Papohaku to Hakina, Ahupua'a o Kaluako'i, Island o Moloka'i

(Portions of TMK 5-1-02-030, 5-1-08-4 through 15, -19, and -23)

Revised Burial Treatment Plan

Prepared for Molokai Ranch
by
Maurice Major, MA

Cultural Landscapes Hawai`i
9712 Overhill Road
Richmond, Virginia, 23229

www.culturallandscapes.net

May, 2006

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LĀʻAU ARCHAEOLOGICAL PLAN SUMMARY

The archaeological plans for Lāʻau include four sections for cultural resource needs that will arise in relation to 196 sites within the proposed development and preserves.[1] The plans are:

Preservation – Procedures for protecting and preserving 160 cultural sites. Actions range from the immediate to the perpetual, and include site condition evaluation, stabilization, short and long-term protection, protocol education, periodic field checks, and data collection. The focus is on conservation of cultural landscapes, rather than isolated sites.

Data Recovery – Procedures and research issues for mapping and excavation of 21-24 sites within the road/infrastructure corridor and proposed subdivision lots. Since the most significant sites are being preserved, data recovery sites mostly consist of very simple agricultural modifications, lithic scatters, and more recent historical sites. All sites will undergo data recovery or, more likely, preservation, and samples within sites will be more robust than minimal SHPD requirements.

Monitoring – Procedures and responsibilities for archaeological maka ʻala of development activity. In addition to ensuring that preservation areas are not damaged, monitoring detects previously unknown cultural deposits, and halts work in an area, to evaluate finds, and if necessary consult with SHPD and interested parties to establish a preservation buffer or recover data.

Burial Treatment – Procedures for dealing with known, suspected, and inadvertently discovered burial sites (with no revisions to the accepted 2001 plan). All burials will be preserved in place, and all sites of unknown function for which burial is a possibility will be preserved. Newly found burials trigger consultation with the Molokaʻi Island Burial Council.

Because the plans are interrelated, and important part of the general approach is to define the **process and sequence**. The past two years of community meetings can be considered the first phase, and with ongoing consultation helps define what happens next. The Ranch has committed to planning for the entire project area, to maintain or expand upon previous preservation commitments, and to have this revision include plans for all of the affected parcels including proposed subdivision lots, whose future owners must also abide by the plans. The process continues:

- Re-survey the road corridor to verify and augment site records, and search for new sites. Unexpectedly significant finds may cause re-routing. Also, the Papohaku Ranchlands section of the corridor will be described and reported at inventory level for SHPD review.
- Next, short-term preservation measures will be implemented, such as establishing protective buffers and emergency stabilization.
- Next, data recovery will be implemented. At the same time, implementation of long-term preservation measures will begin.
- During the course of construction, monitoring will occur.
- Final reports for each plan will be submitted for community feedback and submitted to SHPD for review as required by rules and statutes.

[1] 197 sites appear in Table I-1 because Sites 53 and 655 refer to the same site. 12 of the 196 lack integrity and significance and are not included in these plans.

The original version of this plan (*Kahaiawa to Hakina, Ahupua'a of Kaluako'i, Island of Moloka'i*, Major 2001) dealt with the former "Alpha USA" parcel (TMK 5-1-2-030). Since then, changes in the project area and the size and location of proposed subdivision lots have necessitated some revisions. More fundamentally, the Ranch's decision to engage the community in master planning has resulted in a scaled-back development with a more conservation-oriented approach, and the proposed land trust, resource management staff, and cultural protection zones have required that the preservation and data recovery plans be augmented and revised. For the most part, the archaeological plans closely resemble the 2001 version, which was accepted by SHPD. Changes in the revised version include:

- Re-assignment of several Data Recovery sites to Preservation.
- Shift from defining buffers around individual or clustered sites to instead establishing a confined development corridor.
- Increased emphasis on active cultural resource management, anticipating as a neighbor a community land trust employing a cultural resource staff person.

Recommendation to collect some data from preservation sites to provide a better baseline for monitoring and help expand our understanding of the chronology and nature of settlement in the area, and specifically to guide environmental restoration.

INTRODUCTION

Background

The cultural resource management plans contained in this volume represent the culmination of a process that has evolved over several years as the landowner's plans have altered, as the scope of planning has grown to encompass most of western Moloka'i, and as the community has become more deeply involved in the process. Despite this recent history of change, many elements of the plans remain as they were in 2001: preservation continues to be the most common treatment for archaeological sites, a process of verification and augmentation of existing inventory survey data precedes development activity, and procedures for preservation, data recovery, monitoring, and burial treatment remain much as they were in the original plans. And while the landowner and the community have engaged in far-reaching discussions about land use and resource management across a large portion of the island, this document focuses only on the southwest corner of the island in a portion of the *ahupua'a* of Kaluako'i.

A brief history of cultural resource management in this area clarifies some of the changes that have happened with regard to this set of plans (archaeological findings of previous studies appear in the following **History and Archaeology** section). Although information about sites had been reported sporadically during the 20th Century, and Catherine Summers (1971) had compiled this information along with her own field observations and research, explicit focus on sites as "cultural resources" to be preserved and otherwise managed did not occur until the 1980s, when Marshall Weisler (1984) undertook the systematic survey, recording, and evaluation of sites in portions of Kaluako'i. This work led to the establishment of the Southwest Moloka'i Archaeological District (Site 50-60-01-803, also referred to as the "SMAD"), a series of well-defined areas that were listed on the State and National Registers of Historic Places, and therefore afforded some protection against future development and alteration.

Several years later (in 1991), after the Japanese real estate company Alpha USA had purchased a 6,350-acre section of southwest Kaluako'i intending extensive development there, Bishop Museum performed archaeological survey of the parcel, producing an inventory extending in scope beyond the major sites recorded by Weisler, as well as significance evaluations and treatment recommendations for each site (Dixon and Major 1993). The majority of the nearly 600 recorded sites deserved further investigation or data recovery in the case of development plans that would have caused damage, a small number (due to more recent origin or very poor site integrity) were considered not significant, and 46 sites were recommended for permanent preservation. The inventory, evaluations, and recommendations were reviewed and accepted by the State Historic Preservation Division (SHPD) at that time.

A decade after the Bishop Museum survey, Alpha USA had sold the property and Cultural Landscapes was retained by the new owner to create a set of management plans for the property, including a Preservation Plan, a Data Recovery Plan, a Monitoring Plan, and a Burial Treatment Plan (Major 2001). These plans provided detailed procedures and site treatments for sites covered by the 1993 inventory report, and were intended to minimize and mitigate any impacts that a smaller subdivision would have on sites. Although the 1993 report recommendations served as the starting point, the new plans emphasized avoiding rather than mitigating impacts, and so the number of sites slated for preservation grew from 46

to 138, including all of the sites outside the proposed subdivision as well as those between the new lots and the ocean, a large preserve encompassing a settlement system from the shore to an inland quarry, and sites within the proposed subdivision amounting to an estimated 10 – 15% of the area within subdivision parcels.

Shortly after SHPD had reviewed and accepted the 2001 plan, the landowner decided to change the subdivision plan by altering the proposed access road alignment, in response to which Cultural Landscapes produced an addendum to the plans (Major 2002). Rather than having the road meet up with the existing road from Maunaloa town to Hale o Lono Harbor on the eastern edge of the parcel, there would be a single entry to the subdivision from the north, from an old subdivision known as Papohaku Ranchlands. (Of that subdivision, the affected lots would be TMK 5-1-08-4, -5, and -14). At that time, an archaeological reconnaissance had been carried out in the Papohaku subdivision for the Army, since the area had been a target range during and after WW II. Although this project produced some good maps and site descriptions (Burtchard and Athens 2000), its authors believed it would not meet inventory standards, and the client had not released the report or submitted it for SHPD review at the time of the Lā'au addendum. On the basis of a draft report recording 27 sites, five of which were in or near the proposed Lā'au subdivision access road, the 2002 addendum proposed inventory survey within 30 m of either side of the propose road centerline. These sites included one with habitation and agricultural features (Site 50-60-01-520), one habitation (Site 1784), one agricultural site (Site 1758), an isolated lithic artifact (Site 1760), and a possible burial (Site 1761); all except for 1760 had been deemed significant for their information content and recommended for inventory survey by Burtchard and Athens (2000). The 2002 addendum to the Lā'au plans suggested that all of these sites could be preserved in place, and recommended that fieldwork be done that would bring the records up to inventory standards, but also begin implementation of site preservation measures such as establishing protective buffers, avoidance, and stabilization (Major 2002). This plan has been integrated into the current revision.

The most recent period of cultural resource management has witnessed a new willingness on the part of the landowner to engage in master planning for all of their holdings and a greatly increased role for the community. In the past two years, a series of meetings with both the general public and of smaller committees composed of Molokai Ranch staff, representatives of various Hawaiian organizations, and interested members of the public have worked on plans to conserve and manage not just cultural resources, but biological and other natural resources as well. The Cultural Committee called on Cultural Landscapes to provide information regarding sites on Ranch lands, archaeological and regulatory concerns regarding cultural resources, and planning for a much-expanded preservation program. Besides further reducing the scope and potential impacts of development, this process sought to increase preservation as a cultural resource management goal by establishing a community land trust tasked with preserving natural and cultural resources within lands deeded to it, by creating conservation easements and cultural overlay districts on privately held land, and by writing codes, covenants, and restrictions for the proposed subdivision that would help preserve sites therein and establish procedures for a management partnership between the new population of subdivision dwellers and Hawaiians who have been on Moloka'i for generations.

The proposed changes in land use, a reduced footprint for the subdivision, and the new approach toward managing cultural resources necessitated this revision of the 2001 plans and the 2002 addendum. Many elements of the existing plans remain the same, and this set of plans simply adjusts the plans to fit the current situation. So while most of the procedures for archaeological measures remain the same, reconfigured boundaries make the status of some sites different; for example, the most recent subdivision plan, being smaller than before, changes the status of some sites from data recovery to preservation, and others from the more protection-oriented preservation of sites within subdivision lots to the avoidance-oriented preservation measures associated with sites outside of development areas. Responsibilities for implementation of some preservation measures have changed with the advent of greater community participation and the proposed establishment of a land trust employing a cultural resource staff person.

Given the more robust management program envisioned by the landowner and community, some measures have been added or augmented, such as: re-survey of development areas, use of GPS to increase site location accuracy, and an increased effort to identify and mark ancient trails. In response to community concerns, the landowner has committed to additional archaeological fieldwork in advance of the road corridor construction, leading to a reorganization of the work-flow envisioned in the 2001 plans. Namely, re-survey of the road corridor will be completed prior to fieldwork done strictly in relation to preservation and data recovery plans. Because the 1993 report (Dixon and Major, for TMK 5-1-02-030) completed the inventory, evaluation, and treatment recommendations for the subdivision parcel, and were approved by SHPD, road corridor fieldwork may be best considered as a "supplemental data collection," a type of archaeological investigation that exceeds the regulatory requirement, but which serves the landowner's and community's desire that final engineering and construction be based on an enhanced understanding of the archaeological sites in the proposed development corridor. Although this does not fit within the usual SHPD review process, a report will be prepared in case of any significant sites located during the new fieldwork, or if new information leads to revised significance evaluations or treatment recommendations. If, however, a known site is encountered during the supplemental survey, but the description does not change substantially, and does not lead to a re-evaluation of significance or different treatment recommendation, then whatever new information is collected will be reported in the preservation or data recovery report that follows those phases, depending on the status of the site.

For the parcels north of the parcel being subdivided (TMK 5-1-08-4, -5, and -14), road corridor survey will in fact constitute an inventory survey, and the data collected from those areas will be prepared as a normal inventory report with site significance evaluations and treatment recommendations, all of which will be submitted to SHPD for review according to the Hawaii Administrative Rules, section 13-13-276.

Perhaps the most profound change embodied in this revision, though, is change in outlook from the traditional practice of defining a site and surrounding it with a protective buffer to defining a development area and enclosing it within what the Cultural Committee came to call a "bubble." By reversing the approach from "Keep out of the fenced sites" to "Do not stray beyond the development corridor," the current plans should result in two major benefits: reduction of inadvertent archaeological finds, and increased preservation of cultural landscapes rather than site "islands" in a sea of development.

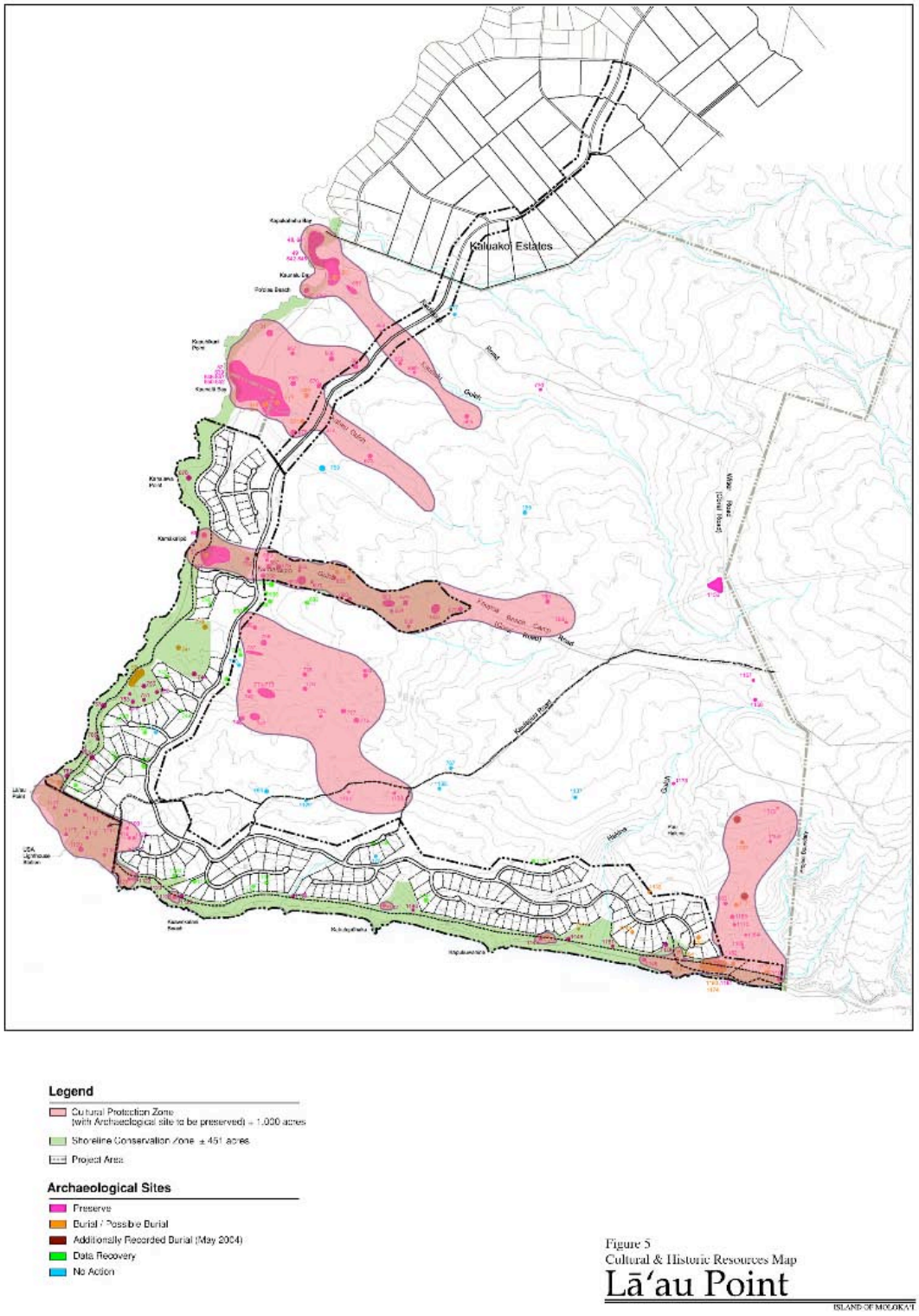
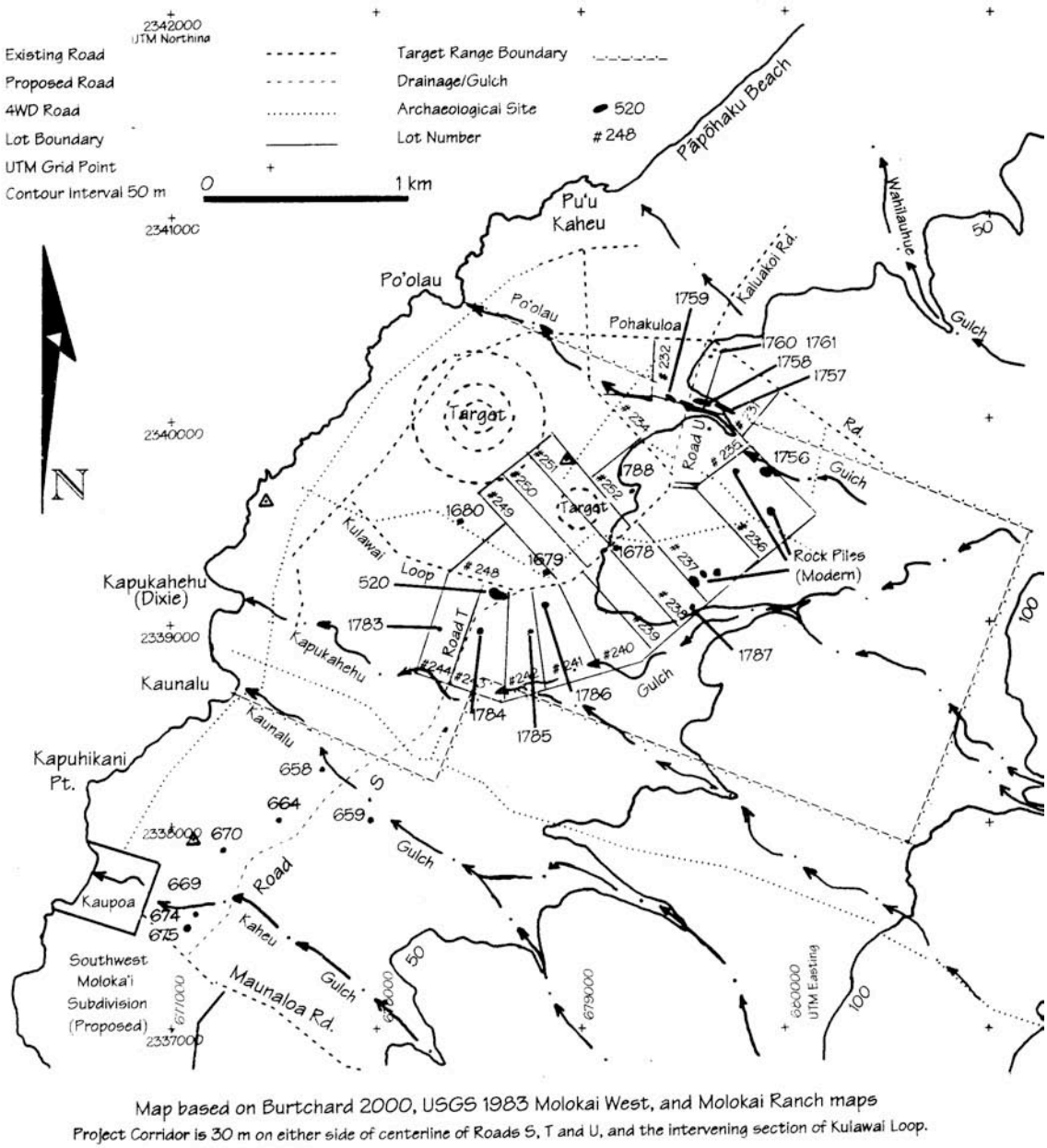


Figure I.1: Lā'au Subdivision Project area, Sites, and Cultural Protection Zones



Map based on Burtchard 2000, USGS 1983 Molokai West, and Molokai Ranch maps

Project Corridor is 30 m on either side of centerline of Roads S, T and U, and the intervening section of Kulawai Loop.

Figure I.2: Papohaku Ranchlands portion of Project Area

The physical scope of the cultural resource management plans in this volume remains limited to those portions of Kaluakoʻi *ahupuaʻa* that could be directly affected by the proposed subdivision (hereafter referred to as the "Lāʻau Subdivision"), rather than all of the lands affected by the recent community planning process. Specifically, the revised cultural resource plans focus on the 1,492-acre project area described in the Ranch's petition to the State Land Use Commission, which requests a 613-acre area to be changed from Agricultural to Rural designation, 10 acres from Conservation to Rural (for a park), and 252 acres from Agricultural to Conservation. In addition, this plan covers the "Lāʻau Mauka"

Rural Landscape Reserve, which corresponds to the remainder of the 6,350-acre parcel surveyed in 1991. All of the proposed Lā‘au Subdivision lots and most of the infrastructure derive from that original parcel (TMK 5-1-02-030), although development activity will affect only a limited portion—400 acres of house lots and 153 acres of roads, infrastructure and parks, or less than 10% of the original parcel area. Finally, the total acreage for the road and utility corridor leading into the Lā‘au Subdivision includes several lots in the older Papohaku Ranchlands subdivision. This volume proposes treatments for each of those subdivision lots where potential effects could occur (a total of approximately 15 acres), but does not encompass the entirety of Papohaku Ranchlands.

Because they concern separate actions in the State Historic Preservation Division administrative rules (the general process being described in Hawaii Administrative Rules 13-13-275), this volume presents Preservation (detailed in HAR 13-13-277), Data Recovery (HAR 13-13-278), Monitoring (HAR 13-13-279), and Burial Treatment (HAR 13-13-300) plans as separate sections. A single Introduction and set of appendices serve all of these sections to reduce repetition and save paper.

A final note regarding figures. The original and addendum plans included numerous reproductions of site sketches and maps from the Dixon and Major 1993 and Burtchard and Athens 2000 reports. As these are now available in at least two documents, paper conservation wins out in this revised plan.

Environmental Setting

Southwest Kaluako‘i lies on the flanks of Mauna Loa, the extinct shield volcano that formed the west side of Moloka‘i prior to the eastern (Ko‘olau) volcano. Mauna Loa, like most other Hawaiian volcanoes, formed through a series of bedded basaltic lava flows MacDonald et. al. 1983:412). The project area includes portions of the western and southern slopes of Mauna Loa, as well as traversing the southwest rift zone, a line of greater activity where vents and flows created a ridge between the summit and Ka Lae o Lā‘au (Lā‘au Point, the southwest tip of Moloka‘i).

Although Mauna Loa is older, the drier conditions have produced less topographic variation than on the Ko‘olau side of Moloka‘i, where heavier rainfall has cut spectacular valleys. The gulches of Mauna Loa are relatively shallow, interspersed with broad, relatively undissected landscapes. Many of the smaller gullies between and feeding into the larger gulches are very young, the result of drought and overgrazing that denuded surface vegetation in the 19th and 20th Centuries, leaving it vulnerable to violent erosion during occasional downpours. Other consequences of this period of erosion have been exposure of hardpan subsoils on high ground and accumulation of wind and water-borne silt in leeward low areas and gulch bottoms.

Rainfall is concentrated during the winter months, but has amounted to an average of only 15 inches per year in modern times; on the lower slopes of the southwest region, that figure is lower (Baker et. al. 1968). One aspect of the local climate not mentioned in rainfall data is the typical cloud cover, which consists of a line of clouds parallel to and directly above the island. In dry periods, it barely extends past the high Ko‘olau mountains, but often extends past the west coast. During wetter periods, this line of clouds brings rainfall that seems to be concentrated over the gulches of Kamāka‘ipō, Kaheu, and Kaunalā. The tradewinds that cause these clouds to pile up over the island dominate, but on the south shore there is frequently little or no wind. When tradewinds are absent, land and sea breezes are

more noticeable, and convection clouds (with occasional rain) may occur if humidity is sufficient. A traditional name for a wind of Kaluakoʻi is "Haleolono," which is also a place name for the land just east of the project area (Nakuina 1992:68).

Although there were reportedly a few springs in the past (Summers 1971, Kaimikaua personal communication 1999), there is no reported evidence of perennial streams that would support typical wetland taro agriculture. Another indication of the aridity of the project area is that there are no traces of traditional coastal fishponds, which generally were constructed where some fresh water input fostered plant growth. However, the wetland just behind the dunes at Site 1146 shows that at least brackish water is present at some coastal locations.

The general soil types of the project area are low humic latosols interspersed with lithosols (Foote et. al. 1972). Soil series represented in the project area are dominated by very stony eroded soil in the north and the interior, Kapuhikani along the southern shore to just south of Kamākaʻipō, and Mala silty clay in the Kamākaʻipō Gulch bottom (ibid.). Both Baker and Foote mention deep soils on the west end, but field experience shows that the project area generally has a very shallow soil cover, with rocky and hardpan areas exposed rather frequently, and substantial accumulation of sediments occurring only in the lower reaches of gulches. The 1991 excavations rarely went more than 50 cm in depth before reaching extremely hard clay.

The soil classifications interpret the project area as having very low productivity Baker et. al. 1968, Foote et. al. 1972). This may be true for modern forms of agriculture and animal husbandry, but it is likely that higher rainfall occurred prior to upland deforestation, providing enough moisture and could cover to grow the less thirsty Polynesian crops such as *ʻuala* (sweet potato, *Ipomoea batatas*), *ʻipu* (gourd, *Lagenaria siceraria*), and the thatching grass *pili* (*Heteropogon contortus*). George Cooke (1949), who managed Molokai Ranch in the first half of the 20th Century, saw Hawaiian *kō* (sugar cane, *Saccharum officinum*) growing in an old household garden at Kamākaʻipō. Terraces, planting circles, and areas cleared of stones show that Hawaiians once practiced agriculture within the gulches, and to a more limited extent, on the sloping lands. Monitoring at Kaupoa, then old ranch house on the outskirts of an ancient village at Kaheu gulch, revealed deposits of loamy soil sometimes exceeding 30 cm in depth, soil that appeared to have a relatively high organic content and held onto moisture for weeks after rainfall—attributes that would have been attractive to ancient farmers.

Currently, vegetation is dominated by *kiawe* (*Prosopis pallida*) forest, which sometimes forms dense thickets, but may also be open. *Lantana* (*Lantana camara*) forms an understory in the forested areas, and also occurs in the open areas. There are occasional grasslands, with various pasture and weedy species that have become naturalized. Chili peppers (*Capsicum frutescens*), bittermelon (*Momordica* species), and basil (*Ocimum* species) are also naturalized, representing historic household garden introductions, but possibly from elsewhere on Molokaʻi, since birds readily disperse each. The native flora are much diminished, although hardier shrubs that are adapted to dry and disturbed conditions are still present; these include: *ʻuhaloa* (*Waltheria indica*), *ʻilima* (*Sida fallax*), and *maʻo* (native cotton, *Gossypium sandvicense*).

Insects and other arthropods dominate fauna of southwest Kaluakoʻi, and it is beyond the expertise of the archaeologists to list or evaluate these. Bird life includes game species introduced by Kamehameha V, and later by the territory and

state, as well as exotic songbirds such as cardinals, mockingbirds, and mynahs. Herds of Axis deer, another of the king's introductions, wander Molokaʻi's west end, and along with the other introduced ungulates (cattle, sheep, and goats—only the former of which is still present) have affected the ecology significantly. More important to the human inhabitants of old was the marine fauna, from pelagic species at the offshore Penguin Banks, to reef fish, to shellfish and echinoderms found on the coast, and even the turtles that hauled up on shore.

The character of the southwest Molokaʻi shoreline merits attention, not least because this is where ancient and historical people settled. Sand beaches cover most of the coastline, although basaltic ridges do extend to the shore in a few locations, with those at Lāʻau Point and along the south shore being highest. Low dunes occur as well, although sand mining depleted those at the eastern end of the project area's south coast. Sandstone and limestone underlie the sand and are visible in many locations. Slabs of this material appear in ancient and historic construction, but the more consistently important aspect of such stone is that the shoreline and shallow waters where it occurs are riddled with holes and cracks that form excellent habitat for fish, lobsters, and other food. Because canoes formed the backbone of the ancient transportation system, the presence of numerous channels through the reef and sandy beach landings would have been an attractive trait of this shoreline in ancient times. The waters of Lāʻau Point, however, remain notorious to this day, as currents traveling down each coast collide in a choppy, swirling mix that makes paddling dangerous.

In the reconnaissance of the gunnery range, Burtchard noted highly eroded areas and charcoal indicative of wildfire (2000). It is no great stretch to infer that live fire practice could have ignited vegetation in this parched landscape, and an aerial photo from 1965 shows what appears to be a recent burn area in the range. The reconnaissance also noted several graded and bulldozed areas, piles of stone, and military dumps. In an analysis of Burtchard's report; Dixon and Major's 1993 report; 1955, 1964, 1965, and 1969 aerial photos; Molokai Ranch color aerial photos from the 1990s; the publication *Detailed Land Classification – Island of Molokai* (Baker et. al., 1968); and USGS quad sheets from 1924 and 1983, Cultural Landscapes has been able to estimate the minimum extent of disturbance in and around the new corridor.

Between Poʻolau and Wahīlauhue Gulches, only a small, unnamed gulch appears to have escaped disturbance prior to the mid-1960s. Between about 100 and 250 feet in elevation, numerous dirt roads criss-cross the landscape here. Poʻolau Gulch itself appears to have escaped much direct impact, except where roads crossed it—Burtchard's discovery of intact agricultural sites in the gulch is consistent with this. (His Site 1760, a single adze preform in "an erosional scar" that may in fact be in a dirt road visible on aerial photographs.) South of Poʻolau Gulch, almost everything inland of the old coastal road, north of where the south arm of Kulawai Loop meets Pohakuloa Road, and below about 250 feet in elevation has been heavily disturbed. Grading to clear the target areas, construct roads, and build observation towers and bunkers has obliterated nearly everything inside of Kulawai Loop, and as far east as the rock piles recorded as Sites 1683-1687. The single contra-indication to this situation may be Site 1788, a concentration of boulders including a slab that was interpreted as a fallen upright from a shrine (Burtchard 2000). Low, seasonably wet ground nearby (interpreted as a spring with which the shrine would have been associated) may have saved this area from grading, and is visible on air photos due to the vegetation.

South of Kulawai Loop, the situation changes markedly, and several sites were present beginning between the road and Kapukahehu Gulch. Sites have been recorded in and between Kapukahehu and Kaunalu Gulches, with a few *mauka-makai* roads being the only disturbance to the intervening ridge. The ridge south of Kaunalu Gulch, however, has been disturbed as far down as 100 feet in elevation, and the 1965 aerial photograph shows a series of lines following the contours from this elevation up to nearly 200 feet. It is uncertain what these are, although they appear to have a few intact trees, and may represent grubbing of pasture, an attempt at erosion control, or both. Kaheu Gulch and south appears to be far less disturbed, except for the road down the ridge to Kaupoa.

History and Archaeology

To achieve a more comprehensible and holistic understanding of southwest Kaluakoʻi's past, this document combines historical and archaeological background. This discussion summarizes what is currently known about the project area, and then offers a brief regional overview as a framework for the research plan. Site particulars appear with the detailed site mitigation plans below, to avoid redundancy and the need to flip pages constantly. A more developed discussion of overall patterns will be included in the final data recovery report.

The name of the *ahupuaʻa* containing all of these places, Kaluakoʻi, refers to the pits or quarries ("lua") from which adzes ("koʻi") were made. Kumu Hula John Kaimikaua notes that the largest quarries were inland at "Amikopala, Kahinawai, Koholalele, and Kamakahi," and that the best types of stone were named "Awalau…Awaliʻi, and Awauli" (Kaimikaua 1997:4). He also relates that when the Maui *aliʻi* (chief) Kiha-a-Piʻilani ruled over Molokaʻi, he stationed his men in all of the coastal villages of Kaluakoʻi "to secure the mining rights of the valuable koʻi as an added wealth for the high chief," and that access to and security over the quarries was the reason he built his famed trail ("KealapūpūoKihaaPiʻilani, See Summers 1971:12-13) around the west end (Kaimikaua 1997:4).

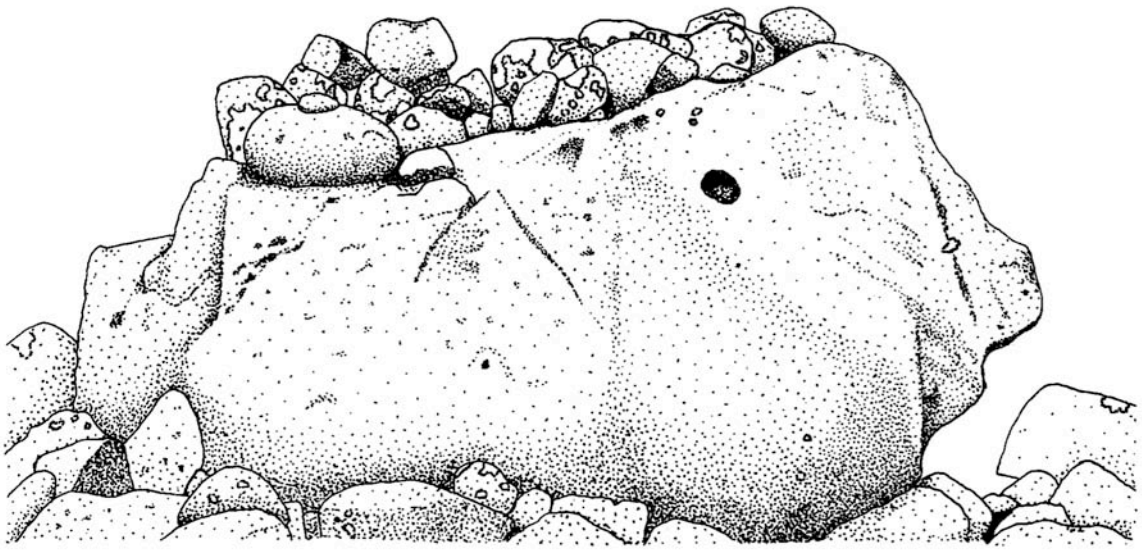


Figure I.3: Trail marker at North Kamākaʻipō

One of the Molokaʻi chiefs who provided labor for the trail, Kamākaʻipō, was immortalized in the name of the gulch and bay north of Lāʻau Point. Kamākaʻipō was also the name of an owl who lived at the place, and whose droppings appeared as a type of gray clay found there. Two Kamākaʻipō places known from traditional oral history that may have identifiable archaeological sites associated with them are a *heiau* dedicated to Hina that is supposed to be small and circular, and a hill named Ahoaho, a small hill where chiefs were buried (Kaimikaua 2001, personal communication).

By the time Europeans found the Hawaiian Islands, western Molokaʻi was not heavily populated, although both the Cook and Vancouver expeditions noted that a small population was present prior to AD 1800 (see Dixon and Major 1993:9). Molokaʻi also became a battleground in the struggles between Maui, Hawaiʻi, and Oʻahu, and during the latter 18th Century lost much of its population due to warfare; a Hawaiian told the surgeon of the Vancouver expedition that Kamehameha had decimated the island (Menzies 1920:115, 118). Another source indicates that a generation earlier, the Oʻahu chief Peleioholani raided and burned Molokaʻi in revenge for his daughter being killed on the island (Fornander, cited in Summers 1971:18). Ash exists widely on the west end, observed in buried layers from at least Poʻolau (Burtchard and Athens 1999) to Kaheu (also known as Kaupoa, Major 2000). An older explanation of the barrenness and low population may be found in the story of ʻAmiʻikopalā, which said that the wells dug by that supernatural crab dried up when he was killed (Kaimikaua, personal communication 1999). Another *moʻolelo* told that other water sources dried up when people carelessly, and later maliciously, poisoned springs with pieces of the Kālaipāhoa gods (Kaimikaua 1988).

Regardless of the causes, the view that Kaluakoʻi was a dry, thinly populated area found its way into archaeological literature, and is accepted today. Stokes (1909) stated that "inhabitants of the western end of Molokai deserted or were removed from their homes nearly half a century ago" (Stokes 1909:30), a period when Kamehameha V had begun ranching operations on the island. Stokes concentrated on religious features, and near the current project area recorded *koʻa* (fishing shrines) on the coast at Kamākaipō (Sites 53 and 55), Lāʻau (Site 58, destroyed by lighthouse construction before 1909), Keawakalai (probably Keawakalani, Site 59), Kahalepohaku (Site 61), and Puʻu Hakina (Site 62). At the latter place, he also recorded Kalalua Heiau (Site 67), which had an unusual reef rock slab construction, and was reportedly used for human sacrifice (ibid:31-32). Stokes further reported that local people identified Kahalepohaku as the place where Kiha-a-Piʻilani had been raised.

During the 1920s and 1930s, most Molokaʻi archaeology was done by visiting scholars such as Fowke (who wrote a brief paper for the Bureau of American Ethnology in 1922), and Phelps (who produced a monograph on Molokaʻi archaeology in 1941). The Phelps paper is more interesting for its consideration of environmental variables than its site recording. He divided the island into ecological regions, of which the western was the driest; Phelps highlighted this aspect by repeating a Hawaiian newspaper story about the 18th Century *aliʻi* Kaiakea, who ordered a well dug with adzes near Ka Lae o Lāʻau (Phelps 1941:57). He stated that the advantages of Kaluakoʻi were its namesake adze quarries and its fine fishing grounds (ibid:55-60). He used the *ahupuaʻa* of Kaluakoʻi to support his conclusion that land divisions with the greatest area had the least population, and that the absence of valleys to provide natural divisions was what made Kaluakoʻi the largest *ahupuaʻa* (ibid:75-76).

Few new sites were recorded prior to the 1950s, when the Bishop Museum and University of Hawai'i began working together on Hawaiian archaeology, and on educating a new generation of scientists. One of these students, William Bonk, reiterated the conventional wisdom in his master thesis, which included the lines, "this was a decidedly marginal land for the inhabitants of Molokai. Fishing and the quest for adze stone brought people into the area, and fighting probably sent refugees into it, but temporarily" (1954:139). His excavation of a house site at Kamāka'ipō (Site 54) revealed less than 10 inches of midden, leading him to conclude that the intensity of habitation had perhaps increased over time, but that the site represented a fisherman's house, and that the area had little more in the way of permanent habitation (ibid:51-52).

Catherine Summers compiled historical and archaeological documentation over the next two decades, and published the results in 1971. Few of the sites are within the current project area, but the book is notable as the first and last attempt to bring together knowledge about sites island-wide. *Molokai: A Site Survey* includes notes made by Stokes and other early site recorders, as well as Hawaiian myths and oral histories, unpublished accounts, and historical documents. Based on all of this information, Summers concurs with the portrayal of Kaluako'i as a land blessed with excellent adze stone and fishing grounds, but also where habitation was limited by aridity (1971:39-40). Also implicit in her maps and descriptions is a settlement pattern in which the most heavily used areas are clustered at the bays and high in the uplands. The current project area occasionally reaches the margins of the coastal settlements, but is largely in the "empty" middle elevations. The Statewide Inventory of historical properties began shortly after the publication of Summers, but consisted more of an effort to relocate previously recorded sites than to discover new ones, and added no new information.

The same year that *Molokai: A Site Survey* was published, a University of Hawai'i student named Hal Strong documented some of the Kamāka'ipō habitations. He described and photographed four house sites and a variety of associated features, including: *ahu* (stone mounds), shrines, *ko'a*, a stone pile, and scatters of midden and artifacts strewn on the surface (Strong 1971).

In the early 1980s, Marshall Weisler surveyed coastal southwest Moloka`i, relocating and discovering eleven sites (State Sites 50-60-01-53 through –56, -655, 1118, and -1134) in or near what has become current project area. He reiterated an aspect of Phelps' settlement pattern in which topography was key—sites were concentrated in gulches and the bays where they met the sea—and added that there was a correlation between the size of the bay and the quantity and diversity of features (Weisler 1984:27). Another pertinent outcome of Weisler's work, creation of the Southwest Moloka`i Archaeological District (hereafter SMAD, Site 50-60-01-803) included some sites (53, 54, and 56), in or near the project area. This district is now on the State of Hawai'i and National Registers of Historic Places, meaning that sites within it are afforded additional protection.

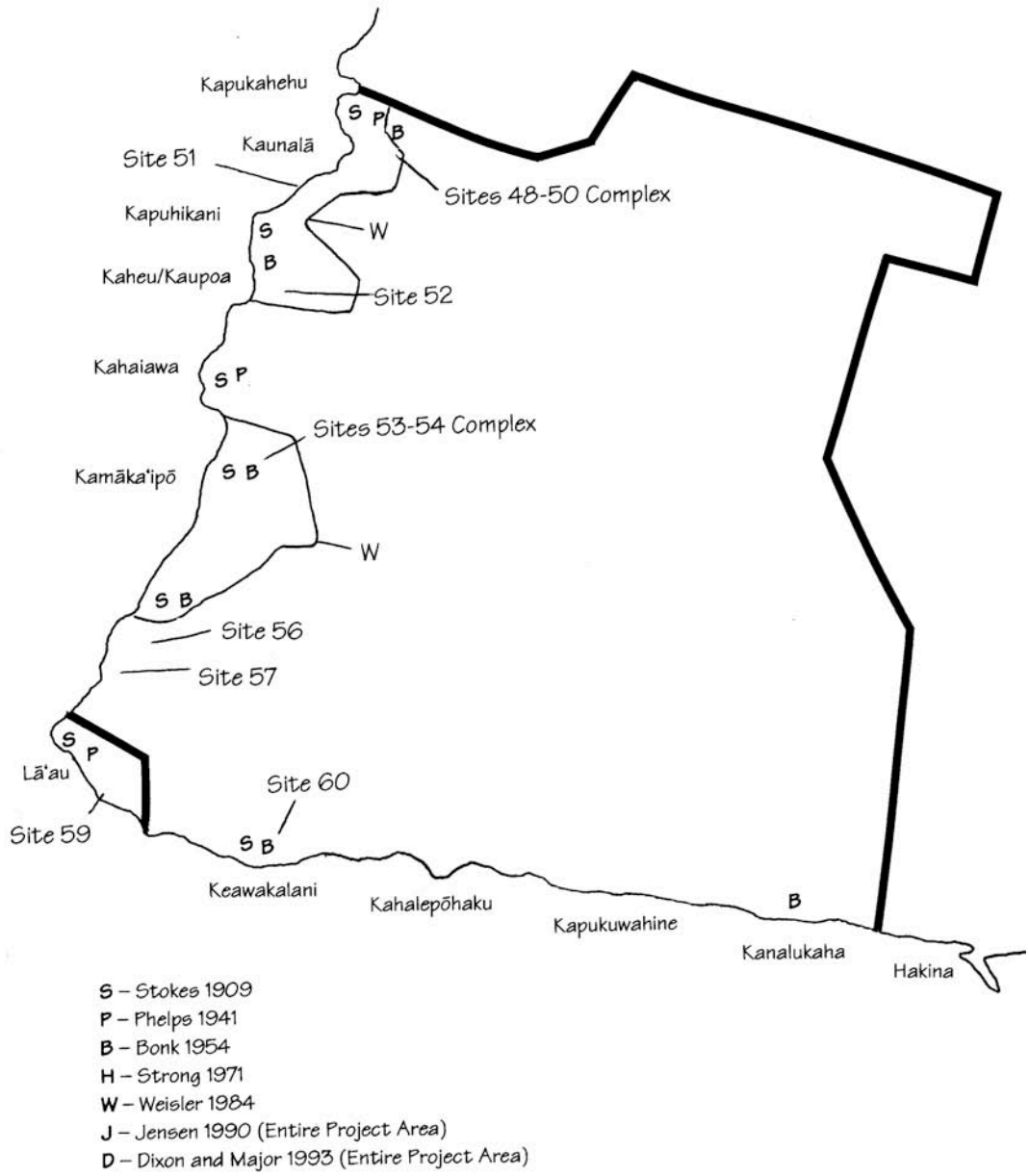


Figure I.4: Previous archaeological study areas. (Note: Burtchard and Athens project area is north of this, and is shown in the Papohaku Ranchland map earlier in this report.)

In 1991, a survey of 6,350 acres of southwest Moloka'i done by Bishop Museum encountered features throughout southwest Moloka'i, including the current project area (Dixon and Major 1993, referred to in this report as the "1991 inventory" and the "1993 report"). This survey provided the most complete coverage of southwestern Kaluako`i to date, and the settlement pattern model that emerged from the inventory reinforces the main pattern mentioned above, that sites cluster around bays and gulches (Dixon and Major 1993:337). However, having a survey area that extended well inland from the coast, it was possible to refine the model. For example, although the inland margins of sites had the expected agricultural areas and lithic work stations, they had a surprising number of "temporary and semi-permanent residential compounds" (ibid:337).

Discovery of large, multi-roomed enclosures near the 100 foot elevation also went against conventional wisdom that inland features were marginal and ephemeral. Two such enclosures occur in the Site 771-773 complex, each with six or more rooms, some of which display massive, well-built walls. Excavation revealed evidence of lithic manufacture (over 3,000 flakes from a single 100 by 50-cm excavation unit), while presence of a metal pick-ax head suggests that this could be a site that transcends the era of contact between Hawaiians and Europeans. These sites remain enigmatic, but seem to suggest a degree of permanence or intensity previously not recognized on the west coast, and certainly not at that elevation.

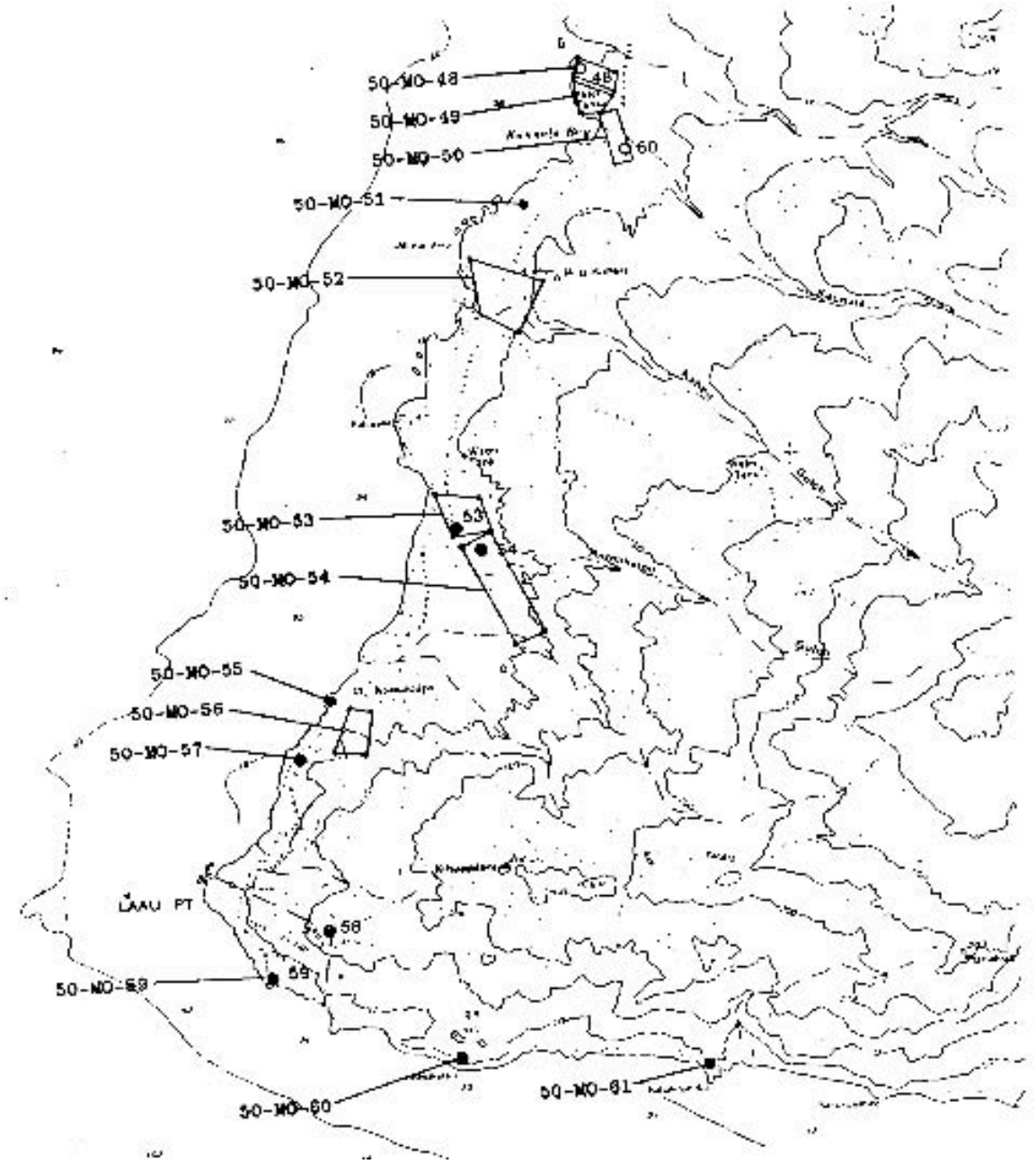


Figure I.5: Southwest Molokai Archaeological District sites and areas.

The 1991 project also documented variation between west coast settlements (where features clustered at the bays and stretched inland to gardening or quarrying areas) and south coast settlements (where habitations were spread laterally along the coast), indicating that the causes again related to topography (ibid:337-338). Analyses of subsistence strategies and lithic production, paired with the form and distribution of features, suggested that rather than a temporarily occupied, culturally peripheral area, southwest Kaluakoʻi was probably permanently occupied late in prehistory, and that its access to fishing grounds and adze quarries meant that it was integrated into island-wide society (ibid:240-344). A more recent study including part of the north end of the current project area concluded that coastal habitations must have been permanent (Burtchard and Athens 1999). Presence of extensive occupations in the uplands (Summers 1971, Major 2000) and of major specialized features such as *heiau* (temples) and *holua* (sledding courses) in the lowlands (Summers 1971) provide evidence that the Kaluakoʻi area had permanent, perhaps socially stratified, occupants.

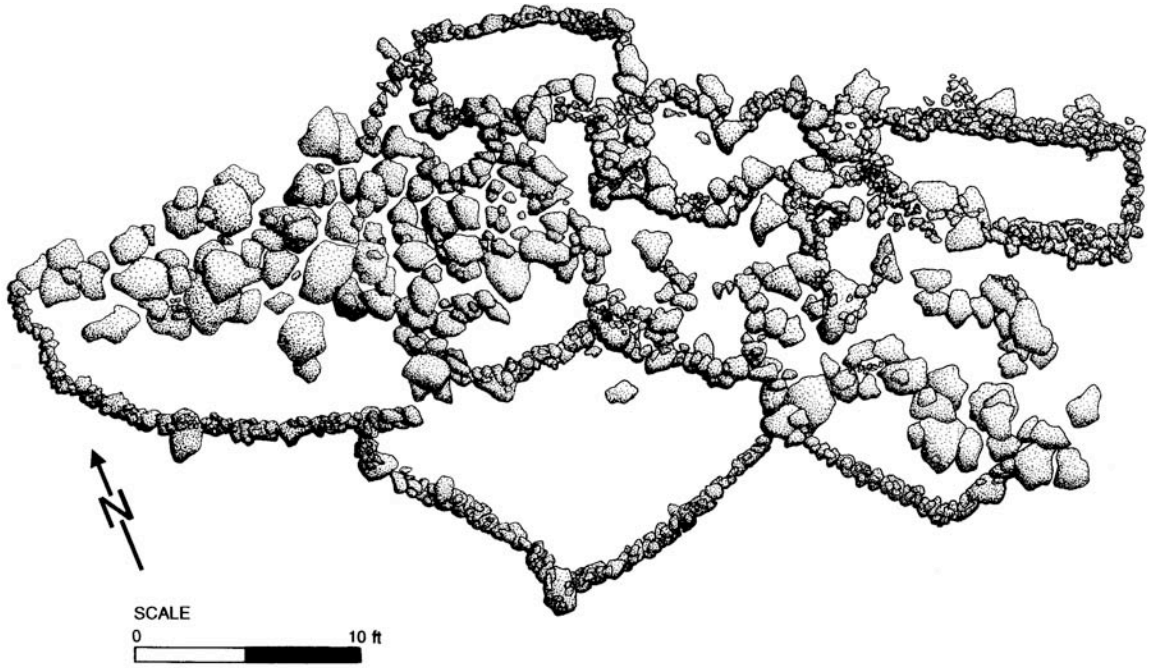


Figure I.6: Site 771, a multi-room enclosure on a ridge above Kamākaʻipō

Traditional wisdom among archaeologists has also concluded that this region would have been settled only after sweet potato was available, and after population densities had risen in the wetter areas, probably no earlier than about AD 1500 (Kirch 1985). Radiocarbon dates suggest somewhat earlier occupation may be possible, although the limited data make it hard to discern sporadic early use from a stable early habitation. An inland quarry yielded a radiocarbon date of AD 1260-1440, and the south Kamākaʻipō coastal site was dated between AD1410-1955. A subsequent, unpublished date from the 1991 excavations at Site 654, in a coastal *imu* that Weisler originally recommended dating, provided an even earlier date of AD 1019-1211, confirming the suspicion that coastal areas were used much earlier than they were permanently settled.

The condition of Site 654, eroding from an exposed dune face, may be a result of the 1946 tsunami. The Cookes (1948, 1961) both wrote of the effect that this wave had on the west coast, impacting Kawakiu heavily and working its way a half mile inland at Pāpōhaku beach; it could easily have come well inland at Kamāka'ipō, where the alluvial flat is severely eroded. Even without tsunami, however, many sites at Kaluako'i have been damaged by erosion, itself catalyzed by cattle and deer grazing since the mid-Nineteenth Century and several periods of severe drought.

Because the archaeology of Kaluako'i is relatively well known, mitigation plans may be based not only on particular knowledge of the sites, but on the patterns evident in southwest Kaluako'i. Because the current project area mostly runs *mauka* of the sites, the data that will be recovered will be skewed toward traces of peripheral activities and agriculture. In the Data Recovery Plan, the effect of this on the techniques of data recovery and the research issues will be evident.

Papohaku Ranchlands Section

Then Papohaku Ranchland section of the project area is discussed separately here for two reasons. First, the presence of an aerial gunnery target range had a profound effects on the environmental setting and on the integrity of archaeological sites. Second, the fact that a formal inventory survey has not been reviewed by SHPD means that the preservation process in this portion of the project area is less advanced than elsewhere.

In 1998, under contract with the Army Corps of Engineers, archaeologists from the International Archaeological Research Institute, Inc, (IARII) attempted an inventory survey of the former gunnery range (Burtchard 2000). Unfortunately, funding was inadequate, and IARII was unable to do more than a reconnaissance of the area, meaning that coverage was not intense enough to guarantee location of all sites, and that excavation to determine age and function of sites was not performed. However, recording of the sites that were located is good, GPS locations make them easy to relocate, and the report is in fact better than some inventory surveys done on Moloka'i in earlier years. Age, function, and significance were estimated for all sites located during the reconnaissance, and will form the basis for treatments proposed in this plan.

Before describing sites in or near the corridor, however, some historical background specific to this new project area deserves attention. The target range mentioned above appeared on maps as early as 1952 (USGS Ilio Point Quad) as a "Bombing Range," and was apparently leased by the US Government from Molokai Ranch between 1944 and 1965 (Burtchard 2000). Documentation of what exactly occurred has not been located, but a combination of physical remains, recollections of residents, and photographs allows some reconstruction. An aerial photograph taken in 1955 shows that the largest feature of the range, a huge (about 600 m in diameter) circular target comprised of three concentric earth and rock rings, had not yet been constructed, although a smaller (about 200 m) one of similar plan was clearly visible. By 1965, facilities included the targets, three cement observation bunkers, a range control tower, a munitions dump, and another possible communication or observation tower. Grading for target and infrastructure development, as well as the direct effects of the munitions, have cleared large areas beyond the constructed features themselves, and the archaeological reconnaissance found several piles of disturbed stone *mauka* of the active range. Local residents recall the area being used for ground troop training in the 1950s and 1960s, and the abundant munitions on the ground confirm that aerial bombardment occurred as well. It is possible that other portions of the

project corridor may have been used for training, since a retired marine recalls participating in amphibious and land-based exercises around Kaupoa. Besides the impacts from thousands of men and heavy machinery being moved around, he noted specifically that they constructed C-shaped shelters (Dixon and Major 1993)

Subsequent to the military training era, the land was not heavily used, although it may have reverted to cattle pasture until the 1970s and 80s, when subdivision for residential development was planned. It was during this period that Hal Hammatt recorded four sites in an archaeological reconnaissance of 3,200 acres subsuming the current project area, and William Barrera recorded five more sites along proposed roads (Hammatt 1980 and Barerra 1982a, both cited in Burtchard 2000). Development of the subdivision resulted in construction of several roads, which also served as corridors for water and electrical infrastructure, which was all installed below ground. However, few of the lots have actually been developed. Near the coast (adjacent to the Poʻolau beach access), grading has damaged archaeological features believed to be part of Site 45, a settlement with habitation, religious, and probably agricultural features. Sand dunes at the south end of Pāpōhaku Beach have also been surreptitiously mined during the 1970s through the 1990s. The extent of impacts resulting from development of the residential lots is undetermined.

The Hawaiian place names near the project area extension shed some light on the cultural landscape. Poʻolau, the name for a gulch and the bay where it terminates, is left un-translated in *Place Names of Hawaiʻi*, but the word means "leaf base; butt end of a leaf" (Pukui and Elbert 1986). Many of the long time residents of Maunaloa, however, know it by the name "shit creek," apparently because it once received waste from the town. However, it should be noted that Poʻolau Gulch terminates well below Maunaloa Town, and instead it is Wahīlauhue Gulch that descends from Maunaloa to the coast, where it ends about one-third of the way from the south end of Pāpōhaku Beach. It appears that extension of that name to the entire beach may be a fairly recent phenomenon, since Monsarrat (who made the first Molokaʻi map in1886) was careful to find knowledgeable Hawaiians, and applied the name to a structure at the beach; Pāpohaku means "stone enclosure." Another name near the project area that appeared on the 1886 map was Puʻu Koai, which Pukui, Elbert and Moʻokini considered to be Puʻu Koaʻe, or "tropicbird hill" (1974).

South of Poʻolau, Kapukahehu Bay (whose origin and meaning are uncertain) is more commonly known now as "Dixie," and does not appear in either form on the old maps. "Dixie Maru," was a boat that crashed there, and the coastline is known for shipwrecks. In a less drastic way, Dixie is also the end of the road for cars, and locals and tourists alike frequent the sandy bay. Continuing south less than half a kilometer, the next gulch and bay are now called Kaunalā ("placing sun" Pukui, Elbert and Moʻokini 1974), although maps until 1924 used Kaunalu, or "placing wave" (ibid). Further south is Kapuhikani, or "sounding eel" (ibid), a point of land that has appeared on all maps beginning in 1886. Next is Kaheu, a gulch and bay whose name first appeared on the 1924 USGS map, and is thought to mean "the fuzz" (ibid). Kaheu is better known as Kaupoa, a name that first appeared as a mapping station on the 1897 map (which was made after the overthrow of the monarchy, and is suspect due to its omission of many Hawaiian place names or replacement with English names). The name was popularized by the Cooke family, who in 1925 built a house by the bay and named it Kaupoa.

Archaeologically, the action is at the bays, and the current project corridor is in the hinterlands. The general settlement pattern of the west coast is for habitations to cluster around the bays, and for the traces of human presence to diminish rapidly with increased elevation and distance from the bay. On the coast, *koʻa* (fishing shrines) and dispersed temporary habitations may occur between bays, and it is likely that dunes contain human burials. Heading inland from the bays, gulches contain terraces and stone piles indicative of attempts to retain freshet moisture and soil, and to clear the stony soil for planting, respectively. Aside from the agricultural features and temporary shelters (both C-shapes and pavements) associated with them, stone mounds that appear to be burials are the most common features at the margins of coastal settlements. Of the features occurring above 50 feet in elevation, few are outside of gulches.

Further inland (generally over 150 feet in elevation), the presence of temporary habitations (usually C-shapes) and concentrations of lithic debris present traces of traditional quarrying and stone tool manufacture sites. Quarries usually occur on gulch margins or ridges where a stratum of fine-grained basalt was accessible, and could be removed with relative ease. Primary reduction into cores and roughly formed adzes was done at the quarry, after which finer flaking and polishing at the coastal habitations resulted in finished tools. Between the quarries and the coastal habitations, stone cairns mark the trails and occasional concentrations of basalt flakes suggest limited lithic work, although the latter usually represent single episodes rather than the sustained or repeated behavior that happened in quarries.

Because it is inland of the coastal settlements, but not far enough in to be a part of the quarry activity, the current project corridor has few archaeological features. Only in Poʻolau Gulch, where the corridor will cross an area of stone piles interpreted as agricultural clearing piles (Site 1758), does it directly encounter sites. However, a few sites are known to be relatively near the corridor, and will be described here.

Site 520. Located by Kulawai Loop near the beginning of Road T, this site consists of numerous features on the crest and in the lee of a ridge. Features atop the ridge include three C-shapes, three walls, a pit, and two platforms, forming a probable habitation site. Barrera (1982) excavated one C-shape, uncovering a large fire pit feature and cultural deposition extending to 60 cm in depth. Whereas Barrera only recorded five of the habitation features, Burtchard's crew spotted the additional features on the ridge, as well as a minimum of 23 small stone mounds extending down the southwest slope. He considered the mounds to be agricultural without specifying whether they were clearing or planting features, but wondered whether the windswept ridge crest would be an undesirable place for habitation, and suggested a possible religious function (Burtchard 2000). However, the walls and C-shapes are very typical of windbreak features, and the form of these and the platform-terrace is commonly associated with habitations in the region. Part of the religious interpretation appears to rest on the presence of a "rough basalt upright" near the pit, but religious uprights tend to be smooth (often waterworn) or have worked surfaces, which this apparently did not. Despite the good view from this location (an attribute of shrines in Kaluakoʻi), the C-shapes are not open toward the sea, as would be expected, and lack the typical stone platform/pavement interior or coral offerings. Although it is possible that the free standing platform could be a burial, the overall function of the site appears to have been habitation and

agriculture. Site 520 covers an area of 6,750 m^2 at an elevation of about 100 feet. [2] Site 520 has been evaluated as significant under Criterion D.

Site 658. This small, isolated stone mound appears to be one of the infrequent agricultural modifications to Kaheu Gulch, along with Site 659. It is significant under criterion D, and covers 4 m^2 at an elevation of 60 feet.

Site 659. About 200 m up Kaheu Gulch from Site 658, this consists of a single alignment of boulders on the south slope, forming a rough terrace. It is significant under criterion D, and covers 30 m^2 at an elevation of 90 feet.

Site 664. This site consists of five small cobble mounds, apparently associated with agricultural clearing in a small gulch north of Pu'u Kaheu. The site is significant under criterion D, and covers about 100 m^2 at an elevation of 60 feet.

Site 669. This site is on the north slope of Kaheu Gulch inland of the main settlement there. The components include a possible burial (a mound), and possibly areas of temporary habitation associated with agriculture (a C-shape, a terrace, an enclosure alignment, and a possible hearth). The site is unusually situated, being in the middle of a small gulch. A test excavation here in the enclosure yielded no cultural materials, and hit hardpan subsoil in only 10 cm (Dixon and Major 1993). The site was listed as significant under criterion D, but will be treated as possibly significant under criterion E due to the possible burial. The site covers about 2400 m^2 at an elevation of 85 feet.

Site 670. This site includes low, oblong mounds interpreted as agricultural features, a substantial C-shape with a cupboard interpreted as a shrine, and an unusual C-shape open toward the northeast tradewinds. Testing in the latter revealed a single, shallow layer with cultural materials including ash, hammerstones, basalt flakes, and a grindstone. Presence of a possible shrine among the other features led to positive significance evaluations including criteria D and E. The site covers and area of 1500 m^2 at an elevation of about 90 feet.

Site 674. This single stone mound was interpreted as a possible burial, and was assigned significance under criteria D and E. It covers 1m^2 at an elevation of 80 feet.

Site 675. This site appears to be an agricultural area with associated temporary habitation. It consists of an enclosure with a possible hearth, and several small stone rings interpreted as planting circles, and was listed as significant under criterion D. The site covers 1000 m^2 at an elevation of 70 feet.

Sites 1678-1680. These sites each consist of a single concrete bunker for observation of the nearby targets. None have been judged significant, and they probably do not meet the 50-year age requirement. Site 1680 is not in a potentially affected lot.

Sites 1683-1687. These were recorded by Burtchard (2000) as a series of rock piles made by the military. They probably represent stockpiles of stone used for target construction, or surface material pushed aside during construction of the target range. None have been judged significant, and they probably do not meet the 50-year age requirement. On the project area map, they are simply marked as "Rock Piles (Modern)."

[2] Burtchard (2000) reported an elevation of 30 feet, but his map and UTM locations place the site much higher. Apparently due to a GPS error, many sites in the IARII report have this problem. This report estimates elevations based on map and UTM locations, written descriptions, and USGS and Molokai Ranch topographic maps.

Site 1756. This site, well *mauka* of the corridor, lies on the opposite (south) side of Po'olau Gulch about 200 m up from Sites 1757-1759 and just inside Lot 236. Burtchard reported a terrace platform on an outcrop, but noted that more features could be expected in the high grass. This feature was described as having two "chambers" (2000). A fence post and 55-gallon drum were interpreted as ranching activity, and the overall site area was estimated to be 1500 m^2 at an elevation of about 200 feet.

Site 1757. Located in Po'olau Gulch, this site consists of 8 small piles of cobbles placed on low boulders on the first natural terrace above the gulch bottom. Because they are in a tight cluster and are rather low to the ground, they do not appear to be trail markers, such as those found in Kamāka'ipō Gulch. Instead, they have been interpreted as agricultural clearing mounds (piles of stone removed from the soil and put on boulders where nothing could be planted). These differ from so-called "sweet potato mounds," which were planting features in which soil or compost was covered with a mantle of cobbles that acted to conserved moisture. Presence of oblong cobbles on one mound caused Burchard to speculate that it could conceivably have been a shrine. This site covers nearly 6,000 m^2 at an elevation of 150 feet, and is *mauka* of the proposed corridor

Site 1758. This is a larger set of 36 stone mounds like those found in Site 1757. These, too, are stacked on boulders and are interpreted as clearing piles. This site occurs in the flood plain of Po'olau Gulch, covering approximately 3,150 m^2 at an elevation of about 140 feet, just down the gulch from Site 1757. Burtchard speculated that these may actually be part of a single site, and noted that a few oblong stones were also present here. The proposed corridor traverses this site.

Site 1759. A third cluster of small clearing mounds (11 in number), this site occurs in a smaller area, also on the flood plain of Po'olau Gulch. This site covers about 800 m^2 at an elevation of approximately 130 feet, and is located down the gulch from 1758, and *makai* of the proposed corridor.

Site 1760. This consists of a single basalt adze preform, broken into two pieces. Because it was visible in an eroded area amid grass, Burchard speculated that it might be part of a larger deposit. Analysis of aerial photographs shows several dirt roads in the area, and it is possible that the erosional scar is one of these roads. This artifact is about 80 m north of Site 1761 at an elevation of about 150 feet, and is just *mauka* of the proposed corridor.

Site 1761. The size (2.9 x 2.5 x .55 m and 1.3 x .75 x .35 m), shape (elongate), and stacked edges of these two stone mounds, as well as their placement on a small knoll, suggests that they are human burials, rather than agricultural features. However, this is rather far inland for burials (which are more often found at the inalnd margin of settlement complexes), and proximity to roads means that these could conceivably be historic features. They are located *mauka* of the northern end of the project corridor. The site covers 100 m^2 at an elevation of 150 feet.

Site 1783. This site consisted of some cobbles piled on a boulder. Burtchard speculated that they may simply have been cleared to provide a sitting area, and there was no evidence of formal construction. The site reportedly covers 400 m^2 at an elevation of 100 feet.

Site 1784. A rectangular platform and a small hearth comprise this site, which Burtchard (2000) interpreted as a habitation. The platform, measures more than 7 m in length, and is raised about 30 cm above the surrounding surface. The hearth, a small ring of stone is described as being 25 m southeast of the platform, but is

shown 25 m northeast on the site map. The site covers an area of 1050 m^2 at an elevation of approximately 110 feet.

