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BOATING AND OCEAN RECREATION
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

ref:OCCL:MC

File No: Loko I'a: HA-18-04

JUN 2 2 2018

Lucas Meade
Kamehameha Schools
1650 Kalaniana'ole Ave.
Hilo, Hawai'i 96720

Dear Mr. Meade,

SUBJECT: LOKO I'A PERMIT HA-18-04: KAPALOHO, WAIĀHOLE, AND WAI'OPIO (NĀ LOKO)
Honohonunui, Waiākea, South Hilo, Hawai'i
TMK (3) 2-1-015:001, 056, and 146

The Office of Conservation and Coastal Lands (OCCL) has reviewed the information you sent regarding repair and maintenance, and operation of Waiāhole, Kapaloho, and Wai'opio fishponds on the above subject parcels. The three ponds, collectively known as nā loko, encompass approximately ten acres of mixed open water, wetland, and low elevation dry lands. Nā loko are in the Resource Subzone of the State Land Use Conservation District.

The ponds are part of the `ili kūpono of Honohononui, which Princess Ruth Luka Keanolani Kauanahoahoa Ke'elikōlani willed to to Princess Bernice Pauahi Bishop. Today the lands are stewarded by the Kamehameha Schools Bishop Estate in execution of her will. The lands were leased to private families from 1959 to 1990, and to a commercial operation between 1990 and 2010. In 2010 Kamehameha Schools took control of the lease, and after consultation with the Kaukaha community decided to return the site to a functioning loko i'a system.

The ponds are fed by spring water from multiple sources, and one study has estimated a freshwater output of twelve to fifteen million gallons of water per day. The ponds are connected through a network of subterranean passages and above ground 'auwai, with a single ocean entry via a mākāhā and a culvert that runs under Kalaniana'ole Highway.

The area is currently overgrown with California grass and a mixture of native and introduced wetland plants and shrubbery. The invasive vegetation has choked off the freshwater supply, and there is one to two meters of organic debris that has accumulated. This has impacted the pond health by increasing the relative temperature, increasing the turbidity, and lowering the levels of dissolved oxygen.

Best management practices for actions proposed at na loko include:

- No use of mechanized equipment in the vicinity of nā loko that could introduce oil, gas, or other chemicals into nā loko;
- No use of mechanized equipment in the vicinity of nā loko that could damage lands or walls surrounding nā loko;
- No use of equipment that could introduce additional non-native invasive species to the site;
- Any rebuild of walls will use pōhaku on-site or those recovered from within nā loko;
- Any rebuild of walls will take place with guidance from nā kia'i loko who understand the cultural and environmental sensitivities of nā loko through participation in Hui Malama Loko I'a and consultation with other practitioners in east Hawai'i;
- No use of chemicals within or proximal to nā loko;
- Daily kilo (observations) to look for signs of emerging problems at nā loko;
- Monitoring for any threatened or endangered native species within or within the vicinity of nā loko and stopping any work in the area that may disturb the species; and
- Weekly sampling of abiotic parameters at nā loko to include temperature, percent dissolved oxygen saturation, oxygen concentration, and conductivity (salinity) to establish a baseline and monitor for change.

After reviewing the application, the Department finds that

1. The plan to restore and return to operation the loko i'a system comprising Kapaloho, Waiāhole, and Wai'opio ponds at Honohonunui, Waiākea, South Hilo, Hawai'i, TMK (3) 2-1-015:001, 056, and 146, 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 State Department of Health water quality certifications are waived pursuant to Hawai'i Revised Statutes (HRS) Chapter 342D WATER POLLUTION §6.5 Hawaiian loko i'a (b) *The department shall waive the requirement to obtain water quality certification under this chapter for any person that has received notice of authorization to proceed from the Department of Land and Natural Resources Office of Conservation and Coastal Lands under the statewide programmatic general permit for the restoration, repair, maintenance, and operation of loko i'a*; and

11. The permittee will continue to follow the Best Management Practices as described in the current application;
12. Other terms and conditions as prescribed by the chairperson;
13. 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: BLNR Chair; Hawai'i County Planning

