty exciting; after all these years (70), I actually got to talk to one of the talented young men who built the boat with my name on it.

Harry Baldwin commissioned the Maui Vocational School to build a new boat for the Kaho'olawe Ranch Co., a cattle-raising partnership Harry had with Angus McPhee on Kaho'olawe. The vocational school was a precursor of Maui Community College. Principal Ernest Hood was confident his students could build such a boat though nothing like it had been tackled before. It was a giant project for the school.

The boat had specific requirements; 65

feet long, steady in the water, room in the hold for cattle, horses and tanks of fresh water and "modern conveniences" in the cabin, as Harry reassured my mother when he invited my brother and I to go on fishing trips in it. Mr. Hood studied the fine points of designing and building such a boat, and supervised the construction hands-on. Hiroshi Arisumi was one of the carpenter students who learned woodworking and engineering skills from Mr. Hood, whom Hiroshi quoted as saying, "You can build anything after you build a boat." Every board, every rib has different measurements and they all have to fit perfectly when



Maizie Cameron christening the Maizie C at Kahului Harbor

the sections are bolted together; no leaks allowed.

After two years of construction, March 25, 1937 was the Big Day. The boat was pulled along railroad tracks laid from the school to the harbor. On the platform next to it, the County band played, speeches were spoken, and my moment of glory came when I stepped up to the mike and said, "I christen thee the Maizie C" and swung the bottle of champagne against the bow. Nothing happened; the bottle was heavily cushioned in braided red, white

and blue ribbons, and my throwing arm at six years old was pretty weak. We tried it again; "I christen thee the Maizie C" and another swing. Still no smash and splash. On the third attempt, a quick-witted dock worker held up a metal pipe near the bow on which I could break the bottle. Properly christened, the boat slid down the ways into the water, a brave sight, all flags flying.

The shakedown cruise of the Maizie C carried 54 of the vocational school students to Oahu, Kauai and Hawaii. Seasickness decimated their numbers; 20 leaving the cruise after visiting the first two ports. The channel crossings were very rough, and the April 17, 1937 Maui News reported that "Many of the boys have never been to sea before, and virtually all of them were sick before the craft had passed Kahakuloa Pt. on the way out of the Kahului harbor." Auwe!

Another coincidence: what kolohe little boys figure out on their own. According to John Arisumi's biographical section of the Arisumi book, his family would buy bread at Komoda Bakery in Makawao, and by the time they got home to Olinda, the kids would have eaten out the center of the loaves, without unduly disturbing the wrappers or the crusts. My mother used to say my brother did the same thing after she would buy bread at Nashiwa Bakery in Paia. Colin would be quiet as a mouse in the back seat, hollowing out the loaf before they got home.

Delving into family histories can be amusing.

— Maizie Santford



The Maizie C with all the flags flying

Figure 18. Notes from Maizie – about Maizie christening the Maizie C.

Land Resources and Use. Land resources and use changes over time. Evidence of these changes is often documented in archival records. Cultural remains are also often evident on the landscape and/or beneath the surface and provide information regarding land resources and use. However, oral histories can give personal glimpses of how the land was utilized over time and where the resources are or may have been.

Ms. Maizie Cameron Sanford has a long family history [Alexander-Baldwin-Cameron] to the project area and greater Kahului and shares some of that history.

A & B was started by my great grandfather and great uncle Henry Perrine Baldwin and Sam Alexander - they started the company because of the plantation. They had a partnership bringing the ditch water over to the central plain.... A & B is [now] owned by a lot of different stockholders. I don't know if there is anybody who has any connection with the family who is on the Board of Directors of A & B anymore. But their headquarters are still in Honolulu, the other Big Five are on the mainland. And H C & S (at Pu'unēnē) is still part of A & B. H C & S is still more or less considered family. It [A&B] started as a brokerage for the sugar plantations that H. P. Baldwin and Sam Alexander started. But then it was mostly H. P. because Sam moved to the mainland. And they had to have a broker to sell and shipping lines to ship the sugar and that was Matson. Now A & B just recently split Matson off. Since they've sold the Kauai plantations, H C & S is the last sugar plantation. But there's a lot of development, lands that they own and developed commercially - they do their own developing. I'm just saying these things off the top of my head; I haven't done any research [Sanford].

And then there was Kahului Railroad, which was right there on the harbor, the building is still there (the roofed concrete building). I don't know what it's used for now, but with all the train tracks that's on these maps, it was pretty important. Henry's brother Frank was the president of Kahului Railroad Co. Kahului Railroad was the transportation for bringing in agricultural things from the outlying areas, first the sugar cane, sugar and molasses, and later on the pineapple - it also hauled merchandise to upcountry stores and building materials to various construction sites. And then it was a passenger train too - school kids went to Maui High School on the train - we all still remember that. People could get from Hāmākuapoko, Ha'ikū area, which was very populated, down to Kahului on the train. I never did - the only ride on the train I did was to get onto the *Maizie C*, a boat, the sampan that was built at the Maui Vocational School [see above]. The train tracks were extended over to the shed where the boat had been built and the boat was hauled along in a huge open car down to the harbor where it was launched. And I christened it and you can see the picture [see above]. I was six years old. I remember it so clearly, what a day! Riding along on the boat and that picture of me with the life preserver on, that was taken on the boat. Then getting off on the big platform, and all of these people, the bands, and the flags, it was very exciting. My grandfather had named it after me. He had commissioned the sampan because he needed it to transport cattle and horses, etc. back and forth to Kaho'olawe, where he had gone into partnership with Angus McPhee to raise cattle. They [A&B] owned the land and the Kahului Railroad was also the one you had to apply to, to get anything for construction. For instance when Fred Baldwin Memorial Home was built [in Makawao], Kahului Railroad was the one that brought the materials there - and everything else. The Kahului Railroad was an integral part of the business community [Sanford].

The Kahului Railroad building is right over there; right past the fabric store going past towards Pa'ia. It's still there - it might have Kahului Railroad Building on the top, but not the fabric store, that was all A&B. My mother worked at the next building [KRR], and the tracks use to run right in front of it. Behind the railroad is pier one, the railroad building. It's just as you go out and you are making the turn, where you can go left, across from the shopping center [Ho].

Kahului had the movie theater - it was a very nice movie theater right on the corner where a Burger King is now. We loved going there, they had Saturday afternoon movies. The kids were dropped off, that was fun. You could get loge seats and regular seats. And they had glowing lights along the side. Not too much else in Kahului, a few stores and a bank. There were more places

later on, of course it got built up when Dream City started and the center of population seemed to shift to Kahului and there were a lot more commercial (enterprises) going down there. Dream City was after the war, so it would be in the late 1940s. That's when plantation camps were closing down and the workers came to Dream City. The first increment was along Pu'unē Avenue and the houses were half cinder bricks and half wood. There wasn't much landscaping, unlike the plantation villages which had a lot of fruit trees that people could pick off of. Kahului was very dusty but the homes were modern and so Kahului built up. And then the first shopping center was right there Kahului Shopping Center - that's where Ah Fook's was. It was very popular, there were nice big monkey pod trees and benches, and retirees would sit around and play games on tables and benches - greatly used area. And across the street, across Ka'ahumanu Avenue, which was rather narrow in those days, there were a line of shops. I remember going there with a bunch of teenagers and eating for the first time in my life a dish of tripe stew - first time. There were a lot of little shops and of course they all got pushed off during the 1946 tidal wave - destroyed [Sanford].

Further over was the Spreckelsville plantation that had been started by Spreckels. And then when Spreckels left the islands, that plantation was absorbed by H C & S, which Frank Baldwin was the head of. For a while, certainly years before he died, H. P. Baldwin was living in a house next to the Spreckelsville plantation, the Camp One area. And so he must have had something to do with buying that area [around the harbor]. You know where Stable Road is? It's on the Pā'ia side of the helicopter zone. Stable Road goes *maka'i* from the road to Pā'ia. Just at that intersection. If you go *mauka*, that's where Camp One is. We used to go there. There was a movie theater, there was a large building, a Japanese school, and stores. I got my first pair of rubber slippers there, which I thought were wonderful [Sanford].

So historically there is an ancient connection to a culture, secondly as far as sugar cane and agricultural products, the area was used for freight services and at the same time too, going up to Wailuku towards the cane fields and some pineapple. The surrounding area housed many small villages and eventually gave into agriculture through HC&S, which had some homes. Wailuku is the main city of Maui, at the same area too there was a train station, and the Kahului Train Company is right behind. It was used for and was a very focal point prior to the construction of the malls as not only for passenger trains, the movement of product and industrial activities [Libed].

Since the majority of the ethnographic consultants were canoe paddlers, their focus was on the Kahului Harbor and vicinity - the many activities, areas of concern and the political history of the area as it pertains to paddlers.

Kahului Canoe Clubs

We used to be down in the old area down here at the end of the road, the end of the beach. We were adjacent to the pier and we were there when we started. Initially raced in koa canoes only, we had two clubs, Hawaiian Canoe Club (HCC) and Kahului Canoe Club. Before us there was something called Kolo Clippers in here, and that was large concentration of Hawaiian families that raced flat water boats in here, in the harbor; and that kind of morphed into the canoe paddling. It grew, phenomenally, mostly, I think, because Kahanamoku was here and his influence on O'ahu, but John Lake was influential in starting this club and growing canoe paddling but I think Kahanamoku and Harry Field really attracted O'ahu to come here because they came in 1960 or 61 to race the State Race here in Kahului Harbor [Ho].

By Pier Two, this park was A&B land, a park that no one took care of it and they kind of got old and didn't take care of it and bad people were hanging out down here, it was all overgrown, it was gross and who would even go over there. We [HCC] were first to move over here and A&B leased the land to the County of Maui and the land where the *halau* is, we have a separate lease with A&B for that, but the reason we could even get that land is because this is a tidal wave

inundation zone and when you are in an inundation zone you can't even build a structures like new structures, so it would have to go way, way back. Other than being a park, what are you going to put there? Traditional *hale* are break away buildings, the way it comes it can wash away. We are on big heavy posts to withstand tsunamis [Akiona].



Photo 31. Hawaiian Canoe Club *halau*



Photo 32. Hawaiian Canoe Club *halau*



Photo 33. HCC traditional *hale*



Photo 34. HCC traditional *hale*

I went off to school and so forth, I guess John Lake died in that period of time, after in the sixties, it [canoe paddling] sort of fell apart; Harry Field died and Kahanamoku moved. The sport itself died on Maui a little bit, it got resurrected in the early 1970s. Hawaiian Canoe Club didn't die, but it just was no place to compete.... Early 1970s, a group of people from Kahului Canoe Club got together with Hawaiian Civic Club to bring back canoe paddling in Kahului and on the island of Maui. So they went out and started Na Kai Ewalu Canoe Club, which is next door to us, and then it started up again in 1971 or 1972. Mary would know better, MCHCA (Maui County Hawaiian Canoe Association) came into being - late 1970s [Ho].



Photo 35. Na Kai Ewalu Canoe Club



Photo 36. Prepping for Regatta

Gathering would be here at the hale. You can see what Hawaiian [Canoe Club] has and also us [Na Kai Ewalu], also further down there is another canoe club called La'eulu O Kai and they have a canoe *hale* like this at Kanahā. All three clubs are pretty much connected in the North Shore or Central Maui but we are heavily used because of the limitation of activities at that end of the Harbor [Libed]

We [HCC] also run in the Spring Break, leadership program for teenagers, because we have a leadership training program, not just for Hawaiian Canoe Club, but we open it up to any kids who want to come to it, like other canoe club kids. We hire kids to work as youth leaders to help, and they have to have gone to that program. It trains them, how to do a resume, how to interview for a job, how to dress for a job, not to wear rubber slippers and t-shirts. We do that during the inter-sessions, mostly paddling because that's what they want to do, there's some camping [Akiona].

Harbor Politics

That was the thing about the Super Ferry, we fought that too, DOT built this entire infrastructure [Pier Two] for the Super Ferry - built this entire ramp - all this extra stuff and why is my tax money paying for an independent company's infrastructure that failed, that was doomed to failure? It was a good idea but there were problems with it. There was no Environmental Impact report done, it was pushed through by the powers that may be and I understand for some people it was a good thing but it was the way they did it; shoved down people throats. Young Brothers hated it; they had to shut down this whole area so the cars could drive off the pier. Have you ever been over there, the Young Brothers pier when they are moving stuff, it's dangerous and now they are driving cars down there; Young Brothers hated it, it was a really bad thing. I went to all those meetings, PUC Meetings, etc., we got snickered at; they knew they had it in the bag because the head guy was pushing it through [Akiona].



Photo 37. Young Bros lot.

Project Area

Around it [*Hale Nanea*] is industrial, surrounded by industrial lands - I would think it was A&B [owned] because the trucking firms and molasses tanks. Sugar, the processing of sugar - that area was used extensively. Before they shipped the sugar to HC&S, they didn't process it here; they prepared the sugar to be shipped to California. So the loading of sugar on barges was done here in this area here. The use of the area now is industrial [Libed].



Photo 38. Industrial structures northwest of *Hale Nanea*



Photos 39 - 42. Some of the businesses around *Hale Nanea*

Cultural Resources and Use

This category includes traditional Hawaiian cultural resources and practices and other ethnic resources and practices. Cultural Resources can be the traditional *wahi pana* or sacred places, any cultural gathering place, or the tangible remains of the ancient past. One of the most significant traditional Hawaiian cultural resources is the *heiau* or place of worship. Other places of great significance for all cultures are the burial places of loved ones. There are no known *heiau*, shrines or burials in the project parcels. However, cultural practices continue to take place in one part of the project parcels [Section B] and in the vicinity as noted below by the ethnographic consultants.

Pre-Contact History

The history of the area as I understood was the landing of Kamehameha from the Kanahā side and Kahului as they prepared to do battle on Maui. They came from the Hana side first and then moved towards Kahului area, working up towards 'Iao Valley.... They came from Kahana, came to Kahului, this area was cleared prior. They may have come up to Kahului and at that time the beaches were a little different so the movement of the army came and going up to Waikapu and eventually 'Iao where they conquered the island of Maui. It was a huge fleet and the battle grounds were happening towards Kahului towards Waikapu, this entire North Shore was a place where there were some battles [Libed].

It's [Hale Nanea] been used forever, as long as I can remember, as a party place and I don't know who - The Order of Kamehameha, I think it is under Kahooohanohano, David Kahooohanohano. I don't know when they took it [building] over but they took it over and restored it and put it all together; it's still used for parties and things and it's used as a halau for people to practice hula and it's used for [inaudible] meetings of The Order of Kamehameha. I think A&B owns it [the land] but I'm not sure. The reason why I'm a little bit confused about it is in the old days the Harbor Master used to live right next door and was connected to Kahului Railroad, I thought but maybe A&B owns everything [Ho].



Photo 43. Royal Order sign.



Photo 44. Hale Nanea



Photo 45. Imu in rear of Hale

Hale Nanea is not only used by the Royal Order, we have family reunions there; the building and grounds that's on the edge of the shore. We've had reunions there where we brought our canoes to the beach, which is kind of a tiny little beach and taken people out during the summer when it's calm. They also have the salsa dances there; the Puerto Rican Club also has their dances there so there're all kinds of community events that go on. It would be a big loss to the community if we lost Hale Nanea [Chun].

They wanted to make container yards all down here more so than they have right now; moving it this way, I always wanted them to go that way and I know it impacts Hale Nanea but other than Hale Nanea it doesn't really impact the amount of people that are served by that area, like we serve our kids in the [canoe paddling] program [Akiona].

Hale Nanea was an army camp, used during the war to house soldiers. I'm not sure exactly where the airport was at the time but it was used for military encampment not necessarily training but that's what I was told it was used for initially in that area. Toward Hale Nanea here, these again are great beaches but you don't see them because of the industrial but once the [inaudible] the industrial kind of covered up the access here from the streets as it was back then. Hale Nanea was that plus a housing camp for workers [Libed].

Hale Nanea is a new building and they use for community gathering and pretty much the only community gathering areas and these canoe *hale* were more recent [Libed].

Hawaiian Canoe Club Cultural Programs

If you are looking for usages, when we just started out, you can ask Iokepa, he can tell you he grew up along here, in Fishermen's Camp, it was a heavily used area. It was a heavily used area, and now, though, when we started back into canoe paddling it was in the 60s, but it was a real community thing and it still is, it's like growing and growing and growing. People come down to events here at Hawaiian Canoe Club and they can't believe, because it doesn't look like it from anywhere else how beautiful this area can be and they have no idea, and this is people who've lived all their life on Maui. They are always amazed when they come to events down here, how nice it is down here, because no one thinks about coming down to Kahului Harbor [Ho].

I don't want to boost us but we provide an extreme value to the community by offering a drug free place to come and learn Hawaiian culture and to learn paddling. It's more than just paddling, we like to teach them to be good young adults and be good people. I am the Program Director of our Cultural Program, we've run a Hawaiian Cultural Program for the past twenty-six summers in a row. We service about 180 youths right here in the club, they come here and learn Hawaiian, from navigation to migration, to food preparation, hula, ole, chants, celestial navigation, wave finding, canoe paddle building, we built a Hawaiian hale out there [next to HCC] [Lu'uwai].

One summer we built a koa canoe with that group, we take our kids every summer for the past twenty-five summers to Kaho'olawe every year, we paddle to all these islands with these kids, and we take about a hundred people every time we go. We go to Kaho'olawe, Moloka'i and Lana'i, all three islands every summer, kind of the focal point of what we are doing here, more than just paddling. This is where our kids can come and learn the culture and kind of live it a little bit. I've been doing that for our club for the last twenty something years, it's called the Hawaiian Kamali'i Program; I'm also an employee of the club. It's a summer Hawaiian cultural program with a lot of camping trips and excursions, we go to Ulupalakua, we have an ahu up there we've made for Kaho'olawe, a rain ahu. We do a lot of partnerships with Ulupalakua Ranch, we work in taro patches and help family in need to redo their taro patches and redo them, pull weeds. Go all over Maui, spending all of time at the Kihei fish pond lately, helping rebuild that; always breaks down. Our club is an integral part of the community, not only our club but all canoe clubs are part of the culture here in Maui. We'd just like to offer a safe place for kids to come and learn Hawaiian culture and participate in this wonderful sport of canoe paddling as well [Lu'uwai].

My children, all of them paddled, my youngest was a leader here, my second youngest and my daughter was a leader here, went through the whole program, my step daughter was a leader. Kimo, my fifth child dances *hula*, danced for Kumu Hula Sonny Ching when they won Merry Monarch twice, he also dances for [Kumu Hula Cody] Pueo Pata [Na Wahine O Halau Hula Ka Malama Mahilani] he comes and teaches our kids *hula* and the kids perform during our fundraiser called The Aha Aina, dinner, silent auction and entertainment from the Kamali'i Program. I love it, the kids are all scared but I encourage them and after they come off the stage high-fiving me, hugging me. They gain so much self-confidence by doing that, one or two performances and it just amazes me every year when I see that happen, and my son is real good at teaching kids, he just has the knack and the kids just really listen to him. Every year we do that and it's just another chance for growth that the kids have especially since the school cut backs on Art and Music and all that and it gives the kids the opportunity to learn that they can do something and that it's okay

to do that. He gets the little kids up in malo, it's amazing and they did their thing and they are so proud that they were able to do their chant or *hula* and that's the kind of stuff that goes on here [Akiona].

Ka'uhane [Paul Ka'uhane Lu'uwai] is taking them to Kaho'olawe, they leave from Makena. He calls it the Keiki Channel because the kids paddle across. We do post follow up on the trips, to write about what they learned, what they liked. One kid wrote, "we were going across to Kaho'olawe and coach told me I had jump into the water and get into the canoe", so jump off the escort boat and do a water change, of course we have adults all around, so he goes, "I was really scared but I did it and I wasn't scared anymore", and that in itself says something really special about what's happening, and with what Ka'uhane has done with our kids. He's amazing, that's thirty something years and he's still doing it, he is now taking on the Aunties, the fifty and above. He's coaching kids all afternoon during the program and staying until after we get done after we get done paddling until 7:00 pm [Akiona].

Kahului is where a lot of our local population lives, particularly those who are maybe not as rich as those people in Kihei and so on. The kids can go down to Kahului Harbor, they can surf, they can paddle, we even have a school that operates out of Hawaiian Canoe Club that is all based around the ocean but teaches them everything thing, arithmetic for marine biology kind of thing. It's all done through cultural teaching [Chun].

What we do here on this harbor is really important work, the kids that we attract, by and large are not kids that are successful in school, we attract kids that get so vested in the programs that they are not at the malls raising hell, getting into gangs and doing graffiti. They come here because they love the water and they want to get into the canoe and maybe they don't have enough money to buy surf boards, or whatever but they can get into a canoe where they are provided a canoe and paddle and they can get out on the water. That is an important resource in the community because you can't do that anymore in Hawaii, because no one can afford the insurance to provide kids program on the water. So only the canoe clubs, really, except for the lifeguard things – what twenty kids a year, are doing work on our ocean and that is critical to me in my mind. You can take them to the 'Y' and learn how to swim, take them up hiking on the mountain but who's taking them on the water? Nobody, and the issue is insurance in regular programs. Parents just don't take their kids on the water anymore, like twenty, thirty years ago when we were raising our kids, they were on the water. Kids today are not able to get in the water quite the same way. It does that and the other thing I think it does it that canoe paddling is not all one kind of person, now that we have our [inaudible] like tomorrow we are going to have seventy Tahitians and so forth and they do all these things and they'll have a cultural exchange, which is critical again to the growth and development of our kids. We've hosted a Japanese exchange students to learn how to paddle and to learn about Hawai'i culture, and they love that, and our kids love doing that. Because we are good competitively, our kids race all over the world, last year they raced in Calgary and these are kids, half of them would never go anywhere and our kids have raced Australia, New Zealand, Tahiti, Samoa, all over the place and they go to these places and see them and lucky if they ever went to Honolulu, and the education of that is immeasurable, the value of that, their growth. You can't take that away, I don't know where else you would go [Ho].

Hawaiian Celebrity Surfer

When Eddie Aikau was a kid he lived in Kahului and practiced on the surf break in the Harbor and to the West of the Harbor [Chun].

Water Resources and Use. The Hawaiian word for fresh water is *wai*; the Hawaiian word for wealth is *wai wai*. This is because of the value the ancient Hawaiians placed on fresh water, which was crucial for growing taro, the staple of the Hawaiian people using the *'auwai* or irrigation system. Fresh water was also crucial in the lifecycle of stream inhabitants such as the *'o'opu* and *'opae*, as well as some of the marine life that depended on the benefits of brackish water areas for spawning.

Water Drainage

Toward Pier Two, it's amazing; I didn't know it was there. When the water goes out its kind of silty but you could see where the water comes out at Kahawai. Kahului is low so it has a lot of drainage places; there are a lot of drainage ditches [Akiona]

Kahului Harbor really used to be bad and then they shut down the pineapple cannery and slaughter house which was just draining straight into it. So the water has gotten much better in Kahului Harbor [Chun].