Site 1785. This site on a flat area up-slope of Kapukahehu bay consists of a possible hearth, an alignment, and a stone slab interpreted as a shrine based on the presence of traditionally worked surfaces and its oblong shape. Site covers 300m^2 at an elevation of about 125 feet.

Site 1786. This site, north of 1785, occupies a small ridge and consists of a series of modifications to an outcrop, atop which appears to be an artificially set boulder upright. The modifications include low walls, alignments, and terraces, as well as what appears to be a trail leading up toward the upright. The immediate area around the boulder is defined by a rectangular platform incorporating natural boulders and set cobbles, and is the high point before the ridge descends toward the sea. Site 1786 covers about 875 m^2 at an elevation of about 150 feet.

Site 1787. This site consists of two large boulders, each with a small pile of cobbles on top. The absence of historical debris led to an estimation that the site is pre-Contact in origin (Burtchard 2000), and the feature type is similar to many found in southwest Moloka'i that have been interpreted as trail markers, based on their visibility and distribution in the landscape (Dixon and Major 1993). The site is reported as covering approximately 150 m^2 at an elevation of close to 190 feet.

Site 1788. This site is located in a low area near a seasonally wet depression interpreted by Burtchard as a possible spring (2000). Because of this proximity and the presence of an oblong boulder slab, the site was interpreted as a shrine. Although the concentration of stone here suggests that this is indeed a feature, the existing records are unclear, since the accompanying sketch depicts a smaller, more amorphous feature than the rectangular one described as retaining its integrity. Proximity to the heavily disturbed target range area warrants consideration that this may be a later feature, and the records fail to note attributes (phallic shape, smooth or worked surface) known to be associated with sacred stones, and the photograph seems to show a fractured, angular stone not commonly associated with that function. Site 1788 is near the 150 foot contour, and is said to have an area of 100 m^2, although the map shows less than 20 m^2, even if the spring is included.

Supplemental Data Collection

Two types of archaeological investigation that are not required by the regulatory historic preservation process will be done in association with the Lā'au subdivision. While elements of each have been part of the plans from the outset, the recent period of community consultation have made it clear that they are a priority to many community members and most Hawaiians on Moloka'i, and their importance is highlighted here. First, because construction of a new road and utility corridor represents the greatest single potential for impact, and is the initial step in construction for the new subdivision, the landowner has committed to re-survey the corridor, most of which as already been through the official review process. The character and methods for this are described beginning in the following section.

The second form of data collection relates to preservation sites within and close to proposed subdivision lots, where the process will amount to a thorough re-survey of sites that are to be protected within or in close proximity to new house lots. Because this type of work is to be done as part of the **Preservation Plan**

implementation, it will be described in more detail there, but it is important to note that it will be done well in advance of any house construction, and therefore any new or augmented finds may be considered in the design and construction process, so that new houses need not damage old sites. An overview for this process is included below.

Road Corridor Re-Survey

As described in the **Introduction**, the first fieldwork associated with these plans will be to re-examine the road corridor and verify descriptions of known sites, gather additional data if possible, and search for unrecorded archaeological deposits or features now obervable due to changes in surface visibility. A preliminary plan for the road corridor has been prepared by engineers, the centerline of which will be staked on the ground by surveyors prior to commencement of archaeological fieldwork. The proposed road begins at the end of Kaluakoi Road, connects to an portion of Kulawai Loop (an existing road in the Papohaku Ranchlands subdivision), and then runs roughly southwest to a point just south of the Kaupoa House lot, and then more or less follows the shoreline down the west coast and along the south coast to the vicinity of Site 1155, south of Pu'u Hakina (see map). Along the way, 12 short spur roads depart from the main corridor, providing access to subdivision lots. No connections to the Hale-o-Lono harbor road or other existing roads are planned, and the old coastal road—a roughly graded, unpaved jeep trail—will be abandoned as part of the development plan due to its alignment through several archaeological sites and erosion-prone environments.

As noted above, the portion of the road corridor north of TMK 5-01-02-030 has not been officially inventoried, and a report for that portion of the road corridor survey will in fact be submitted to SHPD for review as an archaeological inventory with significance evaluations and treatment recommendations. Despite this procedural difference, survey techniques will remains the same throughout the road corridor.

The area for data collection consists of a 30 m wide swath on either side of the centerlines for the main and spur roads, and a 50 m radius surrounding each end point, where turn-arounds have been planned. The eventual impact of road construction and utility trenching will be less than the resulting 60 m wide corridor, but that width has been chosen both to provide the best archaeological understanding of the road and its context, and to provide intensive coverage that may be used to avoid additional survey or unexpected impacts should presence of sensitive sites within the corridor cause a need to adjust the alignment.

The survey team will consist of Moloka'i residents with archaeological experience and training led by the Principal Investigator, with additional archaeologists hired from off-island if necessary. The corridor will be divided into segments, and the crew will perform sweeps in each segment with a 5 m interval. Where grass is thick enough to obscure surface visibility, gas-powered string trimmers will be used to expose the surface within 10 m of the centerline, so that low-relief features such as pavements and lithic scatters will not escape notice. Vegetation will also be cleared around the periphery of any visible surface features found within the corridor (regardless of distance from the centerline) to allow their accurate documentation and to search for additional features or deposits.

Any finds within the corridor will be documented with scaled surface planviews, cross-sections and profiles as necessary, photographs, and descriptive notes. Where sediments occur that could contain buried cultural deposits, transects of probes will be employed to determine site boundaries and characterize site stratigraphy. Each

probe is to be excavated with a shovel, by stratigraphic layer as far as practicable, with the entire volume screened through $^1/_4$-inch mesh. For each probe a representative profile will be drawn, referenced to the current ground surface. Any features encountered will be drawn and photographed in plan and profile and excavated as a separate stratigraphic context. All cultural materials will be collected, described, and recorded in a project inventory. Probe intervals will range from 1 to 5 m, depending on the area of sediment where buried features could occur, as well as the nature and density of the surface features and visible deposits. Probes will begin at the outer edge of surface features and radiate outward in at least two directions along grids established for each site (the orientation of which will be decided in the field by the PI according to topography and local conditions). Where probe intervals are greater than 2 m, follow-up probes will be used at tighter intervals to better determine the horizontal extent of the site.

For each site, a minimum of one datum point will be flagged and marked on site planviews to facilitate location on large maps. Initially, a GPS device will be used at each of these to provide a location; consumer-grade Garmin units used on property by Ranch staff have achieved accuracy to within 2-m of the UTM coordinates provided by survey grade GPS, and will be used during the re-survey to provide interim site locations. Subsequent to the initial fieldwork and prior to construction, these points will be plotted lot surveys to provide accurate, precise control points for site and buffer locations. Each datum point will be integrated into the engineering consultant's CADD system, along with either an appropriately-sized point buffer or a polygon derived from the site planview.

Sites that have been previously recorded will be reported in the Data Recovery or Preservation report, according to its status, including any newly-located features or artifacts found within 10 m of the know features. Features not associated with known sites will be reported in a Supplemental Inventory Survey report, submitted to SHPD along with significance evaluations and treatment recommendations. This report will also cover sites located north of TMK 5-1-02-030 in the Papohaku Ranchlands subdivision.

In a few cases where the site is minimal, Data Recovery measures proposed in the accompanying Data Recovery Plan may be done in conjunction with this phase of fieldwork. For example, Site 697 consists of lithic artifacts on a deflated hardpan surface, for which the proposed data recovery method is surface collection; rather than draw a planview (for the supplemental data collection) and return later to collect the artifacts (for data recovery), a single period of fieldwork will be done to satisfy both phases.

Subdivision Lot and Coastal Zone Re-Survey

Sites within proposed subdivision lots have reasonably accurate locations due to their proximity to coastal reference points, and many have been previously documented in detail by archaeologists. In order to ensure that all sites have been adequately recorded and those slated for preservation receive timely and effective preservation, land within and in close proximity to the subdivision lots will be re-surveyed as well. As with the road corridor, the aim is to verify extant site records, augment them as necessary, and search for any previously unrecorded sites.

Methods for investigating and recording sites will be the same as well, although the project area differs. Rather than a corridor defined by the road centerline, this survey area consists of the proposed private lots and the lands makai of them. Inclusion of the coastal land (most of it already zoned Conservation, and the

remainder to be so if the Ranch's petition to change some near-shore land from Agriculture is approved) in this phase stems from two facts. First, some sites straddle the boundary between Conservation land and lots. Second, as lots are occupied and coastal parks are opened, foot traffic through coastal sites will increase, subjecting them to a greater potential for impact than in recent decades.

Because so many sites have been recorded near the shoreline, this phase will begin with the known and work outward, annotating and augmenting site documentation as necessary, firmly establishing site boundaries. Areas between sites will be surveyed at 5-m intervals to search for any unrecorded features or deposits.

Vegetation clearing in this phase will focus on sites, exposing surface features and visible deposits to allow for mapping. However, clearing in Conservation lands will be limited to cutting grasses and vines, and close attention will be paid to any native plants, preserving them. A sampling of high probability landforms (ridge-tops, natural terraces within gulches, and level ground above slopes) will be cleared to check for unrecorded features in the private lots, but not within the coastal strip. In all cases, clearing will proceed with an awareness of soil, slope, and groundcover, to avoid exacerbating erosion.

In addition to the use of shovel probes to define site boundaries, some excavation will be done in this phase to help further the general conservation goals of the master plan and to better understand chronological and functional issues regarding the sites. Wherever hearths or *imu* are at risk from erosion, they will be excavated to reveal the stratigraphic relationship to other site components, and to collect charcoal for taxonomic identification, providing a basis for future re-vegetation efforts. Likewise, eroding deposits will be cleaned up to provide a representative vertical face for profile illustration, and a charcoal or other materials may be collected at this time.

Proposed Site Mitigation Measures

Sites will be dealt with differently depending on their significance, their position in the cultural landscape, and their location relative to private parcels, the proposed land trust, and conservation overlays. Options for site treatment include preservation, data recovery, and no action. Monitoring may be done in addition to other actions, and will also occur throughout the road corridor. Sites for which no action is planned are those that were deemed not significant in the 1993 inventory report, typically because they were recent hunting blinds or had been so badly damaged as to eliminate the possibility of determining their original form or salvaging meaningful data. **Table I-1** lists the categories of mitigation actions generally; the subsequent Preservation and Data Recovery plans will add more detailed information regarding specific practices.

The forms of mitigation dealt with in these plans derive from the process outlined in HAR 13-13-275, which describes the historic preservation review process in Hawai'i. Preservation, obviously, means avoiding damage to the site, although there are different degrees of this measure that will be described in the appropriate section. **Data Recovery** pertains to sites that are significant for their information only, and covers actions such as mapping, excavation, and surface collection that adequately gather that information. The objective is to collect information prior to construction, so that any damage during development is offset by gains in knowledge. Once data recovery has occurred and the report approved by SHPD, the site is officially considered "no longer significant," although the approach in this project is to monitor any unexcavated portion in hopes of gathering further

data that may be unearthed. **Monitoring** means having an archaeologist present during ground-disturbing activities that could potentially have an adverse impact on a significant site, and to gather data from inadvertently encountered sites. The objectives are twofold: to prevent incursion into preservation areas and damage to sites being preserved, and to collect data from any sites or deposits encountered outside of preservation areas. In some cases, monitoring may result in discovery of previously unknown features or deposits, leading to an expedited inventory and evaluation, and potentially to data recovery or even preservation. This will occur wherever activity with potential to impact sites occurs, and therefore is not listed at the site-specific level. **Preservation** differs from the other treatments in that sites are protected, and there is no impact to mitigate. Options within this treatment revolve around the degree and type of protective measures to be implemented, and whether the preservation is to be passive (avoidance) or active (stabilization, interpretation, and other measures). **Burial treatment** concerns not only the actions taken for sites that have documented or possible burial sites, but also measures that will be followed should an inadvertent discovery of human remains occur. Like monitoring, the procedures for burial treatment apply throughout the project area.

Because of uncertainty regarding some site locations and the fact that the final alignment of the proposed road corridor has not yet been designated, some treatments may change later pending community and SHPD approval. (All such changes will be from Data Recovery to Preservation, and no objections are anticipated.) Any site thought to be near the road or within a proposed subdivision lot has a detailed mitigation plan. At least 14 sites recommended for data recovery in the 2001 plan are now slated for preservation due to the road realignment and the revised approach to subdivision, and as many as 8 more appear likely to do the same. SHPD will be consulted regarding such changes. As mentioned above, the preliminary road corridor will be resurveyed prior to finalizing the plan, and every effort will be made to realign it around significant sites.

A few sites listed in 1993 lack specific mitigation measures described in this plan. Some of these are sites recorded prior to 1991 that could not be located or were destroyed by that time (State Sites 55, 653, 1108, and Bishop Museum Sites B5-58 and B5-61). However, most consist of recorded sites that lacked cultural or archaeological significance. Other gaps in the site numbers—653, 1133, 59-638, 700-735 and 783-1099—have been assigned to sites elsewhere on Moloka‘i, and do not actually denote gaps in the 1993 site records.

Table I-1. Site Conversions and Mitigation Treatments

State Number (50-60-01-)	Bishop Museum Number (50-Mo-)	Inventory	Preserve	Data Recovery	No Action
48	B6-61		X		
49	B6-62		X		
50	B6-63		X		
50	B6-64		X		
51	B6-65		X		
52	B6-66		X		
53	B6-68 and -97		X		
54	B6-69 to -73		X		
56	B6-76 and -77		X		
57	B6-78		X		
520	N/A	X	X		
639	B6-67		X		
640	B6-74		X		
641	B6-83		X		
642	B6-84		X		
643	B6-85		X		
644	B6-86		X		
645	B6-87		X		
646	B6-88		X		
647	B6-89		X		
648	B6-90		X		
649	B6-91		X		
650	B6-92		X		
651	B6-93		X		
652	B6-94		X		
654	B6-96		X		
655 (aka 53)	B6-97		X		
656	B6-98		X		
657	B6-107		X		
658	B6-108		X		
659	B6-109		X		
660	B6-110		X		
661	B6-111				X
662	B6-112		X		
663	B6-113		X		
664	B6-114		X		
665	B6-115		X		
666	B6-116		X		
667	B6-117		X		
668	B6-118		X		
669	B6-119		X		
670	B6-120		X		
671	B6-121		X		

State Number (50-60-01-)	Bishop Museum Number (50-Mo-)	Inventory	Preserve	Data Recovery	No Action
672	B6-122		X		
673	B6-123		X		
674	B6-124		X		
675	B6-125		X		
676	B6-126		X		
677	B6-127				X
678	B6-128		X		
679	B6-129		X		
680	B6-130		X		
681	B6-131		X		
682	B6-132		X		
683	B6-133		X		
684	B6-134		X		
685	B6-135		X		
686	B6-136		X		
687	B6-137		X		
688	B6-138		X		
689	B6-139		X		
690	B6-140		X		
691	B6-141		X		
692	B6-142		X		
693	B6-143		X		
694	B6-144		X		
695	B6-145		X		
696	B6-146		X		
697	B6-147			X	
698	B6-148			X	
699	B6-149		X		
736	B6-150		X		
737	B6-151		X		
738	B6-152			X	
739	B6-153		X		
740	B6-154				X
741	B6-155		X		
742	B6-156		X		
743	B6-157			X	
744	B6-158		X		
745	B6-159			X	
746	B6-160			X	
747	B6-161		X		
748	B6-162		X		
749	B6-163			X	
750	B6-164		X		
751	B6-165		X		

State Number (50-60-01-)	Bishop Museum Number (50-Mo-)	Inventory	Preserve	Data Recovery	No Action
752	B6-166		X		
753	B6-167		X		
754	B6-168		X		
755	B6-169			X	
756	B6-170			X	
757	B6-171				X
758	B6-172			X	
759	B6-173				X
760	B6-174			X	
761	B6-175		?	?	
762	B6-176			X	
763	B6-177		X		
764	B6-178		X		
765	B6-179		X		
766	B6-180				X
767	B6-181				X
768	B6-182		X		
769	B6-183		X		
770	B6-184		X		
771	B6-185		X		
772	B6-186		X		
773	B6-187		X		
774	B6-188		X		
775	B6-189		X		
776	B6-190		X		
777	B6-191		X		
778	B6-192		X		
779	B6-193		X		
780	B6-194		X		
781	B6-195		X		
782	B6-196		X		
1100	B5-59		X		
1101	B5-60		X		
1102	B5-62		X		
1103	B5-63		X		
1104	B5-64		X		
1105	B5-65		X		
1106	B5-66		X		
1107	B5-67		X		
1109	B5-69		X		
1110	B5-70		X		
1111	B5-71		X		
1112	B5-72		X		
1113	B5-73		X		
1114	B5-74		X		

State Number (50-60-01-)	Bishop Museum Number (50-Mo-)	Inventory	Preserve	Data Recovery	No Action
1115	B5-75		X		
1116	B5-76		X		
1117	B5-77		X		
1118	B5-78		X		
1119	B5-79		X		
1120	B5-80		X		
1121	B5-81			X	
1122	B5-82		X		
1123	B5-83		X		
1124	B5-84			X	
1125	B5-85		?	?	
1126	B5-86		X		
1127	B5-87		X		
1128	B5-88		X		
1129	B5-89				X
1130	B5-90			X	
1131	B5-91			X	
1132	B5-92			X	
1134	B5-93			X	
1135	B5-94				X
1136	B5-95		?	?	
1137	B5-96				X
1138	B5-97				X
1139	B5-98		X		
1140	B5-99				X
1141	B5-100			X	
1142	B5-101		X		
1143	B5-102		X		
1144	B5-103		X		
1145	B5-104			X	
1146	B5-105		X		
1147	B5-106		X		
1148	B5-107		X		
1149	B5-108		X		
1150	B5-109		X		
1151	B5-110		X		

State Number (50-60-01-)	Bishop Museum Number (50-Mo-)	Inventory	Preserve	Data Recovery	No Action
1152	B5-111		X		
1153	B5-112		X		
1154	B5-113		X		
1155	B5-114		X		
1156	B5-115		X		
1157	B5-116		X		
1158	B5-117		X		
1159	B5-118				X
1160	B5-119		X		
1161	B5-120		X		
1162	B5-121		X		
1163	B5-122		X		
1164	B5-123		X		
1165	B5-124				X
1166	B5-125		X		
1167	B5-126		X		
1168	B5-127		X		
1169	B5-128		X		
1170	B5-129		X		
1171	B5-130		X		
1172	B5-131		X		
1173	B5-132		X		
1174	B5-133		X		
1175	B5-134		X		
1176	B5-135		X		
1758	N/A	X	X		
1760	N/A	X	X		
1761	N/A	X	X		
1784	N/A	X	X		

NOTE: Treatments with an outlined X signal changes in status from Data Recovery to Preservation status. Sites slated for Inventory will all be recommended for Preservation. Question marks (?) indicate sites currently recommended for Data Recovery that may change to Preservation, pending precise site location.

BURIAL TREATMENT PLAN

General Procedures

Within the project area are several sites with known or suspected burial features. These will be preserved in place, as described previously in the **Preservation Plan**. This Burial Treatment Plan does not propose specific actions on a feature by feature basis, since the plan is to avoid all burials and possible burials.

Prior to any construction, the SHPD Burials Program will be consulted to determine if any individuals or groups have registered as lineal or cultural descendants with a bona fide interest in southwest Kaluakoʻi burials. Construction will be planned to avoid any burials or suspected burials recorded in previous studies and during the supplemental road corridor survey. Therefore, it is very unlikely that any burials will be disturbed, but awareness of descendants will help resolve any issues that arise in a timely manner.

Should it prove extremely difficult to plan around a *possible* burial, then (as a last resort) that feature may be tested to determine its actual function. If it is in fact a human burial, then it will be covered, and preserved in place. Human remains encountered during such a test will not be removed, photographed, or collected. If testing does not encounter human remains, the feature will be subject to data recovery according to the procedures and standards described in the **Data Recovery Plan**.

If, during the course of the project, and human burials are inadvertently discovered, work in the vicinity will be halted while the archaeologist determines if they are likely to have been in place for more than 50 years. If not, the matter comes under the jurisdiction of local police, who will be notified. If so, then any registered descendants, the Molokaʻi Island Burial Council, and the SHPD Burials Program will be consulted. The preferred treatment will be to leave any burials in the location they were found, and avoid any further disturbance.

Lineal or cultural descendants who have registered their interest with SHPD have a right to visit known burials, and future landowners will be notified by the current landowners that human burials in Hawaiʻi are held in public trust, and are not their property. It will be up to landowners and descendants to arrange for access as the need arises.

Descendants

This plan addresses burials and possible burials within the *ahupuaʻa* of Kaluakoʻi, which was awarded to Bernice Pauahi Bishop. Her husband and heir, Charles Reed Bishop, received the land upon her death, and sold it to individuals who established Molokai Ranch ion 1898 (Cooke 1949). No Land Commission Awards were made anywhere near the burials in question, and although one family of Japanese descent (Egusa) and another of Hawaiian descent (Burrows) were known to have lived in the Kamākaʻipō and Lāʻau Point areas, respectively, neither has indicated that they know of ancestors buried in the sites. Informal inquiries with Hawaiian families historically associated with Molokai Ranch lands, some of them working there in the 1990s, failed to produce evidence of burials with known descendants. These included members of the Aki, Duvachelle, Kaōpuiki, Kekahuna, Lima, and Poepoe families. John Kaimikaua, a *kumu hula* and student of Molokaʻi culture and history, did indicate that a hill called Ahoaho at the south end of Kamākaʻipō was the burial place for local chiefs (Personal communication,

2001); this is thought to be the mauka portion of Site 56 (reported as Bishop Museum Site 50-MO-B6-76). Attempts to receive guidance from the Burials Program during initial preparation of this plan in 2001-2002 did not produce any additional names for consultation.

Burial and Possible Burial Sites

The following is a list of burials and possible burials. Features were designated as burials due to their form (generally mounds and small platforms), their size (between 1 and 3 meters in length), and their location relative to other features (burials often occur in and near habitations, and in the *mauka* land behind settlements). The interpretations are fairly certain; test excavation is not considered necessary for management purposes. Possible burials, on the other hand, may have matched only one of these criteria, or simply lacked an obvious alternative interpretation. Undoubtedly, some possible burials do contain human remains, but others may be agricultural clearing mounds or other types of features. Although this project will err on the side of caution by avoiding possible burials, it is important for future students of the cultural landscape, for landowners, and for cultural descendants to understand the distinction. Possible burials, for example, do not enjoy the same public trust status that actual burials do. Rather than conduct test excavations, which in the case of an actual burial would cause a temporary exposure of human remains, the landowner has chosen the more culturally sensitive option of avoidance.

Table B-1. Burials and Possible Burials, by Site

State Site Number	Inventory Site:Fe. Number	Form	Burial	Possible Burial	Zone Location
50	B6-64:9	Mound		X	Cultural Protection
54	B6-69:2,4,5,7	Mounds	X		Cultural Protection Shoreline Conservation
	B6-72:2	Mound		X	
	B6-73:11	Mound	X		
	B6-73:13	Mound		X	
56	B6-77:4-8	Mounds	X		Shoreline Conservation
520	N/A	Mounds		X	Papohaku Ranchlands
648	B6-90:6	Mound		X	Cultural Protection
649	B6-91:4	Mound		X	Cultural Protection
669	B6-119:3	Mound		X	Cultural Protection
671	B6-121:1,2	Mounds	X		Cultural Protection
674	B6-124:1	Mound		X	Cultural Protection
681	B6-131:1	Mound		X	Cultural Protection
682	B6-132:1	Mound		X	Cultural Protection
739	B6-153:1	Pavement		X	Shoreline Conservation
741	B6-155:3	Mound		X	Shoreline Conservation
764	B6-178:2	Platform		X	Cultural Protection Shoreline Conservation
1102	B5-62:1	Pit in Platform		X	Cultural Protection Shoreline Conservation
1107	B5-67:1,2,8 B5-67:6,7,10	Platforms Enclosures	X		Cultural Protection Shoreline Conservation

State Site Number	Inventory Site:Fe. Number	Form	Burial	Possible Burial	Zone Location
1143	B5-102:1	Mound		X	Project Area
1144	B5-103:1,2	Mounds		X	Project Area
1147	B5-106:4	Mound with Upright		X	Shoreline Conservation
1150	B5-109:8	Mound		X	Cultural Protection Shoreline Conservation
1152	B5-111:1-2 B5-111:3	Mounds Platform		X	Cultural Protection Shoreline Conservation
1154	B5-113:1,2	Mounds		X	Cultural Protection Shoreline Conservation
1155	B5-114:2,3	Mounds		X	Project Area
1160	B5-119:2	Pavement (Historic)		X	Cultural Protection Shoreline Conservation
1167	B5-126:1,2	Platforms (Histroric?)		X	Cultural Protection
1170	B5-129:1	Mound		X	Cultural Protection
1171	B5-130:1	Mound		X	Cultural Protection
1174	B5-133:5-8, 10	Mounds Platforms		X	Cultural Protection
1176	B5-135:3	Mound		X	Cultural Protection
1761	Fe. 1-2	Mounds	X		Papohaku Ranchlands

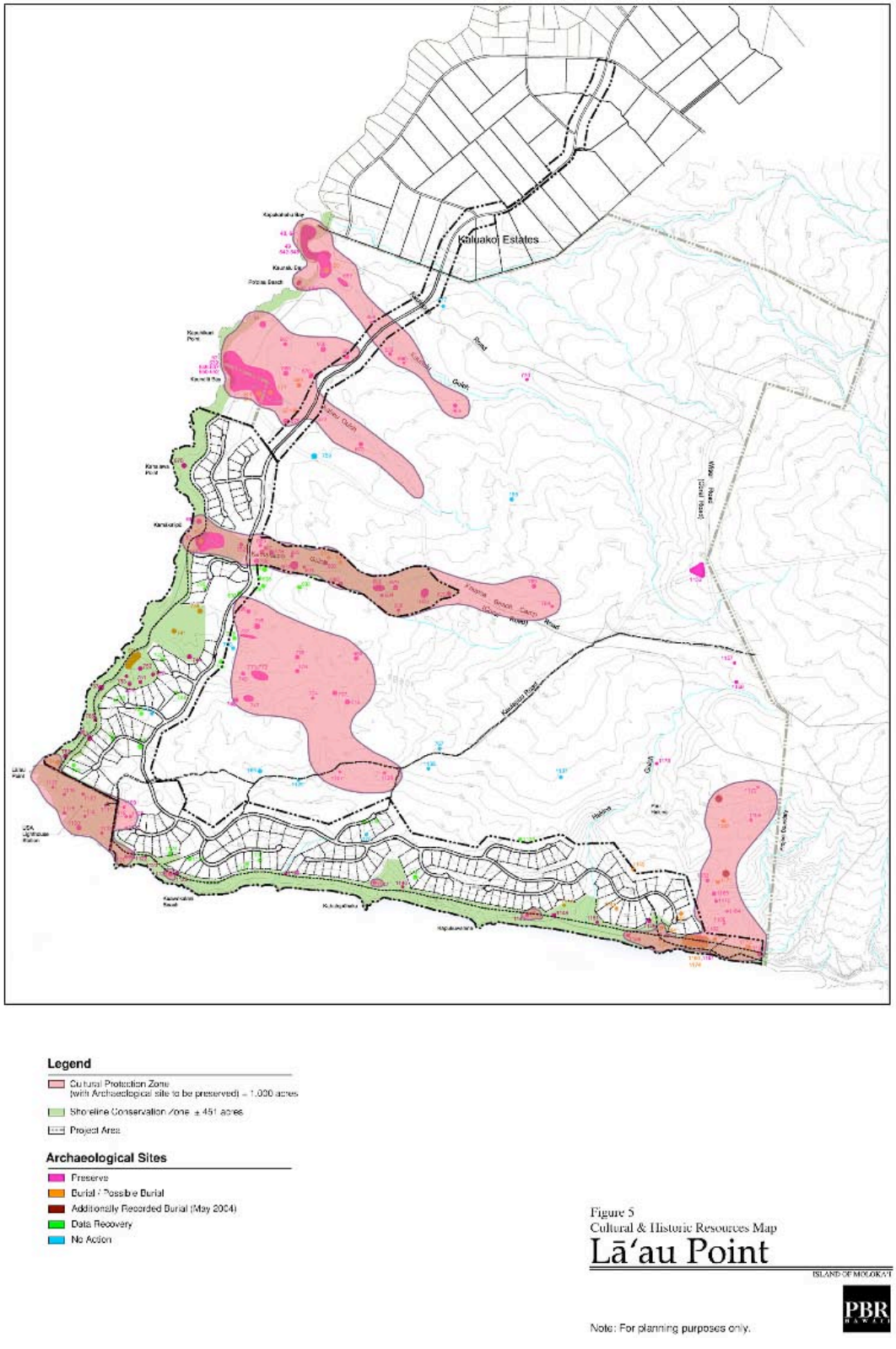


Figure B.1: Inventoried Burial and Possible Burial Site Locations

Site Locations

Table B-1 also reports the location of burial and possible burial sites in relation to the proposed Lā'au Subdivision project area and to overlay zones proposed for Cultural Protection and Shoreline Conservation. The accompanying map (Figure B.1) shows the location of burial sites (which appear in orange). This map also depicts two areas, Pu'u Hakina (adjacent to Site 1171) and another ridge mauka of that that were identified by the Cultural Committee as likely burial areas during consultations between the Ranch and the community in 2004. These do not have recorded features, but were identified by Native Hawaiian residents of Moloka'i as burial places; both are within the large mauka-makai preserve beyond the eastern edge of the proposed development.

Although the table includes information about the two sites (520 and 1761) with possible burials in Papohaku Ranchlands (Labeled "Kaluakoi Estates" in Figure B.1), they have not yet been adequately reported for inventory purposes, a step that must be completed before the landowner can present preservation and burial treatment plans. Their inclusion here simply acknowledges the likely result of an inventory study and provides contextual information.

All but three of the burial and possible burial sites lie within proposed land use zones for Cultural Protection and/or Shoreline Conservation, and to not face potential effects from construction. Sites 1143, 1144, and 1155 comprise five stone mounds located near the eastern extreme of the proposed subdivision (Figure B.1, lower right corner). However, proposed subdivision lot boundaries have been drawn so that even these possible burial features will not fall within the subdivision, and all will be preserved in place. During construction, they will be protected as described below.

Site Descriptions

Table B-1 includes the State and original Bishop Museum designations of features that were interpreted as burials and possible burials, as well as the feature form and the interpretation of "burial" or "possible burial" from the original report descriptions and feature inventory table (Dixon and Major 1993). Detailed dimensional data, sketch maps, and brief descriptions are available in that report, and will not be reported here. What follows are descriptive summaries of the features covered in this plan.

Site 50. This site was located prior to the 1991 survey, and is part of a relatively extensive habitation complex at Kaunalā Gulch. Mound Feature 9 is considered a possible burial mound. A heiau and permanent habitation in the site complex suggest a stable occupation, which makes burials likely.

Site 54. This site subsumes several Bishop Museum sites, of which B6-69, B6-72, and B6-73 have burials or possible burials, along the north edge of Kamāka'ipō Gulch and in its alluvial plane. Again, extensive evidence of habitation and ritual structures indicate a stable occupation, and increase the likelihood that burials are present. In particular, Site 73, Feature 11, a substantial platform-like mound with a smaller cairn piled on the surface, appears to be a burial feature, perhaps containing multiple interments.

Site 56. In this site, B6-77 contains five mounds (Feature 4-8) whose form and location at the margins of a settlement suggest burial function. A hill-like ridge at the southeast end of this complex may be the hill called "Ahoaho," which John Kaimikaua identified as the burial place for the chiefs of Kamāka'ipō.

Site 648. This mound, located in the "Kaupoa Camp" parcel, is already protected in a site preserve there. It is associate with a koʻa shrine.

Site 649. Similar to 648 in form and its proximity to a koʻa, this mound is just north of the Kaupoa parcel.

Site 669. Located in the flood plane of a small gulch, this is a small habitation site, of which a stone mound may be a possible burial. Condition is relatively poor, having been exposed to erosion.

Site 671. This site consists of two mounds on a ridge at the mauka periphery of the Kaunalā Bay settlement complex. The location and oblong shape strongly indicate burial function.

Site 674. This mound is just a meter in area and two stones high, and its location on a slope behind the Kaheu Gulch settlement is the primary factor in its interpretation as a possible burial.

Site 681. This partially-eroded mound is located on the slope of Kamākaʻipō Gulch, inland of the main settlement and agricultural area.

Site 682. This partially-eroded mound is located on the slope of Kamākaʻipō Gulch, inland of the main settlement and agricultural area, and about 20 feet higher in elevation than Site 681.

Site 739. This is an oval-shaped pavement of stones lacking midden or other evidence of habitation.

Site 741. This mound is nearly 2-m in diameter, and is located on a slope near trail markers.

Site 764. This is located just north of the lighthouse reservation boundary, and consists of a low platform within the largest room of a multi-room structure. It may be associated with the occupation of the lighthouse keeper Burrows.

Site 1102. This consists of a rectangular depression on the surface of a platform feature interpreted as a habitation.

Site 1107. Part of a south-shore complex of sites including the above-mentioned habitation platform (Site 1102) and a heiau (1106), this site includes three platforms (Features 1, 2, and 8) as well as three rectangular enclosure alignments (Features 6, 7, and 10) interpreted as burials due to their form and their location on the mauka periphery of the Hakina settlement. It is possible that a more thorough documentation of the site could result in additional burial or possible burial designations, since additional mounds are present.

Site 1143. This is an isolated stone mound whose 2 by 3-m size is consistent with a burial.

Site 1144. This site consists of a large and a small stone mound. Abundant lithic debris between and near the features suggests that they may be associated with lithic production rather than burial.

Site 1147. This site has two terraces, midden, and lithic debitage indicative of habitation, Feature 4 is a mound into which an upright stone has been incorporated; although adjacent to a hammerstone and lithic debitage concentration, its form and location near habitation suggest burial as a possible function.

Site 1150. This site is a concentration of cairns (too small to contain burials), a ko'a shrine, and Feature 8, a large mound considered to be a possible burial.

Site 1152. This site contains a structure thought to be a ko'a, as well as two substantial mounds thought to be possible burials. The site has been damaged by historic road construction, although the mounds appear in fair condition.

Site 1154. Although associated with an extensive lithi debris concentration and a historic hunting blind, the presence of two mounds in this site suggest possible burial function.

Site 1155. This site includes two mounds on the brow of a ridge overlooking the coast below.

Site 1160. This site has a concrete st ructure foundation associated with ranching, but it is a rectangular pavement with multiple pieces of branch coral that indicate a burial, probably also historic.

Site 1167. The good condition of these two platforms and their proximity to a fenced corral indicate that they are historic in origin. One is round (a possible indicator that it supported a water tank), and the other rectangular. Burial is one possible interpretation of these features, which are at a higher elevation than most in the project area.

Site 1170. This consists of a single stone mound on the slope just behind the coastal sand flats.

Site 1171. Located mauka of most features, this is an unusual soil mound with a partial stone veneer. Its position near the brow of a prominent ridge as well as its size suggest burial as a possible function.

Site 1174. This site contains numerous features on the slope behind the Hakina settlement complex, of which two mounds and a platform appear to be possible burials.

Site 1176. This site includes 13 features arrayed on the slope just mauka of the coastal flat, of which one mound appears to be a possible burial.

Current Site Condition

Although some sites have been observed in the interim, the burial or possible burial sites have been systematically documented since the 1991 inventory survey. At that time, the condition of the features was not recorded in detail, but the general status was that all appeared to have at least minimal integrity, but none appeared to be in excellent condition. (Where specific observations of condition were provided in the inventory report, they have been paraphrased in the above site descriptions. Basically, stones appear to remain in their original vicinity, although collapse and toppling of features was typical. None were reported to have been dismantled or looted, and in no case were human remains reported to have been visible on the surface. Because most features consist of mounds, whose degree of collapse and original form can be difficult or impossible to assess, their absolute integrity cannot be determined.

As part of the re-survey of the proposed road corridor and subdivision lots, which will include survey beyond the actual construction area, all sites located will be evaluated more carefully for integrity. Likewise, implementation of the Preservation Plan will include relocation of the burial and possible burial sites, augmentation of their documentation, evaluation of their condition and integrity, and

recommendations for stabilization or reconstruction. Finally, ongoing consultation with the community, as well as review of this draft plan by the SHPD Burials Program and Moloka'i Island Burial Council will likely result in a more detailed plan with regard to stabilization and restoration. At this time, however, no specific measures are proposed for stabilization and restoration.

Burial Protection Measures

The measures listed below also appear in the Preservation Plan, which has been submitted simultaneously with this plan. All of the burial and possible burial sites fall within the Preservation treatment, and will be left in their original locations. Table B-2 lists the specific measures to be implemented at burial sites. The following sections explain the short and long term measures included in the table.

NOTE: The categories of "Recover Eroded Data" and "Interpretation" are included here because the historic preservation process deals with sites, rather than individual features, and the sites to which the burial or possible burial features belong have these as proposed preservation treatments. However, burials will not be part of public interpretation or collection of eroded data.

Table B-2. Burial Preservation Measures.

Site (50-60-01-)	Avoidance	Temporary Buffers	Mapping	Evaluate Stability	Recover Eroded Data	Physical Stabilization	Vegetative Stabilization	Permanent Boundary	Interpretation	Protocol Education
50	X									X
54		X	X	X	X	X	X	X	X	X
56			X	X		X		X	X	X
520	X	X	X	X		X	X	X		X
648	X									X
649	X									X
669	X									X
671	X									X
674	X									X
681			X	X		X		X	X	X
682			X	X		X		X	X	X
739			X	X		X		X		X
741			X	X	X	X		X	X	X
764		X	X	X	I	X	X	X	X	X
1102	X									X
1107	X									X
1143			X	X				X		X
1144		X	X	X	X			X		X
1147			X	X	I	X	X	X		X
1150			X	X		X		X		X
1152			X	X	X	X		X		X
1154			X	X	I			X		X
1155	X									X
1160	X									X
1167	X									X

Site (50-60-01-)	Avoidance	Temporary Buffers	Mapping	Evaluate Stability	Recover Eroded Data	Physical Stabilization	Vegetative Stabilization	Permanent Boundary	Interpretation	Protocol Education
1170	X									X
1171	X									X
1174	X									X
1176	X									X
1761	X	X	X							X

Short Term Protection

Temporary Fencing and Protection. For sites that are in the area of potential impacts during construction, temporary buffers will be established. These will consist of brightly-colored construction fencing erected on the permanent site buffer boundary. Construction personnel will be alerted to their presence and significance, and will not be allowed to encroach. Once buffer zone markers are placed in the field, field personnel will be alerted to their presence and their meaning; no construction, ground-disturbing activity, traversing by vehicle, or stockpiling will be allowed within them. Buffers of this type differ from site boundaries, and extend 7 m or more beyond the outermost features of a site. An archaeologist will be present during ground-disturbing work in such locations to maintain the protective buffer, and to evaluate any inadvertent discoveries that may occur nearby. The archaeologist will follow the procedures outlined below in **Monitoring: Methods**.

Evaluate Stability. Sites are part of a changing environment, and in Kaluakoʻi a widespread agent of environmental change is erosion; long dry periods and occasional downpours mean that many sites are vulnerable to sudden erosion. Generally, sites are at risk either from soil deflation or by more damaging collapses as gullies advance up-slope; in fact several previously buried cultural deposits were initially recorded because erosion had exposed them. More rarely, low-lying sites may be covered with silt washed down from above. For these reasons, sites where erosion appears to be a factor will be evaluated with regard to the damage that has already occurred and the risk of further adverse impacts from erosion. In addition to the sediments, stone features will be evaluated to determine the degree to which collapse has occurred and may be expected to continue. Recommendations for stabilizing sediments and structures will be made.

Long Term Measures

As-Is Preservation. For sites that are outside the subdivision, as well as some within that can easily be planned around, the primary treatment will be simple avoidance. These are sites that have no construction or ground-disturbing activities planned nearby. Sites preserved in this manner will have 7 m buffers unless otherwise noted, but because they are usually remote, will not have physical boundary markers. Instead, these sites will be marked on topographic maps (see attached), and current and future landowners will be notified of their presence, and of the buffer zones.

Mapping. Many sites, especially those where public access or frequent use may be expected, would benefit from accurate mapping. The inventory survey included plane table and alidade mapping of some sites, but most were only sketched. Mapping techniques for structural features will conform to those described in **Data Recovery: Methods**. Maps will become baseline illustrations of sites, allowing landowners to re-identify them and evaluate their condition in the future, as well as to recognize site buffers, which will be depicted on parcel plats. Copies of each map will be submitted to the SHPD office as part of a Preservation Report.

Physical Stabilization. For sites where erosion or historic development has resulted in an unstable deposit, measures may be taken to prevent further impacts. Physical stabilization refers to actions that replenish eroded sediments or create barriers preventing further erosion. Soil from upland pineapple fields may be introduced at some locations to cover deflated surfaces or fill in erosional gullies. No fill will be taken from archaeological sites. For features, previously toppled stones may be re-stacked to repair collapsed sections, but only to the degree that it prevents further degradation; complete restoration of walls or other features will be done only after SHPD has reviewed and accepted a site specific restoration plan. In a few cases, imminent damage may require use of retaining structures. These will consist of alignments or stacked stone facings, and will incorporate natural materials erected in traditional mortarless construction; to avoid confusion of stabilizing features with older sites, they will generally make use of a different type of stone so that they can be readily distinguished. Kiawe or other logs may also be used. Prior to implementation, specific treatments involving alteration of site landscapes will be submitted in writing for SHPD review. Subsequent to implementation, all forms of physical stabilization will be annotated on site maps, described specifically in a letter to SHPD, and identified in any educational materials that are developed for stabilized sites.

Vegetative Stabilization. In sites where soil and water availability make it possible, plants will be used to stabilize damaged sites and prevent erosion of intact sites. In some cases where it is being recommended, it may not be practical to plant vegetation, due to hardpan surfaces or lack of water. In such cases, the appraoch will be to encourage growth of extant plants, particularly native plants and grasses that have become naturalized and help bind the soil. The technique will be to allow low-growing varieties to stay, rather than introducing them. Vegetation that is brought in and planted will consist of native and Polynesian introduced shrubs and groundcovers that are well suited to the dry environment. Shrubs may include species common in the project area, such as *maʻo, ʻilima,* and *ʻuhaloa*, as well as others that would have been expected prior to historic changes, such as *ʻakoko, ʻauhuhu, ʻāweoweo, maiapilo, naupaka,* and *ʻūlei*. Ground covers will also include known and likely former species, such as *ʻākulikuli, hinahina, ʻihi, ʻiliʻeʻe, nanea, pōhuehue,* and *pōhinahina*. Choices of species for particular sites will depend on the availability of the varieties, physical environment, and consultation with ethnobotanical and botanical specialists.

Permanent Boundary. For some sites where public use is expected to be relatively high, permanent boundaries around site buffers are appropriate. Although some especially sensitive sites may have boundaries preventing access except by bona fide cultural practitioners or descendants, they will more often be visual reminders of site boundaries. At some, openings will allow public access, and boundary markers will serve to direct foot traffic rather than prevent it. Before making boundaries, the Kūpuna Advisory Committee will be consulted, but the intent is to use wood or other natural materials that will be visible, yet not too distracting.

Stone walls will not be used, to avoid confusion with the sites themselves. Access to and around boundaries will be planned on a site-by-site basis to minimize the potential for impacts. Signs at buffers will identify sites and advise visitors regarding protocol. (See Appendix.)

Protocol Education. All sites being preserved have significance at least for the information they can offer to our understanding of Molokaʻi history. In some cases they also represent of a unique function or style, and many are valued for their cultural significance to *kanaka maoli* (indigenous Hawaiians) and other groups. For these reasons and the fact that they show the last physical traces left by former inhabitants, it is important to communicate new residents the importance of helping protect and respect ancient sites. As interpretive materials are developed, therefore, information on how to properly behave in sites will be included on printed materials and signs. From an archaeological perspective, this means leaving things as they are and avoiding actions that could damage or destabilize sites. Hawaiian cultural protocol builds on this to include other behaviors, especially with regard to *koʻa* and burial sites, and therefore the Kūpuna Advisors and cultural experts will be consulted. It is anticipated that protocol education will consists of two parts: a general notice for people to respect sites and leave them as they find them, and more detailed information about sites with religious or burial features.

Preservation Report. Following completion of preservation measures, a report will describe their implementation, present data collected at preservation sites, and refine the long-term preservation measures. Interpretive themes and messages based on consultation with cultural experts, other research, and data recovery results will also be detailed in the final Preservation Report.

REFERENCES

Bonk,William
1954 Archaeological Excavations On West Molokai. Master of Arts Thesis, Department of Anthropology, University of Hawaii.

Burtchard, Greg and Stephen Athens
2000 "Archaeological Reconnaissance of the Pāpōhaku Aerial Gunnery Range Kaluakoʻi *Ahupuaʻa*, Island of Molokaʻi, Hawaiʻi." Ms. prepared by International Archaeological Research institute, Inc.

Cooke, George P.
1949 *Mo'olelo O Molokai: A Ranch Story of Molokai.* Honolulu Star Bulletin, Honolulu.

Cooke, Sophie
1961 *Sincerely, Sophie.* Tongg Publishing. Honolulu.

Dixon, Boyd and Maurice Major
1993 "Kapukahehu to Pu`uhakina: An Archaeological Inventory Survey of Southwest Moloka`i." Ms. in Anthropology Department, Bishop Museum.

Dixon, Boyd, Maurice Major, Michael Price, Alan Carpenter, Cary Stine, Bruce Longton
1994 "Lithic Tool Production and Dryland Planting Adaptations to regional Agricultural Intensification: Preliminary Evidence from Leeward Moloka`i, Hawai`i." *Bishop Museum Occasional Papers No. 39.* Bishop Museum Press: Honolulu.

Dye, Tom, Marshall Weisler, and Mary Riford
1985 "Adz Quarries On Moloka`i And Oahu, Hawaiian Islands." Bernice P. Bishop Museum, Honolulu.

Fowke, Gerard
n.d. Archaeological Work in Hawaii. Bureau of American Ethnology Bulletin No. 76: 174-195

Handy, Edward S. C., Elizabeth Handy and Mary K. Pukui
1972 *Native Planters of Old Hawaii: Their Life, Lore, and Environment.* Bernice Pauahi Bishop Museum Bulletin No. 233. Bishop Museum Press, Honolulu.

Jenson, P.
1988 "Archaeological Resource Assessment, Alpha Hotels 7000-Acre West Molokai Parcel." Prepared by Paul H. Rosendahl, Inc. Ms. on file in Historic Preservation Division, Kapolei.

Kaimikaua, John
n.d. "Kaluakoʻi—The Adze Quarries" Molokai Dispatch Newspaper. June 26. Page 4
1988 Oral History. Interviewed by Philip Spalding III

Kamakau, Samuel M.
1992 *Ruling Chiefs of Hawai'i.* Revised edition. Kamehameha Schools, Honolulu.

Kirch, Patrick
1985 *Feathered Gods and Fishhooks.* University of Hawaii Press, Honolulu.

Major, Maurice
1997 "Preservation Plan for Kaupoa Camp, Kaluako`i, Moloka`i." Ms. prepared for Molokai Ranch, Ltd. by Cultural Landscapes Hawai`i, Honolulu.
2000 "Archaeological Inventory Survey at Kukui Summit, Ahupua'a of Kaluako'i, Moloka'i." Ms. on File in State Historic Preservation Division, Kapolei.
2001 "Kahaiawa to Hakina, Ahupua'a of Kaluako'i, Island of Moloka'i (Portion of TMK 5-1-02-030): Archaeolgical Mitigation Plans" Ms. on File in State Historic Preservation Division, Kapolei.
2002 "Southwest Moloka'i Mitigation Plan Addendum" Ms. on File in State Historic Preservation Division, Kapolei.

Major, Maurice and Boyd Dixon
1992 "Archaeological Reconnaissance Survey from Haleolono to Kaumanamana Point, Kaluako`i, Moloka`i, Hawai`i." Ms. in Anthropology Department, Bishop Museum.

Major, Maurice and Tracy Tam Sing
1998 "Supplemental Archaeological Inventory Survey of a Portion of the Public Access Trail at Kapukahehu, Kaluako`i, Moloka`i." Ms. on file in State Historic Preservation Division, Honolulu.

Malo, David
1951 *Hawaiian Antiquities.* Bishop Museum Press, Honolulu.

Menzies, Archibald
1920 *Hawaii Nei 120 Years Ago.* W. F. Wilson, Honolulu.

Nakuina, Moses (Esther Mookini and Sarah Nakoa, translators)
1992 *The Wind Gourd of La'amaomao: The Hawaiian Story of Paka'a and Ku-a-paka'a.*
Second edition. Kalamaku Press, Honolulu.

Phelps, Southwick
1941 "A Regional Study Of Molokai, Hawaii." Ms. in Bishop Museum Archives, Honolulu.

Stokes, John F. G.
1909 "Molokai, Survey of Heiau." Ms. in Bishop Museum Archives, Honolulu.

Strong, Hal
1971 "A Preliminary Survey of Kamakaipo Gulch Habitation Area, Molokai." MS on file, University of Hawai'i

Summers, Catherine
1971 *Molokai: Site Survey.* Pacific Anthropological Records No. 14. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Weisler, Marshall
1984 "Impressions of Prehistory: An Archaeological Survey of Selected Area of Southwest Moloka'i, Hawaiian Islands." Department of Anthropology, Bishop Museum, Honolulu.

APPENDIX A

Sample Text For Signs

Example A: Buffer Marker

This is a traditional site built and used centuries ago by Hawaiians. Please help preserve this place by staying on marked trails and by not moving rocks. Damage to sites is punishable under Hawai'i law (Chapter 6E-11). Take with you memories and photos, but please remove no objects from this site. Aloha

Example B: Interpretive Sign

SITE 656 – STONE TOOL QUARRY

By about 1400 AD, Hawaiians often ventured inland from their coastal settlements to quarry dense-grained basalt that was used to make adzes and other tools. This became so common that the name of the land district in west Moloka'i came to be "Kaluako'i" meaning "the adze pit."

Hawaiians used other stones to strike this fine basalt, chipping away flakes until the rough shape of an adze emerged. Some of this work occurred here, where workers would camp. Polished adzes are uncommon here, but are more so at the coast, leading archaeologists to believe that final stages of manufacture occurred at the more permanent settlements by the ocean.

[Illustration showing hammerstone and adze preform, and perhaps map of quarry location.]

Example C: Photo of Kaupoa Sign and Fencing

Appendix I

Cultural Impact Assessment

Cultural Impact Assessment for the

Kamaka'ipo Gulch meets the ocean between Kaupoa and La'au Point in West Moloka'i.

La'au Point Rural-Residential Development

Kaluako'i, Island of Moloka'i

of Moloka'i Properties Limited dba Moloka'i Ranch

November 15, 2006

by
Davianna Pomaika'i McGregor, PhD

Professor, Ethnic Studies Department
University of Hawai'i, Manoa

assisted by
Sean McNamara

Dept. of Urban & Regional
Planning, UH Manoa

Table of Contents

List of Figures

All of the photographs were taken by Davianna McGregor on a site visit to the West Coast of Moloka'i between Kaupoa and Ka Lae o ka La'au on June 8, 2006

Regarding Hawaiian orthography, the 'okina is marked by a single quotation mark (') and the kahako is marked by an "underline" above the letter (_) in the narrative and informant quotations. Quotes from documents preserve the original spelling.

Contribution

Dr. Davianna Pomaika'i McGregor has conducted this cultural impact assessment on a pro bono basis so that the fee she would have received can be contributed to the Moloka'i Land Trust to support its mission which is:

> *To protect and restore the land, natural and cultural resources of Moloka'i, and to perpetuate the unique Native Hawaiian traditions and character of the island for the benefit of the future generations of all Moloka'i, particularly Native Hawaiians.*

Qualifications and Role

The primary author, Davianna Pomaika'i McGregor is a Professor of Ethnic Studies at the University of Hawai'i Manoa. Her ongoing research endeavors have focused on documenting the persistence of traditional Hawaiian cultural customs, beliefs, and practices in rural Hawaiian communities including Moloka'i, Puna, Ka'u, Ke'anae-Wailuanui, and Waiahole-Waikane. The findings yielded from her ongoing research endeavors are published in a forthcoming book by UH Press, Kua'aina: Living Hawaiian Culture.

Dr. McGregor is a part-time resident of Ho'olehua, Moloka'i. In 1993 she helped to conduct the Moloka'i Subsistence Study which was completed in 1994. In 1998, she helped write the community grant which received funding for the Moloka'i Enterprise Community. In 1998, she served as an expert witness on behalf of the subsistence practitioners in the Wai Ola Water case. In 2004-2005, she participated in the culture and land use committees which helped develop the Community-Based Master Land Use Plan for Moloka'i Ranch. In 2006 she completed a community-based responsible tourism plan for the Ke Aupuni Lokahi-Moloka'i Enterprise Community and cultural impact assessments for The Nature Conservancy preserves at Kamakou and Mo'omomi on the island of Moloka'i. In 2006 she also helped incorporate the Moloka'i Land Trust and currently serves as a member of its Board of Directors.

In 1993, Dr. McGregor, together with Dr. Jon Matsuoka of the UH-Manoa School of Social Work and and Dr. Luciano Minerbi ofthe Department of Urban and Regional Planning, conducted the "Native Hawaiian Ethnographic Study for the Hawai'i Geothermal Project Envirionmental Impact Study" which serves as the template for cultural impact studies for Hawai'i.

Sean McNamara, has a Master of Arts degree from the UH-Manoa Department of Urban and Regional Planning and is currently a doctoral student in that department. In Spring 2005 he helped research and write the Papohaku Dunes Cultural and Natural Resource Preservation Plan, Kaluako'i, Moloka'i, Hawai'i as one of eleven students in a planning practicum taught by Professor Luciano Minerbi. Sean researched ethnographic documents and oral history sources for the Kaluako'i ahupua'a and wrote the ethnographic section of this report. He also reviewed the Waiola Case testimonies and developed the subsistence flow chart to illustrate the information provided in those testimonies.

Mahalo Nui Loa To:

KAL-EC Project #47 members for their critical and exhaustive work on the Community-Based Master Land Use Plan for Moloka'i Ranch which I used as a foundation for this cultural assessment report.

Ke Aupuni Lōkahi Moloka'i Enterprise Community executive director Abbey Meyer and the staff for community outreach support.

Moloka'i Land Trust for their dedication and courage and the support the offered with community outreach.

Office of Hawaiian Affairs Trustee Colette Y. Machado and staff members Irene Kaahanui and Halona Kaopuiki for community outreach and co-sponsorship of the community meetings to ensure input from the Native Hawaiian community.

Peter Nicholas, Harold Edwards and John Sabas of Moloka'i Properties Limited for their assistance with community outreach.

Professor Luciano Minerbi of the UH Mānoa Department of Urban and Regional Planning for assistance in the design of the report, the consideration of alternatives to La'au and permission to include ethnographic information gathered by graduate students in his planning practicum for the Papohaku Dunes Cultural and Natural Resource Preservation Plan, Kaluako'i, Moloka'i, Hawai'i Study.

Note takers for the community meetings - Loretta Sherwood, Sean McNamara, Blake La Benz.

Summary Cultural Assessment

This Cultural Impact Assessment Report has been prepared as part of the Environmental Impact Statement (EIS) for the proposed La'au Point Development in compliance with Chapter 343, Hawai'i Revised Statutes and Title 11, Department of Health, Chapter 200, Environmental Impact Rules, State of Hawai'i.

This report has especially been designed to fulfill the mandate to the Land Use Commission from the Hawai'i State Supreme Court in its ruling, Ka Pa'akai O Ka 'Aina v. Land use Commission, State of Hawai'i / 94 Haw. 31 (2000). The specific section of the ruling that served to guide the development of the report is as follows:

> "In order for the rights of native Hawaiians to be meaningfully preserved and protected, an appropriate analytical framework for enforcement is needed. Such an analytical framework must endeavor to accommodate the competing interests of protecting native Hawaiian culture and rights on the one hand, and economic development and security, on the other . . .
>
> In order to fulfill its duty to preserve and protect customary and traditional native Hawaiian rights to the extent feasible, the LUC, in its review of a petition for reclassification of district boundaries, must – at a minimum – make specific findings and conclusions as to the following: (1) the identity and scope of 'valued cultural, historical, or natural resources' n27 in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area; (2) the extent to which those resources, including traditional and customary native Hawaiian rights will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the LUC to reasonably protect native Hawaiian rights if they are found to exist. n28

This summary, addresses the three key findings required of the Land Use Commission and government agencies empowered to make decisions affecting land use in Hawai'i under the ruling of the Hawai'i State Supreme Court in its ruling in Ka Pa'akai O Ka 'Aina in 2000.

Valued Cultural, Historical or Natural Resources and Traditional and Customary Native Hawaiian Rights Exercised in the Petition Area

The La'au Subdivision Archaeological Preservation and Mitigation Plan prepared by Cultural Landscapes in May 2006 documents valued cultural and historical resources in the petition area. This report focuses on valued natural resources utilized for cultural, subsistence and spiritual purposes.

A large part of the significance of the La'au Point area is that it is raw and untouched. It is so isolated that most of the residents of Moloka'i have never even been there and have no direct experience with the place. This factor gives La'au an almost mythical quality. La'au Point has become an icon of what Moloka'i represents - a rural stronghold and reserve of Native Hawaiian culture, a cultural kipuka. If Moloka'i is "The Last Hawaiian Island" then La'au is one of the last untouched Native Hawaiian places on "The Last Hawaiian Island."

In Hawaiian tradition, La'au Point represents a point of no return. For those traveling by canoe from O'ahu to Moloka'i across the Kaiwi Channel, once La'au Point is sighted, there is not turning back to O'ahu. This concept has been applied to the issue of the development of the La'au Point Rural-Residential Subdivision. Many Moloka'i residents feel that if the west and south shores adjacent to La'au Point are developed, as proposed, that this will open up Moloka'i to new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

Everyone interviewed and those who came to community meetings had reservations about the proposed development. No one was an enthusiastic advocate, many were reluctant supporters and those most vocal were opposed to the development.

The Maunaloa kupuna and larger community and longtime employees of Moloka'i Ranch have the most direct and longtime experience with the area proposed for development. What is striking is that while they are very concerned and reluctant about the development, they are also willing to acknowledge and support the right and the need of the Ranch to seek the development. They feel that the negative impacts could be managed if the development would conform to the strict covenants, conditions and restrictions outlined in the Community-Based Master Land Use Plan for Moloka'i Ranch. They are confident that their community can work together with the project's resource managers to provide stewardship over the marine resources that they rely upon for subsistence. They also felt that the negative impacts would be offset with the gifting of important legacy lands to the community.

In addition, many longtime adversaries of Moloka'i Ranch engaged in the development of the Community-Based Master Land Use Plan for Moloka'i Ranch, which includes the proposed La'au development, over the course of two and a half years throughout countless community meetings, long hours of impassioned debate, critical thinking and soul searching. For them it was a process of negotiating a lasting settlement of a thirty year struggle with Moloka'i Ranch over extravagant development schemes and the extractive use of millions gallons of the island's precious and limited water resource. The proposed La'au development was difficult for them to accept and at that point some withdrew their support. However the majority of the planning group persisted in their support for the overall Community-Based Master Land Use Plan as a reasonable and balanced approach that empowers the community to manage premier Native Hawaiian legacy lands, control population growth and land speculation and monitor the one last major development on Moloka'i Ranch lands. Moreover, the plan revolves around the management of natural resources for subsistence, cultural and spiritual purposes.

Participants in community meetings and the key informants speak of the south and west coasts adjoining La'au point and its nearshore waters as reserve of marine resources which serve as their "icebox." It is a place where fishermen usually go to get fish, 'opihi and crab for parties and gatherings of their large extended families.

The southwest shore also factors into the life cycle of the mullet, serving as a hatchery area from which they move east to Mana'e or East Moloka'i.

Along the south shore, informants identified the various fishing and gathering areas by points that they referred to as first point (Kanalukaha), second point (Kapukuwahine), third point (Kahalepohaku) and fourth point ('Opihi Road). The south shore is best known for moi, aholehole, 'a'ama crab and 'opihi. The 'opihi starts at Kapukuwahine on the south shore and out on the cliffs along what they refer to as 'Opihi road. The west shore is best known for moi, aholehole and lobster. Due to the seasonal ocean swells, the south shore is usually harvested in the winter time when there are north swells and the west shore is usually harvested in the summer time when there are south swells. They also speak of the ocean as being very treacherous and not safe for swimming. Off of La'au Point itself, informants spoke of a very strong current which has swept even the best divers out to the open ocean.

Traditionally, it is not a place that was fished on a regular basis because it is isolated and difficult to reach. However, the increased use of boats on Moloka'i and O'ahu has changed this. Informants noted that the resources have declined in the area with heavy seasonal harvesting by boaters from O'ahu and the opening of Hale O Lono harbor and Kaluako'i as closer launching points for Moloka'i boaters.

In addition to natural resources utilized for subsistence, informants spoke of other natural resources which have cultural significance such as native plants, native species of turtles and monk seals, and the simple unspoiled natural beauty of the undeveloped seascape.

The La'au area is generally regarded as a special place of spiritual mana and power. Community participants and key informants spoke of specific burials, fishing ko'a, and heiau. Such specific sites are documented and described in the La'au Subdivision Archaeological Preservation and Mitigation Plan by Cultural Landscapes that is part of this EIS.

The overall spiritual quality of the La'au area as a wahi pana and wahi kapu cannot be quantified and deserves recognition and respect.

Informants identified the following coastal cultural and subsistence resources in the proposed development area.

Coastal Cultural and Subsistence Resources

x	streams	x	ponds
____	‘auwai (taro irrigation ditches)	____	lo’i kalo
x	springs	x	caves
x	trails	x	wahi pana (named places)
x	sacred places	____	dunes
x	landings	____	bridges
x	surfing sites	x	sandy beach
x	fishing area	x	fishpond
x	fish trap	x	fish house
x	hunting areas	x	kilo i’a (fish sighting)
x	muliwai (brackish pond)	x	anchialine pond
x	trails	x	salt ponds
x	wells	x	turtle nesting area
x	historic walls	x	basalt veins for tools
____	alae vein	x	salt pans
x	shrines	x	salt gathering areas
x	ko’a (fishing shrines)	x	heiau (temples)
x	historic sites	x	cultural use areas
x	ho’ailona (natural signs)	x	sighting place
____	lele (cliff jumping spots)	x	native plants
x	pu’uhonua (places of refuge)	____	holua slides
____	cultivation area	____	leina (jumping off point
x	archaeological sites	for souls to cross over)	
x	burials	x	kupe’e
____	o’opu	____	hihiwai/wi
x	aholehole	x	‘anae
____	steam bath areas	x	bathing pools
x	limu gathering areas	x	lava tubes
x	subterranean water course	x	petroglyphs
x	kapu kai/hi’u wai areas	x	paddling areas
x	artifacts	x	view plane
x	seasonal residential sites	x	burial markers
x	water caves	x	birthing stones
____	phallic stones	x	Pohaku Kane
x	coral reef	____	estuary
x	spawning grounds	x	house sites
x	po kane routes (night marchers	____	dams
x	‘aumakua (ancestral deities) domain		

They added the following additional resources:

monk seals, water catchments, bell stones, ahu stones, Hawaiian moth, chamomile type flower for clearing liver, shells on shore.

Extent to which Valued Resources and Traditional and Customary Native Hawaiian Rights will be Affected or Impaired by the Proposed Action

Participants in the community meetings expressed concern that the proposed development will change the demographics of Moloka'i forever. They believe that La'au will contribute to the increase of land values and prices and property taxes on Moloka'i.

The community expressed concern that 200 new millionaires will change the make up of the Moloka'i community and lead to changes in the Hawaiian way of life. With more outsiders, Moloka'i will no longer be "The Last Hawaiian Island." The proposed development will bring in new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

The community doesn't want Moloka'i to turn into Maui or O'ahu with a large population off-island people. They expressed regret that if the development occurs, La'au will never be the same.

In balance, the Maunaloa kupuna shared that no matter what happens, the population will increase and the land will be limited. While Moloka'i has been preserved it is gradually being developed. They acknowledged that progress cannot be stopped but that it can be controlled. The Maunaloa kupuna felt that the overall community plan of which La'au is a part provides for the community to manage and monitor the proposed development.

Access and Trails

Community members were concerned that the subdivision might be a gated community, and were relieved that this is not part of the plan.

Native Hawaiians and the general public will have access from two points - one on the south shore at the southeast entry and one on the west shore at the northwest entry. In the process to develop the Community-Based Master Land Use Plan for Moloka'i Ranch, subsistence fishers and gatherers were very concerned that opening up the south and west shores to public access at every 1500 feet as the County of Maui provides will deplete the marine resources. They regretted that the opening of Hale O Lono harbor to public access had severely decreased the marine resources there and they do not want to see that happen in the area proposed for development. Opening up access points every 1500 feet would have a severe impact on the subsistence resources along the west and south coasts adjacent to La'au Point.

Community members were concerned that subdivision lot owners and their friends will have preferential access to the coast. There will be nothing to stop the home owners from going down to the beach. Those who live on the shoreline will be able to access their home and the beach by vehicle. Homeowners can create a trail to the beach and let their friends have access to the beach. Affording only two access points for the general public, while the rich people in the subdivisions will have access from their homes seems unequal. Informants also expressed concern that landowners might call police if they see the general public walking on the beach, as this has happened at Papohaku.

Participants in community meetings and informants felt it was important to provide emergency access through the subdivision to the shoreline for emergencies. They were also concerned that access should be afforded for kupuna and persons with special needs. Some pointed out that the areas closest to the access points will be heavily impacted, while spreading out the access points might spread out the impact. It was also noted that the road down to Hale O Lono harbor would need to be maintained in order to keep access to the area open.

Subsistence Fishing and Gathering

Informants feel that the development will spoil the experience of fishing in what is now an isolated, pristine and spiritual area. They are concerned that instead of La'au being a place to get food, it will be a place with haole in their back yards. Many informants felt that the proposed development will greatly hinder, if not abolish altogether, ongoing traditional gathering activities currently enjoyed by Moloka'i islanders at La'au. Fishermen will lack privacy if the development goes through. Yet, throw net subsistence fishers require an undisturbed beach that allows fish to forage closer inshore in order to succeed. Gatherers of 'a'ama crabs require dark silent nights to ensnare their nocturnal prey. Commotion emanating from noisy and brightly lit beach homes will negatively impact crabbers' efforts to capture their already skittish prey. Gatherers of limu and pupu will very likely be met with kayakers in the water, people sunbathing on the beach, and pet animals running up and down the shoreline. If experiences elsewhere in Hawai'i hold true, it is not likely that owners of multi-million dollar beach homes will greet shoreline subsistence gatherers with open arms. It is more probable that subsistence practitioners will be confronted by insensitive newcomers intolerable of extractive activities in what they will perceive to be their front yards.

While the new landowners will probably want to go out and fish when they see the lobsters in the area, most informants felt that the new residents will probably not directly damage the fishing grounds because they don't know how to fish. The real impact on the fishing resources is from the Honolulu boaters. When the outboard motor and twin outboards came out at an affordable prices, the Honolulu boats came fishing all along the west end and south shore. These fishermen have taken everything, even the eggs. The lobster area is wiped out. The Moloka'i residents fish for the family and perhaps get an extra cooler of fish to sell. The outside commercial fishermen fish out the grounds of lobster and fish. They do not plan for the future.

Community participants and key informants were concerned that pesticides and fertilizers will contaminate the ocean and kill the marine resources. Fertilizer run off will kill the small organisms that support all of the marine life offshore. Runoff from the development will contaminate the ocean. Grading can increase erosion which will result in sediment flowing into the ocean and destroy marine resources. Some informants from the East End felt that the development would impact the mullet run and thus impact the resources on their end of the island. However, longtime fishermen who have regularly fished the south shore as members of Ranch families noted that the mullet spawn at Hale O Lono, Halena and Kolo, rather than close to La'au. Hale O Lono is on the eastern border of the project area. Halena and Kolo are outside of the project area.

Community members wanted to be assured that the rules outlined for access and for subsistence and gathering cannot be changed by the subdivision lot owners. MPL clarified that the lot owners will be required to uphold the Covenants, Conditions and Restrictions (CC&Rs) that include these rules as part of the homeowner contract.