HA-18-04

HO'ALA LOKO I'A APPLICATION

FISHPOND NAME: Kapalaho/Waiāhole

APPLICANT NAME: Kamehameha Schools

Pond location: Honohononui

Nearest Tax Map Key(s): (3) 2-1-015:001, 056 (por), (3) 2-1-013:146 (por)

Ahupua`a: Waiākea District: Hilo

Island: Hawai'i

Commencement Date: Completion Date:

Wall length: Pond surface area:

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: Kamehameha Schools
Street Address: 895 Kauhiula Rd
Hilo, Hawai'i 96720
Contact Person & Title: Leanne Okamoto, Land Asset Manager
Phone: 808-982-0839
Email: leokamot@ksbe.edu
Interest in Property: Property is owned by Kamehameha Schools / B P Bishop Estate Trust

Signature: **Date: 5/23/2018**
Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

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Landowner (if different than the applicant)

Name: Same as applicant.
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: Kamehameha Schools
Contact Person & Title: Lucas Mead, Director
Mailing Address: 1650 Kalaniana'ole Ave
Hilo, Hawai'i 96720
Phone: 808-931-0105 / 808-896-4039
Email: lumead@ksbe.ecu

Signature: **Date: 5/23/2018**

For DLNR Managed Lands

State of Hawai`i
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.

Waiāhole, Kapalaho, and Wai'opio (collectively nā loko) are low salinity (~3 ppt) loko kuapā / loko kāheka located on Hawai'i Island, within the moku of Hilo, ahupua'a of Waiākea, and the 'ili kūpono of Honohononui (see aerial photographs in Exibit 1 and State Land Use Designation in Exhibit 2). Nā loko encompass approximately 10 acres of mixed open water, wetland, and low elevation dry lands. Currently, nā loko are heavily overgrown with California grass and a mixture of native and non-native wetland plants and shrubbery. These three loko are but a few of the many loko and loko i'a in the Keaukaha area. Since 2015, Kamehameha Schools has been working with the community on removing the invasive grass from within the ponds and cleaning the 'auwai, mākāhā, and pond walls to restore their historic flow and functionality.

Nā loko are spring-fed from multiple sources within the ponds; preliminary measurements have estimated the output of freshwater from these springs into nā loko at around 12-20 million gallons per day as measured through the 'auwai. All of the ponds have subterranean and 'auwai connections to one another; all ponds share a single ocean connection via a culvert and mākāhā located on the north side of Kapalaho that runs underneath Kalaniana'ole Highway.

The benthic environment within nā loko is related to each pond's level of impact by California grass and its exposure to a steady supply of moving water. The benthos in areas not heavily impacted by California grass and exposed to a steady flow of water are generally shallow (<4m) hard-bottom basalt, coated in a thin layer of algae; dissolved oxygen saturation in these areas are high (generally 90-100%) with cool water temperatures (~19 C) and low turbidity. The benthic environment in areas of nā loko that are heavily impacted by California grass and have been choked off from steady moving water are characterized by heavy organic sediment accumulation up to 1-2m deep in places, lower dissolved oxygen saturation (~50%), higher relative temperatures, and higher overall turbidity.

Nā loko and the surrounding loko i'a of Keaukaha are host to many species of flora and fauna, a few of which are listed as threatened in terms of their conservation status. Native avifauna include the 'io (Buteo solitarius), 'auku'u (Nycticorax nycticorax), nēnē (Branda sandvicensis), and 'alae kea (Fulica alai), which overfly or occasionally use the property but have yet to establish a permanent presence at the site. Non-native avifauna include ducks, cattle egrets, myna birds, doves, and various introduced finch species. All observed mammal species on the property (mongoose, rats, mice, et al.) are non-native and to the extent possible are discouraged from taking up residence. Flora at the site consists largely of invasive California grass within and immediately surrounding the loko. Vegetation outside of the ponds consist of a mix of native, Polynesian introduced, and non-native invasive grasses, shrubs and trees. Common native and Polynesian introduced flora include pūhala (Pandanus tectorius), milo (Thespesia populnea), hau (Hibiscus tiliaceus), naupaka (Scaevola spp.), kukui (Aleurites moluccanus), niu (Cocos nucifera), 'aka'akai (Schoenoplectus tabernaemontani), nānaku (Scirpus validus), and 'ae'ae (Bacopa monnieri). No endangered or threatened flora species have been documented on site, however two individual nuku i'iwi (Strongylodon rubra) were identified on site in 2013 as part of a floral survey of the property; these vines were given special note as they are not necessarily a common species. Ubiquitous non-native flora include California and other grasses, Chinese banyan, ironwood, bingabing, autograph plant, gunpowder tree, guava, Christmas berry, and the like.

