

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA  
FIRST DEPUTY

W. ROY HARDY  
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

ref:OCCL:MC

File No: Loko I'a: LA-15-03

Kehau Watson  
Honua Consulting  
4348 Wai'alaie Ave #254  
Honolulu, HI 96816

JUN 23 2015

Dear Ms. Watson,

**SUBJECT: LOKO I'A PERMIT LA-15-03: WAIA'OPAE FISHPOND**  
Pālāwai Ahupua'a, Lāhaina District, Lāna'i  
TMK (2) 4-9-003:000 (submerged lands)

Dear Ms. Watson,

The Office of Conservation and Coastal Lands (OCCL) has reviewed the information you sent regarding Lāna'i Culture & Heritage Center's proposal to conduct repairs at Waia'opae Fishpond on the above subject parcel. The state-owned pond is in the Resource Subzone of the Conservation District, while the areas mauka of the pond lie outside the Conservation District.

Waia'opae lies on the east shore of Lāna'i, in the ahupua'a of Pālāwai. The 5897-acre ahupua'a once contained three known fishponds (Ka'a Loko, Kahōkeo and Waia'ōpae), kula (dry land) agricultural field systems, forest resources, and numerous fresh water springs and intermittent streams. In the near shore sections of Pālāwai, potable water sources were developed, and villages were established all along the coast. The coastal fisheries were used by local residents as well as residents of Lahaina and eastern Moloka'i.

By the mid-1800s, the landscape of Lāna'i had been altered by introduced ungulates. The land was denuded, the clouds stopped passing across the mountains, and the water dried up. The coastal villages were subsequently abandoned by many native tenants.

The infrastructure of Waia'opae Fishpond is in fairly good condition. The wall has fallen into disrepair, but the base is intact and the stones are within the general area of the wall. The pond has been degraded by severe sediment build up in the pond over several decades. Additionally, there is limited fresh water input into the pond, whereas there may have been greater fresh water input into the pond historically from stream flow or springs. As a result, there is limited marine life seen in the pond currently.

The restoration of Waia'ōpae loko i'a (traditional fishpond system) is part of a Native Hawaiian Education Program led by the Lāna'i Culture & Heritage Center, a 501(c)(3) organization, in

partnership with the land owner, Pūlama Lāna'i.

Lāna'i Culture & Heritage Center is seeking a tier one permit for the manual repair of the fishpond walls and manual removal of sedimentation from the internal of the pond area. The base of the kuapā is intact and all rocks are on site. No new material will be used and only rocks from within the pond area will be used to restore the wall. There will be no expansion of the wall's original footprint.

Restoration work will also involve restoring the native landscape mauka of the shoreline, and outside the conservation district, with the goal of reducing the high amounts of soil runoff that enter the pond during the rainy season.

The work will be conducted by volunteers supervised by experienced practitioners. The following best management practices will be followed:

1. Only rocks and materials from on site will be used in wall reconstruction. No new materials will be used.
2. No mechanized equipment will be used. All activities will be conducted by hand or hand tools.
3. Environmental monitoring will be followed to check daily for protected species
4. Cultural and archaeological monitors will be on site during activities. Students and workers will attend orientations about the historical and cultural significance of the pond and area.
5. All historic preservation regulations will be strictly adhered to.
6. Water quality will be monitored for sediment plumes.

There is currently a fair amount of sediment in the pond basin. The applicant has no plans to mechanically dredge the pond. They hope that the sediment buildup will be flushed naturally once the walls are repaired and a buffer of coastal vegetation is established.

There are no plans to stock the pond with introduced fish. Any recruitment will be done naturally.

The applicant will work with DLNR Land Division to secure a Right of Entry into the pond.

After reviewing the application, OCCL finds that

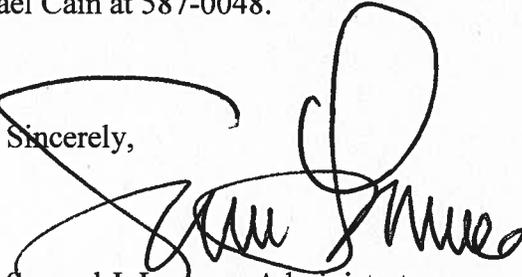
1. That the proposal to restore the walls at Waia'ōpae is consistent with Conservation District Use Permit (CDUP) ST-3703 for the Ho'āla Loko I'a program, as approved by the Board of Land and Natural Resources on June 27, 2014;
2. That the activities described were covered in the Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) for the Ho'āla Loko I'a program, which was published on October 23, 2013;
3. That the proposal requires the need for a Tier 1 Loko I'a permit signed by OCCL;
4. That the standard conditions found in Hawai'i Administrative Rules (HAR) §13-5-42 apply.

After careful review of the proposed project, the Department authorizes a Tier 1 Loko I‘a permit for the restoration of the walls at Waia‘ōpae Fishpond in the ahupua‘a of Pālāwai on Lāna‘i, offshore of TMK (2) 4-9-003:000, subject to the following standard conditions:

1. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;
2. The permittee, its successors and assigns, shall indemnify and hold the State of Hawai‘i harmless from and against any loss, liability, claim, or demand for property damage, personal injury, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;
3. The permittee shall obtain appropriate authorization from the department for the occupancy of state lands, if applicable;
4. The permittee shall comply with all applicable department of health administrative rules;
5. All representations relative to mitigation set forth in the application are incorporated as conditions of the permit;
6. The permittee understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;
7. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;
8. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;
9. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawai‘i, and by Hawai‘i statutory and case law;
10. Should historic remains such as artifacts, burials or concentration of charcoal be encountered, work shall cease immediately in the vicinity of the find, and the find shall be protected from further damage. The contractor shall immediately contact HPD (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;
11. Other terms and conditions as prescribed by the chairperson;
12. Failure to comply with any of these conditions shall render a permit void under the chapter, as determined by the chairperson or board.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. Please sign two copies. Retain one and return the other within thirty days. Should you have any questions feel free to contact Michael Cain at 587-0048.