Providing parking areas at either end of the proposed project area and limiting access along the shoreline to foot access will open up access sufficiently that it might impact the resources, as the entry points will be closer for those who now walk and must either enter from Hale O Lono or Dixie Maru. The conservation rules might affect fishing, but if the access is easier there will be more fishing.

Subsistence Hunting

Hunters are concerned that the new landowners from outside of rural Moloka'i will not want to hear shooting and may be protective of the deer and oppose even bow hunting. Deer hunting could become an animal rights issue. Bullets can travel 4 miles and 10 year kids can get a license. Need to have a sufficient buffer zone. It will only take one accident to close down hunting in the area. The overall hunting area will be reduced by the no hunting zone in the subdivision and buffer zone and the safety zone.

The plan to put in a deer fence and remove deer within the proposed subdivision will effectively close off hunting in the southwest corner of Moloka'i. It will have to be a very high fence. The deer will keep going back. The deer will get hurt.

Cultural Resources and Practices

Informants are concerned that cultural sites will be destroyed once start to bulldoze and grade and clear the land for development. At Papohaku, homeowners have graded and damaged dune system and destroyed cultural sites and burials located in the dunes. They have extended their household area into the conservation zone, treated it like their own private property and tried to exclude Moloka'i residents from the public beach area fronting their homes. The same process can occur in the proposed subdivision.

Informants expressed concern that future generations may not have a concept of how to do subsistence and only going to catch what can be carried. Future generations should be

able to be in an environment where it's just them and mother nature. They should know what it feels like.

Concern was expressed about the impact of the proposed development on the monk seals who frequent the remote beaches of the west and south shores. Monk seals might be disturbed during the grading and construction phase. New residents may have dogs who would disturb the monk seals.

Many of the informants commented that the development will require a lot of expensive landscaping because the land is rough and rocky with a lot of boulders.

Spiritual Resources and Practices

Can destroy ko'a fishing shrines and cultural sites, unless monitored. Informants are also concerned that once the grading starts there will be erosion when it rains and the mud will cover the ko'a, the sand and the reef.

Can disturb iwi kupuna burials unless monitored.

The overall general concern is that the development of the area will destroy the special quality of La'au as a special place of spiritual mana and power.

Feasible Action by the LUC to Reasonably Protect Native Hawaiian Rights

The Community-Based Master Land Use Plan for Moloka'i Ranch provides measures to mitigate the overall impacts of the proposed development at La'au which set unique precedents for the development of large landholdings by offshore corporations. These precedents are related to community planning, the creation of a land trust for the community, the donation of legacy lands to the land trust, the donation of easements to the land trust, the protection of subsistence fishing, gathering and hunting, reserving lands for community housing, and the creation of economic opportunities for the community through the re-opening of the Kaluako'i Hotel. The plan also provides for covenants, conditions and restrictions that landowners in the La'au Point rural residential development will need to accept and agree to uphold in order to purchase a lot.

The Land Use Commission can review the Community-Based Master Land Use Plan for Moloka'i Ranch, especially the Covenants, Conditions and Restrictions (CC & Rs). The Commission can endorse the guidelines and CC & Rs which provide mitigation of the identified impacts to the cultural and natural resources utilized for subsistence, cultural and spiritual practices and customs. The Land Use Commission can assist in the enforcement of the CC & Rs by making these part of the conditions of the rezoning of the lands from the agricultural to the rural classification.

La'au Point must be the most environmentally planned, designed and implemented large lot community in the State. The residents would be educated and informed about the environment and culture, and taught to "Malama 'aina," take care of the land and sea."

This statement precedes the covenant document determined by the Land Use Committee that will place many restrictions on lot owners at La'au Point, in order to attract only those who are concerned about conservation.

As an example, the Conservation Zone and other areas to be protected (approximately 1,200 acres) within the subdivision will be the subject of an easement held by the Land Trust, with guidelines for these uses to be determined prior to the construction of the subdivision and reflecting the importance of the area archaeologically and to subsistence gathering.

These protected lands will be part of an entity that is controlled equally by the homeowners and the Land Trust. All decisions relating to this area: maintenance, subsistence protection, archaeological site protection, personnel, etc., will be the shared responsibility between the Trust and the homeowners, who will share equally in the costs.

MPL will attempt to attract buyers to the La'au point subdivision who reflect the hopes and aspirations of the community. Brochures, sales material and other promotional documents will be vetted by the Land Trust or the EC for accuracy and adherence to their principles.

One of the unique features of the CC &Rs is the condition that every person whose name is on the property title must commit to undergo a certain amount of education about the Moloka'i community and its desires and aspirations with kupuna and the Maunaloa community.

Measures will be taken to assure that these CC & Rs cannot be changed in the future. These CC & Rs include the following:

- prevent a gated community
- restrict the further subdivision of lots
- restrict the area that can be disturbed for use
- prevent construction on slopes of more that 50%
- restrict building height
- require the use of alternative energy
- prohibit the use of pesticides
- require that exterior lighting be shielded from the ocean
- require water catchments and 5,000-gallon storage tanks
- restrict landscaping to native and Polynesian introduced species suitable for dry coastal locations
- prohibit the use of noxious or invasive species; require green architecture
- manages erosion with vegetative cover
- puts a deer fence at the rear of the subdivision

The covenants, Conditions and Restrictions that landowners will need to uphold are described on pages 101 - 105 of the Community-Based Land Use Plan for Moloka'i Ranch that is part of the EIS.

Additional Recommended Guidelines:

Informants recommend the following additional provisions to mitigate the impact of the development on subsistence practices:

- ***Fence to demarcate private property from public access area***

All of the informants felt that it is important to have a clear physical demarcation, such as a log fence, running along the individual property lines to distinguish between private property and the public access area. By putting in a fence of some kind the public will know the boundary so that they won't trespass. Another suggestion was to use a round wire fence, called a New Zealand fence.

- ***Location of Access Trail***

Informants suggested that there be a physical demarcation between the property line and the ocean, along which the trail would run. The trail would follow the contour, following the old traditional trail as much as possible. Then the existing kiawe would serve as a buffer between the trail and the sand and ocean. This can help reduce impact of the trail on the beach and ocean. The kiawe can be pruned. It is a nitrogen fixing plan and will help other plants to grow around it. The trail should be placed back from the ocean so that it won't wash out. The trail will only be for walking and not for atv's or even bicycles. The trail should not be paved but kept clear and maintained.

- ***Emergency access to shoreline through subdivision***

Access through the subdivision should be provided for emergency rescue

- ***Document Existing Trails and Roads***

Document and map existing trails and roads for access.

- ***Kupuna Access***

To accommodate kupuna and those with special needs, have a golf cart available to assist their access.

- ***Landscaping***

Need to prevent landowners from landscaping the area of the setback which ranges from 250 to 1,000 feet.

- ***Support for the Maunaloa Community***

Have monies generated go into the community to support the school. Include the Maunaloa 'Ohana I Lokahi Association needs to be involved in the decisions about La'au.

- ***Regulate Fertilizers***

The use of fertilizers will be regulated.

- ***Involve Maunaloa Community in Stewardship***

Longtime fishers and gatherers from the Maunaloa community will be involved in the monitoring and protection of the marine resources in the development area.

- ***Cultural Monitoring***

Provide onsite monitoring of sites and potential erosion areas during clearing, grading and construction. Should have the resource management plan up and running when the grading and constructions starts.

- ***Hunting***

Have the buyers accept that hunting occurs in the broader surrounding area.

- ***Kama'aina residents of the Maunaloa community have seniority***

The seniority for hunting in accordance with traditional subsistence should be for kama'aina residents of the Kaluako'i ahupua'a and MPL employees.

- ***Papohaku Preservation Plan***

Apply relevant recommendations from the Papohaku Dunes Cultural and Natural Resource Preservation Plan, Kaluako'i, Moloka'i, Hawai'i Study.

- ***Kamaka'ipo Buffer***

The buffer area for Kamaka'ipo Gulch may need to be expanded. Due to the potential for erosion during grading and construction, the houses close to Kamaka'ipo Gulch should be moved further away from the gulch.

- ***Monk Seals***

Provide education and enforce laws protecting monk seals

- **Community-Based Subsistence Fishing Management Area**

It is a good idea to establish the community-based subsistence fishing management area that was demonstrated in a pilot project at Mo'omomi. Should also coordinate efforts with the communities of Miloli'i, Hawai'i and Ha'ena, Kaua'i who are also establishing community-based fishing zones. Also respect the Kalaupapa people and their grounds. The rights of the Kalapana people to fish in the Volcano National Park is another model.

- ***Restock moi***

The Land Trust should use some of the money to restock moi if they diminish. Restocking should be part of the management plan.

Conclusion

The overall Community-Based Master Land Use Plan for Moloka'i Ranch is not a perfect plan because it requires the development of the relatively pristine south and west shorelines of Moloka'i adjacent to La'au Point. Nevertheless, it is truly a grassroots community plan which represents a historic good faith effort on the part of Moloka'i Properties Limited and Ke Aupuni Lokahi-Moloka'i Enterprise Community to create sustainable economic solutions that will protect the cultural integrity of a unique Hawaiian island community. This monumental effort deserves serious reflection, deliberation and endorsement.

Ke Aupuni Lokahi-Moloka'i Enterprise Community is the steward of a plan that was designed by a broad cross section of the Moloka'i community. From May through September 1998, a planning group of the Moloka'i community formed seven subcommittees on Health, Education, the Environment, the Economy, Recreation, Youth and Leadership, and Culture to develop a comprehensive grant proposal to the U.S. Department of Agriculture to receive designation as a Rural Economic Empowerment Zone. They sent out newsletters to every postal service customer on the island and held two well-attended community meetings to receive input on the grant proposal. The final proposal contained a statement of the community's vision for Moloka'i; a description of strengths and weaknesses in the island's economy and natural environment and a strategy for sustainable community economic development. Although the Moloka'i community was not designated as an Empowerment Zone, they succeeded in attaining the status of a Rural Enterprise Community eligible to receive federal funds totaling $2.5 million over ten years in increments of $250,000 a year to attract additional funds that would launch sustainable economic development projects. The Community-Based Master Land Use Plan for Moloka'i Ranch is Project #47 of the Ke Aupuni Lokahi-Moloka'i Enterprise Community.

Ke Aupuni Lokahi-Moloka'i Enterprise Community continues to be guided by its vision statement that also serves as the vision statement for the Community-Based Master Land Use Plan for Moloka'i Ranch. It is as follows:

> *Moloka'i is the last Hawaiian island. We who live here choose not to be strangers in our own land. The values of aloha ' aina and malama 'aina (love and care for the land) guide our stewardship of Moloka'i's natural resources, which nourish our families both physically and spiritually. We live by our kupuna's (elders') historic legacy of pule o'o (powerful prayer). We honor our island's Hawaiian cultural heritage, no matter what our ethnicity, and that culture is practiced in our everyday lives. Our true wealth is measured by the extent of our generosity.*
>
> *We envision strong 'ohana (families) who steadfastly preserve, protect and perpetuate these core Hawaiian values.*

We envision a wise and caring community that takes pride in its resourcefulness, self-sufficiency and resiliency, and is firmly in charge of Moloka'i's resources and destiny.

We envision a Moloka'i that leaves for its children a visible legacy: an island momona (abundant) with natural and cultural resources, people who kokua (help) and look after one another, and a community that strives to build an even better future on the pa'a (firm) foundation left to us by those whose iwi (bones) guard our land.

In the final analysis, the government agencies responsible for decisions about the future of the land and natural resources of Moloka'i must weigh the cultural impacts and benefits of the proposal to develop the west and south shorelines of the island of Moloka'i in consultation with the people of Moloka'i who depend upon these resources for subsistence, cultural and spiritual purposes. In particular, the kama'aina families who have lived in Maunaloa and the Kaluako'i ahupua'a for generations and the longtime employees of Moloka'i Ranch and their relatives have been the primary users of these resources and will be the most directly affected by the proposed development.

There is also the critical issue of Water. Is there enough water to provide for all of the island's major uses and yet allow this development to draw out 1,000,000 gpd of brackish water from Kakalahale? The Hawaiian homesteaders have a special claim and particular interest in this issue. MPL is actively working with all of the major managers and current users of the island's water resources to develop a solution.

There are clearly profound and unprecedented features in the overall Community-Based Master Land Use Plan for Moloka'i Ranch that will benefit future generations of the island as a whole. The gifting of fee title ownership of 26,200 acres to the Moloka'i Land Trust and dedication of 24,950 acres in conservation easements in perpetuity by Moloka'i Properties Limited (MPL) is clearly in the tradition of "Aloha Mai, Aloha Aku," "When aloha is given, aloha should be returned." Such an outstanding and magnanimous gesture deserves recognition as a model for offshore owners of Hawaiian lands on Moloka'i and other islands. Moreover, it is not just the quantity, but the quality of the lands that are being turned over that is significant. The ancient burial grounds of Kawa'aloa, the birthplace of the hula at Ka'ana and the Hula Piko at Maunaloa, the Makahiki grounds of Na'iwa, the fishing village of Kawakiu, the fishing grounds of Halena and Mokio are premier Native Hawaiian legacy lands of great significance to Native Hawaiians throughout the islands.

As with any groundbreaking work that is seeking to create innovative solutions to time worn problems, this plan takes risks. While the plan protects significant subsistence resources on the northeast shoreline of Moloka'i from Kalaupapa to 'Ilio Point and around to Kepuhi from development, the southwest shoreline from Kaupoa to Hale O Lono will be ringed by luxury residential homes. Extraordinary measures are incorporated into the plan to buffer and protect the subsistence and cultural resources from the negative impacts that such a development can generate.

These include:

- Upholding and assuring Native Hawaiian rights of access for cultural, subsistence and spiritual purposes.

- Creating sizeable conservation zones and buffer areas to protect the cultural sites and shoreline area.

- Ending commercial hunting so that Moloka'i kama'aina can legally engage in subsistence hunting on Ranch lands.

- Hiring two community cultural and natural resource managers who will work with the community to monitor every phase of the project, from clearing and grading, to construction and the moving in and residence of new homeowners.

- Orienting homeowners to appreciate and support the unique and special way of life on Moloka'i as the "Last Hawaiian Island."

- Limiting shoreline access to a foot trail.

Are these measures provided within the Community-Based Master Land Use Plan sufficient to protect these resources for future generations? The kupuna advise us that after all is said and done, it is La'au itself that will determine what will be acceptable and who will be accepted.

Section 1 Introduction: Proposed Development at La'au Point

1.1 Purpose

Moloka'i Properties Limited proposes to develop 200 two-acre rural-residential lots on the west and southwest shores of Moloka'i adjacent to La'au Point in the ahupua'a of Kaluako'i (portions of TMK (2)5-1-02:30). The total project area includes roads, infrastructure, an expansion of the State Conservation District, cultural and environmental preservation zones, and two beach parks on 1,492 acres of vacant land, although the actual area for which rezoning is being petitioned is 875 acres.

This Cultural Impact Assessment Report is being prepared as part of the Environmental Impact Statement (EIS) for the proposed La'au Point Development in compliance with Chapter 343, Hawai'i Revised Statutes and Title 11, Department of Health, Chapter 200, Environmental Impact Rules, State of Hawai'i.

This Cultural Impact Assessment Report is also designed to fulfill the mandate to the Land Use Commission from the Hawai'i State Supreme Court in its ruling, Ka Pa'akai O Ka 'Aina v. Land use Commission, State of Hawai'i / 94 Haw. 31 (2000). The specific section of the ruling that served to guide the development of the report is as follows:

> "In order for the rights of native Hawaiians to be meaningfully preserved and protected, an appropriate analytical framework for enforcement is needed. Such an analytical framework must endeavor to accommodate the competing interests of protecting native Hawaiian culture and rights on the one hand, and economic development and security, on the other . . .
>
> In order to fulfill its duty to preserve and protect customary and traditional native Hawaiian rights to the extent feasible, the LUC, in its review of a petition for reclassification of district boundaries, must – at a minimum – make specific findings and conclusions as to the following: (1) the identity and scope of 'valued cultural, historical, or natural resources' n27 in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area; (2) the extent to which those resources, including traditional and customary native Hawaiian rights will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the LUC to reasonably protect native Hawaiian rights if they are found to exist. n28

In summary, the purpose of this Cultural Impact Assessment report is to:

(1) document Native Hawaiian and Local subsistence, cultural and spiritual resources and practices that are located in the proposed development area;

(2) assess the benefits and impacts of the planned development on the identified subsistence, cultural, and spiritual resources and practices; and

(3) affirm and recommend strategies and actions that can mitigate these impacts in order to protect Native Hawaiian customs and practices.

In addition to Native Hawaiians, "Local" residents of Maunaloa and employees of Moloka'i Ranch are primary users of the natural and cultural resources in the proposed development area, for subsistence and cultural purposes. Community meetings and interviews were inclusive of both Native Hawaiians and "Locals." Moreover, Chapter 343 requires an assessment of the affects of a proposed development on cultural practices in general, not limited to Native Hawaiian cultural practices.

1.2 Scope of Work

1. Conduct an examination of historical documents, Land Commission awards and historic maps to identify traditional and customary Hawaiian and "Local" subsistence, cultural and spiritual resources and activities that exist, or may have existed in the area of the proposed development adjacent to La'au Point.

2. Conduct community meetings for the sharing of concerns about the impact of the proposed La'au development upon subsistence and cultural resources in the project area.

3. Identify primary persons who engage in subsistence activities in the area of the proposed La'au Point Development and interview them in order to gather knowledge about their historic and traditional subsistence practices there. Collect insights into the benefits and impacts of the planned management actions on the cultural practices and features identified. Identify and recommend mitigation ideas for any identified impacts.

4. Prepare a report documenting the results of the review of literature, maps, and historic documents, and the results of the interviews related to traditional practices and land use. The report will assess the benefits and impacts of the planned development on the cultural practices and features identified and affirm and recommend strategies and actions that can mitigate any identified impacts.

1.3 Summary of Proposed La'au Point Rural-Residential Development

Project Name:	La'au Point
Location:	Kaluako'i, Moloka'i
Judicial District:	Moloka'i
Landowner:	Moloka'i Properties Limited
Applicant:	Moloka'i Properties Limited
Tax Map Key:	(2) 5-1-02:30; 5-1-06; 5-1-08: 04, 03, 06, 07, 13, 14, 15, 21, and 25
Project Area:	Approximately 1,492 acres
SLUDBA Petition Area:	875 acres
Existing Uses:	Vacant
Proposed Use:	Single-family rural-residential lots, cultural preserves, trails, and public shoreline access.
Land Use Designations:	State Land Use: Agricultural and Conservation Conservation District Subzones: General and Limited Community Plan: Agricultural and Conservation County Zoning: Agricultural Special Management Area (SMA): within the SMA
Permits/Approvals Required:	Compliance with Chapter 343, Hawaii Revised Statutes Community Plan Amendment Special Management Area Use Permit State Land Use District Boundary Amendment Conservation District Use Permit Change in Zoning Grading/Building Permit NPDES permit
Accepting Authority:	State Land Use Commission

It should be noted that while the development is called La'au Point Rural-Residential Subdivision, that La'au Point itself, is not part of the development. It is not owned by Moloka'i Properties Limited but by the U.S. federal government which owns and manages a lighthouse for navigational safety within a 51 acre parcel.

1.4 Water Plan and Kakalahale Brackish Well

As noted above, the purpose of this Cultural Impact Assessment Report is to document subsistence and cultural resources and practices that may be impacted by the proposed La'au development. Many of the participants in the community meetings, especially the Ho'olehua Native Hawaiian Homesteaders, stated that the greatest cultural impact of the proposed La'au Point Development is the impact of the water plan on the future expansion of agriculture and residences on Hawaiian Homelands and on subsistence and cultural resources makai of the well. Many voiced opposition to the proposed development because of the proposal to draw out 1,000,000 gallons per day from the abandoned Kakalahale brackish water well.

This cultural impact assessment report also documents the cultural concerns about the Kakalahale Well. It includes concerns expressed in community meetings as well as findings about cultural impacts from the testimonies provided to the Hawai'i State Commission on Water Resource Management for the contested case hearing for the Waiola Well Water Use Permit Application. Since the Kakalahale well is located in the general vicinity of the proposed Waiola Well, in the Kamiloloa aquifer sector, the community and MPL agree that the testimonies about cultural impacts in that case would be relevant to the Kakalahale Well.

1.5 Community-Based Master Land Use Plan for Moloka'i Ranch

The larger context of the proposed La'au Point Development project is the Community-Based Master Land Use Plan for Moloka'i Ranch. Initiated in 2003 by the Ke Aupuni Lokahi Molokai Enterprise Community (KAL-EC) and MPL, this Land Use Plan, of which the La'au application is a key piece, was designed and will be implemented by the community of Moloka'i.

On one hand, the community faced the prospect of Molokai Ranch lands being split up and sold off and the potential loss of Moloka'i Ranch employee jobs with continuing deficits in Ranch operations. On the other hand, the Moloka'i community wanted to protect existing Ranch jobs, create new economic opportunities by re-opening the Kaluako'i Hotel, while at the same time conserve its rural way of life. These complementary interests, combined, made the urgency of agreeing to the La'au Point Development project of critical importance to both the local MPL staff and the KAL-EC.

The planning process, involving more than 1,000 Moloka'i residents, was unique, complicated and exhaustive. It sets an important precedent and model of community-based planning.

The La'au Point Development project is integral in the implementation of the Community-Based Master Land Use Plan for Moloka'i Ranch. In this report, the overall plan will be considered in the assessment of benefits, impacts and mitigation measures of the development project.

Section 2 Framework and Methodology

2.1 Framework For This Cultural Assessment

2.1.1 La'au Subdivision Archaeological Preservation and Mitigation Plan

The La'au Subdivision Archaeological Preservation and Mitigation Plan was prepared by Cultural Landscapes in May 2006. For this reason, this cultural impact assessment report will not address the cultural historical sites and features, but focus on the impacts of the proposed La'au development on subsistence and cultural resources and practices. The lead anthropologist in Cultural Landscapes is Maurice Major. Mr. Major has worked on Moloka'i since 1991. In addition to working on the archaeological inventory of La'au and writing the 2001-2002 archaeological plan for the area, he has worked in many parts of the ahupua'a of Kaluako'i and Pala'au. The following summary was prepared by Cultural Landscapes for distribution to the community in meetings held to receive input about the impacts of the proposed development on subsistence and cultural resources and practices.

"La'au Subdivision Archaeological Plan Summary:
The original version of this plan (*Kahaiawa to Hakina, Ahupua'a of Kaluako'i, Island of Moloka'i*, Major 2001) dealt with the former "Alpha USA" parcel (TMK 5- 1-2-030). Since then, changes in the project area and the size and location of proposed subdivision lots have necessitated some revisions. More fundamentally, the Ranch's decision to engage the community in master planning has resulted in a scaled-back development with a more conservation-oriented approach, and the proposed land trust, resource management staff, and cultural protection zones have required that the preservation and data recovery plans be augmented and revised. For the most part, the archaeological plans closely resemble the 2001 version, which was accepted by SHPD. Changes in the revised version include:

- Re-assignment of several Data Recovery sites to Preservation.

- Shift from defining buffers around individual or clustered sites to instead establishing a confined development corridor.

- Increased emphasis on active cultural resource management, anticipating as a neighbor a community land trust employing a cultural resource staff person.

- Recommendation to collect some data from preservation sites to provide a better baseline for monitoring and help expand our understanding of the chronology and nature of settlement in the area, and specifically to guide environmental restoration.

The archaeological plans for Lā'au include four sections that cover the various cultural resource needs that will arise in relation to 201 sites within the proposed development and preserves. They are:

> **Preservation** – Describes procedures for protecting and preserving cultural sites. Actions range from the immediate to the perpetual, and include site condition evaluation, stabilization, short and long-term protection, protocol education, periodic field checks, and data collection. The focus is on conservation of cultural landscapes, rather than isolated sites.
>
> **Data Recovery** – Describes the procedures and research issues for mapping and excavation of some sites within the road/infrastructure corridor and proposed subdivision lots. Since the most significant sites are being preserved, data recovery sites mostly consist of very simple agricultural modifications, lithic scatters, and more recent historical sites. All sites will undergo data recovery or, more likely, preservation, and samples within sites will be more robust than minimal SHPD requirements.
>
> **Monitoring** – Describes the procedures and responsibilities for archaeological maka'ala of development activity. In addition to ensuring that preservation areas are not damaged, monitoring detects previously unknown cultural deposits, and if they are found, stops work in the area, evaluates the find, and if necessary consults with SHPD and interested parties to establish a preservation buffer or recover data.
>
> **Burial Treatment** – Describes the procedures for dealing with known, suspected, and inadvertently discovered burial sites (with no revisions to the accepted 2001 plan). All burials will be preserved in place, and all sites of unknown function for which burial is a possibility will be preserved. Newly found burials trigger consultation with the Moloka'i Island Burial Council.

Because the plans are interrelated, and important part of the general approach is to define the **process and sequence**. The past two years of community meetings can be considered the first phase, and with ongoing consultation helps define what happens next. The Ranch has committed to planning for the entire project area, to maintain or expand upon previous preservation commitments, and to have this revision include plans for all of the affected parcels including proposed subdivision lots, whose future owners must also abide by the plans. The process continues:

> • Re-survey the road corridor to verify sites, augment their descriptions, and search for new sites. Finds more significant than previous records indicate will cause re-routing. Also at this time, the Papohaku Ranchlands section of the corridor will be described and reported at inventory level for SHPD review.

• Next, short-term preservation measures will be implemented, such as establishing protective buffers and emergency stabilization.

• Next, data recovery will be implemented. At the same time, implementation of long-term preservation measures will begin.

• During the course of construction, monitoring will occur.

• Final reports for each plan will be submitted for community feedback and submitted to SHPD for review as required by rules and statutes."

2.1.2 Focus On Subsistence and Cultural Resources and Practices

Subsistence and cultural resources and practices are usually examined in relation to a particular island, district and ahupua'a. An ahupua'a runs from the sea to the mountains and contains a sea fishery and sea beach, a stretch of kula or open cultivable land and higher up its forest. The court of the Hawaiian Kingdom described the ahupua'a principle of land use in the case of In Re Boundaries of Pulehunui, 4 Haw. 239, 241 (1879) as follows:

> A principle very largely obtaining in these divisions of territory [ahupua'a] was that a land should run from the sea to the mountains, thus affording to the chief and his people a fishery residence at the warm seaside, together with the products of the high lands, such as fuel, canoe timber, mountain birds, and the right of way to the same, and all the varied products of the intermediate land as might be suitable to the soil and climate of the different altitudes from sea soil to mountainside or top.

In this study, the island is Moloka'i, the district is Kona and the ahupua'a is Kaluoko'i in West Moloka'i and includes the nearshore resources out to one-quarter mile from the shoreline or to the outer edge of the reef.

Hawaiians consider the land and ocean to be integrally united and that these land sections also include the shoreline as well as inshore and offshore ocean areas such as fishponds, reefs, channels, and deep sea fishing grounds. Coastal shrines called fishing ko'a were constructed and maintained as markers for the offshore fishing grounds that were part of that ahupua'a.

It should be noted that the methods and techniques of accessing, acquiring or utilizing traditional natural resources may have changed over time but this does not detract from the fact that it is used and prepared for Hawaiian custom and practice relating to subsistence, culture or religion.

For example, Hawaiian fishermen may use motor boats rather than canoes to get to their ancestral fishing ground. They may use a nylon net rather than one sewn out of native plant materials to surround the fish and pa'ipa'i or to entangle them in the overnight tide. In most cases they are still utilizing ancestral knowledge of ocean tides, currents and reefs to locate and catch the fish. Their catch is used to honor family 'aumakua and to feed their extended families and neighbors.

What distinguishes Hawaiian custom and practice is the honor and respect for traditional 'ohana cultural values and customs to guide subsistence harvesting of natural resources. Such 'ohana values and customs include but are not limited to the following:

1. Only take what is needed.
2. Don't waste natural resources.
3. Gather according to the life cycle of the resources. Allow the resources to reproduce. Don't fish during their spawning seasons.
4. Alternate areas to gather, fish and hunt. Don't keep going back to the same place. Allow the resource to replenish itself.
5. If an area has a declining resource, observe a kapu on harvesting until it comes back. Weed, replant and water if appropriate.
6. Resources are always abundant and accessible to those who possess the knowledge about their location and have the skill to obtain them. There is no need to overuse a more accessible area.
7. Respect and protect the knowledge which has been passed down intergenerationally, from one generation to the next. Do not carelessly give it away to outsiders.
8. Respect each other's areas. Families usually fish, hunt, and gather in the areas traditionally used by their ancestors. If they go into an area outside their own for some specific purpose, they usually go with people from that area.
9. Throughout the expedition keep focused on the purpose and goal for which you set out to fish, hunt, or gather.
10. Be aware of the natural elements and stay alert to natural signs, e.g. falling boulders as a sign of flash flooding.
11. Share what is gathered with family and neighbors.
12. Take care of the kupuna who passed on the knowledge and experience of what to do and are now too old to go out on their own.
13. Don't talk openly about plans for going out to subsistence hunt, gather, or fish.
14. Respect the resources. Respect the spirits of the land, forest, ocean. Don't get loud and boisterous.
15. Respect family 'aumakua. Don't gather the resources sacred to them.

On Moloka'i, the community has identified subsistence as essential to their way of life. They have participated in studies to document the importance of subsistence and to better protect the natural resources upon which they subsist. In one such study, the Governor's Task Force on Moloka'i Fishpond Restoration came up with a definition of subsistence that has been generally accepted. It is as follows:

On Moloka'i, subsistence is the customary and traditional uses of wild and cultivated renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, transportation, culture, religion, and medicine; for barter, or sharing, for personal or family consumption and for customary trade. (Governor's Task Force On Moloka'i Fishpond Restoration)

In addition to the above principles, subsistence and cultural practices are also defined by traditional responsibilities and rights of the 'ohana or extended families of Moloka'i.

2.1.3 'Ohana Responsibilities and Rights

Traditional and customary rights of ahupua'a tenants are rooted in the customs, practices and rights of the original and still primary social unit of the Hawaiian people, the 'Ohana. Custom and practice encompasses the full range of traditional, cultural, religious, and subsistence activities Native Hawaiian 'ohana have engaged in for many centuries to live as a people and survive in a unique island environment. There are customs and practices related to each major aspect of Hawaiian lifestyle and livelihood including:
(1) community life; (2) family; (3) human well-being and spirituality; (4) natural environment, cultural and ecological resources; (5) rights; and (6) economics.

Throughout the islands of Hawai'i, we find subsistence thriving in particular rural Hawaiian communities. Surrounding these communities, are pristine and abundant natural resources in the ocean, the streams, and the forest. This is largely due to the continued practices of aloha 'aina/kai (cherish the land and ocean) and malama 'aina/kai (care for the land and ocean). These rural communities were bypassed by the mainstream of economic, political, and social development and the Hawaiians living in these communities continued, as their ancestors before them, to practice subsistence cultivation, gathering, fishing and hunting for survival. Thus, we find in these areas that the natural resources sustained a subsistence lifestyle and a subsistence lifestyle, in return, sustained the natural resources. Moloka'i offers the premier examples of such communities. (Matsuoka, McGregor, Minerbi, 1994; McGregor, Matsuoka, Minerbi, 1997)

The quality and abundance of the natural resources of these rural Hawaiian communities such as on Moloka'i can also be attributed to the persistence of 'ohana values and practices in the conduct of subsistence activities. An inherent aspect of these 'ohana values is the practice of conservation to ensure availability of natural resources for present and future generations. These rules of behavior are tied to cultural beliefs and values regarding respect of the 'aina, the virtue of sharing and not taking too much, and a holistic perspective of organisms and ecosystems that emphasizes balance and coexistence. The Hawaiian outlook which shapes these customs and practices is lokahi or maintaining spiritual, cultural and natural balance with the elemental life forces.

In communities such as on Moloka'i where traditional Hawaiian customs and practices have continued to be practiced the 'ohana respect and care for the surrounding natural resources. They only use and take what is needed. They allow the natural resources to reproduce. They share what is gathered with family and neighbors. Through understanding the life cycle of the various natural resources, how changes in the moon phase and the wet and dry seasons affect the abundance and distribution of the resources, the subsistence practitioners are able to plan and adjust their activities and keep the resources healthy. Such knowledge has been passed down from generation to generation through working side-by-side with their kupuna or elders.

This ancestral knowledge about the land and its resources is reinforced through continued subsistence practices. While traveling to the various 'ili of the traditional cultural practices region through dirt roads and trails, and along spring fed streams, and the shoreline, practitioners continuously renew their cultural knowledge and understanding of the landscape, the place names, names of the winds and the rains, traditional legends, wahi pana, historical cultural sites, and the location of various native plants and animals. The practitioners stay alert to the condition of the landscape and the resources and their changes due to seasonal and life cycle transformations. This orientation is critical to the preservation of the natural and cultural landscape. The land is not a commodity to them. It is the foundation of their cultural and spiritual identity as Hawaiians. They proudly trace their lineage to the lands in the region as being originally settled by their ancestors. The land is a part of their 'ohana and they care for it as they do the other living members of their families.

Reflecting and summarizing the stewardship responsibilities for the land that have been passed on from one generation to the following on Moloka'i is the mana'o of kupuna Daniel Pahupu shared in a 1961 interview with Mary Kawena Pukui:

> ***Ke ha'awi nei au ia ʻoe. Mālama ʻoe i keia mau mea. ʻA'ohe mālama, pau ka pono o ka Hawai'i.***
> ***I pass on to you. Take care of these things. If you don't take care, the well-being of the Hawaiian people will end.***
> *Daniel Pahupu, in interview with Mary Kawena Pukui, Mana'e, Moloka'i, March 9, 1961.*

The community guidelines for land use principles and policies in the Community-Based Master Land Use Plan for Moloka'i Ranch and the interviews with Moloka'i kupuna and subsistence practitioners which are summarized in this report reflect the ongoing stewardship responsibilities for the marine resources of the Mo'omomi Preserve which have been assumed by contemporary generations of Moloka'i residents.

2.1.4 The Importance of Subsistence on Moloka'i

Traditionally, Moloka'i, with its extensive protected reefs and fishponds gained the reputation of a land of "fat fish and kukui nut relish." Moloka'i Hawaiians obtained marine resources from the shallow offshore reefs; the deep sea channels between Moloka'i and Maui, O'ahu, and Lana'i (Pailolo, Kaiwi, and Kalohi); the deeper ocean off of the island's north shore; and from an extensive network of human constructed fishponds.

Moloka'i is known as the "Last Hawaiian Island." According to the 2000 U.S. Census, the total population of Moloka'i was 7,257. Of this total population, 4,442 or 61 percent were Native Hawaiians. Among the eight major islands, Moloka'i has the highest concentration of Native Hawaiians outside of Ni'ihau.

Many families on Moloka'i, particularly Hawaiian families rely upon subsistence fishing, hunting, gathering, or cultivation for a significant portion of their food. Even families who may not engage in such activities benefit through sharing and exchange among family members and neighbors.

The traditional Hawaiian diet study conducted on Moloka'i in 1982 by Na Pu'uwai, a community-based Native Hawaiian health organization proved that a diet consisting of traditional Hawaiian foods - fish, taro, breadfruit, sweet potato, etc. reduces weight and the risk of heart disease, high blood pressure and diabetes Thus, the availability of traditional foods, most of which is acquired through subsistence fishing, hunting, gathering or cultivation, is a critical component for improving Native Hawaiian health.

The Governor's Moloka'i Subsistence Task Force Study, completed in 1994 (Subsistence Study), concluded that many families on Molokaʻi, particularly Hawaiian families,

continued to rely upon subsistence fishing, hunting, gathering, or cultivation for a significant portion of their food. A random sample survey of the families on Moloka'i revealed that twenty-eight(28%) percent of their food was acquired through subsistence activities. Among Native Hawaiian families the survey found that thirty-eight(38%) percent of their food was derived from subsistence activities. The families reported receiving food through subsistence activities at least once a week. Virtually every person surveyed believed that subsistence was important to the lifestyle of Moloka'i. (Matsuoka, McGregor, Minerbi, 1994, see Appendix 18)

Availability of the natural resources needed for subsistence was essential to Moloka‘i households where the unemployment rate was consistently higher than on other islands and a significant portion of the population depended upon public assistance. In March 1993, the unemployment rate of 8.1% on Moloka‘i was higher than the statewide rate of 4.7%. With regard to public assistance, in 1990, 24.4% of the Moloka‘i population received food stamps; 12% received AFDC and 32.5% received Medicaid. According to the U.S. census for 1990 21% of the families on Moloka‘i had incomes that fell below the poverty level of $12,674 for a family of four. The ability to supplement meager incomes through subsistence was very important to maintaining the quality of life of families on the island through 1994.

Subsistence has also contributed to the persistence of traditional Hawaiian cultural values, customs, and practices. Cultural knowledge, such as about place names; fishing ko'a; methods of fishing and gathering; or the reproductive cycles of marine and land resources were passed down from one generation to the next through training in subsistence skills. The sharing of foods gathered through subsistence activities continued to reinforce good relations among members of extended families and with neighbors.

The Subsistence Study also documented the growing concerns of the Moloka'i community about diminishing resources. While the natural resources of Moloka'i and its surrounding waters were still abundant enough to support both subsistence and commercial harvesting, the resources were not as plentiful as adult subsistence practitioners remembered them to be when they were growing up. The subsistence practitioners were faced with challenges from tourism, commercial harvesting, offisland fishermen and hunters, and newcomers from continental U.S. and the Philippines. Hawaiian conservation practices that were customarily passed down from one generation to the next were being set aside in light of increasing competition from off-island fishermen and hunters and new residents. There was a growing feeling that "if you don't take everything when you see it, then someone will take it before you come back the next time." Thus, rather than taking only what was needed, more was being harvested and wasted. The widespread use of large freezers also contributed to overharvesting. Before the use of freezers, the ocean was "the icebox" and one only gathered enough for the 'ohana, close neighbors and kupuna to eat. Subsistence practitioners had started to gather more than what their families could immediately eat and the surplus was being stored in freezers.

In 1993, Moloka'i subsistence practitioners who participated in the Subsistence Study realized that they had arrived at a crucial juncture. They were concerned that if something was not done to reverse the trend of overharvesting and diminishing resources there would be nothing left for future generations. They felt that community wide acceptance of traditional Hawaiian values and practices of aloha 'aina would be key to restoring the balance between subsistence fishing, gathering and hunting and the sustainability of the island's natural resources. They recognized the need for everyone in the community to make a commitment to manage the natural resources of Moloka'i not just to benefit the current generation, but for the benefit and well-being of six and seven generations into the future. Conservation education through the schools, DLNR hunter education and education about fishing rules and regulations were seen as important elements in the effort to sustain Moloka'i's natural resources. A series of recommendations for the management of resources were generated. (see report - Appendix 18)

Below is the map of subsistence activities indicated by practitioners on Moloka'i in focus group meetings throughout the island in 1993.

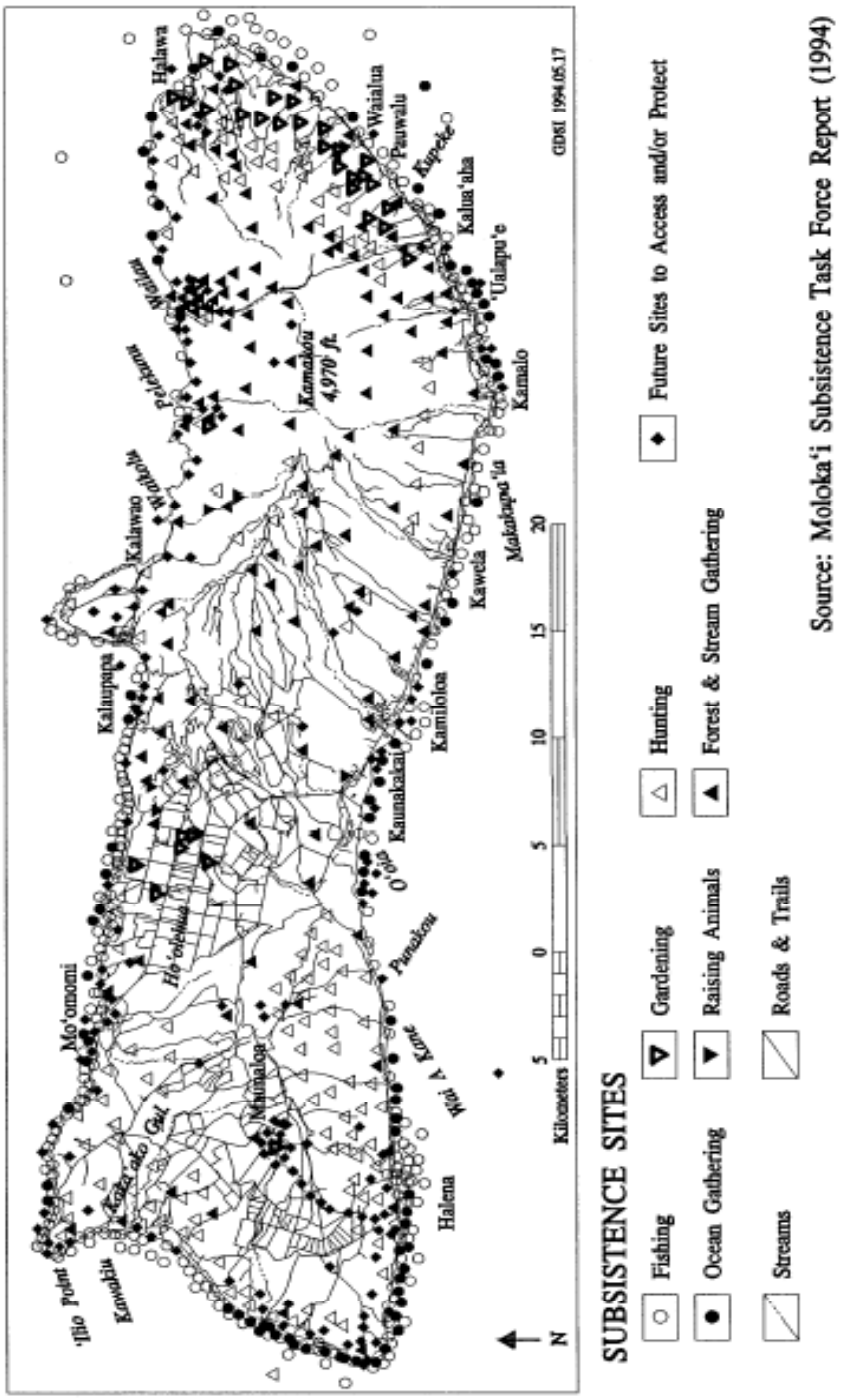


Figure 1. Map of subsistence activities indicated by Moloka'i practitioners in 1993.

This 1993 Subsistence Sites map indicates intensive fishing and ocean gathering in the area where the La'au Point Development is proposed. It also indicates that subsistence practitioners who participate in the 1993 survey hunted in the vicinity of La'au Point.

Interviews with key informants that were conducted for this report in 2006 indicate that the area is primarily a accessed by land for subsistence resources by families of Ranch employees and families who have lived in the Maunaloa community for more than one generation. By ocean access, the marine resources are also extensively harvested by subsistence and commercial boaters from both O'ahu and Moloka'i. Unless one has a key to take a vehicle out to La'au, it is a long, hot, dry walk. For this reason, the primary users are those who can get a key to the gate and enter with a vehicle, that is, Ranch employees and their families and friends. In addition, especially since the road to Hale O Lono harbor was opened, Moloka'i residents with boats access the area by launching out of Hale O Lono, Pala'au or Kaunakakai. Boaters from O'ahu also frequently fish and dive along the West and south coastlines adjacent to La'au Point. Hunting also extends into the La'au area.

The Subsistence Study recommended the establishment of a "Community-Based Subsistence Fishing Management Area" from Nihoa Flats and west through Mo'omomi and over to 'Ilio Point. In 1994, the Hawai'i State Legislature passed a bill which gave the Hawai'i State Department of Land and Natural Resources the authority to designate community-based subsistence fishing management areas and to carry out fishery management strategies through administrative rules for the purpose of reaffirming and protecting fishing practices customarily and traditionally exercised for purposes of Native Hawaiian subsistence, culture, and religion. The bill also established a pilot demonstration project for the fisheries and adjacent coastline between Nihoa Flats and 'Ilio Point. The demonstration area was eventually designated between Nahihikina'u and Kaiehu points. The demonstration pilot project expired July 1, 1997. Under the Community-Based Master Land Use Plan for Moloka'i Ranch, the Moloka'i Land Trust, the KAL-EC , MPL and the broader community would seek to institute a community-based subsistence fishing management area in the nearshore area from Dixie Maru, south to La'au Point and east to Pala'au.

With regard to the area of the Kakalahale Well that is part of the MPL water plan, the 1993 Subsistence Sites map indicates that the Kamiloloa shoreline and nearshore waters are used extensively for fishing and ocean gathering and that the mauka area is used for hunting and gathering of forest and stream resources. Given that there is still a high concentration of Native Hawaiians in the Kapa'akea-Kamiloloa-Makakupaia area, it is reasonable to assume that these activities are ongoing in 2006.

2.1.5 Coastal Cultural Resources

The proposed La'au Point Development runs along the west shore from Kaupoa to La'au Point and east from La'au Point to Hale O Lono. The primary subsistence and cultural resources are coastal and marine resources and deer. The following identifies the coastal resources which are essential for the conduct of Hawaiian subsistence customs, beliefs

and practices. Participants in community meetings and the key informants were asked to identify which of these resources are located and utilized in the area proposed for the La'au Development.

Coastal Cultural and Subsistence Resources

_____ streams
_____ ‘auwai (taro irrigation ditches)
_____ springs
_____ trails
_____ sacred places
_____ landings
_____ surfing sites
_____ fishing area
_____ fish trap
_____ hunting areas
_____ muliwai (brackish pond)
_____ trails
_____ wells
_____ historic walls
_____ alae vein
_____ shrines
_____ ko’a (fishing shrines)
_____ historic sites
_____ ho’ailona (natural signs)
_____ lele (cliff jumping spots)
_____ pu’uhonua (places of refuge)
_____ cultivation area
_____ archaeological sites
_____ burials
_____ o’opu
_____ aholehole
_____ steam bath areas
_____ limu gathering areas
_____ subterranean water course
_____ kapu kai/hi’u wai areas
_____ artifacts
_____ seasonal residential sites
_____ water caves
_____ phallic stones
_____ coral reef
_____ spawning grounds
_____ po kane routes (night marchers
_____ ‘aumakua (ancestral deities) domain
_____ ponds
_____ lo’i kalo
_____ caves
_____ wahi pana (named places)
_____ dunes
_____ bridges
_____ sandy beach
_____ fishpond
_____ fish house
_____ kilo i’a (fish sighting)
_____ anchialine pond
_____ salt ponds
_____ turtle nesting area
_____ basalt veins for tools
_____ salt pans
___ salt gathering areas
_____ heiau (temples)
_____ cultural use areas
_____ sighting place
_____ native plants
_____ holua slides
_____ leina (jumping off point for souls to cross over)
_____ kupe’e _
_____ hihiwai/wi
_____ ‘anae
_____ bathing pools
_____ lava tubes
_____ petroglyphs
_____ paddling areas
_____ view plane
_____ burial markers
_____ birthing stones
_____ Pohaku Kane
_____ estuary
_____ house sites
_____ dams

2.1.6 The Water Plan and Waiola Contested Case Testimonies

The Water Plan is integral to the La'au Point development proposal. Hawaiian homesteaders, especially those with lots in Ho'olehua, feel that the greatest cultural impact of the proposed La'au Development is the MPL water plan. They feel that the withdrawal of an additional 1,000,000 gallons per day of brackish water from the Kakalahale well will take away water that the Department of Hawaiian Homelands(DHHL) will need to support future expansion of agriculture and residential lots on their Moloka'i lands.

The Water Plan was discussed in the key informant interviews. In addition to information gathered for this report, testimonies from the Waiola Water Permit contested case have been reviewed and analyzed. Issues raised in the Waiola contested case about the impact of the proposed well on subsistence resources and activities makai of the Kakalahale well are summarized and discussed in this report.

2.1.7 Broader Indirect Impacts

Community meetings and interviews focused on the impact to subsistence and cultural resources and activities in the area directly affected by the proposed La'au Residential Development, the pumping of brackish water from the Kakalahale well.

Indirect affects of the development on subsistence and cultural activities outside of the project area and water development that were raised in community meetings and interviews are summarized and generally addressed in this report. Details of the affect of the proposed development on the overall way of life on Moloka'i as "The Last Hawaiian Island" is fully addressed in the Social Impact Assessment that is part of this EIS.

2.1.8 Community-Based Master Land Use Plan for Moloka'i Ranch

The larger Community-Based Master Land Use Plan for Moloka'i Ranch will be considered in this report with regard to mitigation measures and alternate options to the proposed La'au Point Development.

In as much as issues were raised in community meetings and interviews about the overall affect of the proposed development on the way of life and lifestyle of Moloka'i, general reference is made in this report as to how the Community-Based Master Land use Plan for Moloka'i Ranch can help to mitigate these broader social impacts.

2.2 Methodology and Process

2.2.1 KAL-EC, MPL and Community Planning Process

The two-year process to develop the Community-Based Master Land Use Plan for Moloka'i Ranch was an extended process of identifying cultural and subsistence resources and practices throughout Moloka'i Ranch lands, including the lands proposed for development adjacent to La'au Point. The process included a site visit to the south and west coastline where the development is proposed. Key cultural resources, sites and complexes were visited and subsistence access routes and setbacks were discussed with MPL and its planning consultant, Frank Brandt of PBR.

Figure 2. Meeting of the EC Project #47 Land Use Committee at Hale Pumehana in August 2004.

Professor McGregor participated in the planning process as a member of the Culture Committee and the Land Use Committee. The Culture Committee identified cultural resources which should be protected under a "Cultural Conservation and Management Zone" which was defined as follows:

> Establish a Cultural Conservation and Management Zone to include the Historic Cultural Sites and the Complexes of Na‘iwa (Manawainui-Kahanui), Kaluako‘i-Ka‘ana-Pu‘u Nana (Kalaipahoa-‘Amikopala), Kaunakakai, and Kawela Cultural Complexes; Cultural and Subsistence use and resource areas; a subsistence fishing zone of one-quarter (1/4) mile offshore on the North and West Shore and to the outside of the reef surrounding the remainder of the property (South shore).

For Kaluako'i, the cultural district was defined as follows:

> The Kaluako‘i Cultural District is to protect the historic and cultural sites and resources for current and future spiritual, cultural practices and subsistence uses. It includes the following sites and complexes:
>
> - Punakou which is inclusive of Ka‘ana, Pu‘u Nana, and Ho‘olehua
> - Paka‘a trail which is located in the entire Kolo Gulch
> - Paka‘a cultivation fields in the uplands of Kopala
> - Kalaipahoa-‘Amikopala and Kukui adze quarry sites
> - Kamaka‘ipo complex of sites in the entire gulch
> - Kahualewa Heiau, mauka of Waikane Gulch
> - Heiau, mauka of Halena Road and between Kahinawai and Oneohilo gulches
> - Kawakiu Iki and Kawakiu Nui village sites and burials
> - Dunes of Keonelele
> - Various fishing ko‘a along the shoreline
> - Burial Site located west of Kaluako‘i water tank in Kaka‘ako Gulch
> - All sites identified on the Maurice Majors maps

The Cultural Committee discussed the importance of the cultural sites and resources in the area proposed for development adjacent to La'au Point. The members had reservations about placing the residential development in the proposed area and discussed alternative sites along the south and west shore of Moloka'i and in the area mauka of La'au Point and below Maunaloa Town. Alternative coastal areas were more sensitive to development because of the cultural resources or the terrain. Development mauka of La'au would not produce the revenue necessary to re-open the Kaluako'i Hotel and develop the residential infrastructure. These alternatives are discussed below.

In the end, through joint discussions with MPL, the Cultural Committee recommended a minimum setback of 250 feet from the designated property line along the entire shoreline; the establishment of a public access walking trail along the entire shoreline, with parking, a public park, and a comfort station at either end of the west and south shore; the creation of cultural and resource protection zones on approximately 1,000 acres; the maintenance of streams, gulches and floodways as open space; and the creation of an archaeological

preserve of approximately 116 acres at Kamaka'ipo Gulch. The MPL, the KAL-EC, and the Moloka'i Land Trust will work with the community to establish a subsistence fishing zone of one-quarter (1/4) mile offshore on the North and West Shore and to the outside of the reef surrounding the remainder of the property (South shore).

2.2.2 Community Meetings

Announcements inviting the community to meetings to share concerns about on the subsistence and cultural impacts of the La'au Development Proposal were posted in two of the local Moloka'i newspapers - The Moloka'i Dispatch and the Moloka'i Island Times and flyers were posted throughout the island. The posted agenda included (1) Review plans and maps of conservation shoreline setback; cultural sites protected areas; subsistence fishing, gathering and hunting zones in relation to the proposed development; (2) Identify additional resources and protection measures; (3) Discuss water plan.

The announced community meetings, co-sponsored by the Office of Hawaiian Affairs, were held from 6pm to 8pm on:

- May 31, 2006 at the Maunaloa Elementary School Cafeteria for the Maunaloa, Kaluako'i and Papohaku communities;
- June 1, 2006 at Kulana 'Oiwi Halau in Kalama'ula for the Kalama'ula and Kaunakakai communities;
- June 5, 2006 for a focus on fishing and ocean gathering at the OHA/DHHL Conference Room;
- June 6, 2006 at Kualapu'u Elementary School Cafeteria for the Ho'olehua and Kala'e communities;
- June 7, 2006 at the Kilohana Recreational Center for the Mana'e or East End communities; and
- June 8, 2006 at the Mitchell Pauole Conference Room for a focus on hunting and land gathering.

A total of 250 persons attended the meetings and signed in as participants. Additional participants chose not to sign-in, concerned that their presence might be interpreted in this report as implied support for the plan. The input received in the community meetings are summarized below.

A special meeting with the Maunaloa kupuna was held to discuss the social impacts of the proposed development with the consultant conducting the social impact study. Input relevant to cultural impacts were noted and are included in the summary below.

Community meetings to discuss the water plan were held in Maunaloa and Ho'olehua. Input relevant to cultural impacts were noted and are included in the summary below.

2.2.3 In-depth Semi-structured Interviews

Between June 8, 2006 and August 15, 2006 eighteen kama'aina were interviewed about their experience in the proposed development area; their knowledge of natural and cultural resources in the area; their subsistence and cultural activities there; the impact of the proposed development on the identified natural resources and their described activities; concerns about the water plan; and their overall assessment of the proposed project.

Mayson "Pono" Asano, Jr. -born and raised on Moloka'i. As a member of Hana Kupono when he was young, he camped near Hale o Lono during the men's Moloka'i Hoe went fishing, gathering and picking 'opihi along the south shore.

Malu Burrows - born and raised on Moloka'i. His great-grandfather built the La'au Point Lighthouse and his grandfather and father manned the lighthouse after him. Mr. Burrows is a meat inspector.

Rikke Cooke- descendant of the Cooke family who owned Moloka'i Ranch which included the ahupua'a of Kaluako'i, including the area proposed for development. He is a professional photographer, educator.

Guy Espaniola - born and raised on Moloka'i. The Ranch evicted him from Maunaoloa town when the plantation houses were razed to build the new houses.

Mercedes Espaniola - born at the Hula Piko near Maunaloa town. Raised her family in Maunaloa and continues to live there.

Joseph Espaniola - moved to Moloka'i to work for the plantation until he retired.

Pepe Espaniola - Son of Joseph Espaniola. Born and raised in Maunaloa.

Shige Inouye - born and raised on Moloka'i. He worked for Moloka'i Ranch when it was the wholesale distributor for Standard Oil and later managed the Ranch's water system.

Kalapana Kealiihoomalu - born and raised in Kalapana on the island of Hawai'i, he married into the Duvauchelle family and works for the Ranch.

Dennis Kamakana - born and raised on Moloka'i, former part-time commercial fishermen, currently works for GASPRO. Mr. Kamakana's relatives were cowboys for Moloka'i Ranch and camped on the West End with his uncles and their families.

Halona Kaopuiki - born and raised on Moloka'i, Ho'olehua Homesteader, subsistence fisher, gatherer, hunter and experienced in Moloka'i field archaeology. His father and uncles worked for Moloka'i Ranch.

Rheno Lapinid - born and raised on Moloka'i. He lived in Maunaloa and Kualapu'u and worked for Libby & McNeil and Moloka'i Ranch.

Keali'i Mawae - born and raised on Moloka'i. His grandfather worked for Moloka'i Ranch. Mr. Mawae is a homesteader in Ho'olehua and is a commercial fisherman.

Henry Paleka - born and raised on Moloka'i. Worked for the plantation, the Department of Education, the power plant, and Department of Hawaiian Homes. Has been in charge of security for Moloka'i Ranch since 1995.

Josh Pastrana - born and raised on Moloka'i. His grandmother lived in a Ranch house near Kaupoa. He works with Akaku Media Center.

John Quintura - born and raised in Maunaloa, worked for the State Department of Transportation at the airport.

Junior Rawlins - born and raised on Moloka'i. Third generation working for Moloka'i Ranch. He worked for B & C Trucking.

Bernie Santiago - has lived on Moloka'i since 1955. He worked for the plantation and in construction. He was evicted from Maunaloa by Moloka'i Ranch when the company razed the plantation town and built new homes.

Information provided by the key informants are summarized in the findings section of this report and kept anonymous. Notes of the interviews will be kept on file by Professor McGregor. The information was shared generously by the informants and provides important insights into subsistence and cultural customs and practices in the area proposed for development.

2.2.4 Site Visit and Ethnographic Sources

Professor McGregor and colleague Sean McNamara went on a site visit of the area proposed for development on Moloka'i's West coast from Kaupoa to La'au Point on June 8, 2006. Photos from this site visit are included in the report.

General historical and ethnographic documents and maps were located, reviewed and analyzed by colleague Sean McNamara and his fellow students when they developed the Papohaku Dunes Cultural and Natural Resource Preservation Plan. These had been located at the Bernice Pauahi Bishop Museum archives and library, Hamilton Library, the Hawai'i State Archives, and the Survey Office of the Department of Accounting and General Services. Archaeology studies relevant to the Kaluako'i ahupua'a at the State

Historic Preservation Division (SHPD) were also gathered and reviewed for relevant information. In addition, McNamara and the planning students conducted oral history interviews about the Kaluako'i ahupua'a with Halona Kaopuiki, Kelson "Mac" Poepoe, Jimmy Duvauchelle, Billy Akutagawa, Noa Emmett Aluli, and Walter Ritte. The information gathered from the studies and interviews are summarized below in the section on the Mo'olelo and Wahi Pana of Kaluako'i.

Sections from Catherine Summers Molokai: A Site Survey, (1971) relevant to the Kaluako'i ahupua'a were reviewed for general historical information but the information relating to specific sites are included in the archaeological preservation and mitigation plan by Major. Additional ethnographic sources on the Kaluako'i ahupua'a that were relied upon for this report are listed in the bibliography. Of special note are videotaped interviews and programs with Kumu Hula John Kaimikaua in the UH Sinclair Library Wong Audiovisual Collection and an interview with John Kaimikaua by Phillip Spalding III.

Land records at the Bureau of Conveyances were also examined to reconstruct the history of ownership of the Kaluako'i ahupua'a.

Professor McGregor also reviewed ethnographic information contained in letters of "Notice of Intent to Intervene." As described above, both McGregor and McNamara reviewed testimonies in the Waiola Contested Case Hearings for information about subsistence and cultural resources and activities in the Kamiloloa area. Relevant information is included in the summary of resources and practices and the discussion of impacts of the proposed development on these resources and practices.

Section 3 Cultural and Subsistence Resources and Activities

3.1 Origin of Ownership of the Kaluako'i Ahupua'a

Tax Map Key: (2) 5-1-02:30; 5-1-06; 5-1-08: 04, 03, 06, 07, 13, 14, 15, 21, and 25

These parcels are all located in Land Grant 3146 which was sold to Charles Reed Bishop by King Kalakaua as a Royal Patent in 1875 for the sum of $5,000. A copy of this Royal Patent deed is below as Figure 3. It shows that Charles Reed Bishop purchased the ahupua'a of Kaluako'i, consisting of 46,500 acres for $5,000 or approximately 11 cents an acre. A map of Land Grant 3146 acquired from the Survey Office of the Department of Accounting and General Services is attached to this report as Attachment #1.

The area proposed for development is located within the Kaluako'i ahupua'a. Summers describes the boundaries of the Kaluako'i ahupua'a as follows:

> "According to Alexander, Kaluako'i was a "district of itself" (1903:390). In *Indices of Awards* . . . it was also referred to as a district and as having the ahupua'a of Kaluako'i 1 and 2 (1929: 16). King said that Kaluako'i was a kalana that had the two ahupua'a, Kaluako'i 1 and 2 (Coulter, 1935:215). The boundaries of these two ahupua'a are not defined, and Kaluako'i is now considered an ahupua'a; it is the largest on the island, having an area of 46,500 acres."

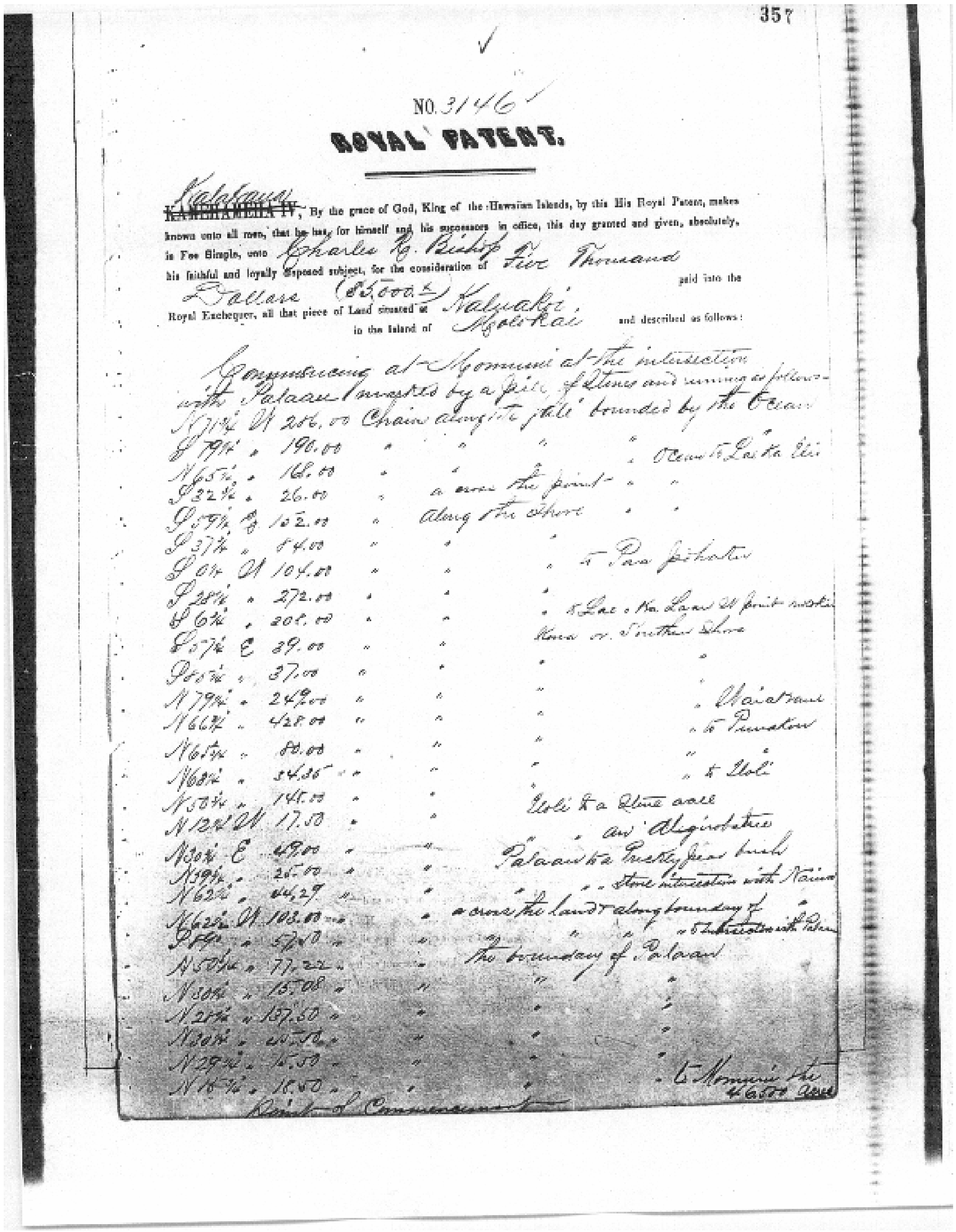
Summers states that Kaluako'i was designated as government land in the 1848 Māhele. The Indices of Awards Made by the Board of Commissioners To Quiet Land Titles In The Hawaiian Islands which provides a record of the disposition of lands under the 1848 Mahele lists the ahupua'a of Kaluako'i 1 and Kaluako'i 2 as Government Lands.

As noted above, in his official capacity as ruling monarch, King Kalākaua, in 1875, granted the ahupua'a of Kaluako'i to Charles Reed Bishop for the payment of $5,000 as Royal Patent Grant 3146.

In the Bureau of Conveyances, the Book of Grantors for 1893 records the transfer of ownership of lands, leaseholds and livestock of Royal Patent Grant 3146 of Kaluako'i, Moloka'i from Charles Reed Bishop to the Trustees of Bernice P. Bishop Estate on November 14, 1893, (Book 146, p. 12, January 2, 1894).

The Book of Grantors for 1898 records the transfer of ownership of lands, leaseholds, livestock and brand of Royal Patent Grant 3146 of Kaluako'i, Moloka'i from the Trustees of Bernice P. Bishop Estate to Molokai Ranch Co. Ltd. on February 5, 1898, (Book 177, p. 170 February 9, 1898).

From February 5, 1898 to present, Royal Patent Grant 3146 of Kaluako'i has continued to be owned by Moloka'i Ranch, although the ownership of the Moloka'i Ranch, itself, has transferred several times, as described below.



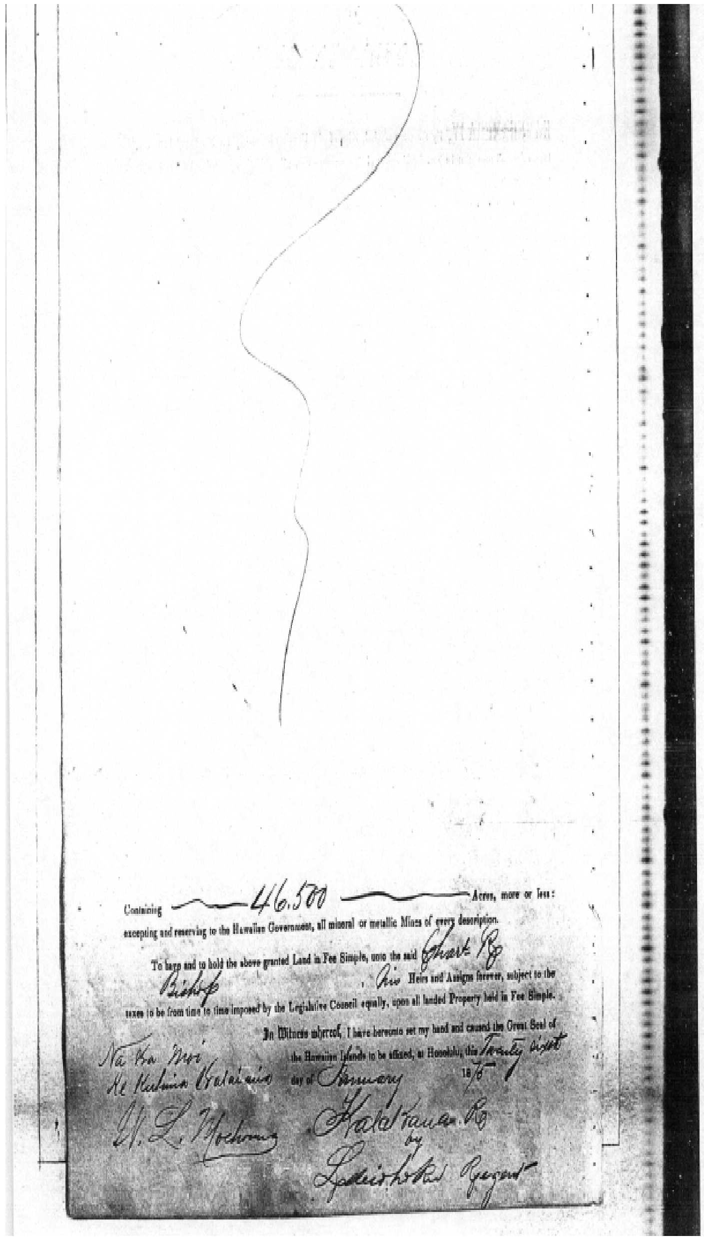
357

NO. 3146

ROYAL PATENT.