History of the Loko I'a

Nā loko of Waiāhole, Kapalaho, and Wai'opio are within the 'ili kūpono of Honohononui, in the ahupua'a of Waiākea. During the Māhele 'Āina, Honohononui was granted to Mataio Kekū'anao'a and his daughter Crown Princess Victoria Kamāmalu Ka'ahumanu, the granddaughter of Kamehameha I, under Land Commission Award 7713, 'āpana 15, Royal Patent Grant 4475. Upon the passing of Crown Princess Victoria Kamāmalu Ka'ahumanu in 1866, Honohononui was passed to her half-sister Princess Ruth Luka Keanolani Kauanahoahoa Ke'elikōlani. Princess Ruth Ke'eleikōlani in turn willed the lands to Princess Bernice Pauahi Bishop, whose lands are today stewarded by the Kamehameha Schools Bishop Estate in execution of her will.

Kamehameha Schools Bishop Estate leased nā loko to various companies and individuals since their tenure as stewards of the lands of Honohononui. In 1907, lease documents to Lucas and Guard indicate that Kauhane Kanekoa and the Kanekoa 'ohana were living on the lands as kia'i (caretakers) of Waiāhole and the loko i'a of Hale o Lono, which is located immediately makai of Waiāhole and is currently separated from Waiāhole by Kalaniana'ole Highway. Upon the passing of Mr. Kanekoa, his daughter, Waiolina Kanekoa, who married Johan Ho'ā, lived in Honohononui. Their daughter, Victoria Ho'ā, and her husband Francis Ahn, moved to Waiāhole after the tsunami of 1946 and built the house that currently stands along the banks of Waiāhole and Kapalaho in 1953. They formally leased the lands from Kamehameha Schools Bishop Estate in 1959 and were stewards of the lands until 1990. From 1990 to 2010, the ponds were leased for commercial operation to include the cultivation of 'ama'ama, āhole, trout, and watercress. Kamehameha Schools took control of the lease in 2010, and after consultation with the Keaukaha community and various stakeholders, a decision was made to restore the site to functioning loko i'a.

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 rehabilitation plan for nā loko and the surrounding 'āina consists of invasive vegetation removal, sediment removal, minor repair to loko i'a walls, reestablishment of the surrounding mala, invasive fish removal, food production, native plant propagation and outplanting, and environmental monitoring. Vegetation removal from within the pond will extend to the historic boundaries of the nā loko as identified by the uncovered historic walls. All actions on site will be coordinated by Kamehameha Schools to ensure adherence to a coordinated plan for stewardship.

All of the proposed actions that concern work to the loko i'a walls, 'auwai, and mākāhā are guided through our consultation with and participation in the Hui Mālama Loko I'a network and a smaller network of local practitioners in east Hawai'i. As nā loko are separated from the ocean by a highway, they are not subject to the intense energy of the surf and therefore the perimeter walls and existing structures remain largely intact, but buried beneath layers of invasive grasses. As much of the infrastructure remains, the proposed work does not include importation of pōhaku from other areas for reconstruction, but will instead use the materials on site to make minor repairs as needed. All work is supervised by kia'i that are guided by best practices in cultural and environmental stewardship.

All work to date has been done by hand and all organic materials are mulched on site and used in

the mala (gardens) that surround the ponds. Mechanized equipment will be limited to the use of lawnmowers, weedeaters, wood/brush chippers, and a sediment pump for removal of fine sediments from the pond bottoms. Any proposed improvements on the agriculturally zoned portion of the property that surrounds the pond will be subject to County of Hawai'i review and permitting processes.

A site plan for proposed work has been included as Exhibit 3.

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.

