

APPENDIX A



Appendix C:
Maui County Department of Water Supply Honokohau System Services,
Tax Map Key Parcels and Photograph of the Area of Use

Legend

- Service Connection
- Tax Map Key



Ka Pa‘akai Analysis for Maui County Honokōhau Stream Diversion in the Honokōhau Aquifer System, Lahaina Aquifer Sector

Honokōhau Ahupua‘a, Kā‘anapali Moku, Island of Maui

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PREPARED FOR

**County of Maui, Department of Water
Supply**

PREPARED BY

SWCA Environmental Consultants

KA PA‘AKAI ANALYSIS FOR MAUI COUNTY HONOKŌHAU STREAM DIVERSION IN THE HONOKŌHAU AQUIFER SYSTEM, LAHAINA AQUIFER SECTOR

HONOKŌHAU AHUPUA‘A, LAHAINA MOKU, ISLAND OF MAUI

Prepared for

County of Maui, Department of Water Supply
200 South High Street
Wailuku, Hawai‘i 96793-2155
Attn: Eva Blumenstein

Prepared by

Tamara Luthy, Ph.D., and Wainani Traub, M.S.

Principal Investigator

Rowland Reeve, M.A.

SWCA Environmental Consultants
1200 Ala Moana Boulevard, Suite 380
Honolulu, Hawai‘i 96814
(808) 548-7922
www.swca.com

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SWCA Cultural Resources Report

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EXECUTIVE SUMMARY

On behalf of the County of Maui Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) conducted a Ka Pa‘akai Analysis in support of the water use permit application for the existing Honokōhau Stream diversion located within the Honokōhau Aquifer System in the larger Lahaina Aquifer Sector.

In 2022, the State of Hawai‘i, Department of Land and Natural Resources, Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as both a Surface and Groundwater Management Area. As a result, the MDWS is required to submit water use permit applications to the CWRM for all existing and proposed water sources within the Lahaina Aquifer Sector.

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa‘akai Analysis. These analyses follow the guidelines established by the 2000 Hawai‘i Supreme Court decision in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*.

Using a combination of archival research, existing oral history interviews, and public testimony from the CWRM’s Instream Flow Standard Assessment Report (IFSAR) meetings, this Ka Pa‘akai Analysis report identifies and discusses the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honokōhau Aquifer System, that are related to water use and could potentially be impacted by water use related to the existing diversion of Honokōhau Stream. These traditional and customary practices include the cultivation of wetland *kalo* (taro, *Colocasia esculenta*), nearshore fishing, the gathering of *limu* (algae), and the gathering of medicinal and other plants. Traditional and customary practices such as gathering *lā‘ua lapa‘au* (medicinal plants), *lo‘i kalo* (flooded taro terraces) cultivation, and gathering riparian species such as ‘o‘opu (goby fish), ‘ōpae (endemic shrimp), the shellfish *hīhīwai* (*Neritina granosa*), and *hapawai* (*Theodoxus vespertinus*) all declined dramatically in the area due to decades of pineapple cultivation. In spite of this, cultural practitioners continue to farm *lo‘i kalo* and fish in the areas makai of the Honokōhau Ditch. In spite of the decades of disconnection from the mauka areas due to the pineapple industry, cultural practitioners are currently increasing the number of *lo‘i kalo* under active cultivation and teaching *keiki* (children) and community members about *mauka* to *makai* (inland to coastal) stewardship, all of which require a sufficient availability of fresh water.

Historical accounts describe Honokōhau Valley as one of the most productive regions for *kalo* cultivation on the entire island of Maui, rivalled only by Kahakuloa. The development of commercial cultivation during the plantation era, however, led to a dramatic decline in *lo‘i kalo* cultivation in Honokōhau. The plateau lands between the deep cut gulches were converted into sugarcane and pineapple fields, and the Honokōhau Stream was diverted into the Honokōhau Ditch. Narrators who contributed to existing oral history interviews and public testimony believe that the existing Honokōhau Stream diversion directly impacts fresh water availability for *lo‘i kalo*. Cultural informants identify the Honokōhau Stream diversion as a decisive factor in the decline in key, culturally important natural resources such as ‘o‘opu (goby fish), ‘ōpae (endemic shrimp), the shellfish *hīhīwai* (*Neritina granosa*) and *hapawai* (*Theodoxus vespertinus*), *limu*, and nearshore fish. The Honokōhau Stream surfacewater diversion, paired with the ecological disturbances from legacy sugarcane and pineapple fields, have led to cascading effects on the natural environment. These effects include a decline in water to irrigate *lo‘i kalo*; silt, pesticide, and fertilizer runoff damaging the reefs; a lack of mauka to makai connectivity for ‘o‘opu and ‘ōpae, and an influx of invasive plant and animal species in the mauka areas leading to increased fire risk, which in turn reduced aquifer replenishment.

This Ka Pa‘akai Analysis found that the Honokōhau Stream diversion contributes to an overall scarcity of freshwater that impacts the vitality of ongoing traditional and customary practices in the Honokōhau ahupua‘a. The Maui County Department of Water Supply has therefore agreed to undertake a number of feasible actions to maintain and potentially increase supplies of fresh water for Native Hawaiian traditional and customary practices. This Ka Pa‘akai Analysis identified a number of feasible actions to help mitigate the potential impacts of the existing stream diversion, which include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

Many words in the Hawaiian language, ‘Ōlelo Hawai‘i, are used throughout this report. In addition to being defined the first time that they are introduced in the report, all Hawaiian-language words are defined in the glossary (see Section 8 Glossary of Hawaiian Words Used in the Text).

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1 INTRODUCTION

On behalf of the County of Maui, Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) has conducted this Ka Pa‘akai Analysis in support of the water use permit application for the existing Honokōhau Stream diversion within the Honokōhau Aquifer System in the Lahaina Aquifer Sector.

1.1 Lahaina Water Management Area

In 2022, the State of Hawai‘i, Department of Land and Natural Resources, Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as a Surface and Groundwater Management Area. This decision was made in accordance with Hawai‘i Revised Statutes (HRS) Chapter 174C, the State Water Code, and Hawai‘i Administrative Rules (HAR) Title 13, Water Resources, Chapter 171, Designation and Regulation of Water Management Areas. As a result of this designation, the County of Maui Department of Water Supply is required to submit water use permit applications to the CWRM for all of its existing and proposed water sources within the Lahaina Aquifer Sector.

The Lahaina Aquifer Sector includes the *moku* (districts) of Lahaina and Kā‘anapali, both within West Maui. The Lahaina Aquifer Management Area includes the Honokōhau, Honolulu, Honokahua, Kahana, Honokōwai, Wahikuli, Kahoma, Kaua‘ula, Launiupoko, Olowalu, and Ukumehame Surface Water Hydrologic Units and the Honokōhau, Honolulu, Honokōwai, Launiupoko, Olowalu, and Ukumehame Groundwater Hydrologic Units. The Honolulu, Honokōhau, Kahana, Honokōwai, and Wahikuli Hydrologic Units are in the Kā‘anapali Aquifer System, whereas the hydrologic units of Launiupoko, Ukumehame, Olowalu, and Kaua‘ula are within the Lahaina Aquifer Systems (Figure 1). The present report focuses on the Honokōhau Hydrologic Unit. The Honokōhau Hydrologic Unit encompasses the *ahupua‘a* (traditional land divisions) of Honokōhau in the Kā‘anapali moku (DLNR CWRM 2019b).

In coming to its decision, the CWRM noted several concerns regarding the surface and groundwater resources in the Lahaina Aquifer Sector:

- These resources could be threatened by existing or proposed withdrawals or diversions of water.
- There is the potential for harm to groundwater quantity and quality by saltwater intrusion.
- There are serious historic and ongoing disputes over current and planned uses of water.
- There is climate uncertainty and potential drought and decline in rainfall and recharge.
- There is surface and groundwater interaction and connection that should be managed in an integrated manner.

The MDWS currently operates two surface water treatment plants and eight well pumps within the Lahaina Aquifer Sector. These existing sources withdraw groundwater from the Honolulu Aquifer System and the Launiupoko Aquifer System, and surface water from Honokōhau and Kanahā Streams. The MDWS is preparing water use permit applications for all of these existing water sources. In addition, the MDWS plans to prepare water use permit applications for new water sources under development.

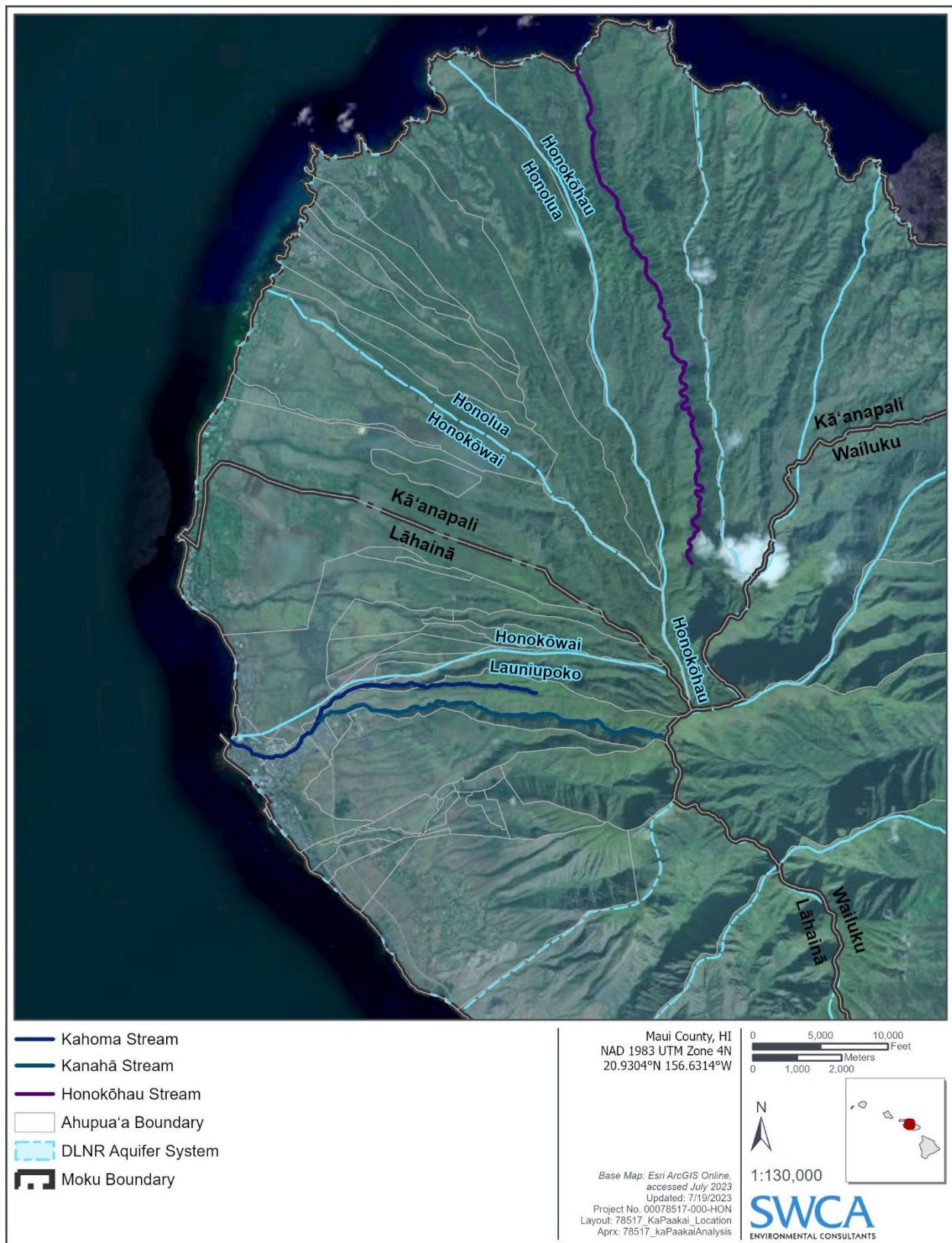


Figure 1. Map of Aquifer Systems within the Lahaina Aquifer Sector.

1.2 Honokōhau Aquifer System

The Honokōhau Aquifer System encompasses the ahupua‘a of Honokōhau. County water sources within the Honokōhau Aquifer System include the Maui Land & Pine diversion of Honokōhau Stream (Figure 2). This source provides water to the residential and resort communities in the Kā‘anapali area.

1.3 Water Issues

The *Maui Water Use and Development Plan* (2019) acknowledges that West Maui’s water resources are constrained by climate change issues such as rising temperatures, increasingly erratic and decreasing rainfall, and other changes in weather patterns. In addition, anthropogenic factors such as increasing population, urban growth, complicated legal processes, lack of capital to improve aging infrastructure, and tensions between the needs of various water users must all be considered by the County when determining water allocations. Existing plantation irrigation systems from Maui Land and Pineapple and Pioneer Mill Irrigation Systems in West Maui, for example, continue to deteriorate since the state transitioned away from pineapple and sugar cane, even though *kalo* (taro, *Colocasia esculenta*) farmers continue to rely on these systems (MDWS 2019:73). Many of these environmental and anthropogenic factors impact the health and vitality of traditional and customary practices taking place within the Lahaina Aquifer Sector.

1.4 Ka Pa‘akai Framework

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa‘akai Analysis. These analyses will follow the guidelines established by the 2000 Hawai‘i Supreme Court decision in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*. The Ka Pa‘akai Analysis and consultation process is designed to identify Native Hawaiian cultural, historical, and natural resources and propose feasible actions to protect against potential impacts to Native Hawaiian customary and traditional rights.

The Hawai‘i State Constitution was amended in 1978 to specifically recognize traditional and customary Hawaiian practices. Article XII Section 7 of the Constitution states that, “The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua‘a tenants who are descendants of Native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.”

Cultural practices are broadly defined as traditions, beliefs, practices, life ways, and the societal history of a community and its traditions, arts, crafts, music, medicine, religion, and related institutions. Hawai‘i State agencies have the responsibility to assess the potential impacts of proposed actions on environmental resources in the public trust in order to preserve and protect customary and traditional Native Hawaiian rights to the extent feasible.

The Hawai‘i Supreme Court in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission* (2000) reaffirmed that “the State and its agencies are obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians to the extent feasible.” The Court provided an analytical framework “to effectuate the State’s obligation to protect Native Hawaiian customary and traditional practices while reasonably accommodating competing private [property] interests.” Under this framework, state and county agencies must independently assess the following when considering proposed actions, such as reviewing land use applications or, as in this case, water use permit applications:

- The identity and scope of “valued cultural and historical or natural resources” in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
- The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and
- The feasible action, if any, to be taken by the LUC [Land Use Commission, or any state agency] to reasonably protect native Hawaiian rights if they are found to exist. (Ka Pa‘akai O Ka ‘Aina v. Land Use Commission 94 Haw 13, Haw. 2000:25–26)

The Ka Pa‘akai Analysis and consultation process is intended to address each of these three elements.

1.4.1 Ka Pa‘akai Analysis

As part of the MDWS’s water use permit application for its existing and proposed water uses within the Lahaina Aquifer Management Area, a Ka Pa‘akai Analysis is required for each application. This analysis is designed to identify the cultural, historical, natural resources, and traditional and customary Native Hawaiian practices that may be affected by the permit action and to develop mitigation measures to protect these resources and rights.

The Ka Pa‘akai Analysis for the existing Maui County stream diversion located within the Honokōhau Aquifer System follows the guidelines established by the 2000 Hawai‘i Supreme Court decision and involves:

- The identification of cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area, and the extent to which traditional and customary Native Hawaiian rights are exercised in the area;
- The determination of the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impaired by actions associated with the existing water use; and
- If impacts are found to exist, the identification of actions that could be taken, as needed, to reasonably protect traditional and customary Hawaiian rights and practices within the permit areas.

2 CULTURAL AND HISTORIC BACKGROUND

This section presents the past and present historical and cultural significance of the permit area, with a focus on water sources. This cultural and historic background also serves to provide context to some of the historic and ongoing disputes over water use in the Lahaina Aquifer Sector Area. These disputes were among the concerns raised by the CWRM when designating the area as a Surface and Groundwater Management Area. The following research is intended to help identify cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area and to be sufficient to the extent appropriate to assess potential impacts to traditional and customary Hawaiian rights and practices pertaining to water in the permit area.

2.1 A Brief Historic Context for Traditional Hawaiian Cultural Knowledge

In any sensitive discussion of Native Hawaiian culture, one must understand the role of colonization in eroding traditional cultural knowledge systems. Native Hawaiian culture—past and present—exists in close partnership with its natural environment. Changes in the traditional land tenure system and the adoption of western concepts of land ownership in the nineteenth century had significant direct and indirect impacts on traditional and customary Hawaiian rights and practices tied to *‘āina* (land). The privatization of land resulted in the loss and destruction of many significant cultural resources and denied Native Hawaiian cultural practitioners access to lands previously used for traditional cultural purposes.

The loss of traditional Hawaiian cultural knowledge during the nineteenth and early twentieth centuries was further compounded by the devastating decline in the native population resulting from the introduction of foreign diseases to which the Hawaiian people had no developed immunity. Changes in traditional life ways resulting from the migration of younger people from the country districts to growing economic centers such as the port of Honolulu, as well as the shift from subsistence agriculture to the commercial cultivation of crops such as pineapple and sugar, contributed to a loss of cultural memory. With the passing of the last custodians of specialized cultural knowledge, that knowledge was lost forever.

Informants interviewed for this study have identified the effects of pineapple and sugar cane plantations, as well as the growth of tourism and luxury housing developments, as primary factors that have profoundly changed the environment of West Maui. The cumulative impacts of these industries on the environment have posed significant challenges for Native Hawaiians, hindering their ability to maintain certain traditional and customary practices reliant upon the health of the *‘āina*.

Not until 1978 was the Hawai‘i Constitution amended to protect and preserve the traditional customary rights of Native Hawaiians, and not until 1995 did the Hawai‘i Supreme Court confirm Native Hawaiian rights to access undeveloped and under-developed private lands (State of Hawaii Environmental Council 1997:1). These actions came much too late to prevent irretrievable loss of traditional cultural knowledge. With this in mind, it is important to note that an absence of evidence is not evidence of absence. The authors of this Ka Pa‘akai Analysis recognize that the loss of Hawaiian traditional cultural knowledge likely applies to the current study area. It is probable that there are place names whose meaning has been lost or which themselves have been forgotten, and traditions no longer passed on. We also recognize that, while we have made a good faith effort to identify traditional and customary Hawaiian rights and practices associated with the permit area, it is possible that there may be place names missed, traditional history misinterpreted, or *kūpuna* (elder) voices not heard.

As this Ka Pa‘akai Analysis shows, however, despite the enduring legacies of colonialism, there are many individuals who possess cultural knowledge, and efforts to revitalize traditional and customary Hawaiian rights and practices are growing. For these cultural revitalization efforts to succeed, it is crucial to support the health of the environments that sustain Native Hawaiian cultural traditions and customs. At the core of ensuring the possibility of these cultural revitalization efforts lies the availability of clean water, which forms the foundation of healthy environments.

2.1.1 *The Significance of Water in Hawaiian Culture*

In *Native Planters in Old Hawaii*, E. S. Craighill Handy, Elizabeth Green Handy, and Mary Kawena Pukui explain that the significance of water in Hawaiian culture is reflected in the Hawaiian words for wealth and law.

Water, which gave life to food plants as well as to all vegetation, symbolized bounty for the Hawaiian gardener for it irrigated his staff of life—taro. Therefore, the word for water reduplicated meant wealth in general, for a land or a people that had abundant water was wealthy.

The word waiwai means wealth, prosperity, ownership, possession. Literally it is “water-water.” A Hawaiian farmer who had all the water he needed for growing taro was indeed a prosperous man...

The word kōnawai, or law, also tied back to water. Ka-na-wai is literally “belonging-to-the-waters.” With farms along the water system upon which all depended, a farmer took as much as he required and then closed the inlet so that the next farmer could get his share of water—and so it went until all had the water they needed. This became a fixed thing, the taking of one’s share and looking after his neighbor’s rights as well, without greed or selfishness.

So a person’s right to enjoy his privileges, and conceding the same right to his fellow man, gave the Hawaiians their word for law, kōnawai, or the equal sharing of water. (Handy and Handy 1972:57–58)

They further explained how alien the Western conception of water as a commodity seemed to Native Hawaiians.

Inalienable title to water rights in relation to land use is a conception that had no place in the Hawaiian way of thinking...Water, whether for irrigation, for drinking, or other domestic purposes, was something that “belonged” to Kane-i-ka-wai-ola (Procreator-in-the-water-of-life), and came through the meteorological agency of Lono-makua the Rain-provider...The paramount chief, born on the soil and hence born of the maka‘ainana of a moku (island or district), was a medium in whom was vested divine power and authority...But this investment...was instrumental in providing only a channeling of power and authority, not a vested right...But this was not equivalent to our European concept of “divine right.” The ali‘i nui, in old Hawaiian thinking and practice, did not exercise personal dominion, but channeled dominion. In other words, he was a trustee. The instances in which an ali‘i nui was rejected and even killed because of abuse of his role are sufficient proof that it was not personal authority by trusteeship that established right (pono). (Handy, Handy, and Pukui 1972:65, cited in Scheuer and Isaki 2021:78-79)

Emma Nakuina, writing in the late 1800s, described how *‘auwai* (water ditches) were traditionally managed so that there was always sufficient fresh water flow to all individuals living downstream.

No auwai was permitted to take more water than continued to flow in the stream below the dam. It was generally less, for there were those who were living makai or below the same stream, and drawing water from it, whose rights had to be regarded. Any dams made regardless of this well-recognized rule were leveled to bedrock by the water rights holder below, and at any rebuilding, delegates from each dam below were required to be present to see that a due proportion of water was left in the stream. (Nakuina 1893, cited in Scheuer and Isaki 2021:82)

2.1.2 Shoreline Traditional Hawaiian Practices in West Maui

Native Hawaiians were keen observers of native ecosystems. The ahupua‘a system was premised upon the interconnections between mauka (inland) and makai (coastal) ecosystems, and between *wai* (fresh water) and *kai* (ocean water or saltwater). Native Hawaiians understood that the health of important marine resources required freshwater discharge from mauka areas (Winter et al. 2018). Many prized species of fish rely upon *limu* (algae) for their food; many species of nearshore limu thrive best in areas with both fresh water and ocean mixing (Abbott 1992). These ancient realizations about the parallels between healthy freshwater and ocean ecosystems were also clearly articulated by kūpuna during ethnographic interviews, community testimony, and existing oral history interviews cited in this report.

West Maui was known for its abundant marine resources. Inhabitants of West Maui relied heavily on fishing in the pre-Contact and early post-Contact periods. According to E. S. Craighill Handy:

On the south side of western Maui the flat coastal plain all the way from Kihei and Maalaea to Honokahua, in old Hawaiian times, must have supported many fishing settlements and isolated fisherman’s houses, where sweet potatoes were grown in the sandy soil or red *lepo* near the shore. For fishing, this coast is the most favorable on Maui, and, although a considerable amount of taro was grown, I think it is reasonable to suppose that the large fishing population which presumably inhabited this leeward coast ate more sweet potatoes than taro with their fish.... (Handy 1940:159–160)

A.D. Kahalelio discussed fishing lore in the area around the turn of the last century, including ‘ō‘io (ladyfish/bonefish, *Albula vulpes*) fishing.

The other division is the division called Mamali oio and is done just beyond the reef and places close to shore, from the steamer landing of Maalaea to the cape of Kunounou at Honokapohau, district of Lahaina. These are the places in which fishing is done by those of Olowalu, Lahaina, Kaanapali, Honolua, and Honokohau. (Kahalelio 1902, cited in Sterling 1998:17)

2.2 Ka‘ānapali Moku

2.2.1 I Ka Wā Kahiko: Pre-Contact Kā‘anapali Moku

Kā‘anapali Moku was a district known for its marine resources and valleys suitable for cultivating important food crops, especially kalo and ‘uala (sweet potato; *Ipomoea batatas*). The large plateau overlooking the Honolua Bay was known as Kulapka‘e‘a, meaning “dusty plain.” Honolua Bay is one of six bays in Kā‘anapali Moku, known collectively as “Hono-a-Pi‘ilani,” meaning “the bays of Pi‘ilani.” Pi‘ilani was a renowned sixteenth century Maui chief (Kamakau 1961:22). Honolua itself means “two bays,” which refers to its bifurcated shape. These bays were all important to Native Hawaiians for fishing and gathering of marine resources. (Planning Consultants Hawai‘i, LLC 2018)

Kā'anapali District was also known for an *ala loa* (long trail) constructed in the 1500s during the reigns of Pi'ilani and Kiha-a-Pi'ilani (Walker 1931). The strategic importance of Kā'anapali Moku led to battles between Hawai'i Island ali'i nui (high chief) Alapa'i and Pele-io-holani a ruling chief of Kaua'i, which occurred at Nāpili and Honokahua. (Kamakau 1961:74) The ahupua'a of Honolua and Honokahua were later granted to King Kamehameha II by his father, King Kahemahema I. (Ashdown 1978, cited in Planning Consultants Hawai'i, LLC 2018).

D.T. Flemming offers a description of Kā'anapali which indicates the abundance and prosperity of the valleys under kalo and sweet potato cultivation.

In all three valleys which you mention—Honokowai, Honokohua and Honolua, as well as Kahana, there was considerable taro raised in olden times; as a matter of fact, a great deal was raised in Honokowai, where there must have been 30 or 40 acres under cultivation at one time (Handy 1940:106).

Hand, Handy, and Pukui also mentioned extensive lo'i kalo in Honokōwai, Kahana, Honokahua, and Honolua.

The first four [Honokawai, Kahana, Honokahua, Honolua] all had extensive lo'i lands in their valley bottoms, where terraces rose tier on tier in symmetrical stone-faced lo'i. On this part of the coast there is no sloping kula land seaward of the valleys as there is back of Lahaina and southeastward (1972:494).

Handy offers additional details about sweet potato cultivation in these areas.

I am told that in ancient times there were numerous settlements on western Maui, between Honokohau and Kahakuloa, and also several between Kahakuloa and Waihee. Settlements in these localities imply planting of sweet potatoes on the lower kula...From [Olowalu] along the leeward coast, through Kaanapali, the kula lands now used for sugar cane and pineapple would have been ideal for sweet potato culture. Some accounts indicate, however, that potato planting was practiced only as an adjunct to the taro culture in and below the great valleys (1940:160).

