SOLURI MESERVE
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June 13, 2022

SENT VIA EMAIL & U.S. MAIL
(Martha_Williams@fws.gov, feedback@ios.doi.gov)

Martha Williams, Director
U.S. Fish and Wildlife Service
U.S. Department of the Interior
1849 C Street, NW
Washington, DC 20240

Deb Haaland, Secretary
U.S. Department of the Interior
1849 C Street, N.W., MS 5311
Washington, DC 20240

RE: Notice of Intent to Sue for Failure to Protect ESA-listed Species by Failing to Adequately Provide and Enforce Development Conditions, Allowing Apparent Section 9 Violations, and Failing to Require Section 10 Take Authorization for the Kauanoe o Koloa Subdivision (Kaua'i cave wolf spider or pee pee maka ole, and Kaua'i cave amphipod) 16 U.S.C. § 1540(g)(2)

Dear Director Williams and Secretary Haaland:

This letter serves as the Save Koloa's and Friends of Māhā'Ulepū's sixty-day notice of intent to sue the U.S. Fish and Wildlife Service ("Service") over violations of Section 4 of the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531 et seq. and 1540(g)(2). Notice of violation of the ESA was previously provided in Save Koloa's letter dated September 30, 2021. (See *Klamath-Siskiyou Wildlands Center v. MacWhorter* (9th Cir. 2015) 797 F.3d 645.)

Save Koloa identified impacts under the ESA to the mesocavern habitat of the endangered Kaua'i cave wolf spider or pee pee maka ole, and endangered Kaua'i cave amphipod from the ongoing development activities at the Kauanoe o Koloa Subdivision. The system of underground passages on the proposed condo site is recognized as one of the 10 most endangered cave ecosystems in the world (Tongvig and Mylroie, in litt. 1998; Belson 1999). We assert that the County and developer have failed to implement

the Service avoidance measures, and the Service has failed to apply the law under Section 9 and failed to require a Section 10 Consultation.

As of late May 2022, the developer had started to use explosives to break up the lava flows and broken into a mesocavern. This development is surrounded by the last refugia for these rare cave species. The destruction of these caves and the expressed intention to destroy any remnants of it and any other mesocaverns on the property is likely to lead to "take" of these species, and will also cause direct and indirect effects on the adjacent marked mesocavern located on Critical Habitat. (See Exhibit A,Visual Evidence of Damage to Listed Species Habitat.)

The development, Kauanoe o Koloa, is located in the Koloa District, County of Kaua'i, the Island of Kaua'i, at the intersection of Kiahuna Plantation Drive, and Pa'u A Laka Street; Tax Map Key (4) 2-8-014:032 and (4) 2-8-014:041. (See Exhibit B, Kauanoe o Koloa development (a.k.a. Yellow Hale Subdivision) Maps and Related Pictures and Figures.)

Disturbance of the site includes blading a new road throughout the site for what appeared to be geotechnical borings, disturbing the native soil and rocks, clearing vegetation, and the widespread use of herbicides. The activities all preceded any clearance of the site for the County-required biological surveys as part of the project development. The current activities also include blasting through the lava flows, which is how the first mesocavern became fully exposed.

The recommendations in the Service's October 27, 2021 letter "Technical Assistance Regarding Proposed Yellow Hale Subdivision, Po'ipu, Kaua'i" 1EPIF00-2022-TA-0024 ("2021 TA letter") are not being followed. (See Exhibit C.) (Project since has been renamed Kauanoe o Koloa.)

In addition, the Service's Technical Assistance Letter to the State of Hawai'i Office of Planning, dated March 24, 2014, "recommend[ed] that KMP applies for an incidental take permit, because development of the area could result in take of listed species. As part of the incidental take permit [ITP] process, KMP will need to develop a habitat conservation plan (HCP)." (See Exhibit D.) These recommendations are also not being followed.

In both 2014 and 2021, the Service established a series of recommendations for the developer to avoid impacts to these species. These are summarized below. Save Koloa's September 30, 2021 comment letter on the 5-year Status Review ("2021 Save Kola Comment Letter") (Exhibit E) established through direct observation of the

immediately adjacent Critical Habitat associated with the golf course that some conditions required for that development were not being followed. Those impacts were identified, along with the likelihood of direct impacts to those species within the development site, and indirect impacts to the adjacent Critical Habitat to the development.

Independent verification of ground disturbing activities that are likely to lead to take at the Proposed Yellow Hale Subdivision was previously provided by the developer's consultant, Tetra Tech (Tetra Tech Draft Biological Resources Survey for Kauanoe o Koloa Project Report Prepared for: Meridian Pacific, LTD, December 2021 ["Tetra Tech 2021"], p. 14.) (See Exhibit F attached.) Tetra Tech advised the developer to:

> Establish a wildlife education and observation program for all construction and operational personnel. Staff should be trained about the presence of listed species on-site and in the vicinity. The program should help staff identify listed wildlife that may be found on-site and their suitable habitat (including listed waterbirds, the Hawaiian goose, listed seabirds, and caves for listed cave invertebrates) and to take appropriate steps if listed wildlife species or caves are found.
>
> *5.2.5 Listed Cave Invertebrates*
>
> Tetra Tech recommends the following based on USFWS' (2019) avoidance and minimization measures for the Kaua'i cave wolf spider and Kaua'i cave amphipod:
>
> - Prior to ground disturbance, contract a qualified biologist to survey the Project Area for depth of soil deposits and the presence of caves. Any areas with soil deposits greater than 12 inches (305 millimeters) are not likely to provide appropriate habitat or have the species present.
>
> - If caves or areas with soil deposits less than 12 inches are found, contact USFWS and DOFAW and do not disturb the vegetation or soil in the area.
>
> - If a cave is found during construction, stop work around the cave immediately and contact USFWS and DOFAW immediately for guidance to minimize and mitigate adverse effects. Work should

only continue upon implementation of the guidelines or actions developed during consultation with USFWS and DOFAW.

As Save Koloa has identified, and Tetra Tech has verified, the site is being actively disturbed; that disturbance includes mechanical, herbicide, and explosive destruction of areas with mesocaverns, and shallow or no soils. The Tetra Tech report advised that the developer should notify USFWS and DOFAW; there is no evidence this notification has occurred. According to the 2014 and 2021 TA letters, if the applicant is not applying the avoidance measures, a Section 10 consultation must be undertaken and an ITP is required.

This is an ongoing injury and the threat is continuing, and the Service has not demonstrated its affirmative duty to protect these endangered species despite apparent take and risk to Critical Habitat being repeatedly brought to its attention.

Very truly yours,

SOLURI MESERVE
A Law Corporation

By: Osha R. Meserve

Attachments:

Exhibit A — Visual Evidence of Damage to Listed Species Habitat

Exhibit B — Kauanoe o Koloa development (a.k.a. Yellow Hale Subdivision) Maps and Related Pictures and Figures

Exhibit C — Technical Assistance Regarding Proposed Yellow Hale Subdivision, Po'ipu, Kaua'i" 1EPIF00-2022-TA-0024, October 27, 2021

Exhibit D — Technical Assistance Letter from Pacific Islands Fish and Wildlife Office to State of Hawai'i Office of Planning, March 24, 2014

Exhibit E SaveKoloa Comments on 5-Year Status Reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada (Kauai cave wolf spider or pee pee maka ole, and Kauai cave amphipod), September 30, 2021

Exhibit F Tetra Tech Draft Biological Resources Survey for Kauanoe o Koloa Project Report Prepared for: Meridian Pacific, LTD, December 2021

cc: Aaron Nadig (aaron_nadig@fws.gov)
Manisa Kung (manisa_kung@fws.gov)
Jennifer Roth (jennifer_roth@fws.gov)
Ivan Vicente (ivan_vicente@fws.com)
Save Koloa (helpsavekoloa@gmail.com)
Friends of Maha`ulepu (kiaiwaialeale@gmail.com)
Peter Morimoto (pmmorimoto@gmail.com)
Sierra Club Hawaii (Oahu), Wayne Tanaka (hawaii.chapter@sierraclub.org)
Sierra Club Kauai, Judy Dalton and Rayne Regush (judydalton123@gmail.com; rayneregush@aol.com)
Center for Biological Diversity, Maxx Phillips (mphillips@biologicaldiversity.org, center@biologicaldiversity.org)
Doug Carstens, Chatten-Brown, Carstens & Minteer LLP (dpc@cbcearthlaw.com)

EXHIBIT A

Visual Evidence of Damage to Listed Species Habitat

Lave Tube-Cave Unroofed Leaving Deep Hole After Blast May 31, 2022 4:00 p.m.