Sincerely,



Samuel J. Lemmo, Administrator  
Office of Conservation and Coastal Lands

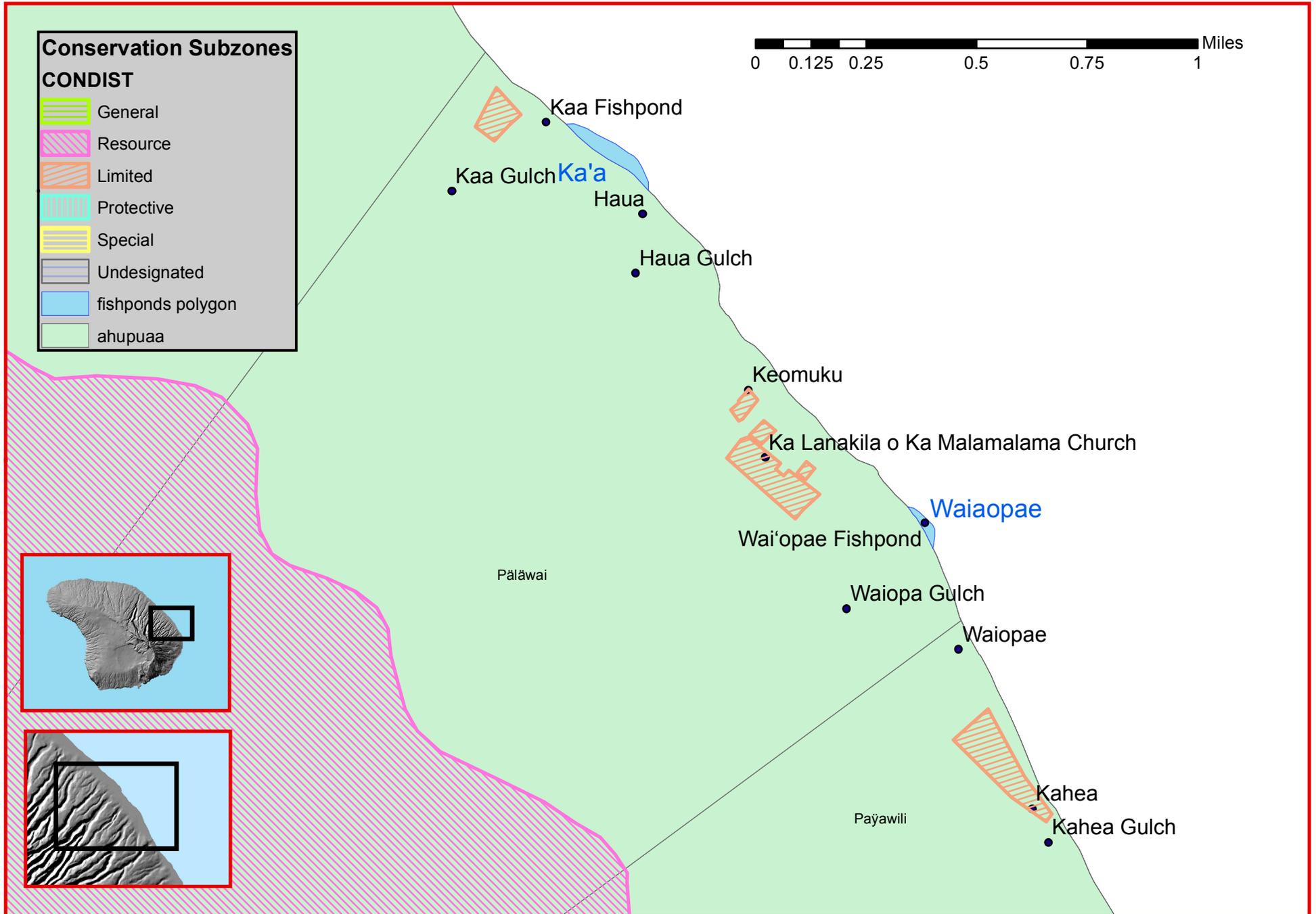
Receipt acknowledged:

\_\_\_\_\_  
Permittee's Signature

\_\_\_\_\_  
Date

copy: DLNR Chair, Land Division, HPD, DOCARE; Maui County Planning; Pūlama Lāna'i

# Waiapae Fishpond, Palawai Ahupuaa, Lanai





## HO‘ALA LOKO I‘A APPLICATION

**FISHPOND NAME:** Waia‘ōpae Fishpond

**APPLICANT NAME:** Lāna‘i Culture & Heritage Center

---

Pond location: Pālāwai Ahupua‘a, Keōmoku Road, Lāna‘i

Nearest Tax Map Key(s): 4-9-03 por

Ahupua`a: Pālāwai

District: Lāhaina

Island: Lāna‘i

Commencement Date: June 23, 2015

Completion Date: June 2018

Wall length: Approximately 2,000 feet

Pond surface area: approximately 1.5 acres

---

### WORK SUMMARY

- Operations only
- Construction of accessory structures
- Minor repair and restoration of pond walls, ‘auwai, mākāhā, etc.
- Moderate repair and restoration (10% to 50% damage)
- Major repair and restoration (greater than 50% damage)

Linear feet of wall to be repaired (rocks on site):

Linear feet of wall to be restored (new rock):

Source of new rock:

Amount of “fill” (expansion beyond original footprint):

- Dredging using mechanized equipment
    - Estimated volume of dredging:
  - Vegetation removal using mechanized equipment
    - Estimated acreage:
  - Emergency repair
-