Kanahā Pond

Kanahā Pond seemed to be much bigger. And I know that when they built the Maui County Fairgrounds, which was originally a race track, they drained a lot of Kanahā Pond, so it's a lot smaller than it originally was. When I was aware of it, of course I wasn't there and I didn't know that had been drained. It was considered a swamp and they did not think about the birds in those days. It has a mustard color now and I haven't seen any birds lately. It was like a swamp; they were draining just to build out more. That part of the development was the race track, then Fairgrounds. They didn't think ecologically in those days [Sanford].

These were marsh lands and the State across the street has ecological ponds and wet lands. These are all wetlands, right now there is a National Reserve for wetlands in Kanahā toward the airport. The assumption would be that these areas were also served as the same principals as wetlands, a lot of them were cultural wetlands. You would assume that all this area before was filled was basically the same area as wetlands [Libed].



Photos 46 and 47. Kanahā Pond Wildlife Sanctuary southeast of project area.

Marine Resources and Uses. The sea can be a great resource to people with access to its bounty. Kahului Basin was part of a coastal environment settlement, the former inhabitants fished and gathered there, but they were also connected to the *mauka* lands. It was also a place of recreation and continues to be, with the many beach parks in the area. However, its biggest contribution to Maui since the 1800s is the Kahului Harbor. It continues to be a resource commercially and for the private sector, especially the canoe paddlers, but not without issues as expressed by the ethnographic consultants below.

Harbor Users

There is a lot of usage, lot of water usage, whether its wind surfer, stand up paddlers has increased a huge usage of this area because they go in and out but also it's the flattest water this side of the island to learn how to stand up paddle. So a lot of people come up recreationally on the weekend, a ton fishermen and ton of paddlers [Ho].

Of course the break water has been enlarged since I was a child. And the docks are much bigger. But along the beachside where our hotels are, I don't remember going there very much at all. I'm sure you can find photos because I've seen photos of what it looked like. And there was an old dock and that's probably where they did a little fishing. It was more protected at the Waihe'e end of the harbor, it would have been a good place to go fishing [Sanford].



Photo 48. Waihe'e or west end of Harbor



Photo 49. Paddlers heading towards Pier 1

The area is the only, currently right now, access for any kind of recreation water sport that serves Central Maui, and includes surfing, canoe paddling, mile standup paddling, fishing, gathering and other cultural activities at the canoe club; both at Hawaiian and here. The access for Central Maui and Kahului Harbor that serves Up Country, Wailuku, Kahului, Hawaiian Homes at Waiehu and adults who participate in other sports for health reason and of course sport. It is not just racing; it is a varied amount of activities that is here. Of course fishing and surfing that will be impacted should something change. There is some surfing in front here and fishing along the shore line which is accessed, and of course there is kite surfing down this area. This is waves that can break and some people can surf out in the Pier One area, canoeing of course is heavily used before we enter the harbor; this is traffic for recreation boats, outriggers, stand up paddling, one-man, two-man, and six man. We have to travel this area to come into the Harbor to finish but there's no access down the other side [Libed].

There was discussion at one point to put the super ferry down in that direction but in that regard there is no other place to put them, it's dredged [Libed].

This is the only commercial port on Maui, you can see the QE-II is here, you do have cruise ships coming in - it is the only commercial space on Maui. The expansion is needed because of the growth on Maui, we all understand that, we are hoping that they will expand in this direction [east] and affect anything towards the harbor [Libed].



Photo 50. QE II in port at Pier 1.

The Harbor is really the only sheltered place regattas can be held on the North side and many times, especially in the summer when the regattas are held, we have shore break in Kihei and Lahaina. We have actually had someone break their neck and be paralyzed because of being hit by a canoe in the shore break, and people are injured in the shore break and old people who are getting on in their years like me in my 60's who have to swim out through an overhead shore break to get into a canoe. Believe me when you get into your 60's that is not an easy or comfortable thing to do. So in the summer, a lot of times they move the regatta to Kahului Harbor and there is three scheduled regattas that are held there anyway, and we have two, one [of which is] a many time State Champion Hawaiian Canoe Club, who operated Kahului Harbor [Chun].

To me it's critical, this property [Hawaiian Canoe Club] and this harbor and the recreational facets of this harbor are absolutely critical, just like the guys on the other side, the fishing guys in their own little halau over there - the other side of the harbor - it's critical to our way of life, otherwise we may as well just move to California. I would go ballistic if we were iced out of the harbor. Even now we live in terror, because they threaten us all the time [Ho].

Harbor Rules and Policies

We do a lot of important things for the community, and we really want to see our harbor stay the way it is. We love running our regattas here, we have a regatta, so does Na Kai E Walu and sometime Lae'ulu O Kai has there's here. Being able to have a regatta here in the harbor is something we've had before when Diane was young, we don't want to see that never happening again. What we have to do is when we set the flags we kind of stick out a little bit out here so when a barge is coming through we have to stop the race. We stop it and wait for them to come into the area and then we start again, we try really hard to follow the rules. I know Diane thinks it's hard but I understand their view point too, I think that safety is the biggest thing and everyone know that when a boat is moving, if you see a ship or barge you need to get outside, on the other side of the buoys, they don't go there because it's too shallow, the turning basin is the center part [Akiona].

Harbor Restrictions

The thing that has impacted us the most about the harbor is 9-11. Because everybody is crazy about it now, we can't go from, lot of times its rough out here as you can see, so we use to go inside the harbor all the time, and go up and down here for training if there weren't any ships. We would go along side here [near the piers] and it was much better because the coach could follow you around, when we could go in here, it was so much better. Now that they are so uptight, you can't go past this, there is an imaginary line. They actually took away a really good area for training with that and it's kind of frustrating because I know we are supposed to worry about terrorist, but I don't know how many terrorist are going to come into Kahului Harbor. One time, not us, one of our crews was approached by guys with machine guns, back when it [9-11] happened. The Harbor Master is very uptight about us now and containing us, and that's difficult, pretty difficult for us to train in such a confined area. This is the North Shore of Maui, it's not like Kihei - you can jump in your canoe and go all the way around the course or Lahaina, all along the shore. We are just contained in here [Ho].

Harbor Conditions

We [canoe paddlers] are so lucky, right here this is the calmest place on the North Shore that we can paddle, and we have a lot of kids, twelve and under, the Manini Division, and there lots of these little kids and you can't send these kids out. As a parent something could happen and to me it is essential that we be allowed to stay in the Harbor; and I think a lot of the kids' parents let them come down here and paddle because they know it's safe for them. People say the harbor is polluted but it used to be a lot worse than it is, it's really, really cleaned up a lot. My son played in the harbor, he'd come here on regatta days and he'd go in the water in morning after he'd paddled, come out and eat lunch and go right back in and get back into the water and he never once, from eight years old to eighteen, got sick, had any kind of infection or sore from the water. The critical part is the safety for the kids that are paddling, maintaining our area [Akiona].

They come often to dredge because it starts to fill up; when the big ones are going out they turn up a lot of silt that means it's not that deep out there [Akiona].

Harbor Politics

Years ago, Souki said something, we had a huge battle with DOT, they wanted to expand this area here and fill in everything totally taking away the chance of us having a race course in the harbor and so now we'd be crammed further away from the pier area; right now they don't care if we go close to the pier. This is the safest, right here, is the safest, calmest water most of the time. So when you are taking out the little kids and you are teaching them when they are first learning, it's a good place to take them because it's really nice down here. So we went to all the meetings, there was a committee of us and we showed up at all the meetings, seated in the front row with our objections and they hated us. They did not know, like what we are telling you, of the impact our programs have in our community. People come to bring their kids, and they paddled here as a kid and are bringing their children to paddle and to be a part of the program and one young man told me, "Because Aunty, it was the best summers of my life down here". And how do we get kids attracted, it's because of the water, kids love the water and we have a safe place where they can train and once we get them down here, they learn about our programs and we can teach them things that can make them things that can help them become better adults. I had an intermediate school girl tell me that she never does drugs because they are so bad and I just felt so heart warmed. They always ask us about results when we do grant forms and how do you know when a kid made the right decisions ten years down the road because what a kid learned. You don't know that, you just hope that you instilled those values in them so that they make the right decisions in their lives. And that's the thing I see happening all the time, I know that it's working when I see the parents come back and bring their kids; and I've been here long enough for that to happen [Akiona].

I used to be the Executive Director, quite a while ago. I was terrified because we worked so hard to build what we have here, the structure to allow a place to conduct our program; so the kids can come up here and we'll have a whole room full of kids learning ukulele or learning something about navigation or the taro plant and all the different parts of the plant. We started out under the trees outside because we had nothing but we worked to build this up so we have a place for the kids to come and learn and to make it more efficient, more productive. That doesn't happen if they destroy our place to paddle and I told them, I asked them if they took every single space in this harbor and built it up for what you need for transportation. Is it going to be enough? And they said no that we'd need a second harbor. So you are going to destroy a beach that you can't put back for a band aid solution that's going to cost you way more money in the future than if you take care of it now [Akiona].

What Souki had originally wanted to do was to expand Pier One where you could have a break wall, the problem that they have at Kahului Harbor is the cruise and freight mixing up together. When you mix people and freight it's not the best scenario, so there was some talk about moving

the cruise ships, making some kind of break thing over here so they could anchor off of that, making that big lot on the other side of the pier where they could make a big visitor center but all surfers wouldn't want that because that would block them. I went to fight this and the whole thing kind of fizzled out because they had no money, it might have been 2013 Plans, by then we would have all of this but of course it didn't happen. I also went to all the second harbor meetings, the core of engineers came and did a study and they went all over the island, all the island have two harbors but we only have Kahului Harbor [Akiona].

Project Area Use (Appendix H – Annotated Map of Project Area)

The distance races, there's a few pre-season races in April. Then there's regatta season, which is in June, July, then the very first weekend in August is usually the State race, and then distance starts and ends in October. There's quite a few races, OC-6, paddle board, one-man, two-man, that go by the area where we are talking about because they start at Maliko and they go down to the Harbor, so they past the area where we are talking about. There's the Queen Ka'ahumanu, the Great Kahakuloa, which doesn't go into the Harbor, it goes from Maliko to Kahakuloa and then around. There's the Olu Kai, which is a commercial race - a whole weekend of races, goes from Maliko to Kanahā, I don't think they go to the Harbor. Like last week end we had a one-man race that was one-man stand up paddle; paddle board that went from Maliko to the Harbor. So that area that we're talking about, the target property, it's frequented by paddlers, both for practice and for races. When the surf is up the reef makes a sheltered area, so you can come out of the Harbor, around pier one and stay inside and make your way up to Spreckelsville without being wiped out, and its particularly good to be on the inside when you are going up wind because the wind regularly gets about 30 miles an hour [Chun].



Photo 51. Regatta with visiting Tahitians



Photo 52. Fisherman near Pier 2

Once in a while we'll go in, if there is surf out here. It depends on the weather, sometimes when it's really good weather, like I've gone out there in the mornings and we'll go right along the pier and we'll stay pretty close to the shore because it's calm, a lot of times it's not calm over there, you can't go over there, you got to stay out a little bit [Akiona].

Reef Resources

What we see out here are divers - there are divers, lots of guys with their kukui [Akiona].

Everywhere, big time divers, big time people getting limu. I think for fishing. People don't realize how much fishermen use the harbor, Jay ____ is organizing the fishermen, he's been monitoring with some grant [Ho].

There may be fishing villages past in the direction of Waiehu, they would appear to be calmer water - people could have moved out with the canoe. It really varies and fishing was more sharing and it's still practiced today, not as much as you used to but there is supposed to be some pretty

rich fishing grounds up in this area and this area here. This area toward Kanahā is still used for diving, there is a *tako* tournament/tournaments towards Kanahā but you can see the usage, wide open ocean people do their own diving and as we paddle we see people diving even around here, and fishing [Libed].

Once you past the pier part with the fill in all those big rocks, but it doesn't stop people from fishing [Libed].

What's really hurting the reef is the injection wells from the sewage plant come out and they are high nitrogen, so algae bloom. It seems that the whole reef, for some reason is being killed off and it probably has to do with run off because there is that river up above there that comes in. It's all concreted, it goes by Costco. Costco just paved it over; it brings all kinds of dirt and debris. The Department of Beavers concreted it up. I used to be an engineer and that is what we called the Army Corp of Engineers [Chun].

Tsunami Impacts

There were a lot of little shops and of course they all got pushed off during the 1946 tidal wave - destroyed. I don't know what happened during the 1923 one. I imagine there was a lot of damage. And the 1837 one must have caused damage too, because it was written up by a missionary who was out observing. The houses were probably mostly grass houses in that time [Sanford].

I wasn't here when the bad one came, that's when things looked really different. The one that hit Japan, we came down here and heard it was really bad. People came down here at night and we showed up and we have nineteen canoes, we took almost all of our canoes to the War Memorial and we had only one trailer and it was horrible. Canoes on peoples' trucks and the cops came down to chase us out because they were closing the roads [Akiona].

The last time it came from Japan, the water came up and it went in the yard, the grass and some of it went into our weight room downstairs but not enough to ruin anything, like there was water on the bottom. It went around the front of the *hale* and you could tell where it was because it killed the grass, the salt water, the next day we brought everything back, it was weird, the harbor was so weird. There were these ebbings, these swirling things, and they'd go between the piers, the water would come really high and it would go out further than we've ever seen it before, exposing a big rock we've never seen before [Akiona].

It's frightening because we were talking about it from the one that happened in Indonesia at that time and they were saying that we were overdue for having a big tsunami because the last one was in 1964 before I came here. I've been here since 1964 and there's never been one, there have been warnings but every time we need to call our President because it's a lot of work to evacuate everything. Some things we bring upstairs, a lot people come to help, grab computers a few hard copies of files [Akiona].

Project Area

There are a lot of divers in that area. I'm not sure how living the reef is but there's a lot of *tako* [Chun].

I see people fish from there; we drag a line behind the canoe and we've caught papio, but it's really fished out [Chun].

A lot of times we pull in just above there by the sewage plant there's a beach we pull into. The one thing I wanted to say is that path from the Harbor to that lagoon inside the reef is very important to one-man, stand up paddlers, paddle boarders and six-man, OC-1 and OC-2; one person on a little out-rigger canoe or two people on a little out-rigger canoe [Chun].



Photo 53. Reef/beach area north of Pier 1 and Parcel B.



Photo 54. North of "B," northeast.

Project Vicinity

From Ka'a Point, there's a whole lot of space before you formally get to Kanahā Beach Park. There's more unused land that the kites are first launched from, below Ka'a Point. Between Hale Nanea and Ka'a Point is $\frac{3}{4}$ mile. Ka'a Point is where the lifeguard stand is and that is where La'eulu O Kai is and from them up to where we [North Shore Renegades] are is the swim zone and that's a $\frac{1}{4}$ mile, from the swim zone up to Spreckelsville, where it starts closing off with the *papa* there, the rock shelf where they fish, is another $\frac{1}{2}$ mile. About a mile from La'eulu to Spreckelsville, you can get past there if it's not rough tide [Chun].

There's all these big cement pill boxes scattered along the shores [Chun].

Project Recommendations/Comments

This special section is included when ethnographic consultants make any recommendation and/or comments about the project in general.

In Favor

It [the project] doesn't affect us in the physical sense but as a person who comes from Maui County Community, I think that is a good plan to make their storage space there, I think it's smart planning to go in that area of Section B on this map. I know that there are businesses there, it will affect some businesses. I don't know. There's a kind of molasses tanks in - those metal tanks. But this is a good area, it won't affect us, it's smart planning to go that way because there is a lot of open space that way, because there is a sewage plant over here, most people would grumble [Lu'uwai]

If they were to go to that spot [NE project area] corner of it would affect that spot a lot, I know the Royal Order of Kamehameha meets there, a couple of *hula halau* meet there, Kapono'ai Molitau (Hula Halau - Nahanonakulike o Piilani) trains out of there. That's an old time historical place of family gatherings. I went there when I was a kid for family gatherings and *luau*, community center. People from Maui, before there were all the community centers, people would go there for that. It's a hall with a kitchen. It's probably from the 50s or older, before my grandparents time. We are not the only people that use our facility, two *hula halau*, groups that use our place for church, the Protect Kaho'olawe 'Ohana is based here when the camp before going to Kaho'olawe, they come here and use the facilities. We have Hui Malama, they have class here as well. This is not exclusively us, funerals, baby luau, weddings, not just club members. I don't see why they couldn't leave them their space, there is so much space and this is ocean front space so for these guys to develop this and go ocean they'd have to do SMA and all that other stuff, I don't know legally what they'd have to do, I can see them affecting businesses but not cultural [Lu'uwai].

I think if they are going to do it in Section B, that's good planning, and I think that's responsible planning on whoever is doing it...other than Hale Nanea, that's kind of sad that they would take that spot away as a historical meeting place [Lu'uwai].

Project Area Concerns

The things that I want to emphasize is that (1) the canoe clubs don't have another place to go besides the Harbor and that (2) they really serve our lower income local people because the kids can just walk over there, and that (3) we need a path from the Harbor to that inside reef area inside Kanahā. (4) Even though it would be a good thing to expand the Harbor to the East, not the West; there would have to be some kind of provision for a canoe path and it wouldn't be just for canoes, it would be all those stand up paddlers, etc.; a path in the water, a canoe path in the water. Canoe clubs have nowhere else to go except in the Harbor, it serves the lower income people who have nowhere else to go, they can walk to the Harbor, and you need a pathway - from the Harbor around to the subject property and pass it up to Kanahā. You need a pathway from the Harbor, around Pier One [Chun].

So that area that we're talking about, the target property, it's frequented by paddlers, both for practice and for races. When the surf is up the reef makes a sheltered area, so you can come out of the Harbor, around pier one and stay inside and make your way up to Spreckelsville without being wiped out, and it's particularly good to be on the inside when you are going up wind because the wind regularly gets about 30 miles an hour [Chun].

There are a lot of divers in that area. I'm not sure how living the reef is but there's a lot of tako [Chun].

I see people fish from there; we drag a line behind the canoe and we've caught papio, but it's really fished out [Chun].

That's another thing to be aware of; there is a lot of erosion going there. With the hardening of the sewage plant which is in the tsunami zone; making hard walls along the shore to protect it from the waves. That increases the erosion in the neighboring areas and they plan on building up the wall around the sewage plant that is just to the East of the subject property. There is talk of relocating it but it would require billions of dollars and unless the Federal Government comes to their senses we'll never see that [Chun].

The Surfrider Foundation has a big campaign going on because people are getting MRSA. I've had MRSA three to five times, MRSA [Methicillin-resistant Staphylococcus aureus (MRSA) infection is caused by a strain of staph bacteria that has become resistant to the antibiotics commonly used to treat ordinary staph infections] is antibiotic resistant bacteria that "we" blame on the injection wells from the [sewage plant]. In the EIS from the sewage plant they admit that those injection wells go down in the ground and come out in the ocean. And it's only treated to R2, not R1. R2 is not disinfected to the level of R1 is so that's R2 water going to the ocean. R1 is the stuff you can put on golf courses [recycled water], it's still not something you'd want to drink. At one point I think our whole club was coming down with staph infections from it [Chun].

Project Area/Vicinity Users

I should also mention all of the other users of the other areas. Between Hale Nanea and Ka'a Point = kite surfer. Above Ka'a Point = wind surfers. BIG visitor J-row. Had to separate because beefs between kiter (loloheads) and everyone else. So between Ka'a Point and Hale Nanea is where all the kilters are confined to because when the kilters were mixing with the windsurfers and paddlers there were beefs because the kilters tend to not realized that their lines if they were to drop across your neck was going to kill you. Kilters launch from shore, and they have these huge kites and a board and they are in the water and their kites just fill with air and its attached to the board and they hold onto a bar with cording, very thin strong cording, and they don't realize that if that cord drops across the canoe, a person's neck as they buzzing them that the canoe person is fastened into half a ton of canoe and that is going to take their heads right off. So there were all these beefs and that's why they are confined to that area. But if you guys want to make the kilters go away you will not get any argument from us. They are mostly visitors, they are clueless and we have to go out and rescue them all the time. Ka'a Point is where the lifeguard stand is, the western point [Chun].

Harbor User Concerns

There's just a beautiful surf break along the west wall of the harbor, along the inside of the harbor, and that's why there was so much outcry against turning that west wall into docks. The other problem turning the west wall into docks, in order to fit the race course into the harbor without it being into the turning basin because you can't anchor the flags and it legally can't be in the turning basin because it obstructs the movement of ships. In order to have a course that is a ¼ mile long, which is the absolute minimum (some course are half mile), there is no other place to put it except for it to go all the way over the west wall by the small boat dock, and even then the course gets more of a parallelogram than more of a rectangle. So the course has to be ¼ mile and the lanes have 80' with 9 lanes, so 9 x 80 and that's how wide it is. It would be devastating, there is no way you can relocate that race course and if you tried to relocate the two big clubs it would overrun Kanahā Beach Park, because really that area is the only place where you could have canoe clubs and there's already two now, ours [North Shore Renegades] and Lae'ulu O Kai. That's us, North Shore Renegades, we have the most un-Hawaiian name but we consider ourselves to be the most Hawaiian Spirit [Chun].

Access Issues

Inevitably the only thing we were so concerned about is the access to Kahului Harbor. Very few tourists come out here and only experienced watermen come out to this area, all the locals come to this area.... That's why I was telling people in that meeting that these guys have no understanding of recreational use. You got, the biggest industry on the North Shore is wind surfing, now you have stand up paddling, these are industries that affect our economy. Canoeing is our tradition but you get the one-man paddle, two-man paddling and these are new industries related to our tradition but it will impact our economy. The only safest entrance is to come into the Harbor and finish, we don't want to be like Honolulu Harbor and shut down. That would be a major travesty, all our communities that serve Central Maui, the cultural impact is tremendous and would be very devastating if access to the Harbor was eliminated because of the rule. We know that we have to be very careful and mindful of the rules in the turning basin, it's our responsibility as *kupuna* and leaders in our community to educate people, and we need to coexist with Harbors and A&B and Federal things that they have to do [Libed].

I hope I gave you enough of a picture of the impact that there is substantial concern regarding impact that will come to our community. That is a major concern and our voices need to be heard, it needs to be said that we cannot preserve our culture without the continuance of gathering rights, etc., surfing, canoeing to a Maui community; to take that away would be a travesty. I'm happy that you are doing something like this because when I first talked with them seven to eight years ago there was zero input. I was fortunately to be here and when I was at that meeting I said, "You got to, need to consider the impact you guys are going to make on the local community." We are not only Central Maui but Up Country, Pa'ia - those areas would be heavily impacted if all those things were shut down and became the Honolulu Harbor, and it would be extremely devastating. Even more now the work that you are doing is critical because of the desire to expand and need to expand, I already know that and I already knew that they were trying to put down an artificial reef. They even asked me if we could put the regatta outside the harbor and I said, "No, you can't do that because of the waves." They were willing but it's not pedestrian friendly, now you block the harbor and took away the waves and eliminated the surf but that would push everybody towards that island over here [Libed].