Blasting 5/31 creates new opening to cave/lava tube
https://www.youtube.com/watch?v=x6s6yckmvus

May 22, 2022

May 24, 2022

May 29, 2022

Construction workers gather near exposed cave/lave tube, seen kicking rock into the exposed opening likely trying to determine depth.
https://www.youtube.com/watch?v=YqlYjkaIoQo

Video Closeup of Cave Opening
https://www.youtube.com/watch?v=e2A0H4PZmoc

Heavy Grading Without Prior Biologic or Archaeologic Review parcel covered by vegetation more than 6 feet in height when last seen by any archaeologist.
https://www.youtube.com/watch?v=oTd9BJExAIM

Save Koloa YouTube channel

EXHIBIT B

Kauanoe o Koloa development (a.k.a. Yellow Hale Subdivision) Maps and Related Pictures and Figures

Figure 1. Site Location (Critical Habitat in red)

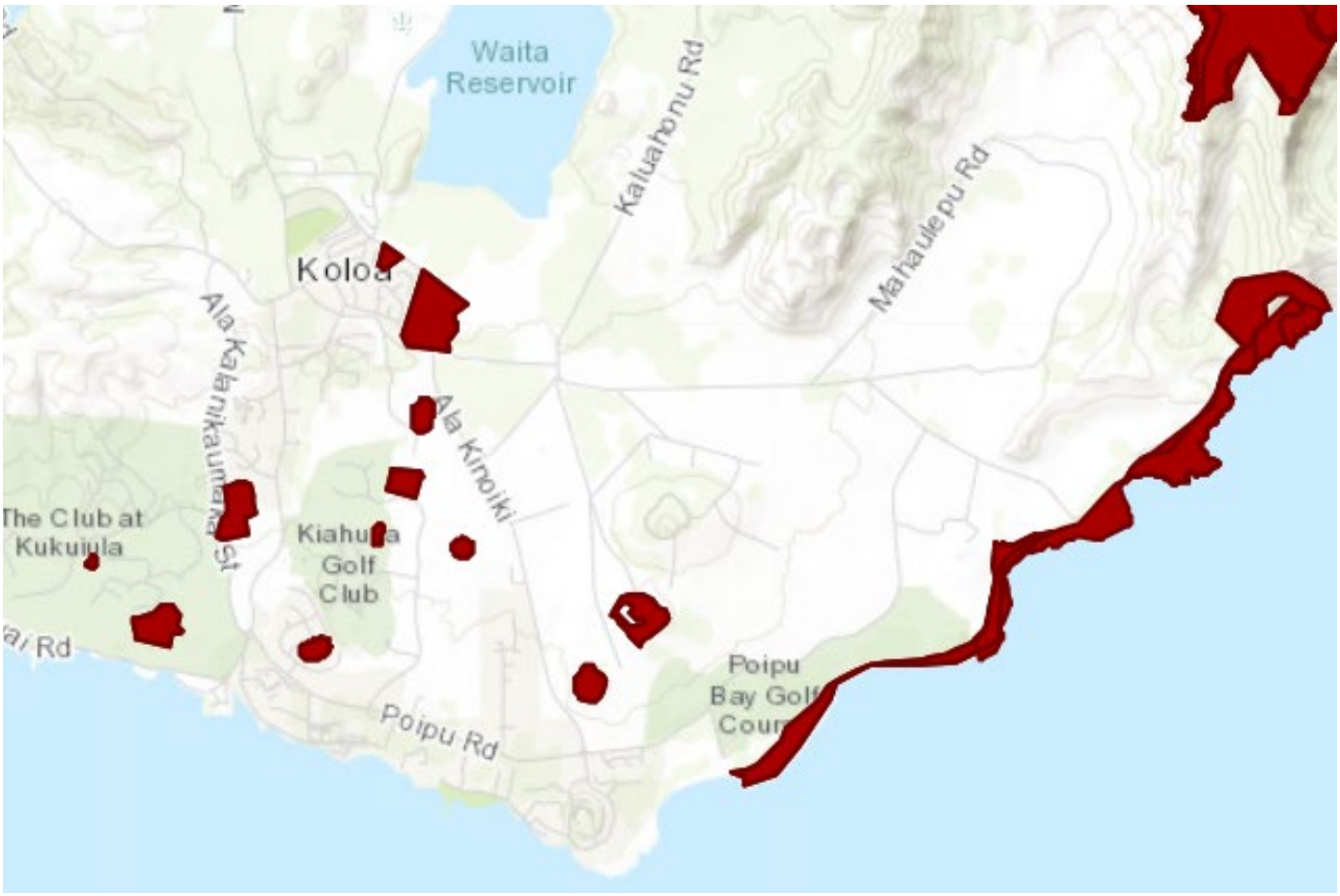


Figure 1 and 2 from September 30, 2021 Save Koloa Letter: 5-Year Status Reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada (Kauai cave wolf spider or pee pee maka ole, and Kauai cave amphipod) Source: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.

Figure 2. Photos of the Development from Project Applicant. The resort is intended to grade into the existing golf course adjacent to the Critical Habitat feature noted in that location in Figure 3. Note: Resort signage is rotated north to the right.

Figure 3. Site Location (zoomed to parcel using the hybrid map background; Critical Habitat in red) The development footprint encompasses all of the area interior of the roads from north, east and south, and abuts the property line approximated by the lighter green area to the west. The estimated distance from the Critical Habitat feature in the golf course to the development is 187 feet using the mapper tool.

Note some modifications of site mainly associated with stormwater management from west to east, and a rough grade feature on the north, and a structure on the south-southeastern corner, apparently related to underground utilities. From FWS mapper cited above, accessed 2022.

Figure 4. Development of Figure 3, with areas observed containing what appear to be seasonal wetland features outlined generally in blue. Note: water feature in site plan description in Figure 2 generally matches the most northerly feature also identified here. From FWS mapper cited above, accessed 2022.

EXHIBIT C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai‘i 96850

In Reply Refer To:
1EPIF00-2022-TA-0024

October 27, 2021

Mr. Kenneth Estes
County of Kaua‘i
Department of Planning
4444 Rice Street, Suite A473
Lihu‘e, Hawai‘i 96813

Subject: Technical Assistance Regarding Proposed Yellow Hale Subdivision, Po‘ipū, Kaua‘i

Dear Mr. Estes:

The U.S. Fish and Wildlife Service (Service) thanks you for your email dated September 30, 2022 requesting technical assistance on the potential effect to threatened or endangered species or their designated critical habitat resulting from the proposed subdivision and construction of a 280-unit multi family residential project at the Tax Map Key (TMK): (4) 2-8-014:032, Po‘ipū, Kaua‘i.

This letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species and designated critical habitat in accordance with section 7 of the ESA.

Our data indicate the following federally listed species may be present on or in the vicinity of the proposed project locations: the pe‘e pe‘e maka‘ole or Kaua‘i cave wolf spider (*Adelocosa anops*) and ‘uku noho ana or Kaua‘i cave amphipod (*Spelaeorchestia koloana*), the endangered ‘ōpe‘ape‘a or Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered ua‘u or Hawaiian petrel (*Pterodroma sandwichensis*), endangered ‘akē‘akē or Hawaii distinct population segment (DPS) of band-rumped storm-petrel (*Oceanodroma castro*), and threatened ‘a‘o or Newell’s shearwater (*Puffinus auricularis newelli*) (hereafter collectively referred to as Hawaiian seabirds).The project area does not contain critical habitat for the pe‘e pe‘e maka‘ole, ‘uku noho ana.

Peʻe peʻe makaʻole and ʻuku noho ana

The peʻe peʻe makaʻole and ʻuku noho ana are obligate cave-dwelling arthropods restricted to the Koloa Basin of the island of Kauaʻi where lava tubes and other cave bearing rock substrate are present. These species live in inaccessible mesocaverns (underground spaces and in accessible passages) as well as large cave passages making population estimates difficult. Few of the known caves in the Koloa district provide appropriate habitat for these arthropods. The limited number of occupied caves greatly limits our knowledge of the life history requirements of these arthropods.

Urban, agricultural development and quarrying operations within the area threatens the mesocavern (underground spaces, caves, cracks, crevices) habitat these species being exposed to drying conditions, most typically from increased airflow created by breaking through the mesocaverns. Another threat comes from non-native insect species that may prey upon and compete for limited food resources. Human visitation and use of caves are threats, including urban and commercial pesticide use. Pesticides, herbicides, and other chemicals as liquid substances and smoke or fumes can percolate through the cracks and crevices of mesocaverns effecting these arthropods. Environmental threats such as extended droughts also threaten these species by altering the high-humidity environment to which these arthropods are adapted and facilitate invasion by non-native species.

Peʻe peʻe makaʻole and ʻuku noho ana may be in the vicinity of the proposed project area is in Poʻipū, an area within the Koloa basin and adjacent to two critical habitat units (one to the north and one the west) (see Map of TMK and Critical Habitat). Both critical habitat units are designated for both species. The critical habitat unit to the west of the proposed project is surveyed periodically for the presence of both species. Although both species could be absent during cave surveys conducted in the critical habitat unit to the west, this does not indicate that these species does not exist within the mesocaverns of the surrounding areas.

To avoid and minimize impacts to peʻe peʻe makaʻole and ʻuku noho ana, we recommend you consider incorporating the following into the project description:

- Survey the project area for depth of soil deposits and exposed rock for the presence of caves. Any areas with soil deposits greater than 12 inches (in) are not likely to provide appropriate habitat or have the species present. Contact the Service and do not disturb the vegetation or soil in areas with soil deposits less than 12 in or if a cave is found.
- If a cave is found during construction, work will stop around the newly found cave immediatley and contact the Service immediately for guidance to minimize and mitigate adverse effects. Work may only continue upon implementation of the guidelines or actions developed during consultation with the Service.

Enhance cave invertebrate habitat if possible:

- Outplant native plants like maiapilo (*Capparis sandwichiana*) so roots eventually provide a food source and irrigate the surface. Control established ecosystem-altering non-native invasive plant species throughout the development especially around in areas with soils less than 12 in or exposed rocks.
- Minimize the use of herbicide, pesticide, and other liquid chemicals in the Project Area.

- Enhance habitat by sealing currently non-occupied caves with temporary air blocks – to increase relative humidity by restricting air flow through cave entrances.
- Design permanent air blocks (e.g., walls) and develop plans to replace temporary air blocks.
- Install gates to cave entrances to restrict access to caves.