Currently nā loko contain naturally recruited 'ama'ama (Mugil cephalus), āhole (Kuhlia xenura), awa (Chanos chanos), 'o'opu naniha (Stenogobius hawaiiensis), and 'o'opu 'akupa (Eleotris sandwicensis), all of which are indigenous or endemic. Non-native fish within the pond include triploid sterile grass carp (Ctenopharyngodon idella), Mozambique tilapia (Oreochromis mossambicus), blackchin tilapia (Sarotherodon melanotheron), Mexican mollies (Poecillia spp.), and Marquesian mullet (Moolgarda engeli). All non-native species in nā loko are well established. Both tilapia genus and the mollies are able to complete their life cycles within nā loko; the Marquesan mullet naturally recruits as young from the marine environment into nā loko through the mākāhā, but must return to higher salinity waters in order to reproduce. The grass carp are sterile and without introduction of outside stock, the ponds' population will eventually be reduced to zero.

I'a (fish) species that we intend to raise in the ponds are limited to the naturally recruiting native species identified above. There are ongoing efforts to remove the non-native predatory species of tilapia within nā loko to reduce predation rates on the desired native recruits. If removal techniques are unsuccessful, we may explore using sub-enclosures within nā loko to protect young recruits until they are large enough where predation no longer poses a significant risk to their survival. We may also explore purchase of 'ama'ama pua if natural recruitment densities within nā loko are lower than can be supported by nā loko. In conjunction with our educators, we are exploring uses for the non-native invasive mollies as a potential sustainable fertilizer product as their populations are substantial and total removal of this species with the techniques available to us is not realistic at this time. The grass carp serve a function to help manage the grass within and along the banks of nā loko; as they are sterile and non-predatory, removal of these fish is not a priority at this time.

Harvesting of target species of i'a within nā loko will be conducted by traditional capture within the mākāhā system as well as by throw-net or spear. These techniques provide us the most discretion in our selection of individuals for harvest. Non-native fish are harvested by hook and line, throw-net, dip-net, and spear.

To supplement fish production within nā loko, we will also explore the growing of aquatic, semi-aquatic, and terrestrial food-plant species. Native and Polynesian introduced species that we will explore for production include 'ae'ae (Lycium sandwicense), various kalo varieties (Colocasia esculenta), 'uala (Ipomoea batatas), and possibly some low-salinity tolerant limu. Non-native species may include watercress, lettuce, and other moderately salt-tolerant non-invasives that may be suitable for aquaponics-style production at the site. A small nursery for native non-food plants will be set up to aid in restoration efforts.

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) **and which tier-level the project falls under.**

The project's proposed actions fall largely under the actions identified as routine maintenance activities and activities listed under Tier 1 of Conservation District Use Permit (CDUP) ST-3703. The project's proposed actions include: basic data collection; stocking and harvesting with traditional methods; removal of invasive species; minor repair, maintenance, and operation to an existing structure, facility, use, land, and equipment; basic land management, including routine weed control, clearing of understory, and tree pruning, utilizing chemical and mechanical control methods that involve no grubbing or grading; planting of native and endemic plants and fence maintenance; replacement of small wall sections; replacement of individual rocks or other wall materials; minor dredging by non-mechanized means; non-routine maintenance of vegetation; construction or placement of minor structures (not to exceed 600 square feet) that are accessory to the maintenance and operation of nā loko, and; removal of alien species (e.g. California grass, bingabing, gunpowder, banyan, Mexican mollies, tilapia, Marquesan mullet, et al.) in an area greater than one acre.

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).

Best management practices for actions proposed at nā loko include:

-No use of mechanized equipment in the vicinity of nā loko that could introduce oil, gas, or other chemicals into nā loko.

-No use of mechanized equipment in the vicinity of nā loko that could damage lands or walls surrounding nā loko.

-No use of equipment that could introduce additional non-native invasive species to the site.

-Any rebuild of walls will use pōhaku on-site or those recovered from within nā loko.

-Any rebuild of walls will take place with guidance from nā kia'i loko who understand the cultural and environmental sensitivities of nā loko through participation in Hui Mālama Loko I'a and consultation with other practitioners in east Hawai'i.

-No use of chemicals within or proximal to nā loko.

-Daily kilo (observations) to look for signs of emerging problems at nā loko.

-Monitoring for any threatened or endangered native species within or within the vicinity of nā loko and stopping any work in the area that may disturb the species.