New Idea

Actually the State, managed by the County would be, in my dream, if done correctly, would be to make a stadium for our sport. Down the other side by the little harbor by the other side, that means you will have to do a break water to break up the surf.... I would tell the surfers that reality is the amount of usage that you have all the way down the coast line. If done correctly we can co-exist and I believe this place is ready for a stadium for outrigger canoe racing because that is a worldwide event. The stadium would be calm water, six hundred feet of lanes or more...that would be because outrigger canoe paddling would be considered for the Olympics because world sprints had about thirty five countries participate. So why wouldn't we look at what we can provide because we do have the constructed hotels, etc., transportation, food. And look at that we can do a stadium to do that with the correct engineering, input from the community. Some people would have to bite the bullet like the surfers but my attitude is to serve the community as a whole and provide an opportunity for more participation. We want to address obesity, we want to address cultural [inaudible] is the key, it has always been. Surfing is a more modern introduction but the canoe paddling has always been there and not that I'm being prejudicial. I've seen more usage out of what we do and maybe I am prejudicial in that regards but I look at it as where would the community be served best, and that consideration can be done and it may take a little bit of engineering. Why not? [Libed]

Anecdotal Stories. Consultants usually have many stories to share. Some of these stories are not always germane to the research categories. However, they are too precious not to share as they give a broader view of the life in Kahului.

Ms. Maize Cameron Sanford has a long family history (Alexander-Baldwin-Cameron) to the project area and greater Maui and shares some of her stories.

Well, Kahului was a pretty big town. Growing up there was the harbor and all the activities coming and going there. Before there was much in the way of airplane travel, of course, we took the boat to Honolulu overnight. And my mother remembers the *Claudine*, she says it was terrible. The *Claudine*, she hated that boat. She got so seasick. But it wasn't in service when I was going to Honolulu on each trip. We would take either the *Wai'ale'ale* or the *Hualālai* and they were kind of twin ships, the same size. And my brother and I used to have a bet, which whistle was the loudest, because just before the boat left the dock it would sound its whistle and we had to close our ears. There was the outer deck but we didn't do much running around on the deck. When we got on board, we had our supper and it was time to be ready for bed. My mother tended be seasick, she didn't quite do anything else. And the cabins were cozy and they had little windows looking out onto the outer deck. And some passengers were deck passengers, they stayed out there overnight. It was sort of like the difference between regular seats and lower seats. And the next morning we'd arrive in Honolulu and get off. Going back from Honolulu, it seemed to be that the boat always went to Lahaina. I don't ever remember getting in at night at Lahaina, though some of our trips we got to Kahului in the night. I guess Lāhainā was closer. Sometimes we got off in Lāhainā. The boat couldn't go to Mala Wharf, so lighters would come out, passengers would come down the gangplank and get lifted into the lighters by big, strong Hawaiian sailors. That was very comforting because the boat was going up and down and the lighter was going up and down and they knew just when to grab you and lift you. I don't know why, sometimes we went to Lāhainā, sometimes to Kahului. I was child - I had nothing to do with the scheduling. In Lāhainā we'd have somebody meet us and end up taking a drive all the way back to home. The person who met us was usually my grandmother's chauffeur, Mr. Maeda. There was also tucked into the back of the car a thermos bottle of ice tea and some little bread and butter sandwiches. And that's what I remember about the boat trips; of course it was nicer when we could take airplanes because it was only an hour instead of overnight [Sanford].

The first airplanes were the sea planes, and that was in the 1930s. And then I remember my first trips were on a Sikorski but they landed on the land. You climbed up the steps on the outside of the plane; on the top, there was big *puka* in the roof of the plane, and you climbed downstairs on the inside. But the later planes, you didn't have to go in on the roof. The first ones landed at Ma'alaea next to Keālia Pond at the mudflats, and then at Pu'unēnē - that was the big airport on Maui. And it just took an hour - that was Interisland Airways, which became Hawaiian Airlines. From the 1930s were mostly those trips. In the 1940s, when the war started, planes were still going from Pu'unēnē, planes were all DC-3s. The Kahului Airport was built by the Navy, so we didn't get to use that until after the war [Sanford].

Kahului Cannery - the only cannery for the pineapple was started by a CPC - California Packing Corporation. The buildings have been torn down now. Do you know where Ka'ahumanu Shopping Center is? It's just on the Pā'ia side of that - replaced by Maui Vocational School, but now a big empty lot off of Kāne Street and Ka'ahumanu Avenue. It was a great, big cannery. It was taken over by Maui Pineapple Company - that's where Maui Pineapple Cannery was for many years, until David Cole and Steve Case decided to eliminate the Cannery after they got control of Maui Pineapple Company. Everything's been torn down, even the executive offices. It's going to be developed somehow. They have destroyed that company completely. It used to be the largest employer on Maui outside of the government. And they are down to a handful of people now. Those that are left, work out of an office over in Kapalua. The pineapple is gone. All they have is land; they're trying to sell off bits and pieces of land to keep afloat for pensions and to make money. Very sad. It made me so sick for so long, but I'm trying not to think about it. I hated the

way they hurt everybody, all those loyal people. Some of them were second generation working for Maui Pineapple Company. They're all our friends. But as soon as Case got a hold of that and Cole, they didn't like pineapple; all they wanted was control of the land, which they could sell for their own profit. And I don't care if you use that or not, I feel very strongly on the subject [Sanford].

CIA SUMMARIES and ASSESSMENT

This cultural impact assessment (CIA) is based on two guiding documents: Act 50 and Environmental Council Guidelines (1997) [see Appendices A & C]. H.B. NO. 2895 H.D.1 was passed by the 20th Legislature and approved by the Governor on April 26, 2000 as Act 50. The following excerpts illustrate the intent and mandates of this Act:

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawai'i. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

Summary of Findings

The following summaries are based on the information presented in the previous sections: the traditional (cultural) and historical literature background review and the ethnographic data and analyses. References are not cited unless it is new information and not already cited in the text above. These summaries condense the information above, but also serve to focus on a few significant individuals and events in history in relation to the project lands of Kahului, *ahupua'a* and *moku* of Wailuku, Maui Island, as well as give a broad overview of land, water and marine resources and uses in the general area, as they reflect cultural resources (properties) and practices and access to them.

Summary of Significant People and Events. According to traditional and historical material, most of the land in Hawai'i has gone through modifications over time, including the lands of Kahului, and have witnessed the comings and goings of many significant people. Some of these people may have contributed substantially not only to the history of this area, but of Maui Island and the rest of the Hawaiian Islands as well. There were several people and events noted in the oral histories including legendary and historic figures. Some of these significant entities traversed these lands or vicinity.

Legendary Entities. There are a few *mo'olelo* about legendary entities connected to Kahului: such as Hina, mother of the deity Maui; Pele and Hi'iaka on their travels throughout the islands; and the *mo'o* deity once connected to Kanahā and Mau'oni fishponds, originally said to have been constructed under the direction of Kiha-a-Pi'ilani, son of Pi'ilani.

Pre-Contact *Ali'i Nui*. The *ali'i nui* or *ali'i 'ai moku* would have jurisdiction over all of Maui's lands, assigning lesser chiefs or *konoiki* to oversee each *moku* or *ahupua'a*. Most of the Maui chiefs are descendants of the 'Ulu. There were twenty generations from Kumuhonua (Foundation) to Wakea and Papa; and fourteen generations from these progenitors to the brothers Nana'ulu and 'Ulu; sixteen generations from 'Ulu to the brothers Hema and Puna; another ten generations from Hema to Huanuikalalailai, father of Paumakua-a-Huanuikalalailai, the first *ali'i ai moku* or Ruling Chief of Maui.

Maui *Ali'i Ai Moku*:

- 1st Paumakua-a-Huanuikalailai
- 2nd Haho
- 3rd Palena
- 4th Hanala'a (iki)
- 5th Mauiloa
- 6th Alō
- 7th Kuhimana
- 8th Kamalo-o-Hua
- 9th Loe
- 10th Kaulahea I
- 11th Kakae (co-ruled)
- 12th Kaka'alaneo (co-ruled)
- 13th Kahekili I (son of Kakae)
- 14th Kawaokaohele (brother of Kelea)
- 15th Pi'ilani (married cousin Laielohelohe, daughter of Kelea and Kalamakua, Halawa Chief)
- 16th Lono-a-Pi'ilani
- 17th Kiha-a-Pi'ilani (usurper with help of sister Pi'ikea and her husband 'Umi-a-Liloa)
- 18th Kamalalawalu
- 19th Kauhiakama
- 20th Kalanikaumakaowakea
- 21st Lonohonuakini
- 22nd Kaulahea II (fathered royal children of all islands)
- 23rd Kekaulike
- 24th Kamehamehanui Ailuau (son of Kekaulike and half-sister Keku'iapoiwa Nui)
- 25th Kahekili II (son of Kekaulike; had court at Pu'u Keka'a, but moved to Wailuku to spy on half-sister Namahana who lived at Waihe'e)
- 26th Kaeokulani (son of Kekaulike; father of Kaumuali'i)
- 27th Kalanikūpule (son of Kahekili)

Kingdom of Hawai'i Era

Kamehameha was a descendant of chiefs of Hawai'i and Maui, a nephew of Kalani'opu'u and Kalola, who was the daughter of Kekaulike and sister of Kahekili, who was said to be the biological father of Kamehameha. After the death of Hawai'i ruling chief Kalani'opu'u in 1782, civil war broke out for control of the districts. Kamehameha as guardian of the war god, Kūka'ilimoku, methodically eliminated his rivals, his cousins, to conquer Hawai'i. In 1790 he landed his war canoes from the island of Hawai'i and landed them on the beach at Kahului before heading inland. He and his Hawai'i Island army later returned, conquering Maui, Moloka'i, Lana'i, Kaho'olawe, and O'ahu in 1795.

He placed his chiefs over all the lands and put the chiefs and their men from Hawai'i Island to help govern the islands. Kamehameha I essentially became the king of all the islands except for Kauai. When Kamehameha I died in 1819, his successor was his son Liholiho (Kamehameha II) with Ka'ahumanu as the Kuhina Nui or regent. They successfully "kidnapped" their cousin Kaumuali'i who under duress turned Kauai over to the Kamehameha rulers.

Kamehameha II was the eldest son of Kamehameha I and Keōpūolani.

Kamehameha III (created new land division/Mahele; promoted the sugar industry; made Lahaina, Maui his Capitol)

Two sons of Elizabeth Kīnaʻu, daughter of Kamehameha I became kings after the death of their uncle, Kamehameha III, Alexander Liholiho Kamehameha IV and Lot Kapuāiwa Kamehameha V; they were followed by William Charles Lunalilo, nephew of Kamehameha I and descendant of Piʻilani through both of his parents – he was the last of the royal Kamehameha line.

David Laʻamea Kalākaua and later his sister Lydia Kamakeha Liliʻuokalani descendants of Maui and Hawaiʻi Island chiefly lines were the last rulers of the Kingdom of Hawaii.

Historic People and Events. Kahului was awarded to Victoria Kamāmalu Kaʻahumanu IV (1838–1866), only daughter of Elizabeth Kīnaʻu, Kaʻahumanu II and younger sister of Kamehameha IV and V. She was named after her aunt, Queen Kamāmalu, wife of Liholiho-Kamehameha II. Her father Mataio Kekūānāoʻa, was the royal governor of Honolulu. Victoria became monarch for a day when her brother Kamehameha IV died without an heir, since she was Kuhina Nui at the time. However, she proclaimed her brother Prince Lot, Kamehameha V. She was betrothed to William Charles Lunalilo - their parents had planned their marriage from infancy, but her brothers later forbade it. She founded the Kaʻahumanu Society in 1863 to help the sick and elderly - Kaʻahumanu was born in Hāna, was the daughter of Namahana and granddaughter of Kekaulike. Kamehameha V named Victoria his heir apparent, but she died before he did. Her lands were inherited by her father, then passed to her half-sister Princess Ruth Keʻelikōlani who willed them to their cousin Princess Bernice Pauahi Bishop.

There are several additional people significant to the historic development of Kahului and events associated with them; a list chronicling them can be found in Table 4. Of note are:

Missionary Richard Armstrong who described the tidal wave (1837) that destroyed the fishing village of 26 grass houses on Kahului shore;

Sea Captain Thomas Hobron who owned the Waiheʻe Sugar Mill which was managed by Samuel T. Alexander and his field boss Henry P. Baldwin (1860s); Hobron established Grove Ranch on 3,000 acres of land he purchased in Hāliʻimaile and Pāʻia; Hobron built the first narrow gauge railroad on Maui and founded (1879) the Kahului Railroad Company (KRR) partnering with his sons-in-law William O. Smith Esq. and William H. Bailey; Hobron also served as Postmaster when KRR started carrying passengers and mail along its routes to sugar mills in Spreckelsville, Pāʻia, Puʻunēnē, and Wailuku; the Kahului Railroad Station was located at Hobron Point named after the Captain; in 1884 KRR became a freight forwarder and subsidiary of the Wilder Steamship Company; in 1898 KRR began construction of the east breakwater; in 1899 A&B purchased KRR;

James Robinson & Company, Thomas Cummins, J. Fuller, and agent C. Brewer & Company who organized the Wailuku Sugar Company (1862);

Thomas Hogan built the first western building, a warehouse, near the Kahului Beach (1863);

Henry Perrine Baldwin and Samuel Thomas Alexander resigned from Waiheʻe Plantation (1869) to start their own plantation in Pāʻia followed by purchasing lands in Makawao that abutted Hobron's Hāliʻimaile Plantation (once owned by Stephen J. Reynolds and Alfred W. Parsons); their first sugar crop was produced in 1870; Alexander & Baldwin (A&B) formalize their company in 1883; in order to outmaneuver the Spreckels Kahului wharf blockade, the directors of A&B purchased the disputed 5.47-acre harbor-front parcel owned by Spreckels and created a

partnership of other plantations to drive Spreckels out of business in 1897; the following year (1898) A&B purchased HC&S; HC&S starts the Lowrie Ditch project, planned by William J. Lowrie and traversed 21.9 miles from East Maui to the border of Kihei bringing water to the arid lands south of Kahului; in 1899 A&B purchased KRR; Kahului Harbor development was initiated by KRR in 1904; that same year Samuel T. Alexander dies leaving H.P. Baldwin in charge of the company; in 1905 A&B bought part of Matson Navigation Company (MNC); [MNC was started by William Matson who had worked on the Spreckels family yacht – Spreckels helped finance many of Captain Matson's ships (Cushing 1951)]; A&B owned Matson outright by 1969;

The Hamakua Ditch Company was organized (1876) and owned by the Haiku Sugar Company, T. H. Hobron/Grove Ranch Plantation, Samuel Alexander, his brother James Alexander and Henry P. Baldwin;

Claus Spreckels establishes (1878) the Hawaiian Commercial & Sugar Company (HC&S); Spreckels Sugar Mill established by Claus Spreckels – the town of Spreckelsville grew around the mill; 24,000 acres of fee-simple lands in isthmus granted to Claus Spreckels (1882); the Spreckels-owned HC&S Company attempted a blockade of the Kahului wharf to drive the Wilder Steamship Company out of business (1897); in 1898 A&B purchase HC&S;

The Bubonic Plague infected Kahului and the town was deliberately burned to the ground to destroy disease-infected rats in 1900; as owner of KRR and several sugar plantations and mills, A&B, Inc. was the primary initiator in the re-building of Kahului Town and the expansion of Kahului Harbor;

Henry Perrine Baldwin dies in 1911 leaving his son Frank F. Baldwin president-manager of HC&S and KRR - subsidiaries of A&B;

Harry Alexander Baldwin, son of H. P. Baldwin becomes president of Haleakala Ranch in 1911; in 1924 the ranch grows pineapple for California Packing Company (CPC); Haleakala Ranch and Keahua Ranch Co. form as Maui Pineapple Company (MPC);

CPC builds the Kahului Cannery in 1924; MPC transports its upcountry pineapple to CPC; in 1934 MPC purchases Kahului Cannery from CPC;

Samuel A. Baldwin youngest son of H. P. Baldwin becomes president of Haleakala Ranch after the death of brother Harry A. Baldwin in 1946;

“Dream City” – the name given to the concept of a new Kahului Town was beginning to take shape in 1948:

May 14th, 1948: Dream City comes true. The Hawaiian Commercial & Sugar (HCS) and the Kahului Railroad announce that they are planning to build a new “model” city in Kahului. During the next ten years, more than 800 homes will be built on what was until then cane land. Most of the homes are offered to local workers from those cane fields, as well the railroad and some local shops. The first area to be constructed is the Kahului Shopping Center, which opens in 1951 (Maui Almanac 2011).

J. Walter Cameron, son-in-law of Harry Baldwin becomes Haleakala Ranch president after death of Samuel A. Baldwin (HR 2013) in 1950; in 1969 the Cameron family (descendants of H. P. Baldwin and Harry A. Baldwin) acquire Maui Pineapple Company, Ltd. from parent company A&B and

change the name to Maui Land & Pineapple Co. Inc. (MLP); J. W. Cameron served as manager of Maui Pineapple Company for forty-four years (JWCC 2012);

Colin Campbell Cameron takes over after the death of his father, J. Walter Cameron in 1976; Colin Cameron was chairman and president of Maui Land & Pineapple Co. (MLP), president of Maui Publishing Co., which publishes The Maui News, an early developer of resorts in Kapalua in the 1960s and served on the Board of Haleakala Ranch;

Mary “Maizie” Cameron Sanford takes over as chair and CEO after the death of her brother Colin Campbell Cameron in 1992; Ms Sanford is currently Director Emeritus of Maui Land & Pineapple Co, Inc. (she served on its Board for 25 years) and on several Boards: J. W. Cameron Center, Haleakala Ranch Co., Fred Baldwin Memorial Foundation, and The Gorilla Foundation, and writes two columns for Maui News (TGF 2012; ZoomInfo 2013).

A&B Properties, Inc. is the current owner of Parcels B-1 and B-2; A&B, owners of HC&S into which Maui Agricultural Co. merged, is now a major corporation with no ties to the family – the same is true for Maui Land & Pineapple Co., originally a venture in the 1920s by Harry and Sam Baldwin – the main Baldwin lands left is Haleakala Ranch (Murphy 2013).

Cultural Impact Assessment

According to the Environmental Council Guidelines, the types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, religious and spiritual customs. The following actions were taken to meet the EC Guidelines Criteria for conducting this cultural impact assessment based on the SOW:

- 1) conduct historical and other culturally related documentary research;

Documentary research, particularly on identifying traditional and cultural uses of the area, was completed. Much of what is known about the traditional and cultural uses of the area comes from written records that tell of its prehistory (e.g., *mo'olelo*; 19th century ethnographic works); the stories and reports associated with early coastal and upland area uses by early Hawaiians and the historic early developers of Kahului; and the many studies of Kahului Harbor and vicinity (i.e., archaeological, botanical, geological, and biological), as well as master and development plans, and previous environmental assessments.

- 2) identify individuals with knowledge of the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or *ahupua'a*; or with knowledge of the area potentially affected by the proposed action (e.g., past/current oral histories);

The project lands, Parcel B-1 (TMK [2]3-7-011:017) and Parcel B-2 (TMK [2]3-7-011:023) have been greatly modified over the last 500 years, starting with the construction of the nearby fishponds of Kanahā and Mau'oni by Kiha-a-Pi'ilani in the 1500-1600s; likely part of the King's Trail started by Pi'ilani around the same period – this trail would have been used during the Makahiki season connecting *ahupua'a* to collect taxes; as part of a coastal environ it was at the least an access point for fishing and gathering over the centuries; historically it was modified by coral fill with the dredging of Kahului Bay in the mid-1800s to early-1900s and later creation of Pier 1 and the east breakwater; it was also modified as part of the railroad system beginning in 1879 – the railroad station was located at Hobron Point just northwest of the project lands; the modification continued with the historic construction of molasses tanks, fuel tanks, garages, and other businesses; one wooden building is currently used by the Royal Order of Kamehameha, Chapter V and other community groups; several canoe clubs use the water

pathway offshore of the project lands for training and racing runs from the Harbor basin to Kanahā Beach and Maliko Landing and back.

The ethnographic consultants were selected for their knowledge and/or use of the project lands and vicinity. Five people, members one of three canoe clubs who use the water pathway were interviewed. One person interviewed was a descendant of the Alexander & Baldwin families, long time users and owners of the project lands.

- 3) identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

Archival research in Chapter 3 (Cultural and Historical Background Review) and ethnographic research in Chapter 4 (Ethnographic Data Review and Analysis) identified only one cultural resource, and associated practices and beliefs within the project lands (Figure 19; see also Appendix H):

- Hale Nanea is the meeting house of the Royal Order of Kamehameha; there are two *imu* or cooking hearths in the back of the building; coconut trees are also on the property;
 - Other cultural resources were identified - canoe paddling, fishing, and gathering *limu*; these practices are outside the boundaries of the project lands.
- 4) assess the impact of the proposed action on the cultural resources, practices and beliefs identified.

The acquisition of Parcels B-1 and B-2 and the follow-up transition to storage facilities will have an adverse impact on a building associated with the Royal Order of Kamehameha, Chapter V, and their cultural practices; it is also used by a *hula halau* for practice and other cultural groups for various celebrations. The meeting house has been on a month-to-month lease. The ethnographic consultants expressed sentimental and cultural value of the meeting house. However, efforts to contact an official spokesperson from the Royal Order were not successful.

Five members of three canoe clubs in the vicinity were interviewed; they expressed concerns regarding the canoe paddling water path fronting the project area on the north (see Figure 19). It is part of the training, practicing and racing pathway. The dirt road on the eastern border of the project parcel is also used as an access for fishermen, *limu* gatherers, and other beach goers. It also serves as access to the meeting house and other current businesses in Parcels B-1 and B-2.

Recommendations include forming a small cultural advisory group to help with transition plans for cultural users of the Hale Nanea meeting house, beach and offshore resources, regarding future access and use of the area. The harbor expansion plans for the parcels will include removal of existing structures, and would include Hale Nanea and its traditional *imu* or cooking hearths. Perhaps part the cultural mitigation could be the relocation of the Hale Nanea meeting house and *imu* paraphernalia to Hoaloha Park, but this should be worked out with the Royal Order. Since the dirt road is not part of the acquisition, access should remain available to fishermen and gatherers. Currently there are no restrictions for canoe paddlers accessing the area fronting (north) Pier 1. It is recommended that the parcel acquisition continue to allow unrestricted use of this area by paddlers.

The project site is an area that has been heavily modified by historic activities spanning over 150 years and currently is in use by several *lessees*. However, the “fill” portion of the project area does not include the entire Parcel B-1 and B-2, therefore any subsurface excavating or trenching activity should have an archaeologist monitoring the activity for any potential cultural or historic remains, with a cultural advisor identified for consultation. This report has met the goals and objectives set forth for this CIA study.



Figure 19. Cultural locations and practices identified in the present study.