~~KAMEHAMEHA IV~~ Kalakaua, By the grace of God, King of the Hawaiian Islands, by this His Royal Patent, makes known unto all men, that he has, for himself and his successors in office, this day granted and given, absolutely, in Fee Simple, unto Charles R. Bishop his faithful and loyally disposed subject, for the consideration of Five Thousand Dollars ($5000.00) paid into the Royal Exchequer, all that piece of Land situated at Kaluakoi in the Island of Molokai and described as follows:

Figure 3. Royal Patent deed from Mo'i Kalakaua to Charles Reed Bishop in 1875.



Containing 46.500 Acres, more or less:
excepting and reserving to the Hawaiian Government, all mineral or metallic Mines of every description.

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

In Witness whereof, I have hereunto set my hand and caused the Great Seal of the Hawaiian Islands to be affixed, at Honolulu, this Twenty first day of January 18[illegible]

W. L. Moehonua

Kalakaua R.
by
Likelike Regent

3.2 Ownership of Moloka'i Ranch and Use of Kaluako'i Lands

George Paul Cooke became the manager of Moloka'i Ranch in 1908 after his father, Charles M. Cooke bought Moloka'i Ranch. In his book, Mo'olelo O Molokai, George P. Cooke described how Moloka'i Ranch was formed. According to Cooke, Moloka'i Ranch was formed in 1897 by a hui of men including Judge Alfred S. Hartwell, Alfred W. Carter, and A.D. McClellan. In 1898, the American Sugar Company Limited was incorporated by Judge Alfred S. Hartwell and Alfred Carter (who were partners in the Moloka'i Ranch), and Charles M. Cooke, George H. Robertson and George R. Carter. At this point, the Moloka'i Ranch stockholders exchanged their stock for shares in the new American Sugar Company. According to George P. Cooke, the sugar cane company failed when the pumps installed in surface wells to irrigate the cane fields depleted the fresh water and started to pump salt water. In December 1908, Charles M. Cooke bought out the interests in the Moloka'i Ranch. (*Mo'olelo O Moloka'i*, 1949, pp. 1 - 8)

In 1991, Marshall Weisler reviewed the history of the ownership of Moloka'i Ranch in his 1991 study of the Mo'omomi dune system. According to Weisler:

> "In 1875, some 30 years after the Great Mahele, Charles R. Bishop purchased, by royal patent, the lands of Kaluako'i. Responding to a query by E.O. Hall, the Minister of the Interior, R.W. Meyer, who made a rough survey of the lands of Kaluako'i in the 1850s, valued the lands - - both 'good and bad . . . at 12 1/2 cents per acre or about 5000 dollars.' (Meyer 1873:2).
>
> Bishop transferred the property to the Bishop Estate in 1893. Five years later, three men formed Moloka'i Ranch and bought 46,500 acres of Kaluako'i from the Bishop Estate. Shortly thereafter, the American Sugar Company was formed by a group including Charles M. Cooke, George Robertson, George Carter, and two judges named Hartwell and Carter (Cooke, 1949). C. M. Cooke bought out his partners in 1908, 10 years after the establishment of American Sugar Company." (Weisler, *The Archaeology of a Hawaiian Dune System: The Nature Conservancy's Mo'omomi Preserve, Moloka'i*. Honolulu: The Nature Conservancy, 1991p. 10)

The Cooke family owned Molokai Ranch for almost 80 years until the late 1980s. It was operated as a family corporation separate, from Castle and Cooke. George Cooke served as manager of the Ranch for 35 years, from 1908 through 1943. Under his tenure it became the second largest cattle ranch in Hawai'i and a major producer of beef.

Libby, McNeill & Libby Company acquired a lease from Moloka'i Ranch Co., Ltd. to establish a pineapple plantation on any lands of Kaluako'i above the five hundred foot level. In February 1923, the first field of 977 acres was planted. Due to the distance to Kaunakakai over undeveloped roads, Libby decided to construct camp buildings and houses on Ranch land in the Maunaloa area. Libby built a cable landing on Pu'u Kaiaka and shipped in materials which were hauled from ship to shore using a winch to construct Maunaloa Town, as well as fertilizer, weed control paper, and pulapula (plantings). (Cooke, 1949, 90-91).

Within a few years Libby dredged a channel through the reef at Kaumanamana and built a wooden wharf that they named Kolo, the name of an adjacent area. The Kaiaka cable landing was abandoned. Ranch shipments of supplies into Moloka'i and of pineapples to the Libby Honolulu cannery shifted to Kolo. (Cooke, 1949, 91)

A pavilion was constructed neat the beach at Halena for the boy scouts. Libby plantation also built cabins for use by their workers. Informants fondly remember camping at Halena and holding large parties for weddings, birthdays and other family gatherings. They also recalled camping at Halena as boy scouts. Boy scouts also came from other islands and camped at Halena.

The Ranch reorganized as Moloka'i Ranch Co., Ltd. under a new charter in1939.

During World War II, on July 17, 1944, Moloka'i Ranch Co., Ltd. leased 1,500 acres to the U.S. military to use for training exercises and target practice. An small installation was constructed at 'Ilio Point. In 1949, the lease was extended through June 1965. According to a 1993 report by Maurice Major, an informant then living on Maui recalled participating in a Marine Corps amphibious exercise at Kaupoa Bay which involved 7,000 men who fired heavy artillery for more than a week. Spent bombs were also found during the survey of Northwest Moloka'i conducted by Marshall Weisler in 1987. A site at the extreme southwest portion of what is now the Papohakua Ranchlands Subdivision was used for a target range for gunnery and practice exercises, a bombing area, bunkers, and a control house. (UH DURP Planning Practicum, 2005, 74)

According to an informant, in the 1950s, a harbor was dredged and a wharf constructed at Hale O Lono by B & C (Brown and Clewitt) Trucking to ship out sand from Papohaku and cinders from the top of Halena hill. A 1957 contract between Moloka'i Ranch Co., Ltd. and HC & D (Honolulu Construction and Draying Company, Ltd.) allowed for sand to be removed from a 297 acre southern parcel of Papohaku Beach. (UH DURP Planning Practicum, 2005, 74). The cinders were taken out of a pit in a hill near Halena. The sand was transported to Honolulu to rejuvenate Waikiki Beach and cinders were used for highway construction. After over twenty years, the sand mining operation was exposed as illegal and terminated in the 1970s. The sand was drawn from below the high water mark which was public land and required a government permit and at some point a dredge bucket even drew the sand out of the ocean. According to Rikki Cooke the Ranch was fined and traded land at Ala Malama in Kaunakakai in lieu of the million dollar fine. Mr. Cooke provided the following information:

B & C trucking took sand from Papohaku for over 20 years. It was said that Waikiki was really Papohaku. When took shipment out they took a whole barge at a time. All day long, every day, had trucks going back and forth from Papohaku to Hale O Lono. Had a dredge at some point and went into the ocean.

They had a million dollar settlement. Traded the Ala Malama site in lieu of the fine, to the county. Moloka'i Ranch gave the Ala Malama site for the fine.

B&C Trucking also owned Seaside Inn and Pau Hana Inn.

In 1968, Moloka'i Ranch Co., Ltd. formed the Kaluako'i Corporation as a joint venture with The Louisiana Land and Exploration Company (LLL). LLL was provided a contingency for the Ranch's West End lands.

In 1972 Dole Corporation acquired Libby, McNeill and Libby and closed the Maunaloa pineapple plantation in 1975.

The Kaluako'i Resort opened in 1977 and included a hotel, a golf course, and condominiums. In 1978, the Moloka'i Ranch Wildlife Park opened for safari-like tours on the ranch lands.

In 1980 LLL separated it's interests from Moloka'i Ranch Co., Ltd. and exercised its option over the West End lands from Kaluako'i to Kawakiu. These lands were sold to Tokyo Kosan in 1987. Operating as Kukui (Moloka'i), Inc. the company subdivided its property and developed the Papohaku Ranchland Subdivision.

The Ranch diversified its investments into mainland commercial property. It also sold the lands from Hale O Lono to Kaupoa to an individual investor from Las Vegas for $21 million. Within a week this investor sold the lands to Alpha U.S.A. for $35 million. Alpha U.S.A. hired Henry Ayau as its representative, Walter Ritte as a consultant, and Groups 70 as its planner. They developed a plan to develop the La'au parcel that involved Hawaiian villages.

When the investments made by Moloka'i Ranch Co., Ltd. failed, its stock was bought by Brierly Investments, Limited who became its sole stockholder in 1987.

In 1991, when Tokyo Kosan went bankrupt, it sold Kukui (Moloka'i), Inc. which owned the closed the Kaluako'i Resort and Golf Course and the adjacent lands over to Kawakiu, back to the Ranch, or its parent company, Brierly Investments, Limited. In 1993, Alpha U.S.A. also sold the lands it had purchased back to the Ranch or Brierly Investments, Limited) for $12 million. It is the shoreline area of this parcel that had been owned by Alpha U.S.A. that is now being proposed for rezoning for the La'au Point Rural-Residential Development.

Brierly Investments, Limited, itself was totally reorganized in 2000 when the Far Eastern stock markets collapsed. It is now a smaller operations-based company that is registered in Bermuda, has its headquarters in Singapore and is listed on the stock exchanges in London, New Zealand and Singapore. Its largest asset is the Thistle Hotel chain in Great Britain and it's second largest asset is Moloka'i Ranch. In December 2002, seeing that Moloka'i Ranch had operations that went beyond ranching, the corporation's name was changed to Moloka'i Properties Limited (MPL). Around the same time, the parent corporation changed its name to BIL International.

3.3 History of Kalauako'i

Kaluako'i means "The stone adz quarry," according to Catherine Summers in Molokai: A Site Survey. There are numerous quarry sites within Kaluako'i. The Kumuma'oma'o and the Haleolono are the winds of the ahupua'a.

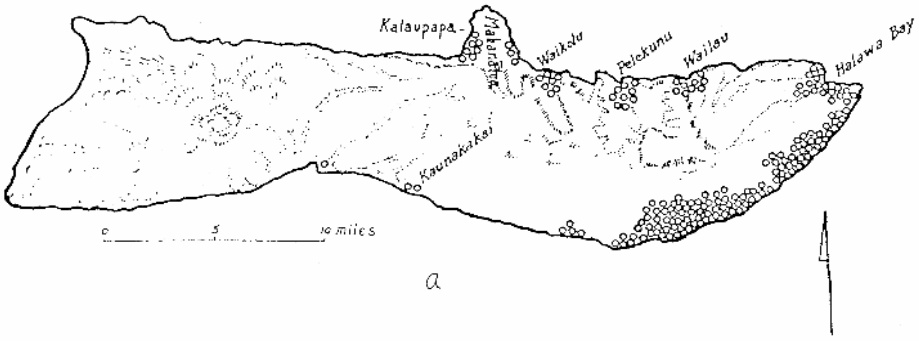
According to Summers, Kamakau described the ahupua'a of Kaluako'i in which Mo'omomi is situated as a desolate land of famine.

George Cooke notes that according to the logs of Captain James Cook, when he came by Moloka'i in the winter, he saw red water from the gulches out half mile from shore. Erosion is not just in modern times, but it got worse with cattle and pineapple culture. Even in ancient times there was soil run off.

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

According to John Wesley Coulter in Population and Utilization of Land and Sea in Hawaii, 1853 (1931), "Nearly all the western half of the island was uninhabited. There the semi-arid climate precluded successful agriculture." His map, shown below, illustrates the distribution of the population on Moloka'i in 1853. It depicts Kaluako'i as an area without any inhabitants.

Figure 4. In Coulter's map of the 1853 Moloka'i population Kaluako'i was uninhabited.



William Bonk conducted archaeological excavations in West Moloka'i for his 1954 M.A. Thesis, "Archaeological Excavations on West Molokai." He excavated 9 archaeological sites on West Moloka'i that were either adjacent to the shoreline or less than one mile from the ocean. Based upon his excavations, Bonk concluded that the Kaluako'i ahupua'a was of significance to early Native Hawaiians for its adze quarries and extensive fishing resources. He writes:

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

Bonk also provided a review of observations about West Moloka'i by early explorers and ethnographers which reinforce his conclusion that West Moloka'i was a dry, marginal, sparsely populated area of the island. The following are excerpts from these observations cited by Bonk.

> Captain George Vancouver:
> "The country had the same dreary and barren appearance, as that noticed on the south side, and I was informed it was equally destitute of water." (p. 16)
>
> Archibald Menzies, naturalist on Vancouver Voyage:
> "presents a naked dreary waste without either habitation or cultivation; its only covering is a kind of think withered grass, which, in many parts, is scarcely sufficient to hide its surface apparently composed of dry rocky and sandy soil." (p.16)
>
> Fornander in History of Kuali'i:
> "The cause of all the trouble was this: The chiefs on the Koolau side of Molokai were anxious to get possession of Kekaha, a stretch of country from Kawela to Maamomi (sp); and the reason why these chiefs were so desirous of getting possession of this section of country was on account of the fishing. But the chiefs of Kekaha, know the value of these fishing grounds, were determined to hold on

to them, so this determination on their part caused a general internal conflict at this time. . ." (p. 17)

Although sparsely inhabited, Kaluako'i has several significant natural and cultural resources which the Moloka'i residents utilized on a seasonal basis or for specific purposes, as described below.

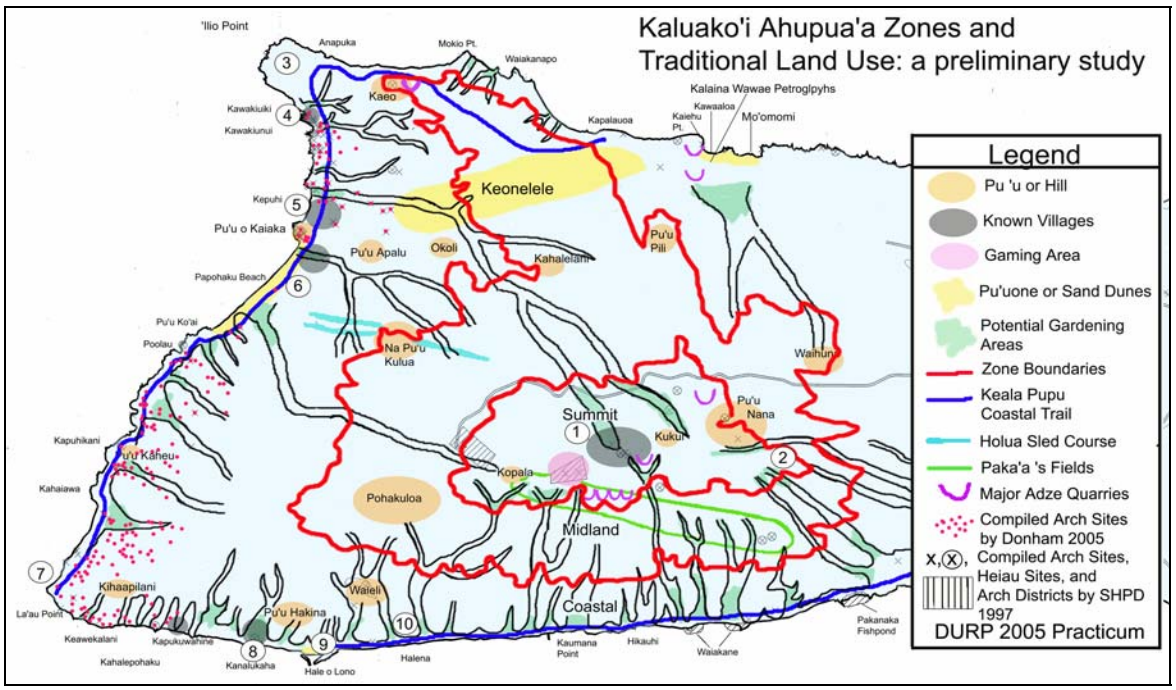
3.4 Cultural Zones of Kaluakoʻi

During the time of early Western contact in the Hawaiian archipelago, Westerners viewed Kaluakoʻi as an arid and sparsely inhabited land. Few were the Native Hawaiians spotted living in this ahupuaʻa. Therefore, Westerners often regarded the valleys and streams of Manaʻe with the utmost importance. Beyond their grasp was that"*Molokaʻi pule oʻo* (Molokaʻi of the potent prayers)," a "figurative reference to Molokaʻi's fame in sorcery" (Pukui and Elbert, 1957:266; cited in Summers:15) was a spiritual island, an island of mana. Halona Kaopuiki shares with us the mana of Molokai.

> *"… when you look at Molokai, when you look at the island, it's a moʻo, it's a mama lizard, and all the valleys is the babies, that she is carrying on her back, of Molokai. My father use to tell us, where the mana stay, where's the defense of the lizard, the moʻo? The tail, the West End!" (Enos et.al., 2005:24)*

Without the moʻolelo (traditional story), the place names, and an understanding of the cultural uses and practices of Kaluakoʻi, the mana of Kaluakoʻi would have remained displaced by these Westerner's first impressions. The following text describes the three zones of the Kaluakoʻi ahupuaʻa based on the natural resources and the cultural uses and practices found within each zone. The moʻolelo of these areas are numbered to show the location on the previous map and the place names of SW Kaluakoʻi can be found in Figure 6.

Figure 5. Kaluako'i Cultural Zones Map



3.4.1 Maunaloa Summit Zone

Topography

The Maunaloa summit area extends from Puʻu Nana on the east to Maunaloa town on the west, basically the land above 900 feet elevation (Major 2000:8). A ridge extending southwest from Puʻu Nana forms a somewhat level plateau between gulches draining to the south and north. Due to elevation, winds with precipitation cause cooler temperatures. These temperatures, coupled with native forest of kukui, hala, ʻieʻie, ʻiwa ferns, ginger, and hau (Summers 1971) thought to be present in the summit region prior to human impacts, lead to soil and climate conditions advantageous to traditional dry land agriculture. Such a forest would also have served to break the force of strong winds that today blow unabated across Kaluakoʻi.

Settlement

Extending across the top of the Maunaloa volcano, the summit zone habitation complex includes a range of sites indicative of cultivation and habitation. In regards to the area south of Puʻu Kukui, Fowke states:

> The surface over hundreds of acres around these ruins is covered with house sites, long straight rows of stones, and garden lots surrounded by stone walls. Shop refuse, mostly chips and spalls from adz making, sea shells broken to obtain mollusks, coral for abrading, adzes in all stages of finish, and many "olomaikis" (chunkey stones) [*ulu maika*] are found. (Fowke 1922:180; cited in Major 2000:8)

Kukui Village, whose name according to John Kaimikaua refers to "light", rather than the tree of the same name, was also located in the summit region. In this village grew large groves of the Iholena variety of banana. The underside of Iholena leaves is particularly silvery, and reflected the light of the fires so that it was visible as far away as Oʻahu; this light led to the name of the village. This variety was prized not only for its flavor, but also for the stout trunks that were good for cultivating in windy areas.

Natural Resources

Adze quarries in the summit zone were used both for the kanaka maoli of Kaluakoʻi and east Molokaʻi due to regional intensification of agriculture, thereby increasing the demand for finished adzes from west Molokaʻi sources. Sinoto described the distribution of adze quarry remains on ʻAmikopala hill as follows:

> There are 13 localities on Amikopala Hill where there is evidence of adz manufacture on or in close proximity to basalt outcrops. The outcrops occur mainly on the western portions of the hill, with 2 major areas that cover an area of c. 500 sq m and consist of several boulders with flakes, spalls, and occasional blanks strewn around their bases. (Sinoto 1974; cited in Dye et. al. 1985:4)

Cultural Sites and Practices

The summit zone is where the head of major gulches are located, generally thought of as the source and the most sacred. The summit zone of Kaluakoʻi was known for its association with the gods and ʻanaʻana (sorcery). This locality helped establish the saying amongst the kanaka maoli of the time throughout the archipelago, *"Molokaʻi pule oʻo*. Noted Kumu Hula John Kaimikaua describes this area is also esteemed as the birth of hula on the island of Molokai (Alu Like, 1985; Thompson, 1977). Here, a woman named Kapo ulakinaʻu was sought by the people of Molokai to teach the hula. However, overwhelmed by the amount of people who wanted to learn, she decided to teach and train her younger sister to be their instructor. The name of the first hula halau located at Kaʻana was *Hoʻokuhi ʻiuʻiu*. This name derived from the expression that the dancers were to mimic or imitate the dripping of water in the caves of Mauna Loa . In time, this younger sister, who taught hula under the name Laka traveled the Hawaiian archipelago to spread this new dance. As Laka's fame grew, Kapo'ulakinaʻu's jealousy led her to leave the hula and learn sorcery in order to disrupt and distort the teachings of Laka. Consequently, Kapo'ulakinaʻu turned herself into stone where she remains at Kaʻana till this day. For this reason, in ancient days, if students forgot a step or made a mistake they would attribute it to Kapo'ulakinaʻu. As Laka's life came to an end, she returned to Kaʻana where she died and her body was buried under Puʻu Nana. At this time Molokai was praised as *Molokai Ka Hula Piko*, and subsequent generations would elevate Laka to a goddess. Kaimikaua further expresses his thoughts on this ʻaina:

> *A lot of the past is still present here. If this place is used as a spiritual sanctuary a lot of the people would come especially for the "hula". There's not too many actual historical sites, you know of a "halau", where the "hula" was done. (Spalding, 1988:4)*

Lying approximately a mile ENE of ʻAmikopala there is a hill with an outcrops of rock. The largest of these rocks is the *piko* stone, where newborns' umbilical cords would be placed. The Mauna Loa summit plateau was also the location for games and aliʻi recreation. According to Kamakau:

> Here there was a maika playing ground just above Kaluakoʻi, to which all the players of Molokaʻi, chiefs and people from Waikolu, Kalaupapa, Kala'e, and all the other places resorted to roll maika stones, slide paheʻe (torpedo shaped sticks used in another game), and play all kinds of other sports. (Kamakau 1991:129; cited in Major 2000:6)

Agriculture

The summit zone had the highest rainfall on the west end, along with well-drained soils. It was a good area for ʻualaʻ (sweet potato), a staple that allowed kanaka maoli to settle in drier climates. The heads of the gulches near the summit often times were good sources of water via springs, and served as sponges, thus leading to gardening activities beyond ʻualaʻ such as dryland kalo (taro), ko (sugarcane), and maiʻa (banana). Although stone planting mounds or walls may be present in some areas, it is thought that many fields existed without durable physical traces.

Wahi Pana: Sacred Places and Their Mo'olelo

#1 Kalaipahoa

Molokaʻi's great renown outside of the island is for its potent kahuna class, especially in the fields of ʻanaʻana (sorcery). One of the greatest aids to a kahuna ʻanaʻana (sorcerer) was in the kiʻi (idols) that were made with wood made from trees said to be inhabited by poisonous spirits called kalaipahoa. These sacred trees were found in the uplands of Kaluakoʻi at the head of Kakaʻako Gulch. According to oral history, these kalaipahoa were instrumental in repelling an invading army from Kahiki; a group of warriors stationed on Puʻu o Kaiaka spied an army of canoes making for the bay. These warriors, daunted by the size of this army, called out for assistance from a kahuna who lived on a hill further back on the hill side. This kahuna advised the warriors to meet the invading army onshore while he chanted on the hillside. Indeed, so potent was the spell he created using the kalaipahoa, as soon as the aggressors landed they fell dead to a man. (Kaʻopuiki, 2005) It is said that Kamehameha I, when landing on Molokaʻi claimed one of these kiʻi as his own, so great was his respect for its mana.(Kaopuiki, 2005)

#2 Kaʻana

Revered by many hula practitioners as the birthplace of the hula, or "ka hula piko" (the navel or center of hula). Kapoʻulakinaʻu lived at Maʻohelaia on Mauna Loa, and originated the hula, enlisting the aid of her younger sister Laka to help teach others; she also remained there in the form of a rock, deciding never to leave the mountain.

3.4.2 Midland Zone

Topography

The midland zone extends just below the Mauna Loa summit zone (below 900ft) and extends to the coastal zone. The elevations near the coastal zones differ from the North, West, and South coasts due to various typologies of the three coasts. The midlands of the North and West coasts are exposed to winds with little or minimal rainfall. The midlands of the South coasts however were shielded from strong winds, and due to their typology and location near the summit zone, they enjoyed greater occurrence of precipitation.

Settlement

The midland zone bears few signs of human presence besides the trails that connected mauka with makai (from the mountain to the sea) and temporary transient shelters.

Cultural Sites and Practices

Along with various heiau, burial caves, and koʻa, many times located in this zone were shrines or ahu created for farming and fishing communities to exchange their goods. On the North Coast is the desert strip of the West End also known as Keonelele, "the flying sand." This desert strip connects Moʻomomi on the North Coast to Papohaku on the West Coast.

> Keonelele was said to have been a "large burial place" (Hawaiʻi Holomua, 1893). Emory removed 14 complete and four incomplete Hawaiian skulls (Bishop Museum Accession No. 94) from "… the lee side of a large sand hills on the north" (Emory, n.d.b:Mar 2). He estimated that there were at least 60 burials located here and, on the slopes of the hill to the N, at least 25 burials (Summers 1971:45)

Located in this zone on the West Coast are three Holua Sleds on Na Puʻu Kulua;

> Two holua are on the W side of the hill, running downward in a westerly direction. They are 6 ft apart and each is 3 ft wide. Traces of paving for the northern one extended 24 ft in 1954, and for the southern one, 27ft. The third holua runs down the hill in an easterly direction. On top of the hill is a paved platform measuring 12 by 18ft, on which the survey station "Heiau" has been built (Summers 1971:51).

Located on the Eastern portion of the midland zone is Waihuna (Sacred Water), which is connected to Naʻiwa on the makahiki grounds and serves as a paliuli (divine place of spiritual essence). According to Kaopuiki, "Waihuna is just like the heart of this area, very sacred grounds, if you walk up to the top you going see the whole nine yards" (Enos, et al. 2005).

Agriculture

This zone was not predominantly known for agriculture. Mainly dry land farming would take place in this zone, especially near where springs could be found. The major exception to this is Pakaʻa's fields located in both the southern portions of the summit and midland zones.

> Cooke (1949:119) was told that these were Pakaʻa's fields, which he planted in sweet potatoes and sugarcane in order to be able to feed the king, Keawenuiaʻumi (Appendix A). Tradition locates the fields in "the

> uplands" from Paka'a's house (Site 75). Described as being six in number, they are said to have stretched "farther than the eye could reach." "Each field was shaped after each of the six districts of Hawai'i" (Fornander, 1918-1919:74). Kamakau said that the fields "…lay in a straight line from the upland of Punahou [Punakou] to the summit of the west side of the disk-(maika) playing site [Site 89] of Maunaloa" (1961:42;cited in Summers 1971:66).
>
> The sweet potato and sugar-cane patches were about a mile long and half a mild wide. Paka'a did his farming in the winter months when there was an abundance of rain. The plains were made fertile when the rain fell, and sweet potatoes and sugar cane flourished. His production was great (Kamakau 1992:42; cited in Major 2000:13).
>
> When the six overseers of the six districts of Hawai'i went with him to the patches, they found huge patches of sweet potato and sugar cane. One could run along the fields until his limbs wearied, that was how large each overseer found his patch [Paka'a had planted six fields for the six districts of Hawai'i] (Kamakau 1992:44-45; cited in Major 2000:13).

It is here that Handy had noted the presence of kuaiwi (1972:516;cited in Major 2000:9), a term that is most often referring to ridges of stone that marked field boundaries parallel to the slope and served as planting areas for perennial crops and famine food.

3.4.3 Coastal Zone

Topography

The North, West, and South coasts vary rather differently in their topography. Due to the sea cliffs of the North Coast (between 'Ilio Point and Mo'omomi), and its exposure to strong winds and big north swells, the North Coast tended to be void of permanent settlement. The exception to this is Mo'omomi, which was used as a fishing station. This area is mostly sand and pu'uone (sand dunes). Although strong winds and big north swells affect the West Coast, protected embayments along the West Coast served as safe places for landing canoes and shelter. The mouths of gulches are also strewn up and down the West and South Coasts, unlike the North Coast. They served as shelter and natural sponges of moisture. Papohaku Beach serves as a major canoe access point for the West Coast. The South Coast had access to generally calmer waters and shallow reef systems that were not found on the West and North Coasts.

Settlement

The North Coast tended to be devoid of permanent settlements mainly because of difficult access to the coastline and a lack of precipitation. Sheltered caves served as transient dwellings. As mentioned earlier, Mo'omomi was the major fishing station along this coast and would have served as the most logical locality to settle. The West

and South Coast differ rather dramatically from the North Coast in terms of settlement. Residential clusters were concentrated near protected embayments, generally below the 50 ft elevation (Athens et al. 1998:16) in order to access marine resources. They were also located near the mouths of gulches that served as gardening areas and potential areas for springs. Caves were also inhabited on the South Coast. As a result, the West and South Coasts were able to sustain fishing villages in areas such as Kawakuiʻiki, Kepuhi, Papohaku, Kapukuwahine, and Kanalukaha (Kaopuiki 2005; Ne 1992). Also, constructed on the eastern portion of the South Coast are several fishponds that may be a clue that the South Coast of Kaluakoʻi had a somewhat large population.

Natural Resources

The ahupuaʻa of Kaluakoʻi has, and still is well known today, for its vast marine resources, especially Penguin Banks located on the eastern portion of the South Coast, off of Kapukuwahine. Along the boulder coastline were habitats for edible mollusks such as ʻopihi, pupuʻawa, pipipi, and aʻama crab, while in the near shore area algae were abundant with a variety of species, including the edible seaweed, limu kohu (Army Corps of Engineers 1984;cited in Weisler 1987b:9). The ranges of sea life found off the coasts of Kaluakoʻi follow different water zones (see Minerbi, McGregor, Matsuoka, 1993, pages 89 – 90), with favorites being moi, kumu, uhu, ʻopelu, ʻono, akule, ʻulua, and ʻahi to name a few. Also found in this zone are the stratified limestone (ʻunuʻunu paʻakea) of Hale O Lonono and various adze quarries or stations, mainly found on the North Coast, such as the Moʻomomi Quarry Complex and the Kaeo cone quarry.

Cultural Sites and Practices

Due to the importance of fishing and the marine resources found on and off the shores of Kaluakoʻi, koʻa or fishing shrines were abundantly found up and down the entire coastline along with a myriad of heiau and burials. It was possible for the kanaka maoli of Kaluakoʻi to access the coastline thanks to the Maui aliʻi Kihaʻa Piʻilani who constructed a coastal trail, "Kealapupu i Molokaʻi" (The shell road at Molokaʻi). This trail was lined with shells to ensure safe travels at nighttime, thus further alluding to the vital significance of the marine resources. On the North Coast, Moʻomomi, in conjunction with Keonelele, served as burials in the sandy areas as well as Papohaku Beach in the puʻuone on the West Coast. Moʻomomi was said to have been "the place for the dead" (Ka Nupepa Kuʻokoʻa, 1921c; cited in Summers:41). Also located near this area is the Kalaina Wawae (carved footprints), which are a series of oblong depressions that are said to represent human footprints. These footprints were made as a prophecy of the arrival of the boot-wearing Caucasian (Summers 1971:44). In the Kawakiu area, the northern portion of the West Coast, Emmet Aluli (2005) explains a koʻa that was found there:

> … and there was, kinda like, uh, a koʻa, a fishing koʻa that they pulled out 37 beautiful fishing hooks... but the more important thing was that the hooks were associated with the bones of the fish, ah. So, for the first time we thought, you could figure out what hook was used to catch what fish.

Further down the coast, a Wahi Pana located on the West Coast is Kaiaka Rock. This major outcropping between Kepuhi and Papohaku is home to a heiau facing Papohaku Beach and was used as an observation tower for fishing and scouting purposes. Just below Kaiaka Rock, facing Papohaku Beach is a canoe heiau (Kaopuiki, 2005). Kaopuiki though is not sure of the name nor of any other such site located on the island. To the south of Papohaku Beach is Puʻu Koa'e, this area was used to strip the flesh of bodies prior to burial.

As mentioned earlier, on the eastern portion of the South Coast is Penguin Banks. Kaopuiki (2005) explains the function and significance of the area:

> Every finger on top here, we have fishing shrines. And if you do one survey of all these fingers, connected to the Penguin Bank. Molokaʻi Nui A Hina owns the Penguin Bank. This is ours we want to save it for our generations. But every finger, where I pointing, get one heiau on top, a fishing shrine. Yeah, and were the koʻa stay, the finger stay. You going throw for moi. Next step in the ocean, the ʻulua, same finger, next step the ʻahi, and the deep water fishes, connected to the Banks. So we have koʻaʻs right through.

Also located in this area above Kanalukaha on Puʻu Hakina are bell stones, Kaopuiki (2005) recalls working with the Bishop Museum:

> Oh yeah, here, right here, Kanalukaha. Inside here, you know this place, I love this place because, this village over here, on top the village on top the mountain, we have bell stones, you guys know what is bell stones ah? On top there, get bell stones that I like save, that's the only bell stones I know now. So we found the bell stone, 3 on top there.

These bell stones are significant because when struck they would kani (ring), and would alarm the fishing village of Kanalukaha the arrival of an aliʻi in his canoe. Just east of Kanalukaha is Hale o Lono. Following the pattern of Moʻomomi, Keonelele, and Papohaku Beach, Hale o Lono has also been noted as an extensive burial locality (Kaʻopuiki, 2005).

#3 The Red Dog of ʻIlio Point

Geographic Location: ʻIlio Point, or "the Point of the Dog."
Characters: Shark god of Kainalu who takes the form of a dog when traveling on land.
Hawaiian Values: A desire to respect and pay homage to ancestors.

Summary

The shark god of Kainalu had an ancestor whose bones washed ashore on the NW end of Molokaʻi, and the people there gathered the bones and made a shrine. When the Kainalu shark wished to pay his respects to his dead ancestor, he could not go by water. He could not swim there and back between sunset and sunrise; and during the day, the shark gods of the other areas would be about. He found a solution; his mother was a dog worshiper, so he went on land and took the form of a dog. Every fifth year, he trotted to his ancestor's shrine at ʻIlio Point, did homage, and then slipped into the sea. Harriet Ne has seen the red dog sniffing along the roadside toward the NW point of Molokaʻi. There she has seen the dog sniff about the heiau, stand on a large slab of stone, and lift his head to howl. Then she saw him walk into the ocean and disappear.

#4 Pueokea, the Owl Daughter

Geographic Location: Kawakiu Iki
Main Character: Pueokea, a beautiful daughter who was born to a poor family who at dusk becomes a pale yellow owl.
Food Items: ʻUala, Fish
Makana: A wristlet of which their village of Kawakiu Iki was known. Such wristlets were three inches wide and made of the mother-of-pearl that washed up on the beaches during winter storms. The mother in the story made one for her daughter, Pueokea, and one for the son of the chief of a new village just south of theirs, because they were invited to attend a luʻau for his twentieth birthday.

Summary

Fearful of the people of the village, Pueokea's parents took their daughter to a secret cave. On the day that Pueokea was one year old, her mother went to her in the cave and gave her a beautiful yellow pa'u (skirt), some baked sweet potato, and the wristlet of mother-of-pearl. As night came on this day, Pueokea took the form of an owl, and flew southward never to return. As twenty years passed the parents received an invitation to attend a luʻau for the chief's son of a nearby village. Making a wristlet as a gift for the chief's son, the mother forgot her gift and did not remember it until they reached the luʻau. Ashamed they lingered in the background until a group of dancers, all wearing red pa'u, came out. One of them, a short, very fair and beautiful girl, was wearing on her arm a wide mother-of-pearl wristlet. Instantly her mom knew that it was Pueokea. After dinner the guests were to present their gifts. Pueokea's parents were to be flogged for not bringing a gift. Pueokea ran forward and offered her wristlet as a gift. Because of her beauty the chief's son pleaded with his father to let her parents go, and so they were

released. The chief's son soon fell in love with Pueokea. However, as night came, she turned into an owl and flew to the north. Knowing where she would go, her parents told the chief's son how to find the secret cave. He left at once, arriving at dawn. Pueokea greeted the chief's son with an exclamation of joy, and they were married soon after. Each_time a child was born to them, a yellow owl appeared on the plains mauka of Kawakiu. It was kapu to kill an owl, especially a pale yellow one.

To this day, one who is driving along the highway to Maunaloa and to the hotel at Kepuhi may see an owl at night flying across the roadway. Pueo have been known to be helpful to motorists stranded at night.

#5 Kepuhi, Village of the Eel

Geographic Location: Kepuhi, a small village in Kaluakoʻi on West Molokaʻi
Characters: Lono Nuʻuhiwa- last chief, Keao- fish spotter, Anuhea- girl from Makapuʻu, Oʻahu.
Deities: Moray Eel, guardian god, ʻaumakua of Kepuhi.

Summary

For generations Kepuhi was ruled by the Nuʻuhiwa family, and their last chief was Lono Nuʻuhiwa. On his sixtieth birthday, even though there was a great feast, he was sad for he had not named a successor. He was fond of Keao but knew that Keao was too soft to be a leader.

One day Keao saw a canoe floating in the ocean. As it came closer, he noticed that there was a beautiful girl in the canoe. The girl was unconscious; when she awoke she mentioned that she was from Makapuʻu, Oʻahu and that she was fishing with her brother when they were attacked by a large eel at Makapuʻu. The chief was in wonder as the guardian god of Kepuhi was a giant moray eel.

Auhea and Keao fell in love, and soon Auhea became pregnant. One night, the kahuna dreamed that the chief of the village to succeed Lono would have the mark of the eel on his body. A few nights later, the chief died.

Three months later, Auhea gave birth to a husky boy. As Auhea lifted the baby to the kahuna, he saw three white marks running down the right side of the baby's face from his ear to his mouth. Instantly, the kahuna broke into a joyful chant: "Behold the mark of the eel. Behold the high chief of Kepuhi." And so life was lived, in harmony and balance, in the village of Kepuhi.

#6 Papohaku, the Stone Wall

Geographic Location: Papohaku Beach
Characters: Chief and his people from East Moloka‘i, Kahuna of Papohaku Village.
Hawaiian Values: Preserving that which is sacred or scarce (Kapu of the fish ‘opelu); respect and homage for deeds of unselfishness.

Summary

A chief from east Moloka‘i and a few of his people boarded canoes and set off around the island. They found themselves on the southwest coast of Moloka‘i. They paddled up to some fishermen who had a large catch of 'opelu. Hungry, they began to eat. As they were all eating with great satisfaction, another group of fishermen came by and cried: “Stop. Do not eat the 'opelu. This is the season of 'opelu kapu.” However, the visiting chief only had a kapu for eating turtle, so they continued eating.

Mad with outrage and fear, the fishermen attacked the visiting chief and his men. Overpowered, they were brought before the kahuna. The visiting chief became very ill, and the only way to make things right was a human sacrifice to save the chief from death. One of his men offered himself as a sacrifice and the chief recovered.

The kahuna ordered a tree planted on the grave of the willing victim. The grave was on shore; when the tide was high, the waves would wash sand from the grave. Thus, in a very short time, the body would be exposed. In respect and remembrance, the chief ordered his men to build a stone wall about fifty feet long. All with gratitude of their fellow, the chief ordered the wall to continue for another two hundred feet. The chief himself put the last stone on the wall, saying as he did so, “I call this place Papohaku, ‘Stone Wall.’”

#7 Ka Lae o ka La'au, the Point of the Branch

There are three versions of the naming of La‘au. The first comes from Harriet Ne, a kupuna of Molokai who was the source for *Tales of Molokai*. The subsequent versions can be found in Summers (1971:54) who compiled and provided a complete listing of known sites for *A Site Survey of Molokai*.

Version 1

Geographic Location: La‘au Point
Characters: Shark god of Kainalu, shark god of Kaua‘i.
Natural Resource: Hau branch, seen as a gift from strange canoes cruising offshore.

Summary

More than two hundred years ago, the shark god of Kainalu left his home off Molokaʻi and traveled to Kauaʻi. Romping in the ocean with the shark god of Kauaʻi, a floating large branch of the hau tree became stuck on the back of the Molokaʻi shark. As he swam back towards Molokaʻi, there, off the SW point, the hau branch came loose and was washed ashore. As the people on the beach saw it float ashore they took the branch and carried it inland to a fertile bit of land where some wild ʻIlima grew. There they planted it and their chief, Kuamu, said, "We shall call this place Ka Lae o ka Laʻau, or ʻthe Point of the Branch.'" This hau is not like the Hawaiian variety; it is short and sprawls close to the earth, bending like a vine before the winds, but its blossoms are beautiful, so beautiful that the people of Molokaʻi offered them to their gods.

Version 2

Geographic Location: Laʻau Point
Characters: Palila

Summary

Subsequent to leaving Kahului, Palila found himself on the rise of Hanauma [Oʻahu] looking at the heat rise from the pili grass of Kaunakakai, Molokaʻi. He then thrust his

war club [la'au palau, spear-club] ahead of him, which flew through the air and landed at Kaluakoʻi. Here he discarded a portion of his person, which turned into the point of Kalaeokalaʻau. However, at this place was a large stick of wood named Hoʻoneʻenuʻu. Thereby causing Palila to dislike Molokai and once again thrust his war club into the air landing at Kaunolu, Lanai.

Version 3

Geographic Location: Laʻau Point
Characters: Palila

Summary

A hero from Kauaʻi, and feared with the kapu of the gods, Palila was blessed by the gods of Manokalanipo and he received a short spear [laʻau palau] that allowed him to fly anywhere. With an appetite for women, Palila came to dwell on Oʻahu. Not long after, Palila heard the fame of Molokaʻi and flew to Kaluakoʻi near puʻu KihaaPiʻilani. At first, the women were greatly attracted to him. However, when they began to know him better, the women kept their distance. Nonetheless, the young men of Molokaʻi went to consult a kahuna. Due to the mana of the gods of Molokaʻi, Palila's spear lost its mana. Upset, Palila threw it away till it fell and landed on the cape [Kalaeokalaʻau].

#8 and #9 Kanalukaha and Hale o Lono, Villages of the Two Brothers

Geographic Location: Beginning in Kona, Big Island and ending in Southwest Molokaʻi
Characters: Two brothers and their sons, Kepa Kepelino (Farmer) and Keao Kepelino (canoe builder)
Hale o Lono: ʻHouse of Lono'; named by Kepa in honor of Lono (God of Harvest/Agriculture, Health, and Weather)
Kanalukaha: ʻFourth Wave'; named so because of the fourth wave that was used to help push the canoe out into the ocean from the canoe pit.
Food Items: pig, poi (Kona, Big Island); dried fish, ʻuala, moi, (Southwest Molokaʻi)
Resources from Big Island: taro, sugarcane, banana seedlings planted in ravines near water holes.

Resources Found in Southwest Molokaʻi:

1. Kukui Tree- all parts of the tree are useful.
2. ʻUlu Tree- used as food and used to make a gum out of the sap to plug canoe.
3. Spring- discovered by watching birds flying overhead dive down and come up again.
4. Milo Tree- used to carve the image of Lono.
5. ʻAiea Tree- used to build a canoe, took four days to find a tree big enough for a canoe.
6. Uliuli- stone used to make small adzes.
7. Ehuehu- stone to make axes.
8. Kumumoe- sandstone, used to smooth rough spots on canoe.

Deities: Lono (God of Harvest/Agriculture, Health, and Weather)

1. When paddling up the SW shore of Molokaʻi, Kepa saw a cliff with "impressive black stones" forming the entrance to a cave. He was inspired to build a temple for the worship of Lono on the face of that cliff. After inspecting the cave, the brothers were impressed with the view of the ocean, beautiful and mysterious from that height. Kepa and Keao decided to spend their first night in the cave. They also decided to settle and start a village. Moving out of the cave, they consecrated the cave as a heiau and named it ʻHale o Lono'
2. A heiau was built with offerings of ʻulu and moi to have Lono's blessing on the newly planted cane and seedlings. If crops were improved, they would offer Lono products of the garden every night of the new moon.

Ku (God of War and Canoes)

1. Keao calls upon Ku by chanting a prayer in the ritual of canoe launching; thanking him for helping build the canoe in a place where material was so scarce.
2. Keao builds a koʻa (fishing shrine), offering one small moi, one kumu, one large moi, and sugarcane to Ku.

Summary

Two brothers, Kepa Kepelino and Keao Kepelino are told by their father that they must go to another island and find a place to settle and raise their families. They set off with their sons to find a new home. First stopping at Maʻalaea Bay on Maui, then Keawa Nui on SE Molokaʻi, they finally make their home in SW Molokaʻi. With the discovery of water they soon find the place livable. Their subsistence is based on simple agriculture and fishing. Soon the two brothers separated, Kepa to the gulch where he had planted his crops near the shrine to Lono, and Keao to the north of the halau waʻa (canoe house). The two families lived peacefully thereafter, sharing their crops and their fish catch like good brothers. Together they performed the ceremonies for good harvests and abundant fish catches.

As the sons grew older they married women from Punakua, the nearest village. When the families were too large for the amount of water, it became clear that some of the people would have to move- but so loving were they that they preferred to abandon their villages and move together to a new location than to separate.

#10 Hālena, the Yellowing

Geographic Location: Hālena, Southwest Molokaʻi
Characters: Kahekili, ruling chief of Maui and a lesser chief of Southwest Molokaʻi.
Hawaiian Values: Humility, Hospitality, and Hoʻailona (use of signs).

Summary

Kahekili, the ruling chief of Molokaʻi who lived on Maui, had made plans to invade Oʻahu. Stopping on Molokaʻi to get supplies, he and his men paddled to the southwest coast of Molokaʻi to find drinking water. As they landed, Kahekili sent his men to explore the land. He then heard a large wail of a newborn, and he and his men discovered a large cave containing several people. Recognizing that Kahekili was an aliʻi nui, the father of the infant welcomed him according to royal traditions and introduced his wife and baby son.

Subsequently, Kahekili offered white tapa as his gift to the newborn son of this lesser chief. As custom, Kahekili breathed upon the tapa, as did the lesser chief. As the lesser chief did so, the white tapa turned yellow, a sign that he was sickly. The lesser chief offered hospitality of his cave and a meal to Kahekili and his men for the night.

In the morning, when Kahekili asked the name of the place the lesser chief responded, "There is no name for this place." Kahekili responded, "Then I shall call it Halena because of the sign of the yellowish tapa."

#11 Weke Pueo

Geographic Location: West End coastline, especially near Kolo
Characters: mano,weke pueo
Marine Resources: mano, weke pueo
Hawaiian Values: dreams have a source and meaning

Summary

An injured mano (shark) was swimming from Maui to Molokai and the weke pueo followed it to the southwest shore of Moloka'i, drinking the blood that was flowing from its wounds. Because the weke drank the blood of the mano, it was poisoned forever. People who eat the head of this weke will be cursed by nightmares.

3.5 Wahi Pana

Figure 6. Wahi Pana Table

Name	Suggested Translation and Tale of Naming	Desc.	Cultural Sites and Information
ʻAmikopala	Waving Ripe Sugar Cane	Adze Quarry	Heiau located on the eastern spur of ʻAmikopala and to the ENE of ʻAmikopala is a piko stone. Formerly, the location of adze quarries, maika playing ground, the "Sisters of Kalaipahoa", and to the south, were Pakaʻa's fields for sweet potato.
Hakina	A Remnant, broken piece	Gulch/Hill	Koʻa facing south on the rising ground N of the beach and road. Kalalua heiau located on the flat land at beach level. Emory believed that this heiau was probably used to mark the seasons due to the exact N and S positions on opposite sides of the platform. Here, on a low rocky hillock are three stones standing in line with petroglyphs.
Halena	Yellow Trough	Gulch	
Hale o Lono	Lono's House	Land	Described as "… a fishing station formerly quite a village below ʻMaunaloa,' Molokai" (*Saturday Press*, 1883. The Malualua is its wind. Burials in the sand dunes were noted in 1952. Koʻa located in the shelter of the Hale o Lono cliff and on the headland to the E of Hale o Lono cliff.
Hikauhi	Name of the daughter of Chief Hoʻolehua and his wife ʻ(I)loli. She became the wife of P(a)kaʻa and mother of the famous K(u)aP(a)kaʻa. She was lost during labor pains and her husband searched vainly for her, hence the saying applied to fruitless endeavors, Hikauhi i Kaumanamana	Land/Gulch	Formerly a fishpond here to the E of Hikauhi Gulch.

Wahi Pana Table p.2

Ka Lae o Ka La)‘au	1. Cape of the trees or the Point of the Branch. In reference to when the shark god of Kainalu traveled to Kaua‘i. There, a branch of the hau tree became stuck on the back of the shark god. Returning back to Molokai, off the Southwest point, the hau branch came loose and was washed ashore. The people on the beach took the branch and planted it amongst ‘ilima. Their chief, Kuamu, said, “We shall call this place Ka Lae o ka La‘au, or ‘the Point of the Branch.’ (Relates to Harriet Ne’s Mo‘olelo) 2. Named for the famous club of Palila, the Kaua‘i hero who, with a spear given him by the gods, leapt to Kiha a Pi‘ilani, a Moloka‘i hill, and there attracted all the women; the angry and jealous Moloka‘i men fought him. His club lost its mana to the gods of Moloka‘i, and so he threw it away; it landed on this cape. (Ka Nupepa Kuokoa, July 6, 1922.)	Cape	Ko‘a once located at the site of the lighthouse. According to Kamakau (1869a), Kalaeokala‘au was one place where “… where stone-cutters made adzes. The stone there were the ho‘okele and the makai‘a, also called the mahikihiki.”
K(a)‘ana	Division	Land	According to Emerson (UL 45), a rock here is the body of Kapo, a hula goddess and sister of Pele. The hill is said to be the site of the original school where the ancients learned hula dancing of every kind. Above the hill lived K(u)aP(a)ka‘a, the punster and hero; he taught men to farm, build houses, and fish. (Ka Nupepa Kuokoa, September 14, 1922.)
K(a)haiawa Kahai‘awa Kaha‘iawa Kaha‘i‘awa K(a)ha‘iawa K(a)ha‘i‘awa	The sacrifice [in a] bay The sacrifice [of the] bay The breaking [by the] bay The breaking [of the] kava plant The bay belonging to someone else The kava plant [or drink] belonging to someone else	Land	
Kahalep(o)haku	The stone house	Land	Heiau 10ft from the edge of a high cliff overhanging the sea. Believed to be the site where Kihapiilani was brought up.
Kaheu	Gourd?	Gulch/Hill	
Kahinawai0	Hina’s water	Gulch	
Kaluakanaka0	Oven-baking man	Headland	
Kaluakau	The elevated pit	Headland	Heiau to the E of Kukuku Gulch
Kaluako‘i	The adze pit	Ahupua‘a	

Wahi Pana Table p.3

Kaluaokawahine	The pit of the woman		
Kam(a)kaʻip(o)	The night guard	Gulch/Point	Koʻa on the northern side of the gulch, 200 ft E of the beach. A number of house sites S and E of the koʻa in the gulch. In addition there is a trail and two structures similar to a koʻa. Koʻa also located at Kamakaipo Point.
Kamanakai	The sea power or the sea branch	Gulch	
Kanalukaha	The fourth wave	Beach/Point	Canoe Halau, located E of Kanalukaha Point. NE of the point is located a heiau and a house site on a bluff to the east of the heiau.
Kapalik(o)(i)	The sliding cliff	Cliff	
Kapuhikani	The sounding eel	Point	Heiau to the N of Kapuhikani Point and a Koʻa to the SE portion of the Point.
Kapukuwahine	The gathering place [of] females	Coastal Area	
Kaumanamana	Place branching out	Bay, Reef, former fish pond	Broken wall of old fishpond here at the mouth of the gulch between Kolo and Hikauhi Gulches.
Kaunal(a)	Placing sun	Bay/Gulch	Koʻa located on the bluff north of the bay and to the S of the stream of Kaunala Gulch with house sites in the vicinity.
Kaupoa			
Keanakaʻiole	The cave of the rat	Gulch	
Keawakalani	The channel of the royal chief	Beach	Koʻa, SE of the former wireless station at the edge of the rocky beach as well as to the W at the edge of the cliff.
Kihaapiilani	Kiha [child] of Piʻilani, name for ancient Maui chief.	Hill	Eastern side of the hill there was once a spring from which barren women drank and were then able to conceive.
Kolo	Crawl or Pull	Land	Foundations of Pakaʻa's house site found on the flat land E of the stream bed of Kolo Gulch. Trail from beach to the slopes below ʻAmikopala on the W side of Kolo Gulch.
Kopala	Below was a trail leading to P(a)kaʻa's sweet potato patches. (Cooke 119).	Hill	
Ku)k(u)k(u)		Gulch	2 heiau on crest of gulch at head on eastern side; fishpond was located here
Mauna Loa	Long Mountain; Occupies whole western end of island	Mountain Mass	
Naninanikukui		Gulch	Fishpond located between Naninanikukui and Keanakaʻiole Gulches.
Oneohilo	Sand of Hilo	Gulch	
Onopalani		Gulch	
P(o)hakuloa	Long stone	Hill	
Puʻu Hoʻolehua	Hill of Ho ʻolehua	Hill	Here, after the death of Laka, when travelers would like to visit Kaʻana they would have to pay homeage facing Kaʻana while on Puʻu Hoʻolehua.
Puʻu N(a)n(a)	Observation Hill	Elevation	On summit of Mauna Loa
Pun(a)kua	Spring [of the] gods		

Wahi pana table p. 4

Punakou	Kou tree spring. The god K(a)ne brought forth fresh water here (HM 64)	Land/Gulch	
Waiahewahewa	Water of Hewahewa	Gulch	From crest of Mauna Loa to Palaau#1. On cliffs at east side of its head is heiau.
Waiak(a)ne	Water [made] by K(a)ne.	Gulch	Heiau or possibly housesites at its head, broken walls of large fish pond at SE entrance probably modern? Kamakau mentions a spring at Waiakane: “Kane and Kanaloa also broke stones, allowing cool, refreshing water to gush forth…at Waiakane, at Punakou on Moloka‘I” (1867).
Waiaooli		Gulch	
Wai‘eli	Dug water	Hill	Heiau on crest. A burial located in a small gulch W of Wai‘eli Hill.
Waihi‘i	Lifted water	Gulch	

3.6 Subsistence, Cultural and Spiritual Resources and Practices

3.6.1 Overall Cultural Significance of La'au Point

La'au Point and the western and southern coastlines of Moloka'i which converge there have always been remote and isolated. As noted above, it was sparsely populated prior to contact. At the time of the Mahele in 1848 no claims were filed by maka'ainana to the area and it was designated as government land of the Kingdom of Hawai'i. Beginning in 1875, the La'au Point area was part of a ranch that was operated in the Kaluako'i ahupua'a by Charles Reed Bishop who had purchased Kaluako'i from the government of King Kalakaua. In 1893 Charles Reed Bishop transferred ownership of Kaluako'i to the Bishop Estate. In 1898 the Bishop Estate sold Kaluako'i to Moloka'i Ranch. Throughout the twentieth century the western and southern coasts adjacent to La'au Point continued to be part of Moloka'i Ranch and access was a privilege reserved for stockholders and employees of Moloka'i Ranch. Even during the years that the area was owned by Alpha U.S.A., this area was never developed and access was restricted.

According to John Clark's Hawai'i Place Names: Shores, Beaches, and Surf Sites, a light to guide navigators was established at La'au by the monarchy in 1881 and automated in 1912. When the lighthouse was manned, a small inlet on the north side of the point was used to service the lighthouse and it was called La'au landing. A boom extended over the inlet to unload the lighters that were brought ashore from the interisland steamers. Only a few concrete foundation blocks remain. (Clark, 2002, p. 205)

George Cooke, in his history of Moloka'i gives the following description of the Burrows family who lived at La'au Point:

> John Burrows was a haole who kept the lighthouse on the west point of Molokai, at Kalae o ka Laau, in the days when kerosene furnished the lights. John had been a retainer of the King, and as he was subject to an over-indulgence in liquor, he was sent to this isolated spot, the idea being that he might be helped to overcome his weakness. John married a Hawaiian woman, Koa by name, and raised a large family at the west end. It was a familiar sight to see him with them all in an open cart drawn by mules, coming across the wide plains to Kaunakakai for their supply of provisions. One of his sons, David, is purported to be the inventor of the "steel guitar.' Several sons have worked for the ranch.
>
> Sam Burrows, Sr., a present employee and son of John, tells of being sent by his father, to swim out from the west point to meet a steamer to deliver a letter corked tightly in a bottle which he carried with him. This letter contained an order for more kerosene for the lighthouse. (p. 132)

A Burrows descendant confirmed that there was a road from La'au to Kolo and all the way into Kaunakakai. His grandfather would drive into Kauanakakai to replenish oil for the lighthouse lamp. There was also a road from La'au to Mo'omomi. The Burrows family would go along this road and catch fish and salt it and put it in the barrel and then go with a wagon to pick it up. At the time that Burrows family first lived at La'au Point there was no kiawe, it was all pili grass. They would have to go up to Maunaloa to get wood. The family also placed white coral all around the outside of the lighthouse so that when it rained they wouldn't track mud into the lighthouse. Sam Burrows, who was described by George Cooke above, was also an excellent fisherman. The story is told that he would ask his wife to start the fire as he headed to the ocean. He would then jump in the water and when he came back the fire was just right for him to grill the enenue that he had caught.

At present, La'au Point itself, as mentioned above, is owned by the U.S. federal government which maintains a "lighthouse" as a navigational aide. A total of 51 acres at La'au Point is managed by the U.S. Coast Guard and will remain vacant and undeveloped land. According to Clark, the 20-foot steel pole supporting the light stands approximately 132 feet above sea level.

In Hawaiian tradition, lae or points of land into the ocean are culturally significant. As a feature, the lae includes not only the point itself, which can be visualized as a nose on a face, but also the forehead, the land formation from which the point juts out into the ocean.

A large part of the significance of the La'au Point area is that it is raw and untouched. It is so isolated that most of the residents of Moloka'i have never even been there and have no direct experience with the place. This factor gives La'au an almost mythical quality. La'au Point has become an icon of what Moloka'i represents - a rural stronghold and reserve of Native Hawaiian culture, a cultural kipuka. If Moloka'i is "The Last Hawaiian Island" then La'au is one of the last untouched Hawaiian places on "The Last Hawaiian Island."

In Hawaiian tradition, La'au Point represents a point of no return. For those traveling by canoe from O'ahu to Moloka'i across the Kaiwi Channel, once La'au Point is sighted, there is not turning back to O'ahu. This concept has been applied to the issue of the development of the La'au Point Rural-Residential Subdivision. Many Moloka'i residents feel that if the west and south shores adjacent to La'au Point is developed, as proposed, that this will open up Moloka'i to new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

Everyone interviewed and those who came to community meetings had reservations about the proposed development. No one was an enthusiastic advocate and the most vocal were opposed to the development. The Maunaloa kupuna and larger community and longtime employees of Moloka'i Ranch have the most direct and longtime experience with the area proposed for development. While they are concerned and reluctant about

the development, they are also willing to acknowledge and support the right and the need of the Ranch to seek the development. They felt that the negative impacts could be managed if the development would conform to the strict covenants, conditions and restrictions outlined in the Community-Based Master Land Use Plan for Moloka'i Ranch. They also felt that the negative impacts would be offset with the gifting of important legacy lands to the community. In addition, many longtime adversaries of Moloka'i Ranch who were involved in developing the land use plan were willing to allow the development to proceed under guidelines and conditions agreed to over the course of a two year planning process.

Mana'o:

Nobody in this room wants to see La'au developed, but if it is developed, we should do it our way.

3.6.2 Access and Trails

An essential aspect of Native Hawaiian cultural and subsistence practices are access routes to reach subsistence and cultural resources. Informants shared the following information about trails and roads through which they access resources in Kaluako'i.

• Trail on 1886 and 1897 Monsarrat Map

Maps produced by M.D. Monsarrat for the Hawaiian Government Survey in 1886 and 1897 clearly show a trail going from Kapalauoa near Mo'omomi to 'Ilio Point and from 'Ilio Point along the west coast to La'au Point.

• Ranch Access Policies

When the Cooke's owned Moloka'i Ranch, access to the west and south coastlines adjacent to La'au point was limited to the Cooke family and the Ranch stockholders. According to Rikki Cooke, his extended family frequented the Kaupoa House. There was also a cabin at what is now Kaluako'i Hotel.. Mr. Joao took care of the cabin near Kaluako'i which was rented for $5 a night. The Egusa's took care of the Kaupoa house which was rented out for $10 a night.

The Cooke family did not camp on the south shore. Ranch employees, mostly cowboys camped on the south shore. Some of the cowboy families camped at certain spots so often that it became know by their name, such as Joao camp site. The camp sites were well-cared for. If a camp site was left with litter, one would not be allowed to get a pass to camp again.

According to Cooke, members of the Recreation Club of Ranch stockholders could rent Kaupoa up until the Cooke family sold the Ranch. Toward the end of the era when the Ranch was owned by the Cooke family, the stock went public. If you had one share you could rent out Kaupoa House for fishing and hunting. According to Rikki Cooke, the Recreation Club of stockholders made $100,000 a year on hunting and fishing. The Kaupoa house was booked every weekend of the year, mostly by offisland Kama'aina.

The Libby Plantation workers were not ranch employees. The plantation employees were allowed access to Hale O Lono, Halena and Kolo or to the Del Monte cabin at Kawa'aloa. When the pineapple operations closed in the 1970s, access was discouraged and finally closed in 1975 after the bridge burned down. After the plantation closed and the resort operations opened, Ranch employees and resort guests were permitted access.

Ranch employees could go hunting and fishing the whole West End under a pass system that was initiated by Aka Hodges when he was the manager and honored by successive managers. Ranch employees could sign up for an area to go hunting and fishing on a first come, first serve basis. The designated areas were spaced sufficiently apart to allow enough space for fishing. Each group was supposed to stay within the designated area that they were assigned. At one time retirees were extended privileges of fishing and hunting, but under the Hodges pass system to present, once employees retired they had to turn in their keys. They were no longer extended the privileges of hunting and fishing that they had enjoyed while employed by the Ranch. The Kaupoa pasture was reserved for the Cooke family and the stockholders Recreation Club.

The rest of the island could only access the Ranch's West End lands with a Ranch or plantation employee.

Currently, a subsistence committee of the Maunaloa community manages permitted access by Ranch employees. Guided access is also provided to hotel guests and guests of out-sourced commercial contractors who offer a range of recreational activities on the Ranch. Employees and their families usually camp out on weekends. However, employees who are off on week days can go during the week. The north portion of the Ranch lands have hunting so its closed to hunting in July, August and September. A $50 deposit is required. They are limited to two or three vehicles and ten adults. ATV's and motorcycles are not allowed. Families can go only once a month to give everyone a chance. Gathering is allowed for parties, and there is a 3 gallon limit on 'opihi.

- Access for Plantation Workers

During the period of the pineapple plantation the Maunaloa community had ready access via a road from Maunaloa through the pineapple fields, to Hale O Lono and as far as Halena. When the pineapple operations closed in the 1970s, access was discouraged and finally, around 1975 the pineapple bridge along the road was burned down and access to Halena from Maunaloa through the fields was cut off.

- Hale O Lono

From the 1960s to present, Hale O Lono is the launching point for the annual Moloka'i Hoe Men's and Women's races.

Those who fish and hunt in the area get dropped off at Hale O Lono and go on foot along the south shore. Some do fishing with bamboo.

The opening of public access to Hale O Lono increased access to the south shore out to La'au point - both by foot and by boat. While it is still a long walk from Hale O Lono along the south coastline to La'au, it is closer than what it had been. Hale O Lono also provides a closer point for boats from Moloka'i to launch and get to the fishing grounds and 'opihi covered rocks of the south coastline.

• Hui Ala Loa

Hui Ala Loa opened access from Pala'au to Kolo in 1975. According to an informant the access was closed when people left rubbish and poached deer on Ranch property.

• Native Hawaiian Access

Native Hawaiian access rights protected under law and are guaranteed under the Community-Based Master Land Use Plan for Moloka'i Ranch.

• Access Patterns

Informants who fish in the area and did not have a key would be taken by jeep to the fence line and walk in from there - about an hour.

The opening of Kaluako'i and Papapohaku afforded closer access points to the western coast south to La'au Point - both by foot and by boat. Fishermen could begin at Kaunalu bay or what the community calls "Dixie" to walk south to La'au. Boaters can launch from Kaunalu bay and even an area off Kaluako'i Resort.

3.6.3 Identified Coastal Resources

A dozen persons filled out the survey forms. They identified the following as cultural resources in the area proposed for development.

Coastal Cultural and Subsistence Resources

x	streams	x	ponds
____	‘auwai (taro irrigation ditches)	____	lo’i kalo
x	springs	x	caves
x	trails	x	wahi pana (named places)
x	sacred places	____	dunes
x	landings	____	bridges
x	surfing sites	x	sandy beach
x	fishing area	x	fishpond
x	fish trap	x	fish house
x	hunting areas	x	kilo i’a (fish sighting)
x	muliwai (brackish pond)	x	anchialine pond
x	trails	x	salt ponds
x	wells	x	turtle nesting area
x	historic walls	x	basalt veins for tools
____	alae vein	x	salt pans
x	shrines	x	salt gathering areas
x	ko’a (fishing shrines)	x	heiau (temples)
x	historic sites	x	cultural use areas
x	ho’ailona (natural signs)	x	sighting place
____	lele (cliff jumping spots)	x	native plants
x	pu’uhonua (places of refuge)	____	holua slides
____	cultivation area	____	leina (jumping off point
x	archaeological sites	for souls to cross over)	
x	burials	x	kupe’e
____	o’opu	____	hihiwai/wi
x	aholehole	x	‘anae
____	steam bath areas	x	bathing pools
x	limu gathering areas	x	lava tubes
x	subterranean water course	x	petroglyphs
x	kapu kai/hi’u wai areas	x	paddling areas
x	artifacts	x	view plane
x	seasonal residential sites	x	burial markers
x	water caves	x	birthing stones
____	phallic stones	x	Pohaku Kane
x	coral reef	____	estuary
x	spawning grounds	x	house sites
x	po kane routes (night marchers	____	dams
x	‘aumakua (ancestral deities) domain		

They added the following additional resources:

> monk seals, Hawaiian moth, water catchments, bell stones, ahu stones, chamomile type flower for clearing liver, shells on shore.

Along the south shore, informants identified the various fishing and gathering areas by points that they referred to as first point (Kanalukaha), second point (Kapukuwahine), third point (Kahalepohaku) and fourth point ('Opihi Road). According to informants there's moi and aholehole 'opihi and 'a'ama crab on the south shore. The 'opihi starts at Kapukuwahine on the south shore and out on the cliffs along what they refer to as 'Opihi road. The western shore is known for moi, aholehole and lobster.

3.6.4 Subsistence Fishing and Gathering

Participants in community meetings and the key informants speak of the south and west coasts adjoining La'au point and its nearshore waters as reserve of marine resources which serve as their "icebox." It is a place where fishermen usually go to get fish, 'opihi and crab for parties and gatherings of their large extended families.

The southwest shore also factors into the life cycle of the mullet, serving as a hatchery area from which they move east to Mana'e or East Moloka'i.

Due to the seasonal ocean swells, the south shore is usually harvested in the winter time when there are north swells and the west shore is usually harvested in the summer time when there are south swells. They also speak of the ocean as being very treacherous and not safe for swimming. Off of La'au Point itself, informants spoke of a very strong current which has swept even the best divers out to the open ocean.

Traditionally, it is not a place that was fished on a regular basis because it is isolated and difficult to reach. However, the increased use of boats on Moloka'i and O'ahu has changed this. Informants noted that the resources have declined in the area with heavy seasonal harvesting by boaters from O'ahu and the opening of Hale O Lono harbor and Kaluako'i as closer launching points for Moloka'i boaters.