-Weekly sampling of abiotic parameters at nā loko to include temperature, percent dissolved oxygen saturation, oxygen concentration, and conductivity (salinity) to establish a baseline and monitor for change.

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 Lucas Mead to act as my representative and to bind me in all matters concerning this application.

Signature of applicant(s)

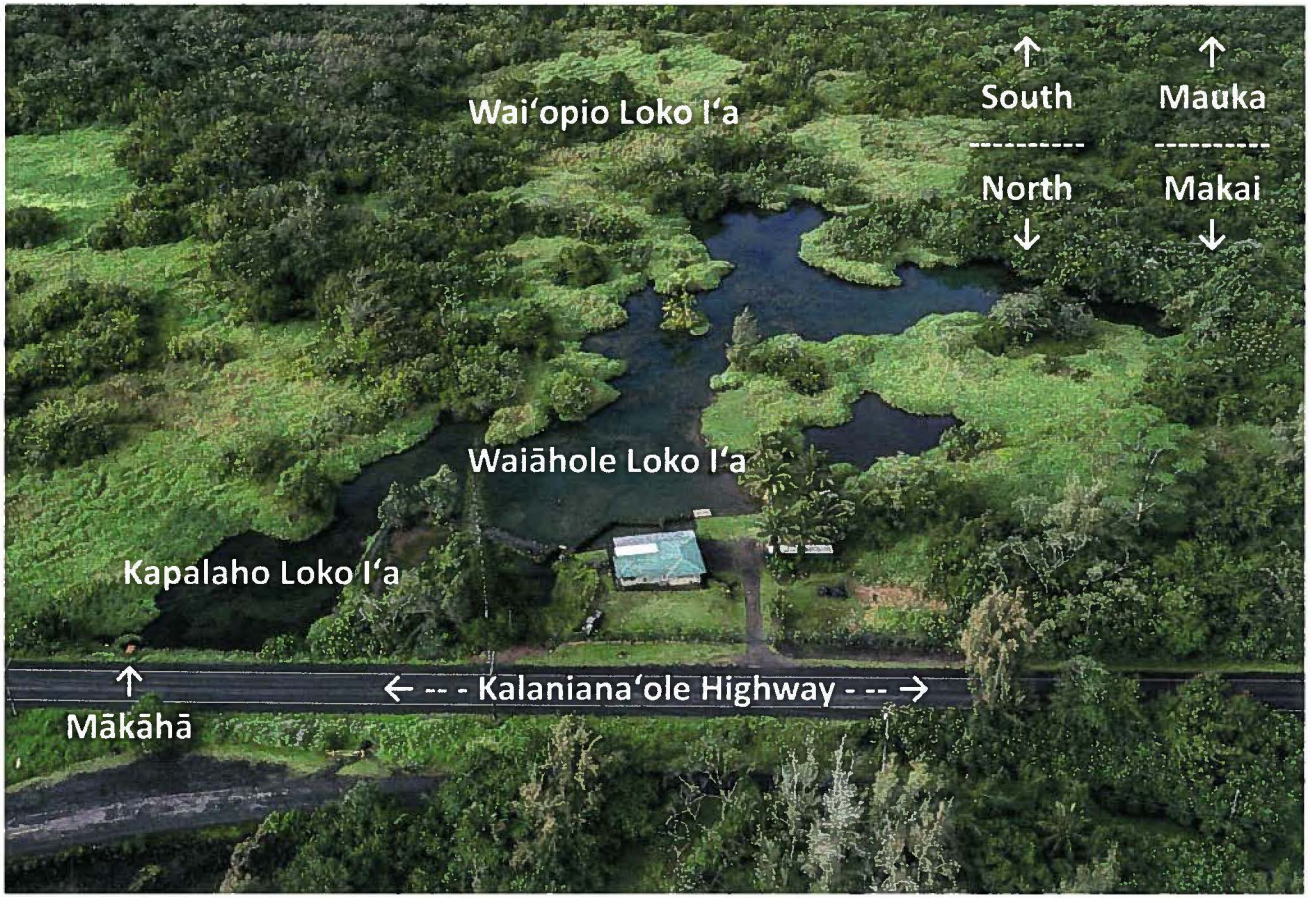

Exhibit 1: Aerial view of the Loko I'a of Waiāhole, Kapalaho, and Wai'opio. Honohononui, Waiākea, Hilo, Hawai'i.