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APPENDIX A

Act 50 — 2000

**A BILL FOR AN ACT RELATING TO
ENVIRONMENTAL IMPACT STATEMENTS
[UNOFFICIAL VERSION]**

HOUSE OF REPRESENTATIVES H.B. NO, 2895 H.D.1
TWENTIETH LEGISLATURE, 2000
STATE OF HAWAII

**A BILL FOR AN ACT
RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.**

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawai'i. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai'i Revised Statutes, is amended by amending the definitions of "environmental impact statement" or "statement"

and “significant effect”, to read as follows:

““Environmental impact statement” or “statement” means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public’s comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

“Significant effect” means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State’s environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare [.] or cultural practices of the community and State.”

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000

APPENDIX B
Guidelines for Assessing Cultural Impacts
Adopted by the Environmental Council, State of Hawai'i

November 19, 1997

I. INTRODUCTION

It is the policy of the State of Hawai'i under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making.

Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

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

II. CULTURAL IMPACT ASSESSMENT METHODOLOGY

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

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

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

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

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

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

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

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

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

III. CULTURAL IMPACT ASSESSMENT CONTENTS

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

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.
3. Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.
4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.
5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.
6. A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.
7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.
8. An explanation of confidential information that has been withheld from public disclosure in the assessment.
9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.
10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.
11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call 586-4185.

APPENDIX C Scope of Work (SOW)

Cultural Impact Assessment [in accordance with OEQC Guidelines]

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

Methods

The specific tasks listed below expand on the above scope of work:

- ◆ Conduct historical and cultural background research (i.e., business records, land records; archival documents, literature, reports, letters, photographs, journals, or newspaper files) to locate material that will provide broad patterns of the history of the project area such as subsistence, religious, recreational, and commercial uses of the land; as well as settlement and residential patterns of the area and region; major family groups that inhabited, used or controlled lands within the project area and region; documented legends, myths, or traditional histories associated with the area; and descriptions of traditional practices, customs and beliefs associated with identified traditional cultural practices;
- ◆ Prepare a semi-structured ethnographic research instrument that will include questions that will generate general biographical information, association with and knowledge of the project area, its history and use;
- ◆ Prepare a consent form to be used as written agreement with any individual interviewed concerning the review of content and use of information recorded during the interview
- ◆ Identify individuals knowledgeable with the project area.
- ◆ Conduct and record ethnographic interviews with knowledgeable individuals. If feasible individuals shall participate in field inspections (Makana to be given)
- ◆ Transcribe recorded interviews (Approximate time, 6-8 hrs/per hr of recording)
- ◆ Prepare a report that will include an overview of the archival material, and an analysis of the ethnographic data.

APPENDIX D

Agreement to Participate in Ethnographic Survey

Project Title: Kahului Harbor Acquisition CIA (TMK: (2)3-7-011-017 and (2)3-7-011-023)
Kahului, Wailuku, Maui

Interviewer: Maria "Kaimi" Orr, M.A.
Kaimipono Consulting Services, LLC

You are being asked to participate in an ethnographic survey conducted by an independent interviewer from *Kaimipono Consulting Services LLC* (KCS) contracted by *International Archaeological Research Institute, Inc.* (IARII) to prepare a Cultural Impact Assessment (CIA) as part of an environmental compliance document prepared by *Edward K. Noda and Associates, Inc.* (EKNA). The interviewer will explain the purpose of this survey/CIA project, the procedures to be used, the potential benefits and possible risks of participating. You may ask the interviewer any question(s) in order to help you to understand the process. If you then decide to participate, please sign on the second page of this form. You will be given a copy of this form.

I. Nature and Purpose of the Study

The purpose of this ethnographic survey is to gather information about the project lands through interviews with individuals who are knowledgeable about the area and/or about the history of these lands. The objective of this survey is to provide ethnographic data for the CIA report.

II. Explanation of Procedures

After you have voluntarily agreed to participate and have signed the consent page, the interviewer will tape record your interview and have it transcribed later. The interviewer may also need to take notes and/or ask you to spell or clarify terms or names that are unclear.

III. Discomforts and Risks

Foreseeable discomforts and/or risks may include, but are not limited to the following: having to talk loudly for the recorder and video; being recorded and/or interviewed; providing information that may be used in a report; knowing that the information you give may conflict with information from others; your uncompensated dedication of time; possible miscommunication or misunderstanding in the transcribing of information; loss of privacy; and worry that your comment(s) may not be understood in the same way you understand them. It is not possible to identify all potential risks.

IV. Benefits

This survey will give you the opportunity to express your thoughts/knowledge (*mana'o*), which will be listened to and shared; your knowledge may be instrumental in the preservation of significant historic information.

V. Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected **if you so desire**. You may request, for example, that your name and/or sex not be mentioned in write-ups, such as field notes, on tape, on files (disk or folders), drafts, reports, and future works; or you may request that some of the information you provide remain "off-the-record." In order to ensure protection of your privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your

desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, _____, understand that Maria "Kaimi" Orr, an independent interviewer contracted by *International Archaeological Research Institute, Inc.* will be conducting oral history interviews with individuals knowledgeable about the project lands at Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. **I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.**

_____ I am willing to participate.

Signature Date

Print Name Phone

Address Zip Code

Email Address

MAHALO NUI LOA!

Part II: Personal Release of Interview Records

I, _____, have been interviewed by Maria “Kaimi” Orr of Kaimipono Consulting Services LLC, an independent interviewer contracted by International Archaeological Research Institute, Inc. I have reviewed the transcripts of tape recordings of the interview and agree that said documentation is complete and accurate except for those matters specifically set forth below the heading “CLARIFICATION OR CORRECTIONS” below.

I further agree that KCS, IARII and/or EKNA may use and release my identity and other interview information, both oral and written, for the purpose of using such information in a report to be made public, subject to my specific objections, to release as set forth below:

SPECIFIC CONDITIONS TO RELEASE OF INTERVIEW TRANSCRIPT:

Signature

Date

Print Name

Phone

Address

Zip code

Email address

MAHALO NUI LOA!

APPENDIX E

Ethnographic Survey Basic Research Instrument for Oral History Interviews

This research instrument includes basic information as well as research categories which will be asked in the form of open primary questions which allow the individual interviewed (Ethnographic Consultant) to answer in the manner he/she is most comfortable. Secondary or follow-up questions are asked based on what the Consultant has said and/or to clarify what was said. The idea is to have an interview based on a “talk-story” form of sharing information. Questions will NOT be asked in an interrogation style/method, NOR will they necessarily be asked in the order presented below. This research instrument is merely a *guide* for the interviewer and simply reflects general categories of information sought in a semi-structured format. Questions will be asked more directly when necessary.

The Consultants were selected because they met one or more of the following criteria:

- ❖ Had/has Ties to Project Area/Vicinity
- ❖ Known Hawaiian Cultural Resource Person
- ❖ Referred By Other Cultural Resource People
- ❖ Referred By Other People

[NOTE: Introduction of Kahului Harbor Acquisition CIA Project is done before the Ethnographic Consultant signs the Consent Form, usually during the initial phone call to make interview appointments.]

[NOTE: This part of the interview, #1-4 is mutual sharing and rapport building. Most of the information for research categories “Consultant Background” and “Consultant Demographics” come from this section, but not exclusively.]

1. *To start please tell me about yourself...Name? Where/When you were born?*

[This information can be addressed in a couple of ways. After the interviewer first turns on the tape recorder, the following information will be recorded: Day/Date/Time/Place of Interview; Name of Consultant (if authorized by Consultant); Name of Interviewer; Initial Questions: Have you read the Agreement to Participate? Do you have any questions before we begin? Will you please sign the Consent Form? The interviewer will explain again the purpose of the interview.

The interviewer will then ask the Consultant to “Please tell me about yourself—when/where were you born? Where did you grow up? Where did you go to school?” This general compound question allows the Consultant to share as much or as little as he/she wants without any pressure. Some of the information for #1 may already be known to the interviewer.]

2. *History: Your 'ohana/family background; Hawaiian connection (if any)?*

[Much of the information for questions #2, 3, and 4 usually comes from the “monologue” answer to Question #1. If it does not, then these questions will be asked. The answers in this section usually establish how the Consultant meets the criteria; how the Consultant developed his/her information base, etc.]

3. *Youth: Where lived? Grew up?* [This may have been answered in #1]

4. *Schooling? Where? When?* [This may have been answered in #1]

[NOTE: The next part of the interview, #5-7 reflects information sought for the following research categories: Land, Cultural, Water, and Marine Resources and Use as well as Significant People and Events. The questions are open-ended so as NOT to “put words in the mouths” of the Consultants. The answers will help in assessing if any cultural properties or practices (or access to them) will be impacted by the proposed project.]

5. *Please tell me what you know about the lands of the Project Area?*

[NOTE: Generally when people share information about a specific topic/place, they usually state where their information came from. If it isn't volunteered, it is asked as a follow-up question(s). A map of the project area should be available to confirm that interviewer and consultant are talking about the same place. Photos would also help if a field trip is not possible. The best scenario would be to be “on-site” at some part of the interview...although this is not always practical.]

6. *What are your recollections and/or personal experiences of this area?*

7. *Do you know any stories/legends/songs/chants associated with these areas?*

[NOTE: Possible follow-up questions if information not in their answers:

- How are you or your family connected to the Project lands?
- What year(s) were you and/or your family associated with these lands?
- What was this place called when you were growing up or working here?
- Can you describe what the area looked like—natural and/or man made things?
- To your knowledge what kind of activities took place in this location?
- Do you know of any traditional gathering of plants, *limu* etc. in the area?
- Please describe any other land/water use? Resources?
- What was the historic land use? Agriculture?
- [Have map ready for marking.]
- Do you know about any burials in the project area? [last resort question]
- Do you know of any cultural sites in the project area or vicinity? [last resort question]

8. *Is there anyone you know who can also tell me about the project area?*

[NOTE: Usually in the course of the interview, Consultants suggest other people to interview.]

9. *As soon as the tape of this interview is transcribed I will send you two sets. Please review your transcript and make any corrections and/or additions, then sign both copies of the Release Forms thereby allowing the information to be used by the interviewer, and other Project Partners. Then mail one set back in the enclosed stamped-addressed envelope (or email corrected version).*

10. *If your revised transcript is not returned within **two weeks** of date of receipt, it will be assumed that you are in concurrence with the transcript material and your information will then be incorporated into any draft reports. However, you can still make changes during the draft review process.*

MAHALO NUI LOA

APPENDIX F
Signed Consent Forms

privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, MARY AKIONA, understand that Maria "Kaimi" Orr, an independent interviewer contracted by International Archaeological Research Institute, Inc. will be conducting oral history interviews with individuals knowledgeable about the project lands adjacent to Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.

X I am willing to participate.

Mary L Akiona 3-6-13
Signature Date

MARY L AKIONA 385-0629
Print Name Phone

675 KILIHAN ST WAILUKU HI 96793
Address ZipCode

maryakiona@hotmail.com
Email Address

MAHALO NUI LOA!

privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, Karen Chun, understand that Maria "Kaimi" Orr, an independent interviewer contracted by International Archaeological Research Institute, Inc. will be conducting oral history interviews with individuals knowledgeable about the project lands adjacent to Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.

X I am willing to participate.

Karen Chun 3-4-13
Signature Date

KAREN CHUN 283-3049 (do not make phone public)
Print Name Phone

87 Lae St Paia Hi 96779
Address ZipCode

karen@RedwoodGames.com
Email Address

MAHALO NUI LOA!

privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, Diane L. Ho, understand that Maria "Kaimi" Orr, an independent interviewer contracted by International Archaeological Research Institute, Inc. will be conducting oral history interviews with individuals knowledgeable about the project lands adjacent to Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.

I am willing to participate.

Signature  Date 3-6-13

Print Name Diane Ho Phone 281-1051

Address 96 Central Ave, Wailuku, HI ZipCode 96793

Email Address dholow@gmail.com

MAHALO NUI LOA!

privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, Cliff R. Libeal, understand that Maria "Kaimi" Orr, an independent interviewer contracted by International Archaeological Research Institute, Inc. will be conducting oral history interviews with individuals knowledgeable about the project lands adjacent to Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.

I am willing to participate.

Cliff R. Libeal 3/7/2013
Signature Date

Cliff R. Libeal
Print Name Phone

P.O. Box 935 Wailuku 96793
Address ZipCode

crlibed@hotmail.com
Email Address

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privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the interviewer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

VII. Waiver

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_____ I am willing to participate.

Paul K Lu'uwai 3/6/13
Signature Date

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privacy, confidentiality and/or anonymity, you should immediately advise the interviewer of your desires. The interviewer will ask you to specify the method of protection, and note it on this form below.

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VII. Waiver

Part I: Agreement to Participate

I, Mary C. Sanford, understand that Maria "Kaimi" Orr, an independent interviewer contracted by International Archaeological Research Institute, Inc. will be conducting oral history interviews with individuals knowledgeable about the project lands adjacent to Kahului Harbor. The oral history interviews are being conducted in order to collect information of the area.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say. I also understand that if I don't return the revised transcripts after two weeks from date of receipt, my signature below will indicate my release of information for the CIA report. I also understand that I will still have the opportunity to make revisions during the draft review process.

X *I am willing to participate.*

Mary C. Sanford March 15, 2013
Signature Date

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APPENDIX G
Signed Release Form
(None returned)

APPENDIX G
Flora and Fauna Inventory

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BIOLOGICAL SURVEY ON A 10-ACRE PARCEL
AND ADJACENT AREAS, PROPOSED LAND
ACQUISITION, KAHULUI, MAUI, HAWAII

Hawaii
Biological
Survey

Final Report

February 2014

**BIOLOGICAL SURVEY ON A 10-ACRE PARCEL AND ADJACENT AREAS,
PROPOSED LAND ACQUISITION, KAHULUI, MAUI, HAWAII**

FINAL REPORT

Prepared for:

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February 2014

Contribution No. 2014-001 to the Hawaii Biological Survey

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EXECUTIVE SUMMARY

In April 2013 a request was made by the U.S. Fish and Wildlife Service (USFWS) to EKNA Services, Inc., to conduct surveys for the possible presence of the endangered Blackburn's sphinx moth [*Manduca blackburni* (Butler 1880)] on properties located in the Kahului Harbor area. In December 2013 the Bishop Museum, Department of Natural Sciences, was contracted by EKNA Services, Inc., to conduct biological surveys on a 10 acre industrial-use site adjacent to the Maui Electric Company power plant located at Kahului Harbor. On 8–12 December 2013 a biological reconnaissance of the harbor area property was conducted, as well as adjacent properties to the east (State Department of Land and Natural Resources [DLNR] storage yard and the Maui County Wastewater Treatment Plant) up to the boundary with Kanahā Beach Park, and to the west (State Harbors Division) up to Pu'unē Avenue and the coastal beaches fronting them, comprising roughly 22 additional acres. In conjunction with the Blackburn's sphinx moth surveys, it was deemed necessary to inventory all the plant and invertebrate species found within the selected survey sites, with particular attention being paid to the alien tree tobacco (*Nicotiana glauca*), the primary host plant for the endangered moth in this area. Host plants that could serve as adult food (flower nectar) for the moth were also searched for and documented. GPS coordinates for all *Manduca* host plants found were recorded, and the presence of *Manduca* eggs, larvae, and adults, as well as evidence of chewing damage that may have been caused by *Manduca*, was searched for. Chewing damage was photographed and the locations of damaged host plants recorded. The Bishop Museum team also searched for federally listed endangered or threatened plant, animal, or insect species, a possibility especially with birds, given the close proximity to Kanahā Pond Wildlife Sanctuary, where several native endangered wetland bird species make their home. Bishop Museum also provided complete inventories of plants, invertebrates, birds, and mammals seen within the survey areas, and conducted vegetation and hydrological analyses for wetland sites noted in the survey areas.

INTRODUCTION

Staff from the Bishop Museum, Department of Natural Sciences, on 8–12 December 2013 conducted a biological reconnaissance of 10 acres of industrial-use land adjacent to the Maui Electric Company power plant in the vicinity of Kahului Harbor (Tax Map Keys (2) 3-7-11:17, (2) 3-7-11:23), currently owned by Alexander & Baldwin, Inc., and proposed for acquisition by the State of Hawai'i Department of Transportation, Harbors Division. The parcel is located in the Kahului Harbor area of north-central Maui in an industrial-use zone, and is bounded on the west by Hobron Lane, on the north by Amala Place, on the east by Amala Road, and to the south (*makai*) by the power plant (see Map 2, p. 33).

While there are no immediate plans to develop the site, looking ahead to potential development, the Pacific Island Office of the U.S. Fish and Wildlife Service (USFWS) in April 2013 noted that the Blackburn's sphinx moth (*Manduca blackburni*), a federally listed endangered Hawaiian moth, was known to inhabit the general vicinity. The USFWS thus recommended that a biological survey be conducted in the project area, as well on adjacent properties, to confirm the presence or absence of adult and/or larval *Manduca*, as well as the known host plants the species needs to survive. At the request of client EKNA Services, Inc., the survey area was thus expanded to include adjacent properties to the east (State Department of Land and Natural Resources [DLNR] storage yard and the Maui County Wastewater Treatment Plant) up to the boundary with Kanahā Beach Park, and to the west (State Harbors Division) up to Pu 'unēnē Avenue and the coastal beaches fronting them, totaling approximately 22 acres (see Map 1, p. 32). The expanded survey perimeter also included water features that were investigated in a preliminary wetland analysis.

Elevation at the site ranged from sea level to 20 feet. Average annual rainfall for the area is around 18 inches. The soil substrates in the survey area fall into three classifications in Foote et al. (1972): 1) Beaches (BS), light-colored sands derived from coral and seashells; 2) Fill Land (Fd), usually consisting of low-lying wetlands along coastal flats, coral sand, coral limestone, or areas shallow to bedrock, filled with bagasse and slurry from sugar mills; and 3) Jaucas sand, saline, 0 to 12 percent slopes (JcC), consisting of calcareous soils occurring as narrow strips on coastal plains, developed in wind- and water-deposited sand derived from coral and seashells. The Jaucas sands are saline, with a water table near the soil surface, and are poorly drained in depressions but excessively drained on knolls. Typical vegetation on JcC soils includes kiawe (*Prosopis pallida*), koa haole

(*Leucaena leucocephala*), fingergrass (*Chloris* spp.), Bermuda grass (*Cynodon dactylon*), and Australian saltbush (*Atriplex* spp.). Typical land use on JcC soils is pastureland, wildlife habitat, or urban development.

The primary objectives of the survey were to 1) record GPS coordinates of all plant hosts reported to be associated with the adult or larval stages of the endangered Hawaiian moth, *Manduca blackburni*, and briefly describe the habitat types in the survey area; 2) record physical presence of *Manduca* adults or larvae, or any physical evidence of their presence (e.g., leaf chew, droppings), also recording photographic evidence and GPS coordinates; 3) provide an inventory of plants, arthropods, birds, and mammals seen; 4) report on locations and numbers of any federally listed endangered or threatened plant, animal, or insect species; and 5) provide vegetation and hydrological analyses for any wetland areas noted (excluding soil analysis).

SURVEY METHODS

Prior to initiation of fieldwork, the authors searched for pertinent literature on previous biological surveys conducted in the general vicinity to familiarize themselves with historical findings in the area (Howarth et al. 2012; Funk 1999; Char 1990, 1997). Literature relating to the endangered Hawaiian moth, *Manduca blackburni*, was also reviewed, especially with regard to its distribution and biology, and the U.S. Fish and Wildlife Service (USFWS) designation of critical habitats and a management unit in the general vicinity of the project site (U.S. Fish and Wildlife Service 2003, 2005; Amidon et al. 2009; Rubinoff & San Jose 2010).

A walkthrough survey method was used, with two biologists systematically combing the survey area, taking field notes, and georeferencing all targeted plant or animal species. The existing roadways and perimeter fences provided reliable reference points for location within the parcel. Garmin GPS units were used for georeferencing, and coordinate location points were recorded using the WGS 84 datum. Plant and animal identifications were largely made in the field; those that could not be positively identified were photographed or collected for later identification at Bishop Museum. Five days of fieldwork were conducted on 8–12 December 2013.

The species recorded reflects the season and environmental conditions at the time of the survey. In their response to the consultant EKNA Services, Inc., the USFWS recommended that the search

for evidence of the endangered Blackburn's sphinx moth take place during the wettest portion of the year, preferably 4–8 weeks after a significant rainfall event. One such significant rainfall event took place during Hawai'i's rainy season on 10 November 2013, when the *Maui News* reported that 3.52 inches of rainfall had been recorded during a 24-hour period at Kahului Airport, shattering the previous Kahului record of 1.78 inches set in 1955. The survey was conducted 4 weeks after this event.

Botanically, the focus was on locating all occurrences of the non-native tree tobacco (*Nicotiana glauca*) in the survey area, the main host plant in the area for the endangered moth, *Manduca blackburni*. The USFWS advisory letter also noted that adult moths fed on the nectar of the native pōhuehue or beach morning glory (*Ipomoea pes-caprae* subsp. *brasiliensis*), 'ilie'e (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*), and that the larvae fed on the native tree, 'aiea (*Nothocestrum latifolium*) and tree tobacco. Other sources (USFWS 2003, 2005) list the native koali 'awa (*Ipomoea indica*) as another preferred adult nectar host. All of these plants were searched for during the survey.

Also included in the search were other documented or suspected host plants of *Manduca* adults and larvae, including commercial tobacco (*N. tabacum*), eggplant (*Solanum melongena*), tomato (*Lycopersicon esculentum*), and Jimson weed (*Datura stramonium*). The presence of any other members of the tomato family (Solanaceae) or morning-glory family (Convolvulaceae) were also noted as potential larval or adult *Manduca* hosts.

SURVEY FINDINGS

Objective 1: *Manduca* plant host census and habitat types

Conservatively, 80+ plants of *Nicotiana glauca*, ranging from seedlings to trees 10 feet tall, were noted during the survey (Fig. 5, p. 41). GPS points were taken for most of the sightings (see Map 1, p. 32 for distributions; Appendix IV, p. 29, for GPS points). Very few of the *Nicotiana* plants were located within Alexander & Baldwin's 10-acre parcel; a few plants were noted in a fenced parcel referred to as the "notch" parcel (SSFM International, Inc. 2012) (see Map 2, p. 33). The largest concentration of tree tobacco plants ranged from the fenceline between the DLNR and wastewater plant to the undeveloped lands on the western end of the treatment facility proper (see Map 4, p. 35).

Although widespread and apparently supporting a population of *Manduca blackburni* in this coastal habitat, the USFWS does not consider the non-native *Nicotiana glauca* to be a *primary constituent element* (defined as those physical or biological features considered essential for the conservation of the species) for *Manduca*, for the following reasons: 1) *Nicotiana* is short-lived and drought-intolerant, and can disappear from an area during prolonged droughts, while *Nothoecstrum* is more stable and persistent in dry to mesic forest habitats; 2) because of its susceptibility to droughts, *Nicotiana* is considered a suboptimal food for sphinx moth larval growth, which consume more food when it has a high water content; 3) *Nicotiana* is an established weed that land managers might prefer to control if native host plants are available; and 4) because *Nicotiana* inhabits weedy environments, potentially harmful alien insect predators are more likely to occur there (USFWS 2003, 2005).