2.3 Traditional Cultivation in Honokōhau

E. S. Craighill Handy explains how the Honokōhau stream supported intensive cultivation of wetland taro.

This valley—watered by a large rivulet the flow of which never ceases, even today when much of its water is piped off in the upper valley—was, and still is, an area of intensive cultivation of wet taro and flooded terraces. In 1931 a larger proportion of the patches were under taro cultivation in Honokohau than anywhere else on Maui with the exception of Kahakuloa. In 1934 I observed that one or two considerable areas had been abandoned and that a number of patches had been planted to rice instead of taro, because of root rot affecting the taro. Only one old Hawaiian kamaaina, David Kapaku, still cultivates his own wet taro. The rest of the planting is done commercially by several small proprietors, Hawaiian and Chinese, and by laborers employed by D. T. Fleming, to whose enterprise largely is due the continued utilization of so many old terraces (Handy 1940:106).

2.4 Māhele 'Āina

A dramatic change that affected the lives of Hawaiians in the 1840s was the Māhele 'Āina (land division, also known as the Great Māhele or simply the Māhele), which ended the traditional Hawaiian system of land tenure and ushered in private ownership of land. Under the traditional system, the maka'āinana (common people) occupied and worked the land under the supervision of the ali'i and their konohiki (land stewards). The chiefs in turn held the land in trust for the ali'i nui, who held it in trust for the akua (the gods). The Māhele, instituted by Kamehameha III, legalized the private ownership of land along the Western model, legislating that the lands of the Hawaiian Kingdom were to be “divided into three parts—one to the Chiefs, one for the support of the Government, and a third for the King’s personal use. These we know by the names of ‘Konohiki,’ ‘Government’ and ‘Crown Lands’” (Indices of Awards 1929:vii). It was principally from within the chief’s “one-third of the Great Māhele that the common people, who were their tenants, received title to the small holdings which are known as ‘Kuleanas.’ These Kuleanas were areas which these tenants had improved and used for their own purposes” (Indices of Awards 1929:vii).

In December 1845, a Board of Commissioners to Quiet Land Titles (often referred to as the Land Board or Land Commission) was established to investigate land claims and make awards based on these claims and their supporting testimony. If a claim was approved by the Board, a Land Commission Award (LCA) was granted to the claimant. These LCA properties were known as kuleana lands. Each claim was assigned a helu (LCA number). Often a single kuleana claim consisted of several 'āpana (land divisions). An index of these claims can be found in Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands prepared by the Office of the Commissioner of Public Lands of the Territory of Hawai'i in 1929 (Indices of Awards 1929).

2.4.1 Māhele Land Awards in Honokōhau

Well over 100 LCA awards are recorded for the ahupua'a of Honokōhau. Several of these Māhele land documents describe 'o'opu fisheries and extensive lo'i kalo systems in Honokōhau (Maly and Maly 2003:266, 267, 288; Kīpuka database). It is clear from these Māhele documents that the 'o'opu and kalo were important food sources to the people of Honokōhau. The large number of land awards corresponds with ethnohistoric research pointing to a large population in the area.

2.5 Plantation History

In 1860, James Campbell started what would become known as the Pioneer Mill Company, a sugar plantation in Lahaina. As the years progressed, the company expanded its holdings by acquiring Lahaina Sugar Company and the West Maui Sugar Company. By 1885, Pioneer Mill Company was cultivating 600 acres out of the total 900 acres it owned, and this number increased to 8,000 acres by 1910. In 1913 Pioneer Mill Company acquired the Olowalu Company, adding 1,200 acres of cane land to the plantation. By 1935, over 10,000 acres were producing cane for the Pioneer Mill. Approximately 1,000 acres of cane was flumed directly to the mill while the rest of the cane was transported by rail (Hawaiian Sugar Planters' Association 2004).

Irrigation of Pioneer Mill Company's fields, an area approximately 10 miles long and 1.5 miles wide with altitudes between 10 and 700 feet, was accomplished with water drawn from wells and water transported from the West Maui Mountains. The McCandless brothers drilled the first well on Maui specifically for Pioneer Mill Company in 1883. By 1935, substantial investments, totaling more than \$3,000,000, were made in water development, including gravity systems and underground supplies (Hawaiian Sugar Planters' Association 2004).

Maui Land and Pineapple Company and Pioneer Mill jointly funded the construction of the Honokōhau Ditch. Since both of these companies ceased operations, water from Honokōhau Ditch has been diverted to support the non-potable needs of the Kapalua Resort and the Maui Department of Water Supply Mahinahina Water Treatment Facility (DLNR CWRM 2019c:1). The Maui County Department of Water Supply used an average of 1.68 million gallons (mgd) a day of water diverted from Honokōhau Stream between the years of 2003-2014. Maui Land and Pineapple Company reported an additional metered use of 1.0 mgd for resort and luxury home irrigation, 0.8 million mgd for golf course and related irrigation, and 0.2 mgd for diversified agricultural or other needs from Honokōhau Ditch. (DLNR CWRM 2019c:93). As of 2019, Maui County Department of Water Supply had an estimated use of 2.5 mgd (DLNR CWRM 2019c:95).

2.6 Historic Properties within Kā‘anapali

The Office of Hawaiian Affairs’ Kīpuka database lists a total of 60 identified historic sites located within the moku of Kā‘anapali (Office of Hawaiian Affairs [OHA] 2023b). Archaeologist Winslow M. Walker recorded two *heiau* (traditional temple or shrine) within Honokōhau ahupua‘a, ‘Ili‘ilikea Heiau and Maiu Heiau (Ashdwon 1978; Thrum 1909, Walker 1931).

3 COMMUNITY CONSULTATION

3.1 Community Consultation Methodology

SWCA identified and consulted with individuals familiar with past and present cultural activities conducted in the permit area, particularly those related to water. To initiate this process, SWCA compiled a list of cultural consultation contacts that included government agencies, Native Hawaiian Organizations (NHOs), community groups, and individuals identified as having a potential interest in water use activities in the Lahaina Aquifer Sector.

In compiling this list SWCA included all NHOs listed on the U.S. Department of Interior’s *Native Hawaiian Organization Notification List* whose geographical purview is Maui Island and whose stated mission relates to environment and/or culture. The list also included select NHOs with a statewide purview whose stated mission relates to environment and/or culture. SWCA prepared a request for consultation letter, a copy of which was sent out to each of the contacts on the cultural consultation contact list. The request for consultation letter delineated the area of the Lahaina Aquifer Sector, described the Ka Pa‘akai Analysis component of the water use permit application, and requested assistance in:

- Identifying *kama‘āina* (long-term residents), kūpuna, and other individuals who might be willing to share their cultural knowledge of the permit area and their cultural resources.
- Information on present and past water use in the permit area.
- Information on place names and cultural traditions associated with the permit area.
- Information on cultural resources that may be impacted by water use activities by the MDWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit area.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit area.

The text of the request for consultation letter is provided in Appendix A of this report.

To supplement the current community consultation efforts undertaken as part of this Ka Pa‘akai Analysis, SWCA researched previous, publicly available studies that involved consultation with members of the Lahaina community regarding water issues. Information provided by community members and cultural practitioners as part of these studies that have direct relevance to the issues addressed in this analysis has been included in the following sections. The results of individual interviews, both previous and current, are presented under the names of the individuals interviewed.

3.2 Public Comments for the Instream Flow Standards Assessment Reports

In 2017 and 2019 the (DLNR), (CWRM) held consultation meetings to gather public comments for the Instream Flow Standard Assessment Reports (IFSAR) for the Lahaina Aquifer Sector. The public comments given during the meeting for Honolua and Honokōhau are applicable to the current Ka Pa‘akai Analysis and are presented here to enhance and supplement the community consultation effort for this Ka Pa‘akai Analysis.

3.2.1 Public Comments for the Honolua and Honokōhau Instream Flow Standard Assessment Report

The *Maui Water Use Draft Plan* references a meeting conducted on March 8, 2017, during which community members submitted testimony that the DLNR should “...refrain from issuing any more water permits before Native Hawaiian water rights are restored to practice traditional and cultural uses.” (MDWS 2019:20) These concerns were evident during two separate consultation meetings while developing the (IFSAR) for the Lahaina Aquifer Sector. The CWRM held a consultation meeting for the Hydrologic Unit of Honolua and Honokōhau on September 9, 2019. As part of this study, the comments from the community were reviewed to determine what sorts of traditional and customary practices were carried out in the area, and what sorts of potential mitigation measures were recommended by these community members. A total of 17 people testified in person during the meeting for Honolua and Honokōhau. The following section discusses the most relevant comments for the purpose of this report.

The public comments for Honolua and Honokōhau revealed community concerns pertaining to sufficient water to irrigate existing and future lo‘i, the need for land stewards to maintain the ditches to ensure continuous water flow, enforcement of existing water allocations, and the need to protect and monitor populations of native stream species. The most relevant comments for this analysis have been organized by theme.

3.2.1.1 AGEING AND BROKEN INFRASTRUCTURE

Darryl Aiwohi of Honokōhau wanted to see CWRM act to ensure steady water supply after large storms:

Our stream, because of that last storm, I know it affected a lot of things. It really screwed up our stream. One of the questions is, what are you guys going to do to help me get rid of. I mean we’ve got, really I bring this here, but his taro patches are completely wiped out. The water came down and took all his soil, all his taro, he can’t grow taro any more....I know this storm was a one-in-100-year storm, but the river itself is trashed. When are you guys to, who is going to come and clean it?...Clean up and guarantee a steady water supply (DLNR CWRM 2019a: 2).

Sy Feliciano of Hoa‘āina Farm Services in Honokōhau Valley discussed fluctuations in water availability. He said that nobody routinely cares for or repairs the ditch anymore. He also expressed concern that the stream diversions at Honokōhau and Honokōwai are not being properly monitored. The fluctuations in water availability cause fish to die:

...I reached out to the taro farmers, mostly Wili Wood, to Keith, to other farmers, Kimo Lindsey, and asked them how the river is fluctuating during the big water and what’s happening. So a lot of the concern was there was a dry area from Aotaki dam down to Taro gate. So the dry area was because the high water would clog up the Aotaki gate and

then no water would flow for two miles until Taro gate was dumping water back in...And I watched the 'o'opu stress out and I asked Ayron a question, "how many days does it take for the fish to start dying." And he said, "maybe like four days maximum." ...Hoa'āina, Maui Land & Pine, they needed to be more responsible and get there within... Within 24 hours I could see the stream... the fish stressing, because there was no water coming through the dam. So what I'm hoping is with this stream report, we get more regulation on the diversions. So just because it's way up in the mountain and there's nobody really monitoring it and taking care of it, we need to have some kind of way of policing it and monitoring it and the response time needs to be, not four days, but 24 hours... So I'm hoping that this report can be a little more strict on those big diversions, not just Honokōhau, but Honokōwai, all these diversions... whoever is running this ditch needs to be on it... A lot of the water is being diverted for no reason, like Ayron said that when the high water happens, a lot of water is pushed into the intake, into the ditch, and it's not even being used. All these systems need to be repaired, need to be monitored, so the community who has a hard enough time to grow taro, doesn't have to be worried about when is the workers going to go up there and protect their right, their law... (DLNR CWRM 2019a: 4-5)

Ka'apuni Aiwahi of Honokōhau Valley also stated that, in addition to wanting 100% of the water restored to Honokōhau Valley, whoever manages the water needs to be responsible for fixing the dams and the gates in the valley:

...And what I would like to tell the Commission that I feel the right thing to do is to restore 100-percent of the water in Honokōhau Valley... With the gate, with the dam still broken, you know, we have people, we have the County, we have all these people wanting to take water, but where are they when it's time to take care of it. Where are they where we have these streams that the State manages, but who is the ones that are left to clean it. It's the people in the valley. It's not everybody else that lives outside the valley. (DLNR CWRM 2019a: 5-6)

Tamara Paltin of the Community Plan Advisory Committee wants to see the stream diversions removed and repairs made to existing infrastructure:

...[W]e need to have a big framework for growth for more lo'i in Honokōhau... For Honolua, when we were talking about the diversion there, they're saying that all this water goes into a diversion and it comes out a small little pipe and they're claiming that the entire amount of the water gets back into the stream and so I would say just remove the diversions. Remove the diversions that are broken, remove the diversions that are just taking the water and supposedly putting 100-percent back, because what's really the point of that if we're talking about a framework of growth and groundwater aquifer recharge is really important... If we're going to pump out more and more water, we need to recharge the aquifers and sounds like that's a good way to do it. I'm for more restoration of all the streams and more reuse of the R1 water. And if folks are going to be major diverters of water, then like the previous guy said, they need to also put back in. They cannot just take, take, take. They gotta maintain the systems, you know, not just leave it, oh, this is broken, oh, this is not working. If you want to take it, you gotta take care of it. (DLNR CWRM 2019a: 6)

3.2.1.2 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

Jon Kindred of the Plantation Estates Lot Owners Association testified in relation to the Honokōhau Ditch:

We're aware that water in the ditch comes from diversions on the Honokōhau Stream as well as other sources [I.e. Honolua Stream]...[The application of new interim stream flow standards] should be incremental, beginning with immediate return of some waters to the Honokōhau Stream, while providing some level of assurance to existing, legal offstream users as reliable data is monitored regularly and necessary infrastructure improvements are made... (DLNR CWRM 2019a: 2)

Wili Wood of Honokōhau expresses grief over the multiple patches of kalo lost to irregular water flow:

We've been restoring and planting lo'i since 2005, with the help of volunteer groups, schools such as Pūnana Leo, Ke Kula Kaiapuni, and Kahana Canoe Club, for example...[T]here's been many occasions where we've lost entire patches, entire lo'is, due to insufficient and inconsistent water flow... And as we're pulling out these big kalo, you can stick your finger right through it. And that's the stuff we've been dealing with for years. After Tropical Storm Olivia, there was no one running the ditch system... There's a lot of people that would love to get back on their land, but the water is just not there. And when it is there, sometimes it's too high. And then it's too low the next day. So, we really need you guys to get together and help us, especially with the irrigator. The irrigator is a big concern of the taro farmers in the valley. And so, please, that's what we're asking you guys to decide on, the most water possible to the stream. Hundred percent if can... (DLNR CWRM 2019a: 9)

Kaipo Kekona of Kā'anapali discusses the impact of wells and water diversion on lo'i in Honokōhau:

I mean Honokōhau was almost 5,000 lo'is. And that was just, yeah, we went divert the water out of the stream and back into the stream...we talk about these lateral wells and wells was established here. Whether it's a lateral or vertical, whatever well was established, all of those wells was established upon resources or sources that were there before they put in their new management or their new infrastructure...These well systems were established on top of what was natural springs. Maybe the spring might have been further up the hill, but in order to get to that source quicker, they went tap in from the side with one lateral well on top of this spring that was pouring into our stream before that. So, that's just kind of where I think we should be considering, understanding our source better before we try to take it and divert it. When we can understand that from the beginning, we can move forward then. That's all I get other than the understanding of the taro, and the fauna, and the flora, and the establishment of the diversions, and whose rights is what, and what is the right use of water... (DLNR CWRM 2019a: 10-11)

Kekai Keahi, in addition to recommending R1 water, argued that West Maui Land, Maui Land & Pine, and Kā'anapali Land need to be held accountable for water usage:

... I know a person that works for West Maui Land Company. He's been telling me that Dave Minami, and Peter, and all of them, been telling them to put water back in the stream at night and in early morning reopen the water. Charlie caught the guy at the siphon, where supposed to have 700,000 at the siphon, he caught the guy turning the water back on at the siphon, saw the meter, and it was at 300,000 gallons. They've been taking this water, so no more enforcement. In my opinion, I don't think a private

company should be in charge of our assets. I get one problem with Maui Land & Pine, even Kā'anapali Land, handling our assets. Already, Aqua Engineers, they supposed to be managing, but they saying, oh no, Maui Land & Pine never pay us, so until we get the money we ain't going manage the system. That is screwed up, 'cause get people in the valley that stay hurtin'...They thinking, even with Kā'anapali Land, when the guy came up here, they looking at all this water going be taken away, and then they starting to feel the pressure. They starting to feel maybe what we've been feeling forever. Yeah? It happened when we testified with Kaua'ula, where I got one letter from one of the persons at Launiupoko saying that Peter Martin telling everybody that, of, the Hawaiians going take all your water, you not going get nothing, turning us into the bad guy. And so we went to the meeting, there's people from Launiupoko, saying eh, you guys gotta able for share, 'cause we worked so hard, we've been doing this, been doing that. ... You never did share with us. One hundred years that water been gone. We was lucky, from our family, we grew up inside Kahoma and Kanahā, we got to raise taro when we was small kids. And so we got to see what was like and how it was before. And what was good was when we stopped doing that, the yearning for go back nevah did go away. Was painful that we couldn't go back and farm our lands again. And so, we started going in different places. We go help Wili out, we go Charlie's place. Everywhere we can go, we went try open up taro again, like we did when we was young, but then we run into these companies, who really no give a shit about us, basically. And so I no really give a shit about what they think if they going lose water too. .. By the way, when I was looking at the Hawaiian Homes map, Kā'anapali Land, their coffee, part of 'em stay on top Hawaiian Homes, yeah? What the hell they doing? You gotta get the thing off. Charge 'em or something... He caught the guy right there turning on the valve with the meter open and saw how much gallons was coming out of the siphon... Also, that R1 water that Hawaiian Homes was talking about, as far as Lahaina goes and the use of that R1 water, I think that's one win-win situation as far as using that water for farm on Hawaiian Homes ag lands. That's a win-win situation 'cause that's water that we no don't gotta take out of any stream or any well...Maybe we can some water for dilute that water, but it's almost four million gallons a day that we could use for farming, which is awesome. I don't think Kā'anapali Land and Maui Land & Pine are really looking at R1 'cause they may be ag companies now, so-called, but I pretty sure they like change the zoning and turn 'em rural so they can make the big money... (DLNR CWRM 2019a: 14-15)

3.2.1.3 LACK OF VIABLE ALTERNATIVE WATER SOURCE STRATEGIES

Jonathan Scheuer, speaking on behalf of the Department of Hawaiian Home Lands, expressed interest in using R1 water as much as possible and supporting community efforts around stream restoration:

I just want to describe for the Commissioners and those present, and the Commission staff, how DHHL is approaching this opportunity to use R1 water on its lands at Honokōwai... The second is to aggressively exercise, reclaim, and protect Hawaiian Home Land water kuleana...When the third point, the third policy talks about DHHL as a public trust use of water, we recognize that we have a priority of water than standard private commercial uses. But we also realize, in this area, we're not going to take so much water that the public trust uses in Honokōhau Stream are going to suffer unbearably, so we want to seek uses like R1 water, but we're also committed, as it says in the other parts of the policies, to communicate with our beneficiaries. So before, as in the process of DHHL's going through right now for planning subsistence homesteading uses on the lands at Honokōwai, it will involve conversations about the kind of water available and the implications of the water choices that are available to make farming on that and

how that fits into the larger landscape...It's very supportive of the process of... you know, for so many years in Nā Wai 'Ehā and elsewhere, was the community having to lead the effort to get streams restored... (DLNR CWRM 2019: 7)

3.2.1.4 NEED TO MANAGE WATER USING AN AHUPUA'A-BASED APPROACH

Frank Caprioni wants to see more monitoring of water samples in the mountains, because what happens to water mauka affects the makai resources:

... I think...[t]he CMMA, the Community Management Makai Area that I think Ekeolu Lindsey guys created down in Lahaina with using community members who are there every day...[are] taking water samples. I think we need to do the same thing up in the mountains too. And as we know now, I know it's kind of cliché sometimes to say, but mauka to makai. What happens up top effects down below, you know what I mean. So I think, everything that going on the reefs has to do with up in the mountains. Marine biologists, people, will all... they'll tell you this stuff too, you know. (DLNR CWRM 2019: 7-8)

3.2.1.4.1 Stream restoration as a means of supporting lo'i kalo farming

Kaniloa Kamaunu of Waihe'e Valley expressed that cultivation of kalo was the foundation of traditional and customary practice under kōnāwāi:

I always live by the kōnāwāi... It's our birthright. It was given to us. It's for every kanaka. When I see the kanakas come up here and beg for use for taro... taro was the law... You know, your Article 12, Section 7, talks about traditional customary practice. The aha moku that was established, 212 talks about customary generational, customary practices, traditional. Traditional is kalo is law. You no get land without kalo. You were rich if you had kalo. The more kalo you had, that means you were prosperous, so they give you more land, more kuleana. You get more water. Because that was the law. Kalo is relatives. It's not a thing where you just eat. It's not your food, but it is our relative. 'Āina, same thing. (DLNR CWRM 2019: 11)

Archie Kalepa observed firsthand the transformation of Kahoma Stream after water was restored, and wanted to see this for the people of Honokōwāi:

When Pioneer Mill, Maui Land & Pine was here, a lot of the resources were diverted. Then came big subdivisions. We all need a place to live, but what has happened is we've taken so much from the main resource that that main resource is damaged. And it is not until you work every day and watch a river... That's an important resource that we need to maintain and manage to make sure, because long-term by taking care of Honokōhau, it's going to be able to take care of the community. Not only the community in Honokōhau, but the communities that exist today. But if we don't continue to take care of that, everybody else, Kā'anapali, everybody else, there's going to come a day that you're not going to have the resources. (DLNR CWRM 2019: 15-16)

3.2.1.4.2 Need for monitoring culturally important stream species

Kaneolani Steward, an assistant marine coordinator with the Nature Conservancy on Maui in cooperation with the Division of Aquatic Resources, mentioned that Honokōhau and Honolua Streams are home to 'ōpae kuahiwi, and 'o'opu nōpili, nākea, and 'alamo'o, and that stream surveys for both Honokōhau need to be conducted regularly to monitor current populations of stream species. Kaneolani also recommends

that educators should train community members and children on how to conduct stream surveys. The need for more R1 water was also mentioned:

...So for the Honokōhau report, under the point-quadrat survey area, you guys indicate nākea, 'alamo'o, and nōpili, but you guys fail to mention that 'ōpae kuahiwi was also sighted, but 'ōpae kuahiwi was however noted in the table...But in the table, you guys left out 'o'opu nōpili... (DLNR CWRM 2019: 12-13)

3.3 Ka Malu of Kahalawai and West Maui Preservation Association Formal Waste Complaint

The following section pertains to Maui Land and Pineapple Company's Honokōhau Diversion 770. The larger issues with the Honokōhau diversions are relevant for the present study as they pertain to ongoing traditional and customary practices in the area of the Maui County diversion. The NHO Ka Malu o Kahalawai, along with the West Maui Preservation Association, filed a formal waste complaint against Maui Land and Pineapple Company, alleging that the company was allowing water that it diverted from the Honokōhau Stream to be wasted. The complainants were concerned that the water overflowing from the ditch ended up being released into gulches, roads, and ditches in the Wahikuli hydrologic unit to the south, rather than flowing downstream to supply lo'i kalo in Honokōhau. (Ka Malu o Kahalawai and West Maui Preservation Association 2019:1-3)

Members of Ka Malu o Kahalawai included lo'i kalo farmers, surfers, canoe paddlers, fishermen, and divers in the nearshore area of the Honokōhau hydrologic unit. CWRM staff, Maui County representatives, the mayor of Maui County, and representatives from Maui Land and Pineapple Company participated in a site visit in October 2018 to assess the damage after Hurricanes Lane and Olivia caused localized flooding and damage to Diversion 770 on Honokōhau Stream. They found that the hurricanes had badly damaged Diversion 770, rendering it inoperable. The Taro Gate, where Maui Land and Pineapple Company traditionally released water back into Honokōhau Valley, was blocked by sediment and debris, which prevented the water from being redirected to kalo farmers in the valley (Ka Malu o Kahalawai 2019:4).

Water wastage directly impacted the Honokōhau community, which was "experiencing a resurgence in food independence and Hawaiian cultural practices in which lo'i kalo cultivation is expanding." (Ka Malu o Kahalawai and West Maui Preservation Association 2019:6) According to the complainants, the 5.15 acres of kuleana parcels in Honokōhau Valley require an estimated 1.11 million gallons a day (MGD) of fresh water. The complainants also stated that an additional 10 acres of historic lo'i kalo could be cultivated if there was an additional 1.01 mgd available (Ka Malu o Kahalawai and West Maui Preservation Association 2019:21).

The complainants, many of whom conduct traditional and customary practices such as paddling, diving, fishing, and surfing in nearshore areas, observed that the waste water from the ditch was warmer than regular fresh water discharge into the ocean. They were concerned that the periodic intrusion of warmer water would interfere with the reefs and other nearshore ecosystems thereby interfering with the traditional and customary practices described above (Ka Malu o Kahalawai and West Maui Preservation Association 2019:2). The petitioners had already experienced decades of warmer ditch water entering Hanakao'o and nearby coastal waters from Honokōwai stream, Hahakea gulch, and sometimes Honolua stream resulting from the Honokōhau Ditch diversions (Ka Malu o Kahalawai and West Maui Preservation Association 2019:37).

To resolve these issues, the petitioners requested the following.

Petitioners seek to prevent wastage by restoring to Honokohau stream surface water in amounts equal that wasted. Petitioners seek to require upgrades to MLP/KWC's diversion intake works from Honokohau stream to Honokohau/ Honolua ditch to better regulate the amounts removed from Honokohau stream to avoid waste in areas including lands used by KLMC through which the Honokohau ditch runs. Upgrades and better maintenance and regulation of the Taro Gate would also allow more water to be restored to Honokohau stream, instead of contributing to wasting events in offstream areas, including agricultural fields further south towards Wahikuli. KLMC should be prevented from allowing ditch water to run into fields and roads adjoining the ditch. KLMC's wastage facilitates MLP/KWC's ability to ignore the need to upgrade its intake/diversion works and better regulation and maintenance of the taro gate. MLP/KWC's intake should be upgraded such that it can be closed during periods of high water flow. This may mean better monitoring so that the Aotaki gate can be closed during high flow (or during times that less water is needed in the Honokohau ditch) and thereby result in that surface water remaining in the Honokohau stream. Another solution might lie in investing in sealing the current diversion and installing a gate with remote control capacity (to avoid difficulties and inconvenience with accessing the intake). Petitioners note that Kamehameha Schools has installed a remote control valve to control the gate above Kahoma stream that can be controlled via a computer (Ka Malu o Kahalawai and West Maui Preservation Association 2019:3).