## REQUIRED SIGNATURES

### Applicant

Name / Hui: Lānaʻi Culture & Heritage Center

Street Address: 730 Lānaʻi Ave #126

Lānaʻi City, HI 96763

Contact Person & Title: Kepā Maly, Executive Director

Phone: (808) 565-7177

Email: kepa@lanaichc.org

Interest in Property: Program Manager

**Signature:**

**Date:**

*Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization*

---

### Landowner (if different than the applicant)

Name: State

Title; Agency: DLNR

Mailing Address:

Phone:

Email:

**Signature:**

**Date:**

*For State-owned ponds, the government entity with management control over the parcel shall sign as landowner.*

---

### Agent

Agency: Honua Consulting

Contact Person & Title: Kehau Watson

Mailing Address: 4348 Waiʻalae Ave #254

Honolulu, HI 96816

Phone: (808) 347-2637

Email: watson@honuaconsulting.com

**Signature:**

**Date:**

---

### For DLNR Managed Lands

#### State of Hawaiʻi

Chairperson, Board of Land and Natural Resources

Department of Land and Natural Resources

P.O. Box 621

Honolulu, Hawaii 96809-0621

**Signature:**

**Date:**

---

## DESCRIPTION OF THE LOKO I‘A

**Please discuss the current physical and environmental conditions of the loko i‘a. Please also note if any endangered or threatened species are found in the pond.**

Due to Lāna‘i's remote nature, Waia‘ōpae Fishpond is in fairly good condition. The wall has fallen into disrepair, but the base is in tact and the stones are within the general area of the wall. The pond has been degraded by severe sediment build up in the pond over several decades. Additionally, there is limited fresh water input into the pond, whereas there may have been greater fresh water input into the pond historically from stream flow or springs. As a result, there is limited marine life seen in the pond currently, although this will hopefully change with restoration.

## HISTORY OF THE LOKO I‘A

The Waia‘ōpae Fishpond is within the ahupua‘a boundaries of Pālāwai. Pālā-wai (literally, Fresh water moss): The ahupua‘a of Pālāwai is one of four ahupua‘a on Lāna‘i that spans both the kona (leeward) and ko‘olau (windward) sides of the island. It contains 5,897 acres, had dedicated fisheries (including Ka‘a Loko, Kahōkeo and Waia‘ōpae fish ponds), kula (dry land) agricultural field systems, forest resources, and numerous fresh water sources with springs and intermittent streams. In the near shore sections of Pālāwai, potable water sources were developed, and villages were established all along the coast. On the leeward side, Pālāwai is bounded by Keālia Aupuni on the west, and by Kama‘o on the east. At the mountain top, Pālāwai shares the highest peak, Lāna‘i Hale (site of a traditional spring), as a boundary point; and adjoins Kaunolū and Pāwili, from the mountain to the windward coast. The basin region of Pālāwai Ahupua‘a was also the site of the first foreign settlement on Lāna‘i in 1854, in the form of the original Mormon colony in Hawai‘i. During the Māhele, Pālāwai was awarded to Chiefess Kekau‘ōnohi, and later inherited by her husband, Ha‘alelea. The kapu fish was ‘anae (mullet) and the kapu wood was ‘ahakea (Bobea).

In 1869, Samuel Manaiakalani Kamakau penned a series of detailed narratives documenting traditional Hawaiian lifestyles, practices and beliefs. Among his contributions to knowledge of the past were descriptions of traditional and customary practices associated with lawai‘a (fishing) and loko i‘a kuapā (walled fishponds). These narratives provide us with some background on the practices associated with two significant traditional features of Pālāwai Ahupua‘a, the loko i‘a kuapā of Waia‘ōpae and Ka‘a Loko. Kamakau observed:

Dekemaba 2, 1869 (aoao 1) Ke Au Okoa, Ka Moolelo Hawaii

No ka mahi loko ia ana.

O na loko-ia, oio kekahi mau mea hoohiluhilu o ka aina, a ua kapaia he aina momona no ka nui o na loko ia, he mea kahiko loa na loko ia. O kekahi mau loko wai, ua hana pu ia me ka hana pu ana o ka honua, a o ka nui o na loko ia a me ka nui o na loko kuapa, ua hana maoli ia e ka poe kahiko. He hana nui loa ka hana ana o na kuapa, a ua ikaika loa ka hana ana, he hana paa ole i ka umi tausani kanaka a oi aku, he 60 eka ka nui o kekahi loko ia, a he 70 ko kekahi, a oi aku, a emi mai ko kekahi, ua hanaia na kuapa ma ka aoao pili i ke kai, ua hohonu kekahi iloko o ke kai, a ua papau kekahi, aka, ua nui loa ka pohaku o ka hana ana... o ka hana ana i na loko ia a me na kuapa, ua kahiko loa, ua akaka kekahi poe alii nana i hana. A o ka nui o ka poe alii nana i hana kekahi mau kuapa aole i akaka, a ma ka manao i ka nana aku, ua hana aupuni ia e na‘lii, no ka mea, he hana kaumaha loa, a he hana hiki ole i na makaainana.

---

I ka hana ana i ka pa pohaku o ke kuapa a paa, alaila, hookahi i koe o ke kii i na laau kupono no ka makaaha [mākāhā]. aia o na laau kupono i ka manao o ke kahuna aumakua hoouluia loko kuapa, he laau ohia ai, a he laau lama, a me na laau kupono e ae, a makaukau ka laau makaha, a hiki i na la kupono e hanaai, alaila kii i ke kahuna aumakua hoouluia nana, e kukulu mua ka laau, he oihana nui no hoi ka ia kahuna', he puua, he ilio, a e like me ke kupono i kana oihana e hooulu ai i ka ia, a me ka pule kupono i kana oihana, alaila, lalau oia i ka laau a kukulu iho i ka makaha, alaila pule iho i ka pule hoonoa a pau, alaila, kukulu na kanaka a pau i ka laau me ka nakinaki i ke ia... (Aole i pau.)