In the surveyed lands, several other members of the Solanaceae besides tree tobacco were noted, but only in small quantities: Jimson weed (*Datura stramonium*), two plants less than 18 inches tall (see Fig. 2, p. 38); groundcherry (*Physalis angulata*), one plant, 6 inches tall; and pōpolo (*Solanum americanum*), several plants, 1 foot tall. The *Datura* and *Physalis* were found on the wastewater plant property, the *Solanum* on the DLNR site.

Among adult *Manduca* host plants, the beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) was an occasional element along the coasts, growing primarily in beach sand (Fig. 6, p. 41). Three additional members of the morning-glory family (*Ipomoea obscura*, *I. triloba*, *Jacquemontia sandwicensis*) were noted and may potentially serve as nectar sources for feeding, but all have small corolla tubes relative to the larger beach morning-glory flower. These were all infrequent in the survey area. Other documented adult hosts (*Capparis sandwichiana*, *Plumbago zeylanica*, *Nothoecstrum latifolium*) were not seen during the survey.

Following are short descriptions of the main vegetation habitat types noted during the survey (complete species lists can be found in Appendix I, p. 17):

a) Coastal dunes (Fig. 8, p. 42). The substrate in this zone is primarily unconsolidated beach sand, and it occurs in mostly undisturbed habitats adjacent to the ocean, beginning at the high tide mark. Strong onshore breezes, constant salt spray, intense sunlight, high temperatures, low rainfall, and shifting sands are the norm in this zone. The best examples along this coast are found in Kanahā Beach Park, adjacent to the east. In its most undisturbed native expression, clumps of naupaka

kahakai (*Scaevola taccada*) form thickets at the high water mark, while the beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) trails along the sand, rooting at each node, intermingling with 'aki'aki grass (*Sporobolus virginicus*). Other occasional native elements include the tree milo (*Thespesia populnea*), the shrub 'āweoweo (*Chenopodium oahuense*), and the herbs 'ākulikuli (*Sesuvium portulacastrum*), kīpūkai (*Heliotropium curassavicum*), and alena (*Boerhavia repens*). The most common weedy elements include the trees common ironwood (*Casuarina equisetifolia*) and tree heliotrope (*Tournefortia argentea*); the shrubs Indian fleabane (*Pluchea indica*) and *P. xfosbergii*; the herbs golden crown-beard (*Verbesina encelioides*), *Heliotropium procumbens* var. *depressum*, saltbush (*Atriplex suberecta*), goosefoot (*Chenopodium murale*), and silky jackbean (*Canavalia sericea*); and the grasses buffelgrass (*Cenchrus ciliaris*) and Bermuda grass (*Cynodon dactylon*). Examples of coastal dune vegetation in the survey area are best developed on the east margin of the wastewater treatment plant property and a section of the beach fronting the treatment plant. Tree tobacco was occasionally found in this zone, but toward the inland, more sheltered side.

b) Coastal forest (Fig. 7, p. 41; Fig. 12, p. 43). This zone occurs mainly on the DLNR property, mostly growing on the banks of Mau'oni Pond, readily visible on the Google Earth © maps as thickly vegetated zones (see Map 3, p. 34). These forests are dominated by the non-native trees common ironwood and kiawe (*Prosopis pallida*), with sections of hau (*Hibiscus tiliaceus*), milo, and false kamani (*Terminalia catappa*), and scattered date palms (*Phoenix dactylifera*). Very little grows under the ironwood, as it thrives on nutrient-poor coastal sands, and the needle litter is said to leach chemicals that restricts plant growth underneath it. Tree tobacco was uncommon in this habitat. In the extreme western end of the survey properties, adjacent to Pier 2, is a tall, thick common ironwood forest adjacent to a drainage channel leading to the ocean.

c) Ruderal vegetation (Fig. 9, p. 42). This zone is broadly defined as all areas not in a forested habitat, a natural coastal habitat, or a wetland. It includes all roadside areas with non-woody vegetation, weedy sections of industrial properties, and purposefully cultivated plantings. The entire 10-acre Alexander & Baldwin property is included here, as well as the entire interior fenced wastewater treatment plant property. Among the most common weeds in the ruderal zone were *Heliotropium procumbens* var. *depressum*, the aggressive legume vine *Macroptilium atropurpureum*, saltbush, buffelgrass, swollen fingergrass (*Chloris barbata*), *Sida ciliaris*, and the possibly indigenous 'uhaloa (*Waltheria indica*). Almost all of the tree tobacco plants seen during the survey grew in this habitat type, concentrated on the treatment plant property and the interface with the

adjoining DLNR land to the west.

d) Wetlands (Fig. 7, p. 41; Figs. 10–12, p. 43). Several waterways and wetland sites were examined during the survey, mostly on the DLNR property (see Map 3, p. 34), and one on the western end of the State Harbors Division property adjacent to Pier 2 (see Map 5, p. 36). Mau'oni Pond on the DLNR property is the remnant of an ancient royal Hawaiian fishpond complex, along with Kanahā Pond, now partially filled in for present-day industrial usage. The present-day water features are likely fed by the adjoining Kanahā Pond complex and drain into Kahului Bay during high-water events. At the time of our visit none of the channels were filled enough to connect to the ocean. Only one wetland feature, on the DLNR property, contained what would be considered typical wetland vegetation. This wetland is located in a sandy depression on the property, fronted on the Amala Place side by an unpaved vehicle lot and small dumpsite, and oceanside by sand dunes fronting Kahului Bay. Adjacent parts of the property have been bulldozed and currently are sparsely vegetated, but the vicinity of the wetland appears to have been little disturbed. The wetland is small and oval-shaped, measuring about 150 feet by 95 feet. The substrate was completely flooded, with about half of the acreage dominated by kaluhā (*Schoenoplectus californicus*), a bulrush with stems up to 7 feet tall. A smaller section was dominated by a smaller sedge, makai (*Bolboschoenus maritimus* subsp. *paludosus*), and a raised section in the middle of the wetland was colonized primarily by the shrubs Indian fleabane (*Pluchea indica*), sourbush (*P. carolinensis*), and marsh fleabane (*P. xfosbergii*). Other wetland indicator plants present included makaloa (*Cyperus laevigatus*), 'ae'ae (*Bacopa monnieri*), and duckweed (*Landoltia punctata*). A steep, sandy slope on the *makai* and western side of the wetland was thickly covered mostly with *P. xfosbergii*.

Objective 2: Entomological evidence of *Manduca blackburni* presence

Known *Manduca blackburni* plant hosts were visually inspected for the presence of the endangered Blackburn's sphinx moth as well as for other invertebrates that were present while walking between sites. An insect sweep net and small handheld aspirator were used to capture specimens. Leaves and branches of *Nicotiana glauca* were examined for the presence of *M. blackburni* eggs and larvae. Chewing damage seen on *N. glauca* was noted and photographed. Locations for general collecting and *Manduca* host searching are listed in Appendix IV (p. 29). Non-*Manduca* species were captured incidentally while walking between sites. Specimens identified in

the field and not retained were recorded. All material collected were placed in vials containing 95% ethanol, labeled, and brought back to the Bishop Museum for identification. A list of identified species are listed in Appendix II (p. 23).

Objective 3: Biological census

a) Plants

A total of 137 plant species were recorded during the survey, including 5 endemic (3 of which were solely cultivated), 14 indigenous (including “questionably indigenous”), 3 Polynesian introductions (all solely cultivated), 87 naturalized weeds, and 28 cultivated plants. A complete plant species list can be found in Appendix I (p. 17). Excluding the 34 solely cultivated species noted, the low percentage of natives among the naturally occurring vegetation (17 of 103 species, 16.5%) is attributable to the highly modified nature of the site (industrial development on coastal fill land). None of the 16 naturally occurring native (endemic + indigenous) plants is a federally protected endangered or threatened species. The more common natives, by habitat type, were:

Coastal dune: kīpūkai (*Heliotropium curassavicum*), ‘āweoweo (*Chenopodium oahuense*), pōhuehue (*Ipomoea pes-caprae* subsp. *brasiliensis*), naupaka kahakai (*Scaevola taccada*), alena (*Boerhavia repens*)

Coastal forest: hau (*Hibiscus tiliaceus*), milo (*Thespesia populnea*)

Ruderal/industrial: ‘uhaloa (*Waltheria indica*)

Wetlands: ‘ākulikuli (*Sesuvium portulacastrum*), ‘ae‘ae (*Bacopa monnieri*), makai (*Bolboschoenus maritimus* subsp. *paludosus*), makaloa (*Cyperus laevigatus*)

b) Arthropods

A total of 52 species were collected while searching on and near the alien tree tobacco (*Nicotiana glauca*). The main objective of this survey was to determine if the endangered Blackburn’s sphinx moth was present on the properties surveyed. While no eggs, larvae, or adults were observed on the tree tobacco, several plants showed signs of feeding damage on their leaves. Although *N. glauca* is a known host species for the Blackburn’s sphinx moth, we can only speculate

on what caused some of the feeding damage. Damage caused by the chrysomelid beetle *Lema trilinea* was evident on many of the tree tobacco plants growing within the Kahului wastewater treatment plant (Fig. 1, p. 37)). The larvae of this beetle resemble small slugs and will feed from the edges of the leaves and also cause shot-holes in the leaves. The chewing damage caused by this beetle is characterized by irregular, jagged edges. This beetle will also feed on *Datura* spp. (Fig. 2, p. 38). At least 2 sphinx moths other than *Manduca blackburni* are known to feed on the alien tree tobacco in Hawai'i. Although tree tobacco is not their preferred host plant, the sweet potato hornworm (*Agrius cingulata*) and the white-lined sphinx (*Hyles lineata*) will feed on tree tobacco. The white-lined sphinx is roughly half the size of the other two. The feeding damage caused by the larger moths can be much more significant, with even the largest leaves being chewed to their bare stems (Fig. 3, p. 39). Because no sphingid larvae were seen during this survey, it was not possible to determine what moth species was feeding on the tree tobacco.

c) Birds and feral mammals

A total of 12 bird species and 1 mammal were observed during the 5-day walkthrough surveys in the Kahului Harbor area. No endangered or threatened species were seen in the area, although the survey sites were in close proximity to the Kanahā Pond State Wildlife Sanctuary, where three endangered waterbirds reside. The Black-crowned Night-Heron (*Nycticorax nycticorax*) was the only native bird species recorded from the survey area. A complete list of species can be found in Appendix III, p. 27.

Objective 4: Endangered or Threatened taxa

None of the 16 naturally occurring native (endemic + indigenous) plants noted during the survey is a federally protected endangered or threatened species. *Hibiscus clayi* is federally listed as endangered, but occurs only as a single cultivated plant in the wastewater plant landscaping.

As explained in objective 3b above, because no eggs, larvae, or adults of *Manduca blackburni* were observed on *Nicotiana glauca*, the obvious chewing damage on tobacco plants noted cannot be conclusively attributed to *M. blackburni*. Otherwise, no endangered or threatened arthropods were seen.

Although three endangered species of waterbirds—Black-necked Stilt (*Himantopus mexicanus knudseni*), Koloa (*Anas wyvilliana*), Hawaiian Coot (*Fulica alai*)—are known to reside at the nearby 235-acre Kanahā Pond State Wildlife Sanctuary, just adjacent to the south, none of them were noted in any of the wetland habitats on the surveyed properties. At the time of our survey in December 2013, the wastewater treatment plant catchment pond was completely dried up; anecdotal evidence indicates that the endangered Black-necked Stilt can be found there when the pond is filled.

Objective 5: Wetland analysis

Wetlands, as defined in the Environmental Protection Agency’s regulations (40 CFR 230.3), are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” To qualify as a wetland, a site must meet three criteria. First, there must be a predominance of hydrophytic vegetation on the site, plants typically adapted to life in water or saturated soils. The *National Wetland Plant List* (Lichvar 2013) provides recent wetland ratings of over 7,900 native and naturalized species throughout the United States, ranging from “obligate” (OBL) plants that almost always occur only in wetlands, to “upland” (UPL) plants that almost never are found in wetlands. “Facultative wetland” (FACW) plants are usually found in wetlands, but may occur in non-wetlands, while “facultative upland” (FACU) lean the other way. In the middle are “facultative” (FAC) plants that are equally adapted to both wetlands and non-wetlands. For purposes of wetland delineation, in simplified terms, the vegetation passes the wetland test if the majority of the biomass is rated OBL, FACW, or FAC.

A second criterion is the presence of wetland hydrology. It may be self-evident during the wettest part of the year, but in drier periods can be the least precise of the criteria, as it can involve relying on reading clues in the environment, such as drainage patterns, water marks, drift lines, and sediment deposits. The final criterion is the presence of hydric soils, which involves digging pits and analyzing soil profiles, textures, and colors to determine whether they are wetland soils.

For this survey, Bishop Museum agreed to analyze the presence of hydrophytic vegetation and wetland hydrology, but deferred on analyzing the presence of hydric soils. No wetland delineations were performed. Most of the water features in the survey area seaward of the adjacent Kanahā Pond Wildlife Refuge appeared to be drainage channels to the ocean exiting from Kanahā Pond. At the

time of the survey none of drainages actually connected to the ocean, and the water quality in the shallower water bodies was murky. Only one of the saturated sites actually met the three conditions required of a wetland habitat. This site occurred on the DLNR property in a depression backed on the ocean side by a steep sand dune, as described in the wetland zone description on pages 6–7 (see Map 3, p. 34). Here all of the primary vegetation within the wetland was rated as hydrophytic:

Schoenoplectus (OBL), *Bolboschoenus* (OBL), *Pluchea indica*/ *P. carolinensis*/ *P. xfosbergii* (FAC), *Cyperus* (OBL), *Bacopa* (OBL), *Landoltia* (OBL), and seashore paspalum (*Paspalum vaginatum*) (FACW), and there was obvious standing water in the depression. In the Google Earth © photo used for the maps in this report, dated 25 April 2013, it does not appear that there is any standing water in the wetland, supporting reports that Maui had been suffering through prolonged drought conditions during this time.

The other water features on the DLNR property include a drainage channel about 600 feet long, 20–30 feet wide (see Fig. 10, p. 43). Soil has been mounded along both banks for its entire length, apparently relatively recently, as it is currently sparsely vegetated with young trees of kiawe, milo, date palm, Christmas berry (*Schinus terebinthifolius*), and larger trees of coconut (*Cocos nucifera*) and common ironwood at the seaward end. A sand berm blocks access to Kahului Bay, and at this end there is a thick growth of the native groundcover, ‘ākulikuli (*Sesuvium portulacastrum*), along with scattered ‘aki‘aki grass (*Sporobolus virginicus*), both FAC wetland species. Also on the DLNR property are two small water-filled depressions. Pool A (see Fig. 11, p. 43) is about 60 x 20 feet, and is shallow with a thick growth of green algae. Pool B is about 40 x 15 feet, and is shaded by 30 foot tall milo and kiawe trees, with sapling date palms on its margin. Neither pool has wetland vascular plants growing in it, and these water features are probably ephemeral elements resulting from the heavy rains that fell a month prior. The final water feature on the DLNR property is Mau‘oni Pond (see Fig. 12, p. 43). This body of water is also landlocked until it reaches the level of the cement drainage pipes on the seaward end. The banks of the pond are mostly steep and covered with coastal forest trees, mostly common ironwood. In places, there are flat pond banks that support hydrophytic species such as torpedo grass (*Panicum repens*, FAC), makai (*Bolboschoenus maritimus* subsp. *paludosus*, OBL), and ‘ae‘ae (*Bacopa monnieri*, OBL), but in general the steep banks prevent development of wetlands on this site.

A drainage channel adjacent to Pier 2 (see Fig. 13, p. 44) was examined. The source of this water is unclear. Although the mouth of this waterway is within several feet of the ocean, it, too, was

separated from the ocean by a berm of sand, and was somewhat stagnant. The distance inland to where it becomes channelized was about 75 yards, and its width was about 20 feet. A tall forest of common ironwood (FACU) grows on either bank, and the banks are covered with thick grass, tentatively identified as seashore paspalum (*Paspalum vaginatum*), a hydrophytic non-native species (FACW). Also in the vicinity were false kamani (*Terminalia catappa*, FAC) and 'ākulikuli groundcover (FAC). If the site is being considered for development, a complete wetland delineation is suggested.

DISCUSSION

A recounting of the conservation history of *Manduca blackburni* is an interesting story and reveals that there is still much to learn about the life history and distribution of this endemic sphinx moth, distinguished for becoming the first Hawaiian insect to achieve Federal endangered status in 2000. The moth was first collected by Rev. T. Blackburn near Honolulu, O'ahu, and was originally described in 1880 by Butler as *Protoparce blackburni*, a species unique to the Hawaiian Islands. The species was subsequently recorded on 6 of the 8 major islands (excluding Ni'ihau and Lāna'i), and was considered somewhat widespread and abundant, based on accounts of early European naturalists, mostly from coastal or lowland dry forest habitats receiving less than 50 inches of rain (USFWS 2003). Since 1899, though, taxonomists decided that the species was actually either no different from the tobacco hornworm (now called *Manduca quinquemaculatus*), a widespread New World species, or only an endemic subspecies of it (Riotte 1986).

Historically, *Manduca* appears to have been most common on Maui, with collections in Kahului as far back as 1919, Spreckelsville in 1922, West Maui in 1929, and Wailuku in 1937 (Riotte 1986), but between 1940 and 1970 the moth was recorded statewide only a handful of times, and was presumed extinct after extensive field surveys in the mid-1970s failed to locate any *Manduca* (Rubinoff et al. 2012). During this time, the moth larvae had only been observed feeding on non-native members of the Solanaceae, including tomato, eggplant, and tree tobacco, but in 1984 the larvae were discovered feeding on a rare, endemic tomato relative, 'aiea (*Nothocestrum latifolium*) in a dry forest on the southwest slope of East Maui. This rediscovery on a new, endemic plant host spurred Riotte (1986) to conduct extensive research and restore the moth's taxonomic status as a fully recognized species, under the name *Manduca blackburni*. Rubinoff et al. (2012) used molecular

techniques to confirm that *M. blackburni* is a distinct species from the closely related, widespread *M. quinquemaculatus*. The species was subsequently rediscovered on Kaho‘olawe, in the Kanahā-Spreckelsville coastal zone on Maui—both where tree tobacco grows but not *Nothocestrum*—and on the Big Island.

Because of its low population size and the rarity of its newly discovered endemic larval host plant, the U.S. Fish and Wildlife Service (USFWS) made *Manduca blackburni* a priority for listing, and it was federally listed as endangered in 2000. This was followed by USFWS critical habitat designation in 2003. Critical habitats are comprised of specific designated geographic areas that contain those physical or biological features considered essential for the conservation of the species (“primary constituent elements”); these areas may be subject to special management considerations or protection until such time that the species is no longer considered endangered and can be delisted. Following public review of the proposed critical habitat designations for *Manduca*, the USFWS settled on 9 critical habitat units totaling over 55,000 acres on the islands of Moloka‘i, Maui, Kaho‘olawe, and Hawai‘i (USFWS 2003). Two of these critical habitats occur in the survey vicinity.

As originally proposed, the Kanahā Pond—Spreckelsville critical habitat unit totaled 559 acres, stretching along the Kahului coast and including a portion of the DLNR property and the county wastewater treatment plant. The USFWS final ruling settled on two smaller, separate critical habitat units, Kanahā Pond (139 acres) and Kanahā Park (62 acres), a reduction of 358 acres (USFWS 2003). Both sites contain managed native habitats appropriate for *Manduca* conservation. The discarded acreage was considered inessential for the conservation of *Manduca* either because it was found to be more seriously degraded than previously thought, or the primary constituent elements needed by the adults or larvae were not present. As discussed under Objective 1, the USFWS does not consider *Nicotiana glauca* to be a primary constituent element for *Manduca* conservation.

In 2005, the USFWS designated 13 management units on 7 islands totaling over 138,000 acres to aid in the recovery of *Manduca* populations. The selected lands include the best remaining tracts of contiguous habitats suitable for *Manduca* conservation. One unit of 1,184 acres called the Kanahā Pond—Spreckelsville management unit encompasses all of the originally proposed critical habitat in the area (USFWS 2005). This small habitat is considered important for *Manduca* recovery, despite the lack of naturally occurring plants of *Nothocestrum*, primarily as a way station and refuge for the moth populations, which are strong fliers and are believed to be able to fly many kilometers to travel

between their now distantly separated primary habitats. Small, geographically isolated populations can become weaker because of inbreeding depression, but can gain vitality if there is genetic exchange between separated populations. The management unit at Kanahā Pond—Spreckelsville is billed to help bridge the gaps between these separate populations.

It remains uncertain whether *Manduca blackburni* has always inhabited the coastal zone before the arrival of humans to Hawaiian shores. In the Bishop Museum plant collection, there is no documentation of *Nothoestrum*, its preferred host plant, ever having been collected in the coastal zone on any island. If so, which native plants served as hosts for *Manduca* larvae in pre-human times in this habitat? Presently documented larval hosts in this zone are mostly post-Cook introductions, such as commercial tobacco (first collected in 1825), tree tobacco (1864–1865), and tomato (possibly mid-1800s (Wagner et al. 1999)).

In view of the depleted statewide populations of the endemic *Nothoestrum* spp., its preferred host plant, there is some management concern that *Manduca* is shifting its host dependence towards *Nicotiana glauca*, presenting something of a dilemma for land managers preferring to remove the invasive species from their lands. Rubinoff and San Jose (2010) conducted laboratory tests to explore whether alternate native and non-native members of the tomato family (Solanaceae) would serve as acceptable hosts for *Manduca* larvae. In limited trials, they found success using the endemic pōpolo‘aiakeakua (*Solanum sandwicense*), the indigenous pōpolo (*Solanum americanum*), and the non-native tomato (*Lycopersicon esculentum*) and eggplant (*Solanum melongena*) as hosts. This provides some possibilities for land managers hoping to remove the invasive tree tobacco in favor of suitable alternate native or introduced larval host plants.

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APPENDIX I: Alexander & Baldwin 10-acre parcel plant checklist

Staff from the Bishop Museum, Department of Natural Sciences, on 8–12 December 2013 conducted a biological reconnaissance of 10 acres of industrial-use land adjacent to the Maui Electric Company power plant in the vicinity of Kahului Harbor (Tax Map Keys (2) 3-7-11:17, (2) 3-7-11:23), currently owned by Alexander & Baldwin, Inc., and proposed for acquisition by the State of Hawai‘i Department of Transportation, Harbors Division. The parcel is located in the Kahului Harbor area of north-central Maui in an industrial-use zone, and is bounded on the west by Hobron Lane, on the north by Amala Place, on the east by Amala Road, and to the south (*makai*) by the power plant. In addition, the coastal strip fronting the Maui Electric Company power plant was surveyed.

A total of 65 taxa were noted during the survey, including 5 indigenous (including “ind?”), 1 Polynesian introduction (solely cultivated), 49 naturalized weeds, and 10 cultivated plants. There were no endemic plants noted in the parcel. Four of the 5 native species were found only along the coastal strip: ‘ākulikuli (*Sesuvium portulacastrum*), kīpūkai (*Heliotropium curassavicum*), alena (*Boerhavia repens*), ‘aki‘aki (*Sporobolus virginicus*), while ‘uhaloa (*Waltheria indica*) was found both along the coast and in inland ruderal habitats. None of the 5 naturally occurring native indigenous plants noted in the parcel is a federally protected endangered or threatened species, nor were any wetland habitats noted.