- Last Protected Area

A lot of gathering and subsistence activities take place at La'au because it is the last area on the West End that is protected from general public access.

- The "Icebox"

La'au is a reserve for marine resources where families go together as a group to fish and gather resources for family parties. When there is a large family gathering, informants said that they go down to southwest shore to get crab and 'opihi.

- Treacherous Ocean

Fishing and diving along in the ocean in front of the proposed development is unsafe. There are not too many sandy beaches. The current is very strong. Fishermen say the current is mean - it can huki or pull one out to the deep.

• Seasonal Fishing

In the summer the south shore gets more swells and those who fish near La'au usually fish on the West shore. In the winter time the north shore gets the swell and so the fishing is usually on the south shore. Informants fish on both sides of La'au Point. There's a lot of fishing after winter and before summer when the graduation and wedding parties come up.

• Camp Out

Because they would walk out to La'au, they would have to camp overnight. They would go in the evening, stay overnight, fish overnight and during the day and then go back. When camping overnight and fishing they would just bring cooked rise. They would also bring salt, because sometimes the salt on the rocks wasn't clean. They would eat what they catch. They could cook the fish right on top of the kiawe coals and peel the skin. They did not carry ice because it is too heavy. Whatever fish they caught early, they would eat down there and then they would catch more fish and go home.

• Hatcheries

The shoreline provides a hatchery for young fish.

According to intervenor Vanda Hanakahi, La'au is the place where the fish gather to begin their eastward journey along the Molokai coast to spawn at Pala'au, and then move on toward the eastern shores of the island. An old 'olelo (saying) about Molokai is: "Moloka'i Kai po'olo'olo'u" meaning the ocean is turbulent along the shoreline. In olden days, the coastal waters were teeming with fish and their movement created the turbulence. This showed the wealth of Moloka'i because of the abundance of food.

According to intervenor William Kalipi, Sr., mullet feed along the La'au coast. At the beginning of winter, when they are fat and the November storms start, they travel East along Moloka'i's southern shoreline to spend the winter months in Mana'e (the East End of Moloka'i). People on the East End catch the mullet to eat. Longtime fishermen of Ranch and Maunaloa families said that the mullet area is at Hale O Lono and from Halena to Kolo.

• Abundant Marine Life

The ocean is rich with lobster, uhu, enenue, moi aholehole, squid, 'opihi, loli (sea cucumber), leho (cowry shell), pipipi, wana, papa'i,

• Lobster

There have always been a lot of lobsters on the south and west shores. There are still a lot of lobsters. Informants note that conservation is important. Lobsters with eggs or out of season should be thrown back.

An informant said that Kamaka'ipo is probably one of the best lobster grounds with sandstone shelves that go out into the ocean.

• 'Opihi

From Kapukuwahine and along the coastal cliffs out to La'au and around to Sam White is where 'opihi is gathered. It used be accessed through what was called 'opihi road. Informants talk about walking out there to get bags of 'opihi for parties. Used to be guaranteed to get 2 gallons of 'opihi.

Those who go to get 'opihi usually go by boat, although a few hard core guys walk out there. They put the 'opihi and moi in the shade or in the water.

Whenever the water is nice, somebody is out on the rocks. In winter, gatherers go to the south side of the point and during the summer they go to the west side.

'Opihi Road has the most 'opihi but there is also some by the lighthouse.

• Crabbing

The south shore is known to have 'a'ama crab and families go there to get crab for parties.

There are two types of crab - 'a'ama and the brown fury one that lives on the reef and eats the limu.

Along the south shore there is 'a'ama and kuhono crab. In the mangrove there is kalahiki. There area also sand crabs. Kolo had Samoan crab.

• Abundant Limu (seaweed)

According to intervenor William Kalipi, Sr., the area has limu kohu, limu, lipoa, limu lipe'epe'e, limu kala.

An informant said that Halena has limu kohu, chop-chop and wawae'iole. He also said that near Pu'u Hakina there is 'ele'ele and limu kohu.

• Springs

According to intervenor William Kalipi, Sr., there are hidden freshwater springs along the coastline and as he used to walk the coastline to fish he would scoop drinking water from some of these springs. Other informants confirm that there are spots of fresh water that enabled fishermen to make it through their day.

One informant described an old well and windmill that was at Pu'u Hakina.

• Fishing

Families use La'au for subsistence and love the area. It is not a beautiful beach, but they consider it the ultimate fishing area. Informants expressed concern about interference by the residents in subsistence fishing. Conservation of the resources is important. Fishing is primarily provide food for their families. What they catch is also shared with relatives and neighbors. A group of Maunaloa fishermen still go out every two or three months to fish and share with everyone, especially with the kupuna. They also go fishing and gathering for occasions such as funerals, graduations, weddings, and baby lu'au.

There are moi holes and aholehole all along the shoreline. One of the main forms of fishing in the ocean in front of the proposed development is throw net for moi and aholehole. The area is considered a choice place for throwing net for moi. There are also kala, palani. While the area is heavily fished by local fishermen there is still a lot of moi. During the summer months moi is kapu.

Informants also spoke of pole fishing by the lighthouse, Kapukuwahine and Kaupoa. They also throw net in these areas.

Ranch employees would feed their families with what they got at La'au - moi, lobster, 'opihi, 'a'ama crab, aholehole, menpachi, kumu, uhu, enenue.

There are moi, manini, palani, and kala.

An informant said that there while there is mostly moi and aholehole, that it is mostly white fish grounds - moi, 'o'io, aholehole, manini and kala.

Some informants from Maunaloa would walk from Hale O Lono to La'au and even as far as Kaluako'i. They would carry gallons of water and bury it and then find it on the way back.

Another informant described how his father would start out by Kaluako'i early in the morning and walk south to La'au and around and meet the family at Hale O Lono and Halena.

According to Rikki Cooke, the Cooke family used it mostly for throw net, diving and shore casting. They mostly shore cast for oio. When they caught moi it was by the big burlap bag fill.

Maunaloa plantation families used to camp at Halena and hike from there straight out to the lighthouse and then catch fish as they walk back. They also carried water in glass containers and buried them in the sand. Even a week later, the water in glass containers would still be good. One informant said that he used to walk from Halena to the lighthouse with the old folks as their bag boy. They would throw net, and bury the fish that they caught, near the edge of the ocean to keep it cool, since they did not have coolers and ice. On the way back from La'au they would get the fish that they had buried. This would take them the whole day.

Before there were freezers, fishermen would fish for what they needed for the day and would dry the rest and thus, there was more fish.

La'au has a cross wave. Informants said that the old folks would go out casting at La'au but didn't dive. They would mostly dive by Halena camp.

• Salt

Once in a while informants gathered salt along the shoreline, however, the primary place for salt was at 'Ilio.

• Pu'u Hakina

Pu'u Hakina was another area known for fish and lobsters. Ranch families would go and camp there. They used to just bring rice and eat everything else fresh from the ocean. In the days of their grandparents, the Ranch families would catch 'o'io by the tons with a hukilau net. There might be as much as 10,000 pounds. There was so much, everyone would take home fish. George Cooke, in his book Mo'olelo O Moloka'i, has photos of the Ranch hukilau in 1926 and in 1932. It shows hundreds of people pulling in the hukilau nets. (Cooke, 1949, p. 79)

• Boats

The area is heavily accessed by those who own boats on Moloka'i as well as O'ahu. Fishers fish by net, pole, and dive from the boats. It is especially popular for fishing during lobster season, net fishing for lobster. If fishermen go to the area by boat, they only go for the day. If they walk out they are more likely to camp overnight.

Deep sea fishing extends for more than a mile out. La'au connects to the Penguin Banks, underwater.

Informants described how they launch from Hale O Lono and drive by boat to Kapukuwahine, then walk around the Lighthouse. They throw net for moi and aholehole and dive for lobster, uhu and enenue.

Boats come over for fishing, especially when the canoe races are scheduled. They come with their boats and clean out the whole area. They use the GPS to mark the lobster and ulua grounds.

With the heavy impact from boaters, there is no enenue, no kala according to some informants. Some informants say that it isn't worth their time to go fishing out by La'au. While they still go, takes a longer time to find fish and they have learned to be satisfied with less.

Informants noted that there is a strong current off of La'au point and it is risky offshore. Diving offshore is risky.

• Hale O Lono

Informants speak of fishing in the reef by Hale O Lono before it was dredged.

Hale O Lono used to have squid, mullet and lobster but when it was dredged it disappeared. The water got all milky after Hale O Lono was dredged.

Hale O Lono still has fish. Community members have caught a lot of fish at Hale O Lono a few months prior to the meetings.

Some informants would walk down to Hale O Lono with an inner tube and then swim/float toward Halena on the current.

• Halena

The Maunaloa community would camp and fish at Halena where there are a lot of lobsters, fish and marine resources, a sandy beach, and safe swimming.

The Filipino plantation families would walk to La'au from Halena camp and pick 'opihi, and 'a'ama crab. They would go with gallons of water and bury it at each point.. On the way back they would retrieve the water they had buried. If the Ranch employees see them walking they would pick them up.

Halena is protected by reef and safer for the children to play in the ocean. La'au is almost direct ocean and rough except for only a few months in the summer.

• Kaluako'i / Papohaku

Informants used to do a lot of fishing and diving in front of the Kaluako'i Hotel. They continued to fish there after the development of the resort. Some of the informants still throw net and dive in front of Kaluako'i and Papohaku.

An informant spoke of fishing near Papohaku. They used to walk to the end of the pineapple field and then walk down to Papohaku. The fish were tame, right under a nearsore shelf.

• Impact on the Resources from Boats, Previous Development and Hale O Lono Access

The resources have already been diminished from what the longtime Maunaloa residents and Ranch employees remember - from O'ahu boaters, Moloka'i boaters, and the opening of Papapohaku and Hale O Lono. At one time Moloka'i boaters could only launch from Kolo and Kaunakakai Wharves. After the hotel opened they could launch by Kaiaka Rock near the hotel. After Hale O Lono opened up they could launch from Lono. Some of the boaters launch from Lono and go to La'au where they drop guys off to get 'opihi, mostly on the south shore. Before Hale O Lono, most boaters would launch from Kaunakakai and fish for akule along the shore as far as Hale O Lono. Longtime fishermen said the resources are not like before where you are guaranteed to get a lot of fish. TV has shown all the secret places, such as where to get Samoan crab. Can easily wipe out the crab.

Informants note that the resources were fished out when the Kaluako'i hotel opened up.

At Papohaku, turtles used lay eggs but they don't go there anymore.

Informants are concerned about the changes they have seen in their lifetime and are concerned that the kids will have nothing to see and experience.

Mana'o

Fishing

Used to hike down here with my dad and he would carry loads of 'opihi and fish. We would walk from mauka to beach, fish, pick 'opihi and walk back with the load.

We had the pain of going down and carry the fish and 'opihi back. My father would hike and we follow, get the 60 to 70 pounds of fish. Go to Kapukuwahine and to La'au. I'd be carrying fish. That's the pain that we go through to bring out this treasure for our family. The joy of bringing out the resources. WE like that pain, it's good pain. We are born with that, it's normal to get that kind of difficulty.

Depends on the purpose - might risk going out even in rough weather. Like if funeral, even if rough need to go. We do a lot of praying on the beach prior and it opens up for us. We go anyway because of the purpose is for the family. The purpose has to be clear before we go awana or holoholo. When it's clear, we pray before we go and the ocean subsides and it opens up for us. Granted we had some times when it goes against all logic, with the elements up against your back.

Go for self gratification. All about the rush. We wanted to go, because we wanted to go.

When there is a purpose, flows little bit more. If moving for the community and the family then nothing can be in the way. It is there for us and we use it in the most appropriate way, then the good stuff flows and the laughter gets loud.

Making the people that will live here and their children live here, feel respected and have a sense of ownership. Our ownership is the beach and the ocean, we want to maintain that ownership. If people come and the fish get untame, we lose that ownership. Want it there for the younger ones and their children. We want everyone to be happy. . . happy.

The act of fishing and hunting have more significance - family and friends and 'ohana and culture. Not only fish because we going to fish because we are hungry. If no fish, the throw net will disappear. Do you want it to disappear in your generation? Lay net disappear. The crab net disappear.

I like to dive. But there's certain people who just like to throw net. Throw net for me is a good couple rushes. My children have that experience, but they are going to schools and running around and partying. If they are not ono for deer meat, no need. Manini was such a valuable asset for us, now manini ??? Even the Hawaiian pallette is changing. Fish?? 'opihi?? different palette.

Did a lot of fishing - diving, pick 'opihi, cook for lot of parties . . . I used to dive out that area. Fishing and swimming is very unsafe, it takes you out, its very dangerous. Once McGuire, known as one of the best divers, went fishing and the current took him into the middle of the channel between O'ahu and Moloka'i.

Pole fishing is okay. Diving is very dangerous, not too much sandy beaches and the current is very strong. From third point over to La'au the current is very strong. The worst portion is in the corner. Once we went out, my friend was sleeping on the boat, we got taken out. Good thing .

Throw net for moi and aholehole . . . by boat do net and when lobster season is open . . . Did from La'au to Pu'u Hakina, all the way to Kaunakakai . . . Pu'u Hakina, net fishing for lobster . . . Not many commercial fishermen here. I was a part time then . . . Not very much now, mostly people from offisland, because of lack of access . . . When I was fishing it was a lot of offshore fishermen from O'ahu.

There are some people who walk the shoreline and do throw net and do fishing.

People that live up Maunaloa used to walk. Younger not want to do it .

Throw net - casting overnight with the line and catch big ulua. I had a boat, when used to have Kolo Wharf down there. I had a boat. That was during the war time, for few years, then I went in the army and the wave bust up my boat. This used to be a wonderful place, now it gets crowded.

Go down and bury water - bury one here and one there. Just put the fish in the pack - Go in the morning and come back some time after lunch. Nice place to fish, go diving for uhu, manini. Squid. Throw net for moi. Get mullet too - Australian mullet - not the regular mullet - used to have plenty down by Halena side.

Moi - throw net for moi - just choice. Sometimes we used to throw net and there would be the small hammer head sharks caught in the fish nets - 2 or 3 of them and you throw them back. Fish used to always be in abundance, no one used to sell. Tutu man always say, you take enough to feed the family - you go back and you get again. Take and share, not take, take, take. Not just take and sell it.

Used to walk from Halena and to lighthouse, throw net. Plenty fish that time, I would go with the old folks and be bag boy. Throw net, catch fish, bury the fish, right where the ocean comes up. Even if the ocean buries the fish, old folks had marked it. On the way back get the fish that had been buried. One day fishing.

Our family depended on this place for food. This is our icebox. Just like Mo'omomi, a safe haven for fishes - moi in particular. Go both sides - all walk. You go down to get your food you got to walk. We have good 'ano down there, good vibe, good feeling. Know our tutu folks used to live down there - walking is all part of it. Make you feel good. Make sure your intentions are pure, your heart is pure and you always going to get because your heart is pure and you only going to take what you need.

This place is the last place, an ice box for food. Have all the historic sites that go all the way down.

I fish this place how many times. This place is abundant. I never seen moi like this in my life. The moi is mean down there. People been pounding them. Moi is abundant down there - it's awesome. People say no more, get. Lot of the holes are rough, deep and the waves crash over there. Usually they tell that's the mama - the big one's carry the eggs. The smaller is preferred to catch. Moi get season. Summer months is supposed to be closed.

Used to fish down at Papohaku side, We used to walk at the end of the pineapple field and the Ranch and walk down to where Papohaku are. The fish were real tame, just look under the shelf and they were right there.

Still have lobster . . . Deep sea fishing is more out there, a mile out. For the shoreline, moi, aholehole, 'a'ama crab.

Lot of 'opihi, lot of fish and lot of deer.

My dad go early in the morning from Kaluako'i and we meet them at Hale O Lono and Halena. From Kaluako'i around La'au to Hale O Lono - once or twice a month, throw net when moi was running. They throw net and walk. Was hard, but they knew how to survive. WE were never starving. We were basically raised on deer meat, lobsters and fish. My dad and his brothers would go down and bring out lobsters and give to everybody and in turn the other guys give us vegetables.

I go every once in a while. Before I had more access. I go with my cousins who work for the Ranch. We used to go down there constantly. More on the south side - Halena, Pu'u Hakina. Main thing moi and 'opihi, still lobsters. Get uhu if you going to dive. Down there is kept for the party. Every time we get party - we get all of our cousins and we walk. We go down and get enough for the party. Not like we going every weekend.

'Opihi and Crab

For parties - go down for crabbing. 'opihi more on the northshore . . . Used to have 'opihi on the south side and 'a'ama crab . . . South and west side - season for moi and lobster.

I used to get 'opihi - more by the point - 'opihi road. Honolulu guys used to always come and clean it out and they sell over there. The Honolulu guys come and clean it all out - lately they don't come cause no more too much now. It's coming back. I don't know why they got to sell them. Fish yeah - but 'opihi is raw food, if you take care and have good size, can get a good lu'au. 7 piece opihi for $7 - I don't blame them, money is money. They make a law and cause trouble. Law is what causes all the trouble.

There's a lot of 'opihi - abundance because not too many people go there. They used to walk far and carry bags of 'opihi.

'Opihi road - get 'opihi and out to Lighthouse. Kapukuwahine get, but no more that much rocks. From 'Opihi road to Lighthouse the majority, and then over to Sam White. Shipwreck is more sand. Not as abundant there, because the guys go pound over there. Not many go to 'Opihi road, mostly by boat. A few hard core guys who walk it. Just put the 'opihi in the shade. Moi - put in the sand, shade or the water.

Lobster

Kids realize when they move away, that the lobster is expensive. When we were young my dad would catch a lot of lobster, we were spoiled.

Used to go down there with Hana Kupono - camp at Hale O Lono and walk the beach all the way to La'au - only take cracker, get 'opihi, fish, plenty lobsters . . . went diving and we brought back enough lobster for each person to have one and then some - fed everybody . . . That was the best dinner - sometimes only this fish or that, and we made it work.

Boats

I am against the project, period. But if going through, may as well say something. I'm subsistence and these are our hunting and fishing grounds. We've reaped the benefits of the pristine fishing grounds. We would launch from Dixie at night and go into the bays. and from Hale O Lono side and come in. Feel like at one with the place. We bartered and shared with family.

Declining Resources

Times have changed - they are getting the young fish, the young crab. Kolo used to have abundance of Samoan crab. Used to just lay our net, wait, sit in the car and then just get an abundance.

Outside boats do the diving. Outsiders are not throw netters. Moi take gas from the locals more than the outsiders. As far as the diving part, the outsiders, get plenty air in their lungs. A few lay lobster net - don't want to lay over there, the current is mean. If you get a running tide- just huki - good bye over there and you don't have a boat out there and you are gone. If you have a boat, the guy can pick you up. The current is mean. It's not a swimming beach. Both ways it goes. Huki up, huki down, oh it huki.

If go fishing now, not like before. Lucky if you get anything. Not like before. Lot of times went diving and cannot find anything. If we come home with one squid, we lucky.

Ever since opened Papohaku and Hale O Lono opened, it's all fished out already. Now go with boats from Moloka'i and O'ahu. Before, would launch from Kolo. There were only the Maunaloa people and there were only 4 boats. We would tie up from the sand - to the Kolo pier, when Kolo was operating during the pineapple.

Used to have a nice papa by Lono - dredged the papa. When we were young, take Model A, have a long single rod, make a barb, take fishing. Take the tubes from the trucks and tie around the bamboo and use as a sling. Used to go dive by the papa by Lono. After the dredged, the water came milky. The water used to be clean, even at Lono. Early or late part of 60's dredged Lono. Sand for the freeways near the airport came from Moloka'i - when stopped the dredging made it out of asphalt.

Used to have plenty fish before, used to go fish only for today. Before there was a freezer. Just get what we need today and the rest we just dry them.

Moi, manini, palani, kala - all down that side. Before was good. It was closed by the Ranch. No one want to go past the Ranch. we walk across and get what we need in a day. Only the ranch boys When the hotel opened, out fished the place. The place has changed from the time the hotel opened and then Lono opened up.

3.6.5 Subsistence Hunting

The area proposed for development is reserved for commercial hunting and closed to subsistence hunting. Informants acknowledge that there is poaching of deer, but not as far out as the areas proposed for development except by illegal trophy hunters for prize money. The areas proposed for development are thick with kiawe and lantana and inaccessible by land. While deer find refuge there, it is not a regularly hunted area. The closing of commercial hunting by the end of 2007 will open the premier areas on Moloka'i Ranch lands for subsistence hunting that are currently reserved and inaccessible.

- **Commercial Hunting**

The major hunting areas on Ranch lands are currently reserved for commercial hunting - Waikane, Kolo, Sekada Hill on top of Pu'u Hakina, and Kaupoa. Commercial hunting will cease at the end of 2007. At that point all of the Ranch lands, including these best areas will be open for subsistence hunting by permit. The closure of commercial hunting and the opening of community hunting by permit will reduce poaching.

- **Pu'u Hakina Gulch**

There are huge herds of deer in the Pu'u Hakina Gulch which will continue to be outside of the area to be fenced in for the proposed development.

- Increasing Number of Hunters

There are a lot of younger hunters. Trophy hunting for prize money is also a factor increasing the number of deer killed. A lot of this hunting is done by poaching. Among the old time hunters, if they poached deer it was like a Robin Hood gesture, they would always share it with family and neighbors. It was part of subsistence. Just hunting for the thrill of the kill or for prize money is outside of subsistence.

- **Cattle Troughs**

The deer follow the cattle. Troughs are only kept full where the cattle to where the cattle are shifted.

- **Fencing**

MPL should also fence off the whole of the Papohaku area. The deer already congregate there where they cannot be easily hunted because it is a residential area.

Given the experience in trying to control deer at Kalaupapa, informants feel that it will be difficult to take the deer out of the area that will be fenced in and that it will also be difficult to keep the deer out.

- **Hunting Areas Diminishing on Moloka'i**

Overall, the areas for game to roam on Moloka'i are diminishing with the impacts on the watershed from pigs and invasive species such as clidemia and the fence closure areas, Need to manage the game hunting areas.

- **Hunting and Fishing**

Informants described how they could go hunt and then go down the trail to get to the beach and go fishing. This makes the area a prime.

- **La'au Hunting Area**

An informant described La'au as an overgrown, inaccessible, flat, lantana infested area where it is very difficult to hunt. Occasionally the employees would do a drive hunt where a whole bunch of guys would walk through and push the deer to the other side where the hunters would wait for them. It was an area that deer congregated because they were protected by an inaccessible impenetrable forest.

The informants don't usually hunt out by La'au. They usually hunt in areas closer to the public access roads and fence. Those who are hunting for meat to feed their families not interested in going that far to hunt. Those looking for big bucks for trophies might go out as far as La'au since it is an area that is not regularly hunted.

Game

Informants have hunted turkeys, guinea hens, pheasants and fracolins on ranch lands in Kaluako'i. At Kolo they used to hunt pigs.

Mana'o

20 years I hunted, when my kids were growing up - from Waikane all the way to Kolo and in the pineapple fields. Those days all illegal but when you hunt for food, not illegal. That's how I feed by 7 kids. Hunt around Maunaloa and Kolo back to Waikane.

Hunters who walk down from mauka to 'opihi road and then they hike to Hale O Lono.

Hunt down, get to beach, get 'opihi, jump in and freshen up and when go home have some pupu to go with the beer.

3.6.6 Cultural Resources and Practices

In addition to natural resources utilized for subsistence, informants spoke of other natural resources which have cultural significance such as native plants, native species of turtles and monk seals, and the simple unspoiled natural beauty of the undeveloped seascape. Informants also shared names that were given to places after the persons who lived in the area or features of the area.

• Native Plants

There is a beautiful stand of ma'o or native cotton at La'au Point. There is also Pohinahina, 'aki'aki and cressa.

• Turtles

The West End is home to many turtles. There are also many sharks who feed on the turtles. At Shipwreck when the river comes down the turtles come in there.

Monk Seals

There are monk seals along the West shore at Kaupoa, Egusa's, and at the sandy area by the lighthouse and on the south shore by 'Opihi Road.

• Natural Beauty

Enjoy the natural wonder, beauty, place of habitat for sea life, swimming, diving, fishing and hunting

Pu'u Hakina

Informants said that there are very significant and important cultural sites in the Pu'u Hakina area.

• Community Names for Places

Egusas - the Egusa family lived near Kaupoa and took care of the bees and cleaned Kaupoa. They raised a lot of chickens. They also took care of the turkeys and checked the water troughs. He was the cook for the cowboys. Every Thursday they would go into town to buy rice and can goods.

Kamakaipo is called fishpond.

Sam White is where the Hawaiian cotton is growing.

Lighthouse - the point was referred to as Lighthouse instead of La'au Point.

Hole is where there is a shipwreck.

Cowboy House, Shit Creek, first gulch, second gulch - these are names the cowboys gave for some of the places. They knew what it referred to.

The community refers to the lae or points along the south shore using numbers - first point (Kanalukaha), second point (Kapukuwahine), third point (Kahalepohaku) and fourth point ('Opihi Road).

Mana'o

I know of Hawaiian stones. One time I even found a skull close to Hale O Lono, I put it by a rock and when I came back I couldn't find it.

Figure 7. Ma'o, the native cotton on federal land near La'au Point.

Figure 8. A monk seal on the western shore fronting the proposed development area.

3.6.7 Spiritual Resources and Practices

The La'au area is generally regarded as a special place of spiritual mana and power. Community participants and key informants spoke of specific burials, fishing ko'a, and heiau. Such specific sites are documented and described in the La'au Subdivision Archaeological Preservation and Mitigation Plan by Cultural Landscapes that is part of this EIS.

The overall spiritual quality of the La'au area as a wahi pana and wahi kapu cannot be quantified and deserves recognition and respect.

• Fishing Ko'a or Shrines
There are fishing ko'a or shrines at each point.

• Turtle Ko'a or Shrine
There was a turtle ko'a (shrine) above Hale O Lono until it was destroyed in the 1960s. Turtles are a favorite food of the sharks and there are also many sharks.

• Iwi Kupuna or Burial Sites
There are many burials throughout Moloka'i's southern coastal areas, including La'au. There are iwi kupuna burial sites in the proposed development area on both the West and south shores. One informant said that her father used to go fishing at Kolo and at Kaupoa and one day he brought home a skull that was possibly from the La'au point area. Her uncle eventually took the skull to the museum.

• Burrows Family Grave Sites
The Burrows family has 16 graves down by La'au Point.

• Caves
There are caves in the area. The Burrows family knew of nine caves, some with ipu and kahili and one that was under water.

• Hale o Lono
According to intervenor Vanda Hanakahi, Hale O Lono is named for the akua Lono of the Makahiki traditions, who used to rest in the harbor area. In ancient times, at the rising of the Makali'i (Plaeides Constellation) kahuna gathered at Kapu'upo'i, the easternmost tip of Moloka'i in an opening ceremony. They would then travel along the coastline to La'au where they closed their ceremony and then Makahiki with its games and other practices began. This meant that La'au was a special and sacred place for our Hawaiian ancestors.

There is a graveyard in the sand by Hale O Lono, going in the direction of Halena on the beach side. If one goes to Hale O Lono, one would come home before dark.

Heiau at La'au

Informants describe a heiau at La'au by the lighthouse at the end of 'opihi road. This is located on federal land and will not be affected by the development.

• Underwater Heiau

According to intervenor Vanda Hanakahi, La'au is an important place for fishing. In ancient times, every ahupua'a (district)had an underwater heiau (temple) constructed in the ocean outside the ahupua'a. The first heiau along Molokai's southern coastline is located at La'au. Again, this meant La'au had great significance for our ancestors, who depended on the ocean for their survival.

• La'au is a Wahi Kapu Where Kahuna Gathered

According to intervenor Vanda Hanakahi, Kahuna (expert teachers and practitioners) did not gather at just any place. But they gathered at La'au, which means that they regarded it as sacred. La'au is a wahi kapu (sacred place). Places that are sacred should be revered and left alone. La'au is a sacred place that should never be desecrated. Some families don't go down there because it is a kapu or sacred area. 'Ohana has mele about these places.

• Place of Mana

Informants spoke of La'au being a place of mana or spiritual power. They said that when they go to fish in the La'au area that there is a spiritual quality. There are ho'ailona or spiritual signs that guide them.

• Sightings

One informant said that at night, while camping near Kaupoa, she saw fireballs. She has also seen menehune through the trees at night in the same area. Another informant spoke of seeing an island offshore when they were camping overnight and fishing on the south coast at La'au Point. It was close enough to swim to.

Kolo and Pala'au

Informants provided information about petroglyphs at Kolo and a cave with an old canoe in Pala'au.

Mana'o

Got lot of mana inside that area - start clearing, they don't know

Can't do the houses and protect this and protect that- when bulldoze going to destroy everything - it's a chain effect. Those that work the tractors, and feel guilty. People building the houses will be from different islands. It's just a bad vibe. The 'ano is not pure. They going to feel it - They are not welcome down there - you go down at night - voices, drums, you know get heavy stuff down there. The only way you come out and get food is because your intentions are pure - e kala mai ia'u, it's just for food - you bond

with your family - you always pule. always no worries, you go down there, you going to get kaukau - no more the attittude of taking too much because someone else going to take it.

It's hard for me to go for this because this is where we get to run away from - dealing with day to day - take yourself out of one element - knowing that those who came before you did the same thing.

Section 4 Assessment of Impacts of Proposed Development

4.1 Overall Impact on Moloka'i Hawaiian Way of Life

Participants in the community meetings expressed concern that the proposed development will change the demographics of Moloka'i forever. They believe that La'au will contribute to the increase of land values and prices and property taxes on Moloka'i.

The community expressed concern that 200 new millionaires will change the make up of the Moloka'i community and lead to changes in the Hawaiian way of life. With more outsiders, Moloka'i will no longer be "The Last Hawaiian Island." The proposed development will bring in new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

The community doesn't want Moloka'i to turn into Maui or O'ahu with a large population off-island people. They expressed regret that if the development occurs, La'au will never be the same.

In balance, the Maunaloa kupuna shared that no matter what happens, the population will increase and the land will be limited. While Moloka'i has been preserved it is gradually being developed. They acknowledged that progress cannot be stopped but that it can be controlled. The Maunaloa kupuna felt that the overall community plan of which La'au is a part provides for the community to manage and monitor the proposed development.

The longtime Maunaloa residents described the years of segregation that they experienced working for the pineapple plantation. The workers lived in simple plantation houses divided into Japanese camp and Filipino camp. The supervisors and managers lived in the better homes on managers' row which they called "snob hill". They fear that the new subdivision will also create a segregated community. If the residents and the community were both limited to 2 points of access, it would be more equal.

When the old Maunaloa town was demolished, a lot of the families moved out. Some of the families were evicted and this left a scar on some people. The way of life in Maunaloa changed with the development of new homes.

Development on one part of the island will affect the whole island. However, more than one informant recalled that in the past there was a tacit agreement to allow the West End to develop, while controlling population growth on the East End. Many had the attitude that the West End could be developed if the East End was protected.

All of these concerns address overall social and economic impacts of the proposed development and are addressed in the social impact study and economic impact study of this EIS. To the extent that the impacts also have ramifications for the Native Hawaiian culture that defines the way of life of all the residents of Moloka'i, these concerns are relevant and noted in this report.

Mana'o

The proposed development of 200 homes along the shore at La'au Point will greatly diminish, if not eliminate altogether, the solitude currently offered by this isolated corner of the island. The invasion of hundreds of new homes coupled with outsiders and their material commodities can only diminish the sanctity La'au currently provides.

Others waltz right in and don't feel the pain. We are the people of poverty who will always be kept out.

No matter how many houses they build, I will still go. I would walk and the land was still owned by someone else, and I would still go there.

Going delete my life.

It will be a major change down there. Take Kihei and Lahaina, used to be sugar cane fields and kiawe, now it's a jungle.

If the reopening will help the economy, that's good. But anything to do with the Ranch, I don't like because of what they did to me. In the long run, it will go through, you cannot fight people with money. Even though fought against the development at Maunaloa, not able to sustain the fight against the big money.

I don't want people down there - and going to be all millionaires down here.
Moloka'i is not going to be what it used be . . . I say development is good, but Moloka'i is small. Look at Maui, what a horrible place it is. I've been here since 1937 and loved every bit of it and gradually getting sick of it.

Maunaloa - before that was a real plantation type looking place. We were just one family. Someone get a party, that's the whole plantation. Everyone get together. Today, right now, I barely know some of my neighbors, everyone to each his own now. And I notice - I want to get better stuff than you got. competition. no more love like it used to be. Before everyone love one another. That's the olden days.

The development will provide jobs, but for how long? Many of our children have to go to Maui and every where. What sort of community are they looking at - not live here all the time. How much money can they generate from that? Would like to see more interaction with Papohaku and Maunaloa - the only interaction is with the church members. They have their own association and we have our own association. WE need to be a community. Some would volunteer at the school. Need more interaction.

I don't know about this development. I just have to wait and see. There's something inside me that it's not ready yet. I just have to step aside and observe, something is going to show up, but when? It has something to do with the ownership of the land. If everything is nice and legal, then go ahead.

La'au is a beautiful place, got to malama pono over there.

Social impact - no one wants to go down to the beach and see them leaving rubbish or taking rocks home. Or the attitude that they own the beach frontage and that the public should not be here . . . that they have their own little community of rich haole people.

Moloka'i will never be Moloka'i for long. Once you let them in. I liike Moloka'i to be Moloka'i - place to hunt, fish, relax. Don't want us to lay gill net, run boats in front their property.

For me, I'm not for development, but will it stop because I don't like it. Just sore seeing the changes. 200 lots - that's a lot, but what can I say. It's all in the process of development. The good part is that they will give this to the trust. I hope I could lease some land to raise cattle. The good part is that they came out to the community and offered their mana'o.

Overall, not a good thing for the development [to go through], will be like the hotel down at the West End. Since I'm born and raised on Moloka'i - like how Mac was taking care of Mo'omomi - I see the changes, lot of places I see are fished out, if we don't have control we will come like Maui. Moloka'i is the best place to preserve our island. If we don't stop it now, we will lose our culture. A lot of stuff that we are losing already. When we became a state, all one time. We didn't have time to think about being a state. The state controls everything. When was Territorial was easier. The living then was more hard now that before - we eat what we can get, now we got to buy it.

I sense in our youth that they are coming more belligerent toward development. Hawaiians used to go in a shell and say no make trouble. These kids wild, mad. They want their own island the way they are used. Going to bring influx of outside influence and these guys are going to get pushed on side . . . What disturbs me is after all is said and done, I don't really know what the impact will be. It's that unknown factor. You cannot hold back progress. Maybe you can curtail it.

My father used to have his nets here. We walked from Kaunakakai to here and not one car would pass us that whole time. Now you stay here and look out the window, that's progress. I don't know what the progress will be. You go to downtown and sit in the car and look at the market and you don't know anyone going into the market. That's progress. I don't know what the impact will be and if it's negative and there's no reversing all that, it's there, and you go on with life.

I'm not against it, but if they would be more relaxed about taking care of the island instead of just thinking of making money . . . if they will acknowledge the lifestyle of the people, I support this. Human beings are born every day, but land doesn't increase. So land is very important.

I hate to see the island change like this. I want them to take care of our kids first before they look outside. Who knows, they might build 200 lots and then they cannot develop it again. At Kaluako'i - saying the county will come in and take care of the roads. Who is in charge of water, maintenance, sewer - home owners, condo owners and hotel. Get a group of people together and they want to make changes. They come here because they love Moloka'i. Keep Moloka'i Moloka'i. And then a few years, they change and they want Moloka'i to change.

4.2 Access and Trails

Community members were concerned that the subdivision might be a gated community, and were relieved that this is not part of the plan.

Native Hawaiians and the general public will have access from two points - one on the south shore at the southeast entry and one on the west shore at the northwest entry. In the process to develop the Community-Based Master Land Use Plan for Moloka'i Ranch, subsistence fishers and gatherers were very concerned that opening up the south and west shores to public access at every 1500 feet as the County of Maui provides will deplete the marine resources. They regretted that the opening of Hale O Lono harbor to public access had severely decreased the marine resources there and they do not want to see that happen in the area proposed for development. Opening up access points every 1500 feet would have a severe impact on the subsistence resources along the west and south coasts adjacent to La'au Point.

Community members were concerned that subdivision lot owners and their friends will have preferential access to the coast. There will be nothing to stop the home owners from going down to the beach. Those who live on the shoreline will be able to access their home and the beach by vehicle. Homeowners can create a trail to the beach and let their friends have access to the beach. Affording only two access points for the general public, while the rich people in the subdivisions will have access from their homes seems unequal. Informants also expressed concern that landowners might call police if they see the general public walking on the beach, as this has happened at Papohaku.

Participants in community meetings and informants felt it was important to provide emergency access through the subdivision to the shoreline for emergencies. They were also concerned that access should be afforded for kupuna and persons with special needs. Some pointed out that the areas closest to the access points will be heavily impacted, while spreading out hte access points might spread out the impact. It was also noted that the road down to Hale O Lono harbor would need to be maintained in order to keep access to the area open.

4.3 Subsistence Fishing and Gathering

Informants feel that the development will spoil the experience of fishing in what is now an isolated, pristine and spiritual area. They are concerned that instead of La'au being a place to get food, it will be a place with haole in their back yards. Many informants felt that the proposed development will greatly hinder, if not abolish altogether, ongoing traditional gathering activities currently enjoyed by Moloka'i islanders at La'au. Fishermen will lack privacy if the development goes through. Yet, throw net subsistence fishers require an undisturbed beach that allows fish to forage closer inshore in order to succeed. Gatherers of 'a'ama crabs require dark silent nights to ensnare their nocturnal prey. Commotion emanating from noisy and brightly lit beach homes will negatively impact crabbers' efforts to capture their already skittish prey. Gatherers of limu and pupu will very likely be met with kayakers in the water, people sunbathing on the beach, and pet animals running up and down the shoreline. If experiences elsewhere in Hawai'i hold true, it is not likely that owners of multi-million dollar beach homes will greet shoreline subsistence gatherers with open arms. It is more probable that subsistence practitioners will be confronted by insensitive newcomers intolerable of extractive activities in what they will perceive to be their front yards.

While the new landowners will probably want to go out and fish when they see the lobsters in the area, most informants felt that the new residents will probably not directly damage the fishing grounds because they don't know how to fish. The real impact on the fishing resources is from the Honolulu boaters. When the outboard motor and twin outboards came out at an affordable prices, the Honolulu boats came fishing all along the west end and south shore. These fishermen have taken everything, even the eggs. The lobster area is wiped out. The Moloka'i residents fish for the family and perhaps get an extra cooler of fish to sell. The outside commercial fishermen fish out the grounds of lobster and fish. They do not plan for the future.

Community participants and key informants were concerned that pesticides and fertilizers will contaminate the ocean and kill the marine resources. Fertilizer run off will kill the small organisms that support all of the marine life offshore. Runoff from the development will contaminate the ocean. Grading can increase erosion which will result in sediment flowing into the ocean and destroy marine resources. Some informants from the East End felt that the development would impact the mullet run and thus impact the resources on their end of the island. However, longtime fishermen who have regularly fished the south shore as members of Ranch families noted that the mullet spawn at Hale O Lono, Halena and Kolo, rather than close to La'au. Hale O Lono is on the eastern border of the project area. Halena and Kolo are outside of the project area.

Community members wanted to be assured that the rules outlined for access and for subsistence and gathering cannot be changed by the subdivision lot owners. MPL clarified that the lot owners will be required to uphold the Covenants, Conditions and Restrictions (CC&Rs) that include these rules as part of the homeowner contract.

Providing parking areas at either end of the proposed project area and limiting access along the shoreline to foot access will open up access sufficiently that it might impact the resources, as the entry points will be closer for those who now walk and must either enter from Hale O Lono or Dixie Maru. The conservation rules might affect fishing, but if the access is easier there will be more fishing.

Mana'o

Once its developed, kiss it goodbye.

Bummer to walk along and the owner is out there sunbathing or swimming. Want to go to the beach when no one is there. You can walk 20 minutes to half an hour and someone is there and has already scared the fish away.

Look at Dixie and see what that house did to the ocean - runoff. John Burell built a house and graded. Til he graded, never saw such runoff at Dixie.

Big concerns about runoff.

Conservation is very important. Why want people to drive in and go fishing Take what you need, not take all you can get when you want it.

I don't think it will have a big impact. I was a young boy when I was down there, it's sitting there. I don't think it will impact the shoreline. I still go fishing down at Kaluako'i side, no problem down there. If people come down, I'll give them. If you give to people, have more good luck. Always have something come back to you . . . No general concerns about the development. I've been living here since I was born and I see how people are here.

Who will stop the Honolulu guys from wiping out the place - they get the opihi, the akule nets, go diving? Who would pay for the caretakers? If landowners have same access as the public, how assess them? Who will own the access land area?

Wow - I didn't know it was going to be this bad. This goes up there goes the last chance for the guys who live on Moloka'i and are dependent on the ocean. This goes through that's a big project . . . the moi holes, the lobster - all that will be gone . . . Everybody knew this was going to happen, the only thing was when.

The Hawaiians not going to afford this. They going to make restrictions where you cannot go in there. They going to keep us out. They going to monitor us. Some guys come out and say what you doing on my beach. They say this is your beach, I say this is our beach.

For our family that's our ice box down there. That will be hard to swallow

Fish - the haole never damage it, they don't know how to fish When outboard motors come out, twin outboards they could afford. They come from Honolulu. Then use the chemicals. Not the haole, they don't fish. The Honolulu boats.

With all these houses coming up - this end is history Fertilizer run off will kill off all the small stuff that keeps things breeding. Like about 1965 - started to decline, get wiped out. The people have more access to the area. Before only us could go by car only. Now every tom, dick and harry got boat. They take everything, take the eggs too. Not think about the future. What this going to do to Moloka'i - they going leave us with a mess and then move on to the next paradise. They taking away what makes Moloka'i, Moloka'i. I don't think you can stop - too much money over here.

All the houses over there, the people not going to damage the fishing. Only thing will damage is the chemicals. They not going to damage the fish. That area where they put up the houses - always rough, always ugly. They might damage other ways. They don't know how eat 'Opihi. From one end to the other, not going to eat 'opihi Why grumbling is because they don't want La'au to change.

Although my health prevents me from fishing now, I still eat the fish from our ocean. What happens at La'au will affect those in the East End if the fisheries are hurt by the proposed new subdivision, such as the mullet run.

Protecting by foot is good, but how they going to control those coming by boat.
The fish are below high water mark. As far as controlling that, I don't know how. Not going really be a negative impact. Might be because of the access. All this time no more really access - go by boat or walk in. If have the road and allow us to park, now closer. Again conservation method - how it will impact the locals.

I don't care for development down there. Through generations will have a chance to walk the beach. When I was young I walked from Halena to down there. Going to come like Papohaku Beach. If you walk on the beach, those who own the land, call the police.

Those who buy the property, they will all have to have money in order to buy. We fishing because we need that to survive. These who come in and buy these properties, they don't need to fish to survive.

4.4 Subsistence Hunting

Hunters are concerned that the new landowners from outside of rural Moloka'i will not want to hear shooting and may be protective of the deer and oppose even bow hunting. Deer hunting could become an animal rights issue. Bullets can travel 4 miles and 10 year kids can get a license. Need to have a sufficient buffer zone. It will only take one accident to close down hunting in the area. The overall hunting area will be reduced by the no hunting zone in the subdivision and buffer zone and the safety zone.

The plan to put in a deer fence and remove deer within the proposed subdivision will effectively close off hunting in the southwest corner of Moloka'i. It will have to be a very high fence. The deer will keep going back. The deer will get hurt.

Mana'o

I can hardly move around and cannot hunt, but my kids can hunt, they all love the hunting. I've been hunting since 1937,- no such thing as license. The deer come in the pineapple field, we had permission to hunt. What I think is, after the rich people come here, lot of Hawaiians going to end up in jail - they going hunting, get arrested. Everyone in my family loves to hunt - to get deer meat. Now law to close it up and put all the homes over there - already all loaded up on the West End.

4.5 Cultural Resources and Practices

Informants are concerned that cultural sites will be destroyed once start to bulldoze and grade and clear the land for development. At Papohaku, homeowners have graded and damaged dune system and destroyed cultural sites and burials located in the dunes. They have extended their household area into the conservation zone, treated it like their own private property and tried to exclude Moloka'i residents from the public beach area fronting their homes. The same process can occur in the proposed subdivision.

Iinformants expressed concern that future generations may not have a concept of how to do subsistence and only going to catch what can be carried. Future generations should be able to be in an environment where it's just them and mother nature. They should know what it feels like.

Concern was expressed about the impact of the proposed development on the monk seals who frequent the remote beaches of the west and south shores. Monk seals might be disturbed during the grading and construction phase. New residents may have dogs who would disturb the monk seals.

Many of the informants commented that the development will require a lot of expensive landscaping because the land is rough and rocky with a lot of boulders.

Mana'o

The kids will never have a concept of how to do subsistence - only going to catch what you can carry. To be in an environment with you, mother nature and tutu them, not know what it feels like.

At Papohaku, clearing the trees even where they are not supposed to. They are not respecting the land. They say all this stuff but turn around and do something else. Just like I rent a house, I say I'm a good guy, they come back and the screens are torn and the house is bust up. Can you trust what they say?

4.6 Spiritual Resources and Practices

Can destroy ko'a fishing shrines and cultural sites, unless monitored. Informants are also concerned that once the grading starts there will be erosion when it rains and the mud will cover the ko'a, the sand and the reef.

Can disturb iwi kupuna burials unless monitored.

The overall general concern is that the development of the area will destroy the special quality of La'au as a special place of spiritual mana and power.

Section 5 Proposed and Recommended Mitigation Measures

5.1 Overall Impact on Moloka'i Hawaiian Way of Life

The Community-Based Master Land Use Plan for Moloka'i Ranch provides measures to mitigate the overall impacts of the proposed development at La'au which set unique precedents for the development of large landholdings by offshore corporations. These precedents are related to community planning, the creation of a land trust for the community, the donation of legacy lands to the land trust, the donation of easements to the land trust, the protection of subsistence fishing, gathering and hunting, reserving lands for community housing, and the creation of economic opportunities for the community through the re-opening of the Kaluako'i Hotel. The plan also provides for covenants, conditions and restrictions that landowners in the La'au Point rural residential development will need to accept and agree to uphold in order to purchase a lot. These are summarized below:

Community Planning
The Community-Based Master Land Use Plan Land was initiated, designed and will be implemented by the community of Moloka'i. It is the result of a two-year planning process involving every member of the community who wished to participate.

Land Trust
A total of 26,200 acres or 40% of Moloka'i Ranch lands is donated to a Moloka'i Land Trust that has the unique mission of:

- Protecting historic cultural archeological sites.
- Preserving the precious natural and environmental resources.
- Enhancing indigenous rights through the protection of subsistence gathering.

The donated lands include premier Native Hawaiian legacy lands:

- The ancient burial ground in the sand dunes at Kawa'aloa Bay. This is one of the most famous and largest burial grounds in all of the islands. At one time the Ranch allowed the mining of sand here and disturbed the burials. The Ranch also planned to develop a resort here. Now these sacred grounds will be permanently protected under the Land Trust.

- Ka'ana, the birthplace of the hula that originated on Moloka'i and spread to other islands. This sacred site will never be destroyed or commercialized.

- Naiwa, the only traditional makahiki grounds that remain intact in the islands. This extensive area was once threatened by the development of a golf course. It will now be protected forever.

- Village sites at Kawākiu, which would be destroyed under current zoning in the Moloka'i Community Plan, will now be permanently protected.

- Burial mounds at Kawela which at one time were threatened by development will be protected under the Land Trust.

- Key subsistence fishing grounds from Keonelele to 'Ilio Point and from Pala'au over to Hale O Lono, including Halena and Kolo.

- The historic Pāka'a house sites, upland sweet potato gardens and connecting trails.

- Kaiaka Rock which was saved from development

- Kamaka'ipo Gulch will be conserved.

- the fishing village north of Kaupoa Camp will be protect under the Land Trust.

Under the Community-based Master Land Use Plan the following development projects over which the Ranch and the community had fought are permanently abandoned.

- A 375 room hotel on Kaiaka Rock
- A 150 unit condominium at Kawakiu
- The Highlands Golf Course and Club House at Naiwa
- The Waiola Well and Pipeline

Outside of the Kaluako'i resort, the proposed La'au development will be the last major development on Moloka'i Ranch lands in the Kaluako'i ahupua'a.

Easements

A further 24,950 acres (38% of the property) are placed under new Land Trust protective easements, of which:

- 14,390 acres will be protected forever for agriculture use.
- 10,560 acres will remain open space.

Protection from Development

The combination of the donated land, existing and new easements protect more than 85% or 55,000 acres of the property from development.

Subsistence Fishing and Hunting

The recognition of Native Hawaiian subsistence rights, and protecting for the community, the hunting and fishing resources of the island, by:

- Seeking to establish a subsistence fishing zone from the coast to the outer edge of the reef or where there is no reef, out a quarter mile from the shoreline along the 40 mile perimeter of the property.
- Ending commercial hunting, and allowing only the community to hunt on the property.
- Ensuring access to the shoreline will be available only by foot.

Community Housing

Only Moloka'i residents will decide future expansion of existing communities in the areas with a total of 200 acres around Kualapu'u and Maunaloa to be made available for community housing, and in the 1,100 acres above Kaunakakai to be donated to the Moloka'i Land Trust for community expansion.

Economic Opportunities for the Community

The Kaluako'i Hotel will be re-opened for visitor accommodation creating more than 100 permanent jobs for the local community. By outsourcing various hotel functions such as laundry, gift shop, beach shack and spa, and by committing to use local produce, small business opportunities will be created for the community.

Covenants, Conditions and Restrictions (CC & Rs)

Covenants, Conditions and Restrictions that landowners will need to uphold are described on pages 101 - 105 of the Community-Based Land Use Plan for Moloka'i Ranch that is part of the EIS.

These conditions provide that every person whose name is on the property title must commit to undergo a certain amount of education about the Moloka'i community and its desires and aspirations with kupuna and the Maunaloa community.

La'au Point must be the most environmentally planned, designed and implemented large lot community in the State. The residents would be educated and informed about the environment and culture, and taught to "Malama 'aina," take care of the land and sea."

This statement precedes the covenant document determined by the Land Use Committee that will place many restrictions on lot owners at La'au Point, in order to attract only those who are concerned about conservation.

As an example, the Conservation Zone and other areas to be protected (approximately 1,200 acres) within the subdivision will be the subject of an easement held by the Land Trust, with guidelines for these uses to be determined prior to the construction of the subdivision and reflecting the importance of the area archaeologically and to subsistence gathering.

These protected lands will be part of an entity that is controlled equally by the homeowners and the Land Trust. All decisions relating to this area: maintenance, subsistence protection, archaeological site protection, personnel, etc., will be the shared responsibility between the Trust and the homeowners, who will share equally in the costs.

MPL will attempt to attract buyers to the La'au point subdivision who reflect the hopes and aspirations of the community. Brochures, sales material and other promotional documents will be vetted by the Land Trust or the EC for accuracy and adherence to their principles.

Measures will be taken to assure that these CC & Rs cannot be changed in the future. These CC & Rs include the following:

- prevent a gated community
- restrict the further subdivision of lots
- restrict the area that can be disturbed for use
- prevent construction on slopes of more that 50%
- restrict building height
- require the use of alternative energy
- prohibit the use of pesticides
- require that exterior lighting be shielded from the ocean
- require water catchments and 5,000-gallon storage tanks
- restrict landscaping to native and Polynesian introduced species suitable for dry coastal locations
- prohibit the use of noxious or invasive species; require green architecture
- manages erosion with vegetative cover
- puts a deer fence at the rear of the subdivision

Additional Recommended Guidelines:
Informants recommend the following additional provisions to mitigate the impact of the development on subsistence practices:

- ***Fence to demarcate private property from public access area***

All of the informants felt that it is important to have a clear physical demarcation, such as a log fence, running along the individual property lines to distinguish between private property and the public access area. By putting in a fence of some kind the public will know the boundary so that they won't trespass. Another suggestion was to use a round wire fence, called a New Zealand fence.

- ***Location of Access Trail***

Informants suggested that there be a physical demarcation between the property line and the ocean, along which the trail would run. The trail would follow the contour, following the old traditional trail as much as possible. Then the existing kiawe would serve as a buffer between the trail and the sand and ocean. This can help reduce impact of the trail on the beach and ocean. The kiawe can be pruned. It is a nitrogen fixing plan and will

help other plants to grow around it. The trail should be placed back from the ocean so that it won't wash out. The trail will only be for walking and not for atv's or even bicycles. The trail should not be paved but kept clear and maintained.

- ***Landscaping***

Need to prevent landowners from landscaping the area of the setback which ranges from 250 to 1,000 feet.

- ***Support the Maunaloa Community***

Have monies generated go into the community to support the school. Include the Maunaloa 'Ohana I Lokahi Association needs to be involved in the decisions about La'au.

Mana'o

My first response was that I was really against the development. Now we are holding so many more ingredients. I can live with the development and I can live with the exchange. End. I forsee this development becoming the benchmark for conscious development in the future of the state of Hawai'i. I see it in the use of water, landscape, planning with the ecosystem, and using as much as possible native Hawaiian Plants where each participant in this development has a conscious participation in a partnership with the Land Trust for managing the shore. This will be , in my opinion, the model that honors the resources and ultimately improves the care for this whole corner of the island.

An informant gave his genealogy back to the land on West End. His ancestors are at Kepuhi beach, it is everyone's kuleana but his iwi is there. For the past 30 years he was on the sidelines, watching his leaders. His biggest kuleana right now is his aina his family. He knows where everything is on that end. He put down his shield and listened to this guy from NZ. He wants his lands back and he will give them back. For your children 7 generations down where are they going. Down the line the mo'opuna are going to manage the land and malama. He wants his land back. His kuleana is greater because this is his land.

I don't want to deal with the next ranch owner, we should make a deal. The opponents want to fight for ever.

The fence makes sense. If you don't put fence, the guy living there will complain that that is my lot, as long as it's open they will complain about people going down there.

Definitely need a demarcation between the private lands and the public lots.

I think it's a bad idea. Those that are for the process, I aloha them anyway because they just trying to do what they can for the community. We all trying to find the best way, just different roads. They are asking a lot even though they think they are not asking a lot. So it's a tough one either way - if they really paid attention to the community we would find a way much sooner to help out the ranch but their mind was set already.

I think a fence would be acceptable - wire fence - round wire fence. Called New Zealand fend - more like a pasture fence. I agree to having a delineation would benefit both ways. Development of a walking and access trail would be very important. Trail should follow the contour, with beautiful vistas. Kiawe will stay. Can be augmented with native plants. Prune kiawe - it is a nitrogen fixing and will help other plants to grow around it. Land Trust will put in the trail - not for 3 wheelers, strictly walking, not even bicycles. Bicycles not allowed, as these contribute to erosion. Not a paved trail, but a maintained trail - clear path and maintain. Old traditional trail - parts of it will find the old trail. It is very rocky.

5.2 Access and Trails

Subsistence fishermen and gatherers felt very strongly that opening access to the general public would lead to the depletion of marine resources. They observed that when Hale O Lono was opened the lobsters went. Subsistence fishers and gatherers involved in developing the master land use plan and the informants interviewed for this report were concerned if the area is opened up, that the community will keep going into the area until there is nothing left. They honestly believe that if access to the area is opened up every 1500 feet, the resources will be gone. More people are fishing now than before. There are more fishermen with better equipment. It will be ruined if vehicles are allowed to access the area every 1500 feet. The subsistence fishers and gatherers felt that the walk will be and important measure to better protect the area. They also felt that the provision of two access points and parking at either end of the development will afford sufficient access for subsistence fishers and gatherers.

Informants felt that overnight surf casting and pole fishing could be allowed but that camping should not be allowed in the reserve area. This is the policy implemented by The Nature Conservancy at their Mo'omomi Preserve.

Guidelines in the Community-Based Master Land Use Plan for Moloka'i Ranch
General Access

- Access on both MPL and Molokaʻi Land Trust lands will be managed.
- Hawaiian Access Rights be enshrined on the property titles for both MPL lands and Land Trust lands.
- Non-Hawaiian access will be determined by the landowner.
- Hunting methods (rifle or bow) and game seasons are as confirmed on the Hunting Map.

Access and Use of Cultural Sites

- Sites can be accessed to fulfill traditional and customary Native Hawaiian responsibilities for cultural, religious, and subsistence purposes.
- Education and training activities can be organized through the kahu or the resource manager.
- In some cases access may be seasonal, such as during the non-hunting season, rainy/muddy season.

- Use of sites and related protocols will vary according to use of the particular site, including but not limited to:
- Monitoring its condition - integrity, boundary and buffer, setting access routes, relation to overall complex or nearby sites and resources. Sites should be assessed once a year during the dry season.
- Work to stabilize and restore sites. A plan for the stabilization and restoration of selected sites should be developed and approved by the State Historic Preservation Office.
- Rededicated for specific spiritual and cultural purposes. Identify sites which have been in continuous use, those which have been rededicated and those which shall be rededicated.
- `Access and use of sites should follow protocols established by the Kahu and resource manager.
- Protocols should address manner of approach, entry, use, and exit of site; chants seeking entry and granting entry to sites; appropriate hoʻokupu; chants and procedures to stabilize sites.
- Kahu and stewardship resource persons should train stewards in moʻolelo, protocols and responsibilities of stewardship for each site.
- There will be no commercial tours within the boundaries of Naʻiwa (Manawainui-Kahanui) and Kaʻana-Puʻu Nana (Kalaipahoa-ʻAmikopala) wahi pana.

CC & Rs

- Design a measure to restrict access to foot only between Dixie Maru and Hale O Lono in order to conserve resources, with an acknowledgement of Native Hawaiian gathering rights as defined by law for subsistence purposes, in a designated subsistence management area.

- CC&Rs to reflect community-driven access plan. Walking access only from each end of the subdivision to restrict area for subsistence. No access from road above subdivision in order to restrict for subsistence gathering to ensure that resources are not depleted.

- No parking all through the roads, to prevent parking and access other than at each end which will enhance the subsistence nature of access.

Additional Recommended Guidelines:

Community participants and informants reaffirmed that the Maunaloa community shall be integrally involved in the management and monitoring of access within the Kaluako'i ahupua'a. They also suggest the following additional guidelines.

- Emergency access to the shoreline through the rural-residential subdivision can be afforded for ocean rescues.

- To accommodate kupuna and those with a disability, have a golf cart available to assist their access.

- Do not allow camping in the public access and park area, although access for overnight fishing and surf casting should be allowed. The Nature Conservancy policy which allows overnight fishing can serve as a guideline.

Mana'o

If want to go somewhere should hike it.

Put a fence so know how far can go, so don't trespass. Put the trail back from the ocean, so don't wash out. Don't have a say on this. It's a long walk, old people cannot make it. That's walk is kind of rough. Resources would be walked out if open it up. Lot of people go from Dixie - some from Pu'u Hakina. More than half gone after Papohaku. Offisland people, from O'ahu take the resources. Now summer, north shore is flat and O'ahu people come and get opihi. When opened Hale O Lono - the lobsters went If you give them privilege - they go every day, until there's nothing left.

I don't care if you have only walking access, guys going to do it. In 10 to 15 years you want to see the ocean. Put in kupuna road - golf carts for kupuna? I like roam over there. Now I can walk. Getting more tired and tired to walk. Even when they built Kaluako'i my dad was happy because they have the access to the beach.

The conservation is good. I'd rather drive in there, but if we need to walk that's okay.

5.3 Subsistence Fishing and Gathering

The primary mitigation measure proposed in the Community-Based Master Land Use Plan is to work with the community, the county and the State Department of Land and Natural Resources to create a nearshore Community-Based Subsistence Fishing Management Zone. It will prohibit commercial harvesting, but unlike a marine protection no-take zone such as at Hanauma Bay, it will provide for subsistence harvesting. Under the plan, the MPL, the Moloka'i Land Trust, the landowners and the broader community will work together as follows:

- To preserve inshore fishing/subsistence resources, create a subsistence fishing zone in the coastal waters along all of the Ranch's coastline property modeled after the Hui Malama O Moʻomomi Subsistence Fishing Zone.

- Establish no commercial take zone 1/4 mile from the shoreline (north and west shore) and from the beach to the reef edge/breaker line (south shore).

- Establish demonstration fishing nurseries/kapu sites to insure reproduction of key subsistence food species (e.g. ‘opihi, moi, mullet, limu, lobster, ulua, uhu he‘e).

- Support protection for Penguin Banks from overfishing.

Guidelines in the Community-Based Master Land Use Plan for Moloka'i Ranch

- Each year, an experienced Resource Group will recommend open areas for subsistence fishing based on protecting and not depleting the resources**.**

- The community-based subsistence fishing zone will allow subsistence fishing and gathering but not allow commercial fishing out to the reef or out to 1/4 mile where there is no reef. There will be 2 residential cultural monitors to oversee and enforce protection of the marine resources - one who will live along the south shore at the southeast entry point and one who will live along the west shore, at the northwest entry point.

- Those provided access to fish and gather once the community-based subsistence fishing management zone is established will be asked to take an educational course on traditional fishing methods, practices and conservation measures that will be offered by the resource managers, with guidance by the Maunaloa residents.

- Persons who receive permission to access Moloka‘i Ranch lands or Trust lands can engage in the following subsistence fishing activities:
  - Hook and line fishing for pelagic species.
  - Hook and line fishing for deep sea bottom fish species.
  - Hook and line net fishing for akule.
  - Fishing with SCUBA gear permitted only for akule and ta‘ape or for research.
  - Trap fishing for deep sea shrimp.
  - Trap and net fishing for kona crab and kuhonu crab.
  - Throw netting permitted only for subsistence.
  - Hook and line fishing from shore permitted only for subsistence (no competitions are permitted).
  - Diving with spears permitted only in the daytime and only for subsistence (no spearing competitions are permitted).
  - Diving for hand harvesting permitted only in the daytime and only for subsistence.
  - Hand harvesting of a‘ama crab is permitted at night and only for subsistence.
  - Hand harvesting of ala‘eke and kuhonu for subsistence only.
  - ‘Opihi collecting permitted from shore only (no diving) and only for subsistence.
  - Harvesting of spiny lobster and slipper lobster permitted only by hand (no netting, no spearing) and only for subsistence.
  - Harvesting of mana-moi (7-12 inch) throughout the year for subsistence only.

- For rescue, monitoring, religious, management, and research purposes only, use of equipment otherwise prohibited in this section is allowed.

The establishment of a community-based fishing management zone off of La'au will involve a rule-making process with the Department of Land and Natural Resources. Should coordinate efforts with the communities of Miloli'i, Hawai'i and Ha'ena, Kaua'i who are also establishing community-based fishing zones. Also respect the Kalaupapa people and their grounds. The rights of the Kalapana people to fish in the Volcano National Park is another model.

Informants noted that they support the quarter mile subsistence fishing zone as most commercial fishermen are from O'ahu. According to the informants, there are only three commercial fishermen on Moloka'i.

Informants also noted that protecting the marine resources by limited shoreline access to foot access is good. However, they are also concerned about managing those coming to the area by boat, since a lot of those who fish the area mainly come by boat.

CC & Rs
The CC &Rs are designed to prevent erosion and the pollution of the ocean by pesticides.

- No building allowed on slopes of 50% or more.
- Pesticide use is prohibited.
- Won't develop in natural run off areas.

- Water quality parameters in storm water drains and in the ocean will be monitored for temperature, salinity, total suspended soils, total nitrogen, ammonia nitrogen, nitrate and nitrite, total phosphorus, chlorophyll A and silicate.

- Require drainage systems that retain any run-off within the disturbed area of the lot.

- Maximize recharge into the ground.

- Restore land areas that have been eroded by re-establishing vegetative cover.

- Minimize impervious surfaces on the lot.

- Ensure that all current run-off from the land is stopped forever.

Additional Recommended Guidelines:
Informants offered the following additional regulations to protect the fishing and marine resources.

- The use of fertilizers will be regulated.

- Longtime fishers and gatherers from the Maunaloa community will be involved in the monitoring and protection of the marine resources in the development area.

- Should have the resource management plan up and running when the grading and constructions starts

5.4 Subsistence Hunting

Community participants and key informants recommended that the buyers be asked to accept and guarantee that hunting will continue to occur in the broader surrounding area.

Although the area of the proposed development will be fenced off and the deer within the fenced area removed, the large deer herds are already in areas outside of the area that will be fenced in. While these best hunting areas are now reserved for commercial deer hunting, the plan provides for commercial hunting to cease at the end of 2007 at which time these areas will be open for subsistence hunting.

Guidelines in the Community-Based Master Land Use Plan for Moloka'i Ranch

- Those provided access to hunt and gather will be asked to take an educational course on traditional subsistence hunting methods, practices and conservation measures that will be offered by the resource managers, with guidance by the Maunaloa residents.
- Hunting will be for subsistence use only. The golden rule is “take only what you need for your family”.
- MPL has a contractual obligation for commercial hunting and wildlife management on parts of MPL property until December 2007. The contractor has agreed that at the conclusion of that contract he will no longer seek to conduct commercial hunting on the property and will be agreeable to work for the Land Trust and/or MPL as a Wildlife or Subsistence Hunting Manager.
- As a goal of this management plan, the Land Trust and MPL will seek to reach a mutually acceptable agreement with the contractor to cease commercial hunting prior to December 2007. MPL acknowledges that it, alone, has a moral obligation to this contractor that may extend beyond 2007.
- MPL employees and Native Hawaiian residents of the Kaluakoʻi ahupuaʻa have seniority for hunting in accordance with traditional subsistence management custom and practice. MPL employees assume responsibilities to sustain the natural and cultural resources of the ahupuaʻa.
- Management Options include the following: The decision about when and how to implement a selected option would be made by Molokaʻi Ranch and Trust resource managers. The Hunting Resource Manager would need to work hand in hand with MPL's Livestock Manager so that the pasture lands remain healthy enough to support the livestock. This is especially critical in times of drought when the deer can intrude into the pasture lands, compete with the livestock, and create erosion problems.
- Kapu on Activities such as “No Hunting for Periods of Time”

- Kapu on Animals “No Hunting of Does”
- Kapu on Areas “No Hunting in Certain Districts”
- Kapu on Seasons “No Hunting During Certain Months”
- Kapu on Times “No Night Hunting”
- Kapu on Equipment “No Dogs for Deer Hunting”, “Only Bow Zones”
- Education on Conservation and Preservation
- Education on Cultural History and Practices
- Education on Management Areas
- Education on Safety and Responsibilities

Additional Recommended Guidelines
The Maunaloa community asked that the seniority for hunting be inclusive of all of the kama'aina residents.

- The seniority for hunting in accordance with traditional subsistence should be for kama'aina residents of the Kaluako'i ahupua'a and MPL employees.

5.5 Cultural Resources and Practices

Archaeology Preservation and Mitigation Plan provides for archaeological maka'ala or monitoring of the development. The archaeology preservation and mitigation plan will provide for the monitoring of the bulldozing and construction to protect fishing ko'a, shrines and cultural sites. The plan also provides for the protection of iwi kupuna within protected areas that include appropriate buffers.