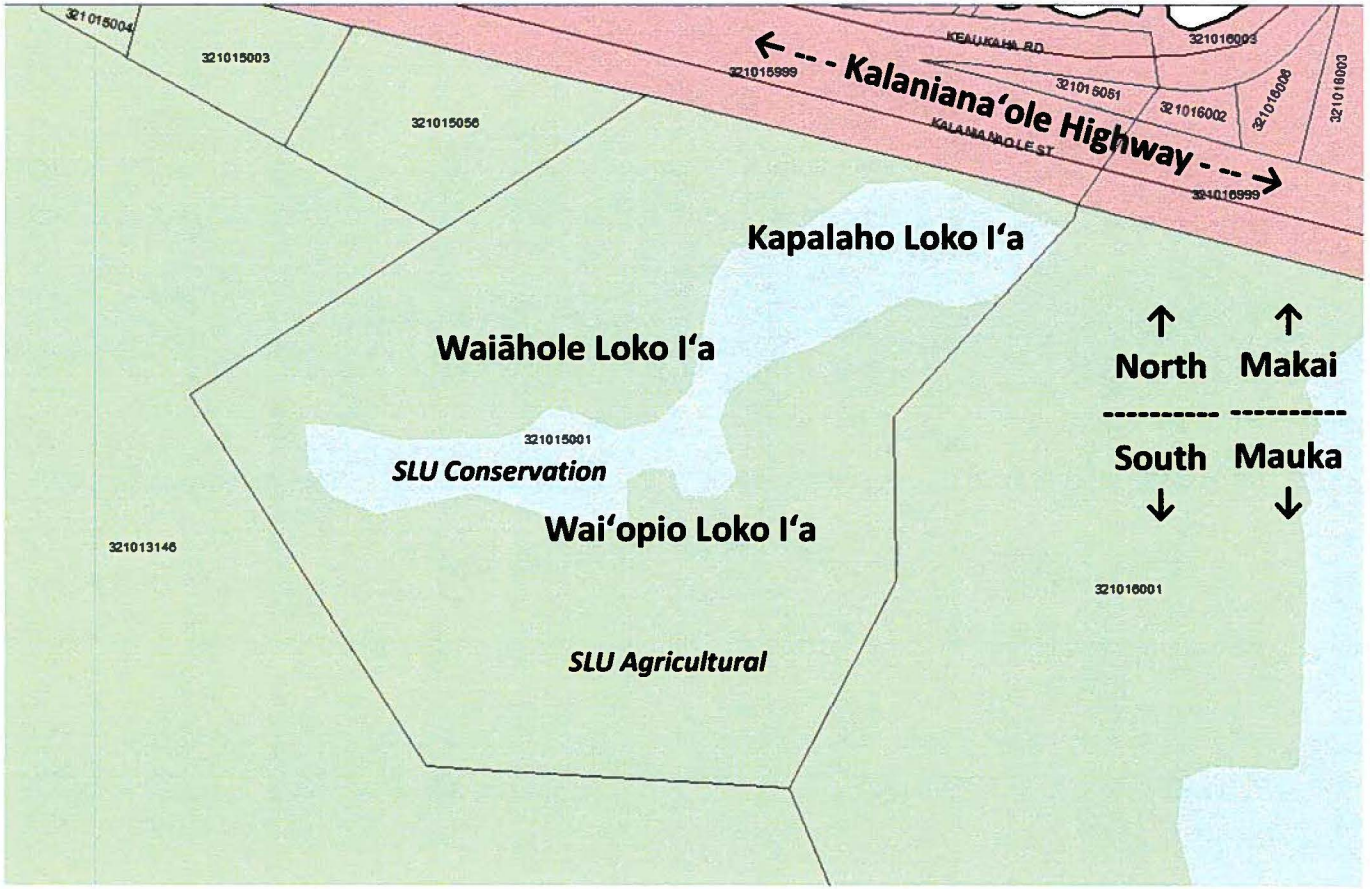

Exhibit 2: State Land Use designations within TMK: (3) 2-1-015:001. Waiāhole, Kapalaho, and Wai'opio Loko I'a. Honohononui, Waiākea, Hilo, Hawai'i.