3.4 Contemporary Ethnographic Information from *Water and Power in West Maui*

The following section includes excerpts of interviews with community members and cultural practitioners, public testimony, and legal proceedings from the Kā'anapali area, as recorded by Jonathan Schuer and Bianca Isaki in their 2021 book *Water and Power in West Maui*. This volume discusses the historical roots of the contemporary grassroots fight by kalo farmers and cultural practitioners to ensure sufficient fresh water to perpetuate and revitalize traditional and customary practices, especially kalo farming. Many of the disputes recorded in this volume are between kalo farmers and large companies such as Maui Land and Pineapple Company, which has historically diverted much of the water in the Honokōhau Ditch. The following quotes are intended to provide additional ethnographic context about community concerns pertaining to the Honokōhau Stream Diversion. They also provide additional context for the formal water waste complaint discussed above.

Lahaina resident and community advocate Kapali Keahi, who helped organize the community to challenge MLP's diversions in Honokōhau in the 1990s, discussed issues with trying to work with Maui Land and Pineapple Company:

Industry is a veritable vacuum for everyone. A lot of people backed off from farming taro. This was a generational shift – the older generation was getting too old to farm, and the younger generation did not have enough water to farm anyway (Scheuer and Isaki 2021:68).

Native Hawaiian Advisory Council, Inc. (NHAC)'s Elizabeth Pa Martin offered further insight into the tensions between kalo farmers and Maui Land and Pineapple Company. According to Martin, the company diverts water out of the watershed, which deprives kalo farmers of their appurtenant water rights.

The problem is not a lack of communication between taro farmers and Maui Pineapple. The problem is Maui Pineapple has been controlling the water flow of the Honokōhau Stream for decades. It diverts water to land outside the watershed and deprives taro farmers of their appurtenant water rights. Taro farmers do not have enough water and Maui Pineapple appears unwilling to change the status quo. The status quo is totally unacceptable to the farmers. We believe it should also be unacceptable to the Water Commission (Scheuer and Isaki 2021:177).

Kai Keahi, a member of the Native Hawaiian Organization (NHO) Ka Malu o Kahalawai member, felt that Maui Land and Pine mismanaged water resources from the stream intake in Honokōhau, which negatively impacted kalo farmers. Kai and others within the Ka Malu o Kahalawai filed a formal complaint about water wasting against MLP (discussed below).

We don't necessarily disagree with most [of] the use that this water is used for, but MLP who controls the stream intake in Honokōhau Valley is notorious for its mishandling and mismanaging the water resources of Honokōhau. Quote often lo'i farmers are left with minimal water to grow their crops, which threatens their harvest. The majority of Honokōhau Stream is taken out of the valley and sent southward towards Lahaina town. The real issue, and the cause of the loss of habitat and the ability to farm kalo, is that MLP when it receives the water at the intake they cannot control how much gets diverted so all of the stream is taken. Because MLP does not need all of Honokōhau Stream water, they dump the unused excess water into various other West Maui streams and areas, such as Honokōwai, Wahikuli, and Hanako'o, thus continuing the dewatering of Honokōhau

Stream and hampering the ability of the aquatic life to reproduce and farmers to farm taro....Allowing water to flow from its source to the ocean is vital for aquatic life and habitat as well as cultural practices such as lo'i kalo...Now is the time to make sure that tomorrow's streams are still flowing clean and abundant [with] life (Scheuer and Isaki 2021:72-73).

Wili Wood was also concerned about the profligate use of water by companies like Maui Land and Pineapple Company, particularly given water scarcity in West Maui.

Today, with global warming, sea level rise, and saltwater intrusion occurring in our small island's fragile aquifers, it is very unwise to be wasting such a valuable resource as water. This imposes a great level of responsibility on the people chosen or hired to be stewards are too often shortsighted businessmen (Scheuer and Isaki 2021:72).

Jonathan Scheuer and Bianca Isaki repeated allegations by Honokōhau farmer Wili Wood that Maui Land and Pine purposefully obstructed the flow of fresh water intended to feed the lo'i kalo.

Honokōhau taro farmer Wili Wood went to investigate the upstream water works to determine the cause of the low flows. When Wood walked up to taro gate, he found it fully closed with a plastic bag filled with sand wedged against it, such that no water at all could get through. The gate was padlocked shut. Hundreds of 'ōpae huddled in the small pool that remained in front of the gate. Honokōhau residents reported that MLP contractors admitted to being paid to go up and close and lock taro gate and the count denies it has anything to do with closing the gate (2021:73).

West Maui Moloka'i Taro Farmers Association (WWMFTA) members wrote about the effects of the dam constructed by Maui Land and Pine in the upper part of the Honokōhau valley:

We need more water. Our crops are being damaged because of the lack of water and it is frustrating (Scheuer and Isaki 2021:177).

4 CULTURAL, HISTORICAL, AND NATURAL RESOURCES

The following is a short overview of cultural, historical, and natural resources of value to Native Hawaiians within the vicinity of the permit area. This overview is the result of archival research and interviews with individuals knowledgeable about contemporary traditional and customary Native Hawaiian rights and practices undertaken within the permit area or associated with fresh water resources. These cultural resources are needed for Native Hawaiians to have the ability to conduct cultural practices and perpetuate indigenous knowledge.

4.1 Culturally Significant Natural Resources

Native Hawaiian culture focused heavily upon natural resources. The moku system allowed Native Hawaiians to manage biocultural resources in a sustainable fashion, which provided food to inhabitants from mauka to makai (Winter et al. 2018). Excluding insects and other invertebrates, there are nine native species found in Hawai'i's streams. These consist of five types of fish, two types of crustaceans, and two types of mollusks. All of these species exhibit amphidromous behavior, which means they migrate between freshwater habitats and the ocean. Eight of these species are endemic to Hawai'i. Native Hawaiians called the fish 'o 'opu, the crustaceans 'ōpae, and the mollusks hīhīwai (or wī) and hapawai. While there are several more Hawaiian names to describe regional variations and physical differences of these creatures, these are the most common names by which they are known. Several 'ōlelo no 'eau

(traditional Hawaiian proverbs and poetical sayings) and *mo‘olelo* (stories) demonstrate that Native Hawaiians were observant of these creatures and understood their life cycles, behaviors, and habitats well. These native freshwater fish, crustaceans, and mollusks were an important food source to Native Hawaiians (Miike 2004:14–18).

4.1.1 *Limu*

Native Hawaiians use *limu* freshwater and marine algae as a relish or condiment to season food. While the marine varieties of limu are known for their more pronounced taste, the freshwater limu found on rocks in streams is also collected and enjoyed as part of the diet (Krauss 1993:16). Many species of nearshore limu thrive best in areas with both fresh water and ocean mixing (Abbott 1992).

Blossom Feiteira, a cultural informant interviewed for this Ka Pa‘akai Analysis, remembered that the shores of West Maui were home to abundant limu varieties in the 1960s, especially manuea, kohu, wailoe, līpoa, and ‘ōpihi limu. Limu ‘ele‘ele, limu kohu, limu līpe‘e, limu līpoa, limu manaua, and limu wāwae‘iole also emerged as culturally significant species previously abundant in the area prior to the 1970s.

4.1.2 *Freshwater Stream Species*

Māhele land documents, oral history interviews and public testimony reveal that culturally important freshwater stream species such as ‘o‘opu were abundant in the Honokōhau stream. Several of these Māhele land documents describe ‘o‘opu fisheries in Honokōhau (Maly and Maly 2003:266, 267, 288; OHA 2023a). It is clear from these Mahele documents that the ‘o‘opu was an important food source to the people of Honokōhau. Kaneolani Steward observed that many species of ‘o‘opu are still present in Honokōhau Stream, although they are endangered by a lack of mauka to makai connectivity.

4.1.3 *Lo‘i Kalo Farming*

The cultural importance of kalo cultivation arose in nearly every interview and segment of public testimony presented in this report. Kalo farming emerged as perhaps the most important traditional and customary cultural practice taking place in the vicinity of the Honokōhau stream. Historically, Honokōhau Valley had more extensive lo‘i kalo cultivation than any other area of Maui except for Kahakuloa. According to the 2019 complaint filed by Ka Malu o Kahalawai and West Maui Preservation Association, today only about 5.5 acres of Honokōhau are covered by lo‘i kalo. Kalo farmers continue to educate the younger generation about kalo cultivation and also try to open up new lo‘i. However, the diversion of water from the Honokōhau Ditch remains one of the largest obstacles to farming kalo in Honokōhau Valley.

4.1.4 *Native Plant Resources and Lā‘au Lapa‘au*

The current study did not uncover reliable information about the cultural practice of gathering plants for lā‘au lapa‘au (traditional plant-based medicines) or for other reasons within the permit area for the Honokōhau stream diversion. However, given that the mauka areas of the nearby Honolua Aquifer System are home to numerous native plant species (Tetra Tech 2021, cited in Wong and Lee-Greig 2021:67), we expect that the mauka areas of Honokōhau Valley would have had a similar vegetation regime. Maui Land and Pineapple Company, Inc. engages in revegetation efforts in Honolua Wao Kele in the Pu‘u Kukui Watershed Management Area for the purpose of watershed protection and Native Hawaiian cultural education. Within this preserve 9,881-acre section of native forest are 40 rare plant species and 6 endemic land snails. (PBR Hawai‘i and Associates 2007: 5-6) The mauka areas of nearby

Honolua Aquifer System are home to important native plant species such as ‘akoko (*Euphorbia celastroides* var. *lorifoli*), ‘ākia (*Wikstroemia oahuensis* var. *oahuensis*), ‘ēkaha (*Asplenium nidus*), alahe‘e (*Psydrax odorata*), .a‘ali‘i (*Dodonaea viscosa*), huehue (*Cocculus orbiculatus*) ‘iliahialo‘e (*Santalum ellipticum*) kīlau (*Pteridium aquilinum* ssp. *Decompositum*), kā‘ape‘ape (*Cyrtomium caryotideum*) kolokolo (*Adenophorus tenellus*), ‘ōhi‘a lehua (*Metrosideros polymorpha* var. *glaberrima*), koali ‘awahia and koali ‘awa (*Ipomoea indica*), moa (*Psilotum nudum*), pala‘ā (*Sphenomeris chinensis*), palapalai (*Microlepia strigosa* var. *strigose*), pūkiawe (*Leptecophylla tameiameia*), ‘uhaloa (*Waltheria indica*), ‘ūlei (*Osteomeles anthyllidifolia*). Many of these species have known ethnobotanical uses (see Krauss 1993 for more details about Hawaiian ethnobotany).

Continuing protection of native forest ecosystems could allow for more individuals to return to traditional and customary gathering practices within the Honolua Aquifer System. Additionally, considering the vast geographic scope of the area surveyed by this Ka Pa‘akai Analysis, it is important to note that it is possible that cultural practitioners do gather within the areas impacted by the existing Honokōhau stream diversion though it was not captured here.

4.2 Coastal Fishing and Gathering

Historical accounts by A.D. Kahaulelio (1902) and others indicate that nearshore fisheries off the coast of Kā‘anapali were vital for the subsistence of local people. The water wastage claim filed by Ka Malu o Kahalawai and West Maui Preservation Association discussed subsistence fishing as a major ongoing customary practice that continues in the nearshore area of the Honokōhau Hydrologic Unit (Ka Malu of Kahalawai and West Maui Preservation Association 2019:4).

4.3 Other Nearshore Cultural Practices

The water wastage claim filed by Ka Malu o Kahalawai and West Maui Preservation Association discussed ongoing traditional and customary practices, such as surfing, canoe paddling, and diving, in the nearshore area of the Honokōhau Hydrologic Unit (Ka Malu of Kahalawai and West Maui Preservation Association 2019:4).

4.4 Cultural and Historical Sites

Archaeologist Winslow M. Walker recorded two heiau in Honokōhau ahupua‘a, ‘Ili‘ilikea Heiau and Maiu Heiau. ‘Ili‘ilikea Heiau is located on top of a ridge on the west side of Punaha Gulch above a road. Maiu Heiau is located on the east side of Honokōhau Valley on a cliff 200 feet above the sea. Maiu Heiau was used for human sacrifice (Sterling 1998:54). Another noteworthy site in Honokōhau is the Waiuli Pit which was used as a burial place for the common people of Lahaina to Kahakuloa (Sterling 1998:55).

5 ASSESSMENT OF POTENTIAL IMPACTS

A primary purpose of this Ka Pa‘akai Analysis is to identify “the extent to which those resources—including traditional and customary native Hawaiian rights—will be affected or impaired by the proposed action” (Ka Pa‘akai O Ka ‘Aina 2000). This section presents the assessment of potential impacts to traditional and customary Native Hawaiian rights and practices as a result of the proposed continued use of the MDWS Honokōhau stream diversion within the Honokōhau Aquifer System.

5.1 Types of Traditional and Customary Rights Referenced Under the State Water Code

The following provision on Native Hawaiian water rights outlined in the State Water Code, HRS §174C-101, defines the types of traditional and customary water rights of Native Hawaiians:

(c) Traditional and customary rights of ahupua‘a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 shall not be abridged or denied by this chapter. Such traditional and customary rights shall include, but not be limited to, the cultivation or propagation of taro on one’s own kuleana and the gathering of hīhīwai, ‘ōpae, ‘o‘opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes. (2019:15)

It is notable that kalo, hīhīwai, ‘ōpae, ‘o‘opu, limu, and medicinal plants are specifically identified here.

5.2 Approach to Assessing Impacts

Using the information gathered through archival research, oral history interviews, and reports containing cultural consultation testimony, SWCA identified cultural resources, including traditional and customary Native Hawaiian practices, within the permit area of the Honokōhau stream diversion. This study also determined the extent to which these resources and practices will be affected or impaired by the proposed continued use of the Honokōhau stream diversion by the MDWS.

The potential impacts to traditional and customary practices extend beyond the immediate vicinity of the Honokōhau stream diversion. Activities such as lo‘i kalo farming; subsistence gathering of stream and nearshore ocean species, and the gathering of lā‘au lapa‘au from areas below the stream diversion could all be impacted by changes in freshwater availability due to the stream diversion.

Given the geographic extent of the Honokōhau Aquifer System, this report cannot definitively identify and address the full breadth of potential impacts to all cultural resources and traditional and customary practices in the areas near the Honokōhau stream diversion. Nevertheless, our research reveals that existing pressure on freshwater resources already endangers the traditional and customary practices described above. Community members expressed fears that diminished streamflow could further threaten the survival of these cultural practices.

5.3 Community Concerns

Based upon the information gathered from the community consultation effort for this Ka Pa‘akai Analysis, existing oral history interviews, and region-specific public testimony from the IFSAR meetings, the following concerns and recommendations were voiced repeatedly by the community.

5.3.1 Ahupua‘a-Based Approach

The community expressed that water needs to be managed holistically and should employ an ahupua‘a-wide approach.

5.3.1.1 CONCERNS REGARDING FOREST AND WATERSHED HEALTH

- The protection of watersheds from mauka to makai emerged as a common concern of community members.
- The most common concern voiced by community members was the need to restore and protect streamflow to irrigate lo‘i kalo.
- According to several individuals, adequate fresh water is needed to ensure the growth and regeneration of native species.
- Several community members personally observed changes in the presence and abundance of culturally important freshwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important native species found in streams. These include the five types of ‘o‘opu fish, the two types of crustaceans or ‘ōpae, and the two types of mollusks, hīhīwai (or wī) and hapawai.
- Community members specifically called out the need to ensure ecosystem resilience against fire hazards and climate change by protecting native forests and water resources.
- Several community members suggested bringing back the kānāwai system of water management for lo‘i kalo farming.

5.3.1.2 CONCERNS REGARDING NEARSHORE AND OCEAN RESOURCES

- A few community members personally observed changes in the presence and abundance of culturally important saltwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important limu species such as limu ‘ele‘ele, limu kohu, limu līpe‘e, limu līpoa, manaua, limu waiwaiiole. Other culturally important marine vertebrate species in the area include: kole, owama/oama, manini, halalu, kūmū, weke, and manō, in addition to invertebrate species such as kūpe‘e, ‘opihi, hā‘uke‘uke, wana (sea urchin), and *he‘e* (octopus).
- Informants noted that periodic water wastage from the Honokōhau ditch causes damaging influxes of warm water into reef and nearshore ecosystems.

5.3.2 Abundance and Quality of Freshwater Flow

5.3.2.1 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

- Several individuals claim that their observations of the streamflow do not align with established instream flow standards and that they would like to see CWRM monitor actual instream flow.

- A common sentiment within the IFSAR testimony is that kalo farmers would like to see all streams restored to 100% flow. Community members called out the fact that decreasing freshwater flow resulted in increasing water temperatures, causing kalo crops to rot.
- Another frequent concern was the lack of enforcement of existing water allocations, particularly for large landowners who are perceived to receive preferential water access over kalo farmers.

5.3.2.2 AGING AND BROKEN INFRASTRUCTURE

- Aging and broken infrastructure, such as dams, gages, stream diversions, etc., came up as a major cause for concern in the community. Kalo farmers want to see responsible parties repair and maintain existing ditch infrastructure to ensure consistent streamflow.
- Several individuals also expressed frustration that the burden for clearing debris from the ditches and 'auwais all too often falls onto individual kalo farmers.

5.3.2.3 LACK OF VIABLE ALTERNATIVE WATER SUPPLIES

- Numerous community members expressed an interest in greater use of R1 water for non-potable uses.

5.3.3 *Reduced Water Quality*

- Community members observed adverse effects from runoff and sedimentation on both streams and the nearshore environment, particularly impacting culturally important species of limu.
- Reduced water quality, particularly from runoff, directly impacts community member's restoration efforts to restore and re-open lo'i kalo for the next generation.
- Certain coastal freshwater springs are also much more saline now than they were in the past, meaning community members cannot gather fresh water from them for subsistence or cultural practices.

5.3.4 *Need for Additional Community Input for Current and Future Projects*

- Potential undocumented kuleana uses may exist within the permit area that did not emerge during this research. These undocumented kuleana uses could be identified through additional community input.
- Community members may also wish to maintain access to lands for gathering, hunting, fishing, and other Native Hawaiian traditional and customary practices.

6 PROPOSED ACTIONS TO PROTECT TRADITIONAL AND CUSTOMARY NATIVE HAWAIIAN RIGHTS

Following the assessment of potential impacts associated with the proposed permit activity, SWCA and the MDWS identified a series of feasible actions that could be taken to mitigate these impacts and serve to reasonably protect and revitalize Native Hawaiian rights, traditions, and customs associated with the permit area. The feasible actions suggested here are intended to address community concerns expressed in ethnographic interviews, oral history interviews, and community consultation and testimony from the IFSAR meetings.

6.1 Apply an Ahupua‘a-Based Approach to All Water Use Decisions

Upon analyzing the findings of the community consultation, public testimony from the IFSAR meetings, and oral history interviews, it is clear that a mauka to makai approach is essential for revitalizing Native Hawaiian traditional and customary practices. The health of the upland forests directly impacts streams and aquifers, which in turn affects the nearshore environment.

- In making decisions regarding water use within the Honokōhau Aquifer System, the MDWS will employ an ahupua‘a-based approach. This involves not only taking into account the potential impacts to the lands in the immediate vicinity of the permit activity, but considering the effect of the project on the entire watershed, from the uplands to the nearshore waters, as well as the cultural practices currently being carried out within the ahupua‘a.
- As part of its community outreach efforts, the MDWS will seek to raise public awareness of ahupua‘a management practices and foster partnerships for use and management of water sources with existing community and school-based ahupua‘a restoration efforts. The Honokōhau Valley Association is one such community group engaged in the restoration of taro patches.
- As part of this ahupua‘a-based approach to water planning and management, the MDWS will work with the local community and cultural practitioners to monitor and protect both the upland watershed and the coastal marine resources.

6.1.1 *Mauka: Reforestation and Invasive Species Control to Improve Watershed Health*

The ‘Aha Moku observed that the depletion of groundwater directly impacts native vegetation in the mountains, rendering these areas vulnerable to repeat wildfires. A decline in vegetation in the mountains then impacts cloud coverage and rainfall. Invasive species often outcompete native species and also potentially use up more water than native species. Invasive grasses are particularly vulnerable to wildfires.

- Maui County will continue financial support for watershed management partnerships designed to improve groundwater recharge, reduce fire hazards, and prevent erosion through native species reforestation, invasive species control, fencing, and weed eradication efforts.

- The MDWS will support watershed partnerships' outreach to West Maui schools to develop service-learning experiences that allow students to assist with invasive species control and the planting of native species.

6.1.2 Makai: Monitoring Culturally Important Aquatic Species

A number of community members observed local declines in culturally important stream, nearshore, and marine species since the 1970s, when the County began to drill wells and also when Pioneer Mill Company sold its water management infrastructure to West Maui Land.

- CWRM and the UH Water Resources Research Center should consider developing, coordinating, and funding a region-wide system for inventorying and monitoring culturally important native aquatic species such as fish, limu, mollusks, and shrimp that may be affected by and are indicators of changing water supply. They should partner with community organizations like Honokōhau Valley Association, Kamehameha Schools, 'Aha Moku o Maui, Inc., cultural practitioners, and other relevant NHOs in these endeavors.
- The MDWS will support and fund inventorying and monitoring of culturally important native species conducted by watershed partnerships in watersheds directly impacted by the MDWS's existing water sources.

6.2 Protect and Recharge Groundwater and Surface Water Flow

6.2.1 Maintaining and Monitoring Current Water Supplies

The availability of fresh water to irrigate lo'i kalo emerged as the most common concern among community members when discussing surface water issues. To ensure sufficient streamflow to irrigate lo'i kalo, the MDWS will:

- Work with the State CWRM to ensure that existing instream flow standards are being met. In those cases where existing instream flow standards are not feasible due to the limitations of existing wells, the MDWS will work with CWRM to develop alternate strategies to ensure adequate water supplies.
- Monitor and enforce current water use restrictions by all existing users in a water shortage.

6.2.2 Alternative Water Source Strategies

Many community members expressed interest in alternative water strategies such as recycling greywater (R1) to be used for landscaping and other non-potable uses. To this end, the MDWS will:

- Support capital improvement program funding for recycled water projects and needed infrastructure expansion in the Lahaina region to offset potable water to the maximum extent feasible.
- Support exploration and permitting of greywater systems to offset potable water use.
- Explore desalination of seawater and brackish water as an alternative water supply for West Maui demand.

6.3 Support Water Quality

Several community members noticed that a decline in water quality impacts limu populations. To combat water quality issues, the MDWS will:

- Encourage the State Department of Health and Maui County to focus cesspool upgrades to areas impacting the nearshore marine environment and prioritize expanding sewer lines into residential areas that are currently unsewered to reduce the amount of wastewater entering the aquifer and nearshore environment.

6.4 Repair, Replace, and Maintain Existing Infrastructure

Community members indicated that the plantation-era ditches contain aging infrastructure. Since Pioneer Mill Company shut down, no one regularly maintains blockages upstream that could be the cause of reduced stream flow. Community members sometimes personally remove debris build-up in the ditches and 'auwais, but they feel that they should not be personally responsible for maintaining these systems. They also feel that the County and the State should be responsible for ensuring that these systems will continue to function in the event of "100-year storms." The MDWS will do its part to ensure proper infrastructure functioning by:

- Continuing to repair and maintain existing gages, pumps, 'auwais, dams, and other infrastructure that is controlled by MDWS to ensure efficient water supply and avoid wastage.
- Work with Maui Land & Pine to regularly maintain the Honokōhau stream diversion.

6.5 Solicit Ongoing Community Input for Current and Future Projects

Members of 'Aha Moku stated that many community members have a stake in water use decisions, and recommend regular venues for them to share their mana'o. Therefore, the MDWS should:

- Hold annual meetings with community groups, cultural practitioners, lineal and cultural descendants of the area, and other interested community members to encourage ongoing cooperation and consultation regarding MDWS projects.
- Consult with 'Aha Moku for water development projects in the subject moku for information on impacts to Native Hawaiian traditional and customary uses and advice on proper actions.
- Promote existing MDWS grant programs by proactively advertising in venues such as social media, in OHA's *Ka Wai Ola* magazine, and in local newspapers.

7 SUMMARY

The Native Hawaiian worldview recognizes that managing water resources requires a comprehensive and unified approach. It emphasizes the idea that we cannot address water issues separately, but instead need to consider them as interconnected and interdependent. Additionally, it is not enough to ensure the *survival* of traditional and customary practices in the existing permit area; instead, all feasible efforts should be made to allow these practices to *thrive*. The natural and cultural resources at the basis of these traditional and customary practices must be sufficiently healthy to allow cultural practitioners to perpetuate these practices by passing them on to future generations.

Using a combination of archival research, existing oral history interviews, and public testimony from the Instream Flow Standard Assessment Report (IFSAR) meetings, this Ka Pa‘akai Analysis report identified and discussed the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honokōhau Aquifer System, that are related to water use and could potentially be impacted by water use related to the existing Honokōhau Stream diversion. These traditional and customary practices include the cultivation of wetland kalo, near-shore fishing, the gathering of limu, and the gathering of medicinal and other plants. Traditional and customary practices such as gathering lā‘ua lapa‘au, lo‘i kalo cultivation, and gathering riparian species such as ‘o‘opu, ‘ōpae, the shellfish hīhīwai and hapawai all declined dramatically in the area due to decades of commercial pineapple and sugar cane cultivation. In spite of this, cultural practitioners continue to farm lo‘i kalo and fish in the areas makai of the Honokōhau Ditch. Cultural practitioners are currently increasing the number of lo‘i kalo under active cultivation and teaching keiki (children) and community members about mauka to makai stewardship, all of which require a sufficient availability of fresh water.

Historical accounts describe Honokōhau Valley as one of the most productive regions for kalo cultivation on the entire island of Maui, rivalled only by Kahakuloa. However, commercial agriculture during the plantation era led to a dramatic decline in the active cultivation of lo‘i kalo within Honokōhau. Plateau lands, formerly planted in ‘uala, were converted into sugarcane and pineapple fields, and the Honokōhau Stream was diverted into the Honokōhau Ditch.