Guidelines in the Community-Based Master Land Use Plan for Moloka'i Ranch

Kaluako'i Cultural District
The Kaluakoʻi Cultural District is to protect the historic and cultural sites and resources for current and future spiritual, cultural practices and subsistence uses. It includes the following sites and complexes:

- Punakou which is inclusive of Kaʻana, Puʻu Nana, and Hoʻolehua
- Pakaʻa trail which is located in the entire Kolo Gulch
- Pakaʻa cultivation fields in the uplands of Kopala
- Kalaipahoa-ʻAmikopala and Kukui adze quarry sites
- Kamakaʻipo complex of sites in the entire gulch
- Kahualewa Heiau, mauka of Waikane Gulch
- Heiau, mauka of Halena Road and between Kahinawai and Oneohilo gulches
- Kawakiu Iki and Kawakiu Nui village sites and burials
- Dunes of Keonelele
- Various fishing koʻa along the shoreline
- Burial Site located west of Kaluakoʻi water tank in Kakaʻako Gulch
- All sites identified on the Maurice Majors maps

- Stewardship of Cultural Sites

- Designate Kahu for complexes and sites including: Na‘iwa(Manawainui-Kahanui); Ka‘ana; Pu‘u Nana (Kalaipahoa-‘Amikopala); Kawakiu, Kamakaipo-La‘au; Hale O Lono; Punakou. Designated Kahu for complexes and sites shall be consulted prior to decisions being made affecting those areas.
- Involve cultural resource persons, as needed, in a cultural sites stewardship role for all other protected sites and areas.
- Responsibility of Kahu and stewardship resource persons
- Ongoing Monitoring of Sites - annual assessment during the dry season
- Identify and prioritize sites for stabilization
- Develop resources for site stabilization and restoration
- Develop any interpretive signage, markers and trails of access
- Identify and prioritize sites for rededication
- Train stewards in mo‘olelo, protocols and responsibilities of stewardship for each site
- Implement Management Plan
- Manage research requests

CC & Rs

Protection and restrictions are to be written into CC&Rs as a result of a Cultural Plan, which shall have two major components-archaeological and cultural. The Plan will follow the community guidelines for Policies and Principles adopted for this Master Land Use Plan.

Additional Recommended Guidelines:

The informants offered the following additional recommendations to protect the cultural and natural resources of the area.

- Apply relevant recommendations from the Papohaku Dunes Cultural and Natural Resource Preservation Plan, Kaluako'i, Moloka'i, Hawai'i Study.

- Provide education and enforce laws protecting monk seals

- Need to enforce the covenants, conditions and restrictions and include substantial penalties.

- The buffer area for Kamakaipo Gulch may need to be expanded. Due to the potential for erosion during grading and construction, the houses close to Kamakaipo Gulch should be moved further away from the gulch.

Mana'o

The $2000 fine is nothing to them. Not going to have someone there all the time to make sure that they won't damage the conservation. Should lose their land. They have to realize that the conservancy area is put there for a reason. If we damage their property they arrest us and put us in jail.

5.6 Spiritual Resources and Practices

Cultural sites used for spiritual customs and practices such as fishing ko'a and heiau, as well as iwi kupun or burials will be protected as discussed in the previous section on cultural resources.

Perhaps there is no way to mitigate the impact upon the solitude that can now be enjoyed at La'au. It offers the opportunity to experience ho'ailona spiritual signs and the overall mana of La'au as a wahi kapu. Limiting access to a walking trail that is set back behind a row of kiawe and providing a clear demarcation between the private lots and the general public access areas can help protect the integrity of the shoreline and mitigate the impact of the houselots. Conservation zones provided for in the CC & Rs will protect the spiritual quality of important complexes such as Kamaka'ipo.

CC & Rs

Conservation zone and "protected land"

Unlike most other subdivisions, control of the conservation zones, archaeological sites, trails and native plant ecosystems would be an easement, but control would rest jointly with the Land Trust and the lot owners. Both will share the responsibility and cost to malama (care for) the area. Kamaka'ipo Gulch and other areas identified as exceptional will be transferred to ownership of the Land Trust.

Section 6 Water Plan - Kakalahale Brackish Well

6.1 Proposed Plan

The MPL Water Plan for the proposed development can be summarized as follows:

- MPL will not, at any time in the future, seek permits for additional drinking water, other than the allocation under its permits existing at July 2005, from the Water Commission. MPL will seek a Water Use Permit amendment to expand the area of use for Well 17 water to include all of the areas its PUC regulated water companies serve including expansion to service La'au Point. This will allow a shift away from using potable water on non-potable uses (e.g. the golf course) which will minimize the use of potable water from the Kualapu'u aquifer sector.

- MPL proposes to develop 1,000,000 GPD from the abandoned Kakalahale Brackish Well in the Kamiloloa Aquifer for future non-potable needs to meet the demands for non-potable uses the Master Plan proposes. This will require a Water Use Permit from the Commission on Water Resource Management.

- The maximum water allocation for the La'au Point subdivision is as follows:
  1. Potable Water: 600 gallons of potable water per day for 200 lots at 80% occupancy.
  2. Non-Potable Water: 1,500 gallons per day for 200 lots.
  3. La'au Point Parks: 1,000 GPD potable and 40,000 GPD non-potable.

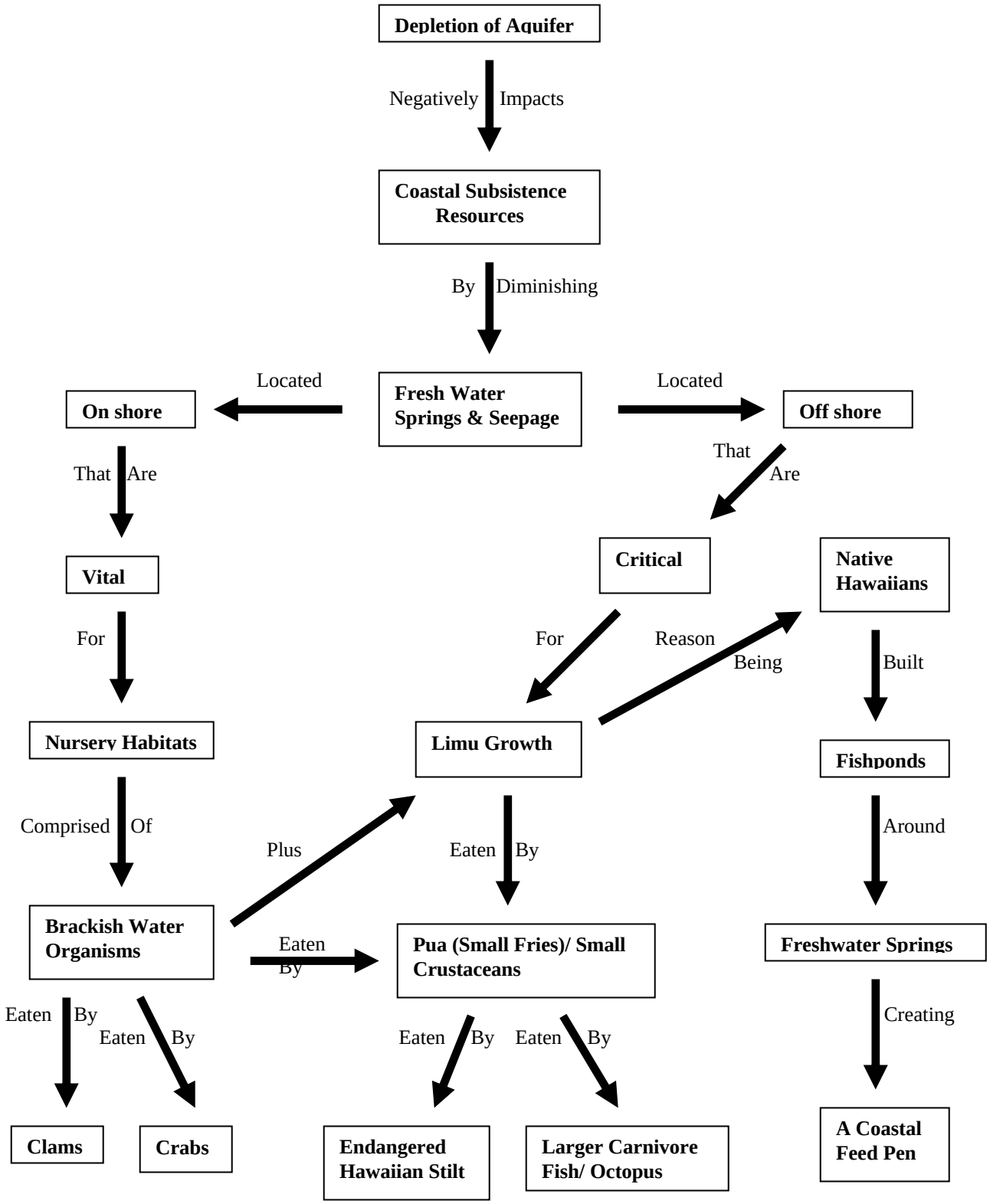
A Water Plan Analysis by Ishikawa, Morihara, Lau & Fong LLP is part of this Environmental Impact Study and includes estimates of the amount of water needed for the proposed development, potential sources, potential impacts and mitigation measures.

6.2 Primary Cultural Concerns in Wai Ola Case Applicable to Kakalahale

A review of the testimonies presented in the Wai Ola Case can be summarized in the following flow chart and explained as follows:

On the island of Molokai, the struggle over water is longstanding and rooted in a cultural way of life that is dependent upon subsistence. This subsistence lifestyle is threatened when coastal resources that thrive in brackish water environments are negatively impacted due to a diminishing aquifer. These brackish water environments, located on shore as well as off shore, are ideal nursing and hatchery grounds for pua or small fries as they feed on photo plankton, brackish water organisms, and limu. Furthermore, these environments are also the breeding grounds of crabs, clams, and other small crustaceans. Together these brackish water environments serve as the foundation for the coastal food chain, as the larger carnivorous fish and octopus are able to then feed on pua and smaller crustaceans. Traditionally, Native Hawaiians recognized these relationships and built fishponds in this environment to create a coastal feeding arena. This knowledge and understanding of the interdependence of the marine environment upon infusions of fresh water which sustains a subsistence lifestyle for the people of Moloka'i, elevates the struggle over the use and distribution of fresh water from a struggle to perpetuate the culture and a way of life, to a struggle to protect life itself.

Figure 9. Fresh Water Aquifer Linkage to Coastal Subsistence Resources



Professor McGregor filed testimony in the Wai Ola Case and the following are excerpts which expand upon the importance of the flow of fresh water from the Kamiloloa aquifer into the coastline of Kapa'akea-Kamiloloa-Makakupaia which lay makai of Kakalahale:

"The GIS maps revealed a high concentration of Hawaiian in the Kapa'akea-Kamiloloa-Makakupaia area. These Hawaiians would be engaged in subsistence activities in the neighboring areas. These same areas showed a high concentration of known historic sites. Conservation lands are located in the mauka area of Kamiloloa and rare and endangered species have been identified in this area. The prevalence of subsistence on Moloka'i was reflected in the amount of food that was derived from these practices and feelings about its overall importance to families. The fact that families were highly dependent on subsistence for survival, especially Hawaiians, points to the value of subsistence as a sector of the economy.

Q: Have you had the opportunity to review the testimonies of Louise K. Bush, Sheldon Hamakua, Walter Mendes, Wayde Lee, Martin Kahae, and Judy Caparida?
A: Yes.

Q: Are the activities they describe consistent with the traditional and customary activities in which ancient Hawaiians engaged?
A: Yes, they describe the gathering of a variety of limu including ogo, 'ele'ele, wawae'iole, manauea, and huluhuluwaena; a variety of fish including weke, mullet, uhu, manini, kole, oio, papio and palani; as well as he'e, ulupapa, lole, wana and a variety of crab including kuhonu, 'alamihi, and ala'eke from the neashore waters. They also describe the gathering of opae from the Kaunakakai stream and the springs in the area. From the mauka forest they describe the gathering of mamaki for tea, as well as lehua, 'a'ali'i, palapalai fern, 'ie'ie, and pukiawe for hula.

Q: How would you characterize the impact of interfering with the continuation of these traditional and customary cultural activities?
A: Interference with the continuation of these traditional customs and practices would reduce the amount of natural marine and forest resources available for subsistence activities. This would impact the diet of the families who have relied on these natural resources for food. This would negatively impact the health and well-being of these families. It would also affect the ability of the families of the extended 'ohana to continue their practices of sharing and exchange and gathering and bonding during critical life cycle events.
Q: Is there a cultural reason for assuring that any water withdrawal from the shoreline does not interfere with the type of practices enumerated in HRS ß 174C-101?
A: The continued gathering of marine and forest resources in the Kamiloloa area is integral to the cultural life ways, health and well-being of the families who have relied upon these resources for subsistence. It is of critical significance to the diet of these families. The ability to alternate gathering areas in accordance with seasonal variations and level of use is essential to having resources available all year round. The sharing of foods gathered through subsistence activities reinforces good relations among members of extended families and with neighbors. Subsistence is integral to the life ways of the

Hawaiians of Moloka'i, popularly referred to as the "Last Hawaiian Island." Hawaiians comprise close to 50 percent of the population. Moreover, the persistence of subsistence on Moloka'i is of critical significance to the persistence of Hawaiian culture throughout our islands. The island of Moloka'i serves as a cultural kipuka for Hawaiian culture throughout Hawai'i. Bypassed by the mainstream of political and economic change in Hawai'i until the 1970's, it serves as a preserve of Hawaiian culture from which the contemporary generation of Hawaiians continue to draw strength and inspiration in the perpetuation of Hawaiian language, culture, and spirituality."

Section 7 Assessment of Impact of Proposed Water Plan on Cultural Resources

- **Water is the Primary Cultural Resource**

For many participants in the community meetings, water is the primary cultural resource. They feel that drawing brackish water out of the Kakalahale well will have a huge impact on the culture and way of life on Moloka'i.

- **Impact on Aquifer**

Moloka'i water resources are limited and drawn primarily from the eastern mountain system of the island. For many Moloka'i residents, water is the main issue in the proposed development. They expressed concern that the additional water proposed to be drawn out of the Kakalahale well, even if it is brackish, will strain and diminish the water table on Moloka'i, increasing salinity levels. Residents are concerned that pumping brackish water from Kakalahale could raise the salinity level in neighboring wells.

Taking all of the drinking water from one area is problematic. The wells are already showing signs of elevated levels of salinity. Got to spread out source.

Community participants and key informants expressed concern about the impact of pumping brackish water on the transition zone. They are concerned that drawing water out of the transition zone might increase the salinity levels of ocean discharge as well as neighboring wells.

- **Impact on Hawaiian Homesteaders**

For Moloka'i homesteaders, the primary issue with the proposed development is water. Hawaiian Homesteaders have the first preference for water from the Moloka'i aquifer. If MPL is given a permit for an additional 1,000,000 gallons a day this may prevent the homesteaders from being able to draw out the water that they need for future agriculture and residences. Homesteaders believe that 1,000,000 gallons a day is too much. It will hamper the rehabilitation of Native Hawaiians on Hawaiian Homelands.

The DHHL 20 year strategic plan projects 400 more residences, but water is the limitation on the development of these homes. Homestead farmers will be affected by water taken to La'au. Homesteaders need water to keep the plants in their garden and fruit trees on their homestead growing and producing. If there's no water, thousands of acres of DHHL land may not be usable. In addition, the homesteaders won't be able to water their food plants - ulu, papaya

- **Keep Water Within Ahupua'a**

Idea of moving water from one ahupua'a to another is hard to accept. It is not a Hawaiian concept to move water from one ahupua'a to another.

- **Impact on the Ocean**

Marine resources need infusion of fresh water to spawn. The findings in the Wai Ola Case provide relevant information on the potential impact of the pumping of 1,000,000

gallons of brackish water a day can have on the marine resources makai of Kakalahale. The findings were based on the pumping of 1.25 mgd of ground water and thus the impact would be less than that projected in the Wai Ola Case.

"Ground-water models showed that pumping 1.25 mgd of ground water would reduce ground-water flux to the nearshore area by about 3% to 15%. At that magnitude, the resultant change in salinity in the fishponds would be virtually indistinguishable from the initial values.

Native Hawaiians gather limu and other marine resources all along the southern and eastern coastline of Molokai, including the shoreline area of the Kamiloloa Aquifer. They do not confine their gathering activities to areas within their ahupua'a of residence.

Nearshore Environment

122. The coastal boundary of the Kamiloloa aquifer comprises approximately 6 kilometers of shoreline, extending just west of Kaunakakai Gulch to just east of Ali'i Fishpond, and includes Kaunakakai Harbor channel and two large fishponds (Ali'i and Kaloko'eli fishponds).

123. No perennial stream exist within the Kamiloloa aquifer and surface runoff reaches the ocean only after significant rainfall events.

124. The coastal area off the Kamiloloa aquifer is fairly homogenous. The shoreline consists of very shallow sand and mud flats that extend offshore several hundred meters.

125. Groundwater enters the nearshore zone from seepage at the shoreline and from offshore springs. In some areas, seeps are actually visible at low tide and offshore springs are also visibly evident.

126. Freshwater springs enter the reef at numerous points along Molokai's south sore creating brackish conditions that favor seaweed growth nearshore, especially in many of the fishponds, which tend to trap fresh water.

127. Groundwater discharge into the ocean is reduced by the amount that is pumped from the ground whether it is pumped from the Kualapu'u or Kamiloloa aquifer.

128. The McNulty model predicts that if 1.25 mgd of groundwater is pumped from the proposed well, the flux of groundwater at the Kamiloloa shoreline will be reduce by about 15%. The USGS Study indicates that the coastal discharge is reduced by 3 percent over a 13-mile stretch of coastline.

129. The USGS Study predicts that pumping 0.3 mgd from the proposed well [Wai Ola] will result in a reduction in groundwater discharge of 0.8 percent over a 13-mile stretch of coastline (which extends further than the boundaries of the Kamiloloa aquifer). The

largest effects occur in areas nearest the well and effects diminish with distance from the well.

Fish

133. Several important species of fish, including mullet, aholehole, and milkfish, depend upon brackish environment along Moloka'i's south shore.

134. The brackish water environment is necessary for the primary productivity that is the basis of the food chain for milkfish, mullet, aholehole, and other animals found along Moloka'i's south shore.

135. Mullet need brackish water with salinity ranging from 13 to 20 ppt. for proper maturation of their eggs.

136. After mullet, ama'ama, awa or milkfish spawn in the open ocean, the fry, up to one month old, are predators, eating zooplankton in the open ocean. Then they move to nearshore areas where they switch to an omnivore diet, and feed on diatoms, a benthic plant usually found on the bottom of estuaries where brackish water and sunlight mix to allow for their growth. They stay on this diet for the rest of their lives, reaching sexual maturity, and feeding in estuaries and stream mouth areas which are conducive to this plant. Fishermen often know these locations in their areas.

137. Brackish water environments, which Dr. Tamaru defined as having salinities of less than 30 ppt, are essential for the maturation of striped mullet from the juvenile stage to maturation. For oocyte maturation, salinities in the range of 13 to 20 ppt is important. However, salinities along the nearshore area fronting the Kamiloloa aquifer consistently exceed 30 ppt.

Limu

145. Native Hawaiians gather limu and other marine resources all along the southern and eastern coastline of Molokai, including the shoreline area of the Kamiloloa aquifer. They do not confine their gathering activities to area within their ahupua'a of residence.

149. Limu is more productive in brackish water than in pure seawater.

Mana'o

Hear that the Homesteaders don't have enough water, but when want to build a project like this, all of a sudden then get water. All of a sudden we get water? Who are we kidding? This is water that is being diverted to something that won't benefit the island.

Main concern - will they have enough water for the community, not starving the rest of the island.

Eventually the drawing out of brackish water from Kākalahale will affect us. It's not about us any more - it will affect my grandchildren. A lot of people don't realize this. Our stake is not money our stake is our family and the people. I always thinking about the island.

Section 8 Proposed Mitigation Measures for Water Plan

MPL will retain its 1.5 million gpd of potable water: 1,018,000 gpd from Well 17 and 500,000 gpd from the Molokai Ranch Mountain System. MPL proposes to develop 1,000,000 gpd from the abandoned Kakalahale brackish water well in the Kamiloloa aquifer sector for future non-potable water needs. MPL will not transmit bracksih water from the Kakalahale well to the West End by the Moloka'i Irrigation System (MIS) system. MPL will use transmission alternatives. MPL will also make its excess potable water capacity available for the use of communities outside its property. MPL will be required to measure chloride levels every month to protect against unacceptable salinity levels.

Upon approval of the Community-Based Master Land Use Plan, MPL will sign covenants preventing it from ever seeking further water permits from the Commission on Water Resources Management. MPL will also abandon the Waiola Well application.

MPL will continue its water conservation campaign to Kaluako'i residents and future residents in the proposed development by reducing consumption, shutting off irrigation systems during rainfall, and restructuring water rates.

MPL continues to work with the major managers of Moloka'i's water resources to meet the needs of the community now and in the future while protecting this precious resource. had a four party meeting with the following in September As a first step in finding solutions to sustainable use of water on Molokai MPL met in September 2006 with the other major water managers - Department of Hawaiian Homelands (DHHL), the County of Maui, Kawela Plantation Homeowners - and the United States Geological Services and the Commission on Water Resource Management. The meeting was aimed at looking to USGS to model the needs for all parties.

In that meeting, MPL offered both DHHL and the County access to further drinking water from its Well 17 in the Kualapu'u aquifer, saying that if necessary it would put Well 17 into a Water Trust to ensure continuity of supply for all parties. MPL has stated that it requires no further drinking water under its Master Plan. Furthermore, MPL also believes that Well 17 has the capacity to pump an additional 500,000 gallons a day, average, without affecting the sustainable yield of the aquifer. This water can be made available to both the County and DHHL.

MPL extended this offer in order to alleviate the need for Maui County to build a new well to replace its current well in the aquifer. This measure would also enable DHHL to access some of its 2.905 million gallon reservation without the added cost of additional well infrastructure. Before another meeting of the parties is convened, DHHL plans to consult with the county and review its needs under its Molokai Island Plan.

Concurrent with the LUC rezoning application, MPL is seeking permission from the Commission on Water Resources Management for its Water Plan.

Alternate Sources

Informants spoke of efforts by Alpha U.S.A. to find water - from hiring Blackhorn who used a willow to the use of modern techniques with electromagnetic waves and a computer. An informant said that there's a well by the corn field - by Amazon trail - brackish water that was used to irrigate the hay with brackish water. He also said that there were old wells at Pala'au and at Punakou that he used to maintain by pumping out the mud. Eleven exploratory wells and boreholes were drilled on the West end between 1945 and 1991. None produced water of usable quality. There is not sufficient rainfall in Kaluako'i to sustain a viable year round rainwater catchment system.

Mana'o

Worked with Dr. Nightingale - in 1954-55 - I was the laborer - he was the water specialist. He said it was divided into 2 pieces - right by the corn field. Billy Buchanan - he has a big well, if he has water on his property - the ranch should look there.

Section 9 Assessment of Alternatives to the Proposed Development

Section 6 of the EIS addresses alternatives to the proposed development, as required under HAR, Title 11, Chapter 200 Environmental Impact Statement Rules, Section 11-200-10(6).

In the report, the criteria for evaluating alternatives included those defined in the HAR, i.e. "those that would allow the objectives of the project to be met, while minimizing potential adverse environmental impacts," in addition to the following criteria:

- Reasonable financial returns must be generated from the funds invested.
- No expanded use of precious drinking water currently available to the company.
- No use of vast amounts of land and population increase beyond what was conceived as acceptable to the island.
- No destruction of land designated for agriculture or open space.
- No development use of potentially productive Agricultural lands versus poorly rated Agricultural land.

From a cultural standpoint, limiting the amount of water to be consumed by any development was the primary consideration in the assessment of alternatives. The impact of population increase is another important issue that was considered in the assessment.

As a part of this cultural impact assessment report the proposed alternatives are discussed below relative to the impact upon cultural, subsistence and spiritual resources and related practices.

9.1 No Action Alternative

The “no action” alternative would not involve any changes to the La'au Point project site, and the property would remain vacant of any additional improved uses. If the La'au Point community were not developed, lands would remain as fallow agricultural land and underutilized due to the poor soils and lack of irrigation water. The conservation zones would not be established at Kamaka'ipo Gulch or along the shoreline.

The Community-Based Master Land Use Plan would not be implemented. While 1,600 along the northeast coast of Moloka'i from Keonelele to 'Ilio would be donated to the Moloka'i Land Trust the remaining 24,600 acres would continue to be owned by Moloka'i Ranch. This would include the legacy lands discussed above - Ka'ana, the birthplace of the hula; the makahiki grounds of Naiwa; the ancient burial grounds of Kawa'aloa; village sites at Kawakiu; burial mounds at Kawela; the historic Paka'a house sites and gardens; Kaiaka Rock; Kamaka'ipo Gulch; and the fishing village at Kaupoa Camp.

The “no action” alternative would ultimately lead MPL to close down its ranch operations and either land bank the property for the future or put the lands up for sale, as discussed as the next and interrelated section. Employment would have to be reduced, tourist expenditures would be lost, and local businesses at Maunaloa Town and elsewhere would be affected. These losses in local jobs and probable business failures would also in turn increase the need for County and State social services.

While the "No Action" alternative would reduce the immediate demand on water resources, in the long run it would increase, because it would be combined with the second alternative of bulk or "Piece-Meal" sale of MPL lands to potentially eight times the number of landowners or to an investment corporation which could develop the land beyond the limited 200 two acre lots. The impact to cultural sites and natural resources utilized for subsistence, cultural and spiritual purposes would be far greater than what is projected in the proposed development.

9.2 Bulk or 'Piece-Meal" Sale of Other MPL Land Inventory

MPL land holdings are comprised of 101 lots that could be sold within Papohaku Ranchlands, Maunaloa (both Residential and Commercial), and the Industrial Park.

In addition, an existing allowable lot density analysis conducted by MPL shows that the west end Agricultural-zoned parcels comprising approximately 43,000 acres could be subdivided into more than 1,500 lots.

This “land-banking,” or individual parcel sales, would essentially close down ranch operations and reduce MPL’s employment to only 10 full-time staff as the company sells its properties to potentially 101 new owners/residents.

A proposal was made to MPL by the U.S. Marine Corps to stage amphibious and air landing exercises on the west coast of Moloka'i between Kaupoa and La'au Point in the area proposed for development. If the proposed development plan fails, the U.S. Marine Corps might renew their effort to have the lands leased out for these purposes. Such use would have tremendous negative impact on the marine and natural resources utilized for subsistence, cultural and spiritual purposes in that area.

In this alternative, the 24,600 acres that would otherwise have been donated to the Land Trust under the La'au Point proposed action would instead be sold off as separate parcels. If these lots were sold off without the benefit of a master plan, the impact would include a greater number of new land owners/residents, less community control of development (i.e. design controls and CC&Rs), no land trust, and less financial support to the County and State.

As discussed above, this alternative would lead to greater overall impacts on cultural sites; natural resources utilized for cultural, subsistence and spiritual purposes; water

resources; and the overall Hawaiian way of life on Moloka'i. This scenario would result in uncontrolled growth and unmonitored utilization of lands and natural resources. It is the worst case scenario.

9.3 Maunaloa to La'au, Kaunakakai and Kaluako'i

In its review of possible alternatives to the La'au development, MPL developed models to compare alternative scenarios ranging among different agricultural and residential projects of between 27 lots/units and 1,000 lots. units.

MPL initially looked at large Agricultural lot developments conforming to existing State land use designations, the Moloka'i Community Plan, and County Zoning at Maunaloa Town and above Kaunakakai. MPL also looked at an affordable residential expansion at Kualapu'u as part of the first round of possible alternatives and at various rural and condo alternatives for Kaluako'i. MPL examined DeGray Vanderbilt's La'au Point alternative (Kaluako'i Rural Subdivision and Golf Course).

In efforts to avoid development specific to the La'au Point project area, MPL examined nine options in detail on other Ranch lands outside of the La'au Point project site. Financial models were created to examine the alternatives' ability to generate the necessary revenue in order to make the Community-Based Master Land Use Plan work economically.

The community and key informants felt that there would be less impact upon subsistence resources if these alternate sites were developed. While archaeological surveys would need to be conducted in these areas, most of the historical sites are within half a mile to one mile of the coastline given the traditional reliance of Native Hawaiians upon the marine resources of Kaluako'i. These areas area less likely to have cultural sites.

In looking at develping the mauka lands in place of the coastal areas, one of the informants suggested that Wai'eli would be a more suitable location for the development. If the houses are located at a mauka area, such as Wai'eli, the landowners would purchase a lot where they could build a house with magnificent views of O'ahu, Lana'i and Maui and enjoy the cool breezes. In addition, the landowners would also acquire a ownership of commonly-owned lands at the coast located at safe beaches where a park could be developed for the special use by the landowners.

The primary cultural impact of these development models are greater overall population increases and demand for precious water resources.

9.4 Hale O Lono to Pala'au

MPL was also asked to look at the area from Hale O Lono to Pala'au There are several issues with this area, not the least of which is the proposed inclusion of this land in the Land Trust and the importance of the Ka'ana area, from mauka to makai to Kumu John Kaimikaua. In the community planning process, his input was to exclude the area from any development.

With respect to historic cultural sites, the area has had only limited survey work to date, and where archaeological surveys have been conducted, sites have always been found. Based on the limited work, it is likely that extensive archaeological surveys would identify several large important cultural complexes such as the Paka'a house sites, cultivation fields and trail. The topography of the site is that of sloping ridges divided by deep, steep gullies. To access development along the more desirable coastal areas. MPL estimated that 24 miles of roads would be needed to service the area. This would not only be costly, but would severely impact the ability of the region to be used for subsistence hunting as currently proposed by the Plan and require the development of hundreds of lots to offset their construction costs.

According to key informants, this area has been used more intensively for subsistence fishing and gathering than the area proposed for development. Hale O Lono, Halena and Kolo were identified as the key spawning areas for mullet. Each of these areas were traditionally accessed by the Maunaloa families throughout the plantation era and they continue to be important areas for fishing and gathering. Key informants experienced spiritual phenomena in the area and observed burials and iwi kupuna. The most favored hunting grounds are also located in this area of the MPL lands.

9.5 Alternative to La'au Development

The Alternative to La'au Development Committee (ALDC) efforts to find an alternative to the La'au Point development involved the hiring of consultant Clark Stevens (New West Land Company) by the Moloka'i Enterprise Community (EC).

This alternative proposed 50 view-shed lots at La'au Point, located between 0.5 mile and 1.5 miles from the La'au shoreline, and another 100 small residential lots, which would represent a new "town" similar to Maunaloa.

The cultural impact of this proposal would depend upon the placement of this lots. Placement .5 to 1.5 miles from the shoreline reduces the impact to coastal cultural sites and to the natural coastal and marine resources utilized for subsistence, cultural and spiritual purposes. However, some of the inland sites in the particular design that was submitted are situated in areas that informants identified as extremely significant and highly sensitive from a cultural and spiritual standpoint. It is similar in concept to the models considered by MPL and discussed above in 9.3, although this particular model would have less population and demand for water than the proposed La'au Development. The infrastructure cost, according to MPL is prohibitive.

The ALDC also suggested the pursuit of a conservation “philanthropic” buyer to purchase the entire 6,348-acre parcel, or a buyer who could use the tax incentives and develop mauka of the shoreline with less density. The ALDC asserted that in order for them to move forward with finding potential purchasers, MPL must be willing to keep this alternative open and determine a purchase price for the parcel.

MPL has stated the following in regard to this purchase alternative:

> If a purchaser offers the company a price for the La'au parcel that is equivalent to its development return, protects areas for subsistence as proposed and provides an endowment income to the Land Trust/CDC as proposed under the La'au development plan, it will seriously consider the offer. Should a serious buyer emerge, MPL will enter meaningful negotiations with that party or parties.

The option to pursue this alternative will remain open.

Section 10 Summary and Conclusion

This Cultural Impact Assessment Report has been prepared as part of the Environmental Impact Statement (EIS) for the proposed La'au Point Development in compliance with Chapter 343, Hawai'i Revised Statutes and Title 11, Department of Health, Chapter 200, Environmental Impact Rules, State of Hawai'i.

This report has especially been designed to fulfill the mandate to the Land Use Commission from the Hawai'i State Supreme Court in its ruling, Ka Pa'akai O Ka 'Aina v. Land use Commission, State of Hawai'i / 94 Haw. 31 (2000). The specific section of the ruling that served to guide the development of the report is as follows:

> "In order for the rights of native Hawaiians to be meaningfully preserved and protected, an appropriate analytical framework for enforcement is needed. Such an analytical framework must endeavor to accommodate the competing interests of protecting native Hawaiian culture and rights on the one hand, and economic development and security, on the other . . .
>
> In order to fulfill its duty to preserve and protect customary and traditional native Hawaiian rights to the extent feasible, the LUC, in its review of a petition for reclassification of district boundaries, must – at a minimum – make specific findings and conclusions as to the following: (1) the identity and scope of 'valued cultural, historical, or natural resources' n27 in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area; (2) the extent to which those resources, including traditional and customary native Hawaiian rights will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the LUC to reasonably protect native Hawaiian rights if they are found to exist. n28

This summary, addresses the three key findings required of the Land Use Commission and government agencies empowered to make decisions affecting land use in Hawai'i under the ruling of the Hawai'i State Supreme Court in its ruling in Ka Pa'akai O Ka 'Aina in 2000.

10.1 Valued Cultural, Historical or Natural Resources and Traditional and Customary Native Hawaiian Rights Exercised in the Petition Area

The La'au Subdivision Archaeological Preservation and Mitigation Plan prepared by Cultural Landscapes in May 2006 documents valued cultural and historical resources in the petition area. This report focuses on valued natural resources utilized for cultural, subsistence and spiritual purposes.

A large part of the significance of the La'au Point area is that it is raw and untouched. It is so isolated that most of the residents of Moloka'i have never even been there and have no direct experience with the place. This factor gives La'au an almost mythical quality. La'au Point has become an icon of what Moloka'i represents - a rural stronghold and reserve of Native Hawaiian culture, a cultural kipuka. If Moloka'i is "The Last Hawaiian Island" then La'au is one of the last untouched Native Hawaiian places on "The Last Hawaiian Island."

In Hawaiian tradition, La'au Point represents a point of no return. For those traveling by canoe from O'ahu to Moloka'i across the Kaiwi Channel, once La'au Point is sighted, there is not turning back to O'ahu. This concept has been applied to the issue of the development of the La'au Point Rural-Residential Subdivision. Many Moloka'i residents feel that if the west and south shores adjacent to La'au Point are developed, as proposed, that this will open up Moloka'i to new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

Everyone interviewed and those who came to community meetings had reservations about the proposed development. No one was an enthusiastic advocate, many were reluctant supporters and those most vocal were opposed to the development.

The Maunaloa kupuna and larger community and longtime employees of Moloka'i Ranch have the most direct and longtime experience with the area proposed for development. What is striking is that while they are very concerned and reluctant about the development, they are also willing to acknowledge and support the right and the need of the Ranch to seek the development. They feel that the negative impacts could be managed if the development would conform to the strict covenants, conditions and restrictions outlined in the Community-Based Master Land Use Plan for Moloka'i Ranch. They are confident that their community can work together with the project's resource managers to provide stewardship over the marine resources that they rely upon for subsistence. They also felt that the negative impacts would be offset with the gifting of important legacy lands to the community.

In addition, many longtime adversaries of Moloka'i Ranch engaged in the development of the Community-Based Master Land Use Plan for Moloka'i Ranch, which includes the proposed La'au development, over the course of two and a half years throughout countless community meetings, long hours of impassioned debate, critical thinking and soul searching. For them it was a process of negotiating a lasting settlement of a thirty year struggle with Moloka'i Ranch over extravagant development schemes and the extractive use of millions gallons of the island's precious and limited water resource. The proposed La'au development was difficult for them to accept and at that point some withdrew their support. However the majority of the planning group persisted in their support for the overall Community-Based Master Land Use Plan as a reasonable and balanced approach that empowers the community to manage premier Native Hawaiian legacy lands, control population growth and land speculation and monitor the one last major development on Moloka'i Ranch lands. Moreover, the plan revolves around the management of natural resources for subsistence, cultural and spiritual purposes.

Participants in community meetings and the key informants speak of the south and west coasts adjoining La'au point and its nearshore waters as reserve of marine resources which serve as their "icebox." It is a place where fishermen usually go to get fish, 'opihi and crab for parties and gatherings of their large extended families.

The southwest shore also factors into the life cycle of the mullet, serving as a hatchery area from which they move east to Mana'e or East Moloka'i.

Along the south shore, informants identified the various fishing and gathering areas by points that they referred to as first point (Kanalukaha), second point (Kapukuwahine), third point (Kahalepohaku) and fourth point ('Opihi Road). The south shore is best known for moi, aholehole, 'a'ama crab and 'opihi. The 'opihi starts at Kapukuwahine on the south shore and out on the cliffs along what they refer to as 'Opihi road. The west shore is best known for moi, aholehole and lobster. Due to the seasonal ocean swells, the south shore is usually harvested in the winter time when there are north swells and the west shore is usually harvested in the summer time when there are south swells. They also speak of the ocean as being very treacherous and not safe for swimming. Off of La'au Point itself, informants spoke of a very strong current which has swept even the best divers out to the open ocean.

Traditionally, it is not a place that was fished on a regular basis because it is isolated and difficult to reach. However, the increased use of boats on Moloka'i and O'ahu has changed this. Informants noted that the resources have declined in the area with heavy seasonal harvesting by boaters from O'ahu and the opening of Hale O Lono harbor and Kaluako'i as closer launching points for Moloka'i boaters.

In addition to natural resources utilized for subsistence, informants spoke of other natural resources which have cultural significance such as native plants, native species of turtles and monk seals, and the simple unspoiled natural beauty of the undeveloped seascape.

The La'au area is generally regarded as a special place of spiritual mana and power. Community participants and key informants spoke of specific burials, fishing ko'a, and heiau. Such specific sites are documented and described in the La'au Subdivision Archaeological Preservation and Mitigation Plan by Cultural Landscapes that is part of this EIS.

The overall spiritual quality of the La'au area as a wahi pana and wahi kapu cannot be quantified and deserves recognition and respect.

Informants identified the following coastal cultural and subsistence resources in the proposed development area.

Coastal Cultural and Subsistence Resources

x	streams	x	ponds
____	‘auwai (taro irrigation ditches)	____	lo’i kalo
x	springs	x	caves
x	trails	x	wahi pana (named places)
x	sacred places	____	dunes
x	landings	____	bridges
x	surfing sites	x	sandy beach
x	fishing area	x	fishpond
x	fish trap	x	fish house
x	hunting areas	x	kilo i’a (fish sighting)
x	muliwai (brackish pond)	x	anchialine pond
x	trails	x	salt ponds
x	wells	x	turtle nesting area
x	historic walls	x	basalt veins for tools
____	alae vein	x	salt pans
x	shrines	x	salt gathering areas
x	ko’a (fishing shrines)	x	heiau (temples)
x	historic sites	x	cultural use areas
x	ho’ailona (natural signs)	x	sighting place
____	lele (cliff jumping spots)	x	native plants
x	pu’uhonua (places of refuge)	____	holua slides
____	cultivation area	____	leina (jumping off point
x	archaeological sites	for souls to cross over)	
x	burials	x	kupe’e
____	o’opu	____	hihiwai/wi
x	aholehole	x	‘anae
____	steam bath areas	x	bathing pools
x	limu gathering areas	x	lava tubes
x	subterranean water course	x	petroglyphs
x	kapu kai/hi’u wai areas	x	paddling areas
x	artifacts	x	view plane
x	seasonal residential sites	x	burial markers
x	water caves	x	birthing stones
____	phallic stones	x	Pohaku Kane
x	coral reef	____	estuary
x	spawning grounds	x	house sites
x	po kane routes (night marchers	____	dams
x	‘aumakua (ancestral deities) domain		

They added the following additional resources:

monk seals, water catchments, bell stones, ahu stones, Hawaiian moth, chamomile type flower for clearing liver, shells on shore.

10.2 Extent to which Valued Resources and Traditional and Customary Native Hawaiian Rights will be Affected or Impaired by the Proposed Action

Participants in the community meetings expressed concern that the proposed development will change the demographics of Moloka'i forever. They believe that La'au will contribute to the increase of land values and prices and property taxes on Moloka'i.

The community expressed concern that 200 new millionaires will change the make up of the Moloka'i community and lead to changes in the Hawaiian way of life. With more outsiders, Moloka'i will no longer be "The Last Hawaiian Island." The proposed development will bring in new residents unfamiliar with the culture and way of life on Moloka'i and lead to irreversible cultural change.

The community doesn't want Moloka'i to turn into Maui or O'ahu with a large population off-island people. They expressed regret that if the development occurs, La'au will never be the same.

In balance, the Maunaloa kupuna shared that no matter what happens, the population will increase and the land will be limited. While Moloka'i has been preserved it is gradually being developed. They acknowledged that progress cannot be stopped but that it can be controlled. The Maunaloa kupuna felt that the overall community plan of which La'au is a part provides for the community to manage and monitor the proposed development.

Access and Trails

Community members were concerned that the subdivision might be a gated community, and were relieved that this is not part of the plan.

Native Hawaiians and the general public will have access from two points - one on the south shore at the southeast entry and one on the west shore at the northwest entry. In the process to develop the Community-Based Master Land Use Plan for Moloka'i Ranch, subsistence fishers and gatherers were very concerned that opening up the south and west shores to public access at every 1500 feet as the County of Maui provides will deplete the marine resources. They regretted that the opening of Hale O Lono harbor to public access had severely decreased the marine resources there and they do not want to see that happen in the area proposed for development. Opening up access points every 1500 feet would have a severe impact on the subsistence resources along the west and south coasts adjacent to La'au Point.

Community members were concerned that subdivision lot owners and their friends will have preferential access to the coast. There will be nothing to stop the home owners from going down to the beach. Those who live on the shoreline will be able to access their home and the beach by vehicle. Homeowners can create a trail to the beach and let their friends have access to the beach. Affording only two access points for the general public, while the rich people in the subdivisions will have access from their homes seems unequal. Informants also expressed concern that landowners might call police if they see the general public walking on the beach, as this has happened at Papohaku.

Participants in community meetings and informants felt it was important to provide emergency access through the subdivision to the shoreline for emergencies. They were also concerned that access should be afforded for kupuna and persons with special needs. Some pointed out that the areas closest to the access points will be heavily impacted, while spreading out the access points might spread out the impact. It was also noted that the road down to Hale O Lono harbor would need to be maintained in order to keep access to the area open.

Subsistence Fishing and Gathering

Informants feel that the development will spoil the experience of fishing in what is now an isolated, pristine and spiritual area. They are concerned that instead of La'au being a place to get food, it will be a place with haole in their back yards. Many informants felt that the proposed development will greatly hinder, if not abolish altogether, ongoing traditional gathering activities currently enjoyed by Moloka'i islanders at La'au. Fishermen will lack privacy if the development goes through. Yet, throw net subsistence fishers require an undisturbed beach that allows fish to forage closer inshore in order to succeed. Gatherers of 'a'ama crabs require dark silent nights to ensnare their nocturnal prey. Commotion emanating from noisy and brightly lit beach homes will negatively impact crabbers' efforts to capture their already skittish prey. Gatherers of limu and pupu will very likely be met with kayakers in the water, people sunbathing on the beach, and pet animals running up and down the shoreline. If experiences elsewhere in Hawai'i hold true, it is not likely that owners of multi-million dollar beach homes will greet shoreline subsistence gatherers with open arms. It is more probable that subsistence practitioners will be confronted by insensitive newcomers intolerable of extractive activities in what they will perceive to be their front yards.

While the new landowners will probably want to go out and fish when they see the lobsters in the area, most informants felt that the new residents will probably not directly damage the fishing grounds because they don't know how to fish. The real impact on the fishing resources is from the Honolulu boaters. When the outboard motor and twin outboards came out at an affordable prices, the Honolulu boats came fishing all along the west end and south shore. These fishermen have taken everything, even the eggs. The lobster area is wiped out. The Moloka'i residents fish for the family and perhaps get an extra cooler of fish to sell. The outside commercial fishermen fish out the grounds of lobster and fish. They do not plan for the future.

Community participants and key informants were concerned that pesticides and fertilizers will contaminate the ocean and kill the marine resources. Fertilizer run off will kill the small organisms that support all of the marine life offshore. Runoff from the development will contaminate the ocean. Grading can increase erosion which will result in sediment flowing into the ocean and destroy marine resources. Some informants from the East End felt that the development would impact the mullet run and thus impact the resources on their end of the island. However, longtime fishermen who have regularly fished the south shore as members of Ranch families noted that the mullet spawn at Hale O Lono, Halena and Kolo, rather than close to La'au. Hale O Lono is on the eastern border of the project area. Halena and Kolo are outside of the project area.

Community members wanted to be assured that the rules outlined for access and for subsistence and gathering cannot be changed by the subdivision lot owners. MPL clarified that the lot owners will be required to uphold the Covenants, Conditions and Restrictions (CC&Rs) that include these rules as part of the homeowner contract.

Providing parking areas at either end of the proposed project area and limiting access along the shoreline to foot access will open up access sufficiently that it might impact the resources, as the entry points will be closer for those who now walk and must either enter from Hale O Lono or Dixie Maru. The conservation rules might affect fishing, but if the access is easier there will be more fishing.

Subsistence Hunting

Hunters are concerned that the new landowners from outside of rural Moloka'i will not want to hear shooting and may be protective of the deer and oppose even bow hunting. Deer hunting could become an animal rights issue. Bullets can travel 4 miles and 10 year kids can get a license. Need to have a sufficient buffer zone. It will only take one accident to close down hunting in the area. The overall hunting area will be reduced by the no hunting zone in the subdivision and buffer zone and the safety zone.

The plan to put in a deer fence and remove deer within the proposed subdivision will effectively close off hunting in the southwest corner of Moloka'i. It will have to be a very high fence. The deer will keep going back. The deer will get hurt.

Cultural Resources and Practices

Informants are concerned that cultural sites will be destroyed once start to bulldoze and grade and clear the land for development. At Papohaku, homeowners have graded and damaged dune system and destroyed cultural sites and burials located in the dunes. They have extended their household area into the conservation zone, treated it like their own private property and tried to exclude Moloka'i residents from the public beach area fronting their homes. The same process can occur in the proposed subdivision.

Informants expressed concern that future generations may not have a concept of how to do subsistence and only going to catch what can be carried. Future generations should be

able to be in an environment where it's just them and mother nature. They should know what it feels like.

Concern was expressed about the impact of the proposed development on the monk seals who frequent the remote beaches of the west and south shores. Monk seals might be disturbed during the grading and construction phase. New residents may have dogs who would disturb the monk seals.

Many of the informants commented that the development will require a lot of expensive landscaping because the land is rough and rocky with a lot of boulders.

Spiritual Resources and Practices

Can destroy ko'a fishing shrines and cultural sites, unless monitored. Informants are also concerned that once the grading starts there will be erosion when it rains and the mud will cover the ko'a, the sand and the reef.

Can disturb iwi kupuna burials unless monitored.

The overall general concern is that the development of the area will destroy the special quality of La'au as a special place of spiritual mana and power.

10.3 Feasible Action by the LUC to Reasonably Protect Native Hawaiian Rights

The Community-Based Master Land Use Plan for Moloka'i Ranch provides measures to mitigate the overall impacts of the proposed development at La'au which set unique precedents for the development of large landholdings by offshore corporations. These precedents are related to community planning, the creation of a land trust for the community, the donation of legacy lands to the land trust, the donation of easements to the land trust, the protection of subsistence fishing, gathering and hunting, reserving lands for community housing, and the creation of economic opportunities for the community through the re-opening of the Kaluako'i Hotel. The plan also provides for covenants, conditions and restrictions that landowners in the La'au Point rural residential development will need to accept and agree to uphold in order to purchase a lot.

The Land Use Commission can review the Community-Based Master Land Use Plan for Moloka'i Ranch, especially the Covenants, Conditions and Restrictions (CC & Rs). The Commission can endorse the guidelines and CC & Rs which provide mitigation of the identified impacts to the cultural and natural resources utilized for subsistence, cultural and spiritual practices and customs. The Land Use Commission can assist in the enforcement of the CC & Rs by making these part of the conditions of the rezoning of the lands from the agricultural to the rural classification.

La'au Point must be the most environmentally planned, designed and implemented large lot community in the State. The residents would be educated and informed about the environment and culture, and taught to "Malama 'aina," take care of the land and sea."

This statement precedes the covenant document determined by the Land Use Committee that will place many restrictions on lot owners at La'au Point, in order to attract only those who are concerned about conservation.

As an example, the Conservation Zone and other areas to be protected (approximately 1,200 acres) within the subdivision will be the subject of an easement held by the Land Trust, with guidelines for these uses to be determined prior to the construction of the subdivision and reflecting the importance of the area archaeologically and to subsistence gathering.

These protected lands will be part of an entity that is controlled equally by the homeowners and the Land Trust. All decisions relating to this area: maintenance, subsistence protection, archaeological site protection, personnel, etc., will be the shared responsibility between the Trust and the homeowners, who will share equally in the costs.

MPL will attempt to attract buyers to the La'au point subdivision who reflect the hopes and aspirations of the community. Brochures, sales material and other promotional documents will be vetted by the Land Trust or the EC for accuracy and adherence to their principles.

One of the unique features of the CC &Rs is the condition that every person whose name is on the property title must commit to undergo a certain amount of education about the Moloka'i community and its desires and aspirations with kupuna and the Maunaloa community.

Measures will be taken to assure that these CC & Rs cannot be changed in the future. These CC & Rs include the following:

- prevent a gated community
- restrict the further subdivision of lots
- restrict the area that can be disturbed for use
- prevent construction on slopes of more that 50%
- restrict building height
- require the use of alternative energy
- prohibit the use of pesticides
- require that exterior lighting be shielded from the ocean
- require water catchments and 5,000-gallon storage tanks
- restrict landscaping to native and Polynesian introduced species suitable for dry coastal locations
- prohibit the use of noxious or invasive species; require green architecture
- manages erosion with vegetative cover
- puts a deer fence at the rear of the subdivision

The covenants, Conditions and Restrictions that landowners will need to uphold are described on pages 101 - 105 of the Community-Based Land Use Plan for Moloka'i Ranch that is part of the EIS.

Additional Recommended Guidelines:

Informants recommend the following additional provisions to mitigate the impact of the development on subsistence practices:

- ***Fence to demarcate private property from public access area***

All of the informants felt that it is important to have a clear physical demarcation, such as a log fence, running along the individual property lines to distinguish between private property and the public access area. By putting in a fence of some kind the public will know the boundary so that they won't trespass. Another suggestion was to use a round wire fence, called a New Zealand fence.

- ***Location of Access Trail***

Informants suggested that there be a physical demarcation between the property line and the ocean, along which the trail would run. The trail would follow the contour, following the old traditional trail as much as possible. Then the existing kiawe would serve as a buffer between the trail and the sand and ocean. This can help reduce impact of the trail on the beach and ocean. The kiawe can be pruned. It is a nitrogen fixing plan and will help other plants to grow around it. The trail should be placed back from the ocean so that it won't wash out. The trail will only be for walking and not for atv's or even bicycles. The trail should not be paved but kept clear and maintained.

- ***Emergency access to shoreline through subdivision***

Access through the subdivision should be provided for emergency rescue

- ***Document Existing Trails and Roads***

Document and map existing trails and roads for access.

- ***Kupuna Access***

To accommodate kupuna and those with special needs, have a golf cart available to assist their access.

- ***Landscaping***

Need to prevent landowners from landscaping the area of the setback which ranges from 250 to 1,000 feet.

- ***Support for the Maunaloa Community***

Have monies generated go into the community to support the school. Include the Maunaloa 'Ohana I Lokahi Association needs to be involved in the decisions about La'au.

- ***Regulate Fertilizers***

The use of fertilizers will be regulated.

- ***Involve Maunaloa Community in Stewardship***

Longtime fishers and gatherers from the Maunaloa community will be involved in the monitoring and protection of the marine resources in the development area.

- ***Cultural Monitoring***

Provide onsite monitoring of sites and potential erosion areas during clearing, grading and construction. Should have the resource management plan up and running when the grading and constructions starts.

- ***Hunting***

Have the buyers accept that hunting occurs in the broader surrounding area.

- ***Kama'aina residents of the Maunaloa community have seniority***

The seniority for hunting in accordance with traditional subsistence should be for kama'aina residents of the Kaluako'i ahupua'a and MPL employees.

- ***Papohaku Preservation Plan***

Apply relevant recommendations from the Papohaku Dunes Cultural and Natural Resource Preservation Plan, Kaluako'i, Moloka'i, Hawai'i Study.

- ***Kamaka'ipo Buffer***

The buffer area for Kamaka'ipo Gulch may need to be expanded. Due to the potential for erosion during grading and construction, the houses close to Kamaka'ipo Gulch should be moved further away from the gulch.

- ***Monk Seals***

Provide education and enforce laws protecting monk seals

- **Community-Based Subsistence Fishing Management Area**

It is a good idea to establish the community-based subsistence fishing management area that was demonstrated in a pilot project at Mo'omomi. Should also coordinate efforts with the communities of Miloli'i, Hawai'i and Ha'ena, Kaua'i who are also establishing community-based fishing zones. Also respect the Kalaupapa people and their grounds. The rights of the Kalapana people to fish in the Volcano National Park is another model.

- ***Restock moi***

The Land Trust should use some of the money to restock moi if they diminish. Restocking should be part of the management plan.

10.4 Conclusion

The overall Community-Based Master Land Use Plan for Moloka'i Ranch is not a perfect plan because it requires the development of the relatively pristine south and west shorelines of Moloka'i adjacent to La'au Point. Nevertheless, it is truly a grassroots community plan which represents a historic good faith effort on the part of Moloka'i Properties Limited and Ke Aupuni Lokahi-Moloka'i Enterprise Community to create sustainable economic solutions that will protect the cultural integrity of a unique Hawaiian island community. This monumental effort deserves serious reflection, deliberation and endorsement.

Ke Aupuni Lokahi-Moloka'i Enterprise Community is the steward of a plan that was designed by a broad cross section of the Moloka'i community. From May through September 1998, a planning group of the Moloka'i community formed seven subcommittees on Health, Education, the Environment, the Economy, Recreation, Youth and Leadership, and Culture to develop a comprehensive grant proposal to the U.S. Department of Agriculture to receive designation as a Rural Economic Empowerment Zone. They sent out newsletters to every postal service customer on the island and held two well-attended community meetings to receive input on the grant proposal. The final proposal contained a statement of the community's vision for Moloka'i; a description of strengths and weaknesses in the island's economy and natural environment and a strategy for sustainable community economic development. Although the Moloka'i community was not designated as an Empowerment Zone, they succeeded in attaining the status of a Rural Enterprise Community eligible to receive federal funds totaling $2.5 million over ten years in increments of $250,000 a year to attract additional funds that would launch sustainable economic development projects. The Community-Based Master Land Use Plan for Moloka'i Ranch is Project #47 of the Ke Aupuni Lokahi-Moloka'i Enterprise Community.

Ke Aupuni Lokahi-Moloka'i Enterprise Community continues to be guided by its vision statement that also serves as the vision statement for the Community-Based Master Land Use Plan for Moloka'i Ranch. It is as follows:

> *Moloka'i is the last Hawaiian island. We who live here choose not to be strangers in our own land. The values of aloha ' aina and malama 'aina (love and care for the land) guide our stewardship of Moloka'i's natural resources, which nourish our families both physically and spiritually. We live by our kupuna's (elders') historic legacy of pule o'o (powerful prayer). We honor our island's Hawaiian cultural heritage, no matter what our ethnicity, and thatculture is practiced in our everyday lives. Our true wealth is measured by the extent of our generosity.*
>
> *We envision strong 'ohana (families) who steadfastly preserve, protect and perpetuate these core Hawaiian values.*

We envision a wise and caring community that takes pride in its resourcefulness, self-sufficiency and resiliency, and is firmly in charge of Moloka'i's resources and destiny.

We envision a Moloka'i that leaves for its children a visible legacy: an island momona (abundant) with natural and cultural resources, people who kokua (help) and look after one another, and a community that strives to build an even better future on the pa'a (firm) foundation left to us by those whose iwi (bones) guard our land.

In the final analysis, the government agencies responsible for decisions about the future of the land and natural resources of Moloka'i must weigh the cultural impacts and benefits of the proposal to develop the west and south shorelines of the island of Moloka'i in consultation with the people of Moloka'i who depend upon these resources for subsistence, cultural and spiritual purposes. In particular, the kama'aina families who have lived in Maunaloa and the Kaluako'i ahupua'a for generations and the longtime employees of Moloka'i Ranch and their relatives have been the primary users of these resources and will be the most directly affected by the proposed development.

There is also the critical issue of Water. Is there enough water to provide for all of the island's major uses and yet allow this development to draw out 1,000,000 gpd of brackish water from Kakalahale? The Hawaiian homesteaders have a special claim and particular interest in this issue. MPL is actively working with all of the major managers and current users of the island's water resources to develop a solution.

There are clearly profound and unprecedented features in the overall Community-Based Master Land Use Plan for Moloka'i Ranch that will benefit future generations of the island as a whole. The gifting of fee title ownership of 26,200 acres to the Moloka'i Land Trust and dedication of 24,950 acres in conservation easements in perpetuity by Moloka'i Properties Limited (MPL) is clearly in the tradition of "Aloha Mai, Aloha Aku," "When aloha is given, aloha should be returned." Such an outstanding and magnanimous gesture deserves recognition as a model for offshore owners of Hawaiian lands on Moloka'i and other islands. Moreover, it is not just the quantity, but the quality of the lands that are being turned over that is significant. The ancient burial grounds of Kawa'aloa, the birthplace of the hula at Ka'ana and the Hula Piko at Maunaloa, the Makahiki grounds of Na'iwa, the fishing village of Kawakiu, the fishing grounds of Halena and Mokio are premier Native Hawaiian legacy lands of great significance to Native Hawaiians throughout the islands.

As with any groundbreaking work that is seeking to create innovative solutions to time worn problems, this plan takes risks. While the plan protects significant subsistence resources on the northeast shoreline of Moloka'i from Kalaupapa to 'Ilio Point and around to Kepuhi from development, the southwest shoreline from Kaupoa to Hale O Lono will be ringed by luxury residential homes. Extraordinary measures are incorporated into the plan to buffer and protect the subsistence and cultural resources from the negative impacts that such a development can generate.

These include:

- Upholding and assuring Native Hawaiian rights of access for cultural, subsistence and spiritual purposes.

- Creating sizeable conservation zones and buffer areas to protect the cultural sites and shoreline area.

- Ending commercial hunting so that Moloka'i kama'aina can legally engage in subsistence hunting on Ranch lands.

- Hiring two community cultural and natural resource managers who will work with the community to monitor every phase of the project, from clearing and grading, to construction and the moving in and residence of new homeowners.

- Orienting homeowners to appreciate and support the unique and special way of life on Moloka'i as the "Last Hawaiian Island."

- Limiting shoreline access to a foot trail.

Are these measures provided within the Community-Based Master Land Use Plan sufficient to protect these resources for future generations? The kupuna advise us that after all is said and done, it is La'au itself that will determine what will be acceptable and who will be accepted.

Section 11. References

Alu Like. (1985). *Molokaʻi ka hula piko* [videorecording]. Honolulu, Hawaii: Alu Like Oʻahu Island Productions.

Athens, S. J., Tomonari-Tuggle, M., Tuggle, D. H. (1998). *Research design for archaeological inventory survey for the defense environmental restoration program for formerly used defense sites at Papohaku Ranchland Subdivision, Papohaku, Kaluakoʻi, Island of Molokaʻi Hawaiʻi.* U.S. Army Corps of Engineers Pacific Ocean Division Fort Shafter, Honolulu: International Archaeological Research Institute, Inc.

Barrera, W., Jr. (1975). *Archaeological investigations of Kaluakoʻi, Molokaʻi.* Kaluakoʻi Corporation, Honolulu: Chiniago, Inc.

Barrera, W., Jr. (1982a). *Archaeological survey of proposed roads and beach access at Kaluakoʻi, Molokaʻi.* Kaluakoʻi Corporation, Honolulu: Chiniago, Inc.

Barrera, W., Jr. (1982b). *Kaluakoʻi, West Molokaʻi : Archaeological excavations.* Kaluakoʻi Corporation, Honolulu: Chiniago, Inc.

Barrera, W., Jr. (1982c). *Additional archaeological sites at Kaluakoʻi, Molokaʻi* . Kaluakoʻi Corporation, Honolulu: Chiniago, Inc.

Bonk, W. J. (1954). *Archaeological excavations on West Molokaʻi.* Masters Thesis, University of Hawaiʻi, Honolulu.

Cartwright, Bruce. (1927-1928). *Place Names of Molokaʻi & Maps.* (Ms.)

Cleghorn, P. L. (1974). *Report on walk-through archaeological survey of Kaluakoʻi Corporation's Land, Kaluakoʻi, Molokaʻi* . Honolulu: Department of Anthropology, B.P. Bishop Museum.

Collins, S. L. (1983). *Archaeological investigations of site 50-Mo-B6-80, Molokaʻi Island.* Molokaʻi Ranch Ltd. (Ms. 101383). Honolulu: Department of Anthropology, B.P. Bishop Museum.

Collins, S. L. (March, 1995). *Inadvertent discovery of human remains at Kukui, Inc. Property, Kaluakoʻi, Molokaʻi (TMK 5-1-4:19).* Honolulu: State Historic Preservation Division, Department of Land and Natural Resources.

Cooke, G. (1949). Moʻolelo o Molokaʻi: A ranch story of Molokaʻi. *Honolulu Star-Bulletin.*

Coulter, John Wesely. *Population and Utilization of Land and Sea in Hawaii, 1853.*

B.P. Bishop Mus. Bull. 88 Honolulu.

Department of Urban and Regional Planning Spring 2005 Planning Practicum. (2005). *Papohaku Dunes Cultural and Natural Resource Preservation Plan Kaluako'i, Moloka'i, Hawai'i.* Honolulu: UHM

Dixon, B., and Major, M. (1992). *Kapukahehu to Pu‘uhakina: An archaeological inventory survey of Southwest Moloka‘i , Hawai‘i.* Honolulu: Anthropology Department, B.P. Bishop Museum.

Dodge, F.S., Willis, C.J., and Kanakanui, S.M. (1897). *Map of Moloka‘i* (Scale 1:60,000; Col. Map: 6ac122cm). Washington, D.C.

Donham, T. (2005). *Archaeological reconnaissance survey and literature review of the Pāpōhaku sand dune, Kaluako'i, Moloka‘i .* Akahele Archaeology, Honolulu: for the Office of Hawaiian Affairs.

Dye, T., Weisler, M., Riford, M. (1985). *Adz quarries on Moloka'i and Oahu, Hawaiian Islands.* Prepared for Historic Sites Section Department of Land and Natural Resources State of Hawaii,Department of Anthropology,Bernice P. Bishop Museum; Honolulu, Hawaii.

Emerson, J.S. *Kālai Pahoa Tree of Moloka‘i,* in Hawaiian Ethnological Notes, vol. II, pp. 111-113. (Ms.)

Enos, K., LaBenz, K., McNamara, S. and Wrede, A. (2005) *Ethnographic Study: Oral History Interview Transcripts, The Papohaku Sand Dune, Kaluako‘i, Moloka‘i.* Practicum. Honolulu, HI; Department of Urban and Regional Planning, UH Manoa.

Folk, W.H., Walsh, P. O., Chiogioji, R., and Hammatt, H.H. (1994). *Historic and archaeological survey of lands surrounding Halena Camp, Halena, Kaluako‘i, Moloka‘i .* Moloka‘i Ranch, Kailua: Cultural Surveys Hawai‘i.

Hammatt, H. H., to T. W. Wilson, (1980). *Archaeological reconnaissance of 3,200 Acres, TMK: 5-1-02:14, Pāpōhaku Beach, Kaluako‘i, Moloka‘i Island.* ARCH 14-212. Honolulu: Archaeological Research Center Hawai‘i, Inc.

Hommon, R. J. (1972). *A walk-through archaeological survey of the proposed HC&D Quarry at Haleolono, Moloka‘i .* Department of Anthropology, University of Hawai‘i, Honolulu: HC&D Ltd.

Kame‘eleihiwa, L. (1992) *Native land and foreign desires: Pehea la i pono ai.* Honolulu, HI; Bishop Museum Press.

Kanahele, E. (1991). Wahi Pana, in Van James (Ed.). *A guide to Hawaiian archaeological places of interest*. Honolulu: Bishop Museum Press.

Kanepuu, J.H. "Traveling about on Molokai." *Ke Au ʻOkoʻa,* Oct. 17, 1867c (Ms. Tr. by M.K. Pukui).

Kaniaupio, D. (1992). *The Hidden* [videorecording]. Honolulu: Media Write-Alphamedia.

Maly, K. (2003). *Ka Hana Lawaiʻa A Me Na Koʻa O Na Kai ʻEwalu: a history of fishing practices and marine fisheries of the Hawaiian Islands.* Hilo, Hawaʻii: Kumu Pono Associates, LLC.

Man, M. et al. (1992). *Hawaiian fishing traditions*. Honolulu: Kalmakū Press.

Manu, Moses. "Moʻolelo o Kihapiʻilani." *Ka Nupepa Kuʻokoʻa,* Jan. 12, & Aug. 23, 1884 (Ms. Tr. by E.P. Sterling).

Matsuoka, J., McGregor, D., and Minerbi, L. (1994). *Governor's Molokaʻi subsistence task force final report.* Honolulu, Hawaiʻi.

Minerbi, L., McGregor, D., and Matsuoka, J. (Eds.). (1993). *Native Hawaiian and local cultural assessment project: Phase 1 problems/assets identification.* Honolulu: CAN-DO (Cultural Action Network for Developing Options) and HERR (Hawaiʻi Environmental Risk Ranking Project).

Minton, Nalani. (2000). *A Mau A Mau* [videorecording]. Honolulu, Hawaiʻi.

Moloka'i Enterprise Community Land Use Committee. (2005) *Community-Based Master Land Use Plan for Moloka'i Ranch*, compiled by Townscape, Inc., November 14, 2005.

Monsarrat, M.D. (1884-1894.) *Diary of Molokai Survey & Field Notebooks 1-8,* Reg. No. 357 – 365. (In Hawaii State Survey's Office, Honolulu).

National Park Service. (1995). *Guidelines for the treatment of cultural landscapes*. Washington, DC: revised Draft

Ne, H. (1992). *Tales of Molokaʻi*. Lāʻie, Hawaiʻi: The Institute for Polynesian Studies.

Ne, H. (1981). *Legends of Molokaʻi.* Honolulu, Hawaiʻi: Topgallant Publishing Co. Ltd.

PBR. (2006) *La'au Point Environmental Impact Statement Preparation Notice, West Moloka'i, Moloka'i, Hawai'i*. April 2006.

Parker, P. and King, T. (1998). *Guidelines for evaluating and documenting traditional cultural properties* (Bulletin No. 38). Washington D.C.: National Register of Historic Sites, Department of the Interior.

Phelps, S. (1937). *A regional study of Molokaʻi, Hawaiʻi.* (Ms. on file). Honolulu: B.P. Bishop Museum.

Pukui, M. K. (1974). *Place Names of Hawaiʻi*. Honolulu, Hawaiʻi: University of Hawaiʻi Press.

Pukui, M. K. (1957). *Hawaiian-English Dictionary*. Honolulu, Hawaiʻi: University of Hawaiʻi
Press.

Spalding, Phil. (1988). *Oral History Interviews with Harriet Ne and John Kaimikaua.*

State Historic Preservation Division [SHPD]. (1974). *State inventory of historic places files for the island of Molokaʻi*. Honolulu: State Historic Preservation Division, Department of Land and Natural Resources.

Stokes, J.F.G. (1909). *Heiaus of Molokaʻi.* (Ms. on file). Honolulu: B.P. Bishop Museum.

Summers, C. (1971). *Molokaʻi : A site survey.* Honolulu: B.P. Bishop Museum. (Pacific Anthropological Records No.14)

Thompson, B. (1977). *Ancient chants and dances from the island of Molokai* [videorecording]. Pearl City, Hawaii: Leeward Community College.

Weisler, M. (1984). *Impressions of prehistory*: *An archaeological survey of selected areas of Southwest Molokaʻi , Hawaiian Islands*. Honolulu: State Historic Preservation Office, Department of Land and Natural Resources, Department of Anthropology, B.P. Bishop Museum.

Westlaw Legal Research Service. (2005) *Abstract of Findings in the Hawai'i State Supreme Court Ruling in the Waiola Water Case*.

Wong, B. L. (November 1991). *A Recordation of West Molokaʻi History, Based on the Cultural Perspective of Oral Traditions.* Molokaʻi, HI; Kukui Molokaʻi, Inc.