The only spot within the A&B parcel where *Nicotiana glauca* plants were located was in the “notch” parcel (see Map 2); at least one, but possibly several, plants were seen at the base of large tank fenced from access. No GPS point was taken, but Google Earth coordinates place it at N 20.896211, W 156.462755. Seven additional small plants were noted along the coastal strip outside of the A&B parcel (waypoints 934–937 in Appendix IV).

In the A&B parcel, no other members of the Solanaceae that might serve as alternate hosts of *Manduca* larvae were noted. Among adult *Manduca* host plants, no plants of the beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) were seen. Two other members of the morning-glory family (*Ipomoea obscura*, *I. triloba*) were noted and may potentially serve as nectar sources for feeding, but both have small corolla tubes relative to the larger beach morning-glory flower. These were infrequent in the survey area. Other documented adult hosts (*Capparis sandwichiana*, *Plumbago zeylanica*, *Nothoestrum latifolium*) were not seen during the survey.

The following is a list of vascular plant species noted during a walk-through survey of the 10-acre Alexander & Baldwin parcel on 8–12 December 2013. In the following table, plants are divided into two main groups, dicots and monocots. Within these groups, plants are arranged alphabetically by family, genus, and species. Each entry includes scientific name with author citation, common name in English and/or Hawaiian (if available), biogeographic status, and presence or absence in the designated parcel. Taxonomy follows Wagner et al. (1999) for native and naturalized plants; Staples and Herbst (2005) for cultivated plants; Palmer (2003) for ferns; and Imada (2012) for current updates of plant names. An explanation of abbreviations used in the list follows.

Biogeographic Status (from Wagner et al. 1999)

| | |
|------|---|
| cult | Cultivated plant; purposefully grown |
| end | Endemic: native, occurring only in the Hawaiian Archipelago |
| ind | Indigenous: native, occurring naturally in the archipelago but also outside of Hawai'i |
| ind? | Questionably indigenous: probably indigenous, possibly naturalized |
| nat | Naturalized: introduced to the archipelago directly or indirectly by humans since Western contact and reproducing and spreading vegetatively or by seed |
| nat? | Questionably naturalized: probably naturalized, but possibly indigenous |
| pol | Likely introduced during Polynesian migrations, now naturalized |

Parcel

| | |
|-------|--|
| A&B | Alexander & Baldwin parcel (including "notch") |
| Coast | Coastal strip makai of Maui Electric Company |

Relative frequency

| | |
|---|---------------|
| c | Common |
| o | Occasional |
| r | Rare |
| 1 | One-of-a-kind |
| - | Absent |

| Scientific name | Common name | Status | Parcel | |
|--|--------------------------|--------|--------|-------|
| | | | A&B | Coast |
| DICOTS | | | | |
| AIZOACEAE (ice plant family) | | | | |
| <i>Sesuvium portulacastrum</i> (L.) L. | ʻākulikuli, sea purslane | ind | - | x |
| AMARANTHACEAE (amaranth family) | | | | |
| <i>Amaranthus spinosus</i> L. | spiny amaranth | nat | x | - |
| <i>Amaranthus viridis</i> L. | slender amaranth | nat | x | - |
| APIACEAE (parsley family) | | | | |
| <i>Centella asiatica</i> (L.) Urb. | Asiatic pennywort | nat | x | - |
| APOCYNACEAE (dogbane family) | | | | |

| Scientific name | Common name | Status | Parcel | |
|--|---------------------------------|--------|--------|-------|
| | | | A&B | Coast |
| <i>Plumeria obtusa</i> L. | Singapore plumeria | cult | x | - |
| ASTERACEAE (sunflower family) | | | | |
| <i>Emilia sonchifolia</i> var. <i>javanica</i> (Burm.f.) Mattf. | Flora's paintbrush | nat | x | - |
| <i>Pluchea carolinensis</i> (Jacq.) G.Don | sourbush, marsh fleabane | nat | x | - |
| <i>Pluchea indica</i> (L.) Less. | Indian fleabane, Indian pluchea | nat | - | x |
| <i>Tridax procumbens</i> L. | coat buttons | nat | x | - |
| <i>Verbesina encelioides</i> (Cav.) Benth. & Hook. | golden crown-beard | nat | x | - |
| BIGNONIACEAE (catalpa family) | | | | |
| <i>Tecoma capensis</i> (Thunb.) Lindl. | cape-honeysuckle | cult | x | - |
| BORAGINACEAE (borage family) | | | | |
| <i>Cordia sebestena</i> L. | geiger tree, kou haole | cult | x | - |
| <i>Heliotropium curassavicum</i> L. | kīpūkai, nena | ind | - | x |
| <i>Heliotropium procumbens</i> Mill. var. <i>depressum</i> (Cham.) Fosberg | | nat | x | - |
| CAPPARACEAE (caper family) | | | | |
| <i>Cleome gynandra</i> L. | wild spider flower | nat | x | - |
| CASUARINACEAE (ironwood family) | | | | |
| <i>Casuarina equisetifolia</i> L. | common ironwood | nat | x | x |
| CHENOPODIACEAE (goosefoot family) | | | | |
| <i>Atriplex suberecta</i> I. Verd. | saltbush | nat | x | x |
| <i>Chenopodium murale</i> L. | goosefoot, pigweed | nat | x | - |
| CLUSIACEAE (clusia family) | | | | |
| <i>Clusia rosea</i> Jacq. | autograph tree | nat | x | - |
| CONVOLVULACEAE (morning-glory family) | | | | |
| <i>Ipomoea obscura</i> (L.) Ker Gawl. | morning glory | nat | x | - |
| <i>Ipomoea triloba</i> L. | little bell | nat | x | - |
| <i>Merremia aegyptia</i> (L.) Urb. | hairy merremia | nat? | - | x |
| CUCURBITACEAE (gourd family) | | | | |
| <i>Cucumis dipsaceus</i> Ehrenb. ex Spach | hedgehog gourd, teasel gourd | nat | x | - |
| EUPHORBIACEAE (euphorbia family) | | | | |
| <i>Euphorbia hirta</i> L. | hairy spurge, garden spurge | nat | x | - |
| <i>Euphorbia hypericifolia</i> L. | graceful spurge | nat | x | - |
| <i>Euphorbia prostrata</i> Aiton | prostrate spurge | nat | x | - |
| <i>Ricinus communis</i> L. | castor bean | nat | x | - |
| FABACEAE (bean family) | | | | |
| <i>Caesalpinia pulcherrima</i> (L.) Sw. | dwarf poinciana | cult | x | - |
| <i>Crotalaria pallida</i> Aiton | smooth rattlepod | nat | x | - |
| <i>Desmanthus pernambucanus</i> (L.) Thell. | slender mimosa | nat | x | - |
| <i>Desmodium tortuosum</i> (Sw.) DC. | Florida beggarweed | nat | x | - |
| <i>Indigofera spicata</i> Forssk. | creeping indigo | nat | x | - |
| <i>Leucaena leucocephala</i> (Lam.) de Wit | koa haole | nat | x | x |

| Scientific name | Common name | Status | Parcel | |
|---|---------------------------|----------|--------|-------|
| | | | A&B | Coast |
| <i>Macroptilium lathyroides</i> (L.) Urb. | wild bean, cow pea | nat | x | - |
| <i>Prosopis pallida</i> (Humb. & Bonpl. ex Willd.) Kunth | algaroba, mesquite, kiawe | nat | x | - |
| MALVACEAE (hibiscus family) | | | | |
| <i>Abutilon grandifolium</i> (Willd.) Sweet | hairy abutilon | nat | x | x |
| <i>Hibiscus rosa-sinensis</i> L. | red hibiscus | cult | x | - |
| <i>Malva parviflora</i> L. | cheese weed | nat | x | - |
| <i>Malvastrum coromandelianum</i> (L.) Garcke subsp. <i>coromandelianum</i> | false mallow | nat | x | - |
| <i>Sida rhombifolia</i> L. | | nat? | x | - |
| MORACEAE (mulberry family) | | | | |
| <i>Ficus microcarpa</i> L.f. | Chinese banyan | nat | x | - |
| NYCTAGINACEAE (four-o'clock family) | | | | |
| <i>Boerhavia coccinea</i> Mill. | | nat | x | x |
| <i>Boerhavia repens</i> L. | alena | ind | - | x |
| <i>Bougainvillea glabra</i> Choisy | bougainvillea | cult | x | - |
| PORTULACACEAE (moss-rose family) | | | | |
| <i>Portulaca oleracea</i> L. | pigweed | nat | x | - |
| SOLANACEAE (tomato family) | | | | |
| <i>Nicotiana glauca</i> Graham | tree tobacco | nat | x | x |
| STERCULIACEAE (cacao family) | | | | |
| <i>Waltheria indica</i> L. | 'uhaloa, hi'aloa | ind? | x | x |
| ZYGOPHYLLACEAE (lignum-vitae family) | | | | |
| <i>Tribulus terrestris</i> L. | puncture vine | nat | x | - |
| MONOCOTS | | | | |
| ALOEACEAE (aloe family) | | | | |
| <i>Aloe vera</i> (L.) Burm.f. | | cult | x | - |
| ARECACEAE (palm family) | | | | |
| <i>Cocos nucifera</i> L. | niu, coconut | pol/cult | x | x |
| Phoenix hybrid | date palm | nat | x | - |
| CYPERACEAE (sedge family) | | | | |
| <i>Cyperus rotundus</i> L. | nut grass | nat | x | - |
| LILIACEAE (lily family) | | | | |
| <i>Crinum</i> sp. | spider lily | cult | x | - |
| POACEAE (grass family) | | | | |
| <i>Bambusa</i> sp. | bamboo | cult | x | - |
| <i>Cenchrus ciliaris</i> L. | buffelgrass | nat | x | x |
| <i>Cenchrus echinatus</i> L. | common sandbur | nat | x | - |
| <i>Chloris barbata</i> Sw. | swollen fingergrass | nat | x | x |
| <i>Cynodon dactylon</i> (L.) Pers. | Bermuda grass | nat | x | x |
| <i>Dactyloctenium aegyptium</i> (L.) Willd. | beach wiregrass | nat | x | - |
| <i>Eleusine indica</i> (L.) Gaertn. | wiregrass | nat | x | - |
| <i>Eragrostis pectinacea</i> (Michx.) Nees var. | Carolina lovegrass | nat | x | - |

| Scientific name | Common name | Status | Parcel | |
|--|------------------------------------|--------|--------|-------|
| | | | A&B | Coast |
| pectinacea | | | | |
| <i>Setaria verticillata</i> (L.) P.Beauv. | bristly foxtail | nat | x | - |
| <i>Sporobolus pyramidatus</i> (Lam.) Hitchc. | | nat | x | - |
| <i>Sporobolus virginicus</i> (L.) Kunth | 'aki'aki, seashore rushgrass | ind | - | x |
| <i>Stenotaphrum secundatum</i> (Walter) Kuntze | St. Augustine grass, buffalo grass | cult | x | - |

APPENDIX II: Plant checklist

The following is a list of vascular plant species noted during a walk-through survey of approximately 32 acres of surveyed land on 8–12 December 2013. A total of 137 taxa were noted during the survey, including 5 endemic (3 of which were solely cultivated), 14 indigenous (including “ind?”), 3 Polynesian introductions (all solely cultivated), 87 naturalized weeds, and 28 cultivated plants.

In the following table, plants are divided into four main groups: dicots, monocots, gymnosperms, and ferns. Within these groups, plants are arranged alphabetically by family, genus, and species. Each entry includes scientific name with author citation, common name in English and/or Hawaiian (if available), biogeographic status, and frequency in designated vegetation zones. Taxonomy follows Wagner et al. (1999) for native and naturalized plants; Staples and Herbst (2005) for cultivated plants; Palmer (2003) for ferns; and Imada (2012) for current updates of plant names. An explanation of abbreviations used in the list follows.

Biogeographic Status (from Wagner et al. 1999)

| | |
|------|---|
| cult | Cultivated plant; purposefully grown |
| end | Endemic: native, occurring only in the Hawaiian Archipelago |
| ind | Indigenous: native, occurring naturally in the archipelago but also outside of Hawai‘i |
| ind? | Questionably indigenous: probably indigenous, possibly naturalized |
| nat | Naturalized: introduced to the archipelago directly or indirectly by humans since Western contact and reproducing and spreading vegetatively or by seed |
| nat? | Questionably naturalized: probably naturalized, but possibly indigenous |
| pol | Likely introduced during Polynesian migrations, now naturalized |

Vegetation zones

| | |
|----|----------------------|
| Cd | Coastal dunes |
| Cf | Coastal forest |
| Ri | Ruderal & industrial |
| Ww | Wetlands & waterways |

Relative frequency

| | |
|---|---------------|
| c | Common |
| o | Occasional |
| r | Rare |
| l | One-of-a-kind |
| - | Absent |

| Scientific name | Common name | Status | Vegetation zones | | | |
|--|--------------------------|--------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| DICOTS | | | | | | |
| AIZOACEAE (ice plant family) | | | | | | |
| <i>Sesuvium portulacastrum</i> (L.) L. | ‘ākulikuli, sea purslane | ind | o | - | r | o |

| Scientific name | Common name | Status | Vegetation zones | | | |
|--|---------------------------------|--------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| <i>Sesuvium verrucosum</i> Raf. | | nat | - | - | r | - |
| AMARANTHACEAE (amaranth family) | | | | | | |
| <i>Alternanthera pungens</i> Kunth | khaki weed | nat | - | - | r | - |
| <i>Amaranthus spinosus</i> L. | spiny amaranth | nat | - | - | o | - |
| <i>Amaranthus viridis</i> L. | slender amaranth | nat | - | - | r | r |
| ANACARDIACEAE (cashew family) | | | | | | |
| <i>Mangifera indica</i> L. | mango | cult | - | - | r | - |
| <i>Schinus terebinthifolius</i> Raddi | Christmas berry | nat | r | - | r | - |
| APIACEAE (parsley family) | | | | | | |
| <i>Centella asiatica</i> (L.) Urb. | Asiatic pennywort | nat | - | - | r | - |
| APOCYNACEAE (dogbane family) | | | | | | |
| <i>Plumeria obtusa</i> L. | Singapore plumeria | cult | - | - | l | - |
| <i>Plumeria rubra</i> L. | plumeria | cult | - | - | l | - |
| ASTERACEAE (sunflower family) | | | | | | |
| <i>Bidens pilosa</i> L. | Spanish needle, beggartick | nat | - | - | r | - |
| <i>Calyptocarpus vialis</i> Less. | | nat | - | - | r | - |
| <i>Conyza bonariensis</i> (L.) Cronquist | hairy horseweed | nat | - | - | r | - |
| <i>Eclipta prostrata</i> (L.) L. | false daisy | nat | - | - | r | - |
| <i>Emilia sonchifolia</i> var. <i>javanica</i> (Burm.f.) Mattf. | Flora's paintbrush | nat | - | - | r | - |
| <i>Flaveria trinervia</i> (Spreng.) C.Mohr | | nat | - | - | r | - |
| <i>Pluchea carolinensis</i> (Jacq.) G.Don | sourbush, marsh fleabane | nat | - | - | o | o |
| <i>Pluchea indica</i> (L.) Less. | Indian fleabane, Indian pluchea | nat | o | - | r | o |
| <i>Pluchea x fosbergii</i> Cooperr. & Galang | marsh fleabane | nat | o | o | - | c |
| <i>Sonchus asper</i> (L.) Hill | prickly sow thistle | nat | - | - | r | - |
| <i>Sonchus oleraceus</i> L. | sow thistle | nat | - | - | r | - |
| <i>Synedrella nodiflora</i> (L.) Gaertn. | nodeweed | nat | r | - | r | - |
| <i>Tridax procumbens</i> L. | coat buttons | nat | - | - | o | - |
| <i>Verbesina encelioides</i> (Cav.) Benth. & Hook. | golden crown-beard | nat | o | - | o | - |
| <i>Xanthium strumarium</i> L. var. <i>canadense</i> (Mill.) Torr. & A.Gray | cocklebur | nat | - | - | r | - |
| BIGNONIACEAE (catalpa family) | | | | | | |
| <i>Tecoma capensis</i> (Thunb.) Lindl. | cape-honeysuckle | cult | - | - | l | - |
| BORAGINACEAE (borage family) | | | | | | |
| <i>Cordia sebestena</i> L. | geiger tree, kou haole | cult | - | - | l | - |
| <i>Heliotropium curassavicum</i> L. | kīpūkai, nena | ind | o | - | o | - |
| <i>Heliotropium procumbens</i> Mill. var. <i>depressum</i> (Cham.) Fosberg | | nat | o | o | c | - |
| <i>Tournefortia argentea</i> L.f. | tree heliotrope | nat | o | - | r | - |
| BRASSICACEAE (mustard family) | | | | | | |
| <i>Coronopus didymus</i> (L.) Sm. | swinecress | nat | - | - | r | - |
| CACTACEAE (cactus family) | | | | | | |
| <i>Opuntia</i> sp. | | cult | - | - | l | - |

| Scientific name | Common name | Status | Vegetation zones | | | |
|---|-------------------------------|--------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| CAPPARACEAE (caper family) | | | | | | |
| <i>Cleome gynandra</i> L. | wild spider flower | nat | - | - | r | - |
| CARICACEAE (papaya family) | | | | | | |
| <i>Carica papaya</i> L. | papaya | cult | - | - | l | - |
| CARYOPHYLLACEAE (pink family) | | | | | | |
| <i>Polycarpon tetraphyllum</i> (L.) L. | | nat | - | - | r | - |
| CASUARINACEAE (ironwood family) | | | | | | |
| <i>Casuarina equisetifolia</i> L. | common ironwood | nat | o | c | o | r |
| CHENOPODIACEAE (goosefoot family) | | | | | | |
| <i>Atriplex suberecta</i> I. Verd. | saltbush | nat | c | - | o | - |
| <i>Chenopodium murale</i> L. | goosefoot, pigweed | nat | o | o | o | - |
| <i>Chenopodium oahuense</i> (Meyen) Aellen | ‘āheahea, ‘āweoweo | end | o | - | o | - |
| CLUSIACEAE (clusia family) | | | | | | |
| <i>Clusia rosea</i> Jacq. | autograph tree | nat | - | - | l | - |
| COMBRETACEAE (combretum family) | | | | | | |
| <i>Terminalia catappa</i> L. | tropical almond, false kamani | nat | - | o | r | r |
| CONVOLVULACEAE (morning-glory family) | | | | | | |
| <i>Ipomoea obscura</i> (L.) Ker Gawl. | morning glory | nat | - | - | r | - |
| <i>Ipomoea pes-caprae</i> (L.) R.Br. subsp. <i>brasiliensis</i> (L.) Ooststr. | pōhuehue, beach morning glory | ind | c | r | o | - |
| <i>Ipomoea triloba</i> L. | little bell | nat | - | - | r | - |
| <i>Jacquemontia sandwicensis</i> A.Gray | pā‘ū-o-Hi‘iaka | end | - | - | r | - |
| <i>Merremia aegyptia</i> (L.) Urb. | hairy merremia | nat? | - | - | r | - |
| CUCURBITACEAE (gourd family) | | | | | | |
| <i>Cucumis dipsaceus</i> Ehrenb. ex Spach | hedghegourd, teasel gourd | nat | - | - | r | - |
| EUPHORBIACEAE (euphorbia family) | | | | | | |
| <i>Codiaeum variegatum</i> (L.) Blume | croton | cult | - | - | l | - |
| <i>Euphorbia hirta</i> L. | hairy spurge, garden spurge | nat | - | - | o | - |
| <i>Euphorbia hypericifolia</i> L. | graceful spurge | nat | - | - | r | - |
| <i>Euphorbia hyssopifolia</i> L. | spurge | nat | - | - | r | - |
| <i>Euphorbia prostrata</i> Aiton | prostrate spurge | nat | - | - | o | - |
| <i>Ricinus communis</i> L. | castor bean | nat | - | - | r | - |
| FABACEAE (bean family) | | | | | | |
| <i>Caesalpinia pulcherrima</i> (L.) Sw. | dwarf poinciana | cult | - | - | l | - |
| <i>Canavalia sericea</i> A.Gray | silky jackbean | nat | o | - | - | - |
| <i>Crotalaria pallida</i> Aiton | smooth rattlepod | nat | - | - | l | - |
| <i>Desmanthus pernambucanus</i> (L.) Thell. | slender mimosa | nat | r | - | r | - |
| <i>Desmodium tortuosum</i> (Sw.) DC. | Florida beggarweed | nat | - | - | r | - |
| <i>Indigofera spicata</i> Forssk. | creeping indigo | nat | r | - | o | - |
| <i>Leucaena leucocephala</i> (Lam.) de Wit | koa haole | nat | r | - | o | - |
| <i>Macroptilium atropurpureum</i> (DC.) Urb. | | nat | - | o | c | - |
| <i>Macroptilium lathyroides</i> (L.) Urb. | wild bean, cow pea | nat | - | - | r | - |