In existing oral history interviews and public testimony, several narrators expressed their belief that the existing Honokōhau Stream diversion directly impacts freshwater availability for lo‘i kalocultivation. Cultural informants also noticed a decline in key, culturally important natural resources such as ‘o‘opu, ‘ōpae, the shellfish hīhīwai and hapawai, limu, and nearshore fish since the stream diversion was installed. The Honokōhau Stream surfacewater diversion, paired with the ecological disturbances from legacy sugarcane and pineapple fields, led to cascading effects on the natural environment. These effects include a decrease in water availability for irrigating lo‘i kalo, as well as silt, pesticide, and fertilizer runoff that damages the reefs. Additionally, the disruption of mauka to makai connectivity for ‘o‘opu and ‘ōpae, and an influx of invasive plant and animal species in the mauka areas leading to increased fire risk, which in turn reduced aquifer replenishment.

This Ka Pa‘akai Analysis found that the Honokōhau Stream diversion contributes to an overall reduction of freshwater that impacts the vitality of ongoing traditional and customary practices. The Maui County Department of Water Supply has therefore agreed to undertake a number of feasible actions to maintain and potentially increase supplies of freshwater for traditional and customary practices. This Ka Pa‘akai Analysis identified a number of feasible actions to help mitigate the potential impacts of the existing stream diversion. These include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore

watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

8 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

<i>a‘ali‘i</i>	a common, small dryland and mesic forest tree, <i>Dodonaea viscosa</i>
<i>ahupua‘a</i>	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land’s early Hawaiian residents. It was “so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief” (Pukui and Elbert 1971:8).
<i>‘āina</i>	land
<i>‘ākia</i>	an important sub shrub to small tree, <i>Wikstroemia oahuensis</i> var. <i>oahuensis</i> , sometimes used to stun fish
<i>‘akoko</i>	a term for native herbs, sub-shrubs, or shrubs in the genus <i>Euphorbia</i> ; in this case, <i>Euphorbia celastroides</i> var. <i>lorifoli</i>
<i>alahe‘e</i>	a native forest tree known for its sweet-smelling flowers, <i>Psydrax odorata</i>
<i>ala loa</i>	main road or trail
<i>ali‘i</i>	chief, individual of chiefly blood
<i>‘auwai</i>	ditch, canal
<i>‘ēkaha</i>	a native forest fern, <i>Asplenium nidus</i>
<i>halalu</i>	young akule, <i>Trachurops crumenophthalmus</i>
<i>hanawai</i>	irrigation
<i>hapawai</i>	a shellfish, <i>Theodoxus vespertinus</i>
<i>hā‘uke‘uke</i>	a type of edible sea urchin; <i>Colobocentrotus atratus</i>
<i>heiau</i>	traditional temple or shrine
<i>hīhīwai</i>	an endemic, edible, freshwater and brackish grainy snail, <i>Neritina granosa</i> ; also known as wī if in fresh water; there is a shellfish of the same name
<i>hō‘ailona</i>	sign, symbol
<i>huehue</i>	a native vine, <i>Cocculus orbiculatus</i> , used for twine and funnel-mouthed fish traps
<i>‘ili</i>	traditional land division, smaller in size and next in importance to an ahupua‘a, usually a subdivision of an ahupua‘a
<i>‘iliahialo‘e</i>	coastal sandalwood, <i>Santalum ellipticum</i>
<i>iwi kupuna</i>	ancestral remains

<i>kā'ape'ape</i>	a native holly fern, <i>Cyrtomium caryotideum</i>
<i>kalana</i>	a land division smaller than a moku; a county
<i>kalo</i>	taro, <i>Colocasia esculenta</i>
<i>keiki</i>	children
<i>kīlau</i>	a native bracken fern, <i>Pteridium aquilinum</i> ssp. <i>Decompositum</i>
<i>koali 'awahia and 'awa</i>	beach morning glory, <i>Ipomoea indica</i> , used for medicine and cordage
<i>kole</i>	surgeonfish, <i>Ctenochaetus strigosus</i>
<i>kolokolo</i>	a small, tongue-like native fern, <i>Adenophorus tenellus</i>
<i>konohiki</i>	land stewards, sometimes minor ali'i
<i>kuahiwi</i>	mountain
<i>kula</i>	plain or open country
<i>kūmū</i>	goatfish; <i>Parupeneus porphyreus</i>
<i>kūpe'e</i>	an edible marine snail; <i>Nerita polita</i>
<i>lālākea</i>	whitetip shark, <i>Pterolamiops longimanus</i>
<i>limu</i>	marine and freshwater algae
<i>limu 'ele'ele</i>	<i>Enteromorpha prolifera</i>
<i>limu kohu</i>	<i>Asparagopsis taxiformis</i>
<i>limu līpe'e</i>	<i>Laurencia</i> sp.
<i>limu līpoa</i>	<i>Dictyopteris pagiogramm</i> and <i>D. australis</i>
<i>limu manaua</i>	<i>Gracilaria coronopifolia</i>
<i>limu wāwae'iole</i>	<i>Codium edule</i>
<i>lo'i kalo</i>	flooded taro terraces
<i>maka 'āinana</i>	common people
<i>makai</i>	toward the sea
<i>manini</i>	a common reef surgeonfish; <i>Acanthurus triostegus</i>
<i>manō</i>	shark
<i>moa</i>	whisk fern, not a true fern; a seedless non-vascular native plant, <i>Psilotum nudum</i>

<i>moano</i>	goatfish; <i>Parupeneus multifasciatus</i>
<i>moelua</i>	weke 'ula; <i>Mulloidichthys vanicolensis</i>
<i>moku</i>	district, land section, or island
<i>mo'o</i>	water spirit or lizard goddess
<i>mo'okū'auhau</i>	genealogy
<i>mo'olelo</i>	story, tradition, legend, history
<i>mo'o'āina</i>	a parcel of land, smaller than an ili, and typically used in agriculture
<i>mauka</i>	inland
<i>nehu</i>	anchovies, <i>Stolephorus purpureus</i>
<i>ogo</i>	a limu; <i>Gracilaria parvisipora</i> , sometimes also called manaua
<i>'ōhi'a 'ai</i>	mountain apple tree, <i>Eugenia malaccensis</i>
<i>'ōhi'a lehua</i>	<i>Metrosideros</i> sp., often polymorpha; an iconic Native Forest tree with beautiful red flowers
<i>'ō'io</i>	ladyfish/bonefish, <i>Albula vulpes</i>
<i>'ōlelo no 'eau</i>	traditional Hawaiian proverbs and poetical sayings
<i>'opihi</i>	limpets; <i>Cellana talcosa</i> , <i>C. sandwicensis</i> , <i>C. exarata</i> , and <i>C. melanostoma</i> .
<i>'o'opu</i>	refers to species of fish in the families Eleotridae, Gobiidae, and Blennidae
<i>'o'opu 'akupa</i>	<i>Eleotris sandwicensis</i>
<i>'opu 'alamo'o</i>	<i>Lentipes concolor</i>
<i>'o'opu nākea</i>	<i>Awaous guamensis</i>
<i>'opu naniha</i>	<i>Stenogobius hawaiiensis</i>
<i>'o'opu nōpili</i>	<i>Sicyopterus stimpsoni</i>
<i>'ōpae</i>	endemic shrimp
<i>'ōpae kuahiwi/kala'ole</i>	<i>Atyoida bisulcata</i>
<i>'ōpae 'oeha</i>	<i>Macrobrachium grandimamus</i>
<i>'ōpelu</i>	Mackerel scad, <i>Decapterus macarellus</i> , <i>pinnulatus</i> and/or <i>D. maruads</i>
<i>'ōpelu kala</i>	a kala fish staying with 'ōpula schools; <i>Naso hexacanthus</i>
<i>owama/oama</i>	young weke or goatfish

<i>pa‘akai</i>	sea salt
<i>pala‘ā lei</i>	a beautiful, culturally important fern, <i>Sphenomeris chinensis</i> ; used as offerings, medicine,
<i>palapalai</i> plant in hula	a beautiful, culturally important fern, <i>Microlepia strigosa</i> var. <i>strigose</i> ; an important
<i>pāpio</i>	the youngest stage of ‘ulua
<i>po‘e</i>	people, population; plural marker
<i>pūkiawe</i>	a native medicinal shrub whose wood was used for tattooing, <i>Leptecophylla tameiameiae</i>
<i>‘uala</i>	sweet potato; <i>Ipomoea batatas</i>
<i>‘uhaloa</i>	a medicinal plant; <i>Waltheria indica</i>
<i>‘ūlei</i>	a native spreading shrub, <i>Osteomeles anthyllidifolia</i> , used for digging sticks, musical instruments, and fishing spears
<i>‘ulua</i>	carangids; the adult stage of certain species of fish such as Giant Trevally, crevalle, jack, or pompano, in the family of Carangidae
<i>wai</i>	fresh water
<i>wana</i>	long-spined sea urchins; possibly <i>Diadema paucispinum</i> or <i>Echinothrix diadema</i>
<i>weke</i>	certain species of the Mullidae, surmullets or goatfish. All weke have large scales and are usually found in reefs, sometimes in deep water

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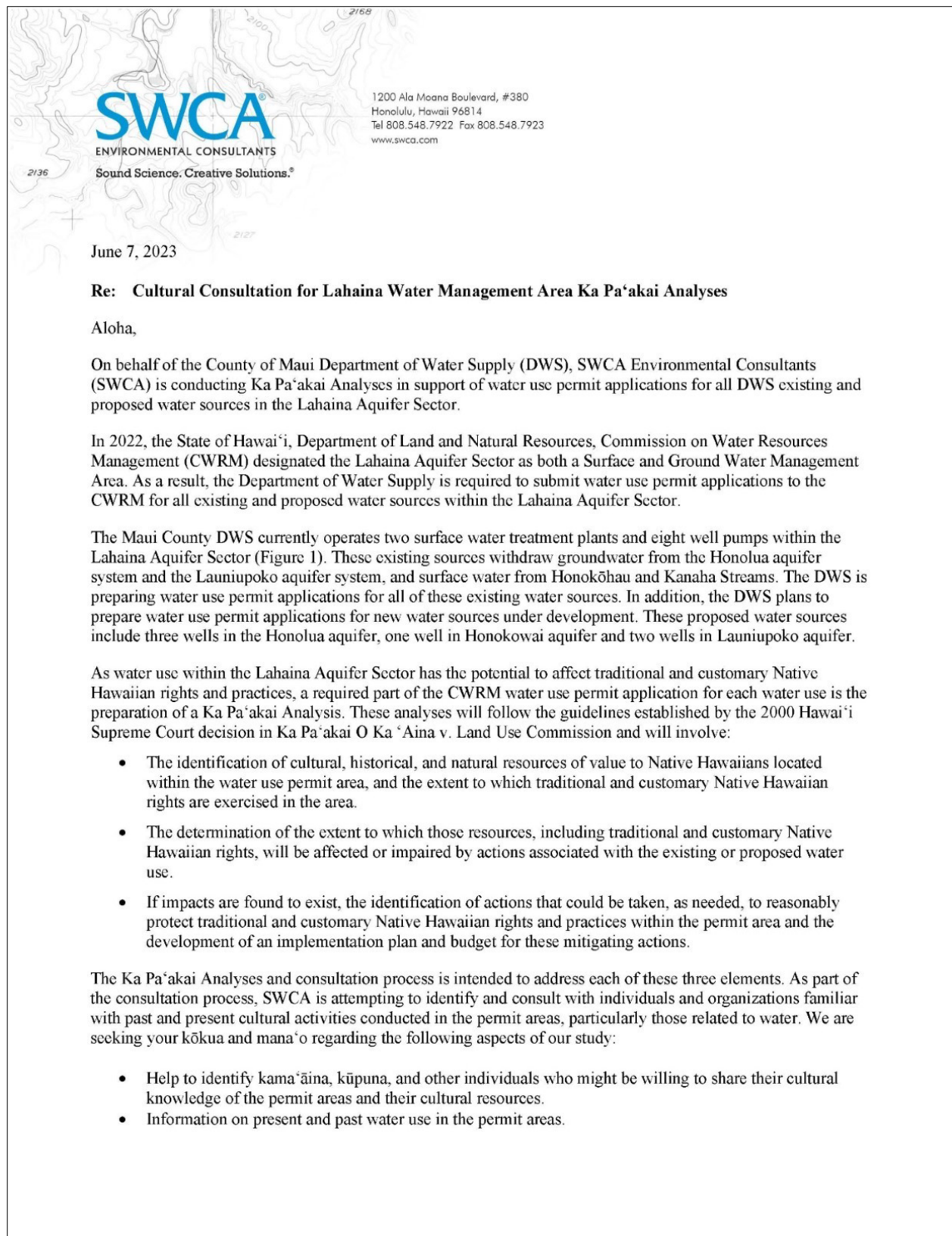
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Appendix A

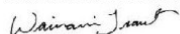
Request for Consultation Letter



- Information on place names and cultural traditions associated with the permit areas.
- Information on cultural resources that may be impacted by water use activities by the DWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit areas.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit areas.

We appreciate any information you would be willing to share regarding the permit areas and those individuals knowledgeable about its past and present cultural uses. Please contact us at Wainani.Traub@swca.com or by phone at (808) 646-6309. We look forward to hearing from you.

Mahalo no kou kōkua 'ana mai,



Wainani Traub

Assistant Project Anthropologist

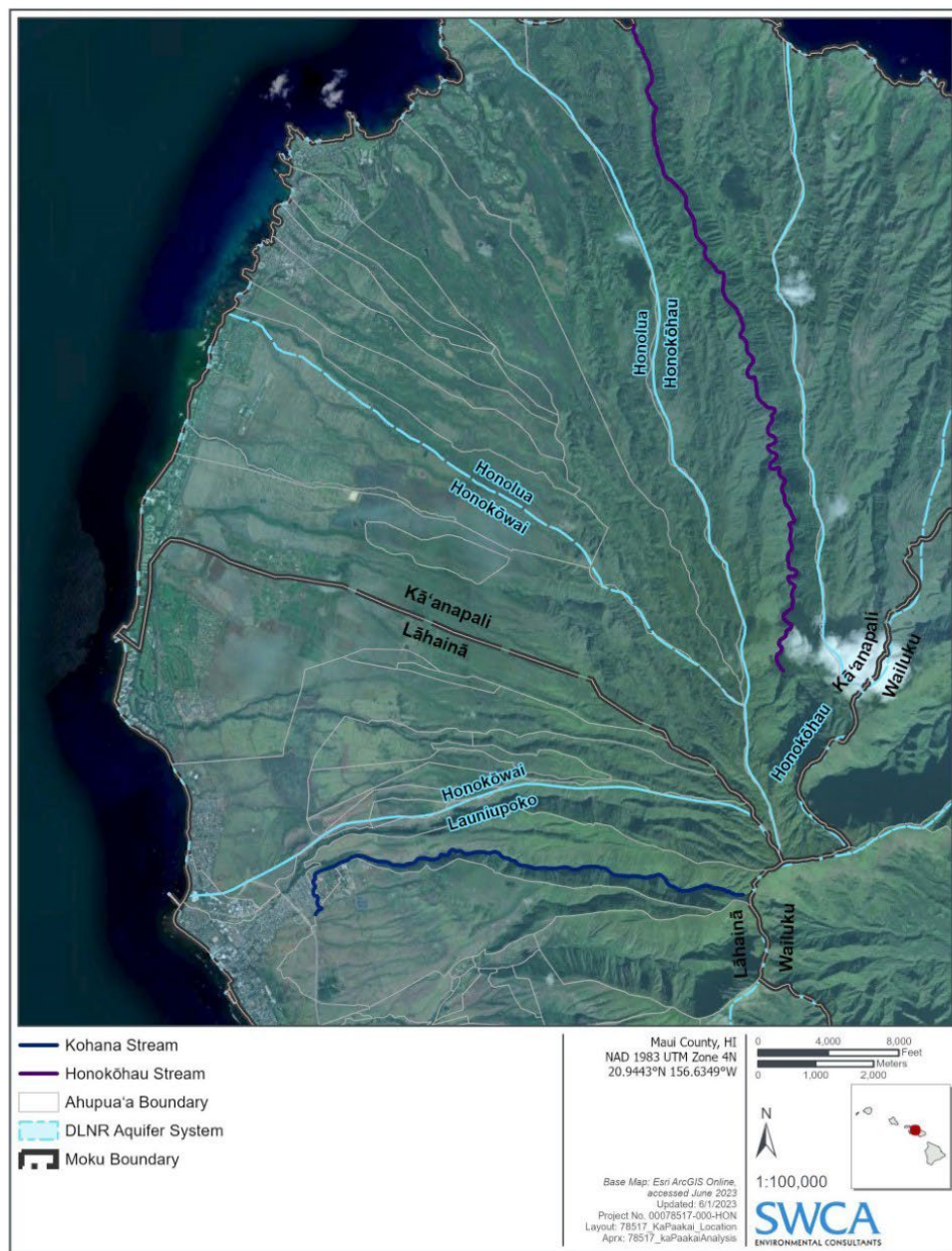


Figure 1. Lahaina Aquifer Sector

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APPENDIX E: DEPARTMENT OF HAWAIIAN HOMELANDS DOCUMENTS REFERENCED

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Significant Impact (February 2022)

APPENDIX F



KAPALUA 1
METER

GADGER METER
180341871



METER



KAPALUA 2
WELLHEAD



KAPALUA 2
WELLHEAD PLATE

Byron Jackson® Products



BWAP International qnc:
Pump Division

SERIAL NO. 921 0 0010

1.0

PUMP SIZE & TYPE 11x14 19 STG SUBM

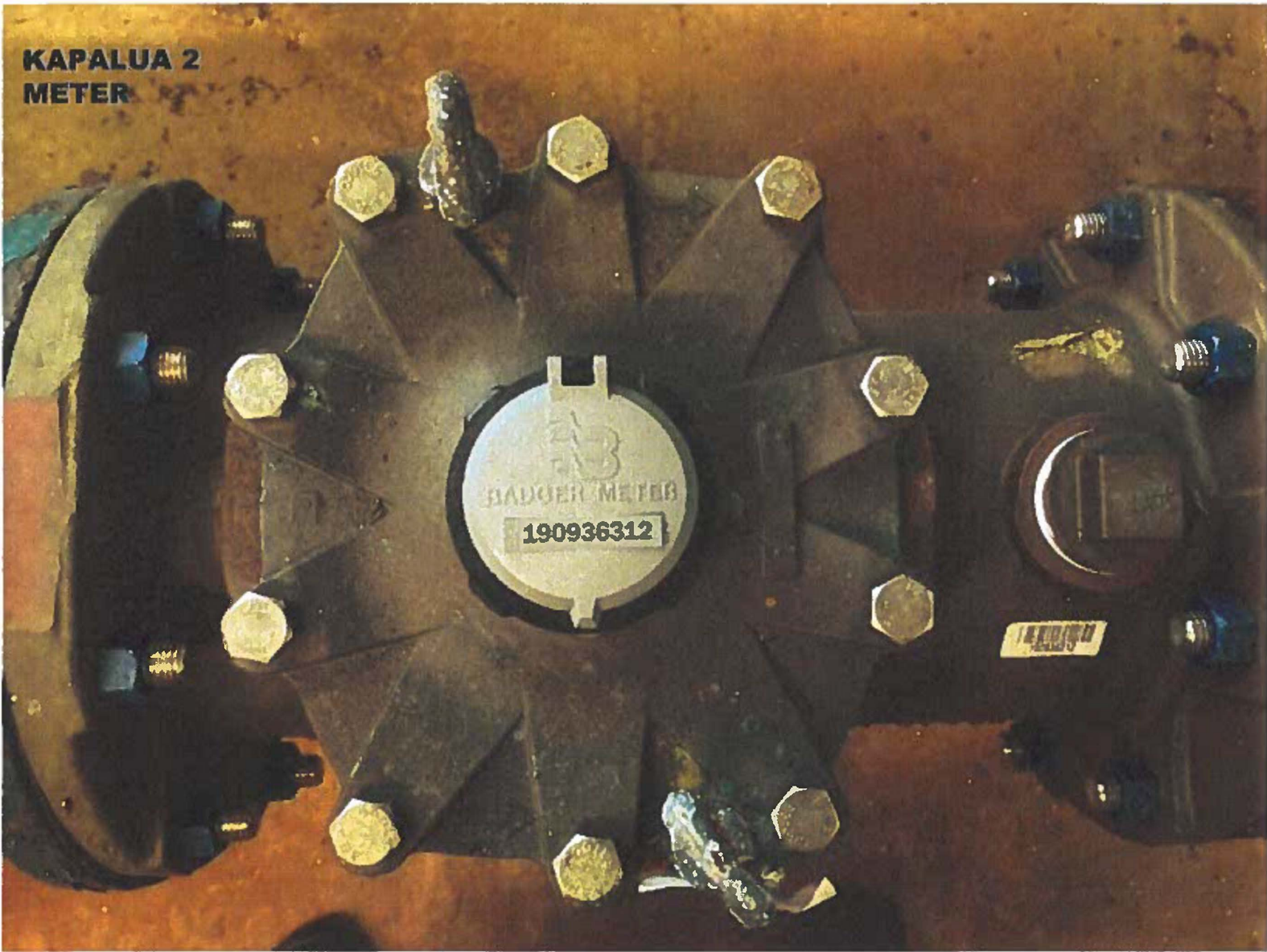
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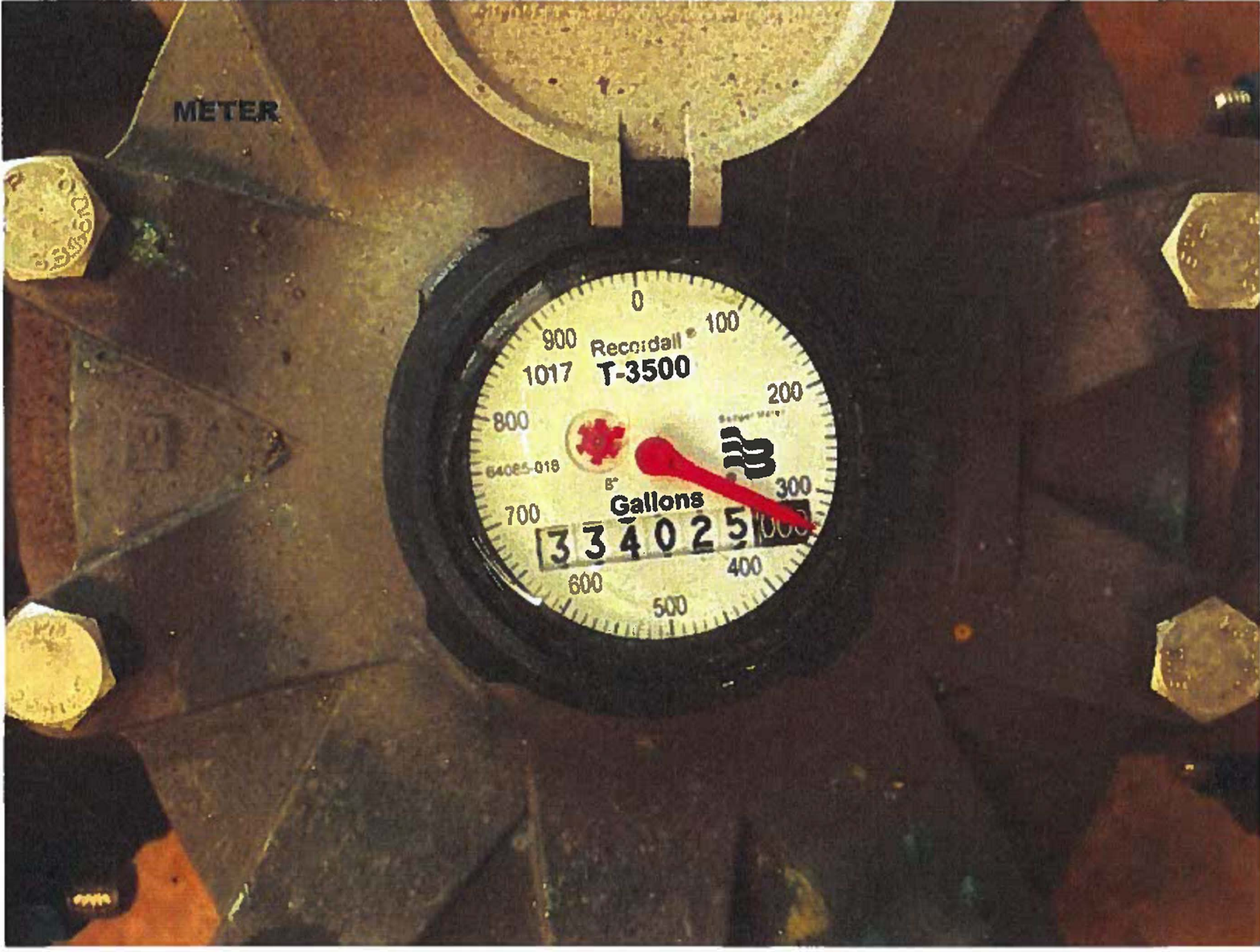
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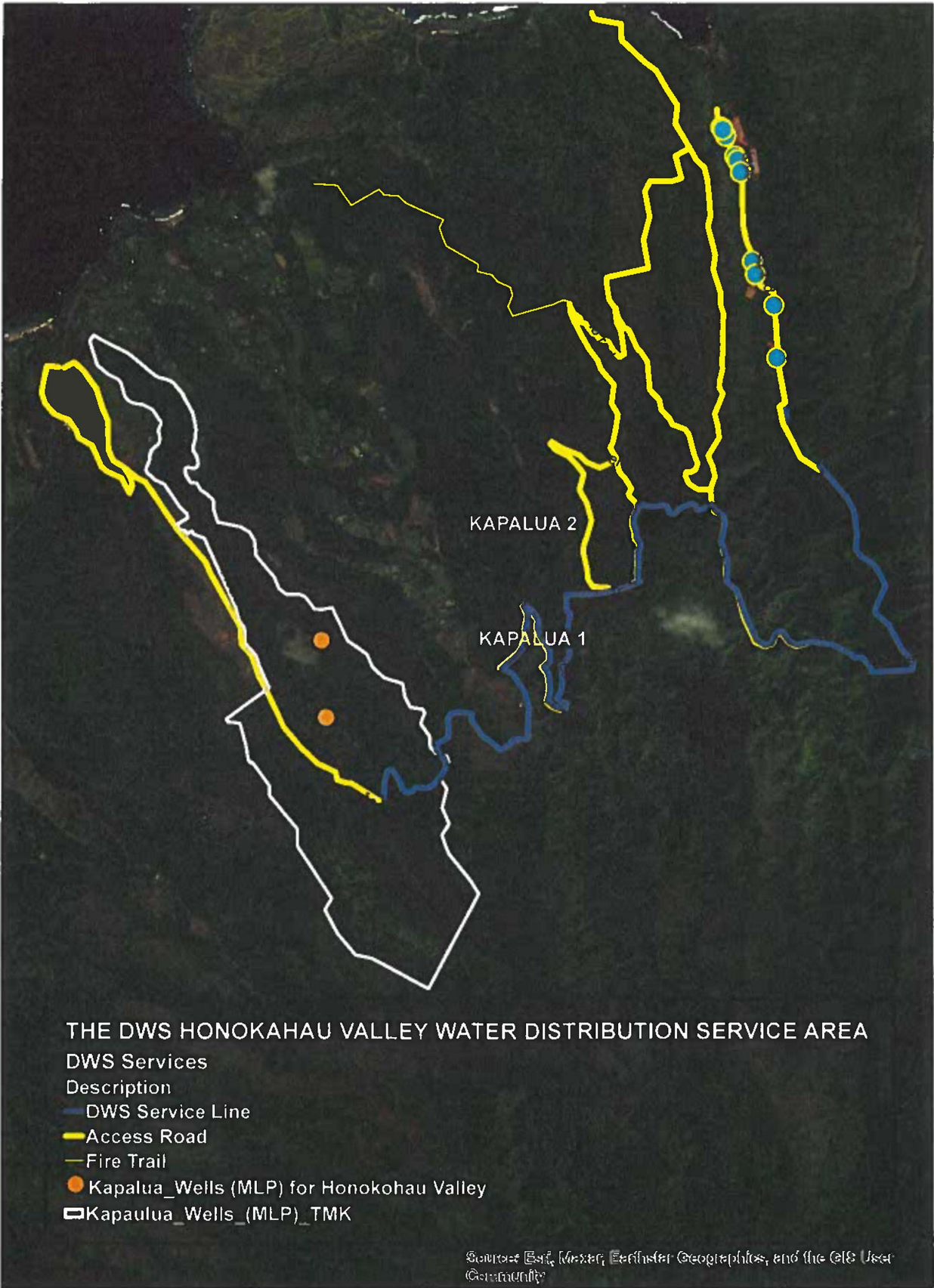
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KAPALUA 2
METER





END USE AREA



Appendix G

OTHER PERTINENT INFORMATION

18. EFFICIENCY

The OWS is currently in contract with a consultant to improve and make recommendations to our current OWS **water** conservation approach, which currently includes a number of supply-side and demand-side conservation strategies. These strategies are attached and provides savings calculations from various program that are currently underway at the DWS, including programs that may work in the future. These conservation programs are considered based on the special water use contexts and behaviors of Maui residents and businesses, and includes a public outreach component which educates and provides public events to give away free high-efficiency fixtures, toilets, rain barrels and irrigation system components to help home owners save water and money.