Appendix J

Traffic Impact Assessment Report

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email:prowell@hawaiiantel.net

June 26, 2007

Molokai Properties, Limited
Amfac Center, Hawaii Tower
745 Fort Street, Suite 600
Honolulu, Hawaii 96813

Attention: Mr. Dan Orodenker

Re: **Traffic Impact Assessment Report**
La'au Point Subdivision
Molokai, Hawaii

Dear Mr. Orodenker:

Phillip Rowell and Associates are pleased to submit this Traffic Impact Assessment Report (TIAR) for the proposed La'au Point Subdivision. The report is presented in the following format:

A. Project Location and Description
B. Purpose and Objective of Study
C. Methodology
D. Description of Existing Streets and Intersection Controls
E. Existing Peak Hour Traffic Volumes
F. Level-of-Service Concept
G. Existing Levels-of-Service
H. 2023 Background Traffic Projections
I. Project Trip Generation
J. Traffic Assessment of Future Conditions
K. Summary and Conclusions

A. Project Description

The proposed project is located on the southwest area of the Island of Molokai. Based on the subdivision plan provided, the subdivision will consist of approximately 200 lots. See Attachment A and Attachment B. It is our understanding that these lots will be for single-family units that will be either recreational, retirement or second homes.

In addition to the single-family dwelling units shown on the subdivision plan, there is a small public park on the western edge of the project with six parking spaces and the Kaupoa Beach Camp with 40 camp sites immediately north of the project boundary.

Access to the subdivision will be via Kaluakoi Road, referred to a "Access Road" on the map. Kaluakoi Road will connect the proposed project with Maunaloa Highway (SR 460). There are additional minor roads in the area but these are unpaved and it was assumed that these roadways will not be used by traffic to and from the subdivision. It was assumed that project traffic will use the paved roadways only.

B. Purpose and Objectives of Study

The objectives of this study are:

1. Estimate the amount of traffic that the proposed subdivision will generate.

2. Assess traffic levels-of-service along the roadway providing access to and egress from the project.

3. Assess the operating conditions of the intersections within the subdivision.

4. If required, identify and evaluate traffic related improvements required to provide adequate access to and egress from the proposed project at an acceptable level-of-service.

C. Methodology

1. *Define the Study Area*

The first step in defining the study area was to estimate the number of peak hour trips that the proposed project will generate. It was estimated that the project will generate a maximum of 125 trips during the morning peak hour and a maximum of 140 trips during the afternoon peak hour. The study area is limited to the major intersections that project trips will use to access the main highway, Maunaloa Highway (SR 460) at Kaluakoi Road and the intersections within the project boundary (See Attachment B).

2. *Analyze Existing Traffic Conditions.*

Existing traffic volumes at the study intersections were obtained from traffic counts completed Monday, August 28, 2006. The traffic volumes obtained from the traffic counts were validated by comparing the approach volumes to the most recent traffic count data available from State of Hawaii Department of Transportation.

The intersection configurations and right-of-way controls were verified at the time of the surveys. Existing traffic operating conditions were assessed using the methodology described in the 2000 *Highway Capacity Manual* (HCM)[1].

3. *Estimate Horizon Year Background Traffic Projections*

Background traffic conditions are defined as future traffic conditions without the proposed project and were estimated by superimposing background growth and traffic generated by related projects in the vicinity onto existing traffic volumes.

The year 2023 was used as the horizon year. This does not necessarily represent the project completion date. It represents a date for which future background traffic projections were estimated. The year 2023 is also consistent with recent direction from the Maui County Department of Public Works and Environmental Management and the Environmental Impact Statement.

[1] Institute of Transportation Engineers, *Highway Capacity Manual*, Washington, D.C., 2000

4. *Estimate Project-Related Traffic Characteristics*

The number of peak-hour trips that the proposed project will generate was estimated using standard trip generation procedures outlined in the *Trip Generation Handbook*[2] and data provided in *Trip Generation*[3]. These trips were distributed and assigned based on the available approach and departure routes and existing approach and departure patterns as determined from the traffic counts.

5. *Analyze Project Related Traffic Impacts*

The project-related traffic was superimposed on 2023 background traffic volumes at the study intersections. The traffic impacts of the project were assessed by estimating the future levels-of-service at the study intersections. The purpose of this analysis was to identify potential operational deficiencies within the project, along the approach and departure roads and at the intersection of Kaluakoi Road at Maunaloa Highway (SR 460).

D. Description of Existing Streets and Intersection Controls

The only existing intersection is the intersection of Maunaloa Highway at Kaluakoi Road. A schematic diagram indicating the existing lane configuration and right-of-way control at this intersection is presented as Attachment C.

Maunaloa Highway and Kaluakoi Road are both two-lane, two-way roadways. Maunaloa Highway has an east-west orientation and Kaluakoi Road has a north-south orientation. The intersection of these two roads is an unsignalized, T-intersection. All approaches are one-lane. There are no separate turn lanes along any approach.

E. Existing Peak Hour Traffic Volumes

The existing traffic volumes are based on traffic counts completed Monday, August 28, 2006. The morning and afternoon peak hour traffic volumes are also summarized on Attachment C.

1. The traffic counts include buses, trucks and other large vehicles. Mopeds and bicycles were not counted.

2. The intersection was counted from 6:30 AM to 8:30 AM and from 2:30 PM to 5:00 PM on a weekday. These hours were determined from SDOT traffic count data for this specific intersection.

3. The traffic volumes shown are the peak hourly volume of each movement rather than the peak sum of all approach volumes.

4. All volumes are rounded to nearest five (5).

5. Pedestrian activity was negligible.

---

[2] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998

[3] Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 2003

F. Level-of-Service Concept

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions.

Table 1 Level-of-Service Definitions for Unsignalized Intersections(1)

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

G. Existing Levels-of-Service

The existing levels-of-service were assessed using the methodology described in the *Highway Capacity Manual*. The results of the level-of-service analysis of existing conditions are summarized in Table 2.

Table 2 Existing (2006) Levels-of-Service

Intersection and Movement	AM Peak Hour		PM Peak Hour	
	Delay [1]	LOS [2]	Delay	LOS
Maunaloa Highway at Kaluakoi Road				
Eastbound Left & Thru	7.3	A	7.3	A
Southbound Left & Right	9.2	A	9.1	A

NOTES:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

The conclusion of the level-of-service analysis is that traffic currently operates at acceptable conditions at the study intersections as all movements operate at Level-of-Service A. Traffic along Maunaloa Highway operates at Level-of-Service A which implies that traffic turning from Maunaloa Highway onto Kaluakoi Road and traffic turning onto Maunaloa Highway has a negligible impact on traffic operations along Maunaloa Highway.

H. 2023 Background Traffic Projections

2023 background traffic projections are defined as future background traffic conditions without the proposed project. Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. This growth factor also accounts for smaller development projects in the area for which a traffic impact study is not available or are not identified as a related project during the data collection process. The second component is estimated traffic that will be generated by other development projects (related projects) in the vicinity of the proposed project.

Background Traffic Growth

The background growth rate is typically determined from historical traffic data obtained from SDOT or from data contained in a long-range land transportation plan. For this study, the most current data available is the SDOT data. Therefore, the data provided in the SDOT data was used to estimate the background growth rate. Historical traffic counts at the intersection of Maunaloa Highway at Kaluakoi Road indicate that the approach volumes decreased from 1993 to 2003. Therefore, we assumed that there would be no additional traffic as a result of ambient background growth between 2006 and 2023.

The decrease in approach volumes at the intersection of Kaluakoi Road at Maunaloa Highway may be explained by the closure of part of the Kaluakoi Resort. As explained in the following section, this has been accounted for by including as estimate of the total traffic generated by the resort when fully developed and in full operation.

Related Projects

The second component in estimating background traffic projections is traffic generated by other proposed projects in the vicinity. Based on discussions with Molokai Properties, it was determined that all the undeveloped property between the north project boundary and Maunaloa Highway is controlled by Molokai Properties. The only development project between the proposed project and Maunaloa Highway is the remainder of Kaluakoi Resort.

The remainder of the Kaluakoi Resort to be developed will consist of 238 Ag lots, 15 single-family lots and 348 condominium units. Trip generation data for single-family residential units was used to estimate the trips generated by the agricultural lots. Trip generation data for condominiums was used to estimate the trips generated by the condominiums.

The existing 152 room hotel will re-open. Trip generation data for resort hotels was used to estimate the trips generated by these hotel rooms.

A trip generation analysis for the Kaluakoi Resort was performed and the traffic assigned to the intersection of Maunaloa Highway at Kaluakoi Road. It was assumed that 85% of the peak hour traffic would enter and exit the study area via this intersection. The remaining 15% was assumed to operate between the resort and La'au Point. The turning movements then were estimated using the distribution calculated from the turning volumes obtained from the August 2006 counts.

I. Project Trip Generation

Traffic volumes generated by the project were estimated using the methodology described in the *Trip Generation Handbook*[4] and data contained in *Trip Generation*.[5] This methodology typically uses trip generation rates and equations provided in *Trip Generation* to estimate the number of trips that the proposed

---

[4] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

[5] Institute of Transportation Engineers, Trip Generation, 7th Edition, Washington, D.C., 2003

project will generate during the weekday peak hours. There are three components of the project considered in the trip generation analysis.

Single-Family

Based on the project description provided, the proposed single-family units would be recreational or second homes. Use of trip generation rates for single-family housing units will result of an overestimate of the number of trips into and out of the project because the data represents a typical suburban subdivision with residents that commute to and from work during the weekday peak hours. As the units in this subdivision will be recreational or second homes, there will be no commute trips.

It was decided that a trip generation study should be performed to establish trip generation rates for the specific development proposed. This procedure is consistent with the procedures described by the Institute of Transportation Engineers in the *Trip Generation Handbook*.

The first step was to identify a comparable development and perform counts of the number of trips into and out of the development. Based on the project description of the proposed project and consultation with the developer, the most comparable development for which traffic generation counts could be performed accurately is the Kahana Ridge development in West Maui. Accordingly, counts were performed along and access and egress routes to and from the project on four weekdays (one Tuesday, one Thursday and two Fridays) during October 2006 and averaged. The number of inbound and outbound trips and the inbound/outbound distribution was then calculated. The results are summarized in Table 3 and compared to the rates provided in *Trip Generation*.

Table 3 Comparison of Trip Generation Rates

Time Period	Direction	Trp Generation Rates		
		Single Family [1]	Recreational Homes [1]	Trip Generation Survey
AM Peak Hour	Total	0.75	0.30	0.62
	In	25%	49%	28%
	Out	75%	51%	72%
PM Peak Hour	Total	1.01	0.31	0.71
	In	63%	44%	61%
	Out	37%	56%	39%

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, 7th Edition, 2003.

The trip generation rates for single-family housing are based on the number of dwelling units, which is 200 units per the subdivision plan provided. The trip generation calculations are summarized in Table 4.

Table 4 Trip Generation Calculations for Single-Family Units

Time Period	Direction	Single-Family Units		
		Rate or %[1]	Units	Totals [2]
AM Peak Hour	Total	0.62	200	125
	In	28%		35
	Out	72%		90
PM Peak Hour	Total	0.71		140
	In	61%		85
	Out	39%		55

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, 7th Edition, 2003.
(2) All numbers rounded to nearest five (5).

Public Parks

In addition to the single-family housing units, there is one public park within the subdivision. This park will have six parking stalls. The subdivision plan indicates that the total area of the park will be 8 acres. The trip generation data for parks provided in *Trip Generation* indicates that county parks will generate 0.01 and 0.06 trips per acre[6] during the morning and afternoon peak hours, respectively. This translates into less that one trip per hour. Because this is such a small number and a majority of the trips will have origins within the subdivision, trips generated by the park were considered negligible.

Kaupoa Beach Park

Kaupoa Beach Park is located along the north boundary of the project between the ocean and Kaluakoi Road. The camp consists of approximately 40 platforms, or campsites.

Trip generation rates for campground/RV parks were used to estimated the trip generated by the Camp. These rates are based on the number of campsites or pads. The trip generation analysis is summarized in Table 5.

Table 5 Trip Generation Calculations for Kaupoa Beach Park

Time Period	Direction	Rate or %(1)	Campsites	Trips (2)
AM Peak Hour	Total	0.22	40	10
	In	42%		5
	Out	58%		5
PM Peak Hour	Total	0.41		15
	In	62%		10
	Out	38%		5

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, Seventh Edition, 2003.
(2) All numbers rounded to nearest five (5).

Summary

The total trips generated by the single-family units and Kaupoa Beach Camp are summarized in Table 6.

Table 6 Trip Generation Analysis

Period & Direction		Single-Family Trips	Kaupoa Beach Camp Trips	Totals (1)
AM Peak Hour	Total	125	10	135
	Inbound	35	5	40
	Outbound	90	5	95
PM Peak Hour	Total	140	15	155
	Inbound	85	10	95
	Outbound	55	5	60

Note:
(1) All numbers rounded to nearest five (5)

[6] Ibid, pages 635 & 636

The project will generate 40 inbound trips and 95 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 95 inbound trips and 60 outbound trips.

The project generated trips were distributed and assigned to the proposed street network based on the available approach and departure routes. The trips were distributed as if the residents commute to and from the project during the peak hours. This results are conservative traffic projections as the residents within the project will not be commuters as discussed in the project description. Also, there is no major employment or shopping center that would attract commuter type trips from the subdivision.

The morning and afternoon peak hour traffic volumes along the study streets are shown schematically in Attachment D and Attachment E, respectively.

J. Traffic Assessment of Future Conditions

A level-of-service analysis was performed to identify traffic operating conditions at the proposed intersections within the subdivision. The Level-of-Service analysis was performed using the following assumptions:

1. All intersections will be unsignalized.

2. All intersection approaches will be one-lane. There will be no separate left turn or right turn lanes.

The results of the Level-of-Service analysis for future conditions are summarized graphically in Attachment F and Attachment G. Shown are the control delays and levels-of-service of all controlled movements. Controlled movements are those that must yield to other movements.

As shown, all controlled traffic movements within the project will operate at Level-of-Service A, which is the highest level-of-service. This means that all the intersections are expected to operate at a high level-of-service during the peak periods and that none of the intersections require widening to accommodate anticipated traffic volumes.

A level-of-service analysis was also performed for the roadway segment of Kaluakoi Road north of the project boundary. All project traffic is concentrated along this section of roadway. The conclusion of this level-of-service analysis is that the roadway segment will operate at Level-of-Service A or B.

Lastly, a level-of-service analysis was performed for the intersection of Maunaloa Highway at Kaluakoi Road. The results are summarized in Table 7. Traffic along Maunaloa Highway will operate at Level-of-Service A. Traffic along Kaluakoi Road will operate at Level-of-Service C. As the minimum acceptable Level-of-Service is D and the level-of-service analysis concluded that the lowest Level-of-Service will be C for 2023 background plus project conditions, no improvements are recommended.

Table 7 2023 Levels-of-Service for Maunaloa Highway at Kaluakoi Road

	AM Peak Hour		PM Peak Hour	
Intersection and Movement	Delay [1]	LOS [2]	Delay	LOS
Maunaloa Highway at Kaluakoi Road				
Eastbound Left & Thru	7.7	A	8.3	A
Southbound Left & Right	15.8	C	22.0	C

NOTES:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

K. Summary and Conclusions

The conclusions of the traffic impact assessment are:

1. The proposed project will consists of approximately 200 second home and recreational lots.

2. Based on trip generation data for a comparable development, the project will generate a maximum125 trips during the morning peak hour and 140 trip during the afternoon peak hour.

3. Based on the findings of the level-of-service analysis, the intersections within the subdivision do not require widening for separate turn lanes or signalization to accommodate project generated traffic for single-family housing. It is anticipated that all intersections will operate at Level-of-Service A, which is the highest level-of-service.

4. Based on the findings of the level-of-service analysis for the intersection of Maunaloa Highway at Kaluakoi Road, which is the access and egress location for project traffic along Maunaloa Highway, the minimum Level-of-Service is C, which is above the minimum acceptable Level-of-Service D. Therefore, no improvements are recommended.

Respectfully submitted,
PHILLIP ROWELL AND ASSOCIATES

Phillip J. Rowell, P.E.
Principal

List of Attachments

A. Subdivision Plan

B. Study Area and Study Intersections

C. Existing Lane Configuration and Peak Hour Traffic Volumes for Maunaloa Highway at Kaluakoi Road

D. AM Peak Hour Traffic Projections

E. PM Peak Hour Traffic Projections

F. AM Peak Hour Levels-of-Service

G. PM Peak Hour Levels-of-Service

Kaluakoi Estates

Kapukahehu Bay

Kaunalu Bay

Po'olau Beach

Kapuhikani Point

Access Road

Kaunaki Gulch

Kaunalā Bay

Kaupoa Beach Camp

Kaheu Gulch

Kahaiawa Point

Western Public Park/ Shoreline Access

Kamāke'ipō Point

Kaupoa Beach Camp Road (Coral Road)

Wisser Road (Coral Road)

Kaulapuu Road (Emergency Access Only)

Lā'au Point

WWTP

Hakina Gulch

Puu Hakina

USA Lighthouse Station

Keawekaisani Beach

Kahalepōhaku

Kapukuwahine

(Emergency Access Only)

Southern Public Park/ Shoreline Access

Petition Area Summary

Agricultural to Rural	
House Lots (200)	± 400 Acs.
Roadways	± 132 Acs.
Infrastructure	± 13 Acs.
Parks	± 8 Acs.
Open Space	± 60 Acs.
Total Agricultural to Rural	± 613 Acs.
Conservation to Rural (Park)	± 10 Acs.
Agricultural to Conservation	± 252 Acs.
Total Petition Area	± 875 Acs.

Project Area Summary

Petition Area	± 875 Acs.
Existing Conservation District (along Shoreline)	± 199 Acs.
Remains in Agricultural District	± 280 Acs.
Offsite Road Corridor	± 138 Acs.
Total Project Area	± 1,492 Acs.

Project Area & LUC Petition Area

Lā'au Point

Island of Molokai

NORTH

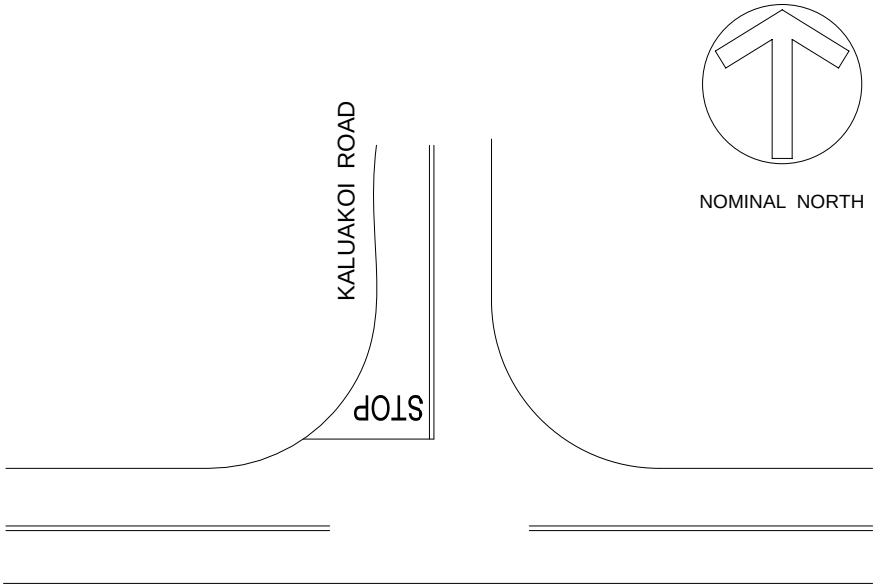
LINEAR SCALE (FEET)

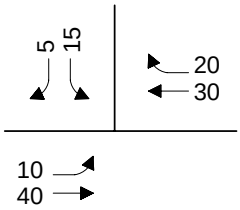
0 1000 2000 4000

PBR HAWAII

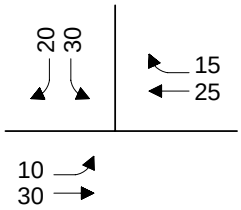
SOURCE OF MAP: USGS

Attachment B
STUDY AREA AND STUDY INTERSECTIONS





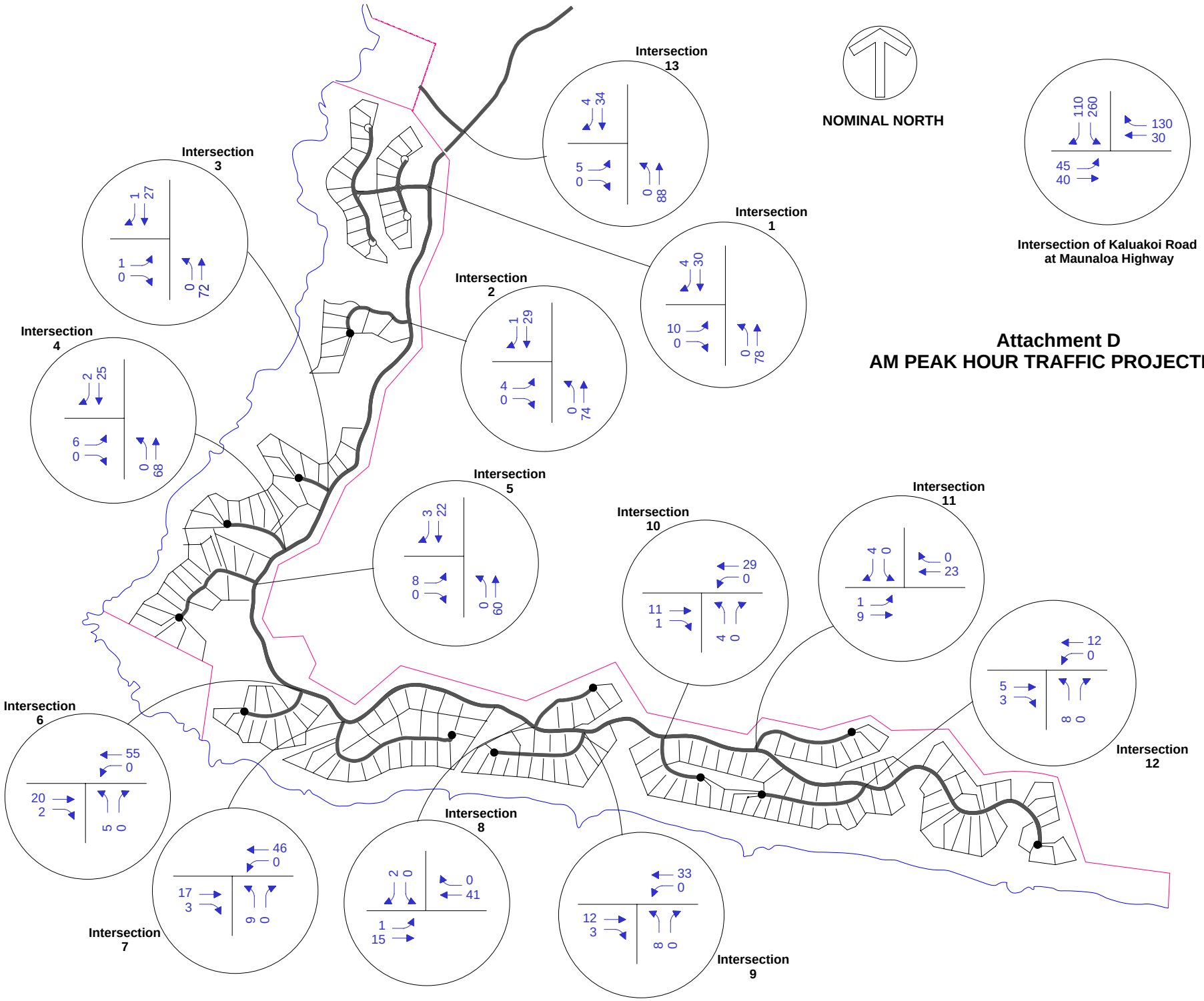
AM PEAK HOUR
VOLUMES
(6:30 AM to 7:30 AM)

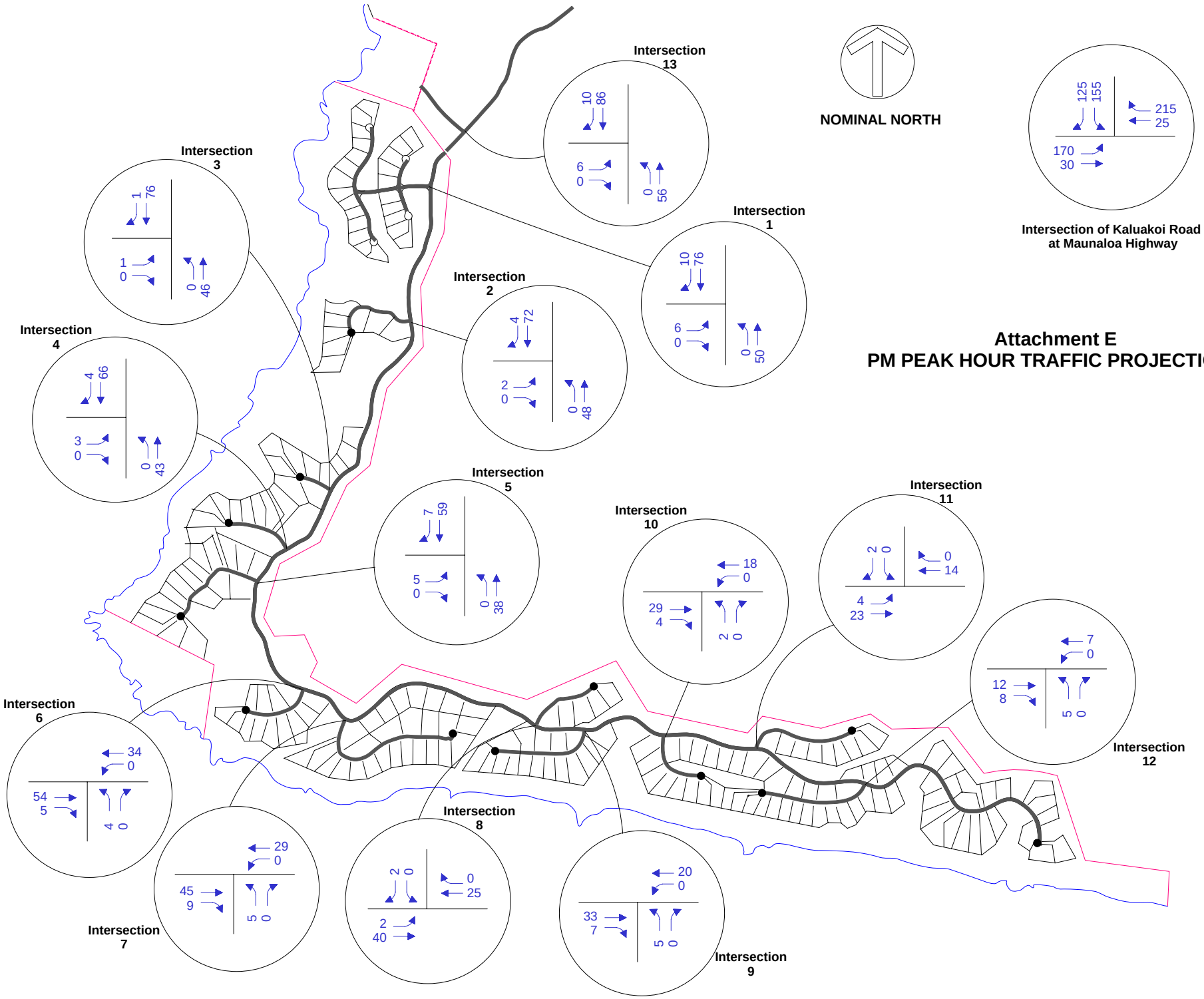


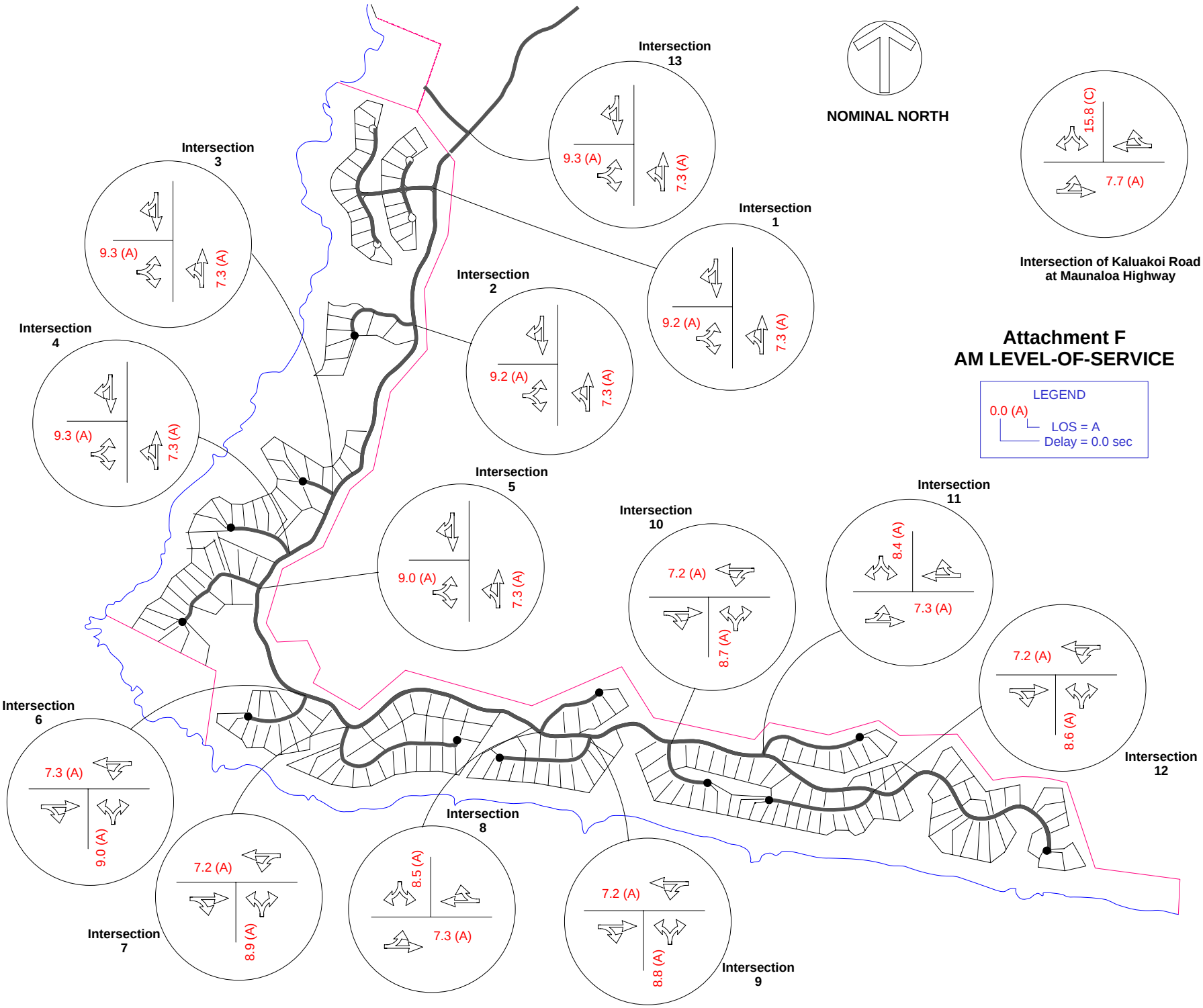
PM PEAK HOUR
VOLUMES
(3:15 PM to 4:15 PM)

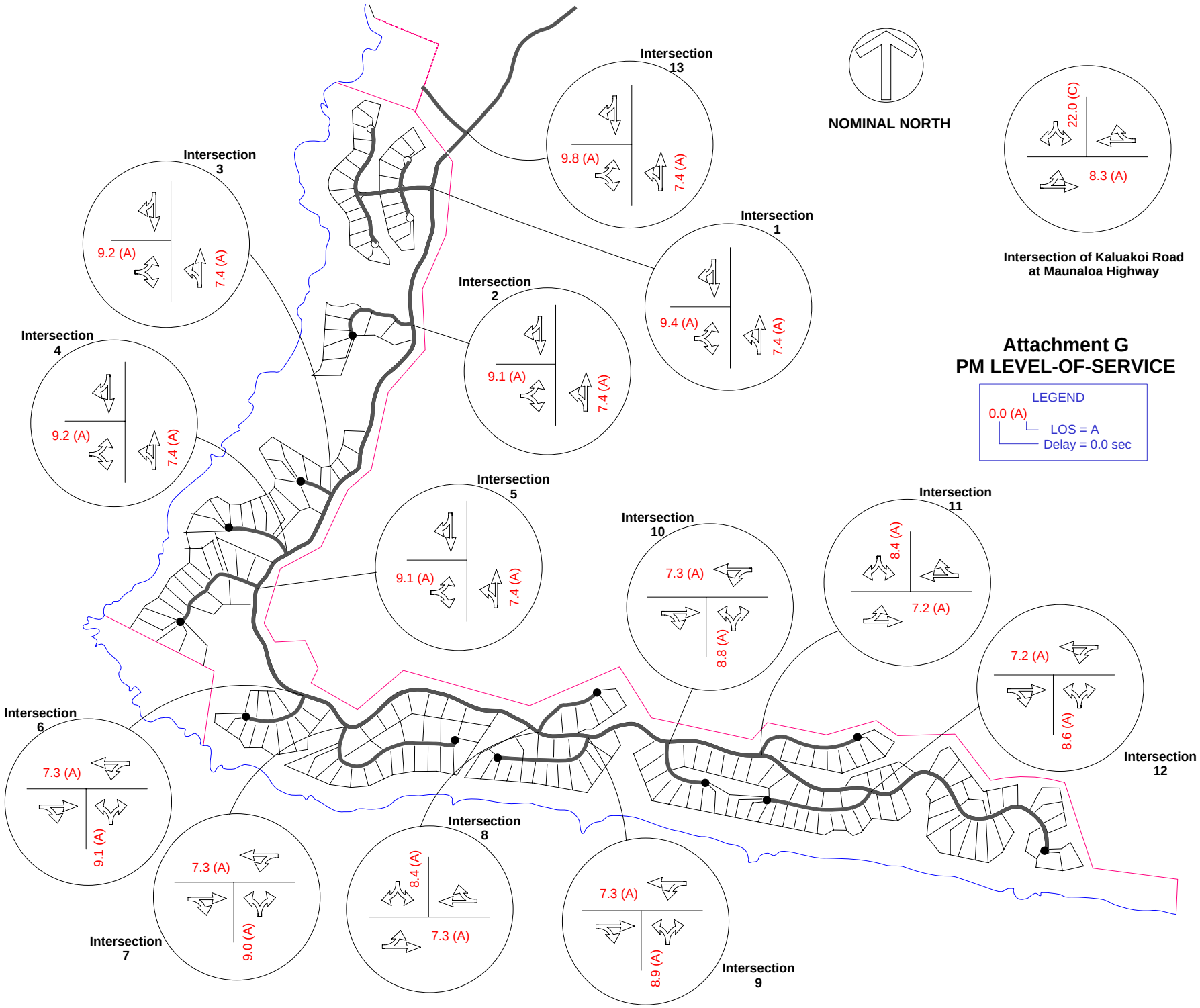
NOTES:
1. COUNTS WERE PERFORMED MONDAY, AUGUST 28, 2006.
2. VOLUMES ARE ROUNDED TO NEARESR FIVE (5).

Attachment C
EXISTING LANE CONFIGURATION AND PEAKHOUR TRAFFIC VOLUMES FOR MAUNALOA HIGHWAY AT KALUAKOI ROAD


NOMINAL NORTH
Intersection of Kaluakoi Road at Maunaloa Highway
110 260 130 30 45 40
Attachment D
AM PEAK HOUR TRAFFIC PROJECTIONS
Intersection 1
4 30 10 0 0 78
Intersection 2
1 29 4 0 0 74
Intersection 3
1 27 1 0 0 72
Intersection 4
2 25 6 0 0 68
Intersection 5
3 22 8 0 0 60
Intersection 6
55 0 20 2 5 0
Intersection 7
46 0 17 3 9 0
Intersection 8
2 0 0 41 1 15
Intersection 9
33 0 12 3 8 0
Intersection 10
29 0 11 1 4 0
Intersection 11
4 0 0 23 1 9
Intersection 12
12 0 5 3 8 0
Intersection 13
4 34 5 0 0 88


NOMINAL NORTH
Intersection of Kaluakoi Road at Maunaloa Highway
125 155 215 25 170 30
Attachment E
PM PEAK HOUR TRAFFIC PROJECTIONS
Intersection 1
10 76 6 0 0 50
Intersection 2
4 72 2 0 0 48
Intersection 3
1 76 1 0 0 46
Intersection 4
4 66 3 0 0 43
Intersection 5
7 59 5 0 0 38
Intersection 6
34 0 54 5 4 0
Intersection 7
29 0 45 9 5 0
Intersection 8
2 0 0 25 2 40
Intersection 9
20 0 33 7 5 0
Intersection 10
18 0 29 4 2 0
Intersection 11
2 0 0 14 4 23
Intersection 12
7 0 12 8 5 0
Intersection 13
10 86 6 0 0 56


NOMINAL NORTH
Intersection 13
9.3 (A)
7.3 (A)
Intersection 3
9.3 (A)
7.3 (A)
Intersection 1
9.2 (A)
7.3 (A)
Intersection 2
9.2 (A)
7.3 (A)
Intersection 4
9.3 (A)
7.3 (A)
Intersection 5
9.0 (A)
7.3 (A)
Intersection 10
7.2 (A)
8.7 (A)
Intersection 11
8.4 (A)
7.3 (A)
Intersection 12
7.2 (A)
8.6 (A)
Intersection 6
7.3 (A)
9.0 (A)
Intersection 7
7.2 (A)
8.9 (A)
Intersection 8
8.5 (A)
7.3 (A)
Intersection 9
7.2 (A)
8.8 (A)
15.8 (C)
7.7 (A)
Intersection of Kaluakoi Road at Maunaloa Highway
Attachment F
AM LEVEL-OF-SERVICE
LEGEND
0.0 (A)
LOS = A
Delay = 0.0 sec


NOMINAL NORTH
Intersection 13
9.8 (A)
7.4 (A)
Intersection 3
9.2 (A)
7.4 (A)
Intersection 1
9.4 (A)
7.4 (A)
Intersection 2
9.1 (A)
7.4 (A)
Intersection 4
9.2 (A)
7.4 (A)
Intersection 5
9.1 (A)
7.4 (A)
Intersection 10
7.3 (A)
8.8 (A)
Intersection 11
8.4 (A)
7.2 (A)
Intersection 12
7.2 (A)
8.6 (A)
Intersection 6
7.3 (A)
9.1 (A)
Intersection 7
7.3 (A)
9.0 (A)
Intersection 8
8.4 (A)
7.3 (A)
Intersection 9
7.3 (A)
8.9 (A)
22.0 (C)
8.3 (A)
Intersection of Kaluakoi Road at Maunaloa Highway
Attachment G
PM LEVEL-OF-SERVICE
LEGEND
0.0 (A)
LOS = A
Delay = 0.0 sec

Appendix K

Noise Assessment Report

D. L. ADAMS ASSOCIATES, LTD.
Consultants in Acoustics and Performing Arts Technologies

Environmental Noise Assessment Report
La'au Point
Molokai, Hawaii

September 2006

DLAA Project No. 05-80

Prepared for:
Molokai Properties Limited
Honolulu, Hawaii

970 N. KALAHEO AVE. • SUITE A311 • KAILUA, HAWAII 96734
808/254-3318 • FAX 808/254-5295
www.dlaa.com • hawaii@dlaa.com

TABLE OF CONTENTS

LIST OF FIGURES

APPENDIX

1.0 EXECUTIVE SUMMARY

1.1 La'au Point is located on the south western corner of Molokai, Hawaii. The development consists of 200 lots where one story, single family recreational homes are proposed for development. The project site is located in an undeveloped area with one unpaved roadway leading to the project site.

1.2 The dominant noise sources during the project construction phase will probably be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities will occur on the project site. Noise from construction vehicles en route to the project site may impact existing homes located along Kaluakoi Road. However, construction equipment noise must comply with the State DOH noise regulations.

1.3 The existing acoustical environment was not measured. The proposed project site is located in an undeveloped area where sound levels are caused by the natural environment (i.e., wind, birds, and ocean) and are typical of a rural environment.

1.4 An extension of Kaluakoi Road is planned and will provide access to the proposed project site. In addition to the low traffic volume predicted for the future, vehicles will travel at speeds typical of a residential environment. Traffic noise levels are not expected to create a significant noise impact on the project or the surrounding areas.

1.5 Although aircraft may be heard at the proposed project area, it is expected to be well outside the 55 dBA (L_{dn}) noise contour.

2.0 PROJECT DESCRIPTION

La'au Point is located on the south western corner of Molokai, Hawaii as shown in Figure 1. The development consists of 200 lots where one story, single family recreational homes are proposed for development. The project site is located in an undeveloped area with only one unpaved roadway leading to the project site.

3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

3.1 State of Hawaii, Community Noise Control

The State of Hawaii Community Noise Control Rule [Reference 1] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to *stationary* noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. The Community Noise Control Rule does not specifically address most *moving* sources, such as vehicular traffic noise, air traffic noise, or rail traffic noise. However, the Community Noise Control Rule does include equipment related to agricultural, construction, and industrial activities, which may not be stationary.

These maximum permissible noise levels are enforced by the State Department of Health (DOH) for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 2. With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level. In determining the maximum permissible sound level, the background noise level is taken into account by the DOH.

3.2 Federal Aviation Administration (FAA)

Airport noise and noise contour maps are not available for Molokai Airport. The FAA addresses guidelines for compatible land uses that surround airports [Reference 2]. Noise contour maps are expressed in terms of yearly day-night average sound levels, L_{dn}, due to aircraft operations. The FAA states that residences outside of the 65 L_{dn} noise contour are compatible without restrictions.

3.3 State Department of Transportation (HDOT), Airports Division

The State of Hawaii, Department of Transportation, Airports Division [Reference 3] has adopted noise restrictions that are more strict than the FAA. In most cases, the DOT states maximum noise limits that are 5 dB lower than the FAA. For example, the DOT states that residences outside of the 60 L_{dn} noise contour are compatible.

In addition to the land use guidelines, the State of Hawaii has adopted a buyer notification requirement for residential properties with noise exposure (L_{dn}) over 55 dB. This buyer notification requirement is intended to ensure that prospective buyers of properties near airports are aware of aircraft noise and potential annoyance due to aircraft noise in vicinity of that property.

3.4 U.S. Environmental Protection Agency (EPA)

The U.S. EPA has identified a range of yearly day-night equivalent sound levels, L_{dn}, sufficient to protect public health and welfare from the effects of environmental noise [Reference 4]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

3.5 U.S. Federal Highway Administration (FHWA)

Although only applicable to federally funded projects, the traffic noise design limits of the FHWA can serve as design goals for most projects. The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, $L_{eq(h)}$, for traffic noise exposure [Reference 5], which are listed in Figure 3. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior L_{eq} of 67dBA and a maximum interior L_{eq} of 52 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

3.6 Hawaii Department of Transportation (HDOT)

Although only applicable to government funded projects, the HDOT's traffic noise policy can serve as a design goal for most projects. The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 6]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1 dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15 dB.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Sound level measurements were not taken to assess the existing acoustical environment at the proposed project site on Molokai. The site is located in an undeveloped area where sound levels are caused by the natural environment (i.e., wind, birds, and ocean), typical of a rural environment, and aircraft flyovers. Currently, an unpaved road is the only access to the project site entrance, and access is limited to off-road vehicles. Aircraft are

routed over the northern portion of the project area to the Molokai airport, located approximately 15 miles to the east. Aircraft are clearly audible when they fly over the project site. However, flyovers occur infrequently and only during the daytime hours. It is not expected that these flyovers create an L_{dn} greater than 55 dBA.

5.0 POTENTIAL NOISE IMPACTS DUE TO THE PROJECT

5.1 Project Construction Noise

Development of project areas will involve excavation, grading, and other typical construction activities during construction. The various construction phases of the project may generate significant amounts of noise. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 5. Earthmoving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction, assuming that pile driving will not be required. As the proposed project site is in an undeveloped area and the nearest residential property is more than a mile away, there will be no noise impact due to construction generated noise in the vicinity of the project site. However, a noise impact is expected for residences located along the Kolua Koi Road to the north of the proposed development due to the large trucks en route to the project site.

5.2 Project Generated Noise

The new homes may incorporate stationary mechanical equipment that is typical for residential housing. Expected mechanical equipment may include air handling equipment, condensing units, etc. Noise from this mechanical equipment and other equipment must meet the State DOH noise rules, which stipulate maximum permissible noise limits at the property line. These noise limits are 55 dBA during the daytime hours (7:00 am to 10:00 pm) and 45 dBA during the night time hours (10:00 pm to 7:00 am) for single-family housing.

5.3 Projection of Vehicular Traffic Noise

An extension of Kaluakoi Road is planned and will provide access to the proposed project site. Future residents of La'au Point will drive through an existing residential area, located approximately one mile to the north, in order to access the subdivision. Vehicles are expected to travel at speeds typical of a residential environment. The future traffic volume projections provided by Phillip Rowell and Associates [Reference 7] are based on typical single family housing units and may be an overestimate of actual traffic volumes due to the recreational or second home nature of the La'au Point subdivision. Based on the nature of the project, we do not expect a significant traffic noise increase in the existing residential area due to the project. Furthermore, traffic noise levels are expected to be below the FHWA/HDOT maximum noise limit of 67 dBA for the properties at the proposed La'au Point development. Thus, a significant noise impact due to vehicular traffic noise on the project and the surrounding area is not expected.

5.4 Projection of Aircraft Noise

Currently, there are approximately 20 flights per day to/from the Molokai Airport. Flights are usually routed over the northern portion of the project area, located approximately 15 miles from the airport. The aircraft are primarily propeller driven. Day-Night Noise Level (L_{dn}) contours for the Molokai airport are not available from the HDOT Airports Division. Noise contours greater than 55 dBA for airports similar in size are generally located within a couple of miles from the airport. Although aircraft will be heard at the proposed project area, it is expected to be well outside the 55 dBA (L_{dn}) noise contour and a significant noise impact is not expected.

5.5 Compliance with EPA Noise Guidelines

The noise levels at the proposed La'au Point Development are expected to satisfy the EPA existing design goal of $L_{dn} \leq 65$ dBA and a future design goal $L_{dn} \leq 55$ dBA for exterior noise levels. It is important to note that EPA noise guidelines are design goals and not enforceable regulations. However, these guidelines and design goals are useful tools for assessing the noise environment.

6.0 NOISE IMPACT MITIGATION

6.1 Mitigation of Project Construction Noise

Project construction noise will be intermittent and short term. Construction vehicle noise will be the main noise source. Construction vehicles should all be equipped with mufflers and should be limited to use during the daytime hours. Construction equipment noise must comply with the State of Hawaii *Community Noise Control* noise regulations [Reference 1].

6.2 Mitigation of Project Generated Mechanical Noise

The design of the new La'au Point development should give consideration to controlling the noise emanating from stationary mechanical equipment, such as chillers, compressors, air conditioning units, etc. so as to comply with the State of Hawaii *Community Noise Control* rules [Reference 1]. Noisy equipment should be located away from neighbors and residential units, as much as is practical. Enclosed mechanical rooms may be required for some equipment.

6.3 Mitigation of Vehicular Traffic Noise

There is expected to be no significant noise impacts due to traffic on the proposed project or the surrounding area. Therefore, noise mitigation for vehicular traffic noise should not be required.

6.4 Mitigation of Aircraft Noise

The proposed project area is expected to be well outside the 55 dBA (L_{dn}) noise contour. Therefore, a disclosure statement to potential home buyers should not be required for the La'au Point development.

REFERENCES

1. Chapter 46, *Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.

2. *FAA Regulations on Airport Noise Compatibility Planning Programs*, Code of Federal Regulations, Title 14, Chapter 1, Subchapter 1, Part 150; Issued by 49 FR 49269, December 18, 1984; corrected by 50 FR 5063, February 6, 1985; amended by 53 FR 8723, March 16, 1988; corrected by 53 FR 9726, March 24, 1988.

3. *Honolulu International Airport Master Plan Update and Noise Compatibility Program*, State of Hawaii Department of Transportation, Airports Division, Vol. 2, December 1989.

4. *Toward a National Strategy for Noise Control*, U.S. Environmental Protection Agency, April 1977.

5. *Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.

6. *Noise Analysis and Abatement Policy*, Department of Transportation, Highways Division, State of Hawaii, June 1977.

7. *Traffic Noise Assessment Report - La'au Point Subdivision,* Phillip Rowell and Associates, September 11, 2006.

Project Location

La'au Point, Molokai

Not to Scale

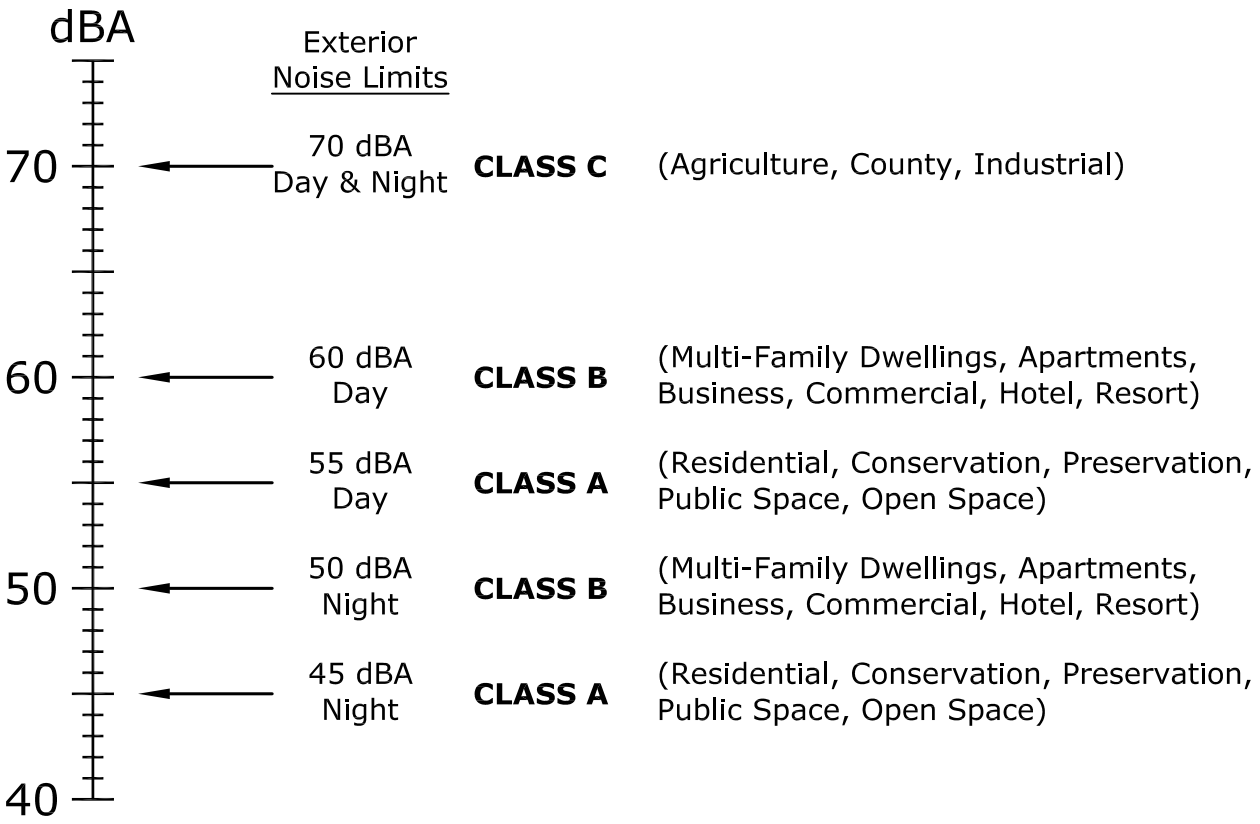
Figure No

1

D. L. ADAMS ASSOCIATES, LTD.
970 N. KALAHEO AVE, A-311
KAILUA, HAWAII 96734
808/254-3318 FAX 808/254-5295

Date	Project No.	Drawn By
September 2006	05-80	DFD

Zoning District	Day Hours (7 AM to 10 PM)	Night Hours (10 PM to 7 AM)
CLASS A Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
CLASS B Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
CLASS C Agriculture, Country, Industrial	70 dBA (Exterior)	70 dBA (Exterior)



D. L. ADAMS ASSOCIATES, LTD.
970 N. KALAHEO AVE, A-311
KAILUA, HAWAII 96734
808/254-3318 FAX 808/254-5295

Hawaii Maximum Permissible Sound Levels for Various Zoning Districts

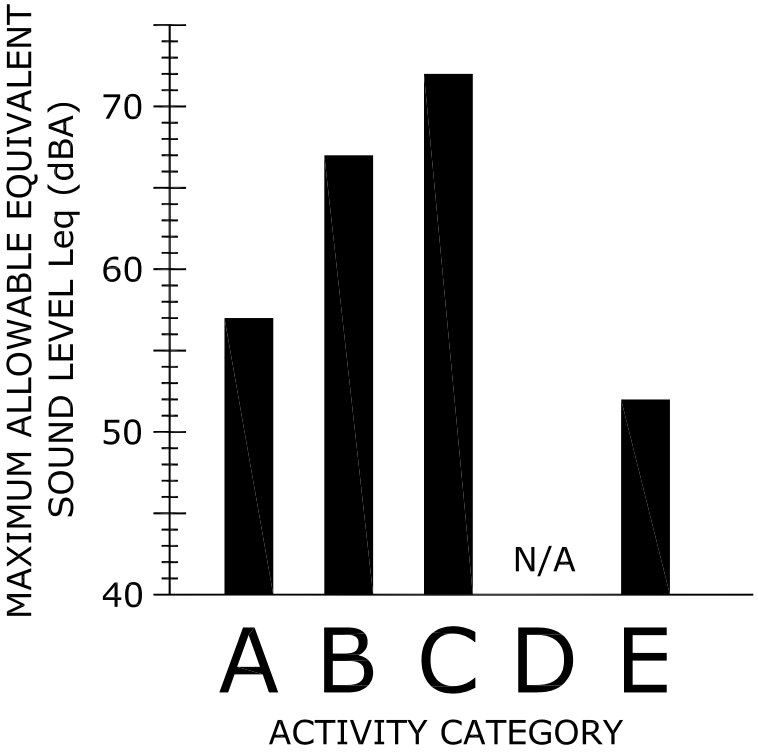
La'au Point, Molokai

Not to Scale

Figure No 2

Date	Project No.	Drawn By
September 2006	05-80	TRB

ACTIVITY CATEGORY	ACTIVITY CATEGORY DESCRIPTION	MAXIMUM EQUIVALENT SOUND LEVEL $L_{eq(h)}$
A	LANDS ON WHICH SERENITY AND QUIET ARE OF EXTRAORDINARY SIGNIFICANCE AND SERVE AN IMPORTANT PUBLIC NEED AND WHERE THE PRESERVATION OF THOSE QUALITIES IS ESSENTIAL IF THE AREA IS TO CONTINUE TO SERVE ITS INTENDED PURPOSE.	57 dBA (EXTERIOR)
B	PICNIC AREAS, RECREATION AREAS, PLAYGROUNDS, ACTIVE SPORT AREAS, PARKS, RESIDENCES, MOTELS, HOTELS, SCHOOLS, CHURCHES, LIBRARIES, AND HOSPITALS.	67 dBA (EXTERIOR)
C	DEVELOPED LANDS, PROPERTIES, OR ACTIVITIES NOT INCLUDED IN ACTIVITY CATEGORIES A OR B ABOVE.	72 dBA (EXTERIOR)
D	UNDEVELOPED LAND	N/A
E	RESIDENCES, MOTELS, HOTELS, PUBLIC MEETING ROOMS, SCHOOLS, CHURCHES, LIBRARIES, HOSPITALS, AND AUDITORIUMS.	52 dBA (INTERIOR)



D. L. ADAMS ASSOCIATES, LTD.
970 N. KALAHEO AVE, A-311
KAILUA, HAWAII 96734
808/254-3318 FAX 808/254-5295

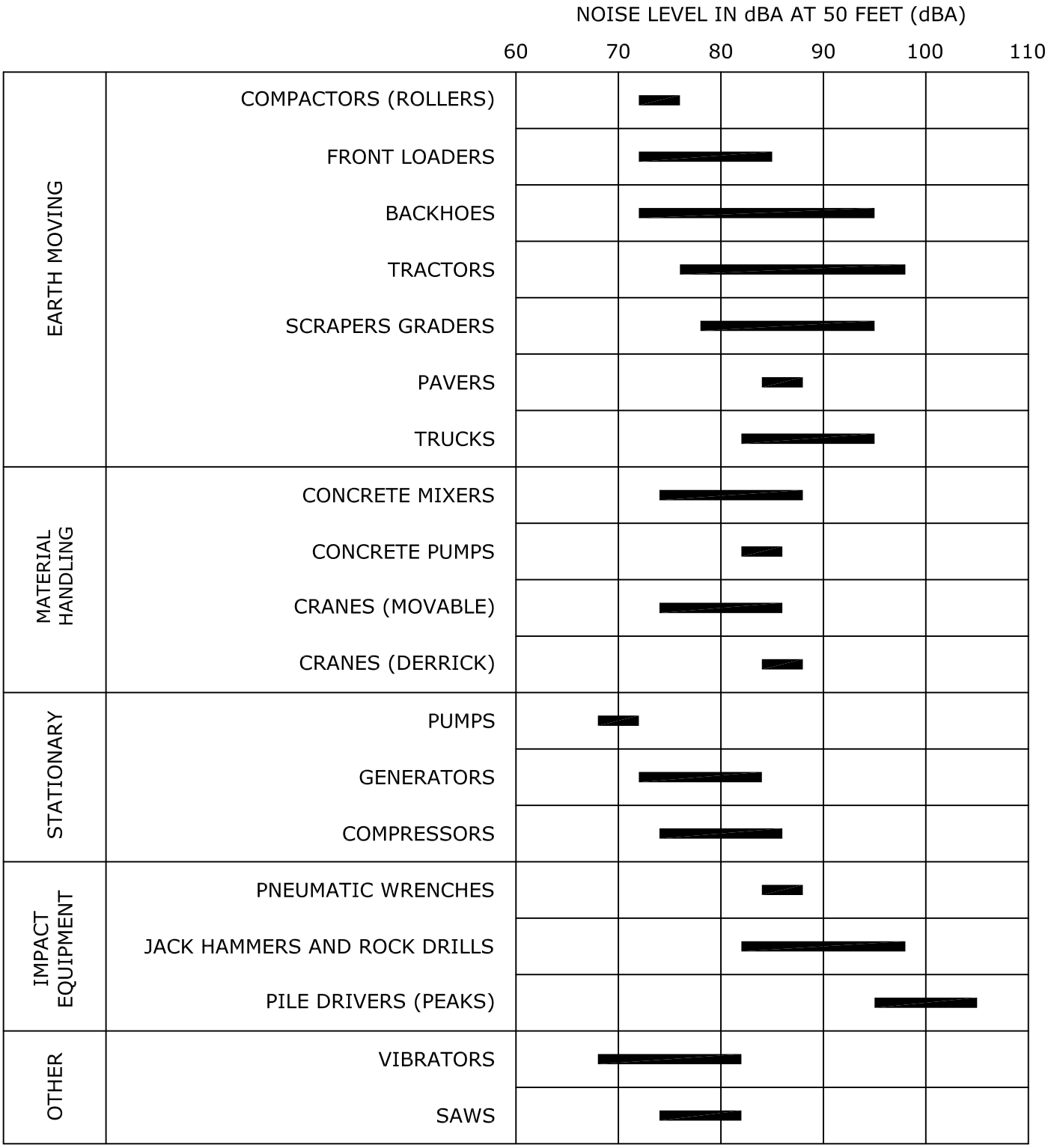
Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based on Land Use

La'au Point, Molokai

Not to Scale

Figure No 3

Date	Project No.	Drawn By
September 2006	05-80	TRB



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

Typical Sound Levels from Construction Equipment

D. L. ADAMS ASSOCIATES, LTD.
970 N. KALAHEO AVE, A-311
KAILUA, HAWAII 96734
808/254-3318 FAX 808/254-5295

La'au Point, Molokai

Not to Scale

Figure No 4

Date	Project No.	Drawn By
September 2006	05-80	TRB

APPENDIX A

Acoustic Terminology

Acoustic Terminology

Sound Pressure Level

Sound, or noise, is the term given to variations in air pressure that are capable of being detected by the human ear. Small fluctuations in atmospheric pressure (sound pressure) constitute the physical property measured with a sound pressure level meter. Because the human ear can detect variations in atmospheric pressure over such a large range of magnitudes, sound pressure is expressed on a logarithmic scale in units called decibels (dB). Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$SPL = 20 \log (P/P_{ref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and P_{ref} is the reference pressure, 20 µPa, which is approximately the lowest sound pressure that can be detected by the human ear. For example:

If P = 20 µPa, then SPL = 0 dB
If P = 200 µPa, then SPL = 20 dB
If P = 2000 µPa, then SPL = 40 dB

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound sources, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined sound level of 53 dB, not 100 dB. Two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 6 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

Studies have shown conclusively that at equal sound pressure levels, people are generally more sensitive to certain higher frequency sounds (such as made by speech, horns, and whistles) than most lower frequency sounds (such as made by motors and engines)[1] at the same level. To address this preferential response to frequency, the A-weighted scale was developed. The A-weighted scale adjusts the sound level in each frequency band in much the same manner that the

[1] D.W. Robinson and R.S. Dadson, "A Re-Determination of the Equal-Loudness Relations for Pure Tones," *British Journal of Applied Physics*, vol. 7, pp. 166 - 181, 1956. (Adopted by the International Standards Organization as Recommendation R-226.

human auditory system does. Thus the A-weighted sound level (read as "dBA") becomes a single number that defines the level of a sound and has some correlation with the sensitivity of the human ear to that sound. Different sounds with the same A-weighted sound level are perceived as being equally loud. The A-weighted noise level is commonly used today in environmental noise analysis and in noise regulations. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

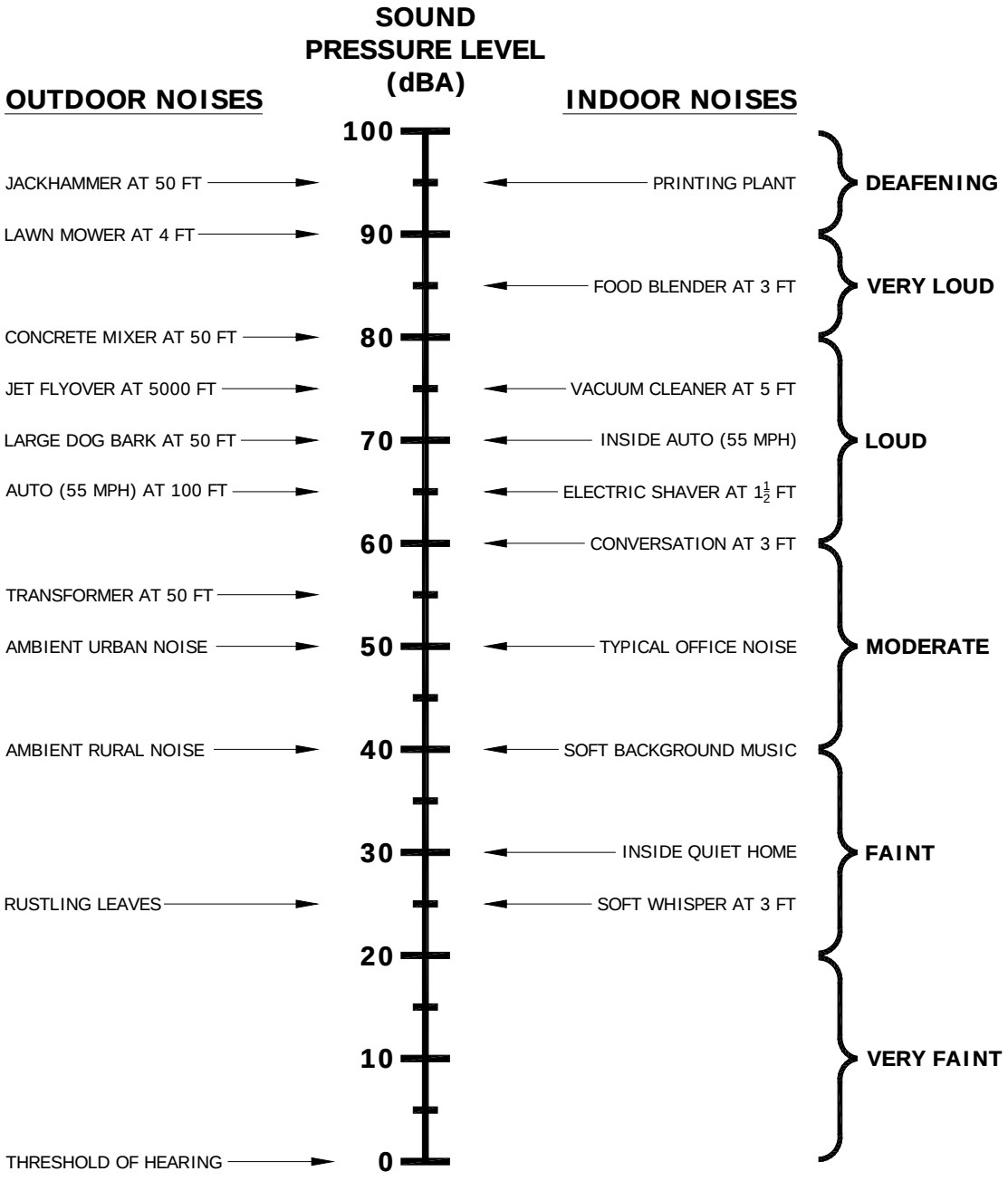


Figure A-1. Common Outdoor/Indoor Sound Levels

Equivalent Sound Level

The Equivalent Sound Level (L_{eq}) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual *instantaneous* noise levels typically fluctuate above and below the measured L_{eq} during the measurement period. The A-weighted L_{eq} is a common index for measuring environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

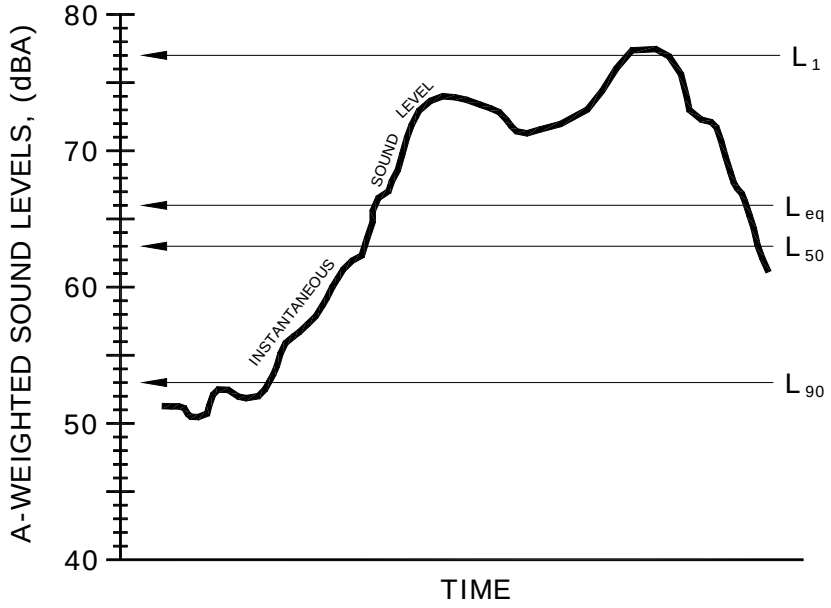


Figure A-2. Example Graph of Equivalent and Statistical Sound Levels

Statistical Sound Level

The sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedence Level, L_n. The L_n represents the sound level that is exceeded for n% of the measurement time period. For example, L_{10} = 60 dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10% of the time. Typically, in noise regulations and standards, the specified time period is one hour. Commonly used Exceedence Levels include L_{01}, L_{10}, L_{50}, and L_{90}, which are widely used to assess community and environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn}, is the Equivalent Sound Level, L_{eq}, measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

Appendix L

Air Quality Impact Assessment

B.D. NEAL & ASSOCIATES
Applied Meteorology • Air Quality • Computer Science
P.O. BOX 1808 • KAILUA-KONA, HAWAII 96745 • TELPHONE (808) 329-1627 • FAX (808) 325-6739
EMAIL: bdneal@bdneal.com

June 6, 2006

Mr. Harold Edwards
Molokai Properties, Limited
Amfac Center, Hawaii Tower
745 Fort Street, Suite 600
Honolulu, Hawaii 96813

Subject: La'au Point Subdivision Project
Air Quality Impact Assessment

Dear Mr. Edwards:

In response to your request, we have examined the potential air quality impacts related to the proposed La'au Point Subdivision Project located on Molokai. The results of this examination along with background information related to this issue and recommended mitigation measures are summarized below.