| Scientific name | Common name | Status | Vegetation zones | | | |
|---|---------------------------|----------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| <i>Prosopis pallida</i> (Humb. & Bonpl. ex Willd.) Kunth | algaroba, mesquite, kiawe | nat | r | c | r | r |
| <i>Vigna unguiculata</i> (L.) Verdc. | yard-long bean | cult | - | - | l | - |
| GOODENIACEAE (naupaka family) | | | | | | |
| <i>Scaevola taccada</i> (Gaertn.) Roxb. | naupaka kahakai | ind | c | - | o | - |
| LAMIACEAE (mint family) | | | | | | |
| <i>Leonotis nepetifolia</i> (L.) R.Br. | lion's ear | nat | - | - | r | - |
| MALVACEAE (hibiscus family) | | | | | | |
| <i>Abutilon grandifolium</i> (Willd.) Sweet | hairy abutilon | nat | - | - | r | - |
| <i>Hibiscus clayi</i> O.Deg. & I.Deg. | aloalo | end/cult | - | - | l | - |
| <i>Hibiscus rosa-sinensis</i> L. | red hibiscus | cult | - | - | l | - |
| <i>Hibiscus tiliaceus</i> L. | hau | ind? | - | o | r | - |
| <i>Malva parviflora</i> L. | cheese weed | nat | r | - | o | - |
| <i>Malvastrum coromandelianum</i> (L.) Garcke subsp. <i>coromandelianum</i> | false mallow | nat | r | - | r | - |
| <i>Sida ciliaris</i> L. | | nat | - | - | o | - |
| <i>Sida rhombifolia</i> L. | | nat? | - | - | r | - |
| <i>Thespesia populnea</i> (L.) Sol. ex Corrêa | milo | ind? | o | o | - | o |
| MORACEAE (mulberry family) | | | | | | |
| <i>Ficus microcarpa</i> L.f. | Chinese banyan | nat | - | - | r | - |
| MYOPORACEAE (naio family) | | | | | | |
| <i>Myoporum sandwicense</i> A.Gray | naio | ind | r | - | - | - |
| NYCTAGINACEAE (four-o'clock family) | | | | | | |
| <i>Boerhavia coccinea</i> Mill. | | nat | r | - | o | - |
| <i>Boerhavia repens</i> L. | alena | ind | o | - | - | - |
| <i>Bougainvillea glabra</i> Choisy | bougainvillea | cult | - | - | l | - |
| PAPAVERACEAE (poppy family) | | | | | | |
| <i>Argemone mexicana</i> L. | Mexican poppy | nat | r | - | - | - |
| POLYGONACEAE (buckwheat family) | | | | | | |
| <i>Coccoloba uvifera</i> (L.) L. | sea grape | nat | - | r | r | - |
| PORTULACACEAE (moss-rose family) | | | | | | |
| <i>Portulaca oleracea</i> L. | pigweed | nat | r | - | l | r |
| RUBIACEAE (coffee family) | | | | | | |
| <i>Morinda citrifolia</i> L. | noni, Indian mulberry | pol/cult | - | - | l | - |
| RUTACEAE (citrus family) | | | | | | |
| <i>Citrus aurantiifolia</i> (Christm.) Swingle | lime | cult | - | - | l | - |
| <i>Citrus</i> sp. | | cult | - | - | l | - |
| SCROPHULARIACEAE (snapdragon family) | | | | | | |
| <i>Bacopa monnieri</i> (L.) Wettst. | 'ae'ae | ind | - | - | - | o |
| SOLANACEAE (tomato family) | | | | | | |
| <i>Datura stramonium</i> L. | jimson weed | nat | - | - | l | - |
| <i>Nicotiana glauca</i> Graham | tree tobacco | nat | o | r | c | - |
| <i>Physalis angulata</i> L. | groundcherry | nat | - | - | r | - |

| Scientific name | Common name | Status | Vegetation zones | | | |
|---|---------------------------|----------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| <i>Solanum americanum</i> Mill. | glossy nightshade, pōpolo | ind? | r | - | - | - |
| STERCULIACEAE (cacao family) | | | | | | |
| <i>Waltheria indica</i> L. | 'uhaloa, hi'aloa | ind? | r | o | c | - |
| THYMELAEACEAE ('akia family) | | | | | | |
| <i>Wikstroemia uva-ursi</i> A.Gray var. <i>uva-ursi</i> | 'ākia | end/cult | - | - | 1 | - |
| VERBENACEAE (verbena family) | | | | | | |
| <i>Vitex trifolia</i> L. | | nat | - | - | r | - |
| ZYGOPHYLLACEAE (lignum-vitae family) | | | | | | |
| <i>Tribulus terrestris</i> L. | puncture vine | nat | - | - | r | - |
| MONOCOTS | | | | | | |
| AGAVACEAE (agave family) | | | | | | |
| <i>Cordyline fruticosa</i> (L.) A.Chev. | kī, ti | pol/cult | - | - | 1 | - |
| ALOEACEAE (aloe family) | | | | | | |
| <i>Aloe vera</i> (L.) Burm.f. | | cult | - | - | 1 | - |
| ARACEAE (aroid family) | | | | | | |
| <i>Xanthosoma robustum</i> Schott | 'ape | cult | - | - | 1 | - |
| ARECACEAE (palm family) | | | | | | |
| <i>Cocos nucifera</i> L. | niu, coconut | pol/cult | - | - | o | - |
| <i>Dypsis lutescens</i> (H.Wendl.) Beentje & J.Dransf. | areca palm | cult | - | - | 1 | - |
| <i>Hyophorbe lagenicaulis</i> (L.H.Bailey) H.E.Moore | bottle palm | cult | - | - | 1 | - |
| Phoenix hybrid | date palm | nat | - | o | - | r |
| <i>Pritchardia thurstonii</i> F.Muell. & Drude | | cult | - | - | 1 | - |
| <i>Pritchardia</i> sp. | loulu | end/cult | - | - | 1 | - |
| <i>Thrinax radiata</i> J.A.Schultes & J.H.Schultes | thatch palm | cult | - | - | 1 | - |
| <i>Vietchia merrillii</i> (Becc.) H.E.Moore | Manila palm | cult | - | - | 1 | - |
| <i>Washingtonia</i> sp. | | cult | - | - | - | 1 |
| BROMELIACEAE (bromeliad family) | | | | | | |
| <i>Ananas comosus</i> (L.) Merr. | pineapple | cult | - | - | 1 | - |
| CYPERACEAE (sedge family) | | | | | | |
| <i>Bolboschoenus maritimus</i> (L.) Palla subsp. <i>paludosus</i> (A.Nelson) T.Koyama | makai, kaluhā | ind | - | - | - | o |
| <i>Cyperus laevigatus</i> L. | makaloa | ind | - | - | - | o |
| <i>Cyperus rotundus</i> L. | nut grass | nat | - | - | o | - |
| <i>Schoenoplectus californicus</i> (C.A.Mey.) Palla | kaluhā | nat? | - | - | - | c |
| LEMNACEAE (duckweed family) | | | | | | |
| <i>Landoltia punctata</i> (G.Mey.) Les & D.J.Crawford | | nat | - | - | - | o |
| LILIACEAE (lily family) | | | | | | |
| <i>Allium fistulosum</i> L. | green onion | cult | - | - | 1 | - |
| <i>Crinum</i> sp. | spider lily | cult | - | - | 1 | - |
| POACEAE (grass family) | | | | | | |
| <i>Bambusa</i> sp. | bamboo | cult | - | - | 1 | - |
| <i>Cenchrus ciliaris</i> L. | buffelgrass | nat | o | o | c | - |

| Scientific name | Common name | Status | Vegetation zones | | | |
|---|------------------------------------|--------|------------------|----|----|----|
| | | | Cd | Cf | Ri | Ww |
| <i>Cenchrus echinatus</i> L. | common sandbur | nat | - | - | r | - |
| <i>Chloris barbata</i> Sw. | swollen fingergrass | nat | r | o | c | r |
| <i>Chloris divaricata</i> R.Br. var. <i>divaricata</i> | stargrass | nat | - | - | r | - |
| <i>Cynodon dactylon</i> (L.) Pers. | Bermuda grass | nat | o | - | o | o |
| <i>Cynodon nlemfuensis</i> Vanderyst | | nat | - | - | r | - |
| <i>Dactyloctenium aegyptium</i> (L.) Willd. | beach wiregrass | nat | r | - | o | - |
| <i>Digitaria ciliaris</i> (Retz.) Koeler | Henry's crabgrass | nat | - | o | r | - |
| <i>Eleusine indica</i> (L.) Gaertn. | wiregrass | nat | - | - | - | r |
| <i>Eragrostis amabilis</i> (L.) Wight & Arn. | lovegrass | nat | r | - | - | r |
| <i>Eragrostis pectinacea</i> (Michx.) Nees var. <i>pectinacea</i> | Carolina lovegrass | nat | - | - | o | - |
| <i>Panicum repens</i> L. | torpedo grass | nat | - | - | - | o |
| <i>Paspalum vaginatum</i> Sw. | seashore paspalum | nat | - | - | - | o |
| <i>Setaria verticillata</i> (L.) P.Beauv. | bristly foxtail | nat | - | - | r | - |
| <i>Sporobolus pyramidatus</i> (Lam.) Hitchc. | | nat | - | r | o | - |
| <i>Sporobolus virginicus</i> (L.) Kunth | 'aki'aki, seashore rushgrass | ind | c | - | r | r |
| <i>Stenotaphrum secundatum</i> (Walter) Kuntze | St. Augustine grass, buffalo grass | cult | - | - | l | - |
| <i>Urochloa distachya</i> (L.) T.Q.Nguyen | | nat | r | - | - | - |
| <i>Urochloa maxima</i> (Jacq.) R.D.Webster | Guinea grass | nat | - | o | o | - |
| GYMNOSPERMS | | | | | | |
| CYCADACEAE (cycad family) | | | | | | |
| <i>Cycas revoluta</i> Thunb. | Japanese sago-palm | cult | - | - | l | - |
| FERNS | | | | | | |
| NEPHROLEPIDACEAE (Boston fern family) | | | | | | |
| <i>Nephrolepis brownii</i> (Desv.) Hovenkamp & Miyam. | | nat | - | - | l | - |

APPENDIX III: Arthropod checklist

The following is a list of arthropods found during a 5-day survey conducted in the Kahului Harbor area. A total of 58 species were collected while searching on and near the alien tree tobacco (*Nicotiana glauca*).

| NAME | STATUS IN HAWAII | INCIDENCE |
|--|------------------|---------------------------|
| ARACHNIDA: ARANEAE (Spiders) | | |
| Araneidae | | |
| <i>Argiope appensa</i> (Walckenaer 1841) yellow garden spider | adv | Common |
| <i>Gasteracantha mammosa</i> C.L. Koch 1844 Asian spinybacked spider | adv | Common |
| Oxyopidae | | |
| <i>Oxyopes</i> sp. A [Kumashiro et. al. 1990] lynx spider | adv | Common |
| Salticidae | | |
| <i>Hasarius adansoni</i> (Audouin 1826) | adv | Local |
| BLATTODEA (Cockroaches) | | |
| Blaberidae | | |
| <i>Pycnoscelus indicus</i> (Fabricius 1775) Surinam cockroach | adv | Common |
| Blatellidae | | |
| <i>Blatella lituricollis</i> (Walker 1868) false German cockroach | adv | Common |
| INSECTA: COLEOPTERA (Beetles) | | |
| Anthicidae (ant-like flower beetles) | | |
| <i>Anthicus recens</i> Werner 1967 | adv | Local |
| Chrysomelidae | | |
| <i>Diachus auratus</i> (Fabricius 1801) | adv | Common |
| <i>Lema trilinea</i> White 1981 | adv | Scarce |
| <i>Stator pruininus</i> (Horn 1873) pruinose bean weevil | adv | Common |
| Coccinellidae | | |
| <i>Coelophora inaequalis</i> (Fabricius 1775) Common Australian lady beetle | pur | Local |
| <i>Diomus notesens</i> (Blackburn 1889) | pur | Local |
| Curculionidae | | |
| <i>Lixus mastersi</i> Pascoe 1874 | adv | Local |
| Hydrophilidae | | |
| <i>Tropisternus salsamentus</i> Fall 1901 | adv | Common wetland species |

| NAME | STATUS IN HAWAII | INCIDENCE |
|---|------------------|-----------|
| Scarabaeidae | | |
| <i>Protaetia fusca</i> (Herbst 1790) mango flower beetle | adv | Common |
| Tenebrionidae | | |
| <i>Ammophorus insularis</i> (Boheman 1858) | adv | Common |
| INSECTA: DIPTERA (True flies) | | |
| Agromyzidae | | |
| <i>Pseudapomyza spicata</i> (Malloch) | adv | Local |
| Anthomyidae | | |
| <i>Anthomyia vicarians</i> Schiner 1868 | adv | Common |
| Chironomidae | | |
| <i>Chironomus</i> sp. | unk | Local |
| Chloropidae | | |
| <i>Monochaetoscinella anonyma</i> (Williston, 1896) | adv | Local |
| Dolichopodidae | | |
| <i>Chrysosoma globiferum</i> (Wiedemann 1830) | adv | Common |
| <i>Dolichopus exsul</i> Aldrich 1922 | adv | Common |
| Ephydriidae | | |
| <i>Ceropsilopa coquilletti</i> Cresson, 1922 | adv | Local |
| <i>Clasiopella uncinata</i> Hendel, 1914 | adv | Local |
| <i>Psilopa girschneri</i> Von Roeder, 1889 | adv | Local |
| <i>Scatella hawaiiensis</i> (Grinshaw) | end | Common |
| <i>Scatella sexnotata</i> (Cresson) | ind | Common |
| Muscidae | | |
| <i>Atherigona orientalis</i> Schiner 1868 | adv | Common |
| Syrphidae | | |
| <i>Eristalinus aeneus</i> (Scopoli 1763) | adv | Common |
| INSECTA: HEMIPTERA: HETEROPTERA (True bugs) | | |
| Corixidae | | |
| <i>Trichocorixa reticulata</i> (Guerin-Meneville 1857) | adv | Local |
| Lygaeidae | | |
| <i>Pseudopachybrachius vinctus</i> (Say 1832) | adv | Common |
| Miridae | | |
| <i>Coridromus variegatus</i> (Montrouzier 1861) | adv | Common |
| <i>Trigonotylus tenuis</i> (Reuter 1895) | adv | Common |
| Nabidae | | |
| <i>Nabis capsiformis</i> (Germar 1837) | adv | Uncommon |

| NAME | STATUS IN HAWAII | INCIDENCE |
|---|------------------|-----------|
| Pentatomidae | | |
| <i>Eysarcoris ventralis</i> (Westwood 1837) | adv | Common |
| Reduviidae | | |
| <i>Zelus renardii</i> Kolenati 1856 | adv | Local |
| Tingidae | | |
| <i>Corythucha morrilli</i> Osborn & Drake 1917 | adv | Local |
| <i>Leptodictya tabida</i> (Herrich-Schaeffer 1840) | adv | Common |
| INSECTA: HEMIPTERA: HOMOPTERA (Hoppers, scales & relatives) | | |
| Cicadellidae | | |
| <i>Balclutha incisa hospes</i> (Kirkaldy 1910) | adv | Common |
| <i>Carnecephala sagittifera</i> (Uhler 1895) | adv | Common |
| <i>Empoasca solana</i> DeLong 1931 | adv | Common |
| <i>Spanbergiella quadripunctata</i> Lawson 1932 | adv | Common |
| Delphacidae | | |
| <i>Sardia rostrata pluto</i> (Kirkaldy 1906) | adv | Common |
| Flatidae | | |
| <i>Melormenis basalis</i> (Walker 1851) | adv | Common |
| Margarodidae | | |
| <i>Icerya purchasi</i> Maskell 1878 cottony cushion scale | adv | Common |
| INSECTA: HYMENOPTERA (Bees & wasps) | | |
| Apidae | | |
| <i>Apis mellifera</i> Linnaeus 1758 | adv | Common |
| Ichneumonidae | | |
| <i>Casinaria infesta</i> (Cresson 1872) | adv | Common |
| <i>Diplazon laetatorius</i> (Fabricius 1781) | adv | Common |
| Sphecidae | | |
| <i>Sceliphron caementarium</i> (Drury 1770) | adv | Local |
| Vespidae | | |
| <i>Polistes aurifer</i> Saussure 1853 | adv | Local |
| INSECTA: LEPIDOPTERA (Moths & butterflies) | | |
| Lycaenidae | | |
| <i>Brephidium exilis</i> (Boisduval 1852) | adv | Common |
| <i>Lampides boeticus</i> (Linnaeus 1767) | adv | Common |
| Nymphalidae | | |
| <i>Danaus plexippus</i> (Linnaeus 1758) | adv | Common |

| NAME | STATUS IN HAWAII | INCIDENCE |
|--|------------------|-----------|
| INSECTA: MANTODEA (Praying mantis) | | |
| Mantidae | | |
| <i>Hierodula patellifera</i> (Serville 1839) | adv | Local |
| INSECTA: ODONATA (Dragonflies & damselflies) | | |
| Coenagrionidae | | |
| <i>Ischnura ramburii</i> (Selys-Longchamps 1850) | adv | Common |
| Libellulidae | | |
| <i>Orthemis ferruginea</i> (Fabricius 1775) | adv | Local |
| <i>Pantala flavescens</i> (Fabricius 1798) | adv | Common |
| INSECTA: ORTHOPTERA (Grasshoppers, crickets & katydids) | | |
| Acrididae | | |
| <i>Oedaleus abruptus</i> (Thunberg 1815) | adv | Common |
| Pyrgomorohidae | | |
| <i>Atractomorpha sinensis</i> Bolivar 1905 | adv | Common |
| CRUSTACEA: ISOPODA (Pillbugs & sowbugs) | | |
| <i>Porcellio laevis</i> Latreille 1804 | adv | Common |

1 = Names and arrangement follow Nishida (2002).

2 = Biogeographic Status: end=endemic to HIs, ind=indigenous to HIs, adv=adventive, pur=purposefully introduced.

3 = Incidence: .A subjective measure of commonness within the Kahului Harbor area environs.

APPENDIX IV: Bird and feral mammal checklist

The following is a list of 12 birds and a single feral mammal observed during a 5-day survey conducted in the Kahului Harbor area. The record for Axis deer was made on the observation of multiple deer tracks along the southern boundary chain-link fence outside the Kahului wastewater treatment plant (Fig. 4, p. 46). No endangered or threatened bird species were observed in the areas surveyed.

| NAME | STATUS IN HAWAII | INCIDENCE |
|---|------------------|-----------|
| AVES: | | |
| PHASIANIDAE | | |
| <i>Francolinus pondicerianus</i> Grey Francolin | N | Local |
| ARDEIDAE | | |
| <i>Bubulcus virescens</i> Cattle Egret | V, N | Local |
| <i>Nycticorax nycticorax</i> Black-crowned Night-Heron | R (Indigenous) | Uncommon |
| CHARADRIIDAE | | |
| <i>Pluvialis fulva</i> Pacific Golden-Plover | W | Local |
| SCOLOPACIDAE | | |
| <i>Tringa incana</i> Wandering Tattler | W | Uncommon |
| COLUMBIDAE | | |
| <i>Streptopelia chinensis</i> Spotted Dove | N | Common |
| <i>Geopelia striata</i> Zebra Dove | N | Common |
| ZOSTROPIDAE | | |
| <i>Zosterops japonicus</i> Japanese White-eye | N | Common |
| STURNIDAE | | |
| <i>Acridotheres tristis</i> Common Myna | N | Common |
| EMBERIZIDAE | | |
| <i>Paroaria coronata</i> Red-crested Cardinal | N | Local |
| PASSERIDAE | | |
| <i>Passer domesticus</i> House Sparrow | N | Common |

| NAME | STATUS IN HAWAII | INCIDENCE |
|--|------------------|-----------|
| ESTRILIDAE | | |
| <i>Padda oryzivora</i> Java Sparrow | N | Common |
| MAMMALIA: | | |
| ARTIODACTYLA: CERVIDAE | | |
| <i>Axis axis</i> Chital deer, Spotted deer, Axis deer | N | Local |

Names follow Pyle and Pyle (2009) <<http://hbs.bishopmuseum.org/birds/rlp-monograph/PrimaryChecklist.htm>>

R = Resident (Endemic or Indigenous)

N = Naturalized (non-native) resident (established and breeding)

W = Winter resident (some may migrate through the islands)

APPENDIX V: Selected GPS localities (WGS 84 datum, maximum error 4m)

Site abbreviations: A&B (Alexander & Baldwin); DLNR (State Department of Land and Natural Resources); MECO (Maui Electric Company); WTP (Maui County Wastewater Treatment Plant)

***Nicotiana glauca* waypoints**

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|----------------------------------|
| none | 09-DEC-13 | None taken | 1+ plants in "notch" parcel, A&B |
| 855 | 09-DEC-13 | N20.89588 W156.45381 | 1 plant, WTP |
| 857 | 09-DEC-13 | N20.89589 W156.45375 | 1 plant, WTP |
| 858 | 09-DEC-13 | N20.89592 W156.45372 | 1 plant, 12 ft tall, WTP |
| 864 | 09-DEC-13 | N20.89679 W156.45483 | 1 plant, WTP |
| 866 | 09-DEC-13 | N20.89655 W156.45516 | 1 plant, WTP |
| 867 | 09-DEC-13 | N20.89688 W156.45634 | 1 plant, 10 ft tall, WTP |
| 868 | 09-DEC-13 | N20.89693 W156.45690 | 1 plant, WTP |
| 870 | 09-DEC-13 | N20.89672 W156.45732 | 1 plant, WTP |
| 871 | 09-DEC-13 | N20.89651 W156.45787 | 6 plants, WTP |
| 873 | 09-DEC-13 | N20.89615 W156.45813 | 1 plant, 6 ft tall, WTP |
| 874 | 09-DEC-13 | N20.89607 W156.45784 | 2 plants, WTP |
| 875 | 09-DEC-13 | N20.89594 W156.45789 | 2 plants, WTP |
| 877 | 09-DEC-13 | N20.89585 W156.45754 | 1 plant, WTP |
| 878 | 09-DEC-13 | N20.89575 W156.45748 | 2 plants, WTP |
| 879 | 09-DEC-13 | N20.89574 W156.45740 | 6+ plants, WTP |
| 880 | 09-DEC-13 | N20.89567 W156.45734 | 4+ plants, WTP |
| 883 | 09-DEC-13 | N20.89576 W156.45729 | 1 plant, WTP |
| 884 | 09-DEC-13 | N20.89585 W156.45732 | 1 plant, WTP |
| 885 | 09-DEC-13 | N20.89587 W156.45738 | 6 plants, WTP |
| 886 | 09-DEC-13 | N20.89604 W156.45738 | 1 plant, WTP |
| 887 | 09-DEC-13 | N20.89539 W156.45784 | 1 plant, WTP |
| 888 | 09-DEC-13 | N20.89540 W156.45800 | 2 plants, WTP |
| 893 | 10-DEC-13 | N20.89679 W156.45478 | 11+ plants, WTP |
| 895 | 10-DEC-13 | N20.89687 W156.45636 | 1 plant, WTP |
| 897 | 10-DEC-13 | N20.89693 W156.45687 | 3 plants, WTP |
| 934 | 10-DEC-13 | N20.89695 W156.46149 | 4 plants, MECO |
| 935 | 10-DEC-13 | N20.89707 W156.46155 | 1 plant, MECO |
| 936 | 10-DEC-13 | N20.89715 W156.46259 | 1 plant, MECO |
| 937 | 10-DEC-13 | N20.89714 W156.46271 | 1 plant, MECO |
| 942 | 10-DEC-13 | N20.89532 W156.45803 | 10+ plants, DLNR |
| 943 | 11-DEC-13 | N20.89629 W156.45732 | 6+ plants, WTP |
| 944 | 11-DEC-13 | N20.89614 W156.45731 | 6+ plants, WTP |
| 945 | 11-DEC-13 | N20.89609 W156.45772 | 1 plant, WTP |

***Ipomoea pes-caprae* subsp. *brasiliensis* waypoints**

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|--------------------------|
| 860 | 09-DEC-13 | N20.89603 W156.45373 | east end, WTP |
| 861 | 09-DEC-13 | N20.89627 W156.45379 | east end, WTP |
| 869 | 09-DEC-13 | N20.89691 W156.45710 | NE corner, WTP |
| 872 | 09-DEC-13 | N20.89638 W156.45814 | NW corner, WTP |
| 890 | 10-DEC-13 | N20.89599 W156.45365 | outside east end, WTP |
| 894 | 10-DEC-13 | N20.89668 W156.45556 | outside coast fence, WTP |
| 928 | 10-DEC-13 | N20.89712 W156.45867 | scattered on dunes, DLNR |
| 930 | 10-DEC-13 | N20.89709 W156.46012 | on beach, DLNR |

***Datura stramonium* waypoint**

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|-------------------------------|
| 876 | 09-DEC-13 | N20.89591 W156.45781 | 2 plants, 18 inches tall, WTP |

Wetland perimeter, DLNR property

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|------------------------------|
| 901 | 10-DEC-13 | N20.89679 W156.45832 | wetland perimeter, clockwise |
| 902 | 10-DEC-13 | N20.89674 W156.45832 | wetland perimeter |
| 903 | 10-DEC-13 | N20.89669 W156.45833 | wetland perimeter |
| 904 | 10-DEC-13 | N20.89664 W156.45834 | wetland perimeter |
| 905 | 10-DEC-13 | N20.89660 W156.45836 | wetland perimeter |
| 906 | 10-DEC-13 | N20.89658 W156.45840 | wetland perimeter |
| 907 | 10-DEC-13 | N20.89659 W156.45845 | wetland perimeter |
| 908 | 10-DEC-13 | N20.89657 W156.45851 | wetland perimeter |
| 909 | 10-DEC-13 | N20.89658 W156.45857 | wetland perimeter |
| 910 | 10-DEC-13 | N20.89660 W156.45861 | wetland perimeter |
| 911 | 10-DEC-13 | N20.89660 W156.45866 | wetland perimeter |
| 912 | 10-DEC-13 | N20.89659 W156.45869 | wetland perimeter |
| 913 | 10-DEC-13 | N20.89667 W156.45872 | wetland perimeter |
| 914 | 10-DEC-13 | N20.89669 W156.45872 | wetland perimeter |
| 915 | 10-DEC-13 | N20.89672 W156.45869 | wetland perimeter |
| 916 | 10-DEC-13 | N20.89675 W156.45867 | wetland perimeter |
| 917 | 10-DEC-13 | N20.89677 W156.45861 | wetland perimeter |
| 918 | 10-DEC-13 | N20.89677 W156.45858 | wetland perimeter |
| 919 | 10-DEC-13 | N20.89680 W156.45854 | wetland perimeter |
| 920 | 10-DEC-13 | N20.89682 W156.45851 | wetland perimeter |
| 921 | 10-DEC-13 | N20.89684 W156.45846 | wetland perimeter |
| 922 | 10-DEC-13 | N20.89684 W156.45840 | wetland perimeter |
| 923 | 10-DEC-13 | N20.89682 W156.45836 | wetland perimeter |
| 924 | 10-DEC-13 | N20.89682 W156.45832 | wetland perimeter |
| 925 | 10-DEC-13 | N20.89678 W156.45830 | wetland perimeter |

Mau'oni Pond waypoints, DLNR property

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|----------------------|
| 940 | 10-DEC-13 | N20.89550 W156.46055 | west bank |
| 971 | 11-DEC-13 | N20.89513 W156.45939 | east bank, mauka end |
| 972 | 11-DEC-13 | N20.89537 W156.45925 | east bank |
| 973 | 11-DEC-13 | N20.89551 W156.45932 | east bank |
| 974 | 11-DEC-13 | N20.89564 W156.45928 | east bank |
| 976 | 11-DEC-13 | N20.89587 W156.45942 | east bank |
| 977 | 11-DEC-13 | N20.89599 W156.45945 | east bank |

Mau'oni Pond waypoints, DLNR property (cont.)