Dekemaba 9, 1869 (aoao 1) Ke Au Okoa, Ka Moolelo Hawaii

Alaila, hoonohonoho i ka pohaku o ka honua me ka makaha, alaila, lu aku i ke ili, a pela e hana ai na makaha a pau, ua kapu ka hele ana o na wahine maluna o ke kuapa, o ae ia ke kuapa e na wahine haumia, a i ka hala ana o na malama elima a eono paha, alaila, e ike ia no ka ia o ka loko kuapa... ...a o na ia kamaaina mau i na loko, o ke awa, o ka anae o ke awaaua, o ke ka-ku, o ke aholehole, o ka oopu, o ka opae, o ka puhi, a me kekahi ia kamaaina e iho i na loko. A no ka pono o na oihana hooulu ia a ke kahuna, ua komo mai kekahi mau ia kamaaina ole mamua, o ka ulua, o ke kahala, o ka oio, o ka palani, o ke ku-mu, o ka uhu, o ka manini, o ka puwalu, a me kekahi mau ia i kamaaina ole, ua piha iho la ka loko kuapa i keia mau ia, a o keia mau ia ka mea nana e hakikaikoo ke kuapa me he nalu la, a oia ka mea e hauoli ai ka naau o kahu kiai loko a me na'lii nona ka loko. Alaila, e olelo ka poe kahu kiai loko i na'lii nona ka loko, ua ola ka aina, a he mea olioli i ka manao o na 'lii o ke ola o ka aina, a he mea mahi ia i ka manao o na'lii o ka wa kahiko. O ke ola o ka poe kahu kiai loko, o ke aholehole, o ke awaaua, o ke ka-ku, o ka oopuhue, o ka oopu, o ka opae, na ka poe kiai loko keia mahi ia...

Dekemaba 16, 1869 (aoao 1) Ke Au Okoa

K a M o o l e l o H a w a i i

He lahui lae ula ka lahui Hawaii i ka lawaia, a he oihana kauoha mai na kupuna mai, o ka mahiai, a o ka lawaia, alua oihana kauoha nui a na kupuna i pili mai i na keikikane, a o ka noho i ke ao me ke ao i ka hana... O ka lawaia he oihana nui...

[Translation by M.K. Pukui (1976)]

About the cultivation of fish in ponds

Fishponds, loko i'a, were things that beautified the land, and a land with many fishponds was called a "fat" land ('aina momona). They date from very ancient times. Some freshwater ponds, loko wai, were made when the earth was made, but most of the loko i'a and the shore ponds, loko kuapa, were made by ka po'e kahiko. The making of the walls (kuapa) of the shore ponds was heavy work, and required the labor of more than ten thousand men. Some of these fishponds covered an area of sixty or seventy acres, more or less. Walls had to be made on the seaward side sometimes in deep water and sometimes in shallow, and many stones were needed... The making of fishponds and their walls is very ancient. It is known which chiefs built some of them, but the majority of their builders is not... [page 47] ...known. However, one can see that they were built as "government" projects by chiefs (hana aupuni 'ia e na li'i), for it was a very big task to build one, and commoners could not have done it.

When the stone walls of the kuapa shore ponds were completed, then the task remained to find the proper wood for the sluice gate, the makaha. This was selected by the kahuna of the 'aumakua who increased the fish in the ponds (kahuna 'aumakua ho'oulu i'a loko kuapa). The wood was 'ohi'a 'ai or lama or some other suitable wood. When the wood for the makaha was ready, and the proper day had arrived for its construction, the kahuna was fetched to set up the first piece of timber. For this important duty he offered a pig or a dog suitable to this work of inspiring the increase of fish, and prayers appropriate to this work. Then he reached for a timber and set it up for the makaha and offered the pule ho'onoa [the prayer that released the kapu and allowed the

work to proceed]. Then the men built the makaha, binding it together with 'ie cords. After that they arranged (ho'onohonoho) foundation stones with the makaha and poured in pebbles. It was in this way that all makaha were made.

It was tabu for menstruating women to walk on the kuapa walls lest the walls be defiled. After five or six months fish would begin to be seen in the loko kuapa. During the high tides of 'Ole ('Ole kai nui) the people who took care of the pond would rejoice to see the fish moving toward the kuapa walls, like waves of a rough sea, until the sluice, makaha, was filled with fish. If the depth of the water at the sluice were a yard or more, the width of the makaha an anana, and the thickness of the kuapa walls an anana, this area would be filled with fish, piled one over the other until the fish at the top were dry; if a stone were placed on them it would not sink.

The usual fishes (kama'aina) in the ponds were the awa, 'anae, awa'aua, haku, aholehole, 'o'opu, 'opae, puhi, and other fishes accustomed to living in ponds. But as a result of the prayers of the kahuna, some fishes that were not accustomed to living in ponds came in; such fishes as ulua, kahala, 'o'io, palani, kumu, uhu, manini, puwalu, and some other kinds. The loko kuapa would be filled with all kinds of fish. They would cause ripples against the walls, like waves, and this made glad the "hearts" (na'au) of the keepers of the pond and of the chiefs whose pond it was (na li'i nona ka loko). "The land has life," Ola ka 'aina, the keepers would say to them, and they would be as pleased as though they were victorious warriors. The caretakers of the pond could eat of the aholehole, awa'aua, kaku, 'o'opu-hue, 'o'opu, and the 'opae openly... [page 48]

The Hawaiian people were a race of expert fishermen. The art had been handed down from their ancestors. Agriculture and fishing were the two main professions always passed on by the grandparents to the boys... The fishing profession was an important one... [Kamakau, 1976:59]

#### Discovering Information on the History of Loko I'a on Lāna'i

Only limited historical information has been recorded about the fishponds on Lāna'i. One interesting account which focused on the events in which Kaululā'au participated on Lāna'i was reported in the Maui News of 1904 as follows:

April 2, 1904 (page 2) The Maui News, Kaululuaau and Lanai.