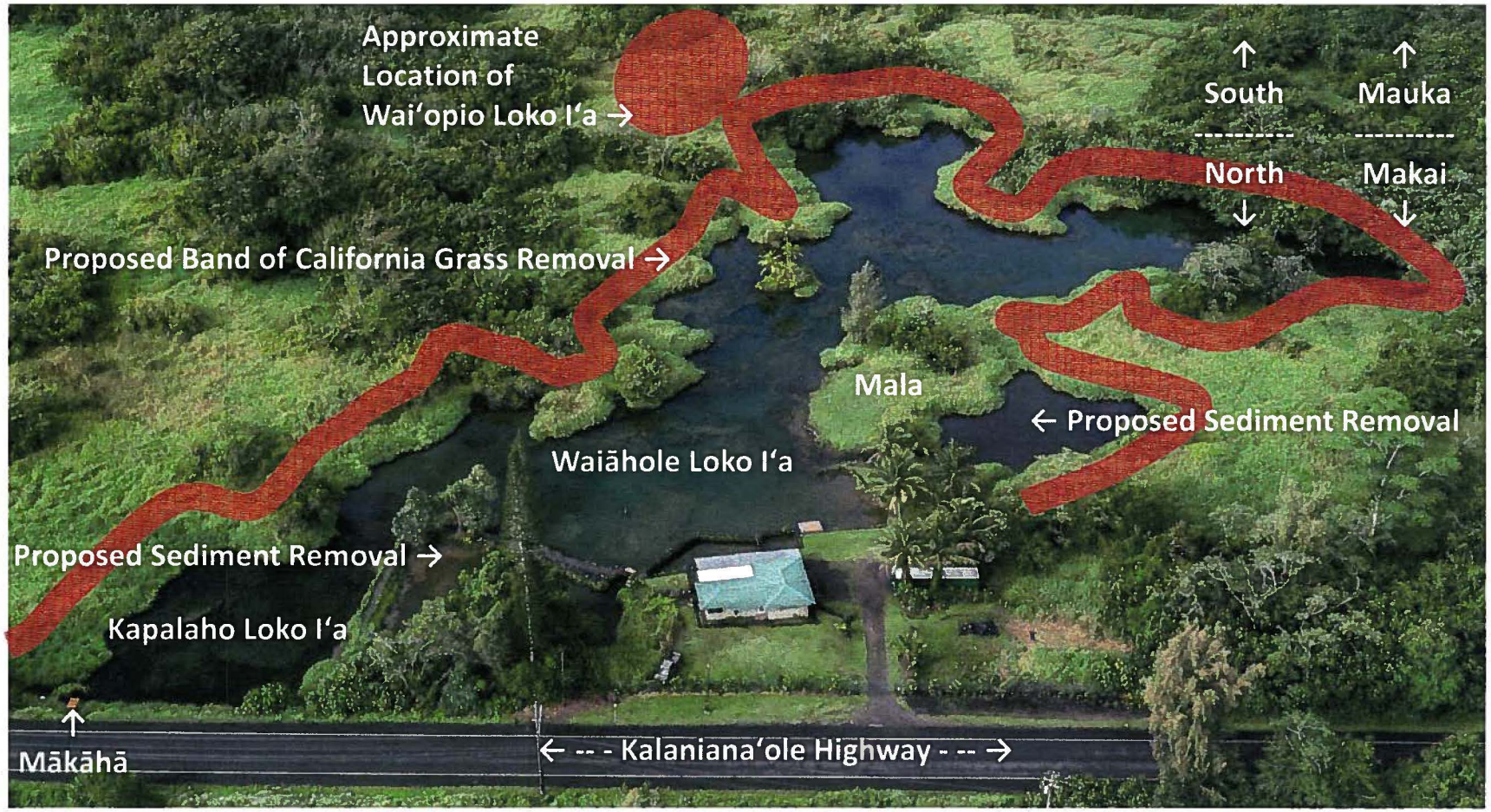

Exhibit 3: Proposed work plan for the Loko I'a of Waiāhole, Kapalaho, and Wai'opio. Honohononui, Waiākea, Hilo, Hawai'i.