ʻŌpeʻapeʻa

The ʻōpeʻapeʻa or Hawaiian hoary bat roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet (ft) or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or move away from disturbance. Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered Hawaiian hoary bat we recommend you consider incorporating the following applicable measure into your project description:

- Do not disturb, remove, or trim woody plants greater than 15 ft tall during the bat birthing and pup rearing season (June 1 through September 15).

Hawaiian seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable to light attraction.

To avoid and minimize potential project impacts to Hawaiian seabirds we recommend you consider incorporating the following applicable measures into your project description:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.
- Disseminate information (e.g., about the species, what to do if a seabird is found) to all construction workers and residents prior to and during seabird fallout season. If a downed seabird needs to be rescued, transport them to the nearest Save Our Shearwater (SOS) collection station.
- Maintenance staff of the development should attend annual training to recognize downed sea birds and know how to respond.

We appreciate your efforts to conserve protected species. If you have any questions regarding this letter, please contact Joy Browning, Fish and Wildlife Biologist (phone: (email: joy_browning@fws.gov, phone: telephone at 808-792-9400). When referring to this project, please include this reference number: 01EPIF00-2022-TA-0024.

Sincerely,

AARON NADIG

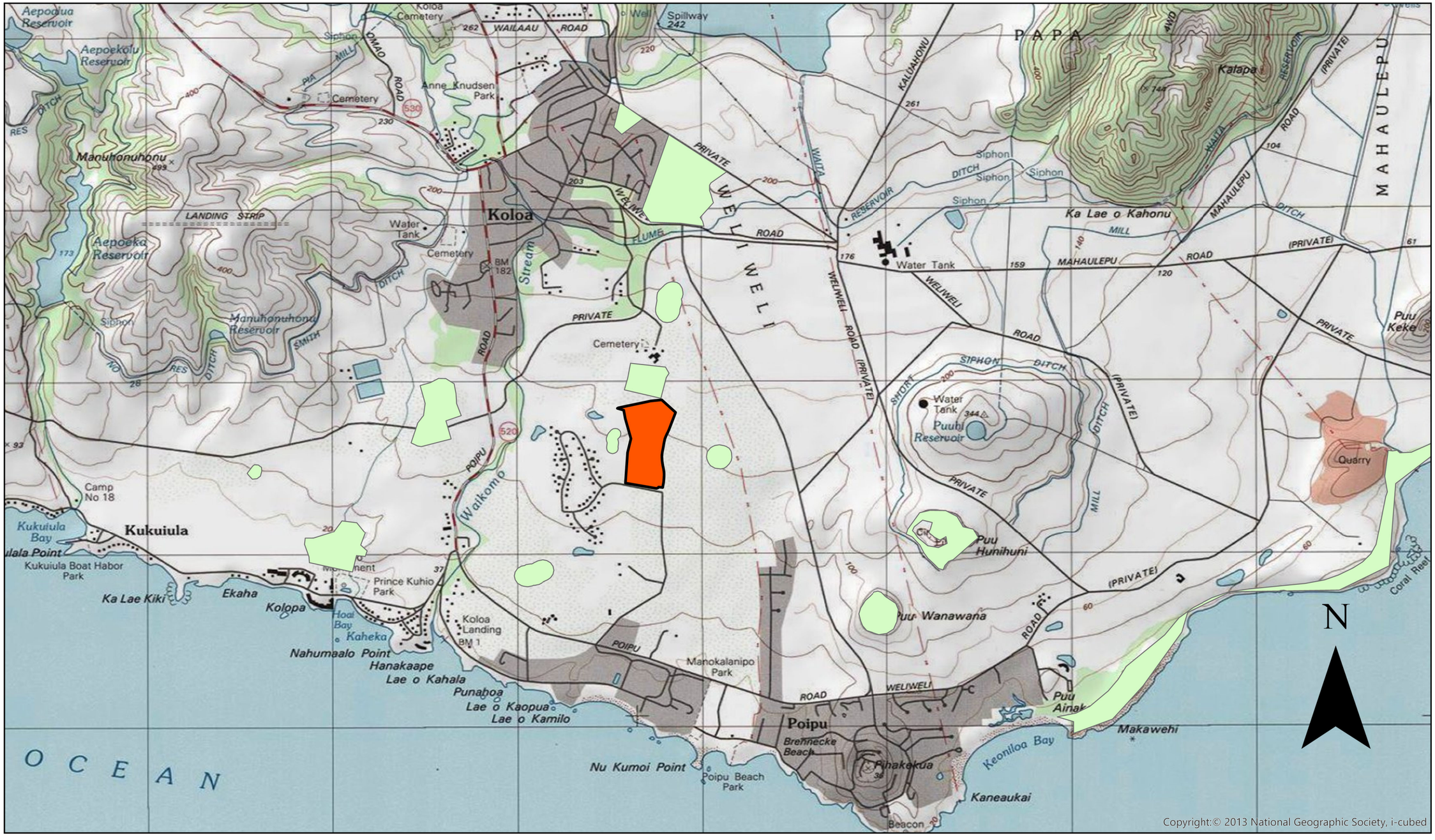
Digitally signed by AARON NADIG
Date: 2021.10.27 12:01:34 -10'00'

Island Team Manager
O'ahu, Kaua'i, Northwestern Hawaiian Islands and American Sāmoa

cc: DOFAW Kaua'i District Office

Enclosure (1): Map of TMK and Critical Habitat

TMK and Critical Habitat for the Kauai Cave Spider and Amphipod



TMK (4) 2-8-014:032

Critical Habitat for Kauai Cave Wolf Spider and Cave Amphipod

0 0.25 0.5 1 Miles

EXHIBIT D

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
2014-TA-0142

Mr. Jesse K. Souki
Office of Planning
State of Hawai'i
235 South Beretania Street
Honolulu, Hawai'i 96786

ORIGINAL

Subject: Technical Assistance for Motion to Amend Conditions Nos. 5 and 7 through 22 of Decision and Order, TMK 2-8-12: 05, 07, 08, POR. 19, 20, 21, 26-36; 2-8-12: 77; 2-8-29: 1-94, Poipu, Kaua'i

Dear Mr. Souki:

The U.S. Fish and Wildlife Service (Service) received your letter dated January 28, 2014, regarding the effects of a Motion to Amend by Moana Corporation (Kiahuna Mauka Partners, LLC (KMP)) which proposes to delete conditions numbers 5 and 7 through 22 of Decision and Orders dated July 7, 1977 and August 5, 1997. The deletions are proposed by KMP on the basis of administrative efficiency that the said conditions have been met fully or substantially met, and are no longer applicable, or can and will be enforced by the County of Kaua'i and thus no longer required to be enforced by the Land Use Commission.

We reviewed the Motion to Amend pursuant to the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*). The information you provided and pertinent information in our files, indicate the endangered Kaua'i cave wolf spider (*Adelocosa anops*) and endangered Kaua'i cave amphipod (*Spelaeorchestia koloana*) are in the vicinity of TMK 2-8-14: 05, 07, 08, POR. 19, 20, 21, 26-36; 2-8-15: 77; 2-8-29: 1-94. Critical habitat has been federally designated for these species on approximately 6-acres of land surrounding and including the Kiahuna Makai Cave on April 9, 2003 (68 FR 17430-17470). Adjacent properties have also been designated critical habitat for these cave species. For the conservation and protection of the endangered Kaua'i cave wolf spider and Kaua'i cave amphipod we are providing the following recommendations to assist you in the preparation of the State's response to the Land Use Commission's hearing on the Motion. The Service's position has not changed from our last correspondence with KMP on October 26, 2006, reiterating that the absence of the cave spider or amphipods from the accessible Kiahuna Makai Cave does not indicate that they do not exist within the mesocaverns of the surrounding areas. Therefore, we are unable to concur with KMP's request to delete Condition No. 7 of Decision and Orders dated July 7, 1977 and August

5, 1997 due to the fact that building in the areas surrounding the cave that contain these mesocaverns could result in take of the cave spider or amphipod. We have no comment on Conditions Nos. 5 and 8-22 since they do not pertain to ESA listed species and therefore do not fall under our jurisdiction.

The Kaua'i cave wolf spider and the Kaua'i cave amphipod are obligate cave-dwelling arthropods restricted to the Koloa basin of the island of Kaua'i where lava tubes and other cave bearing rock substrate are present. Urban, agricultural development and quarrying operations within the area threatens the habitat of these cave arthropods. Another threat comes from non-native insect species that may prey upon and also compete for limited food resources. Human visitation and use of caves are threats including urban and commercial pesticide use. Environmental threats such as extended droughts also threaten these species by altering the high-humidity environment to which these arthropods are adapted and facilitating invasion by non-native species.

These species live in inaccessible mesocaverns (voids and inaccessible passages) as well as large cave passages making estimates difficult. Few of the known caves in the Koloa District provide appropriate habitat for these arthropods which are typically only found in the dark and stagnant air zones (two of five cave zones typified by low air movement, elevated relative humidity, and reduced temperature fluctuations) of caves and require high humidity conditions (Bousfield and Howarth 1979; Hadley *et al.* 1981; Ahearn and Howarth 1982). The limited number of occupied caves greatly limits our knowledge of the life history requirements of these arthropods.

The Service has conducted nine surveys in the Kiahuna Makai Cave between the years of 1998 and 2003. The Service has not been able access to conduct further surveys of Kiahuna Makai Cave since 2003. The last survey of the site on September 17, 2003, no cave spiders or amphipods were observed. However, this cave is important for both animals because historic occurrences in the 1990s. The Service designated critical habitat for both species in Kiahuna Makai Cave due to its importance in the overall recovery of these species. It is probable that the endangered Kaua'i cave wolf spider and the Kaua'i cave amphipod are still present on the property in voids and passages inaccessible by humans.