The following charmingly told myths appear in "Hawaii, Its People, Their Legends," written by Mrs. Emma Metcalf Nakuina, and published by the Hawaiian Promotion Committee, and are republished in the News for the benefit of those who have not seen the book.

Kakaalaneo, King of Maui, has always been famed in Hawaiian traditions as the first king of that island who gave his attention to agriculture and the promotion of all domestic and peaceful arts, and his reign has always been looked upon as the golden age of Maui's kingdom.

He it was who planted Lahaina, formerly known as Lele, with ulu trees (breadfruit), and the place became famous in story and songs as the "Malu ulu o Lele." "The shady breadfruit grove of Lele." As the place is situated at the base of and leeward of the Lihau range of mountains, where very little rain falls, and is more or less shut off from the cooling influence of the prevailing trade winds, one who is a kamaaina can fully appreciate the cool, grateful memories evoked by the mere mention of the "Malu ulu o Lele."

Breadfruit was a very important article of diet among the ancient Hawaiians, and when in season, chiefs and commoners alike abandoned the use of taro poi for bread fruit poi, claiming that such a change of diet was beneficial on account of its alternative effect on the system.

In the days of Kakaalaneo, breadfruit trees were a very valuable possession, and to plant one was a meritorious act, worthy of commendation by one's superior. To plant a grove, even if only a small one, was an act worthy of the gods, entitling the planter to the grateful remembrance of posterity, whose duty it was to sing songs of praise in his or her honor. It was the same if the

---

grove was a cocoanut one; and conversely, to cut and destroy one tree, either breadfruit or cocoanut, merited death. To destroy many was a declaration of war, and a war of extermination at that, to distinguish it from a war entered in to for honor, glory or profit.

To return to the subject of our story, Kaululaau. He was the son of Kakaalaneo and his queen, Kanikaniaula, who was the first maker of an Ahuula, the famous netted feather capes and cloaks of these islands. Kaululaau should have been the heir apparent to the kingdom, but he was so wild and eccentric that his father declared he had forfeited his rights, and banished him to Lanai, which at that time was inhabited by a race of ogres, gnomes or goblins. The prince, then only ten years old, was stronger than many a full-grown man, but had in most respects the intellect and desires of a child of his age. He slipped out night after night, after everyone was asleep, and wrenched out trees, roots and all, from a certain place he wanted to clear for a playground, so he could indulge in the pastime of ke'a pua—the throwing or slinging of sugar cane blossom arrows,—unobstructed by the branches of the trees.

The king, chiefs and people were very much incensed at the destruction of the trees, and a watch was set to find out what unnatural monster was doing such a wanton act, depriving people of the abundant staff of life their industry and the favor of the gods had provided. When it was found to be his own son, the king, with a prudent regard for the anger of his people, added to his own indignation and sorrow at the destruction of his favorite trees, had no option but to banish the lad to Lanai where he could have the congenial company of goblins and ogres, and could exercise his great strength in fighting out his own salvation with them instead of using it in pulling fruitful trees from the ground.

Kaululaau was accordingly taken over to Lanai on one of his father's double war canoes and landed at Kahalepalaoa. Such was the detestation and horror in which he was held, on account of the wanton destruction of what meant life to many people, that not a servant or retainer would volunteer to share his exile and danger, contrary to the well-known and customary fidelity of Hawaiian nurses, or kahus, to their chiefs and nurslings.

It would take too much space to recount in detail the many battles waged by him with the demons, but suffice to say he came out victorious in all and finally exterminated or reduced to servitude all the goblins and other inhabitants of the island.

When he had reduced the last goblin, or demon to subjection he set them to building a stone wall to enclose a fishpond for him, and to clearing and planting patches of potatoes along the beach, and of upland taro in the mountain ravines, as he has become tired of living exclusively on noni and fish.

The goblins having either disappeared or become subject to Kaululaau, fishermen from Maui, Molokai and Oahu, who frequented the famous fishing banks of Ka-Pali-a-ka-holo to leeward of Lanai, came ashore, were made welcome by Kaululaau and given potatoes, taro, sugar cane and bananas in return for such fish as he needed.

The news of his success in subjecting the supernatural inhabitants of the heretofore dreaded island and of his generosity to fishermen quickly spread through the islands, and on invitation, many fishermen brought their families with them, and located permanently on Lanai, swearing fealty to Kaululaau as the prince.

Tradition has it that he made a wise generous ruler, greatly beloved by his subjects.

Kakaalaneo was the last to hear of the success and reformation of his wayward son, and as soon as he did, yielding to the entreaties of his queen, Kanikaniaula, they sailed to Lanai to pay him a visit. He received his parents with every mark of humility and affection, offering the redeemed island of Lanai as his indemnity to the Maui king and people for the uprooted ulu trees. Lanai from that time became an appendage of Maui. Kaululaau took his place as if a younger prince

---

royal, and steadily refused to return to Maui or to take the sovereignty of the islands at the death of his father.