DWS Conservation Planning

The County of Maui Department of Water Supply (DWS) conducts a robust water conservation plan, which includes ongoing and planned projects that are categorized as follows:

1 Conservation Programs (CP)

- a Toilet Replacement Program (dual-flush, ultra-high efficiency, .8/1.28 gpf) - 100% free
- b Rain Barrel Program (Ivy 50 gal) -100% free
- c High efficiency fixture giveaway -100% free
- d Outdoor irrigation B-Hyve "smart" hose timer giveaway - 100% free

These programs and giveaways are tracked for estimated water savings and have been developed with qualifying rules and guidelines for both our customers and county citizens.

e Watershed Protection Grants Program

This grants program has been funding highly specialized organizations who help protect and preserve the County of Maui watersheds from invasive plant and animal species that damages and endangers native Hawaiian ecosystems that critical for recharging water sources and maintaining high water quality.

f Public outreach

Every year, the DWS runs water conservation advertisements in various media outlets, at the airport, on public transit, and participates at various public events with a booth to promote our programs, provide informational materials, free program giveaways, and speak directly to the public and answer questions about the DWS water distribution system that people are curious about. We provide information and support for both young and old to learn and participate in water conservation and to help protect our water sources.

The DWS has just concluded its 12th Annual Water Conservation Poster Contest and its 6th Annual Source Water Protection Video Contest. Over the years, these very successful contests have attracted thousands of grade school and high school participants, and allowed representatives from many different organizations to judge their creative entries. Winners and their schools have received various prizes, which aim to encourage on-going participation and curiosity about what and why water conservation is so important to their future.

Information about the DWS water conservation efforts can also be found here:

<https://waterresources.mauicounty.gov/153/Water-Conservation>

2 Conservation Capital Improvement Projects (CCIP)

As water consumption rises due to urban growth and development, water reuse is on the rise. The DWS is at the forefront of finding ways to apply this practice with maturing technology in

the public space, to help pave the way its expanded use in Maui's commercial and residential space.

a. Greywater reuse systems

The State of Hawaii's first mechanical greywater reuse system installed at Launiupoko Beach Park in Lahaina, Maui. Provides up to 3K-12K per day of reusable water for landscape irrigation, depending on patronage. 3K at 1.IMG savings per year with automatic variable production, and scalable to recycled (R-1) quality if permitted by DOH.

Another ongoing greywater project is at the Kana ha Beach Park in Kahului, Maui. This system provides up to 4-6 times the amount of savings estimated at the recently installed Launiupoko Beach Park Greywater Reuse System. It is currently in Phase 1, Design and Permitting, with Phase 2, Procurement and Construction, scheduled to begin in 2024.

b. Xeriscape outdoor landscaping demonstration project

Xeriscaping promotes native Hawaiian plant species instead of high water-intensity ornamental plants to save water, especially in drier, drought-stricken, areas of Maui. The DWS is preparing to coordinate with the Maui Nui Botanical Gardens in Kahului, Maui, to build a xeriscape demonstration project, which provides the public an opportunity to see and learn about xeriscaping in the different microclimates of Maui.

3. Conservation Strategies (CS)

The DWS continues to investigate other feasible options to save water. These potential options include physical improvements and policy changes that are being explored:

- A Bill for a Water Conservation Ordinance (working draft)
- Xeriscape Improvements (physical incentives via rebate)
- Ordinances New Build (with indoor & outdoor LEED)
- More Efficient Agricultural Irrigation Management
- Actionable Drought & Climate Change Incentives
- Public Outreach to HOAs on Xeriscaping (technical support)
- LEED Water Efficiency Incentive Program (Materials for Residential and Commercial/Resorts)
- Grey Water Residential Program
- SMART Irrigation Controller (zoned irrigation with sprinklers)
- Neighborhood Greywater System Pilot (Centralized Reuse Treatment System)
- Department of Parks and Recreation Irrigation Efficiency Program (30% reduction)
- Commercial Greywater Reuse Pilot (Hotels and Businesses Irrigation)
- Condominium Complex Greywater System Pilot (Bathrooms/Shower/Laundry)
- Large Catchment System for Upcountry and Hana Residents (irrigation and garden)

- Hot Water Recirculators Program
- Residential Laundry to Landscape
- New Build Reuse Systems
- Pool Cover Program
- Hotel Efficient HVAC Program (Laundry to cooling towers)
- New Home Buyer Dual Piping (greywater)
- Agriculture Water Reuse Pilot
- Commercial Laundromat Water Reuse
- Agriculture: Urban and peri-urban horticulture, micro-gardens, hydroponics
- Water audit on all County facilities
- County Properties High Efficiency Fixtures Retrofitting (i.e. Schools and Office)

4. Supply-Side Intervention Strategies (SSIS)

There are several ways that the DWS continues to find ways to conserve water and make its operations more efficient:

a Water auditing

Under Act 169, SLH 2016, the DWS has completed all mandatory yearly utility water audits that were validated by the Commission of Water Resources Management (CWRM).

b Leak Detection Program

The OWS has an evolving leak detection program that aims to reduce non-revenue water loss and to help target priority water distribution infrastructure maintenance improvements.

c Meter Replacement Program

For the past several years, aging service meters have been replaced throughout the DWS service subsystems. This program is also helping DWS and its customers better track usage to reduce water losses faster and more efficiently.

d Re-using Production Water

The DWS is improving its ability to reuse production water by sending it back to its headworks.

e Hydraulic Model

In 2023, the DWS will be contracting with a consultant to develop its hydraulic model to assist in estimating and modeling water levels, pressures, flows and velocities in its water distribution system.

f PRV replacement and pressure monitoring

The DWS continues to improve its awareness to properly adjust PRVs and how to better monitor them to find optimal pressures to reduce water loss.

g District submetering and master metering

The DWs is exploring ways to better track and analyze water consumption throughout its water distribution systems through district and master metering options.

Ka Pa‘akai Analysis for Maui County Honokōhau Stream Diversion in the Honokōhau Aquifer System, Lahaina Aquifer Sector

Honokōhau Ahupua‘a, Kā‘anapali Moku, Island of Maui

AUGUST 2023

PREPARED FOR

**County of Maui, Department of Water
Supply**

PREPARED BY

SWCA Environmental Consultants

KA PA‘AKAI ANALYSIS FOR MAUI COUNTY HONOKŌHAU STREAM DIVERSION IN THE HONOKŌHAU AQUIFER SYSTEM, LAHAINA AQUIFER SECTOR

HONOKŌHAU AHUPUA‘A, LAHAINA MOKU, ISLAND OF MAUI

Prepared for

County of Maui, Department of Water Supply
200 South High Street
Wailuku, Hawai‘i 96793-2155
Attn: Eva Blumenstein

Prepared by

Tamara Luthy, Ph.D., and Wainani Traub, M.S.

Principal Investigator

Rowland Reeve, M.A.

SWCA Environmental Consultants
1200 Ala Moana Boulevard, Suite 380
Honolulu, Hawai‘i 96814
(808) 548-7922
www.swca.com

SWCA Project No. 00078517

SWCA Cultural Resources Report

August 2023

EXECUTIVE SUMMARY

On behalf of the County of Maui Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) conducted a Ka Pa‘akai Analysis in support of the water use permit application for the existing Honokōhau Stream diversion located within the Honokōhau Aquifer System in the larger Lahaina Aquifer Sector.

In 2022, the State of Hawai‘i, Department of Land and Natural Resources, Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as both a Surface and Groundwater Management Area. As a result, the MDWS is required to submit water use permit applications to the CWRM for all existing and proposed water sources within the Lahaina Aquifer Sector.

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa‘akai Analysis. These analyses follow the guidelines established by the 2000 Hawai‘i Supreme Court decision in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*.

Using a combination of archival research, existing oral history interviews, and public testimony from the CWRM’s Instream Flow Standard Assessment Report (IFSAR) meetings, this Ka Pa‘akai Analysis report identifies and discusses the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honokōhau Aquifer System, that are related to water use and could potentially be impacted by water use related to the existing diversion of Honokōhau Stream. These traditional and customary practices include the cultivation of wetland *kalo* (taro, *Colocasia esculenta*), nearshore fishing, the gathering of *limu* (algae), and the gathering of medicinal and other plants. Traditional and customary practices such as gathering *lā‘ua lapa‘au* (medicinal plants), *lo‘i kalo* (flooded taro terraces) cultivation, and gathering riparian species such as ‘o‘opu (goby fish), ‘ōpae (endemic shrimp), the shellfish *hīhīwai* (*Neritina granosa*), and *hapawai* (*Theodoxus vespertinus*) all declined dramatically in the area due to decades of pineapple cultivation. In spite of this, cultural practitioners continue to farm *lo‘i kalo* and fish in the areas makai of the Honokōhau Ditch. In spite of the decades of disconnection from the mauka areas due to the pineapple industry, cultural practitioners are currently increasing the number of *lo‘i kalo* under active cultivation and teaching *keiki* (children) and community members about *mauka* to *makai* (inland to coastal) stewardship, all of which require a sufficient availability of fresh water.

Historical accounts describe Honokōhau Valley as one of the most productive regions for *kalo* cultivation on the entire island of Maui, rivalled only by Kahakuloa. The development of commercial cultivation during the plantation era, however, led to a dramatic decline in *lo‘i kalo* cultivation in Honokōhau. The plateau lands between the deep cut gulches were converted into sugarcane and pineapple fields, and the Honokōhau Stream was diverted into the Honokōhau Ditch. Narrators who contributed to existing oral history interviews and public testimony believe that the existing Honokōhau Stream diversion directly impacts fresh water availability for *lo‘i kalo*. Cultural informants identify the Honokōhau Stream diversion as a decisive factor in the decline in key, culturally important natural resources such as ‘o‘opu (goby fish), ‘ōpae (endemic shrimp), the shellfish *hīhīwai* (*Neritina granosa*) and *hapawai* (*Theodoxus vespertinus*), *limu*, and nearshore fish. The Honokōhau Stream surfacewater diversion, paired with the ecological disturbances from legacy sugarcane and pineapple fields, have led to cascading effects on the natural environment. These effects include a decline in water to irrigate *lo‘i kalo*; silt, pesticide, and fertilizer runoff damaging the reefs; a lack of mauka to makai connectivity for ‘o‘opu and ‘ōpae, and an influx of invasive plant and animal species in the mauka areas leading to increased fire risk, which in turn reduced aquifer replenishment.

This Ka Pa‘akai Analysis found that the Honokōhau Stream diversion contributes to an overall scarcity of freshwater that impacts the vitality of ongoing traditional and customary practices in the Honokōhau ahupua‘a. The Maui County Department of Water Supply has therefore agreed to undertake a number of feasible actions to maintain and potentially increase supplies of fresh water for Native Hawaiian traditional and customary practices. This Ka Pa‘akai Analysis identified a number of feasible actions to help mitigate the potential impacts of the existing stream diversion, which include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

Many words in the Hawaiian language, ‘Ōlelo Hawai‘i, are used throughout this report. In addition to being defined the first time that they are introduced in the report, all Hawaiian-language words are defined in the glossary (see Section 8 Glossary of Hawaiian Words Used in the Text).

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1	Introduction	1
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1 INTRODUCTION

On behalf of the County of Maui, Department of Water Supply (MDWS), SWCA Environmental Consultants (SWCA) has conducted this Ka Pa‘akai Analysis in support of the water use permit application for the existing Honokōhau Stream diversion within the Honokōhau Aquifer System in the Lahaina Aquifer Sector.

1.1 Lahaina Water Management Area

In 2022, the State of Hawai‘i, Department of Land and Natural Resources, Commission on Water Resources Management (CWRM) designated the Lahaina Aquifer Sector as a Surface and Groundwater Management Area. This decision was made in accordance with Hawai‘i Revised Statutes (HRS) Chapter 174C, the State Water Code, and Hawai‘i Administrative Rules (HAR) Title 13, Water Resources, Chapter 171, Designation and Regulation of Water Management Areas. As a result of this designation, the County of Maui Department of Water Supply is required to submit water use permit applications to the CWRM for all of its existing and proposed water sources within the Lahaina Aquifer Sector.

The Lahaina Aquifer Sector includes the *moku* (districts) of Lahaina and Kā‘anapali, both within West Maui. The Lahaina Aquifer Management Area includes the Honokōhau, Honolulu, Honokahua, Kahana, Honokōwai, Wahikuli, Kahoma, Kaua‘ula, Launiupoko, Olowalu, and Ukumehame Surface Water Hydrologic Units and the Honokōhau, Honolulu, Honokōwai, Launiupoko, Olowalu, and Ukumehame Groundwater Hydrologic Units. The Honolulu, Honokōhau, Kahana, Honokōwai, and Wahikuli Hydrologic Units are in the Kā‘anapali Aquifer System, whereas the hydrologic units of Launiupoko, Ukumehame, Olowalu, and Kaua‘ula are within the Lahaina Aquifer Systems (Figure 1). The present report focuses on the Honokōhau Hydrologic Unit. The Honokōhau Hydrologic Unit encompasses the *ahupua‘a* (traditional land divisions) of Honokōhau in the Kā‘anapali moku (DLNR CWRM 2019b).

In coming to its decision, the CWRM noted several concerns regarding the surface and groundwater resources in the Lahaina Aquifer Sector:

- These resources could be threatened by existing or proposed withdrawals or diversions of water.
- There is the potential for harm to groundwater quantity and quality by saltwater intrusion.
- There are serious historic and ongoing disputes over current and planned uses of water.
- There is climate uncertainty and potential drought and decline in rainfall and recharge.
- There is surface and groundwater interaction and connection that should be managed in an integrated manner.

The MDWS currently operates two surface water treatment plants and eight well pumps within the Lahaina Aquifer Sector. These existing sources withdraw groundwater from the Honolulu Aquifer System and the Launiupoko Aquifer System, and surface water from Honokōhau and Kanahā Streams. The MDWS is preparing water use permit applications for all of these existing water sources. In addition, the MDWS plans to prepare water use permit applications for new water sources under development.

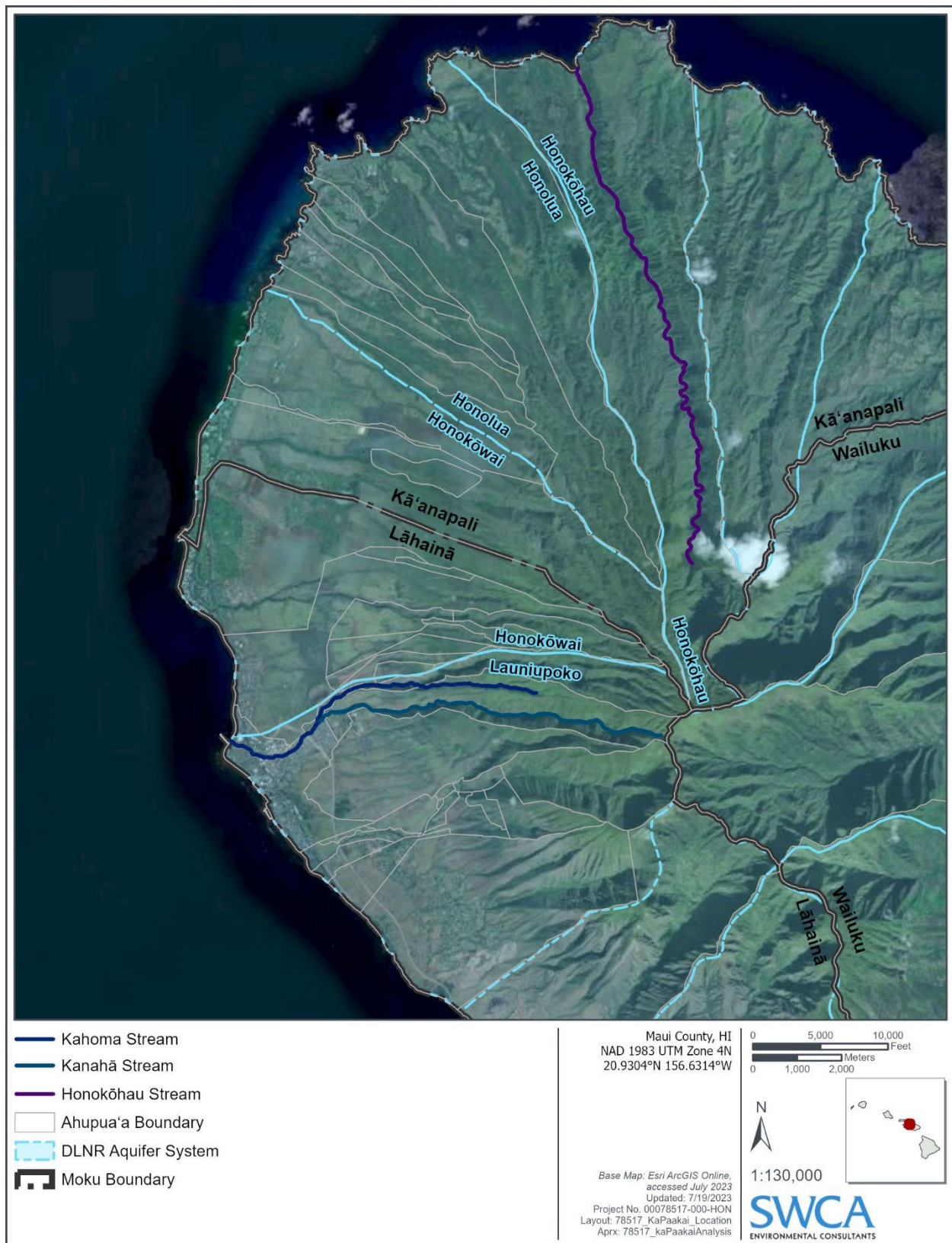


Figure 1. Map of Aquifer Systems within the Lahaina Aquifer Sector.

1.2 Honokōhau Aquifer System

The Honokōhau Aquifer System encompasses the ahupua‘a of Honokōhau. County water sources within the Honokōhau Aquifer System include the Maui Land & Pine diversion of Honokōhau Stream (Figure 2). This source provides water to the residential and resort communities in the Kā‘anapali area.

1.3 Water Issues

The *Maui Water Use and Development Plan* (2019) acknowledges that West Maui’s water resources are constrained by climate change issues such as rising temperatures, increasingly erratic and decreasing rainfall, and other changes in weather patterns. In addition, anthropogenic factors such as increasing population, urban growth, complicated legal processes, lack of capital to improve aging infrastructure, and tensions between the needs of various water users must all be considered by the County when determining water allocations. Existing plantation irrigation systems from Maui Land and Pineapple and Pioneer Mill Irrigation Systems in West Maui, for example, continue to deteriorate since the state transitioned away from pineapple and sugar cane, even though *kalo* (taro, *Colocasia esculenta*) farmers continue to rely on these systems (MDWS 2019:73). Many of these environmental and anthropogenic factors impact the health and vitality of traditional and customary practices taking place within the Lahaina Aquifer Sector.

1.4 Ka Pa‘akai Framework

As water use within the Lahaina Aquifer Sector has the potential to affect traditional and customary Native Hawaiian rights and practices, a required part of the CWRM water use permit application for each water use is the preparation of a Ka Pa‘akai Analysis. These analyses will follow the guidelines established by the 2000 Hawai‘i Supreme Court decision in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*. The Ka Pa‘akai Analysis and consultation process is designed to identify Native Hawaiian cultural, historical, and natural resources and propose feasible actions to protect against potential impacts to Native Hawaiian customary and traditional rights.

The Hawai‘i State Constitution was amended in 1978 to specifically recognize traditional and customary Hawaiian practices. Article XII Section 7 of the Constitution states that, “The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua‘a tenants who are descendants of Native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.”

Cultural practices are broadly defined as traditions, beliefs, practices, life ways, and the societal history of a community and its traditions, arts, crafts, music, medicine, religion, and related institutions. Hawai‘i State agencies have the responsibility to assess the potential impacts of proposed actions on environmental resources in the public trust in order to preserve and protect customary and traditional Native Hawaiian rights to the extent feasible.

The Hawai‘i Supreme Court in *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission* (2000) reaffirmed that “the State and its agencies are obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians to the extent feasible.” The Court provided an analytical framework “to effectuate the State’s obligation to protect Native Hawaiian customary and traditional practices while reasonably accommodating competing private [property] interests.” Under this framework, state and county agencies must independently assess the following when considering proposed actions, such as reviewing land use applications or, as in this case, water use permit applications:

- The identity and scope of “valued cultural and historical or natural resources” in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
- The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and
- The feasible action, if any, to be taken by the LUC [Land Use Commission, or any state agency] to reasonably protect native Hawaiian rights if they are found to exist. (Ka Pa‘akai O Ka ‘Aina v. Land Use Commission 94 Haw 13, Haw. 2000:25–26)

The Ka Pa‘akai Analysis and consultation process is intended to address each of these three elements.

1.4.1 Ka Pa‘akai Analysis

As part of the MDWS’s water use permit application for its existing and proposed water uses within the Lahaina Aquifer Management Area, a Ka Pa‘akai Analysis is required for each application. This analysis is designed to identify the cultural, historical, natural resources, and traditional and customary Native Hawaiian practices that may be affected by the permit action and to develop mitigation measures to protect these resources and rights.

The Ka Pa‘akai Analysis for the existing Maui County stream diversion located within the Honokōhau Aquifer System follows the guidelines established by the 2000 Hawai‘i Supreme Court decision and involves:

- The identification of cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area, and the extent to which traditional and customary Native Hawaiian rights are exercised in the area;
- The determination of the extent to which those resources, including traditional and customary Native Hawaiian rights, will be affected or impaired by actions associated with the existing water use; and
- If impacts are found to exist, the identification of actions that could be taken, as needed, to reasonably protect traditional and customary Hawaiian rights and practices within the permit areas.

2 CULTURAL AND HISTORIC BACKGROUND

This section presents the past and present historical and cultural significance of the permit area, with a focus on water sources. This cultural and historic background also serves to provide context to some of the historic and ongoing disputes over water use in the Lahaina Aquifer Sector Area. These disputes were among the concerns raised by the CWRM when designating the area as a Surface and Groundwater Management Area. The following research is intended to help identify cultural, historical, and natural resources of value to Native Hawaiians located within the water use permit area and to be sufficient to the extent appropriate to assess potential impacts to traditional and customary Hawaiian rights and practices pertaining to water in the permit area.

2.1 A Brief Historic Context for Traditional Hawaiian Cultural Knowledge

In any sensitive discussion of Native Hawaiian culture, one must understand the role of colonization in eroding traditional cultural knowledge systems. Native Hawaiian culture—past and present—exists in close partnership with its natural environment. Changes in the traditional land tenure system and the adoption of western concepts of land ownership in the nineteenth century had significant direct and indirect impacts on traditional and customary Hawaiian rights and practices tied to *‘āina* (land). The privatization of land resulted in the loss and destruction of many significant cultural resources and denied Native Hawaiian cultural practitioners access to lands previously used for traditional cultural purposes.

The loss of traditional Hawaiian cultural knowledge during the nineteenth and early twentieth centuries was further compounded by the devastating decline in the native population resulting from the introduction of foreign diseases to which the Hawaiian people had no developed immunity. Changes in traditional life ways resulting from the migration of younger people from the country districts to growing economic centers such as the port of Honolulu, as well as the shift from subsistence agriculture to the commercial cultivation of crops such as pineapple and sugar, contributed to a loss of cultural memory. With the passing of the last custodians of specialized cultural knowledge, that knowledge was lost forever.