Project Description

Molokai Properties, Limited proposing to develop the La'au Point Subdivision project on the island of Molokai. The project includes 1492 acres of land along the southwestern coast which will be subdivided into approximately 200 residential lots for single-family homes. It is expected that the homes will primarily be used for recreation and second residences with a 30 percent occupancy rate on an annual basis. Full project build out will likely occur over a 20-year period.

Ambient Air Quality Standards

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide which are more stringent than the national standards.

Regional and Local Climatology

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the La'au Point area is very much affected by its near coastal situation and by nearby mountains. Winds are variable but are often trade winds from the north or northeast. Wind speeds typically vary between about 5 and 15 miles per hour. Temperatures in the La'au Point area are generally very consistent and moderate with an average daily temperature range of about 65°F to 85°F. Average annual rainfall in the area amounts to only about 15 inches.

Existing Air Quality Conditions

No ambient air quality data for the La'au Point area on Molokai has been reported by the state Department of Health. However, except for periodic impacts from distant volcanic emissions (vog), the present air quality of the La'au Point area is believed to be good.

Air Quality Impacts of Project

Short-term direct and indirect impacts on air quality could potentially occur during project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from soil excavation and vehicle movement; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term air quality impacts from the disruption of traffic on nearby roadways, from slow-moving construction equipment traveling to and from the project site and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions from construction activities are difficult to estimate accurately because of their elusive nature of emission and because the potential for dust generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The U.S. EPA has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium"

activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions from project construction would likely be somewhere near this level. In any case, State of Hawaii Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase should be prepared.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust. On days without rainfall, construction areas should be watered at least twice during the workday to help keep dust to a minimum. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Haul trucks tracking dirt onto paved streets from unpaved areas are oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as tire washing or road cleaning, may be appropriate. Dust monitoring could be considered as a means to quantitatively evaluate the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased. This impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity.

After the period of construction, long-term impacts on air quality from motor vehicle exhausts can potentially occur at or near any project that attracts large volumes of motor vehicle traffic. Carbon monoxide emissions are usually the primary issue, and public areas near traffic-congested intersections are the main concern. Traffic associated with the proposed project will likely use Kalua Koi Road and several intersecting project access roads. The project traffic study indicates that with the project at full build-out peak-hour traffic approach volumes at these intersections will be less than about 200 vehicles per hour and that all intersections in the vicinity of the project will have very good level-of-service conditions.

Based on extensive experience in assessing traffic-related air quality impacts, traffic volume increases of less than about 5 percent or about 100 vehicles per hour and traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided. Considering the relatively small volumes of traffic that are expected and the very good level-of-service at nearby intersections that is forecast, traffic from the proposed project should have no significant long-term impacts on maximum air pollution levels in the project area. Although a detailed air quality modeling study could be performed to predict project impacts, such an analysis is probably unwarranted.

Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with a development's electrical power and solid waste disposal requirements. Electrical power will likely be provided by diesel-fired power plants operated by the electric utility, which would result in offsite emissions of particulate, sulfur dioxide, nitrogen oxides and other combustion byproducts. Solid waste will likely be landfilled, and any air pollution emissions would probably be limited mostly to fugitive dust. The project's electrical demand is expected to reach about 2 million kilowatt-hours per year, and the solid waste disposal demand is estimated to reach about 330 tons per year. Quantitative estimates of the potential air quality impacts were not made, but based on the estimated demand levels and the emission rates involved, any impacts will likely be negligible. Nevertheless, incorporating energy conservation design features and promoting conservation and recycling programs within the proposed development could serve to further reduce any associated impacts.

In summary, any long-term impacts on air quality from this project will likely be negligible. Short-term impacts from fugitive dust during project construction may occur, particularly due to the dry climate in the area. Because of this, an effective dust control plan should be prepared and implemented.

Please call me if you have any questions concerning the information presented herein or if you wish to discuss this matter further.

Very truly yours,

Barry D. Neal

Barry D. Neal
Certified Consulting
Meteorologist

Appendix M

Economic & Fiscal Impacts

KNOWLEDGE BASED CONSULTING GROUP

19 Holly Ave.
Larkspur, CA 94939
(415) 924-6577
clivej@sbcglobal.net

ECONOMIC AND FISCAL IMPACTS OF THE PROPOSED LA'AU POINT RESIDENCES ON MOLOKAI

Prepared for

Molokai Properties Limited

Prepared by

Knowledge Based Consulting Group

June 2006

EXECUTIVE SUMMARY

Knowledge Based Consulting Group (KBCG) prepared the following fiscal impact analysis for the La'au Point development project located on the island of Molokai in the County of Maui, Hawaii.

PROJECT SITE

The La'au Point property is a proposed residential development within a 1,492-acre project area within the Molokai Ranch. The development program will be comprised of approximately 200 2-acre lots and associated infrastructure. As part of the overall program, an additional 18 acres will be dedicated as County parks, 130 acres will be in a land trust, 280 acres of land use buffer will be dedicated to the La'au Point homeowners association, and 450 acres will be under homeowner and land trust joint ownership. It is anticipated that the La'au Point property will be developed and built out over a 15-year timeframe and should commence development in 2007.

PRICING STRUCTURE

The La'au Point concept plan seeks to provide a mix of residential lots, which will include oceanfront home sites, ocean view homesites, and inland sites with more distant ocean views. The proposed prices for the lots range from $450,000 to $1,900,000 depending upon size of lot, view quality, and distance to the ocean.

ECONOMIC AND FISCAL IMPACTS

At final build out in 2023, approximately 174 permanent residents will reside in the La'au Point community. In addition, there will be a non-resident population of some 325 people who will occupy their residences during peak seasons. The annual average population at buildout is expected to be just over 230 persons. Expenditures by these new residents as well as maintenance, landscaping, security and other services required by the La'au Point community will support about 60 new local jobs. In addition, total development and residential construction costs are approximately $247 million, creating over 1,350 person-years of construction and related employment.

The County of Maui could receive surplus revenues of approximately $30.0 million over the development period (2007 to 2023), after receiving all revenues from property taxes and other sources (includes revenues from fuel taxes, utility taxes, license fees, permits, and state and federal grants) and incurring all expenses to serve the community.

The State of Hawaii could receive surplus revenues of $4.7 million over the development period from a combination of excise taxes, property transfer taxes, utility taxes, and income taxes on permanent residents. In addition to these on going revenues, there will be state taxes on construction materials and services. State revenues from excise taxes and income taxes on construction workers and businesses should amount to $17.7 million over the buildout period.

Finally, Molokai Properties Limited has agreed to allocate 5% of land sales to support the land trust. This commitment will provide just over $10.2 million for preservation and enhancement of the dedicated lands.

INTRODUCTION

This assessment has been prepared by Knowledge Based Consulting Group (KBCG) in response to the need to evaluate the impact on community services and facilities to the County of Maui and other service providers that would result from the development of the La'au Point project.

PROPOSED ACTION

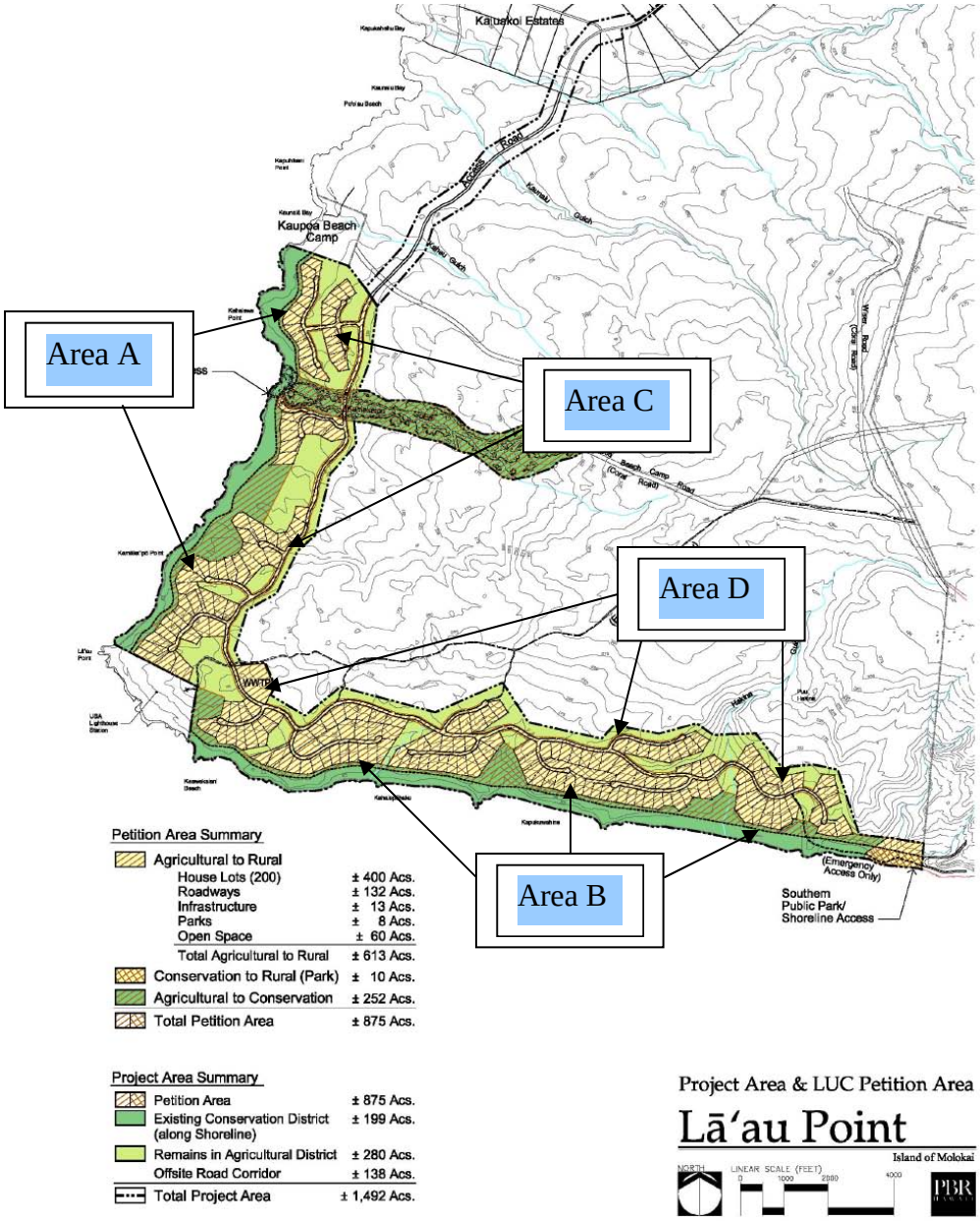
Molokai Properties Limited proposes to develop 200 residential lots at La'au Point as part of an overall development and preservation plan for some 65,000 acres within the Molokai Ranch. The La'au Point site slopes from an elevation of sea level to 150 feet, providing good to excellent ocean and countryside views from nearly all development parcels.

The La'au Point development project is proposed for three general lot type areas:

A	West Facing Ocean Front Home Sites	40
B	South Facing Ocean Front Home Sites	58
C	Inland West Facing Ocean View Home Sites	28
D	Inland South Facing Ocean View Home Sites	74
Total Lots and Residences		200

Molokai Properties Limited would construct roadway improvements servicing the site, major electrical improvements, water and sewage treatment facilities, drainage, and other improvements. Total infrastructure investment is estimated at approximately $72 million.

A project description, along with development assumptions is provided in Table 1, and an illustrative development plan is shown below:



It is anticipated that the La'au Point lots will be developed and sold over a 5-year time frame. Construction of roads and infrastructure should commence in 2007 and lot sales will begin in 2008. Following initial lot sales, the first houses should be built around 2010 and residential construction should continue through at least 2023. This relatively slow build out of La'au Point residences should provide a steady source of construction employment for nearly the next 20 years.

Based on current housing trends and taking into account the CC&R's of the La'au Point project which limit the overall residence size as well as allowable building envelopes within each lot, we

estimate that the average residence will be 3,500 square feet. At a current construction allowance of $225 per square foot for a good quality residence, the average construction cost per residence would be $787,500. Over the life of the project, total residential construction investment will be approximately $158 million.

By applying the appropriate tax rates, the ensuing analysis develops estimates of real estate, excise, and other tax revenues and fees to be received over time by the County of Maui and State of Hawai'i. Comparing these revenues to service costs then determines net impact.

At final build out in 2023, approximately 174 permanent residents will reside in the La'au Point community. In addition, there will be a non-resident population of some 325 people who will occupy their residences on a seasonal basis. Expenditures by these new residents will support about 49 local jobs and another 11 jobs will be created for maintenance, landscaping, security and other services within the La'au Point community.

.

FISCAL ANALYSIS

The program for real estate development at La'au Point is based on a phased infrastructure development and preservation plan for the La'au Point property as prepared by PBR Hawaii. The expected production schedule of lots is illustrated in Table 2, which shows the mix of product and absorption schedule by year. It is estimated that the lots will be sold over a five-year period at a rate of 35 to 50 per year, starting in 2008. The residential build out of these lots is projected to start in 2010 and continue at a rate of 10% per year such that full residential build out will not be completed until at least 2023.

Residential Sales and Build Out

The residential development program for La'au Point includes a mix of low density oceanfront and near ocean lots in a setting of unspoiled seclusion and natural beauty. It will be a unique product in the state and should attract buyers who appreciate privacy and the natural values of the land and Molokai community rather than the resort environment prevalent on the more developed islands. Based on market data from comparable non resort settings, the limited availability of low density oceanfront and near ocean property anywhere in the state, and the special conditions and requirements associated with ownership at La'au Point, KBCG anticipates annual demand for residential lots at La'au Point to range from 35 to 50 units a year.

We expect that the residential build out will stretch over at least ten years after the end of lot sales and that the community will be primarily be used for seasonal residences. In other communities with relatively expensive homes, we see that the average occupancy is relatively low. As shown below, less than 20% of the units are occupied full time and the average overall occupancy is less than 30%.

Resort Community Occupancy Patterns

Days Occupied			Weighted Days	
Category	Average Days	% of Households	All	Seasonal Only
Less than 60	40.2	35%	14.2	14.2
60 to 90	67.1	17%	11.5	11.5
90 to 120	93.3	11%	10.2	10.2
120 to 150	124.2	7%	9.1	9.1
150 to 180	157.6	12%	19.2	19.2
180 and over	250.9	17%	42.8	
Average Days Occupied			107.1	64.2
Resident Occupancy Rate			29%	18%
Rentals			0%	0%
Total Occupancy Rate			29%	18%

Similar occupancy patterns should be observed at La'au Point. These low occupancy rates should serve to minimize the need for county services to residents and lessen any impacts of residential build out on the unspoiled and uncrowded character of the Molokai coast. At build out, we anticipate that permanent residents (persons staying at La'au Point 180 or more days per year) will occupy up to 60 of the homes (30%) and seasonal residents would occasionally occupy the remainder. Upon agreement with the community, the La'au Point CC&R's will severely limit any rentals of the residences.

School Age Population

As the La'au Point project moves forward, it is appropriate to evaluate the impact of the project upon the Hawaii Department of Education (DOE) and determine how this might relate to the DOE "Fair Share" exaction for the project. We understand that the DOE has a formula, which calculates for each type of residential unit (SF, MF, etc.) the number of students expected. Then a dollar figure is applied per student. This exaction can range from $3,000 to $5,000 per unit. Considering the unique character of the La'au Point project and the expectation that seasonal residents and retirees will occupy a substantial share of the project, it is appropriate to examine the probable school age population to see if adjustments to the DOE formula may be justified.

The following factors should be considered:

- Only about 30% of La'au Point residents are expected to be permanent residents.
- La'au Point residents will be somewhat older than the general population.
- About 25% of permanent residents at La'au Point are expected to have children under 18 living at home. Another 10% will have family members over 18 living at home.
- The expected school age population of La'au Point permanent residents will probably include:
    - Less than 10 children ages 5 through 12
    - Less than 15 young adults ages 13 through 17
- The expected La'au Point population of school children is less than 25% of what would be expected on a pro rata basis.
- It is likely that some of the La'au Point residents will home school or send their children to private school off island.

Under these conditions, it would appear that a reduction in Department of Education impact fees would be appropriate and warranted.

MARKET AND ASSESSED VALUE

The proposed La'au Point development project is planned for 200 2-acre lots along the Molokai Coast. Approximately 98 of these lots will be front row (with no other private property between them and the coast), while the remaining 102 inland lots will be set further back. The average prices for the oceanfront lots will be about $1,750,000 for the west (sunset) facing home sites and $1,495,000 for the south facing sites, although there will be a relatively wide range in prices depending upon views and nearby oceanfront qualities. The more inland Ocean View Estates, still with expansive ocean views, will average around $470,000, but will vary in price from $425,000 to $800,000. This analysis assumes that the residential build out of the lots will be at the rate of 10% per year, starting two years after lot purchase. We have not applied an inflation factor or real estate appreciation rate to either lot prices or residential values, although both of these are likely and would add to Maui County tax revenues.

Residential Values

As shown in Table 3, residential market values for the project will be $34.9 million in the first year of lot sales (2008) and increase to $222.2 million when lot sales are completed and the first 22 homes have been built (2012). From that point on, the residential values increase by about $16 million per year as additional residences are constructed for both seasonal and permanent residents. Upon the eventual build out of all residences by the end of 2023, the residential market value will increase to $362 million.

IMPACT ON THE COUNTY OF MAUI

Table 4 illustrates the projected population for the La'au Point development project as well as estimates of tax revenues and Maui County expenses through 2023.

Population

Based upon the demographic patterns at other seasonal communities in Hawaii and what we have observed at Kaluakoi, we expect that most residents will be empty nesters and in pre retirement or retirement. The average number of persons per household at La'au Point is expected to be 2.9 as shown below:

Household Size Distribution for La'au Point

Family Size	%
2	66%
3	10%
4	16%
5	7%
6	1%
Average family members per household	2.65
% with caretaker/ caregiver	25%
Average persons per household	2.90

At the end of the lot sales period in 2012, there should be 12 new permanent residents in the La'au Point community. At final build out in 2023, approximately 174 permanent residents will reside in the La'au Point community at least 180 days per year. In addition, there will be a non-resident population that will occupy their residences on a seasonal basis. We anticipate that up to 80% of the seasonal residences may be occupied during peak seasons resulting in a maximum seasonal population of 325 part time residents. This leads to a peak population of permanent and seasonal residents of just under 500 persons and an average population of just over 230 persons.

County Tax Revenues

Below is a listing of tax rates that effect residents and commercial entities in Maui County.

Maui Property Tax Rates

Improved Residential	$5.86
Apartment	$5.86
Commercial	$6.75
Industrial	$6.75
Agricultural	$4.93
Conservation	$4.93
Hotel & Resort	$8.30
Unimproved Residential	$5.86
Homeowner	$3.50
Time Share	$14.00

Unlike in Hawaii County, there is no differentiation in Maui County in the property tax rates applied to permanent and seasonal residents or to vacant land.

KBCG estimates that the County of Maui can expect to receive approximately $1.3 million in annual real estate tax revenues at the end of the lot sales period in 2012. These property tax revenues will increase at a rate of about $90,000 each year until they reach $2.1 million at residential build-out in 2023. In addition to real estate taxes, other County revenues are received in proportion to population and economic activity. These other revenues include fuel taxes, utility taxes, license fees, permits, and state and federal grants. After deducting for bond revenues, intergovernmental transfers, and transient occupancy tax, these other county revenue sources have historically represented 74% of property tax revenues. This ratio has been assumed to be constant in this model. It is estimated that the total annual tax revenue after residential build-out in 2023 will be $3.7 million, and that total taxes of $40.6 million will have been paid to that point.

County Expenditures

The County of Maui provides essential services to residents and businesses throughout the islands of Maui, Lanai, and Molokai. The overall budget for the County of Maui was $404.8 million for fiscal 2005, broken down as shown below:

Maui County Expenditures by Function

Function	2005 Estimate	2006 Budget	% of total	Increase (Decrease)	% Increase (% Decrease)
Capital Improvement Projects	$ 64,198,120	$ 82,428,150	20.4%	$ 18,230,030	28.4%
Public Safety	$ 49,843,278	$ 56,376,512	13.9%	$ 6,533,234	13.1%
Solid Waste and Wastewater	$ 35,879,049	$ 40,831,028	10.1%	$ 4,951,979	13.8%
Finance, Countywide, Personnel, Legal	$ 18,700,179	$ 26,554,441	6.6%	$ 7,854,262	42.0%
Employee Benefits	$ 35,674,695	$ 42,306,400	10.5%	$ 6,631,705	18.6%
Bond Issuance/ Debt Service	$ 33,510,559	$ 34,917,309	8.6%	$ 1,406,750	4.2%
Parks and Recreation	$ 20,508,129	$ 22,265,799	5.5%	$ 1,757,670	8.6%
Highways	$ 11,554,655	$ 10,107,128	2.5%	$ (1,447,527)	-12.5%
Social Concerns	$ 13,208,956	$ 14,573,568	3.6%	$ 1,364,612	10.3%
Management	$ 10,605,771	$ 13,528,030	3.3%	$ 2,922,259	27.6%
Planning/ Community Development	$ 8,647,488	$ 10,653,819	2.6%	$ 2,006,331	23.2%
Legislative	$ 4,875,268	$ 5,145,689	1.3%	$ 270,421	5.5%
Transportation	$ 5,703,227	$ 12,463,498	3.1%	$ 6,760,271	118.5%
Water	$ 31,149,302	$ 32,656,417	8.1%	$ 1,507,115	4.8%
Total	**$ 344,058,676**	**$ 404,807,788**	**100.0%**	**$ 60,749,112**	17.7%
Total Less Debt Service	$ 310,548,117	$ 369,890,479			
Resident Population	137,000	138,000			
Expenditures Per Resident	$ 2,267	$ 2,933			
Daily Tourist Population	44,500	45,000			
Total Population	181,500	183,000			
Expenditure per Person	$ 1,896	$ 2,212			

Subtracting out debt service, this budget represents current expenditures in 2006 of approximately $2,933 per person, including law enforcement. Applying this full cost allocation to the projected peak population at La'au Point, the potential cost to the County of Maui to serve the La'au Point development project will be $157,000 in 2012 at the end of lot sales, rising to $1.5 million by 2023 at full build out. These expenses are projected on a conservative basis of peak occupancy whereas in actuality most residents will be seasonal occupants.

It should also be noted that the La'au Point development will provide significant infrastructure improvements that will serve the entire community, and many of the on site improvements will not require county maintenance. These lower costs are due to the following:

- Molokai Properties Ltd. will fund most or all of the building costs for infrastructure improvements (roads, water, wastewater systems, etc.), and recreational facilities.
- The La'au Point community association dues will cover the cost of:
  - Maintaining local roads
  - Operating and maintaining wastewater systems
  - Operating and maintaining recreational facilities
  - Providing on-site security
- The comparatively low occupancy rates for seasonal residences at La'au Point will result in a lower demand for County services.
- Most residents are expected to be comparatively wealthy, so they will require little government assistance.
- Most occupants will be retirees and visitors who are less likely to travel offsite during heavy traffic periods (such as they are on Molokai), and so are less likely to add to the demand for additional road capacity.
- Fewer government services are required for empty lots.

Therefore, actual county costs could be substantially less than the amounts shown in this model.

Comparison of Revenues and Expenses

Comparing revenues and costs, there is an annual surplus ranging from $355,000 at the end of the first year of lot sales to $2.1 million at the end of lot sales. Moreover, Maui County will have a cumulative surplus of just under $30.0 million by project buildout in 2023.

IMPACT ON THE STATE OF HAWAI'I

The State of Hawaii provides a wide range of services to meet the transportation, education, social service, and other vital needs of its population.

State Tax Revenues

Revenues to the State of Hawai'i from the La'au Point project will be generated from excise taxes, transfer taxes, utility taxes, and income taxes on individuals and businesses. These revenues go directly to the State General Fund.

Whereas there are no direct excise taxes from commercial businesses at La'au Point, resident expenditures will be subject to a 4% excise tax. Other state taxes include a 0.1% to 0.35% graduated levy on the transfer of fee interest, including leases of five years or greater, individual income taxes on permanent residents at a rate up to 8.25%, state utility taxes, and liquor taxes.

As shown in Table 5, annual state revenues from taxes on residents and their expenditures are expected to reach $276,000 at the end of lot sales in 2012 and climb to $1.3 million by 2023 as the project becomes more occupied by permanent and seasonal residents. State variable expenditures for permanent residents are estimated at $4,071 per permanent resident. Comparing state revenues to costs over the life of the project, state revenues should exceed expenditures by $4.7 million.

In addition to these on going revenues, there are state excise taxes on construction businesses and materials as well as income taxes on construction labor, which are discussed later.

JOB CREATION AND LAND TRUST SUPPORT

Resident and Visitor Spending

Spending by permanent and seasonal residents as well as the maintenance, landscaping, security and other services required by the community will create substantial permanent job support within the local Molokai community. Annual spending by new residents should be about $806,000 per year at the end of lot sales and then climb to about $6.8 million at build out. Approximately 65% of these expenditures are expected to be on Molokai, with the remainder spent elsewhere in the State of Hawaii. The annual expenditures on Molokai at build out are about $4.4 million, which represents about $22,000 in on island spending per residence.

Supportable Commercial Space

The on island resident expenditures will support existing businesses and commercial space on Molokai as well as encourage some expansion.

Permanent Jobs

As shown in Table 6, direct ongoing employment supported by new resident and lot owner spending will be about 6 jobs at the end of lot sales and then increase year by year to about 49 jobs when the project is built out in 2023. In addition, the La'au Point Community Association will provide employment for community services in maintenance, landscaping, security, and other association functions. Together, resident spending and the community association requirements will support 12 on going jobs at the end of lot sales and some 60 on going jobs upon full build out in 2023.

Land Trust Support

Molokai Properties Limited has agreed to allocate 5% of land sales to support the land trust. This commitment will provide just over $10.2 million (prior to the payment of any real estate commissions or other regulatory costs), for the preservation and enhancement of the dedicated lands.

CONSTRUCTION IMPACT

Construction Spending and Employment

As shown in Table 7, the total development and construction investment at La'au Point is expected to be about $246 million. As shown in Table 8, this investment supports over 1,350 person years of construction and service related employment over the life of the project.

Construction Excise and Other Taxes

In addition to the creation of construction jobs, the State of Hawaii will receive excise tax revenue on finished development and building materials and income taxes on construction wages. As shown in Table 9, these will amount to an additional $17.7 million in State of Hawaii revenue over the life of the project.

INDIRECT IMPACT

In 2000, the Hawaii Department of Business, Economic Development, & Tourism (DBEDT) developed a model of the impact of construction on the Hawaii economy. On the basis of the factors developed in that model, the construction expenditures of $246 million on the La'au Point project will result in an increase in total output of $302 million, an additional 2,970 person years of employment, and an additional $141 million in household income (See Table 10).

NO DEVELOPMENT ALTERNATIVE

Whereas the proposed development plan for La'au Point has been prepared with extensive input from the community, the issue of a no development alternative at La'au Point has come up in community meetings focusing on the social impact of the project. The following is an analysis of the no development alternative.

Loss of Project Benefits

Of course, the economic and fiscal benefits outlined in the preceding economic impact analysis would be lost without the development. To summarize these included:

- A residential development program of approximately 200 2-acre lots and associated infrastructure. At full buildout in 2023 this community will include174 permanent residents as well as a non-resident population of some 325 people who will occupy their residences on an occasional basis. The annual average population at buildout is expected to be just over 230 persons.
- A program of land dedication and preservation that includes 18 acres as County parks, 130 acres in a community administered land trust, 280 acres of land use buffer that will be dedicated to the La'au Point homeowners association, and 450 acres that will be under homeowner and land trust joint ownership.
- Expenditures by these new residents as well as maintenance, landscaping, security and other services required by the La'au Pont community will support about 60 new local jobs.
- Total development and residential construction costs of approximately $247 million create over 1,350 person-years of construction and related employment.
- The County of Maui could receive surplus revenues of approximately $30.0 million over the development period.
- The State of Hawaii could receive surplus revenues of $4.7 million over the development period as well as $17.7 million in excise taxes and income taxes on construction workers and businesses.
- Finally, Molokai Properties Limited has agreed to allocate 5% of land sales to support the land trust. This commitment will provide just over $10.2 million for preservation and enhancement of the dedicated lands.

The above are substantial benefits that provide government revenues, community jobs, and preserve large areas of the land as permanent open space.

Effect of No Development

The principal issue of the no development alternative would be the effect of no development on the viability of ongoing operations of the Molokai Ranch Company and its employees. In evaluating this impact, we evaluated the economic health of the current operation and considered what alternatives may be available to assure ongoing sustainability of the Ranch. To do this, we

evaluated the record of current and historical operating losses as well as other potential land sales that could deliver supporting revenues. Each of these is discussed below:

Economic History of Molokai Ranch Operations

Table 11 presents a summary of Operating Cash Flow for Molokai Properties Limited from 2001 through 2006. It is not a pretty picture. As shown, the net loss from operations over those six years has been approximately $31.6 million. Whereas often painful cost cutting has reduced operating losses from $8.6 million in 2001 to a range of $3.6 to $3.8 million in the last three years, the increasing costs of water, energy, and insurance make it difficult to expect profitable operations in the future.

In addition to operating losses, annual capital expenditures are another drain on cash flow, averaging over $800,000 per year over the past five years. Taken in total, MPL has subsidized the continuing operations and upkeep of the Molokai Ranch to the tune of $4.7 million to $10.2 million per year. The cumulative subsidy over the past six years has been $36.9 million. Clearly this is not a sustainable business model.

Alternatives Without the La'au Point Development Program

Without the La'au Point development program, we expect that MPL will have to make some difficult choices in terms of further cutting back on ranch operations and/ or breaking up the property and selling already entitled lands on a piecemeal basis. Each of these is discussed below:

Sale of Other Land Inventory

The Guocco Group, MPL's ultimate parent, recently had Hallstrom and Associates prepare a valuation of the property on a breakup basis.

According to tax records, MPL has 101 lots that it could sell exclusive of Lot inventory within Papohaku Ranchlands, Maunaloa (both Residential and Commercial) and the Industrial Park. 23 are held by a Kaluakoi LLC, 70 by MPL and 8 by Cooke Land Company. The golf course is actually held in 6 separate TMKs but is only counted as one, as it would be impractical to sell it to more than one buyer. Each of the lots in Kaunakakai are counted as separate lots as they could be sold to different buyers although it would be unlikely that there wouldn't be a fair amount of aggregation of those small industrial or business lots.

In addition, a density analysis conducted by MPL shows that the west end AG parcels could be subdivided into more than 1500 legal lots. This does not take into consideration any of the parcels held outside of the Kaluakoi ahupua'a. If these lots were sold off without the benefit of a master plan such as prepared for La'au Point, the impact would probably include a greater number of new land owners/ residents, less control of development, no land trust, and less financial support to the County and State.

Further Reductions in Operations

Without the increase in support for golf and hotel operations that will come from the La'au Point development, it is likely that MPL will be forced to reduce operations and perhaps close those facilities. In addition, they would likely be forced to reduce or eliminate other subsidized operations such as maintenance, nursery, gas station, and other services. The impacts of these

reductions would significantly affect existing employment at the Molokai Ranch and in Maunaloa. Under this doomsday scenario, MPL essentially closes down ranch operations and land banks the property for the future. Employment could be reduced by over 100 persons to around 10 full time staff, and payroll will be reduced by at least $3.5 million annually. These reductions, along with lost tourist expenditures, will in turn severely affect local businesses at Maunaloa and elsewhere. These losses in local jobs and probable business failures will in turn increase the need for County and State social services.

Table 1

Development Program for La'au Point, Molokai Ranch

	Total Units	Lot Size (SF)	Size of Average Residence (SF)	Land Area (acres)	% of Total	Lot Sales Price/ SF	Average Lot Price	Sales Value ($000)	SF of Residential Construction	Const. Cost/SF	Construction Cost per Residence	Total Residential Construction Cost ($000)
Single Family Residential (lots)												
A West Facing Ocean Front Estates	40	87,120	3,500	80	5.4%	$ 20.09	$ 1,750,000	$ 70,000	140,000	$ 225	$ 787,500	$ 31,500
C South Facing Ocean Front Estates	58	87,120	3,500	116	7.8%	$ 17.16	$ 1,495,000	$ 86,710	203,000	$ 225	$ 787,500	$ 45,675
B Inland West Facing Ocean View Sites	28	87,120	3,500	56	3.8%	$ 5.74	$ 500,000	$ 14,000	98,000	$ 225	$ 787,500	$ 22,050
D Inland South Facing Ocean View Sites	74	87,120	3,500	148	9.9%	$ 5.28	$ 460,000	$ 34,040	259,000	$ 225	$ 787,500	$ 58,275
Subtotal Single Family	**200**			**400**	26.8%		**$ 1,023,750**	**$ 204,750**				**$ 157,500**
Multi Family Residential					0.0%							
Total La'au Point Residential	**200**			**400**	26.8%		**$ 1,023,750**	**$ 204,750**	**700,000**			**$ 157,500**
Commercial				-	0.0%				-			
Roadways and Utility Easements				80	5.4%							
Home Owner/ Land Trust Joint Ownership				414	27.7%							
Home Owner Association				450	30.2%							
Land Trust				130	8.7%							
County Parks				18	1.2%							
Open Space & Preservation				1,012	67.8%							
TOTAL UNITS AND ACREAGE	**200**			**1,492**	100.0%							

Phasing:

Lot sales over 5 years

Residential buildout over 15 years

Table 2
Absorption Schedule at La'au Point, Molokai Ranch

			Lot Sales					Residential Buildout											
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**TOTAL**
Lot Sales																			
West Facing Ocean Front Estates																			
Annual			6	8	8	8	10												40
Cumulative			6	14	22	30	40	40	40	40	40	40	40	40	40	40	40	40	
South Facing Ocean Front Estates																			
Annual			10	10	10	10	18												58
Cumulative			10	20	30	40	58	58	58	58	58	58	58	58	58	58	58	58	
Inland West Facing Ocean View Sites																			
Annual			5	5	5	5	8												28
Cumulative			5	10	15	20	28	28	28	28	28	28	28	28	28	28	28	28	
Inland South Facing Ocean View Sites																			
Annual			15	15	15	15	14												74
Cumulative			15	30	45	60	74	74	74	74	74	74	74	74	74	74	74	74	
Subtotal Lot Sales																			
Annual			36	38	38	38	50	0	0	0	0	0	0	0	0	0	0	0	172
Cumulative			**36**	**74**	**112**	**150**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	
Residential Units																			
Annual		10%			4	7	11	15	20	20	20	20	20	20	16	13	9	5	200
Cumulative					4	11	22	37	57	77	97	117	137	157	174	186	195	200	
Residency																			
Percent																			
Seasonal					85%	84%	83%	82%	80%	79%	78%	77%	76%	75%	73%	72%	71%	70%	
Permanent (180 days or more per year)					15%	16%	17%	18%	20%	21%	22%	23%	24%	25%	27%	28%	29%	30%	
Units																			
Seasonal					3	9	18	30	46	61	76	90	104	117	128	135	139	140	
Permanent (180 days or more per year)					1	2	4	7	11	16	21	27	33	40	46	51	56	60	

Table 3

Estimated Assessed Values for La'au Point ($000)

Inflation 0.0%

	2006	2007	Lot Sales 2008	2009	2010	2011	2012	Residential Buildout 2013	2014	2015
West Facing Ocean Front Estates										
Average Lot Value	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Lot Sales			$ 10,500	$ 14,000	$ 14,000	$ 14,000	$ 17,500	$ -	$ -	$ -
Residential Buildout			$ -	$ -	$ 567	$ 1,166	$ 1,764	$ 2,363	$ 3,150	$ 3,150
Cumulative	$ -	$ -	$ 10,500	$ 24,500	$ 39,067	$ 54,233	$ 73,497	$ 75,859	$ 79,009	$ 82,159
South Facing Ocean Front Estates									-	
Average Lot Value	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Lot Sales			$ 14,950	$ 14,950	$ 14,950	$ 14,950	$ 26,910	$ -	$ -	$ -
Residential Buildout			$ -	$ -	$ 822	$ 1,690	$ 2,558	$ 3,426	$ 4,568	$ 4,568
Cumulative	$ -	$ -	$ 14,950	$ 29,900	$ 45,672	$ 62,312	$ 91,780	$ 95,206	$ 99,773	$ 104,341
Inland West Facing Ocean View Sites										
Average Lot Value	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Lot Sales			$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 4,000	$ -	$ -	$ -
Residential Buildout			$ -	$ -	$ 397	$ 816	$ 1,235	$ 1,654	$ 2,205	$ 2,205
Cumulative	$ -	$ -	$ 2,500	$ 5,000	$ 7,897	$ 11,213	$ 16,448	$ 18,101	$ 20,306	$ 22,511
Inland South Facing Ocean View Sites										
Average Lot Value	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Lot Sales			$ 6,900	$ 6,900	$ 6,900	$ 6,900	$ 6,440	$ -	$ -	$ -
Residential Buildout			$ -	$ -	$ 1,049	$ 2,156	$ 3,263	$ 4,371	$ 5,828	$ 5,828
Cumulative	$ -	$ -	$ 6,900	$ 13,800	$ 21,749	$ 30,805	$ 40,509	$ 44,879	$ 50,707	$ 56,534
Annual Lot value	$ -	$ -	$ 34,850	$ 38,350	$ 38,350	$ 38,350	$ 54,850	$ -	$ -	$ -
Annual Improved Value	$ -	$ -	$ -	$ -	$ 2,835	$ 5,828	$ 8,820	$ 11,813	$ 15,750	$ 15,750
Total Residential Value	**$ -**	**$ -**	**$ 34,850**	**$ 73,200**	**$ 114,385**	**$ 158,563**	**$ 222,233**	**$ 234,045**	**$ 249,795**	**$ 265,545**

	Residential Buildout 2016	2017	2018	2019	2020	2021	2022	2023
West Facing Ocean Front Estates								
Average Lot Value	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750	$ 1,750
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Residential Buildout	$ 3,150	$ 3,150	$ 3,150	$ 3,150	$ 2,583	$ 1,985	$ 1,386	$ 788
Cumulative	$ 85,309	$ 88,459	$ 91,609	$ 94,759	$ 97,342	$ 99,327	$ 100,713	$ 101,500
South Facing Ocean Front Estates								
Average Lot Value	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495	$ 1,495
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Residential Buildout	$ 4,568	$ 4,568	$ 4,568	$ 4,568	$ 3,745	$ 2,878	$ 2,010	$ 1,142
Cumulative	$ 108,908	$ 113,476	$ 118,043	$ 122,611	$ 126,356	$ 129,233	$ 131,243	$ 132,385
Inland West Facing Ocean View Sites								
Average Lot Value	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Residential Buildout	$ 2,205	$ 2,205	$ 2,205	$ 2,205	$ 1,808	$ 1,389	$ 970	$ 551
Cumulative	$ 24,716	$ 26,921	$ 29,126	$ 31,331	$ 33,139	$ 34,529	$ 35,499	$ 36,050
Inland South Facing Ocean View Sites								
Average Lot Value	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460	$ 460
Average Improvement Value	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788	$ 788
Residential Buildout	$ 5,828	$ 5,828	$ 5,828	$ 5,828	$ 4,779	$ 3,671	$ 2,564	$ 1,457
Cumulative	$ 62,362	$ 68,189	$ 74,017	$ 79,844	$ 84,623	$ 88,294	$ 90,858	$ 92,315
Annual Improved Value	$ 15,750	$ 15,750	$ 15,750	$ 15,750	$ 12,915	$ 9,923	$ 6,930	$ 3,938
Total Residential Value	**$ 281,295**	**$ 297,045**	**$ 312,795**	**$ 328,545**	**$ 341,460**	**$ 351,383**	**$ 358,313**	**$ 362,250**

Assume residential buildout rate of 10% per year, with completions starting 2 years after initial lot sale

Table 4
REVENUES AND COSTS TO MAUI COUNTY

			Lot Sales					Residential Buildout		
	Rates	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Real Estate Taxes										
Residential										
Lots and Residences	$5.86	$ -	$ 204,221	$ 428,952	$ 670,296	$ 929,176	$ 1,302,282	$ 1,371,504	$ 1,463,799	$ 1,556,094
Total Real Estate Taxes		$ -	$ 204,221	$ 428,952	$ 670,296	$ 929,176	$ 1,302,282	$ 1,371,504	$ 1,463,799	$ 1,556,094
Other Revenue	74%	$ -	$ 150,805	$ 316,756	$ 494,975	$ 686,143	$ 961,660	$ 1,012,776	$ 1,080,930	$ 1,149,085
Total Revenue		**$ -**	**$ 355,026**	**$ 745,708**	**$ 1,165,271**	**$ 1,615,319**	**$ 2,263,942**	**$ 2,384,279**	**$ 2,544,729**	**$ 2,705,178**
	Persons Per									
Estimated Population	Household									
Seasonal	2.9		-	-						
Peak Occupancy	80%				7	21	42	70	107	142
Permanent	2.9		-	-	3	6	12	20	32	46
Peak Population		-	-	-	10	27	53	90	139	188
Average Occupancy					38%	33%	33%	33%	33%	35%
Average Population					4	9	17	30	46	65
Cost to Serve (per person, peak occupancy)		$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933
Total Expenditure		**$ -**	**$ -**	**$ -**	**$ 28,923**	**$ 78,263**	**$ 156,526**	**$ 263,712**	**$ 406,626**	**$ 551,243**
Surplus or Deficit										
Annual		**$ -**	**$ 355,026**	**$ 745,708**	**$ 1,136,347**	**$ 1,537,056**	**$ 2,107,416**	**$ 2,120,568**	**$ 2,138,102**	**$ 2,153,936**
Cumulative		$ -	$ 355,026	$ 1,100,734	$ 2,237,082	$ 3,774,138	$ 5,881,554	$ 8,002,122	$ 10,140,224	$ 12,294,160

		Residential Buildout								
	Rates	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**TOTAL**
Real Estate Taxes										
Residential										
Lots and Residence	$5.86	$ 1,648,389	$ 1,740,684	$ 1,832,979	$ 1,925,274	$ 2,000,956	$ 2,059,101	$ 2,099,711	$ 2,122,785	$ 23,356,202
Total Real Estate Taxes		$ 1,648,389	$ 1,740,684	$ 1,832,979	$ 1,925,274	$ 2,000,956	$ 2,059,101	$ 2,099,711	$ 2,122,785	$ 23,356,202
Other Revenue	74%	$ 1,217,239	$ 1,285,394	$ 1,353,548	$ 1,421,702	$ 1,477,589	$ 1,520,526	$ 1,550,514	$ 1,567,553	$ 17,247,195
Total Revenue		**$ 2,865,628**	**$ 3,026,077**	**$ 3,186,527**	**$ 3,346,976**	**$ 3,478,545**	**$ 3,579,628**	**$ 3,650,226**	**$ 3,690,338**	**$ 40,603,397**
	Persons Per									
Estimated Population	Household									
Seasonal	2.9									
Peak Occupancy	80%	176	209	241	271	297	313	322	325	
Permanent	2.9	61	78	96	116	133	148	162	174	
Peak Population		237	287	337	387	430	461	485	499	
Average Occupancy		39%	40%	41%	42%	43%	44%	45%	46%	
Average Population		92	115	138	164	186	203	219	231	
Cost to Serve (per person, peak occupancy)		$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	$ 2,933	
Total Expenditure		**$ 695,859**	**$ 842,176**	**$ 988,494**	**$ 1,136,513**	**$ 1,262,414**	**$ 1,352,586**	**$ 1,422,342**	**$ 1,463,175**	**$ 10,648,850**
Surplus or Deficit										
Annual		**$ 2,169,769**	**$ 2,183,901**	**$ 2,198,033**	**$ 2,210,464**	**$ 2,216,131**	**$ 2,227,042**	**$ 2,227,884**	**$ 2,227,163**	**$ 29,954,546**
Cumulative		$ 14,463,929	$ 16,647,830	$ 18,845,863	$ 21,056,326	$ 23,272,458	$ 25,499,499	$ 27,727,383	$ 29,954,546	

TABLE 5

ONGOING REVENUES AND COSTS TO THE STATE OF HAWAII Inflation 0.0%

		Lot Sales					Residential Buildout		
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Revenues From Residents									
Household Income ($000)	$ -	$ -	$ -	$ 382	$ 896	$ 1,792	$ 3,070	$ 4,773	$ 6,683
Excise Tax	-	$ -	$ -	$ 6,111	$ 14,334	$ 28,668	$ 49,114	$ 76,374	$ 106,931
Income Tax		$ -	$ -	$ 16,000	$ 32,000	$ 64,000	$ 112,000	$ 176,000	$ 256,000
Conveyance Taxes		$ 106,325	$ 118,575	$ 120,487	$ 124,416	$ 183,324	$ 19,754	$ 30,375	$ 40,995
Subtotal	**$ -**	**$ 106,325**	**$ 118,575**	**$ 142,598**	**$ 170,750**	**$ 275,992**	**$ 180,868**	**$ 282,749**	**$ 403,926**
Total State Revenues	**$ -**	**$ 106,325**	**$ 118,575**	**$ 142,598**	**$ 170,750**	**$ 275,992**	**$ 180,868**	**$ 282,749**	**$ 403,926**
Total Permanent Population	**-**	**-**	**-**	**3**	**6**	**12**	**20**	**32**	**46**
Cost to Serve (per person)	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071
Total Expenditure	**$ -**	**$ -**	**$ -**	**$ 11,806**	**$ 23,612**	**$ 47,224**	**$ 82,641**	**$ 129,865**	**$ 188,894**
Net Surplus (Deficit)	**$ -**	**$ 106,325**	**$ 118,575**	**$ 130,792**	**$ 147,139**	**$ 228,768**	**$ 98,226**	**$ 152,884**	**$ 215,032**
Cumulative	**$ -**	**$ 106,325**	**$ 224,900**	**$ 355,692**	**$ 502,831**	**$ 731,599**	**$ 829,825**	**$ 982,709**	**$ 1,197,741**

	Residential Buildout								
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Revenues From Residents									
Household Income ($000)	$ 8,593	$ 6,750	$ 8,250	$ 10,000	$ 11,500	$ 12,750	$ 14,000	$ 15,000	
Excise Tax	$ 137,488	$ 108,000	$ 132,000	$ 160,000	$ 184,000	$ 204,000	$ 224,000	$ 240,000	$ 1,671,021
Income Tax	$ 336,000	$ 432,000	$ 528,000	$ 640,000	$ 736,000	$ 816,000	$ 896,000	$ 960,000	$ 6,000,000
Conveyance Taxes	$ 51,615	$ 62,236	$ 72,856	$ 83,477	$ 92,186	$ 98,877	$ 103,550	$ 106,205	$ 1,415,251
Subtotal	**$ 525,103**	**$ 602,236**	**$ 732,856**	**$ 883,477**	**$ 1,012,186**	**$ 1,118,877**	**$ 1,223,550**	**$ 1,306,205**	**$ 9,086,272**
Total State Revenues	**$ 525,103**	**$ 602,236**	**$ 732,856**	**$ 883,477**	**$ 1,012,186**	**$ 1,118,877**	**$ 1,223,550**	**$ 1,306,205**	**$ 9,086,272**
Total Permanent Population	**61**	**78**	**96**	**116**	**133**	**148**	**162**	**174**	
Cost to Serve (per person)	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	$ 4,071	
Total Expenditure	**$ 247,924**	**$ 318,759**	**$ 389,595**	**$ 472,236**	**$ 543,071**	**$ 602,101**	**$ 661,130**	**$ 708,354**	**$ 4,427,213**
Net Surplus (Deficit)	**$ 277,180**	**$ 283,477**	**$ 343,262**	**$ 411,241**	**$ 469,114**	**$ 516,776**	**$ 562,419**	**$ 597,851**	**$ 4,659,059**
Cumulative	**$ 1,474,921**	**$ 1,758,397**	**$ 2,101,659**	**$ 2,512,900**	**$ 2,982,014**	**$ 3,498,790**	**$ 4,061,209**	**$ 4,659,059**	

Table 6

Employment and Land Trust Support at La'au Point

		Lot Sales					Residential Buildout		
	Total	2008	2009	2010	2011	2012	2013	2014	2015
New Resident Spending for Goods and Services				$ 171,882	$ 403,147	$ 806,293	$ 1,381,322	$ 2,148,027	$ 3,007,438
% on Molokai 65%				$ 111,723	$ 262,045	$ 524,091	$ 897,859	$ 1,396,217	$ 1,954,835
Total Local Spending				$ 111,723	$ 262,045	$ 524,091	$ 897,859	$ 1,396,217	$ 1,954,835
JOB CREATION									
Labor Component 50%				$ 55,862	$ 131,023	$ 262,045	$ 448,930	$ 698,109	$ 977,417
Average Wage $ 45,000									
Total Direct Employment From Resident Spending			0	1	3	6	10	16	22
Direct La'au Point Community Association Employment									
Community Maintenance,									
Administration, and Services		5	5	5	5	6	6	7	7
Total Local Employment		**5**	**5**	**6**	**8**	**12**	**16**	**23**	**29**
Land Trust Funds ($000)									
At 5% of Land Sales	**$10,238**	**$ 1,743**	**$ 1,918**	**$ 1,918**	**$ 1,918**	**$ 2,743**			

		Residential Buildout							
		2016	2017	2018	2019	2020	2021	2022	2023
New Resident Spending for Goods and Services		$ 3,866,849	$ 3,037,500	$ 3,712,500	$ 4,500,000	$ 5,175,000	$ 5,737,500	$ 6,300,000	$ 6,750,000
% on Molokai	65%	$ 2,513,452	$ 1,974,375	$ 2,413,125	$ 2,925,000	$ 3,363,750	$ 3,729,375	$ 4,095,000	$ 4,387,500
Total Local Spending		$ 2,513,452	$ 1,974,375	$ 2,413,125	$ 2,925,000	$ 3,363,750	$ 3,729,375	$ 4,095,000	$ 4,387,500
JOB CREATION									
Labor Component	50%	$ 1,256,726	$ 987,188	$ 1,206,563	$ 1,462,500	$ 1,681,875	$ 1,864,688	$ 2,047,500	$ 2,193,750
Average Wage	$ 45,000								
Total Direct Employment From Resident Spending		28	22	27	33	37	41	46	49
Direct La'au Point Community Association Employment									
Community Maintenance,									
Administration, and Services		8	9	9	10	10	11	11	11
Total Local Employment		**36**	**31**	**36**	**43**	**47**	**52**	**57**	**60**
Land Trust Funds ($000)									
At 5% of Land Sales									

Source: Knowledge Based Consulting Group

Table 7

SUMMARY OF PROJECT COSTS FOR LA'AU POINT ($000)

	Assumptions	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Infrastructure & Development Costs												
Offsite Electrical			$ 350	$ 350	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 700
Land Restoration/ Erosion Control			$ 1,445	$ 1,445	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,890
Sewer System			$ 2,408	$ 2,408	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,815
Potable Water System			$ 1,580	$ 1,580	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,160
Nonpotable Water System			$ 2,955	$ 2,955	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,910
Subtotal:			$ 8,865	$ 8,865	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,730
Onsite Costs												
Roadways			$ 128	$ 1,667	$ 1,540	$ 1,540	$ 1,540	$ 1,540	$ -	$ -	$ -	$ 7,955
Drainage Improvements			$ -	$ 400	$ 400	$ 400	$ 400	$ 400	$ -	$ -	$ -	$ 2,000
Housepads			$ -	$ 1,188	$ 1,188	$ 1,188	$ 1,188	$ 1,188	$ -	$ -	$ -	$ 5,940
Potable Water System			$ -	$ 1,097	$ 1,097	$ 1,097	$ 1,097	$ 1,097	$ -	$ -	$ -	$ 5,483
Non-potable Water System			$ -	$ 1,023	$ 1,023	$ 1,023	$ 1,023	$ 1,023	$ -	$ -	$ -	$ 5,117
Electrical/Comm (Underground-Main Road)			$ -	$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ -	$ -	$ -	$ 8,000
Electrical/Comm (Underground-Minor Roads)			$ -	$ 999	$ 999	$ 999	$ 999	$ 999	$ -	$ -	$ -	$ 4,995
Subtotal:			$ -	$ 7,847	$ 7,847	$ 7,847	$ 7,847	$ 7,847	$ -	$ -	$ -	$ 39,234
Amenities												
Amenity Construction			$ -	$ 1,175	$ 1,175	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,350
Total Hard Construction Costs		**$ -**	**$ 8,865**	**$ 17,887**	**$ 9,022**	**$ 7,847**	**$ 7,847**	**$ 7,847**	**$ -**	**$ -**	**$ -**	**$ 59,314**
Contingency	15%	$ -	$ 1,330	$ 2,683	$ 1,353	$ 1,177	$ 1,177	$ 1,177	$ -	$ -	$ -	$ 8,897
Planning, Arch., Eng'g and Other		$ 1,262	$ 1,262	$ 1,262	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,786
Total Design & Construction Costs		**$ 1,262**	**$ 11,457**	**$ 21,832**	**$ 10,375**	**$ 9,024**	**$ 9,024**	**$ 9,024**	**$ -**	**$ -**	**$ -**	**$ 71,997**
On-Going Maintenance, Operations, and Management Costs												
General & Administration		$ 200	$ 400	$ 800	$ 800	$ 600	$ 500	$ 400	$ 300	$ 200	$ 100	$ 4,300
Common Area / Security/		$ -	$ -	$ 272	$ 196	$ 120	$ 44	$ (56)	$ (56)	$ (56)	$ (56)	$ 408
Sales and Marketing	6%	$ -	$ -	$ 1,941	$ 2,151	$ 2,151	$ 2,151	$ 3,051	$ -	$ -	$ -	$ 11,445
Total On-Going Costs:		**$ 200**	**$ 400**	**$ 3,013**	**$ 3,147**	**$ 2,871**	**$ 2,695**	**$ 3,395**	**$ 244**	**$ 144**	**$ 44**	**$ 16,153**
PROJECT COSTS:		**$ 1,462**	**$ 11,857**	**$ 24,845**	**$ 13,522**	**$ 11,895**	**$ 11,719**	**$ 12,419**	**$ 244**	**$ 144**	**$ 44**	**$ 88,150**
Residential Construction												
West Facing Ocean Front Estates				$ -	$ -	$ 567	$ 1,166	$ 1,764	$ 2,363	$ 3,150	$ 3,150	
South Facing Ocean Front Estates				$ -	$ -	$ 822	$ 1,690	$ 2,558	$ 3,426	$ 4,568	$ 4,568	
Inland West Facing Ocean View Sites				$ -	$ -	$ 397	$ 816	$ 1,235	$ 1,654	$ 2,205	$ 2,205	
Inland South Facing Ocean View Sites				$ -	$ -	$ 1,049	$ 2,156	$ 3,263	$ 4,371	$ 5,828	$ 5,828	
Total Residential Construction				**$ -**	**$ -**	**$ 2,835**	**$ 5,828**	**$ 8,820**	**$ 11,813**	**$ 15,750**	**$ 15,750**	
All Costs		**$ 1,462**	**$ 11,857**	**$ 24,845**	**$ 13,522**	**$ 14,730**	**$ 17,546**	**$ 21,239**	**$ 12,057**	**$ 15,894**	**$ 15,794**	

	2016	2017	2018	2019	2020	2021	2022	2023	Total
Residential Construction									
West Facing Ocean Front Estates	$ 3,150	$ 3,150	$ 3,150	$ 3,150	$ 2,583	$ 1,985	$ 1,386	$ 788	$ 31,500
South Facing Ocean Front Estates	$ 4,568	$ 4,568	$ 4,568	$ 4,568	$ 3,745	$ 2,878	$ 2,010	$ 1,142	$ 45,675
Inland West Facing Ocean View Sites	$ 2,205	$ 2,205	$ 2,205	$ 2,205	$ 1,808	$ 1,389	$ 970	$ 551	$ 22,050
Inland South Facing Ocean View Sites	$ 5,828	$ 5,828	$ 5,828	$ 5,828	$ 4,779	$ 3,671	$ 2,564	$ 1,457	$ 58,275
Total Residential Construction	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 12,915**	**$ 9,923**	**$ 6,930**	**$ 3,938**	$ 157,500
All Costs	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 12,915**	**$ 9,923**	**$ 6,930**	**$ 3,938**	**$ 245,650**

Source: Molokai Ranch; Knowledge Based Consulting Group

TABLE 8
CONSTRUCTION AND PROJECT DEVELOPMENT EMPLOYMENT AT LA'AU POINT

Developer Construction		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Infrastructure Costs:		**$ 1,262**	**$ 11,457**	**$ 21,832**	**$ 10,375**	**$ 9,024**	**$ 9,024**	**$ 9,024**	**$ -**	**$ -**	**$ -**
Labor as % of Const Cost	42%	$ 530	$ 4,812	$ 9,169	$ 4,358	$ 3,790	$ 3,790	$ 3,790	$ -	$ -	$ -
Jobs at Average Wage of	$ 75,000	7	64	122	58	51	51	51	-	-	-
Total Residential Construction Costs		**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,835**	**$ 5,828**	**$ 8,820**	**$ 11,813**	**$ 15,750**	**$ 15,750**
Labor as % of Const Cost	40%	$ -	$ -	$ -	$ -	$ 1,134	$ 2,331	$ 3,528	$ 4,725	$ 6,300	$ 6,300
Jobs at Average Wage of	$ 75,000	-	-	-	-	15	31	47	63	84	84
Total Construction Jobs		**7**	**64**	**122**	**58**	**66**	**82**	**98**	**63**	**84**	**84**
On-Going Developer Costs:		**$ 200**	**$ 400**	**$ 3,013**	**$ 3,147**	**$ 2,871**	**$ 2,695**	**$ 3,395**	**$ 244**	**$ 144**	**$ 44**
Labor as % of Ongoing Cost	40%	$ 80	$ 160	$ 1,205	$ 1,259	$ 1,148	$ 1,078	$ 1,358	$ 98	$ 58	$ 18
Jobs at Average Wage of	$ 60,000	1	3	20	21	19	18	23	2	1	0
Total Construction and Developer Employment		**8**	**67**	**142**	**79**	**85**	**100**	**120**	**65**	**85**	**84**
Total Construction Value		**$ 1,462**	**$ 11,857**	**$ 24,845**	**$ 13,522**	**$ 14,730**	**$ 17,546**	**$ 21,239**	**$ 12,057**	**$ 15,894**	**$ 15,794**

Developer Construction		2016	2017	2018	2019	2020	2021	2022	2023	Total
Total Infrastructure Costs:										**$ 71,997**
Labor as % of Const Cost	42%									**$ 30,239**
Jobs at Average Wage of	$ 75,000									**$ 403**
Total Residential Construction Costs		**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 12,915**	**$ 9,923**	**$ 6,930**	**$ 3,938**	**$ 157,500**
Labor as % of Const Cost	40%	$ 6,300	$ 6,300	$ 6,300	$ 6,300	$ 5,166	$ 3,969	$ 2,772	$ 1,575	**$ 63,000**
Jobs at Average Wage of	$ 75,000	84	84	84	84	69	53	37	21	**$ 840**
Total Construction Jobs		**84**	**84**	**84**	**84**	**69**	**53**	**37**	**21**	**$ 1,243**
On-Going Developer Costs:										**$ 16,153**
Labor as % of Ongoing Cost	40%									**$ 6,461**
Jobs at Average Wage of	$ 60,000									**$ 108**
Total Construction and Developer Employment		**84**	**84**	**84**	**84**	**69**	**53**	**37**	**21**	**1,351**
Total Construction Value		**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 15,750**	**$ 12,915**	**$ 9,923**	**$ 6,930**	**$ 3,938**	**$ 245,650**

TABLE 9
Construction and Project Development Tax ($000)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Developer and Residential Construction												
Total Infrastructure Costs:		$ 1,262	$ 11,457	$ 21,832	$ 10,375	$ 9,024	$ 9,024	$ 9,024	$ -	$ -	$ -	$ 71,997
Non Labor Costs as % of Const Cost	58%	$ 732	$ 6,645	$ 12,662	$ 6,018	$ 5,234	$ 5,234	$ 5,234	$ -	$ -	$ -	$ 41,758
Excise Tax on Finished Development	4.0%	$ 50	$ 458	$ 873	$ 415	$ 361	$ 361	$ 361	$ -	$ -	$ -	$ 2,880
Excise Tax on Building Materials	0.5%	$ 4	$ 33	$ 63	$ 30	$ 26	$ 26	$ 26	$ -	$ -	$ -	$ 209
Total Residential Costs		$ -	$ -	$ -	$ -	$ 2,835	$ 5,828	$ 8,820	$ 11,813	$ 15,750	$ 15,750	
Non Labor Costs as % of Const Cost	40%	$ -	$ -	$ -	$ -	$ 1,134	$ 2,331	$ 3,528	$ 4,725	$ 6,300	$ 6,300	
Excise Tax on Finished Development	4.0%	$ -	$ -	$ -	$ -	$ 113	$ 233	$ 353	$ 473	$ 630	$ 630	
Excise Tax on Building Materials	0.5%	$ -	$ -	$ -	$ -	$ 6	$ 12	$ 18	$ 24	$ 32	$ 32	
On-Going Developer Costs:		$ 200	$ 400	$ 3,013	$ 3,147	$ 2,871	$ 2,695	$ 3,395	$ 244	$ 144		
Material as % of Ongoing Cost	50%	$ 100	$ 200	$ 1,507	$ 1,574	$ 1,436	$ 1,348	$ 1,698	$ 122	$ 72	$ -	
Excise Tax on Materials	0.5%	$ 1	$ 1	$ 8	$ 8	$ 7	$ 7	$ 8	$ 1	$ 0	$ -	
Summary												
Excise Tax on Finished Development	4.0%	$ 50	$ 458	$ 873	$ 415	$ 474	$ 594	$ 714	$ 473	$ 630	$ 630	
Excise Tax on Building Materials	0.5%	$ 4	$ 34	$ 71	$ 38	$ 39	$ 45	$ 52	$ 24	$ 32	$ 32	
Income Taxes on Construction Wages	6.0%	$ 38	$ 301	$ 641	$ 356	$ 416	$ 518	$ 647	$ 433	$ 571	$ 567	
Total Taxes on Construction		**$ 92**	**$ 793**	**$ 1,585**	**$ 809**	**$ 929**	**$ 1,157**	**$ 1,413**	**$ 929**	**$ 1,233**	**$ 1,229**	

		2016	2017	2018	2019	2020	2021	2022	2023	Total
Total Residential Costs		$ 15,750	$ 15,750	$ 15,750	$ 15,750	$ 12,915	$ 9,923	$ 6,930	$ 3,938	$ 157,500
Non Labor Costs as % of Const Cost	40%	$ 6,300	$ 6,300	$ 6,300	$ 6,300	$ 5,166	$ 3,969	$ 2,772	$ 1,575	$ 63,000
Excise Tax on Finished Development	4.0%	$ 630	$ 630	$ 630	$ 630	$ 517	$ 397	$ 277	$ 158	$ 6,300
Excise Tax on Building Materials	0.5%	$ 32	$ 32	$ 32	$ 32	$ 26	$ 20	$ 14	$ 8	$ 315
On-Going Developer Costs:		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,109
Material as % of Ongoing Cost	50%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,055
Excise Tax on Materials	0.5%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40
Summary										
Excise Tax on Finished Development	4.0%	$ 630	$ 630	$ 630	$ 630	$ 517	$ 397	$ 277	$ 158	$ 9,180
Excise Tax on Building Materials	0.5%	$ 32	$ 32	$ 32	$ 32	$ 26	$ 20	$ 14	$ 8	$ 564
Income Taxes on Construction Wages	6.0%	$ 567	$ 567	$ 567	$ 567	$ 465	$ 357	$ 249	$ 142	$ 7,968
Total Taxes on Construction		**$ 1,229**	**$ 1,229**	**$ 1,229**	**$ 1,229**	**$ 1,007**	**$ 774**	**$ 541**	**$ 307**	**$ 17,712**

TABLE 10

Indirect Impacts of La'au Point Construction

Value of Construction ($millions)		$ 246						
Output			**Employment**			**Household Income ($millions)**		
Sector	**Multiplier**	**($millions)**	**Sector**	**Multiplier**	**Person Years of employment**	**Sector**	**Multiplier**	**($millions)**
Construction	1.000	$ 246	Construction	0.942	2,314	Construction	0.484	$ 119
Manufacturing	0.070	$ 17	Retail Trade	0.059	145	Engineering and Arch	0.018	$ 4
Engineering and Arch	0.032	$ 8	Engineering and Arch	0.041	101	Manufacturing	0.015	$ 4
Communications	0.030	$ 7	Other Services	0.034	83	Retail Trade	0.013	$ 3
Retail Trade	0.028	$ 7	Manufacturing	0.033	82	Wholesale Trade	0.011	$ 3
Wholesale Trade	0.026	$ 6	Wholesale Trade	0.032	79	Communications	0.010	$ 2
Other Services	0.014	$ 3	Business Services	0.028	68	Other Services	0.008	$ 2
Business Services	0.011	$ 3	Communications	0.018	45	Business Services	0.007	$ 2
Other Transportation	0.011	$ 3	Other Transportation	0.016	39	Other Transportation	0.004	$ 1
Finance	0.008	$ 2	Finance	0.007	17	Finance	0.003	$ 1
Total		**$ 302**	**Total**		**2,973**			**$ 141**

Table 11
Statement of Operating Cash Flow for Molokai Properties Limited

In $(000)

	Actual						Cumulative	Forecast
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2001 - 06	FY 2007
Net Cash Flow from Operations								
Hotel		$ (3,150)	$ (2,285)	$ (2,173)	$ (1,039)	$ (828)	$ (9,475)	$ (791)
Golf Course		$ -	$ -	$ (292)	$ (480)	$ (394)	$ (1,166)	$ (329)
Water Operations		$ (341)	$ (455)	$ (177)	$ (200)	$ (366)	$ (1,539)	$ (331)
Minor Operations (1)		$ (79)	$ (291)	$ (491)	$ (582)	$ (340)	$ (1,783)	$ (603)
Support Costs (2)		$ (2,139)	$ (1,329)	$ (1,506)	$ (1,638)	$ (1,292)	$ (7,904)	$ (1,616)
Subtotal	$ (8,707)	$ (5,709)	$ (4,360)	$ (4,639)	$ (3,939)	$ (3,220)	$ (30,574)	$ (3,670)
Changes in Assets and Liabilities	$ (881)	$ (115)	$ (117)	$ 368	$ 349	$ (590)	$ (986)	$ 13
Cash Flow from Operations	**$ (9,588)**	**$ (5,824)**	**$ (4,477)**	**$ (4,271)**	**$ (3,590)**	**$ (3,810)**	**$ (31,560)**	**$ (3,657)**
Capital Spending							$ -	
Work in Progress		$ (547)	$ (830)	$ (292)	$ (425)	$ (718)	$ (2,812)	$ -
Fixed Assets	(597)	$ (150)	$ (47)	$ (577)	$ (502)	$ (126)	$ (1,999)	$ (248)
Capital Spending	**$ (597)**	**$ (697)**	**$ (877)**	**$ (869)**	**$ (927)**	**$ (844)**	**$ (4,811)**	**$ (248)**
Work on Master Plan		$ -	$ -	$ -	$ (152)	$ (405)	$ (557)	$ (1,005)
Net Cash Flow	**$ (10,185)**	**$ (6,521)**	**$ (5,354)**	**$ (5,140)**	**$ (4,669)**	**$ (5,059)**	**$ (36,928)**	**$ (4,910)**

Notes:

(1) Minor Operations include Rentals, Cattle, Repair and Maintenance Shop, Nursery, Theaters, Gas Station, Kauluakoi Hotel, and Roads

(2) Includes Professional fees, Legal expenses, Insurance, Real Property taxes, Partnership operations, etc.