In 1901, the federal government of the United States of America was engaged in a process of accessing the newly designated Territory of Hawai‘i. A part of the studies undertaken included the “Preliminary Report on an Investigation of the Fishes and Fisheries Of The Hawaiian Islands and Commercial Fisheries of the Hawaiian Islands” By David Starr Jordan and Barton Warren Evermann (1901). The extensive study provides the following passing references to the loko i‘a and fishery resources of Lāna‘i:

#### Fish Ponds.

The most interesting of the fishery resources of the islands are the fish- ponds. This is the only place within the limits of the United States where they are found on such an immense scale and put to such general and beneficent use. The time of the building of many of these ponds goes back into the age of fable... [1901:427] ... There used to be a number of fish ponds of Lanai, but they have all been allowed to fall into decay... [1901:428]

#### The Fisheries of Lanai.

Schools of fishes congregate around the shores of this island, and it is a favorite fishing ground for the fishermen from Lahaina and the eastern portion of Molokai. Only natives were engaged in the fisheries. Seines and lines were the only forms of apparatus in use, but a number of women and children engaged in fishing with their hands. The total investment in the fisheries of the island was \$3,478. The principle species taken in the fisheries were akule, aku, amaama, and ulua. The total catch amounted to 212,628 pounds, valued at \$29,853. The portion of the catch not consumed locally is usually carried to the markets at Lahaina, on Maui.

The products of the seine and line fisheries are almost the same, both in quantity and value. In the line fisheries the aku, ulua, kawakawa, and puhi were the leading species, while in the same fisheries akule, amaama, kumu, and iheihe were most prominent. [1901:471]

#### Survey of the fisheries of Pālāwai Ahupua‘a in 1902

Surveyor, M.D. Monsarrat, who participated in the kingdom surveys of Lāna‘i in 1876- 1878, was engaged to prepare surveys of the fisheries of Lāna‘i in 1902. The survey of Pālāwai includes both the windward and leeward coasts of Pālāwai, with reference to the Waia‘ōpae and Ka‘a fishponds:

#### Description of the Sea Fisheries belonging to Palawai, Island of Lanai.

L.C. Award 10040 [L.C. Award No. 11216] to Kekauonohi.

#### Fishery on the North East Coast.

Commencing at a red wood post at sea shore on the boundary of Paawili and Palawai at a place called Waiaopae about 400 feet South East from Fish pond wall and running:

1. N54o22’Etrue2600feetalong Paawili Sea Fishery,
  2. N40o15’Wtrue9610feet,thence,
  3. S37o09’Wtrue2600feetalong Kaunolu sea fishery toward woodpost at sea shore on boundary of Kaunolu and Palawai at a place called Kaa and about 1400 feet North West of Fish pond wall,
  4. Thence along sea shore and around walls of fish ponds to initial point, the traverse along the shore begin,
    1. S 24o 31’ E true 2888 feet,
-

2. S 27o 21' E true 2549.5 feet,
3. S 50o 25' E true 1770.5 feet,
4. S 33o 50' E true 1727 feet to initial point. Area 459 Acres... [page 1]

M.D. Monsarrat, Surveyor Honolulu.

June 9th, 1902 [page 2]

List of Selected I'a and Limu of the Loko I'a Reef Zone

Limu 'ele'ele (*Enteromorpha intestinalis*)

Limu lepe o Hina (*Halymenia formosa*)

Limu lipoa (*Dictyopteris plagiogramma*)

Limu manauea (*Gracilaria coronopifolia*)

Limu wāwae'iole (*Codium edule*)

Pāpa'i (crabs)

'Āholeholoe (flagtail)

'Ama'ama (mullet)

Awa (milkfish)

Awa 'aua (ladyfish)

Moi (thread fish)

Nehu (anchovy)

'Ōpae (shrimp)

Pūhi (eel)

Uhu (parrotfish)

Weke

Kūmū (goat fish)

List of Plants that Occur Along the Coastal Zone:

'Aki'aki

'Ākulikuli 'Ānapanapa Hala

Hau Hinahina

(*Sporobolus virginicus*) (*Sesuvium protulacastrum*) (*Columbrina asiatica*) (*Pandanus tectorius*)  
(*Hibiscus tiliaceus*) (*Heliotropium anomalum*)

'Iiahialo'e

'Ilima

Kamani

Kauna'oa

Kou

Loulou

Maiapilo / pua pilo Mānewanewa / pōhinahina Ma'ō

Milo

---

Naio

Nama sandwicensis

Naupaka kahakai

Nehe

Nena / kipukai

Niu

Nohu

‘Ōhai

‘Ōhelo kai

Pā‘ūohi‘iaka

Pōhuehue

On Lāna‘i the native forest once extended from the top of Lāna‘i Hale out to the Kānepu‘u region, across Pālāwai basin, and down the slopes towards the eastern and southern shores of the island. All the fresh water on Lāna‘i comes from clouds which have been blown more than 2,000 miles across the Pacific Ocean. The clouds in turn drop rain, or create cloud and fog drip as they move across the mountain slopes. Most of the rain on Lāna‘i is borne upon the trade winds which come from the northeast, though seasonal “kona” (southwesterly) storms also bring rains to the island.

Lāna‘i, which rises approximately 3,370 feet above sea level is at a disadvantage in the island group, as it sits in the rain shadow of Maui. Because of its location, most of the trade wind borne clouds drop their rains upon the higher West Maui mountains. When a healthy native forest existed on Lāna‘i, the windward side of the island attracted the fragmented clouds from Maui, to the mountain slopes of Lāna‘i Hale. It is because of the phenomenon of banks of clouds nestling upon the mountain slopes of Lāna‘i, that the land name Maunalei (Mountain Garland) was given. Ancient Hawaiian residents of Lāna‘i likened the layers of clouds to a lei adornment on the mountain.

The natural native forest of Lāna‘i was uniquely suited to the attraction of clouds. Native tree species formed the canopy which caught rains and fog that passed through them. The understory shrubs and fern beds kept the moisture in the ground, so that most of the water percolated into a subsurface aquifer, rather than running to the sea. Because of its proximity to Maui, Lāna‘i’s forest was considered more a cloud forest than a rain forest, and through the process of fog drip generated by clouds passing through the forest, the rainfall was more than tripled.