All areas designated as critical habitat are deemed essential to the conservation of these species providing for a widely distributed pattern of the highest quality habitat left in the Koloa Basin. In the case of the cave dwelling animals, areas designated provide occupied and unoccupied habitat for protection against catastrophic events by allowing a wider distribution throughout the Koloa Basin. Designated surrounding mesocaverns incorporate the areas where the majority of the cave animals are likely to occur, providing refugia from fluctuating conditions in caves and are essential to the conservation and recovery of the species.

Previous discussions between the Service and KMP identified KMP's intent to develop the property surrounding the Kiahuna Makai Cave. We recommend that KMP applies for an incidental take permit, because development of the area could result in take of listed species. As part of the incidental take permit process, KMP will need to develop a habitat conservation plan (HCP). Through this process, private landowners are able to carry out otherwise lawful activities

(i.e., home building) while protecting and conserving listed species in compliance with the ESA. Landowners are assured that if "unforeseen circumstances" arise, we will not require the commitment of additional restrictions on the use of land or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the permittee.

Any projects occurring where endangered and threated animal species exist must avoid take of federally listed species under the ESA. The ESA defines "take" as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The term "harass" is further defined as an intentional or negligent act or omission which created the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering. The term "harm" means an act which actually injures or kills listed species. Such acts may include significant habitat modification or degradation where there is a likelihood of adverse impacts to these species by significantly impacting essential behavioral patterns. In addition, if a project contains a Federal nexus (*i.e.,* Federal permit or Federal monies), private landowners or project proponents need to consult with the Service under section 7 of the ESA.

In addition to contacting the Service regarding the development of an HCP, guidelines have been developed by KMP in discussion with the Service in 2003 to minimize impacts to the cave spider and amphipods and their habitats. They are: 1) the Kiahuna Makai Cave will not be collapsed, 2) plantings of milo and other suggested planting will be planted on top of the cave foot print, 3) the cave location will not be published on public maps, 4) a disclosure about critical habitat and the Kaua'i cave wolf spider and the Kaua'i cave amphipod will be given to any successor owners, 5) a 50-foot no build zone will be established above Kiahuna Makai Cave areas to make sure no structures are built on top of the cave. Areas in the critical habitat designated lands with exposed rock or places where the soil layer is less than a foot deep will not be graded, paved, or filled or underlying caves collapsed, 6) the cactus and haole koa now occupying lands surrounding and above the cave will be removed by hydroaxel/slash busters, and 7) if during construction a subsequent cave is found, the owners will stop work around the newly found cave and immediately notify the Service which will provide guidance to minimize and mitigate adverse effects. Work may only continue upon implementation of guidelines or actions developed during consultation with the Service.

The guidelines are still needed to minimize impacts to cave habitats that have been, and continue to be, degraded or destroyed through surface alterations such as the removal of perennial vegetation, soil fill, grading, paving, collapsing and filling of caves, and other activities associated with development and agriculture. In addition, a 50-foot no-build buffer zone around the cave will not guarantee avoidance of take of the cave animals. However, avoiding areas with exposed rock or places where the soil layer is less than a foot deep will greatly minimize the chance of adversely affecting cave animals either by direct loss or injury to individuals or by altering existing habitat which diminishes its quality or function. Although not stated in the 2003 guidelines, the use of pesticides, herbicides, and other chemicals around the cave and on the property should also be used with extreme caution, as liquid substances and smoke or fumes can percolate through the cracks and crevices of cave habitats effecting cave spiders and amphipods.

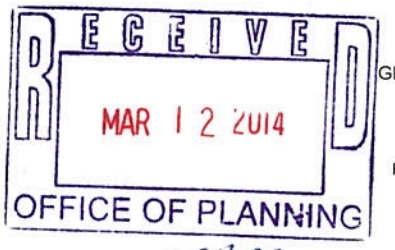
Although guidelines to minimize development impacts have been established, the Services does not support the deletion of Condition No. 7 in the Decision and Orders dated July 7, 1977 and August 5, 1997 due to the possible presence of the Kaua'i cave spider and Kaua'i cave amphipod in the voids or passage ways on the property that are inaccessible to humans. These species are only known to occur in the Koloa basin on the island of Kaua'i and further restricted to areas where above and below ground alterations to lave tubes and other cave bearing rock substrates have not occurred.

We appreciate your efforts to conserve endangered species. If you have questions regarding this response, please contact Joy Hiromasa Browning, Fish and Wildlife Biologist (phone: 808-792-9400 or email: Joy_Browning@fws.gov).

Sincerely,

Aaron Nadig
Acting Assistant Field Supervisor:
O'ahu, Kaua'i, NWHI, Am. Samoa

NEIL ABERCROMBIE
GOVERNOR



75322

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
RANDY GRUNE
AUDREY HIDANO
JADINE URASAKI

IN REPLY REFER TO:
HWY-PS 2.6692

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

ORIGINAL

March 10, 2014

TO: JESSE K. SOUKI, DIRECTOR
OFFICE OF PLANNING
DEPARTMENT OF BUSINESS ECONOMIC DEVELOPMENT AND TOURISM

FROM: GLENN M. OKIMOTO, PH.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: MOTION TO AMEND CONDITIONS OF APPROVAL, LAND USE COMMISSION DOCKET NO. A76-418, MOANA CORPORATION,
PROPOSED ACTION: MOTION TO DELETE CONDITIONS 5 AND 7 THRU 22 OF DECISION AND ORDER, POIPU, KAUAI
TMK: (4) 2-8-14:5, 7, 8, POR. 19, 20, 21, 26-36; 2-8-15:77; 2-8-29:1-94

Thank you for the opportunity to respond to the subject motion from Petitioner, Kaihuna Mauka Partners, LLC, dated January 7, 2014. This Petition of Moana Corporation to amend the Agricultural Land Use District Boundary into the Urban Land Use District for approximately 457.54 acres of the subject lands was filed by the State Land Use Commission as Docket No. A76-418 on July 7, 1977, and an Order Granting First Hawaiian Bank, Trustee of the Eric A. Knudsen Trust's Amendment to Motion to Modify Condition Imposed by the Land Use Commission was filed and effective on August 5, 1997. Portions of the land area are referred to as the Knudsen Property and as the Sports Shinko Property.

The Department of Transportation (DOT) objects to the Petitioner's request to delete Condition No. 12 of the Decision and Order in the subject Land Use Commission Docket A76-418, and DOT has the following comments regarding Condition No. 12:

1. The traffic generated by the project will have an impact on Kaumualii Highway, State Route 50, particularly at the intersections of Kaumualii Highway with Maluhia Road and with Koloa Road.

2. The Traffic Impact Analysis Report (TIAR) prepared by Austin, Tsutsumi and Associates, dated December 8, 2003 and finalized September 13, 2005, which we reviewed, analyzes the 210-acre Knudsen Property [TMK: (4) 2-8-013:001 and 2-8-014:001 to 004, 019 and 037].

3. The TIAR identified above did not analyze the other properties in the subject Docket A76-418, including the Sports Shinko Property. If and when the County of Kauai requires an updated TIAR that includes the Sports Shinko Property, the DOT would appreciate the opportunity to review and comment on any updated TIAR, as specified in Condition No. 12.

If you have any questions, please contact Gary Ashikawa, Systems Planning Engineer, Highways Division, Planning Branch, at 587-6336.

ORDINANCE NO. PM-31-79

BILL NO. 585 Draft 1
(As amended)

AN ORDINANCE AMENDING ORDINANCE NO. 164
COMPREHENSIVE ZONING ORDINANCE OF THE
COUNTY OF KAUAI
(Moana Corporation)

BE IT ORDAINED BY THE COUNCIL OF THE COUNTY OF KAUAI, STATE OF HAWAII:

SECTION 1. That the Zoning Map ZM-KO & PO 300 is hereby amended by changing the present "Open District (O)" to "Neighborhood Commercial District (C-N) and Residential Districts (R-20), (R-10), (R-6), (R-4)" for TMK: 2-8-14; Por. 1, 5, 6; 2-8-13: Por. 5, Poipu, Koloa, as recommended by the Planning Commission subject to the following conditions:

1. For the purpose of relieving the housing impact which will result from the proposed development, and in lieu of the 140 home sites to be provided by the Applicant, the Applicant will contribute the sum of $2,000,000 to the County of Kauai to be used for the implementation of a County housing program. The sum will be paid as single family residential lots are sold on the basis of $10,000 per lot sold in the development, but no later than 5 years from the date construction commences in this development. At the end of 5 years, the balance of the $2,000,000 shall be due and payable to the County in one lump sum, unless the Applicant is unable to perform due to economic conditions beyond its control, in which event the Applicant shall seek an extension from the Council.

   This condition shall be subject to the withdrawal by the Land Use Commission of the State of Hawaii of its conditions numbered 1, 2, 3 and 4, relating to housing and the amending of condition No. 9 relating to performance time to provide housing as contained in its Decision and Order in Docket No. A-76-418, dated July 7, 1977.

   The County of Kauai will assist the Applicant in petitioning the Land Use Commission to delete the aforesaid housing conditions from its Decision and Order in the aforesaid Docket No. A-76-418.

2. In order to satisfy the need for employee housing, the Applicant shall make available to employees:

   a) Rental housing at a reasonable cost, which would be based on ability to pay.