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|-----------------------------|
| 978 | 11-DEC-13 | N20.89610 W156.45950 | east bank |
| 979 | 11-DEC-13 | N20.89629 W156.45956 | east bank |
| 980 | 11-DEC-13 | N20.89646 W156.45956 | east bank |
| 981 | 11-DEC-13 | N20.89664 W156.45964 | east bank |
| 982 | 11-DEC-13 | N20.89670 W156.45971 | east bank |
| 983 | 11-DEC-13 | N20.89685 W156.45973 | east bank, <i>makai</i> end |

Drainage channel, DLNR property

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|--------------------------------|
| 948 | 11-DEC-13 | N20.89513 W156.45866 | east end of Amala Place bridge |
| 949 | 11-DEC-13 | N20.89512 W156.45871 | west end of Amala Place bridge |
| 950 | 11-DEC-13 | N20.89526 W156.45880 | west bank, <i>mauka</i> end |
| 951 | 11-DEC-13 | N20.89537 W156.45885 | west bank |
| 952 | 11-DEC-13 | N20.89552 W156.45891 | west bank |
| 953 | 11-DEC-13 | N20.89574 W156.45899 | west bank |
| 954 | 11-DEC-13 | N20.89592 W156.45907 | west bank |
| 955 | 11-DEC-13 | N20.89611 W156.45913 | west bank |
| 956 | 11-DEC-13 | N20.89622 W156.45918 | west bank |
| 957 | 11-DEC-13 | N20.89640 W156.45923 | west bank |
| 958 | 11-DEC-13 | N20.89663 W156.45927 | west bank, <i>makai</i> end |

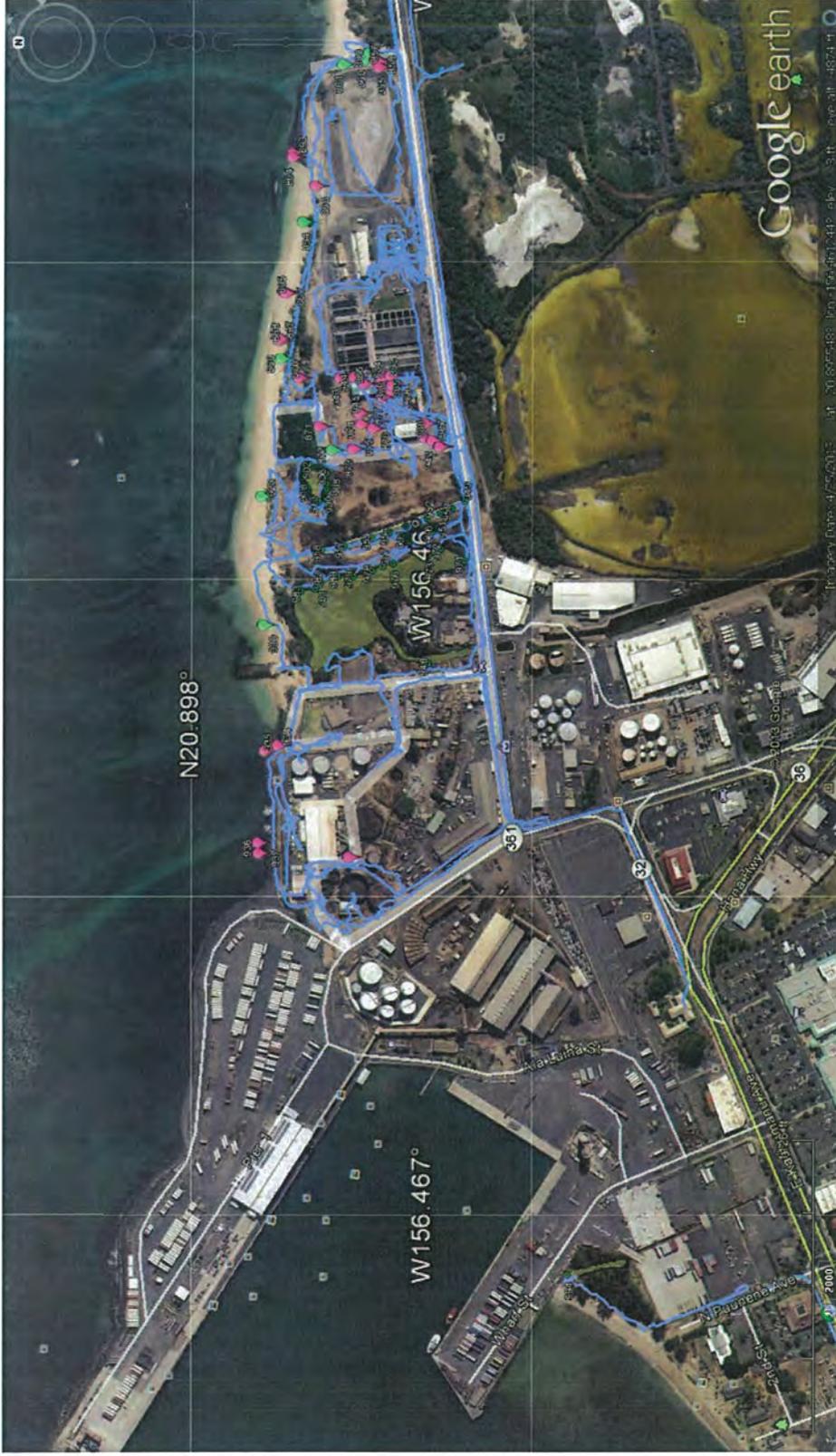
Water-filled depression A, DLNR property

| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|---------------------------|
| 959 | 11-DEC-13 | N20.89564 W156.45903 | Pond perimeter, clockwise |
| 960 | 11-DEC-13 | N20.89560 W156.45905 | Pond perimeter |
| 961 | 11-DEC-13 | N20.89554 W156.45903 | Pond perimeter |
| 962 | 11-DEC-13 | N20.89546 W156.45900 | Pond perimeter |
| 963 | 11-DEC-13 | N20.89541 W156.45900 | Pond perimeter |
| 964 | 11-DEC-13 | N20.89540 W156.45901 | Pond perimeter |
| 965 | 11-DEC-13 | N20.89542 W156.45902 | Pond perimeter |
| 966 | 11-DEC-13 | N20.89545 W156.45905 | Pond perimeter |
| 967 | 11-DEC-13 | N20.89549 W156.45907 | Pond perimeter |
| 968 | 11-DEC-13 | N20.89553 W156.45909 | Pond perimeter |
| 969 | 11-DEC-13 | N20.89557 W156.45908 | Pond perimeter |
| 970 | 11-DEC-13 | N20.89559 W156.45908 | Pond perimeter |

Water-filled depression B, DLNR property

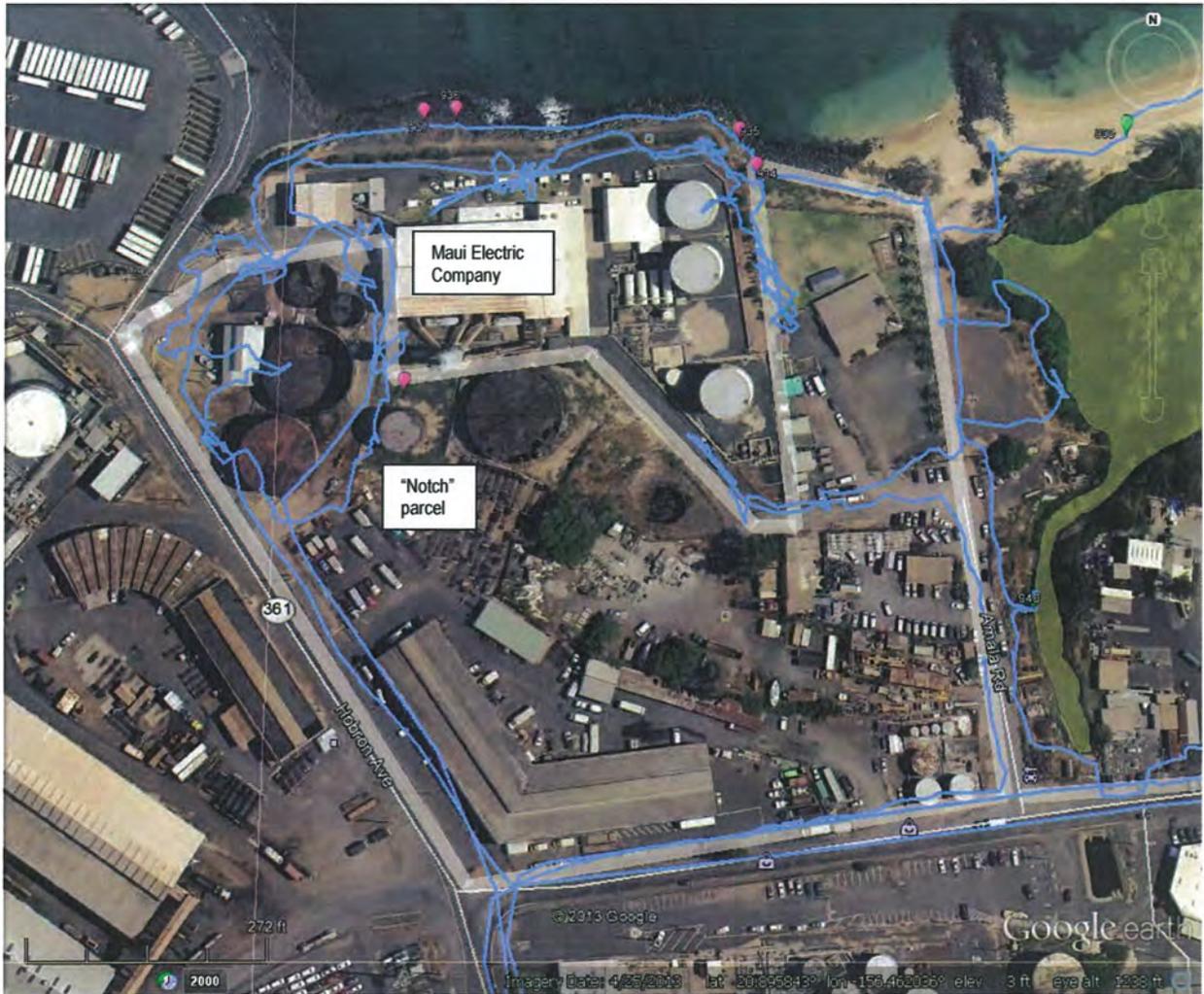
| Waypt# | Date | Coordinate | Notes |
|--------|-----------|----------------------|---------------------------|
| 985 | 11-DEC-13 | N20.89565 W156.45907 | Pond perimeter, clockwise |
| 986 | 11-DEC-13 | N20.89568 W156.45911 | Pond perimeter |
| 987 | 11-DEC-13 | N20.89571 W156.45917 | Pond perimeter |
| 988 | 11-DEC-13 | N20.89574 W156.45917 | Pond perimeter |
| 989 | 11-DEC-13 | N20.89578 W156.45918 | Pond perimeter |
| 990 | 11-DEC-13 | N20.89578 W156.45912 | Pond perimeter |
| 991 | 11-DEC-13 | N20.89575 W156.45911 | Pond perimeter |
| 992 | 11-DEC-13 | N20.89571 W156.45908 | Pond perimeter |
| 993 | 11-DEC-13 | N20.89566 W156.45907 | Pond perimeter |

APPENDIX VI: Tracks and points of interest
 Map 1. Kahului Harbor, overall view of survey area.



-  Property boundary
-  Survey track
-  Water feature/wetland
-  Tree tobacco (*Nicotiana glauca*) locality
-  Beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) locality
-  Jimson weed (*Datura stramonium*)

MAP 2. Alexander & Baldwin property (10 acres)



-  Tree tobacco (*Nicotiana glauca*) locality
-  Beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) locality
-  Survey track
-  Property boundary

MAP 3. DLNR property



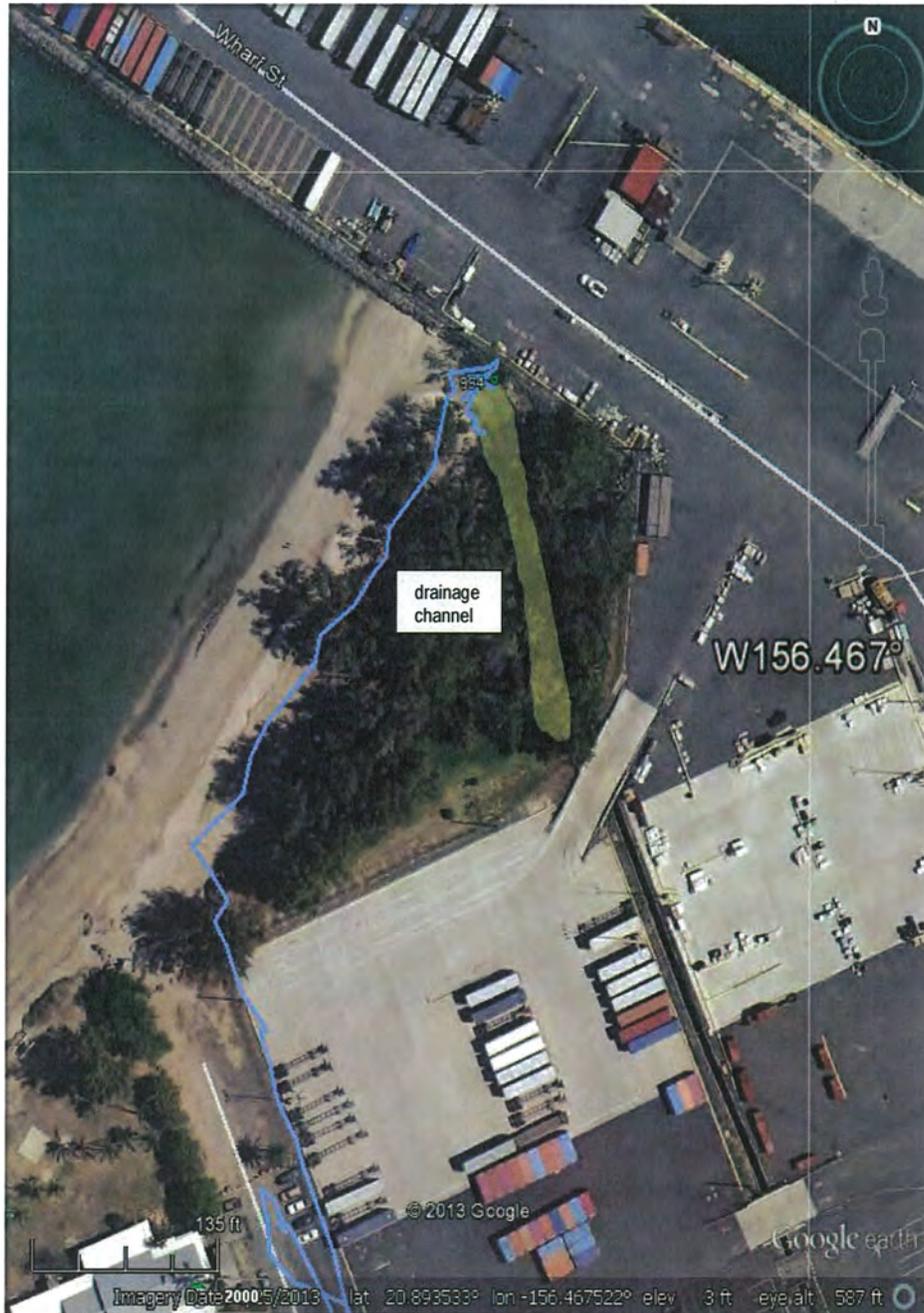
- Tree tobacco (*Nicotiana glauca*) locality
- Beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) locality
- Jimson weed (*Datura stramonium*)
- Property boundary
- Survey track
- Water feature/wetland

Map 4. Maui County Wastewater Treatment Plant.



-  Tree tobacco (*Nicotiana glauca*) locality
-  Beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*) locality
-  Jimson weed (*Datura stramonium*)
-  Survey track
-  Property boundary

MAP 5. State Harbors Division property, Pier 2.



-  Survey track
-  Water feature/wetland

APPENDIX VII: Photographs

Figure 1. Chrysomelid beetle feeding damage on *Nicotiana glauca*. Photo by D.J. Preston, HBS.



Figure 2. Chrysomelid feeding damage on *Datura stramonium*. Photo by D.J. Preston, HBS.



Figure 3. Sphinx moth feeding damage on *Nicotiana glauca*. Photo by D.J. Preston, HBS.



Figure 4. Axis deer tracks observed outside the Kahului wastewater treatment plant. Photo by D.J. Preston, HBS.





Figure 5. Tree tobacco (*Nicotiana glauca*). Photo by C. Imada, HBS.

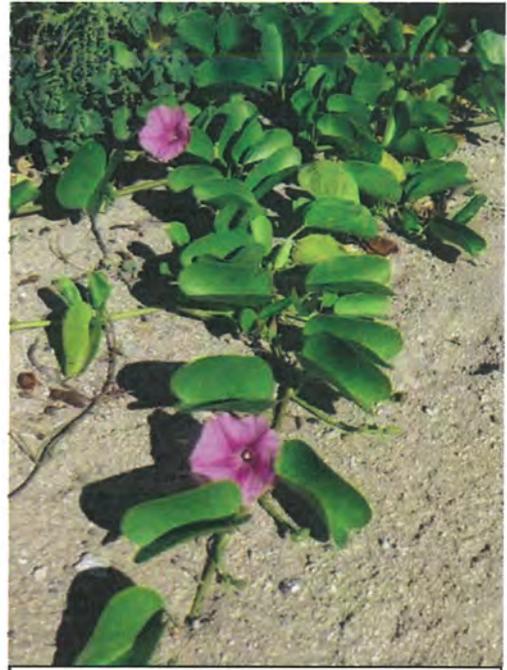


Figure 6. Beach morning-glory (*Ipomoea pes-caprae* subsp. *brasiliensis*). Photo by C. Imada, HBS.



Figure 7. Wetland on DLNR property, backed by dump area and coastal forest zone. Photo by C. Imada, HBS.



Figure 8. Coastal dune habitat, makai of wastewater treatment plant. Photo by C. Imada, HBS.



Figure 9. Ruderal/industrial vegetation type, makai of wastewater plant settling pond. Photo by C. Imada, HBS.

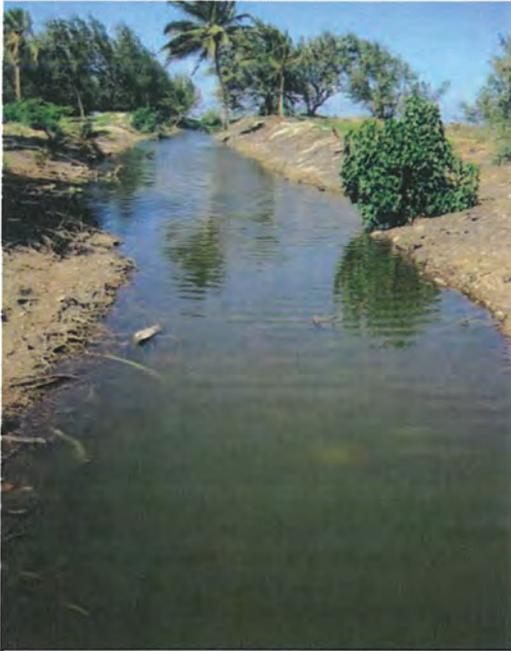


Figure 10. Drainage channel on DLNR property. The *makai* end in the distance is blocked from the ocean by a sandbar. Photo by C. Imada, HBS.



Figure 11. Water-filled depression A on DLNR property. Photo by C. Imada, HBS.



Figure 12. Mau'oni Pond on DLNR property, with coastal forest and patches of wetland vegetation on flat sections of pond bank. Photo by C. Imada, HBS.



Figure 13. Drainage channel west of Pier 2.
Photo by D.J. Preston, HBS.