Following western contact, ungulates (goats, sheep, European boar, and cattle) were introduced. The native ecosystems, which evolved without hoofed animals were unable to survive the gnawing, trampling and uprooting of the animals, subsequently dying back. By the mid-1800s, the landscape of Lāna‘i was being radically altered. The land was denuded, the clouds stopped passing across the mountains, and the water dried up. The land, unable to sustain adequate agricultural endeavors, was abandoned by many native tenants, and the feral sheep and goat populations soared.

By 1912, George C. Munro and Charles Forbes (naturalist ranchers) developed a program of planting pine trees along Lāna‘i Hale, the source of Lāna‘i’s watershed, and worked to restore vegetation in an effort to draw water laden clouds back to the island. Over the next 50 years, the Hawaiian Pineapple Company supported a program of tree planting and restored some level of health to the island’s watershed and aquifer. Though the forest watershed has regained some

---

vegetation, the aquifer— which once supported one perennial stream on Lāna‘i—remains in a precarious situation. It is estimated that the upper mountain region of Lāna‘i receives approximately 35 inches of rain a year. In the 1950s, measurements were kept of the fog drip, and it was found that one Cook Island Pine Tree could capture as much as 240 gallons of water from clouds passing through its branches, in a 24 hour period. It is now estimated that the clouds and fog passing through the pine trees and other plants of the watershed create the equivalent of more than 200 inches of rain per year.

In order to sustain Lāna‘i’s water resources it is imperative that continued planting of native plant species be undertaken, that the declining Cook Island pines be maintained, and that invasive alien species of plants, and ungulates like axis deer and mouflon be controlled. If not, the water resources of the island will not be able to support the demand for water.

Today the forest zone covers less than 3,500 acres, and the rare and unique native species are fragmented. Only one native honeycreeper, the ‘apapane (*Himatione sanguinea*), is known to have survived. Hundreds of species are now extinct on the island, and the introduction of plants, insects, and birds has led to the continual decline of native populations.

Where once a dynamic forest attracted water rich clouds to the island, vast tracks of exposed soil and grass lands leave the earth warm, causing the moisture to evaporate. Introduced plants, like the strawberry guava, iron wood, Brazilian pepper tree, and eucalyptus form mono- cultures, poisoning the land. The water that does drop from clouds, fog and rain runoff more quickly than that in a healthy multi-layered canopy of the native forest and moisture retaining understory.

While the modest effort to begin to restore the low-lying area around Waia‘ōpae Fishpond may be a very small project, it is a unique one for Lāna‘i in that largely driven by the students that their vision and research. Their data is attached as an appendices to this application.

## **PROPOSED WORK PLAN**

**Please provide a summary of the work that is being proposed under this permit. Please note any use of mechanized equipment.**

The restoration Waia‘ōpae loko i‘a (traditional fishpond system) is part of a Native Hawaiian Education Program led by the Lāna‘i Culture & Heritage Center, a 501(c)(3) organization, in partnership with the land owner, Pūlama Lāna‘i. In the summer of 2014, students on Lāna‘i from grades 6-12 participated in a three week summer program during which they learned about cultural literacy, Hawaiian Language, and conservation sciences. The students learned conservation techniques, including how to measure water quality, soil testing, archaeology methods, and spent the summer collecting data, including historical data from Hawaiian language texts, and thinking about how they can take care of their island environment.

While the original goal was to originally attempt to begin restoration of the Waia‘ōpae Fishpond structure, the students realized that in order to restore the fishpond environment, they need to begin to restore the mauka (mountain side) area first by preventing run off into the pond, which has low oxygen circulation due to high sedimentation in the pond.

The proposal is to begin restoring the pond in a phased approach. One step will remove the kiawe trees (*Prosopis pallida*) between the access road and the shoreline of fishpond to begin restoration

---

of the fishpond system (loko i'a) so less soil runs off into the pond during the rainy season. They would replace the kiawe trees with native plants like naupaka (*Scaevola sericea*), 'ilima (*Sida fallax*), pohuehue, (*Ipomoea pes-caprea*), kauna'oa (*Cuscuta sandwichiana*) and others.

The kiawe would be placed in bundles within 5-8 feet of the mauka side of the county road. No machinery would be used. All work would be done by hand and shall constitute "clearing" as defined by HAR Chapter 13-5-2 as no ground disturbing is anticipated beyond that normally expected in the hand-removal of invasive kiawe.

All activities will be limited to maintenance work and the removal of invasive species and replanting of native species for the purpose of restoration and conservation activities. Some minor maintenance of the fishpond wall will occur. All activities will conform to the conditions of the Hō'ala Loko I'a FEA/FONSI and Master CDUP.

Activities would be limited to three general categories of activities:

- Removal of invasive species and planting of native species for the purpose of restoration of conservation lands and resources
- Restoration of the Waia'ōpae loko i'a for the purpose of traditional Hawaiian cultural uses and ecosystem services
- Minor research and education activities that shall not result in any adverse environmental disturbances or impacts (i.e., coring or dredging) but shall exceed one acre in activity area and shall take place in a conservation district (under the authority of the Department of Land and Natural Resources) and shall take place in the special management area (under the authority of the County of Maui)

## **PROPOSED OPERATIONS PLAN**

**Please discuss what species you intend to raise in the pond, and your proposed methods of stocking, raising, and harvesting these species.**

There are no operations plan at this time.

---

## CONSISTENCY WITH HO‘ALA LOKO I‘A PROGRAM

**Please discuss how this proposal is consistent with Conservation District Use Permit (CDUP) ST-3703 (available online at [dlnr.hawaii.gov/special-projects](http://dlnr.hawaii.gov/special-projects)) and which tier-level the project falls under.**

Lāna‘i Culture & Heritage Center is seeking a tier one permit for the manual repair of the fishpond walls and manual removal of sedimentation from the internal of the pond area. The base of the kuapā is intact and all rocks are on sight. No new material will be used and only rocks from within the pond area will be used to restore the wall. There will be expansion of the wall's original footprint.