Informants interviewed for this study have identified the effects of pineapple and sugar cane plantations, as well as the growth of tourism and luxury housing developments, as primary factors that have profoundly changed the environment of West Maui. The cumulative impacts of these industries on the environment have posed significant challenges for Native Hawaiians, hindering their ability to maintain certain traditional and customary practices reliant upon the health of the *‘āina*.

Not until 1978 was the Hawai‘i Constitution amended to protect and preserve the traditional customary rights of Native Hawaiians, and not until 1995 did the Hawai‘i Supreme Court confirm Native Hawaiian rights to access undeveloped and under-developed private lands (State of Hawaii Environmental Council 1997:1). These actions came much too late to prevent irretrievable loss of traditional cultural knowledge. With this in mind, it is important to note that an absence of evidence is not evidence of absence. The authors of this Ka Pa‘akai Analysis recognize that the loss of Hawaiian traditional cultural knowledge likely applies to the current study area. It is probable that there are place names whose meaning has been lost or which themselves have been forgotten, and traditions no longer passed on. We also recognize that, while we have made a good faith effort to identify traditional and customary Hawaiian rights and practices associated with the permit area, it is possible that there may be place names missed, traditional history misinterpreted, or *kūpuna* (elder) voices not heard.

As this Ka Pa‘akai Analysis shows, however, despite the enduring legacies of colonialism, there are many individuals who possess cultural knowledge, and efforts to revitalize traditional and customary Hawaiian rights and practices are growing. For these cultural revitalization efforts to succeed, it is crucial to support the health of the environments that sustain Native Hawaiian cultural traditions and customs. At the core of ensuring the possibility of these cultural revitalization efforts lies the availability of clean water, which forms the foundation of healthy environments.

2.1.1 *The Significance of Water in Hawaiian Culture*

In *Native Planters in Old Hawaii*, E. S. Craighill Handy, Elizabeth Green Handy, and Mary Kawena Pukui explain that the significance of water in Hawaiian culture is reflected in the Hawaiian words for wealth and law.

Water, which gave life to food plants as well as to all vegetation, symbolized bounty for the Hawaiian gardener for it irrigated his staff of life—taro. Therefore, the word for water reduplicated meant wealth in general, for a land or a people that had abundant water was wealthy.

The word waiwai means wealth, prosperity, ownership, possession. Literally it is “water-water.” A Hawaiian farmer who had all the water he needed for growing taro was indeed a prosperous man...

The word kōnāwai, or law, also tied back to water. Ka-na-wai is literally “belonging-to-the-waters.” With farms along the water system upon which all depended, a farmer took as much as he required and then closed the inlet so that the next farmer could get his share of water—and so it went until all had the water they needed. This became a fixed thing, the taking of one’s share and looking after his neighbor’s rights as well, without greed or selfishness.

So a person’s right to enjoy his privileges, and conceding the same right to his fellow man, gave the Hawaiians their word for law, kōnāwai, or the equal sharing of water. (Handy and Handy 1972:57–58)

They further explained how alien the Western conception of water as a commodity seemed to Native Hawaiians.

Inalienable title to water rights in relation to land use is a conception that had no place in the Hawaiian way of thinking...Water, whether for irrigation, for drinking, or other domestic purposes, was something that “belonged” to Kane-i-ka-wai-ola (Procreator-in-the-water-of-life), and came through the meteorological agency of Lono-makua the Rain-provider...The paramount chief, born on the soil and hence born of the maka‘ainana of a moku (island or district), was a medium in whom was vested divine power and authority...But this investment...was instrumental in providing only a channeling of power and authority, not a vested right...But this was not equivalent to our European concept of “divine right.” The ali‘i nui, in old Hawaiian thinking and practice, did not exercise personal dominion, but channeled dominion. In other words, he was a trustee. The instances in which an ali‘i nui was rejected and even killed because of abuse of his role are sufficient proof that it was not personal authority by trusteeship that established right (pono). (Handy, Handy, and Pukui 1972:65, cited in Scheuer and Isaki 2021:78-79)

Emma Nakuina, writing in the late 1800s, described how *‘auwai* (water ditches) were traditionally managed so that there was always sufficient fresh water flow to all individuals living downstream.

No auwai was permitted to take more water than continued to flow in the stream below the dam. It was generally less, for there were those who were living makai or below the same stream, and drawing water from it, whose rights had to be regarded. Any dams made regardless of this well-recognized rule were leveled to bedrock by the water rights holder below, and at any rebuilding, delegates from each dam below were required to be present to see that a due proportion of water was left in the stream. (Nakuina 1893, cited in Scheuer and Isaki 2021:82)

2.1.2 Shoreline Traditional Hawaiian Practices in West Maui

Native Hawaiians were keen observers of native ecosystems. The ahupua‘a system was premised upon the interconnections between mauka (inland) and makai (coastal) ecosystems, and between *wai* (fresh water) and *kai* (ocean water or saltwater). Native Hawaiians understood that the health of important marine resources required freshwater discharge from mauka areas (Winter et al. 2018). Many prized species of fish rely upon *limu* (algae) for their food; many species of nearshore limu thrive best in areas with both fresh water and ocean mixing (Abbott 1992). These ancient realizations about the parallels between healthy freshwater and ocean ecosystems were also clearly articulated by kūpuna during ethnographic interviews, community testimony, and existing oral history interviews cited in this report.

West Maui was known for its abundant marine resources. Inhabitants of West Maui relied heavily on fishing in the pre-Contact and early post-Contact periods. According to E. S. Craighill Handy:

On the south side of western Maui the flat coastal plain all the way from Kihei and Maalaea to Honokahua, in old Hawaiian times, must have supported many fishing settlements and isolated fisherman’s houses, where sweet potatoes were grown in the sandy soil or red *lepo* near the shore. For fishing, this coast is the most favorable on Maui, and, although a considerable amount of taro was grown, I think it is reasonable to suppose that the large fishing population which presumably inhabited this leeward coast ate more sweet potatoes than taro with their fish.... (Handy 1940:159–160)

A.D. Kahalelio discussed fishing lore in the area around the turn of the last century, including ‘ō‘io (ladyfish/bonefish, *Albula vulpes*) fishing.

The other division is the division called Mamali oio and is done just beyond the reef and places close to shore, from the steamer landing of Maalaea to the cape of Kunounou at Honokapohau, district of Lahaina. These are the places in which fishing is done by those of Olowalu, Lahaina, Kaanapali, Honolua, and Honokohau. (Kahalelio 1902, cited in Sterling 1998:17)

2.2 Ka‘ānapali Moku

2.2.1 I Ka Wā Kahiko: Pre-Contact Kā‘anapali Moku

Kā‘anapali Moku was a district known for its marine resources and valleys suitable for cultivating important food crops, especially kalo and ‘uala (sweet potato; *Ipomoea batatas*). The large plateau overlooking the Honolua Bay was known as Kulapka‘e‘a, meaning “dusty plain.” Honolua Bay is one of six bays in Kā‘anapali Moku, known collectively as “Hono-a-Pi‘ilani,” meaning “the bays of Pi‘ilani.” Pi‘ilani was a renowned sixteenth century Maui chief (Kamakau 1961:22). Honolua itself means “two bays,” which refers to its bifurcated shape. These bays were all important to Native Hawaiians for fishing and gathering of marine resources. (Planning Consultants Hawai‘i, LLC 2018)

Kā'anapali District was also known for an *ala loa* (long trail) constructed in the 1500s during the reigns of Pi'ilani and Kiha-a-Pi'ilani (Walker 1931). The strategic importance of Kā'anapali Moku led to battles between Hawai'i Island ali'i nui (high chief) Alapa'i and Pele-io-holani a ruling chief of Kaua'i, which occurred at Nāpili and Honokahua. (Kamakau 1961:74) The ahupua'a of Honolua and Honokahua were later granted to King Kamehameha II by his father, King Kahemahema I. (Ashdown 1978, cited in Planning Consultants Hawai'i, LLC 2018).

D.T. Flemming offers a description of Kā'anapali which indicates the abundance and prosperity of the valleys under kalo and sweet potato cultivation.

In all three valleys which you mention—Honokowai, Honokohua and Honolua, as well as Kahana, there was considerable taro raised in olden times; as a matter of fact, a great deal was raised in Honokowai, where there must have been 30 or 40 acres under cultivation at one time (Handy 1940:106).

Hand, Handy, and Pukui also mentioned extensive lo'i kalo in Honokōwai, Kahana, Honokahua, and Honolua.

The first four [Honokawai, Kahana, Honokahua, Honolua] all had extensive lo'i lands in their valley bottoms, where terraces rose tier on tier in symmetrical stone-faced lo'i. On this part of the coast there is no sloping kula land seaward of the valleys as there is back of Lahaina and southeastward (1972:494).

Handy offers additional details about sweet potato cultivation in these areas.

I am told that in ancient times there were numerous settlements on western Maui, between Honokohau and Kahakuloa, and also several between Kahakuloa and Waihee. Settlements in these localities imply planting of sweet potatoes on the lower kula...From [Olowalu] along the leeward coast, through Kaanapali, the kula lands now used for sugar cane and pineapple would have been ideal for sweet potato culture. Some accounts indicate, however, that potato planting was practiced only as an adjunct to the taro culture in and below the great valleys (1940:160).

2.3 Traditional Cultivation in Honokōhau

E. S. Craighill Handy explains how the Honokōhau stream supported intensive cultivation of wetland taro.

This valley—watered by a large rivulet the flow of which never ceases, even today when much of its water is piped off in the upper valley—was, and still is, an area of intensive cultivation of wet taro and flooded terraces. In 1931 a larger proportion of the patches were under taro cultivation in Honokohau than anywhere else on Maui with the exception of Kahakuloa. In 1934 I observed that one or two considerable areas had been abandoned and that a number of patches had been planted to rice instead of taro, because of root rot affecting the taro. Only one old Hawaiian kamaaina, David Kapaku, still cultivates his own wet taro. The rest of the planting is done commercially by several small proprietors, Hawaiian and Chinese, and by laborers employed by D. T. Fleming, to whose enterprise largely is due the continued utilization of so many old terraces (Handy 1940:106).

2.4 Māhele 'Āina

A dramatic change that affected the lives of Hawaiians in the 1840s was the Māhele 'Āina (land division, also known as the Great Māhele or simply the Māhele), which ended the traditional Hawaiian system of land tenure and ushered in private ownership of land. Under the traditional system, the maka'āinana (common people) occupied and worked the land under the supervision of the ali'i and their konohiki (land stewards). The chiefs in turn held the land in trust for the ali'i nui, who held it in trust for the akua (the gods). The Māhele, instituted by Kamehameha III, legalized the private ownership of land along the Western model, legislating that the lands of the Hawaiian Kingdom were to be “divided into three parts—one to the Chiefs, one for the support of the Government, and a third for the King’s personal use. These we know by the names of ‘Konohiki,’ ‘Government’ and ‘Crown Lands’” (Indices of Awards 1929:vii). It was principally from within the chief’s “one-third of the Great Māhele that the common people, who were their tenants, received title to the small holdings which are known as ‘Kuleanas.’ These Kuleanas were areas which these tenants had improved and used for their own purposes” (Indices of Awards 1929:vii).

In December 1845, a Board of Commissioners to Quiet Land Titles (often referred to as the Land Board or Land Commission) was established to investigate land claims and make awards based on these claims and their supporting testimony. If a claim was approved by the Board, a Land Commission Award (LCA) was granted to the claimant. These LCA properties were known as kuleana lands. Each claim was assigned a helu (LCA number). Often a single kuleana claim consisted of several 'āpana (land divisions). An index of these claims can be found in Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands prepared by the Office of the Commissioner of Public Lands of the Territory of Hawai'i in 1929 (Indices of Awards 1929).

2.4.1 Māhele Land Awards in Honokōhau

Well over 100 LCA awards are recorded for the ahupua'a of Honokōhau. Several of these Māhele land documents describe 'o'opu fisheries and extensive lo'i kalo systems in Honokōhau (Maly and Maly 2003:266, 267, 288; Kīpuka database). It is clear from these Māhele documents that the 'o'opu and kalo were important food sources to the people of Honokōhau. The large number of land awards corresponds with ethnohistoric research pointing to a large population in the area.

2.5 Plantation History

In 1860, James Campbell started what would become known as the Pioneer Mill Company, a sugar plantation in Lahaina. As the years progressed, the company expanded its holdings by acquiring Lahaina Sugar Company and the West Maui Sugar Company. By 1885, Pioneer Mill Company was cultivating 600 acres out of the total 900 acres it owned, and this number increased to 8,000 acres by 1910. In 1913 Pioneer Mill Company acquired the Olowalu Company, adding 1,200 acres of cane land to the plantation. By 1935, over 10,000 acres were producing cane for the Pioneer Mill. Approximately 1,000 acres of cane was flumed directly to the mill while the rest of the cane was transported by rail (Hawaiian Sugar Planters' Association 2004).

Irrigation of Pioneer Mill Company's fields, an area approximately 10 miles long and 1.5 miles wide with altitudes between 10 and 700 feet, was accomplished with water drawn from wells and water transported from the West Maui Mountains. The McCandless brothers drilled the first well on Maui specifically for Pioneer Mill Company in 1883. By 1935, substantial investments, totaling more than \$3,000,000, were made in water development, including gravity systems and underground supplies (Hawaiian Sugar Planters' Association 2004).

Maui Land and Pineapple Company and Pioneer Mill jointly funded the construction of the Honokōhau Ditch. Since both of these companies ceased operations, water from Honokōhau Ditch has been diverted to support the non-potable needs of the Kapalua Resort and the Maui Department of Water Supply Mahinahina Water Treatment Facility (DLNR CWRM 2019c:1). The Maui County Department of Water Supply used an average of 1.68 million gallons (mgd) a day of water diverted from Honokōhau Stream between the years of 2003-2014. Maui Land and Pineapple Company reported an additional metered use of 1.0 mgd for resort and luxury home irrigation, 0.8 million mgd for golf course and related irrigation, and 0.2 mgd for diversified agricultural or other needs from Honokōhau Ditch. (DLNR CWRM 2019c:93). As of 2019, Maui County Department of Water Supply had an estimated use of 2.5 mgd (DLNR CWRM 2019c:95).

2.6 Historic Properties within Kā'anapali

The Office of Hawaiian Affairs' Kīpuka database lists a total of 60 identified historic sites located within the moku of Kā'anapali (Office of Hawaiian Affairs [OHA] 2023b). Archaeologist Winslow M. Walker recorded two *heiau* (traditional temple or shrine) within Honokōhau ahupua'a, 'Ili'ilikea Heiau and Maiu Heiau (Ashdwon 1978; Thrum 1909, Walker 1931).

3 COMMUNITY CONSULTATION

3.1 Community Consultation Methodology

SWCA identified and consulted with individuals familiar with past and present cultural activities conducted in the permit area, particularly those related to water. To initiate this process, SWCA compiled a list of cultural consultation contacts that included government agencies, Native Hawaiian Organizations (NHOs), community groups, and individuals identified as having a potential interest in water use activities in the Lahaina Aquifer Sector.

In compiling this list SWCA included all NHOs listed on the U.S. Department of Interior’s *Native Hawaiian Organization Notification List* whose geographical purview is Maui Island and whose stated mission relates to environment and/or culture. The list also included select NHOs with a statewide purview whose stated mission relates to environment and/or culture. SWCA prepared a request for consultation letter, a copy of which was sent out to each of the contacts on the cultural consultation contact list. The request for consultation letter delineated the area of the Lahaina Aquifer Sector, described the Ka Pa‘akai Analysis component of the water use permit application, and requested assistance in:

- Identifying *kama‘āina* (long-term residents), kūpuna, and other individuals who might be willing to share their cultural knowledge of the permit area and their cultural resources.
- Information on present and past water use in the permit area.
- Information on place names and cultural traditions associated with the permit area.
- Information on cultural resources that may be impacted by water use activities by the MDWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit area.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit area.

The text of the request for consultation letter is provided in Appendix A of this report.

To supplement the current community consultation efforts undertaken as part of this Ka Pa‘akai Analysis, SWCA researched previous, publicly available studies that involved consultation with members of the Lahaina community regarding water issues. Information provided by community members and cultural practitioners as part of these studies that have direct relevance to the issues addressed in this analysis has been included in the following sections. The results of individual interviews, both previous and current, are presented under the names of the individuals interviewed.

3.2 Public Comments for the Instream Flow Standards Assessment Reports

In 2017 and 2019 the (DLNR), (CWRM) held consultation meetings to gather public comments for the Instream Flow Standard Assessment Reports (IFSAR) for the Lahaina Aquifer Sector. The public comments given during the meeting for Honolulu and Honokōhau are applicable to the current Ka Pa‘akai Analysis and are presented here to enhance and supplement the community consultation effort for this Ka Pa‘akai Analysis.

3.2.1 Public Comments for the Honolulu and Honokōhau Instream Flow Standard Assessment Report

The *Maui Water Use Draft Plan* references a meeting conducted on March 8, 2017, during which community members submitted testimony that the DLNR should “...refrain from issuing any more water permits before Native Hawaiian water rights are restored to practice traditional and cultural uses.” (MDWS 2019:20) These concerns were evident during two separate consultation meetings while developing the (IFSAR) for the Lahaina Aquifer Sector. The CWRM held a consultation meeting for the Hydrologic Unit of Honolulu and Honokōhau on September 9, 2019. As part of this study, the comments from the community were reviewed to determine what sorts of traditional and customary practices were carried out in the area, and what sorts of potential mitigation measures were recommended by these community members. A total of 17 people testified in person during the meeting for Honolulu and Honokōhau. The following section discusses the most relevant comments for the purpose of this report.

The public comments for Honolulu and Honokōhau revealed community concerns pertaining to sufficient water to irrigate existing and future lo‘i, the need for land stewards to maintain the ditches to ensure continuous water flow, enforcement of existing water allocations, and the need to protect and monitor populations of native stream species. The most relevant comments for this analysis have been organized by theme.

3.2.1.1 AGEING AND BROKEN INFRASTRUCTURE

Darryl Aiwohi of Honokōhau wanted to see CWRM act to ensure steady water supply after large storms:

Our stream, because of that last storm, I know it affected a lot of things. It really screwed up our stream. One of the questions is, what are you guys going to do to help me get rid of. I mean we’ve got, really I bring this here, but his taro patches are completely wiped out. The water came down and took all his soil, all his taro, he can’t grow taro any more....I know this storm was a one-in-100-year storm, but the river itself is trashed. When are you guys to, who is going to come and clean it?...Clean up and guarantee a steady water supply (DLNR CWRM 2019a: 2).

Sy Feliciano of Hoa‘āina Farm Services in Honokōhau Valley discussed fluctuations in water availability. He said that nobody routinely cares for or repairs the ditch anymore. He also expressed concern that the stream diversions at Honokōhau and Honokōwai are not being properly monitored. The fluctuations in water availability cause fish to die:

...I reached out to the taro farmers, mostly Wili Wood, to Keith, to other farmers, Kimo Lindsey, and asked them how the river is fluctuating during the big water and what’s happening. So a lot of the concern was there was a dry area from Aotaki dam down to Taro gate. So the dry area was because the high water would clog up the Aotaki gate and

then no water would flow for two miles until Taro gate was dumping water back in...And I watched the 'o'opu stress out and I asked Ayron a question, "how many days does it take for the fish to start dying." And he said, "maybe like four days maximum." ...Hoa'āina, Maui Land & Pine, they needed to be more responsible and get there within... Within 24 hours I could see the stream... the fish stressing, because there was no water coming through the dam. So what I'm hoping is with this stream report, we get more regulation on the diversions. So just because it's way up in the mountain and there's nobody really monitoring it and taking care of it, we need to have some kind of way of policing it and monitoring it and the response time needs to be, not four days, but 24 hours... So I'm hoping that this report can be a little more strict on those big diversions, not just Honokōhau, but Honokōwai, all these diversions... whoever is running this ditch needs to be on it... A lot of the water is being diverted for no reason, like Ayron said that when the high water happens, a lot of water is pushed into the intake, into the ditch, and it's not even being used. All these systems need to be repaired, need to be monitored, so the community who has a hard enough time to grow taro, doesn't have to be worried about when is the workers going to go up there and protect their right, their law... (DLNR CWRM 2019a: 4-5)

Ka'apuni Aiwahi of Honokōhau Valley also stated that, in addition to wanting 100% of the water restored to Honokōhau Valley, whoever manages the water needs to be responsible for fixing the dams and the gates in the valley:

...And what I would like to tell the Commission that I feel the right thing to do is to restore 100-percent of the water in Honokōhau Valley... With the gate, with the dam still broken, you know, we have people, we have the County, we have all these people wanting to take water, but where are they when it's time to take care of it. Where are they where we have these streams that the State manages, but who is the ones that are left to clean it. It's the people in the valley. It's not everybody else that lives outside the valley. (DLNR CWRM 2019a: 5-6)

Tamara Paltin of the Community Plan Advisory Committee wants to see the stream diversions removed and repairs made to existing infrastructure:

...[W]e need to have a big framework for growth for more lo'i in Honokōhau... For Honolua, when we were talking about the diversion there, they're saying that all this water goes into a diversion and it comes out a small little pipe and they're claiming that the entire amount of the water gets back into the stream and so I would say just remove the diversions. Remove the diversions that are broken, remove the diversions that are just taking the water and supposedly putting 100-percent back, because what's really the point of that if we're talking about a framework of growth and groundwater aquifer recharge is really important... If we're going to pump out more and more water, we need to recharge the aquifers and sounds like that's a good way to do it. I'm for more restoration of all the streams and more reuse of the R1 water. And if folks are going to be major diverters of water, then like the previous guy said, they need to also put back in. They cannot just take, take, take. They gotta maintain the systems, you know, not just leave it, oh, this is broken, oh, this is not working. If you want to take it, you gotta take care of it. (DLNR CWRM 2019a: 6)

3.2.1.2 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

Jon Kindred of the Plantation Estates Lot Owners Association testified in relation to the Honokōhau Ditch:

We're aware that water in the ditch comes from diversions on the Honokōhau Stream as well as other sources [I.e. Honolua Stream]...[The application of new interim stream flow standards] should be incremental, beginning with immediate return of some waters to the Honokōhau Stream, while providing some level of assurance to existing, legal offstream users as reliable data is monitored regularly and necessary infrastructure improvements are made... (DLNR CWRM 2019a: 2)

Wili Wood of Honokōhau expresses grief over the multiple patches of kalo lost to irregular water flow:

We've been restoring and planting lo'i since 2005, with the help of volunteer groups, schools such as Pūnana Leo, Ke Kula Kaiapuni, and Kahana Canoe Club, for example...[T]here's been many occasions where we've lost entire patches, entire lo'is, due to insufficient and inconsistent water flow... And as we're pulling out these big kalo, you can stick your finger right through it. And that's the stuff we've been dealing with for years. After Tropical Storm Olivia, there was no one running the ditch system... There's a lot of people that would love to get back on their land, but the water is just not there. And when it is there, sometimes it's too high. And then it's too low the next day. So, we really need you guys to get together and help us, especially with the irrigator. The irrigator is a big concern of the taro farmers in the valley. And so, please, that's what we're asking you guys to decide on, the most water possible to the stream. Hundred percent if can... (DLNR CWRM 2019a: 9)

Kaipo Kekona of Kā'anapali discusses the impact of wells and water diversion on lo'i in Honokōhau:

I mean Honokōhau was almost 5,000 lo'is. And that was just, yeah, we went divert the water out of the stream and back into the stream...we talk about these lateral wells and wells was established here. Whether it's a lateral or vertical, whatever well was established, all of those wells was established upon resources or sources that were there before they put in their new management or their new infrastructure...These well systems were established on top of what was natural springs. Maybe the spring might have been further up the hill, but in order to get to that source quicker, they went tap in from the side with one lateral well on top of this spring that was pouring into our stream before that. So, that's just kind of where I think we should be considering, understanding our source better before we try to take it and divert it. When we can understand that from the beginning, we can move forward then. That's all I get other than the understanding of the taro, and the fauna, and the flora, and the establishment of the diversions, and whose rights is what, and what is the right use of water... (DLNR CWRM 2019a: 10-11)

Kekai Keahi, in addition to recommending R1 water, argued that West Maui Land, Maui Land & Pine, and Kā'anapali Land need to be held accountable for water usage:

... I know a person that works for West Maui Land Company. He's been telling me that Dave Minami, and Peter, and all of them, been telling them to put water back in the stream at night and in early morning reopen the water. Charlie caught the guy at the siphon, where supposed to have 700,000 at the siphon, he caught the guy turning the water back on at the siphon, saw the meter, and it was at 300,000 gallons. They've been taking this water, so no more enforcement. In my opinion, I don't think a private

company should be in charge of our assets. I get one problem with Maui Land & Pine, even Kā'anapali Land, handling our assets. Already, Aqua Engineers, they supposed to be managing, but they saying, oh no, Maui Land & Pine never pay us, so until we get the money we ain't going manage the system. That is screwed up, 'cause get people in the valley that stay hurtin'...They thinking, even with Kā'anapali Land, when the guy came up here, they looking at all this water going be taken away, and then they starting to feel the pressure. They starting to feel maybe what we've been feeling forever. Yeah? It happened when we testified with Kaua'ula, where I got one letter from one of the persons at Launiupoko saying that Peter Martin telling everybody that, of, the Hawaiians going take all your water, you not going get nothing, turning us into the bad guy. And so we went to the meeting, there's people from Launiupoko, saying eh, you guys gotta able for share, 'cause we worked so hard, we've been doing this, been doing that. ... You never did share with us. One hundred years that water been gone. We was lucky, from our family, we grew up inside Kahoma and Kanahā, we got to raise taro when we was small kids. And so we got to see what was like and how it was before. And what was good was when we stopped doing that, the yearning for go back nevah did go away. Was painful that we couldn't go back and farm our lands again. And so, we started going in different places. We go help Wili out, we go Charlie's place. Everywhere we can go, we went try open up taro again, like we did when we was young, but then we run into these companies, who really no give a shit about us, basically. And so I no really give a shit about what they think if they going lose water too. .. By the way, when I was looking at the Hawaiian Homes map, Kā'anapali Land, their coffee, part of 'em stay on top Hawaiian Homes, yeah? What the hell they doing? You gotta get the thing off. Charge 'em or something... He caught the guy right there turning on the valve with the meter open and saw how much gallons was coming out of the siphon... Also, that R1 water that Hawaiian Homes was talking about, as far as Lahaina goes and the use of that R1 water, I think that's one win-win situation as far as using that water for farm on Hawaiian Homes ag lands. That's a win-win situation 'cause that's water that we no don't gotta take out of any stream or any well...Maybe we can some water for dilute that water, but it's almost four million gallons a day that we could use for farming, which is awesome. I don't think Kā'anapali Land and Maui Land & Pine are really looking at R1 'cause they may be ag companies now, so-called, but I pretty sure they like change the zoning and turn 'em rural so they can make the big money... (DLNR CWRM 2019a: 14-15)