   Because not all employees will need housing, the Applicant shall establish qualifying criteria to determine what employees are in need of housing and how many units will be needed.

3. The Applicant shall make the recreational and other amenities of the development such as golf course, golf clubhouse, swimming facilities, tennis courts, and theater and cultural center available for public use at reasonable usage fees.

OP EXHIBIT E

4. That the Applicant dedicate to the County of Kauai approximately 20 acres of land makai of Poipu Beach Road and abutting Poipu Beach Park for expansion of the park.

   With respect to this condition, the dedication shall occur as soon as Applicant may reasonably obtain a subdivision of said property, but shall not be required to make the dedication in less than 2 years from the date of zoning approval but not more than 5 years from that date hereof.

   The Applicant shall further sign an agreement with the County to this effect; such agreement shall give the County the right to occupy and improve the property if necessary.

5. The Applicant shall preserve:

   a) the five (5) archaeological sites identified in the archaeological and biological report and shall cause no construction or alteration or other land disturbances on said sites except for preservation and restoration of the sites.

   b) the two lava tubes containing the habitat of the eyeless big-eyed hunting spider and protect these from man-made encroachments. Permission to re-survey three (3) other caves that are potential habitats, shall be granted for scientific purposes, before these caves are destroyed.

6. No site identified in the report, "Archaeological and Biological Survey of the Proposed Kiahuna Golf Course Village Area, Koloa, Kona, Kauai Island, Hawaii" shall be graded, grubbed, bulldozed, or in any way destroyed unless in accordance with a plan, mutually agreed upon by the Applicant and the archaeologist that has been prepared whereby the archaeological salvage will be accomplished by means of coordinating any grading, grubbing or similar work by the Applicant with the archaeological salvage.

7. That to whatever extent possible within the confines of union requirements and applicable legal prohibitions against the discrimination in employment the Applicant, as represented, shall hire Kauai contractors as long as they are reasonably competitive with other contractors, and employ residents of Kauai in the temporary construction and permanent hotel related jobs. The Applicant may have to employ non-Kauai residents for particular skilled jobs when no Kauai resident possess such skills. However, the Applicant shall cooperate with, and utilize, whatever government training program may be available so that Kauai residents can be trained to fill such jobs. For the purposes of this condition, the Commission relieves the Applicant of this requirement if he is subjected to anti-competitive restraints on trade or other monopolistic practices.

8. The Applicant shall provide a minimum 6 feet wide public pedestrian access from the commercial area to the beach site. Public restrooms and showers shall also be provided and maintained by the Applicant in the vicinity

of the existing beach right-of-way. The Applicant shall further provide alternative parking plans for additional parking stalls for beach-goers in the vicinity of the Hoone Street cul-de-sac. The public parking area proposed by the commercial area shall be used for back-up parking needs for beach goers.

9. When the final route for the by-pass roadway from Poipu to Koloa is determined, the Applicant shall participate in his pro rata share of the cost of the by-pass road. If the alignment of the roadway traverses over the owner's property, then the portion of property required for the roadway shall be dedicated to the County by the owner. The pro rata share will be established in a manner agreed upon by the Applicant and the Department of Planning and Public Works.

   Furthermore, should the by-pass road occur along the East boundary of the project, the owner shall be required to dedicate a 40 feet strip of land abutting Weliweli Subdivision for roadway purposes, and the Applicant shall participate in his pro rata share of the cost of the by-pass road. Until the final by-pass route is determined, no development shall be allowed within this 40 feet strip. Should the by-pass road not occur along the East boundary of the project, the 40 feet strip shall be kept as a buffer zone between the project and the abutting Weliweli Subdivision. The Applicant shall be entitled to use the land area comprising the 40 feet strip in the calculation of the permissible number of lots in the abutting rezoned area.

   Furthermore, should funds not become immediately available to construct the by-pass road, the Applicant shall work with the Planning and Public Works Departments to consider providing an interim alternate road through the site connecting Poipu to Koloa, to resolve potential traffic congestion that would occur on Poipu Road.

10. All interior roadways shall comply with the County standards. Direct lot access to Poipu Road shall not be permitted. Lot accesses shall be from the interior roads.

11. The drainage diversion channels shall be reviewed and approved by the Public Works Department, and settling basins shall be provided if required.

12. The grading of the subject development shall comply with Grading Ordinance No. 262. The maximum area of land that may be opened for grading or grubbing is 20 acres. Additional area shall not be opened for grading or grubbing until measures to prevent dust or erosion problems in the area already graded or grubbed have been satisfactorily completed.

13. The Applicant shall be required to tie in its efforts in providing sewage facilities for the project with County Planning for sewage facilities, and shall work with the Department of Health and Department of Public Works towards the development of a regional sewage treatment plant.

14. If Applicant is to use water provided by the Department of Water, Applicant shall be required to contribute to the Department of Water its pro rata share of the cost to provide domestic water to the subject parcel.

15. The proposed amphitheatre site shall be kept and reviewed for possible relocation, if necessary, to minimize noise impacts to Weliweli Subdivision. Site location, stage orientation, facility design, landscaped berms, limitations on uses, and other means of reducing noise impacts shall be utilized in the planning of this facility.

16. All access roads shall be provided to within 250 feet to all sections of all building structures and shall not be less than 20 feet wide. Fire extinguishers installed as required by the NFPA 10, Installation of Fire Extinguishers. Fire hydrants complying with water department standards shall be located within 250 feet and not to exceed 500 feet from the protected buildings.

17. A landscaped buffer zone shall be provided along Poipu Road. Open vistas from Poipu Road to the golf course shall be, however, provided to create a feeling of openness along the Poipu Road.

18. The Applicant shall meet with the Planning Department and Public Works Department relative to the future improvements to Hapa Road, and its relationship to the traffic circulation.

19. Prior to the approval of any subdivision or zoning permit, the Applicant shall provide the following:

    a) Qualifying criteria for employee housing and preferential rates or purchase prices for employees;

    b) Alternative plans for additional parking areas for beachgoers located in the vicinity of Hoonani Road cul-de-sac;

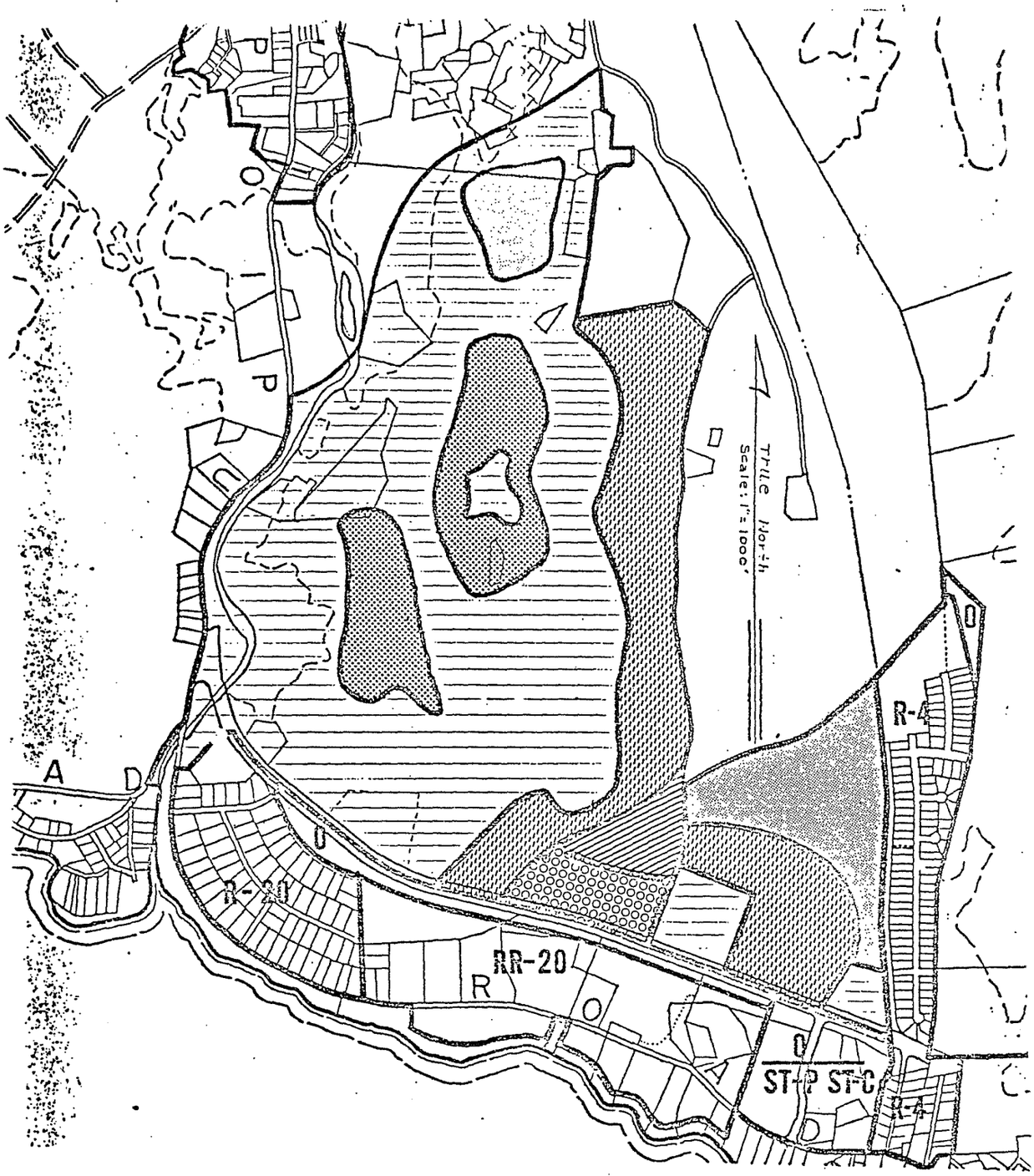
    c) Amphitheatre design criteria, use restrictions and alternative site if relocation is necessary.