It should be noted that LC&HC has coordinate with DLNR Land Division for right of entry into the pond.

## BEST MANAGEMENT PRACTICES

**Please discuss the BMPs that will be followed to protect both the environment and the integrity of the pond (users' guide forthcoming).**

1. Only rocks and materials from on sight will be used in wall reconstruction. No new materials will be used.
  2. No mechanized equipment will be used. All activities will be conducted by hand or hand tools.
  3. Environmental monitoring will be followed to check daily for protected species, even though no protected species have been seen in the area.
  4. Cultural and archaeological monitors will be on site during activities and students and workers will orientations about the historical and cultural significance of the pond and area. All historic preservation regulations will be strictly adhered to.
  5. Water quality will be monitored for sediment plumes.
-

## CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

---

*Signature of authorized agent(s) or if no agent, signature of applicant*

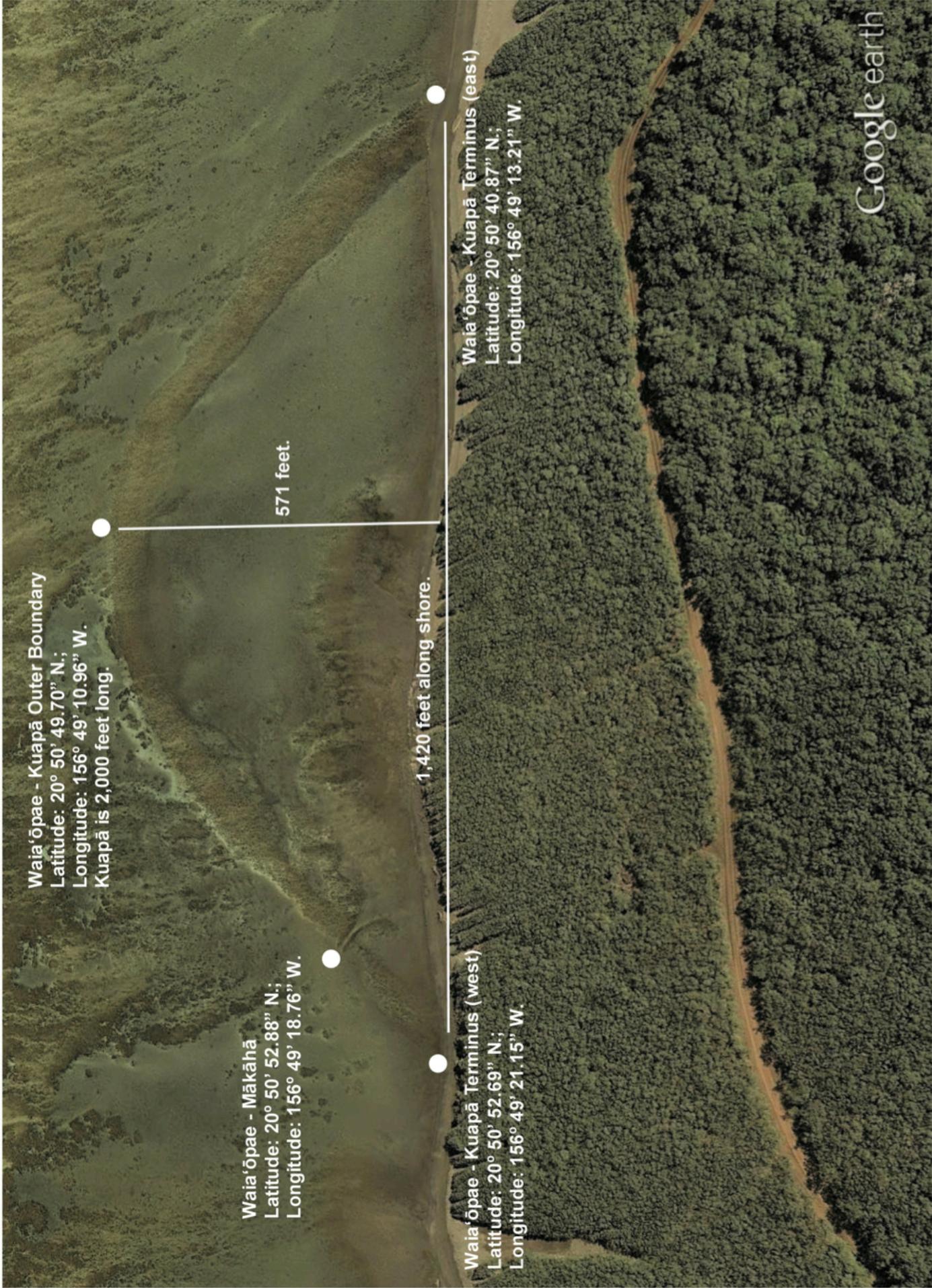
### AUTHORIZATION OF AGENT

I hereby authorize \_\_\_\_\_ to act as my representative and to bind me in all matters concerning this application.

---

---

*Signature of applicant(s)*



Waia'ōpae - Kuapā Outer Boundary  
Latitude: 20° 50' 49.70" N.;  
Longitude: 156° 49' 10.96" W.  
Kuapā is 2,000 feet long.

Waia'ōpae - Mākāhā  
Latitude: 20° 50' 52.88" N.;  
Longitude: 156° 49' 18.76" W.

571 feet.

1,420 feet along shore.

Waia'ōpae - Kuapā Terminus (west)  
Latitude: 20° 50' 52.69" N.;  
Longitude: 156° 49' 21.15" W.

Waia'ōpae - Kuapā Terminus (east)  
Latitude: 20° 50' 40.87" N.;  
Longitude: 156° 49' 13.21" W.

Google earth

Google earth