3.2.1.3 LACK OF VIABLE ALTERNATIVE WATER SOURCE STRATEGIES

Jonathan Scheuer, speaking on behalf of the Department of Hawaiian Home Lands, expressed interest in using R1 water as much as possible and supporting community efforts around stream restoration:

I just want to describe for the Commissioners and those present, and the Commission staff, how DHHL is approaching this opportunity to use R1 water on its lands at Honokōwai... The second is to aggressively exercise, reclaim, and protect Hawaiian Home Land water kuleana...When the third point, the third policy talks about DHHL as a public trust use of water, we recognize that we have a priority of water than standard private commercial uses. But we also realize, in this area, we're not going to take so much water that the public trust uses in Honokōhau Stream are going to suffer unbearably, so we want to seek uses like R1 water, but we're also committed, as it says in the other parts of the policies, to communicate with our beneficiaries. So before, as in the process of DHHL's going through right now for planning subsistence homesteading uses on the lands at Honokōwai, it will involve conversations about the kind of water available and the implications of the water choices that are available to make farming on that and

how that fits into the larger landscape...It's very supportive of the process of... you know, for so many years in Nā Wai 'Ehā and elsewhere, was the community having to lead the effort to get streams restored... (DLNR CWRM 2019: 7)

3.2.1.4 NEED TO MANAGE WATER USING AN AHUPUA'A-BASED APPROACH

Frank Caprioni wants to see more monitoring of water samples in the mountains, because what happens to water mauka affects the makai resources:

... I think...[t]he CMMA, the Community Management Makai Area that I think Ekeolu Lindsey guys created down in Lahaina with using community members who are there every day...[are] taking water samples. I think we need to do the same thing up in the mountains too. And as we know now, I know it's kind of cliché sometimes to say, but mauka to makai. What happens up top effects down below, you know what I mean. So I think, everything that going on the reefs has to do with up in the mountains. Marine biologists, people, will all... they'll tell you this stuff too, you know. (DLNR CWRM 2019: 7-8)

3.2.1.4.1 Stream restoration as a means of supporting lo'i kalo farming

Kaniloa Kamaunu of Waihe'e Valley expressed that cultivation of kalo was the foundation of traditional and customary practice under kōnāwāi:

I always live by the kōnāwāi... It's our birthright. It was given to us. It's for every kanaka. When I see the kanakas come up here and beg for use for taro... taro was the law... You know, your Article 12, Section 7, talks about traditional customary practice. The aha moku that was established, 212 talks about customary generational, customary practices, traditional. Traditional is kalo is law. You no get land without kalo. You were rich if you had kalo. The more kalo you had, that means you were prosperous, so they give you more land, more kuleana. You get more water. Because that was the law. Kalo is relatives. It's not a thing where you just eat. It's not your food, but it is our relative. 'Āina, same thing. (DLNR CWRM 2019: 11)

Archie Kalepa observed firsthand the transformation of Kahoma Stream after water was restored, and wanted to see this for the people of Honokōwāi:

When Pioneer Mill, Maui Land & Pine was here, a lot of the resources were diverted. Then came big subdivisions. We all need a place to live, but what has happened is we've taken so much from the main resource that that main resource is damaged. And it is not until you work every day and watch a river... That's an important resource that we need to maintain and manage to make sure, because long-term by taking care of Honokōhau, it's going to be able to take care of the community. Not only the community in Honokōhau, but the communities that exist today. But if we don't continue to take care of that, everybody else, Kā'anapali, everybody else, there's going to come a day that you're not going to have the resources. (DLNR CWRM 2019: 15-16)

3.2.1.4.2 Need for monitoring culturally important stream species

Kaneolani Steward, an assistant marine coordinator with the Nature Conservancy on Maui in cooperation with the Division of Aquatic Resources, mentioned that Honokōhau and Honolua Streams are home to 'ōpae kuahiwi, and 'o'opu nōpili, nākea, and 'alamo'o, and that stream surveys for both Honokōhau need to be conducted regularly to monitor current populations of stream species. Kaneolani also recommends

that educators should train community members and children on how to conduct stream surveys. The need for more R1 water was also mentioned:

...So for the Honokōhau report, under the point-quadrat survey area, you guys indicate nākea, 'alamo'o, and nōpili, but you guys fail to mention that 'ōpae kuahiwi was also sighted, but 'ōpae kuahiwi was however noted in the table...But in the table, you guys left out 'o'opu nōpili... (DLNR CWRM 2019: 12-13)

3.3 Ka Malu of Kahalawai and West Maui Preservation Association Formal Waste Complaint

The following section pertains to Maui Land and Pineapple Company's Honokōhau Diversion 770. The larger issues with the Honokōhau diversions are relevant for the present study as they pertain to ongoing traditional and customary practices in the area of the Maui County diversion. The NHO Ka Malu o Kahalawai, along with the West Maui Preservation Association, filed a formal waste complaint against Maui Land and Pineapple Company, alleging that the company was allowing water that it diverted from the Honokōhau Stream to be wasted. The complainants were concerned that the water overflowing from the ditch ended up being released into gulches, roads, and ditches in the Wahikuli hydrologic unit to the south, rather than flowing downstream to supply lo'i kalo in Honokōhau. (Ka Malu o Kahalawai and West Maui Preservation Association 2019:1-3)

Members of Ka Malu o Kahalawai included lo'i kalo farmers, surfers, canoe paddlers, fishermen, and divers in the nearshore area of the Honokōhau hydrologic unit. CWRM staff, Maui County representatives, the mayor of Maui County, and representatives from Maui Land and Pineapple Company participated in a site visit in October 2018 to assess the damage after Hurricanes Lane and Olivia caused localized flooding and damage to Diversion 770 on Honokōhau Stream. They found that the hurricanes had badly damaged Diversion 770, rendering it inoperable. The Taro Gate, where Maui Land and Pineapple Company traditionally released water back into Honokōhau Valley, was blocked by sediment and debris, which prevented the water from being redirected to kalo farmers in the valley (Ka Malu of Kahalawai 2019:4).

Water wastage directly impacted the Honokōhau community, which was "experiencing a resurgence in food independence and Hawaiian cultural practices in which lo'i kalo cultivation is expanding." (Ka Malu o Kahalawai and West Maui Preservation Association 2019:6) According to the complainants, the 5.15 acres of kuleana parcels in Honokōhau Valley require an estimated 1.11 million gallons a day (MGD) of fresh water. The complainants also stated that an additional 10 acres of historic lo'i kalo could be cultivated if there was an additional 1.01 mgd available (Ka Malu o Kahalawai and West Maui Preservation Association 2019:21).

The complainants, many of whom conduct traditional and customary practices such as paddling, diving, fishing, and surfing in nearshore areas, observed that the waste water from the ditch was warmer than regular fresh water discharge into the ocean. They were concerned that the periodic intrusion of warmer water would interfere with the reefs and other nearshore ecosystems thereby interfering with the traditional and customary practices described above (Ka Malu o Kahalawai and West Maui Preservation Association 2019:2). The petitioners had already experienced decades of warmer ditch water entering Hanakao'o and nearby coastal waters from Honokōwai stream, Hahakea gulch, and sometimes Honolua stream resulting from the Honokōhau Ditch diversions (Ka Malu o Kahalawai and West Maui Preservation Association 2019:37).

To resolve these issues, the petitioners requested the following.

Petitioners seek to prevent wastage by restoring to Honokohau stream surface water in amounts equal that wasted. Petitioners seek to require upgrades to MLP/KWC's diversion intake works from Honokohau stream to Honokohau/ Honolua ditch to better regulate the amounts removed from Honokohau stream to avoid waste in areas including lands used by KLMC through which the Honokohau ditch runs. Upgrades and better maintenance and regulation of the Taro Gate would also allow more water to be restored to Honokohau stream, instead of contributing to wasting events in offstream areas, including agricultural fields further south towards Wahikuli. KLMC should be prevented from allowing ditch water to run into fields and roads adjoining the ditch. KLMC's wastage facilitates MLP/KWC's ability to ignore the need to upgrade its intake/diversion works and better regulation and maintenance of the taro gate. MLP/KWC's intake should be upgraded such that it can be closed during periods of high water flow. This may mean better monitoring so that the Aotaki gate can be closed during high flow (or during times that less water is needed in the Honokohau ditch) and thereby result in that surface water remaining in the Honokohau stream. Another solution might lie in investing in sealing the current diversion and installing a gate with remote control capacity (to avoid difficulties and inconvenience with accessing the intake). Petitioners note that Kamehameha Schools has installed a remote control valve to control the gate above Kahoma stream that can be controlled via a computer (Ka Malu o Kahalawai and West Maui Preservation Association 2019:3).

3.4 Contemporary Ethnographic Information from *Water and Power in West Maui*

The following section includes excerpts of interviews with community members and cultural practitioners, public testimony, and legal proceedings from the Kā'anapali area, as recorded by Jonathan Schuer and Bianca Isaki in their 2021 book *Water and Power in West Maui*. This volume discusses the historical roots of the contemporary grassroots fight by kalo farmers and cultural practitioners to ensure sufficient fresh water to perpetuate and revitalize traditional and customary practices, especially kalo farming. Many of the disputes recorded in this volume are between kalo farmers and large companies such as Maui Land and Pineapple Company, which has historically diverted much of the water in the Honokōhau Ditch. The following quotes are intended to provide additional ethnographic context about community concerns pertaining to the Honokōhau Stream Diversion. They also provide additional context for the formal water waste complaint discussed above.

Lahaina resident and community advocate Kapali Keahi, who helped organize the community to challenge MLP's diversions in Honokōhau in the 1990s, discussed issues with trying to work with Maui Land and Pineapple Company:

Industry is a veritable vacuum for everyone. A lot of people backed off from farming taro. This was a generational shift – the older generation was getting too old to farm, and the younger generation did not have enough water to farm anyway (Scheuer and Isaki 2021:68).

Native Hawaiian Advisory Council, Inc. (NHAC)'s Elizabeth Pa Martin offered further insight into the tensions between kalo farmers and Maui Land and Pineapple Company. According to Martin, the company diverts water out of the watershed, which deprives kalo farmers of their appurtenant water rights.

The problem is not a lack of communication between taro farmers and Maui Pineapple. The problem is Maui Pineapple has been controlling the water flow of the Honokōhau Stream for decades. It diverts water to land outside the watershed and deprives taro farmers of their appurtenant water rights. Taro farmers do not have enough water and Maui Pineapple appears unwilling to change the status quo. The status quo is totally unacceptable to the farmers. We believe it should also be unacceptable to the Water Commission (Scheuer and Isaki 2021:177).

Kai Keahi, a member of the Native Hawaiian Organization (NHO) Ka Malu o Kahalawai member, felt that Maui Land and Pine mismanaged water resources from the stream intake in Honokōhau, which negatively impacted kalo farmers. Kai and others within the Ka Malu o Kahalawai filed a formal complaint about water wasting against MLP (discussed below).

We don't necessarily disagree with most [of] the use that this water is used for, but MLP who controls the stream intake in Honokōhau Valley is notorious for its mishandling and mismanaging the water resources of Honokōhau. Quote often lo'i farmers are left with minimal water to grow their crops, which threatens their harvest. The majority of Honokōhau Stream is taken out of the valley and sent southward towards Lahaina town. The real issue, and the cause of the loss of habitat and the ability to farm kalo, is that MLP when it receives the water at the intake they cannot control how much gets diverted so all of the stream is taken. Because MLP does not need all of Honokōhau Stream water, they dump the unused excess water into various other West Maui streams and areas, such as Honokōwai, Wahikuli, and Hanako'o, thus continuing the dewatering of Honokōhau

Stream and hampering the ability of the aquatic life to reproduce and farmers to farm taro....Allowing water to flow from its source to the ocean is vital for aquatic life and habitat as well as cultural practices such as lo'i kalo...Now is the time to make sure that tomorrow's streams are still flowing clean and abundant [with] life (Scheuer and Isaki 2021:72-73).

Wili Wood was also concerned about the profligate use of water by companies like Maui Land and Pineapple Company, particularly given water scarcity in West Maui.

Today, with global warming, sea level rise, and saltwater intrusion occurring in our small island's fragile aquifers, it is very unwise to be wasting such a valuable resource as water. This imposes a great level of responsibility on the people chosen or hired to be stewards are too often shortsighted businessmen (Scheuer and Isaki 2021:72).

Jonathan Scheuer and Bianca Isaki repeated allegations by Honokōhau farmer Wili Wood that Maui Land and Pine purposefully obstructed the flow of fresh water intended to feed the lo'i kalo.

Honokōhau taro farmer Wili Wood went to investigate the upstream water works to determine the cause of the low flows. When Wood walked up to taro gate, he found it fully closed with a plastic bag filled with sand wedged against it, such that no water at all could get through. The gate was padlocked shut. Hundreds of 'ōpae huddled in the small pool that remained in front of the gate. Honokōhau residents reported that MLP contractors admitted to being paid to go up and close and lock taro gate and the count denies it has anything to do with closing the gate (2021:73).

West Maui Moloka'i Taro Farmers Association (WWMFTA) members wrote about the effects of the dam constructed by Maui Land and Pine in the upper part of the Honokōhau valley:

We need more water. Our crops are being damaged because of the lack of water and it is frustrating (Scheuer and Isaki 2021:177).

4 CULTURAL, HISTORICAL, AND NATURAL RESOURCES

The following is a short overview of cultural, historical, and natural resources of value to Native Hawaiians within the vicinity of the permit area. This overview is the result of archival research and interviews with individuals knowledgeable about contemporary traditional and customary Native Hawaiian rights and practices undertaken within the permit area or associated with fresh water resources. These cultural resources are needed for Native Hawaiians to have the ability to conduct cultural practices and perpetuate indigenous knowledge.

4.1 Culturally Significant Natural Resources

Native Hawaiian culture focused heavily upon natural resources. The moku system allowed Native Hawaiians to manage biocultural resources in a sustainable fashion, which provided food to inhabitants from mauka to makai (Winter et al. 2018). Excluding insects and other invertebrates, there are nine native species found in Hawai'i's streams. These consist of five types of fish, two types of crustaceans, and two types of mollusks. All of these species exhibit amphidromous behavior, which means they migrate between freshwater habitats and the ocean. Eight of these species are endemic to Hawai'i. Native Hawaiians called the fish 'o 'opu, the crustaceans 'ōpae, and the mollusks hīhīwai (or wī) and hapawai. While there are several more Hawaiian names to describe regional variations and physical differences of these creatures, these are the most common names by which they are known. Several 'ōlelo no 'eau

(traditional Hawaiian proverbs and poetical sayings) and *mo‘olelo* (stories) demonstrate that Native Hawaiians were observant of these creatures and understood their life cycles, behaviors, and habitats well. These native freshwater fish, crustaceans, and mollusks were an important food source to Native Hawaiians (Miike 2004:14–18).

4.1.1 *Limu*

Native Hawaiians use *limu* freshwater and marine algae as a relish or condiment to season food. While the marine varieties of limu are known for their more pronounced taste, the freshwater limu found on rocks in streams is also collected and enjoyed as part of the diet (Krauss 1993:16). Many species of nearshore limu thrive best in areas with both fresh water and ocean mixing (Abbott 1992).

Blossom Feiteira, a cultural informant interviewed for this Ka Pa‘akai Analysis, remembered that the shores of West Maui were home to abundant limu varieties in the 1960s, especially manuea, kohu, wailoe, līpoa, and ‘ōpihi limu. Limu ‘ele‘ele, limu kohu, limu līpe‘e, limu līpoa, limu manaua, and limu wāwae‘iole also emerged as culturally significant species previously abundant in the area prior to the 1970s.

4.1.2 *Freshwater Stream Species*

Māhele land documents, oral history interviews and public testimony reveal that culturally important freshwater stream species such as ‘o‘opu were abundant in the Honokōhau stream. Several of these Māhele land documents describe ‘o‘opu fisheries in Honokōhau (Maly and Maly 2003:266, 267, 288; OHA 2023a). It is clear from these Mahele documents that the ‘o‘opu was an important food source to the people of Honokōhau. Kaneolani Steward observed that many species of ‘o‘opu are still present in Honokōhau Stream, although they are endangered by a lack of mauka to makai connectivity.

4.1.3 *Lo‘i Kalo Farming*

The cultural importance of kalo cultivation arose in nearly every interview and segment of public testimony presented in this report. Kalo farming emerged as perhaps the most important traditional and customary cultural practice taking place in the vicinity of the Honokōhau stream. Historically, Honokōhau Valley had more extensive lo‘i kalo cultivation than any other area of Maui except for Kahakuloa. According to the 2019 complaint filed by Ka Malu o Kahalawai and West Maui Preservation Association, today only about 5.5 acres of Honokōhau are covered by lo‘i kalo. Kalo farmers continue to educate the younger generation about kalo cultivation and also try to open up new lo‘i. However, the diversion of water from the Honokōhau Ditch remains one of the largest obstacles to farming kalo in Honokōhau Valley.

4.1.4 *Native Plant Resources and Lā‘au Lapa‘au*

The current study did not uncover reliable information about the cultural practice of gathering plants for lā‘au lapa‘au (traditional plant-based medicines) or for other reasons within the permit area for the Honokōhau stream diversion. However, given that the mauka areas of the nearby Honolua Aquifer System are home to numerous native plant species (Tetra Tech 2021, cited in Wong and Lee-Greig 2021:67), we expect that the mauka areas of Honokōhau Valley would have had a similar vegetation regime. Maui Land and Pineapple Company, Inc. engages in revegetation efforts in Honolua Wao Kele in the Pu‘u Kukui Watershed Management Area for the purpose of watershed protection and Native Hawaiian cultural education. Within this preserve 9,881-acre section of native forest are 40 rare plant species and 6 endemic land snails. (PBR Hawai‘i and Associates 2007: 5-6) The mauka areas of nearby

Honolua Aquifer System are home to important native plant species such as ‘akoko (*Euphorbia celastroides* var. *lorifoli*), ‘ākia (*Wikstroemia oahuensis* var. *oahuensis*), ‘ēkaha (*Asplenium nidus*), alahe‘e (*Psydrax odorata*), .a‘ali‘i (*Dodonaea viscosa*), huehue (*Cocculus orbiculatus*) ‘iliahialo‘e (*Santalum ellipticum*) kīlau (*Pteridium aquilinum* ssp. *Decompositum*), kā‘ape‘ape (*Cyrtomium caryotideum*) kolokolo (*Adenophorus tenellus*), ‘ōhi‘a lehua (*Metrosideros polymorpha* var. *glaberrima*), koali ‘awahia and koali ‘awa (*Ipomoea indica*), moa (*Psilotum nudum*), pala‘ā (*Sphenomeris chinensis*), palapalai (*Microlepia strigosa* var. *strigose*), pūkiawe (*Leptecophylla tameiameia*), ‘uhaloa (*Waltheria indica*), ‘ūlei (*Osteomeles anthyllidifolia*). Many of these species have known ethnobotanical uses (see Krauss 1993 for more details about Hawaiian ethnobotany).

Continuing protection of native forest ecosystems could allow for more individuals to return to traditional and customary gathering practices within the Honolua Aquifer System. Additionally, considering the vast geographic scope of the area surveyed by this Ka Pa‘akai Analysis, it is important to note that it is possible that cultural practitioners do gather within the areas impacted by the existing Honokōhau stream diversion though it was not captured here.

4.2 Coastal Fishing and Gathering

Historical accounts by A.D. Kahaulelio (1902) and others indicate that nearshore fisheries off the coast of Kā‘anapali were vital for the subsistence of local people. The water wastage claim filed by Ka Malu o Kahalawai and West Maui Preservation Association discussed subsistence fishing as a major ongoing customary practice that continues in the nearshore area of the Honokōhau Hydrologic Unit (Ka Malu of Kahalawai and West Maui Preservation Association 2019:4).

4.3 Other Nearshore Cultural Practices

The water wastage claim filed by Ka Malu o Kahalawai and West Maui Preservation Association discussed ongoing traditional and customary practices, such as surfing, canoe paddling, and diving, in the nearshore area of the Honokōhau Hydrologic Unit (Ka Malu of Kahalawai and West Maui Preservation Association 2019:4).

4.4 Cultural and Historical Sites

Archaeologist Winslow M. Walker recorded two heiau in Honokōhau ahupua‘a, ‘Ili‘ilikea Heiau and Maiu Heiau. ‘Ili‘ilikea Heiau is located on top of a ridge on the west side of Punaha Gulch above a road. Maiu Heiau is located on the east side of Honokōhau Valley on a cliff 200 feet above the sea. Maiu Heiau was used for human sacrifice (Sterling 1998:54). Another noteworthy site in Honokōhau is the Waiuli Pit which was used as a burial place for the common people of Lahaina to Kahakuloa (Sterling 1998:55).

5 ASSESSMENT OF POTENTIAL IMPACTS

A primary purpose of this Ka Pa‘akai Analysis is to identify “the extent to which those resources—including traditional and customary native Hawaiian rights—will be affected or impaired by the proposed action” (Ka Pa‘akai O Ka ‘Aina 2000). This section presents the assessment of potential impacts to traditional and customary Native Hawaiian rights and practices as a result of the proposed continued use of the MDWS Honokōhau stream diversion within the Honokōhau Aquifer System.

5.1 Types of Traditional and Customary Rights Referenced Under the State Water Code

The following provision on Native Hawaiian water rights outlined in the State Water Code, HRS §174C-101, defines the types of traditional and customary water rights of Native Hawaiians:

(c) Traditional and customary rights of ahupua‘a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 shall not be abridged or denied by this chapter. Such traditional and customary rights shall include, but not be limited to, the cultivation or propagation of taro on one’s own kuleana and the gathering of hīhīwai, ‘ōpae, ‘o‘opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes. (2019:15)

It is notable that kalo, hīhīwai, ‘ōpae, ‘o‘opu, limu, and medicinal plants are specifically identified here.

5.2 Approach to Assessing Impacts

Using the information gathered through archival research, oral history interviews, and reports containing cultural consultation testimony, SWCA identified cultural resources, including traditional and customary Native Hawaiian practices, within the permit area of the Honokōhau stream diversion. This study also determined the extent to which these resources and practices will be affected or impaired by the proposed continued use of the Honokōhau stream diversion by the MDWS.

The potential impacts to traditional and customary practices extend beyond the immediate vicinity of the Honokōhau stream diversion. Activities such as lo‘i kalo farming; subsistence gathering of stream and nearshore ocean species, and the gathering of lā‘au lapa‘au from areas below the stream diversion could all be impacted by changes in freshwater availability due to the stream diversion.

Given the geographic extent of the Honokōhau Aquifer System, this report cannot definitively identify and address the full breadth of potential impacts to all cultural resources and traditional and customary practices in the areas near the Honokōhau stream diversion. Nevertheless, our research reveals that existing pressure on freshwater resources already endangers the traditional and customary practices described above. Community members expressed fears that diminished streamflow could further threaten the survival of these cultural practices.

5.3 Community Concerns

Based upon the information gathered from the community consultation effort for this Ka Pa‘akai Analysis, existing oral history interviews, and region-specific public testimony from the IFSAR meetings, the following concerns and recommendations were voiced repeatedly by the community.

5.3.1 Ahupua‘a-Based Approach

The community expressed that water needs to be managed holistically and should employ an ahupua‘a-wide approach.

5.3.1.1 CONCERNS REGARDING FOREST AND WATERSHED HEALTH

- The protection of watersheds from mauka to makai emerged as a common concern of community members.
- The most common concern voiced by community members was the need to restore and protect streamflow to irrigate lo‘i kalo.
- According to several individuals, adequate fresh water is needed to ensure the growth and regeneration of native species.
- Several community members personally observed changes in the presence and abundance of culturally important freshwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important native species found in streams. These include the five types of ‘o‘opu fish, the two types of crustaceans or ‘ōpae, and the two types of mollusks, hīhīwai (or wī) and hapawai.
- Community members specifically called out the need to ensure ecosystem resilience against fire hazards and climate change by protecting native forests and water resources.
- Several community members suggested bringing back the kānāwai system of water management for lo‘i kalo farming.

5.3.1.2 CONCERNS REGARDING NEARSHORE AND OCEAN RESOURCES

- A few community members personally observed changes in the presence and abundance of culturally important saltwater species under different stream conditions. They would like to see MDWS monitor and protect populations of culturally important limu species such as limu ‘ele‘ele, limu kohu, limu līpe‘e, limu līpoa, manaua, limu waiwaiole. Other culturally important marine vertebrate species in the area include: kole, owama/oama, manini, halalu, kūmū, weke, and manō, in addition to invertebrate species such as kūpe‘e, ‘opihi, hā‘uke‘uke, wana (sea urchin), and *he‘e* (octopus).
- Informants noted that periodic water wastage from the Honokōhau ditch causes damaging influxes of warm water into reef and nearshore ecosystems.

5.3.2 Abundance and Quality of Freshwater Flow

5.3.2.1 INSUFFICIENT MONITORING AND ENFORCEMENT OF CURRENT WATER SUPPLIES

- Several individuals claim that their observations of the streamflow do not align with established instream flow standards and that they would like to see CWRM monitor actual instream flow.

- A common sentiment within the IFSAR testimony is that kalo farmers would like to see all streams restored to 100% flow. Community members called out the fact that decreasing freshwater flow resulted in increasing water temperatures, causing kalo crops to rot.
- Another frequent concern was the lack of enforcement of existing water allocations, particularly for large landowners who are perceived to receive preferential water access over kalo farmers.

5.3.2.2 AGING AND BROKEN INFRASTRUCTURE

- Aging and broken infrastructure, such as dams, gages, stream diversions, etc., came up as a major cause for concern in the community. Kalo farmers want to see responsible parties repair and maintain existing ditch infrastructure to ensure consistent streamflow.
- Several individuals also expressed frustration that the burden for clearing debris from the ditches and 'auwais all too often falls onto individual kalo farmers.