20. Applicant shall obtain building permits, electrical permits and plumbing permits prior to starting construction of any structures to be erected on the property.

21. Prior to and during any development or construction, all applicable State and County laws, codes, ordinances, rules and regulations be complied with.

SECTION 2. The Planning Commission is directed to note the change on the official Zoning Map ZM-KO & PO 300 on file with the Commission. All applicable provisions of the Comprehensive Zoning Ordinance shall apply to the district as amended.

SECTION 3. This ordinance shall take effect upon its approval.



L E G E N D

- Proposed Amendment To Zoning Map From Ag. District To R-4 District
- " " " " " " " " " R-6 "
- " " " " " " " " " R-10 "
- " " " " " " " " " R-20 "
- " " " " " " " " " C-N "
- Open District

LOCATION SHOWING

PROPOSED AMENDMENT TO ZONING MAP ZM-KO & PO-30C

FROM

OPEN DISTRICT (O) TO R-4, R-6, R-10, R-20, C-N DISTRICTS

KOLOA, POIPU, KAUAI

ZA-79-3

CERTIFICATE OF THE COUNTY CLERK

I hereby certify that hereto attached is a true and correct copy of Bill No. 585 (Draft 1), As Amended, which was passed on second and final reading by the Council of the County of Kauai at its meeting held on March 20, 1979, by the follow ng vote:

FOR ADOPTION: Baptiste, Hew, Sarita, Tsuchiya, Yadao, Yotsuda — TOTAL - 6,
AGAINST ADOPTION: Yukimura — TOTAL - 1,
ABSENT & NOT VOTING: None — TOTAL - 0.

Dated at Lihue, Kauai, Hawaii,
this 23rd day of
March, A. D. 1979.

Tatsuo Kato
Deputy County Clerk
County of Kauai

Date of transmittal to the Mayor:

March 23, 1979

Approved this 23rd day of
March, A. D. 1979.

Eduardo E. Malapit
Mayor
County of Kauai

EXHIBIT E

SOLURI MESERVE
a law corporation

tel: 916.455.7300 · fax: 916.244.7300
510 8th Street · Sacramento, CA 95814

September 30, 2021

SENT VIA U.S. MAIL AND EMAIL
(pifwo_admin@fws.gov)

Field Supervisor
Attention: 5-Year Review
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3–122
Honolulu, Hawaii 96850

RE: 5-Year Status Reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada (Kauai cave wolf spider or pee pee maka ole, and Kauai cave amphipod)

Dear U.S. Fish and Wildlife Service:

This letter is written on behalf of the Save Koloa project of E Ola Kakou Hawaii, and pertains to the critical habitat status review for the Kauai cave wolf spider (*Adelocosa anops*) and the Kauai cave amphipod (*Spelaeorchestia koloana*). These species were listed as endangered in 2000 (65 Fed. Reg. 2348, Jan. 14, 2000) and 272 acres of critical habitat was designated in southern Kauai in 2003 (68 Fed. Reg. 68, April 9, 2003). One year earlier, the U.S. Fish and Wildlife Service ("Service") had proposed that 4,193 acres should be designated as critical habitat. From 1998 through 2003 the Service conducted nine surveys of the subject property and noted the land as sensitive area. In addition to the caves themselves, properties adjacent to cave openings were listed as critical habitat for these cave-dependent spider and amphipod species.

Save Koloa is a group dedicated to preserving and ensuring access to culturally significant and historical sites, along with the protection of natural resources and native species on the island of Kauai.[1] The Koloa lava tubes of Kauai and their associated endangered fauna were identified as one of the ten most endangered cave communities in the world.[2] The longest known cave on Kauai was located upslope from the Kiahuna

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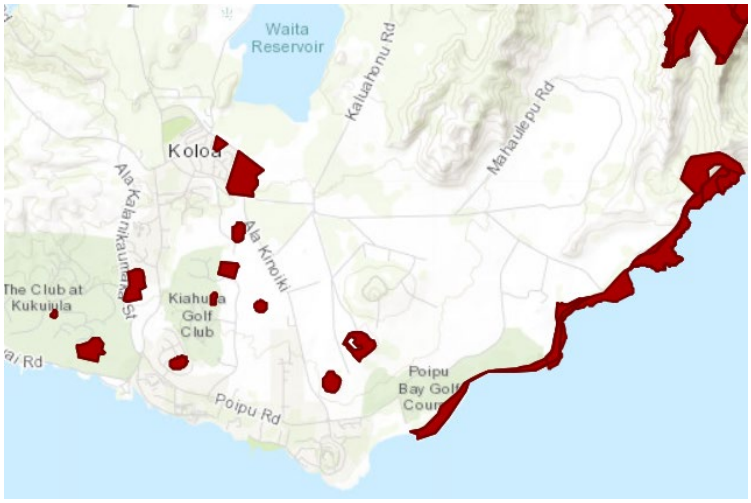
[1] See: https://eolakakouhawaii.com

[2] Proposed Rule, Determination of Critical Habitat for the Kauai Cave Wolf Spider and Kauai Cave Amphipod, 67 Fed. Reg. 14671-14690, March 27, 2002, available at: https://www.federalregister.gov/documents/2002/03/27/02-6801/endangered-and-threatened-wildlife-and-plants-determination-of-critical-habitat-for-the-kauai-cave.

development in Poipu, Koloa, between the Koloa Mill on the east and Koloa Town on the west. This cave was filled with cane waste in the early 1970s before it could be surveyed, but its existence indicates that there are other caves and mesocaverns in the area. The Koloa Cave Ecosystem is considered to be one of the 10 most critically endangered cave ecosystems in the world.[3] It is also part of the Historic Koloa field system, and very near to the Historic Hapa trail.

Here are the Service's currently mapped polygons for the Kauai cave wolf spider:[4]



Current Conditions in This Critical Habitat

We appreciate the Service's effort to identify the need for protection of these species in its prior correspondence regarding development of areas within and near this designated critical habitat. In 2014, the Service clearly highlighted concerns with the protection of listed species on portions of property now subject to proposed development that could negatively impact the short and long-term viability of the Kauai cave wolf spider and Kauai amphipod.

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[3] 67 Fed. Reg. 14671-14690, March 27, 2002, citing Howarth 1973, available at: https://www.researchgate.net/publication/265148790_The_cavernicolous_fauna_of_Hawaiian_lava_tubes_I_Introduction/link/545723650cf2cf516480428d/download).

[4] Available at: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.

(See Technical Assistance Letter from Pacific Islands Fish and Wildlife Office to State of Hawai'i Office of Planning, April 24, 2014, attached as Exhibit A.)

Cave systems are complex. For example, the figure below regarding a typical lava tube illustrates how surface actions can impact cave wildlife, also known as stygofauna:

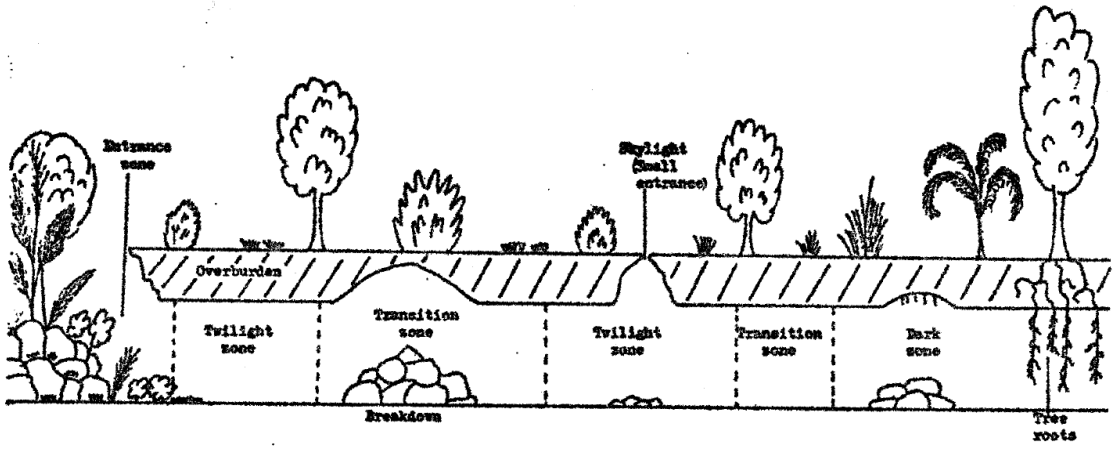


FIG. 1. A typical lava tube in Hawaii. Simplified longitudinal section showing ecological zones. Height of cave to length of zones exaggerated.

Currently, conditions in the designated critical habitat are variable. In some places, the land above and around the caves has been cleared. In others, cave entrances are choked with non-native vegetation, and in at least one case, irrigation, fertilizer and herbicides have been used to maintain a major golf course above a cave. The conditions for development in these sensitive areas appear to have been ignored or misconstrued by land owners, by the out of state developers, and the County. In our conversations with interested parties, it appears that the Service is not yet engaged with monitoring of these threats to listed species and their critical habitat.