5.3.2.3 LACK OF VIABLE ALTERNATIVE WATER SUPPLIES

- Numerous community members expressed an interest in greater use of R1 water for non-potable uses.

5.3.3 *Reduced Water Quality*

- Community members observed adverse effects from runoff and sedimentation on both streams and the nearshore environment, particularly impacting culturally important species of limu.
- Reduced water quality, particularly from runoff, directly impacts community member's restoration efforts to restore and re-open lo'i kalo for the next generation.
- Certain coastal freshwater springs are also much more saline now than they were in the past, meaning community members cannot gather fresh water from them for subsistence or cultural practices.

5.3.4 *Need for Additional Community Input for Current and Future Projects*

- Potential undocumented kuleana uses may exist within the permit area that did not emerge during this research. These undocumented kuleana uses could be identified through additional community input.
- Community members may also wish to maintain access to lands for gathering, hunting, fishing, and other Native Hawaiian traditional and customary practices.

6 PROPOSED ACTIONS TO PROTECT TRADITIONAL AND CUSTOMARY NATIVE HAWAIIAN RIGHTS

Following the assessment of potential impacts associated with the proposed permit activity, SWCA and the MDWS identified a series of feasible actions that could be taken to mitigate these impacts and serve to reasonably protect and revitalize Native Hawaiian rights, traditions, and customs associated with the permit area. The feasible actions suggested here are intended to address community concerns expressed in ethnographic interviews, oral history interviews, and community consultation and testimony from the IFSAR meetings.

6.1 Apply an Ahupua‘a-Based Approach to All Water Use Decisions

Upon analyzing the findings of the community consultation, public testimony from the IFSAR meetings, and oral history interviews, it is clear that a mauka to makai approach is essential for revitalizing Native Hawaiian traditional and customary practices. The health of the upland forests directly impacts streams and aquifers, which in turn affects the nearshore environment.

- In making decisions regarding water use within the Honokōhau Aquifer System, the MDWS will employ an ahupua‘a-based approach. This involves not only taking into account the potential impacts to the lands in the immediate vicinity of the permit activity, but considering the effect of the project on the entire watershed, from the uplands to the nearshore waters, as well as the cultural practices currently being carried out within the ahupua‘a.
- As part of its community outreach efforts, the MDWS will seek to raise public awareness of ahupua‘a management practices and foster partnerships for use and management of water sources with existing community and school-based ahupua‘a restoration efforts. The Honokōhau Valley Association is one such community group engaged in the restoration of taro patches.
- As part of this ahupua‘a-based approach to water planning and management, the MDWS will work with the local community and cultural practitioners to monitor and protect both the upland watershed and the coastal marine resources.

6.1.1 *Mauka: Reforestation and Invasive Species Control to Improve Watershed Health*

The ‘Aha Moku observed that the depletion of groundwater directly impacts native vegetation in the mountains, rendering these areas vulnerable to repeat wildfires. A decline in vegetation in the mountains then impacts cloud coverage and rainfall. Invasive species often outcompete native species and also potentially use up more water than native species. Invasive grasses are particularly vulnerable to wildfires.

- Maui County will continue financial support for watershed management partnerships designed to improve groundwater recharge, reduce fire hazards, and prevent erosion through native species reforestation, invasive species control, fencing, and weed eradication efforts.

- The MDWS will support watershed partnerships' outreach to West Maui schools to develop service-learning experiences that allow students to assist with invasive species control and the planting of native species.

6.1.2 Makai: Monitoring Culturally Important Aquatic Species

A number of community members observed local declines in culturally important stream, nearshore, and marine species since the 1970s, when the County began to drill wells and also when Pioneer Mill Company sold its water management infrastructure to West Maui Land.

- CWRM and the UH Water Resources Research Center should consider developing, coordinating, and funding a region-wide system for inventorying and monitoring culturally important native aquatic species such as fish, limu, mollusks, and shrimp that may be affected by and are indicators of changing water supply. They should partner with community organizations like Honokōhau Valley Association, Kamehameha Schools, 'Aha Moku o Maui, Inc., cultural practitioners, and other relevant NHOs in these endeavors.
- The MDWS will support and fund inventorying and monitoring of culturally important native species conducted by watershed partnerships in watersheds directly impacted by the MDWS's existing water sources.

6.2 Protect and Recharge Groundwater and Surface Water Flow

6.2.1 Maintaining and Monitoring Current Water Supplies

The availability of fresh water to irrigate lo'i kalo emerged as the most common concern among community members when discussing surface water issues. To ensure sufficient streamflow to irrigate lo'i kalo, the MDWS will:

- Work with the State CWRM to ensure that existing instream flow standards are being met. In those cases where existing instream flow standards are not feasible due to the limitations of existing wells, the MDWS will work with CWRM to develop alternate strategies to ensure adequate water supplies.
- Monitor and enforce current water use restrictions by all existing users in a water shortage.

6.2.2 Alternative Water Source Strategies

Many community members expressed interest in alternative water strategies such as recycling greywater (R1) to be used for landscaping and other non-potable uses. To this end, the MDWS will:

- Support capital improvement program funding for recycled water projects and needed infrastructure expansion in the Lahaina region to offset potable water to the maximum extent feasible.
- Support exploration and permitting of greywater systems to offset potable water use.
- Explore desalination of seawater and brackish water as an alternative water supply for West Maui demand.

6.3 Support Water Quality

Several community members noticed that a decline in water quality impacts limu populations. To combat water quality issues, the MDWS will:

- Encourage the State Department of Health and Maui County to focus cesspool upgrades to areas impacting the nearshore marine environment and prioritize expanding sewer lines into residential areas that are currently unsewered to reduce the amount of wastewater entering the aquifer and nearshore environment.

6.4 Repair, Replace, and Maintain Existing Infrastructure

Community members indicated that the plantation-era ditches contain aging infrastructure. Since Pioneer Mill Company shut down, no one regularly maintains blockages upstream that could be the cause of reduced stream flow. Community members sometimes personally remove debris build-up in the ditches and 'auwais, but they feel that they should not be personally responsible for maintaining these systems. They also feel that the County and the State should be responsible for ensuring that these systems will continue to function in the event of "100-year storms." The MDWS will do its part to ensure proper infrastructure functioning by:

- Continuing to repair and maintain existing gages, pumps, 'auwais, dams, and other infrastructure that is controlled by MDWS to ensure efficient water supply and avoid wastage.
- Work with Maui Land & Pine to regularly maintain the Honokōhau stream diversion.

6.5 Solicit Ongoing Community Input for Current and Future Projects

Members of 'Aha Moku stated that many community members have a stake in water use decisions, and recommend regular venues for them to share their mana'o. Therefore, the MDWS should:

- Hold annual meetings with community groups, cultural practitioners, lineal and cultural descendants of the area, and other interested community members to encourage ongoing cooperation and consultation regarding MDWS projects.
- Consult with 'Aha Moku for water development projects in the subject moku for information on impacts to Native Hawaiian traditional and customary uses and advice on proper actions.
- Promote existing MDWS grant programs by proactively advertising in venues such as social media, in OHA's *Ka Wai Ola* magazine, and in local newspapers.

7 SUMMARY

The Native Hawaiian worldview recognizes that managing water resources requires a comprehensive and unified approach. It emphasizes the idea that we cannot address water issues separately, but instead need to consider them as interconnected and interdependent. Additionally, it is not enough to ensure the *survival* of traditional and customary practices in the existing permit area; instead, all feasible efforts should be made to allow these practices to *thrive*. The natural and cultural resources at the basis of these traditional and customary practices must be sufficiently healthy to allow cultural practitioners to perpetuate these practices by passing them on to future generations.

Using a combination of archival research, existing oral history interviews, and public testimony from the Instream Flow Standard Assessment Report (IFSAR) meetings, this Ka Pa‘akai Analysis report identified and discussed the traditional and customary practices undertaken within the Lahaina Aquifer Sector, and more specifically within the Honokōhau Aquifer System, that are related to water use and could potentially be impacted by water use related to the existing Honokōhau Stream diversion. These traditional and customary practices include the cultivation of wetland kalo, near-shore fishing, the gathering of limu, and the gathering of medicinal and other plants. Traditional and customary practices such as gathering lā‘ua lapa‘au, lo‘i kalo cultivation, and gathering riparian species such as ‘o‘opu, ‘ōpae, the shellfish hīhīwai and hapawai all declined dramatically in the area due to decades of commercial pineapple and sugar cane cultivation. In spite of this, cultural practitioners continue to farm lo‘i kalo and fish in the areas makai of the Honokōhau Ditch. Cultural practitioners are currently increasing the number of lo‘i kalo under active cultivation and teaching keiki (children) and community members about mauka to makai stewardship, all of which require a sufficient availability of fresh water.

Historical accounts describe Honokōhau Valley as one of the most productive regions for kalo cultivation on the entire island of Maui, rivalled only by Kahakuloa. However, commercial agriculture during the plantation era led to a dramatic decline in the active cultivation of lo‘i kalo within Honokōhau. Plateau lands, formerly planted in ‘uala, were converted into sugarcane and pineapple fields, and the Honokōhau Stream was diverted into the Honokōhau Ditch.

In existing oral history interviews and public testimony, several narrators expressed their belief that the existing Honokōhau Stream diversion directly impacts freshwater availability for lo‘i kalocultivation. Cultural informants also noticed a decline in key, culturally important natural resources such as ‘o‘opu, ‘ōpae, the shellfish hīhīwai and hapawai, limu, and nearshore fish since the stream diversion was installed. The Honokōhau Stream surfacewater diversion, paired with the ecological disturbances from legacy sugarcane and pineapple fields, led to cascading effects on the natural environment. These effects include a decrease in water availability for irrigating lo‘i kalo, as well as silt, pesticide, and fertilizer runoff that damages the reefs. Additionally, the disruption of mauka to makai connectivity for ‘o‘opu and ‘ōpae, and an influx of invasive plant and animal species in the mauka areas leading to increased fire risk, which in turn reduced aquafer replenishment.

This Ka Pa‘akai Analysis found that the Honokōhau Stream diversion contributes to an overall reduction of freshwater that impacts the vitality of ongoing traditional and customary practices. The Maui County Department of Water Supply has therefore agreed to undertake a number of feasible actions to maintain and potentially increase supplies of freshwater for traditional and customary practices. This Ka Pa‘akai Analysis identified a number of feasible actions to help mitigate the potential impacts of the existing stream diversion. These include soliciting ongoing feedback from community members; employing a mauka to makai approach to water conservation; supporting community-based efforts to restore

watersheds; repairing, replacing, and maintaining existing infrastructure; maintaining and monitoring water quality; and developing alternative water source strategies.

8 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

<i>a‘ali‘i</i>	a common, small dryland and mesic forest tree, <i>Dodonaea viscosa</i>
<i>ahupua‘a</i>	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land’s early Hawaiian residents. It was “so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief” (Pukui and Elbert 1971:8).
<i>‘āina</i>	land
<i>‘ākia</i>	an important sub shrub to small tree, <i>Wikstroemia oahuensis</i> var. <i>oahuensis</i> , sometimes used to stun fish
<i>‘akoko</i>	a term for native herbs, sub-shrubs, or shrubs in the genus <i>Euphorbia</i> ; in this case, <i>Euphorbia celastroides</i> var. <i>lorifoli</i>
<i>alahe‘e</i>	a native forest tree known for its sweet-smelling flowers, <i>Psydrax odorata</i>
<i>ala loa</i>	main road or trail
<i>ali‘i</i>	chief, individual of chiefly blood
<i>‘auwai</i>	ditch, canal
<i>‘ēkaha</i>	a native forest fern, <i>Asplenium nidus</i>
<i>halalu</i>	young akule, <i>Trachurops crumenophthalmus</i>
<i>hanawai</i>	irrigation
<i>hapawai</i>	a shellfish, <i>Theodoxus vespertinus</i>
<i>hā‘uke‘uke</i>	a type of edible sea urchin; <i>Colobocentrotus atratus</i>
<i>heiau</i>	traditional temple or shrine
<i>hīhīwai</i>	an endemic, edible, freshwater and brackish grainy snail, <i>Neritina granosa</i> ; also known as wī if in fresh water; there is a shellfish of the same name
<i>hō‘ailona</i>	sign, symbol
<i>huehue</i>	a native vine, <i>Cocculus orbiculatus</i> , used for twine and funnel-mouthed fish traps
<i>‘ili</i>	traditional land division, smaller in size and next in importance to an ahupua‘a, usually a subdivision of an ahupua‘a
<i>‘iliahialo‘e</i>	coastal sandalwood, <i>Santalum ellipticum</i>
<i>iwi kupuna</i>	ancestral remains

<i>kā'ape'ape</i>	a native holly fern, <i>Cyrtomium caryotideum</i>
<i>kalana</i>	a land division smaller than a moku; a county
<i>kalo</i>	taro, <i>Colocasia esculenta</i>
<i>keiki</i>	children
<i>kīlau</i>	a native bracken fern, <i>Pteridium aquilinum</i> ssp. <i>Decompositum</i>
<i>koali 'awahia and 'awa</i>	beach morning glory, <i>Ipomoea indica</i> , used for medicine and cordage
<i>kole</i>	surgeonfish, <i>Ctenochaetus strigosus</i>
<i>kolokolo</i>	a small, tongue-like native fern, <i>Adenophorus tenellus</i>
<i>konohiki</i>	land stewards, sometimes minor ali'i
<i>kuahiwi</i>	mountain
<i>kula</i>	plain or open country
<i>kūmū</i>	goatfish; <i>Parupeneus porphyreus</i>
<i>kūpe'e</i>	an edible marine snail; <i>Nerita polita</i>
<i>lālākea</i>	whitetip shark, <i>Pterolamiops longimanus</i>
<i>limu</i>	marine and freshwater algae
<i>limu 'ele'ele</i>	<i>Enteromorpha prolifera</i>
<i>limu kohu</i>	<i>Asparagopsis taxiformis</i>
<i>limu līpe'e</i>	<i>Laurencia</i> sp.
<i>limu līpoa</i>	<i>Dictyopteris pagiogramm</i> and <i>D. australis</i>
<i>limu manaua</i>	<i>Gracilaria coronopifolia</i>
<i>limu wāwae'iole</i>	<i>Codium edule</i>
<i>lo'i kalo</i>	flooded taro terraces
<i>maka 'āinana</i>	common people
<i>makai</i>	toward the sea
<i>manini</i>	a common reef surgeonfish; <i>Acanthurus triostegus</i>
<i>manō</i>	shark
<i>moa</i>	whisk fern, not a true fern; a seedless non-vascular native plant, <i>Psilotum nudum</i>

<i>moano</i>	goatfish; <i>Parupeneus multifasciatus</i>
<i>moelua</i>	weke 'ula; <i>Mulloidichthys vanicolensis</i>
<i>moku</i>	district, land section, or island
<i>mo'o</i>	water spirit or lizard goddess
<i>mo'okū'auhau</i>	genealogy
<i>mo'olelo</i>	story, tradition, legend, history
<i>mo'o'āina</i>	a parcel of land, smaller than an ili, and typically used in agriculture
<i>mauka</i>	inland
<i>nehu</i>	anchovies, <i>Stolephorus purpureus</i>
<i>ogo</i>	a limu; <i>Gracilaria parvisipora</i> , sometimes also called manaua
<i>'ōhi'a 'ai</i>	mountain apple tree, <i>Eugenia malaccensis</i>
<i>'ōhi'a lehua</i>	<i>Meterosideros</i> sp., often polymorpha; an iconic Native Forest tree with beautiful red flowers
<i>'ō'io</i>	ladyfish/bonefish, <i>Albula vulpes</i>
<i>'ōlelo no 'eau</i>	traditional Hawaiian proverbs and poetical sayings
<i>'opihi</i>	limpets; <i>Cellana talcosa</i> , <i>C. sandwicensis</i> , <i>C. exarata</i> , and <i>C. melanostoma</i> .
<i>'o'opu</i>	refers to species of fish in the families Eleotridae, Gobiidae, and Blennidae
<i>'o'opu 'akupa</i>	<i>Eleotris sandwicensis</i>
<i>'opu 'alamo'o</i>	<i>Lentipes concolor</i>
<i>'o'opu nākea</i>	<i>Awaous guamensis</i>
<i>'opu naniha</i>	<i>Stenogobius hawaiiensis</i>
<i>'o'opu nōpili</i>	<i>Sicyopterus stimpsoni</i>
<i>'ōpae</i>	endemic shrimp
<i>'ōpae kuahiwi/kala'ole</i>	<i>Atyoida bisulcata</i>
<i>'ōpae 'oeha</i>	<i>Macrobrachium grandimamus</i>
<i>'ōpelu</i>	Mackerel scad, <i>Decapterus macarellus</i> , <i>pinnulatus</i> and/or <i>D. maruads</i>
<i>'ōpelu kala</i>	a kala fish staying with 'ōpula schools; <i>Naso hexacanthus</i>
<i>owama/oama</i>	young weke or goatfish

<i>pa‘akai</i>	sea salt
<i>pala‘ā lei</i>	a beautiful, culturally important fern, <i>Sphenomeris chinensis</i> ; used as offerings, medicine,
<i>palapalai</i> plant in hula	a beautiful, culturally important fern, <i>Microlepia strigosa</i> var. <i>strigose</i> ; an important
<i>pāpio</i>	the youngest stage of ‘ulua
<i>po‘e</i>	people, population; plural marker
<i>pūkiawe</i>	a native medicinal shrub whose wood was used for tattooing, <i>Leptecophylla tameiameiae</i>
<i>‘uala</i>	sweet potato; <i>Ipomoea batatas</i>
<i>‘uhaloa</i>	a medicinal plant; <i>Waltheria indica</i>
<i>‘ūlei</i>	a native spreading shrub, <i>Osteomeles anthyllidifolia</i> , used for digging sticks, musical instruments, and fishing spears
<i>‘ulua</i>	carangids; the adult stage of certain species of fish such as Giant Trevally, crevalle, jack, or pompano, in the family of Carangidae
<i>wai</i>	fresh water
<i>wana</i>	long-spined sea urchins; possibly <i>Diadema paucispinum</i> or <i>Echinothrix diadema</i>
<i>weke</i>	certain species of the Mullidae, surmullets or goatfish. All weke have large scales and are usually found in reefs, sometimes in deep water

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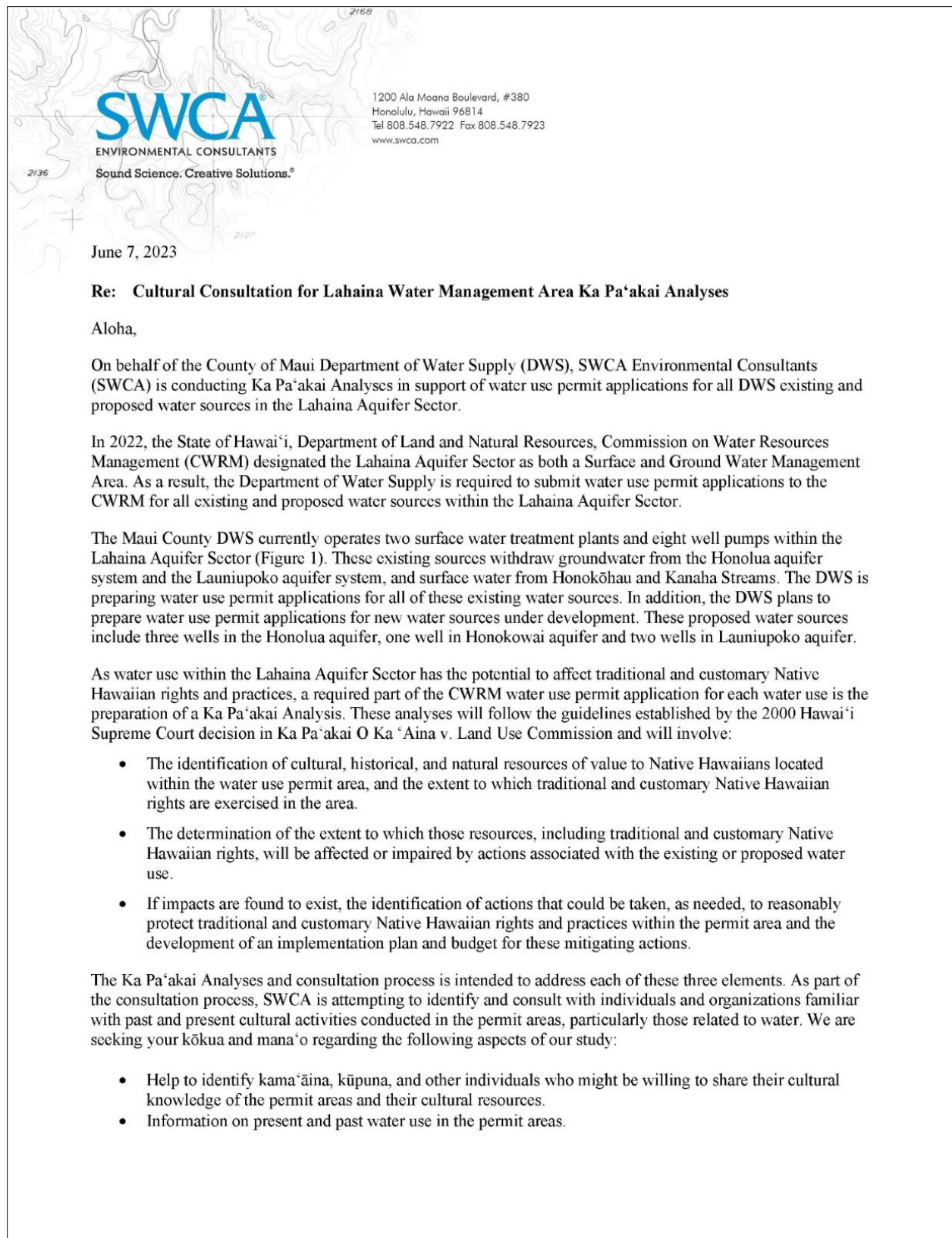
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Appendix A

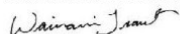
Request for Consultation Letter



- Information on place names and cultural traditions associated with the permit areas.
- Information on cultural resources that may be impacted by water use activities by the DWS.
- Knowledge of traditional gathering practices within the permit area, both past and ongoing.
- Information on any current cultural practices being carried out within the permit areas.
- Any other concerns the community might have related to cultural practices within or in the vicinity of the permit areas.

We appreciate any information you would be willing to share regarding the permit areas and those individuals knowledgeable about its past and present cultural uses. Please contact us at Wainani.Traub@swca.com or by phone at (808) 646-6309. We look forward to hearing from you.

Mahalo no kou kōkua 'ana mai,



Wainani Traub

Assistant Project Anthropologist

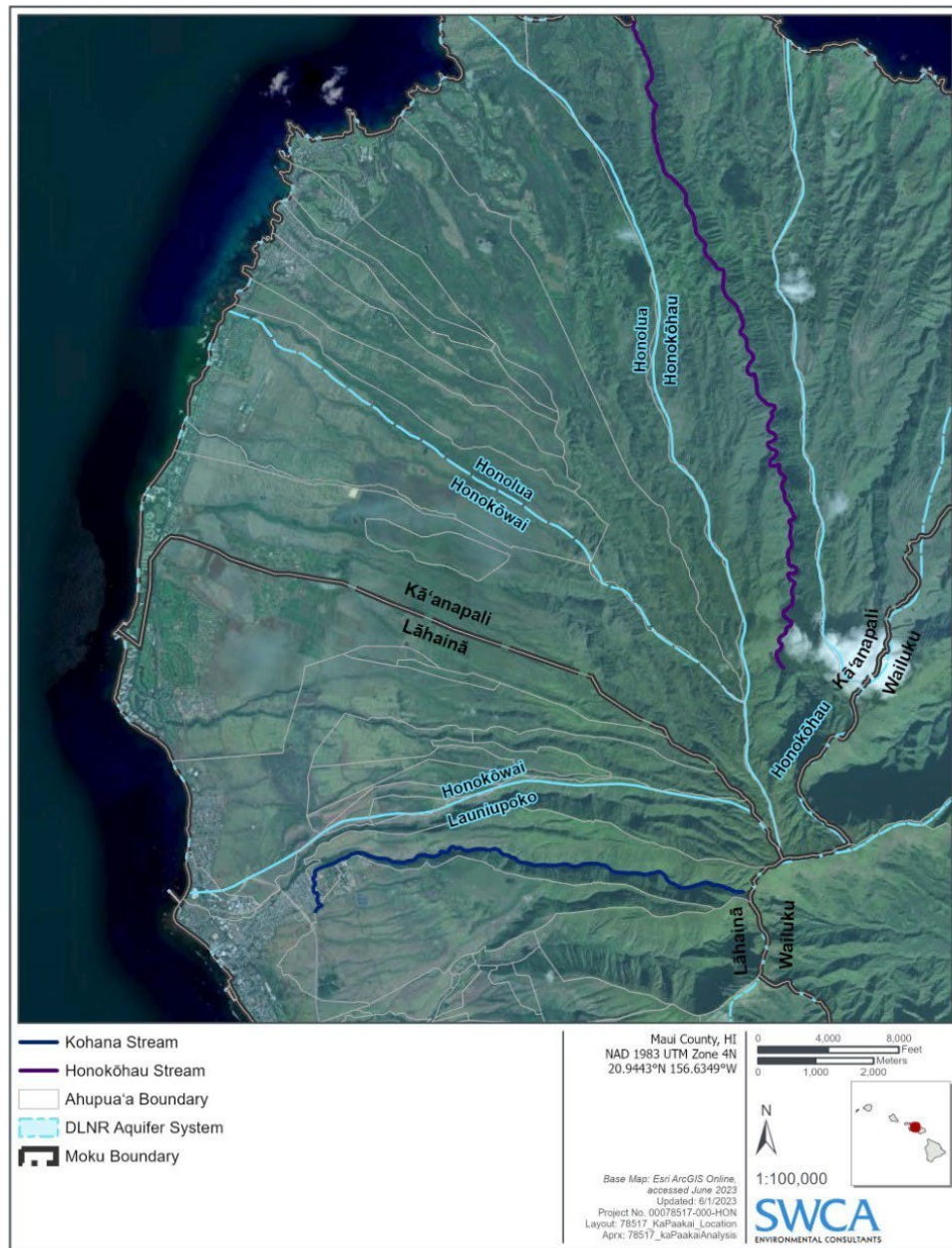


Figure 1. Lahaina Aquifer Sector

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