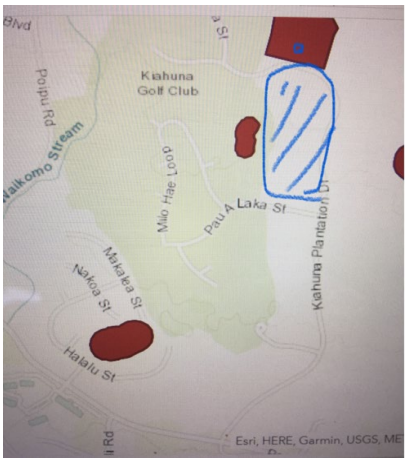
Golf courses exist on, or are proposed for, the land directly above or adjacent to both populations of the spider and all but one population of the amphipod. Residential pesticides are also a serious threat to the cave animals. These cave animals are particularly susceptible to pesticides because of their tendency to seek water sources.[5] Even if pesticides are not used directly above a lava tube, pesticides that leach into

[5] See Howarth 1983a; available at: https://www.annualreviews.org/doi/abs/10.1146/annurev.en.28.010183.002053; Asquith, in litt. 1994a, available at: http://hdl.handle.net/10125/1742.

adjacent subterranean caverns with water from runoff or irrigation are serious threats because the animals may be attracted to the water and come into contact with the chemicals.

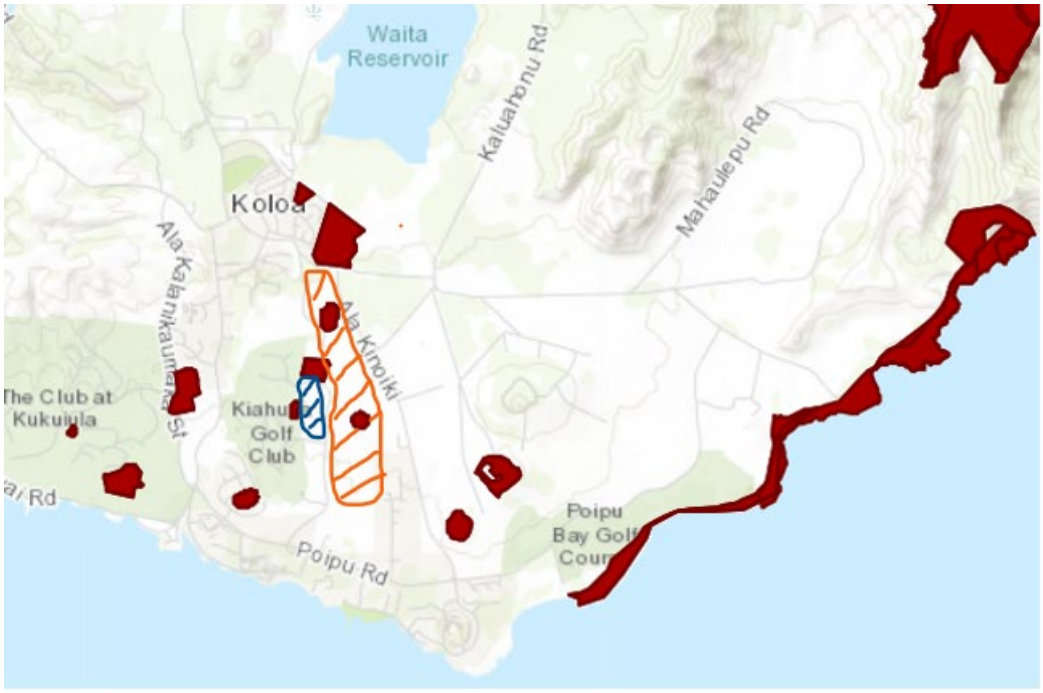
The addition of impervious surfaces above and adjacent to the caves can increase water and humidity detrimentally, or may direct water away that would otherwise help optimal humidity. Direct land disturbance, from site surveys and explorations, site preparation, and completion of construction can also impact the integrity of caves and associated fissure structures, causing direct and indirect impacts to individual endangered species and their critical habitat.

There are at least two major development proposals in the process of obtaining local entitlements potentially within, or directly adjacent, and inducing impacts to, identified critical habitat for the cave wolf spider and the cave amphipod. The proposed Kiahuna Poipu Golf Resort parcel was purchased in June 2021 and the developer is currently marketing 280+ condominiums on this sensitive property. This is the same property that was the subject of the Service's April 24, 2014 letter. It is located just between mapped polygons in the Service's critical habitat database (shown in blue).



Another project, called "The Villages at Poipu", is located just to the east of the proposed Kiahuna Poipu Golf Resort, and is proposed on top of and adjacent to mapped critical habitat polygons.

Below is a conceptual figure showing the relative locations of both the proposed Kiahuna Poipu Golf Resort (in blue) and The Villages at Poipu (in orange).



Mapping of Critical Habitat for These Cave-Dependent Species Must Be Updated

Critical habitat listing should include consideration of physical and biological habitat features needed for life and successful reproduction of the species. These include:

- space for individual and population growth and for normal behavior;
- cover or shelter;
- food, water, air, light, minerals, or other nutritional or physiological requirements;
- sites for breeding and rearing;
- offspring; and
- habitats that are protected from disturbances or are representative of the historic geographical and ecological distributions of a species.

Primary constituent elements are those physical and biological features of a landscape that a species needs to survive and reproduce. (See 50 C.F.R. § 424.12(2)(b).)

Since the original Listing, and the 2003 Critical Habitat designation for the spider and its amphipod prey, the state of the science has matured considerably. The original field reconnaissance methods were limited both by vegetation and ground conditions, and the cultural practice of protecting cave entrances.

Currently, there are a number of technologies that allow the assessment of potential cave features and cave connectivity, as well as tools for direct observation. For example, geophysical survey techniques such as ground penetrating radar, airborne and surface magnetic and resistivity assessments, and seismic survey techniques are all vastly superior in their ability to differentiate features, and far more cost effective than they were even 10 years ago. Each of those techniques has potential application in assessing the potential degree of cave and fracture proliferation, as well as assessing the connectivity of these complexes. Critical habitat and its relationship to the success of threatened species must be reassessed in light of contemporary ability to assess the connectivity of these features. In particular, the influence of surface impacts should be assessed to supplement the simple mapping completed previously.

Once a cave or open fracture is found, scoping methods, such as Internal Close Circuit Television Inspection, are now used commercially at scale and widely available. A survey protocol could be readily developed and this minimally invasive technique warrants review as a means to avoid or minimize take in the monitoring and population census.

* * *

Save Koloa respectfully requests that the Service take into account the changes in condition of the critical habitat, the availability of significantly advanced mapping and monitoring technologies that are now best available commercial and scientific data collection methods, along with the remarkable cultural importance of these sites, as a part of its review. Specifically, additional reconnaissance is necessary to ensure that the primary constituent elements that these species need to survive and reproduce are designated as critical habitat. Given the very real pendency of development of parcels between identified caves where these species are known to exist, it is imperative that underground features connecting these caves be identified and protected.

In addition to providing critical habitat for listed species, these delicate caves and lava tubes are culturally significant archeological features that were used as burial sites by Native Hawaiians, and must be protected for that reason as well. In Hawaiian culture, ancestral bones, or *iwi*, possess a person's mana, or spiritual essence, and were, thus, considered sacred. These sites appear to be the remains of extensive agricultural complex that at one time stretched from Koloa Town to the Coast. For Hawaiians, the proper and respectful treatment of ancestral bones remains essential to avoid insulting the person's spirit and bringing trauma and harm to living descendants. Construction has often resulted in the accidental disturbing of ancient burial sites and the disinterring of human remains. Proper protection of habitat for listed species will also preserve these culturally significant sites.

Save Koloa is available to assist the Service in conducting the five-year review. In particular, Save Koloa would be happy to take Service staff on a tour or otherwise help to locate relevant local information. Please contact me (osha@semlawyers.com or (916) 455-7300) or Elizabeth Okinaka (helpsavekoloa@gmail.com or (808) 635-7520) with any questions. Please also add us to the list of interested individuals to receive all notices regarding the critical habitat review.

Very truly yours,

SOLURI MESERVE
A Law Corporation

By: 
Osha R. Meserve

Enclosure: Exhibit A - Technical Assistance Letter from Pacific Islands Fish and Wildlife Office to State of Hawai'i Office of Planning, April 24, 2014

cc: Interior Secretary Deb Haaland
1849 C Street, NW, MS 5311
Washington, DC 20240
(feedback@ios.doi.gov)
Aaron Nadig, USFWS Island Team Manager (aaron_nadig@fws.gov)
Ivan Vicente (Ivan_vicente@fws.com)
Save Koloa (helpsavekoloa@gmail.com)
Friends of Maha`ulepu (kiaiwaialeale@gmail.com)
Sierra Club Hawaii (Oahu), Martha Townsend (martha.townsend@sierraclub.org)
Sierra Club Kauai, Judy Dalton and Rayne Regush
(judydalton123@gmail.com; rayneregush@aol.com)
Center for Biological Diversity, Maxx Phillips
(mphillips@biologicaldiversity.org, center@biologicaldiversity.org)
Doug Carstens, Chatten-Brown, Carstens & Minteer LLP (dpc@cbcearthlaw.com)

EXHIBIT A

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
2014-TA-0142

Mr. Jesse K. Souki
Office of Planning
State of Hawai'i
235 South Beretania Street
Honolulu, Hawai'i 96786

ORIGINAL

Subject: Technical Assistance for Motion to Amend Conditions Nos. 5 and 7 through 22 of Decision and Order, TMK 2-8-12: 05, 07, 08, POR. 19, 20, 21, 26-36; 2-8-12: 77; 2-8-29: 1-94, Poipu, Kaua'i

Dear Mr. Souki:

The U.S. Fish and Wildlife Service (Service) received your letter dated January 28, 2014, regarding the effects of a Motion to Amend by Moana Corporation (Kiahuna Mauka Partners, LLC (KMP)) which proposes to delete conditions numbers 5 and 7 through 22 of Decision and Orders dated July 7, 1977 and August 5, 1997. The deletions are proposed by KMP on the basis of administrative efficiency that the said conditions have been met fully or substantially met, and are no longer applicable, or can and will be enforced by the County of Kaua'i and thus no longer required to be enforced by the Land Use Commission.

We reviewed the Motion to Amend pursuant to the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*). The information you provided and pertinent information in our files, indicate the endangered Kaua'i cave wolf spider (*Adelocosa anops*) and endangered Kaua'i cave amphipod (*Spelaeorchestia koloana*) are in the vicinity of TMK 2-8-14: 05, 07, 08, POR. 19, 20, 21, 26-36; 2-8-15: 77; 2-8-29: 1-94. Critical habitat has been federally designated for these species on approximately 6-acres of land surrounding and including the Kiahuna Makai Cave on April 9, 2003 (68 FR 17430-17470). Adjacent properties have also been designated critical habitat for these cave species. For the conservation and protection of the endangered Kaua'i cave wolf spider and Kaua'i cave amphipod we are providing the following recommendations to assist you in the preparation of the State's response to the Land Use Commission's hearing on the Motion. The Service's position has not changed from our last correspondence with KMP on October 26, 2006, reiterating that the absence of the cave spider or amphipods from the accessible Kiahuna Makai Cave does not indicate that they do not exist within the mesocaverns of the surrounding areas. Therefore, we are unable to concur with KMP's request to delete Condition No. 7 of Decision and Orders dated July 7, 1977 and August

5, 1997 due to the fact that building in the areas surrounding the cave that contain these mesocaverns could result in take of the cave spider or amphipod. We have no comment on Conditions Nos. 5 and 8-22 since they do not pertain to ESA listed species and therefore do not fall under our jurisdiction.

The Kaua'i cave wolf spider and the Kaua'i cave amphipod are obligate cave-dwelling arthropods restricted to the Koloa basin of the island of Kaua'i where lava tubes and other cave bearing rock substrate are present. Urban, agricultural development and quarrying operations within the area threatens the habitat of these cave arthropods. Another threat comes from non-native insect species that may prey upon and also compete for limited food resources. Human visitation and use of caves are threats including urban and commercial pesticide use. Environmental threats such as extended droughts also threaten these species by altering the high-humidity environment to which these arthropods are adapted and facilitating invasion by non-native species.

These species live in inaccessible mesocaverns (voids and inaccessible passages) as well as large cave passages making estimates difficult. Few of the known caves in the Koloa District provide appropriate habitat for these arthropods which are typically only found in the dark and stagnant air zones (two of five cave zones typified by low air movement, elevated relative humidity, and reduced temperature fluctuations) of caves and require high humidity conditions (Bousfield and Howarth 1979; Hadley *et al.* 1981; Ahearn and Howarth 1982). The limited number of occupied caves greatly limits our knowledge of the life history requirements of these arthropods.

The Service has conducted nine surveys in the Kiahuna Makai Cave between the years of 1998 and 2003. The Service has not been able access to conduct further surveys of Kiahuna Makai Cave since 2003. The last survey of the site on September 17, 2003, no cave spiders or amphipods were observed. However, this cave is important for both animals because historic occurrences in the 1990s. The Service designated critical habitat for both species in Kiahuna Makai Cave due to its importance in the overall recovery of these species. It is probable that the endangered Kaua'i cave wolf spider and the Kaua'i cave amphipod are still present on the property in voids and passages inaccessible by humans.

All areas designated as critical habitat are deemed essential to the conservation of these species providing for a widely distributed pattern of the highest quality habitat left in the Koloa Basin. In the case of the cave dwelling animals, areas designated provide occupied and unoccupied habitat for protection against catastrophic events by allowing a wider distribution throughout the Koloa Basin. Designated surrounding mesocaverns incorporate the areas where the majority of the cave animals are likely to occur, providing refugia from fluctuating conditions in caves and are essential to the conservation and recovery of the species.

Previous discussions between the Service and KMP identified KMP's intent to develop the property surrounding the Kiahuna Makai Cave. We recommend that KMP applies for an incidental take permit, because development of the area could result in take of listed species. As part of the incidental take permit process, KMP will need to develop a habitat conservation plan (HCP). Through this process, private landowners are able to carry out otherwise lawful activities

(i.e., home building) while protecting and conserving listed species in compliance with the ESA. Landowners are assured that if "unforeseen circumstances" arise, we will not require the commitment of additional restrictions on the use of land or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the permittee.

Any projects occurring where endangered and threated animal species exist must avoid take of federally listed species under the ESA. The ESA defines "take" as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The term "harass" is further defined as an intentional or negligent act or omission which created the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering. The term "harm" means an act which actually injures or kills listed species. Such acts may include significant habitat modification or degradation where there is a likelihood of adverse impacts to these species by significantly impacting essential behavioral patterns. In addition, if a project contains a Federal nexus (*i.e.,* Federal permit or Federal monies), private landowners or project proponents need to consult with the Service under section 7 of the ESA.

In addition to contacting the Service regarding the development of an HCP, guidelines have been developed by KMP in discussion with the Service in 2003 to minimize impacts to the cave spider and amphipods and their habitats. They are: 1) the Kiahuna Makai Cave will not be collapsed, 2) plantings of milo and other suggested planting will be planted on top of the cave foot print, 3) the cave location will not be published on public maps, 4) a disclosure about critical habitat and the Kaua'i cave wolf spider and the Kaua'i cave amphipod will be given to any successor owners, 5) a 50-foot no build zone will be established above Kiahuna Makai Cave areas to make sure no structures are built on top of the cave. Areas in the critical habitat designated lands with exposed rock or places where the soil layer is less than a foot deep will not be graded, paved, or filled or underlying caves collapsed, 6) the cactus and haole koa now occupying lands surrounding and above the cave will be removed by hydroaxel/slash busters, and 7) if during construction a subsequent cave is found, the owners will stop work around the newly found cave and immediately notify the Service which will provide guidance to minimize and mitigate adverse effects. Work may only continue upon implementation of guidelines or actions developed during consultation with the Service.

The guidelines are still needed to minimize impacts to cave habitats that have been, and continue to be, degraded or destroyed through surface alterations such as the removal of perennial vegetation, soil fill, grading, paving, collapsing and filling of caves, and other activities associated with development and agriculture. In addition, a 50-foot no-build buffer zone around the cave will not guarantee avoidance of take of the cave animals. However, avoiding areas with exposed rock or places where the soil layer is less than a foot deep will greatly minimize the chance of adversely affecting cave animals either by direct loss or injury to individuals or by altering existing habitat which diminishes its quality or function. Although not stated in the 2003 guidelines, the use of pesticides, herbicides, and other chemicals around the cave and on the property should also be used with extreme caution, as liquid substances and smoke or fumes can percolate through the cracks and crevices of cave habitats effecting cave spiders and amphipods.

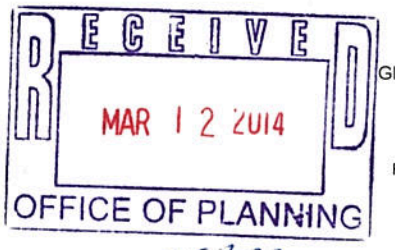
Although guidelines to minimize development impacts have been established, the Services does not support the deletion of Condition No. 7 in the Decision and Orders dated July 7, 1977 and August 5, 1997 due to the possible presence of the Kaua'i cave spider and Kaua'i cave amphipod in the voids or passage ways on the property that are inaccessible to humans. These species are only known to occur in the Koloa basin on the island of Kaua'i and further restricted to areas where above and below ground alterations to lave tubes and other cave bearing rock substrates have not occurred.

We appreciate your efforts to conserve endangered species. If you have questions regarding this response, please contact Joy Hiromasa Browning, Fish and Wildlife Biologist (phone: 808-792-9400 or email: Joy_Browning@fws.gov).

Sincerely,

Aaron Nadig
Acting Assistant Field Supervisor:
O'ahu, Kaua'i, NWHI, Am. Samoa

NEIL ABERCROMBIE
GOVERNOR



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GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
RANDY GRUNE
AUDREY HIDANO
JADINE URASAKI

IN REPLY REFER TO:
HWY-PS 2.6692

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

ORIGINAL

March 10, 2014

TO: JESSE K. SOUKI, DIRECTOR
OFFICE OF PLANNING
DEPARTMENT OF BUSINESS ECONOMIC DEVELOPMENT AND TOURISM

FROM: GLENN M. OKIMOTO, PH.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: MOTION TO AMEND CONDITIONS OF APPROVAL, LAND USE COMMISSION DOCKET NO. A76-418, MOANA CORPORATION,
PROPOSED ACTION: MOTION TO DELETE CONDITIONS 5 AND 7 THRU 22 OF DECISION AND ORDER, POIPU, KAUAI
TMK: (4) 2-8-14:5, 7, 8, POR. 19, 20, 21, 26-36; 2-8-15:77; 2-8-29:1-94

Thank you for the opportunity to respond to the subject motion from Petitioner, Kaihuna Mauka Partners, LLC, dated January 7, 2014. This Petition of Moana Corporation to amend the Agricultural Land Use District Boundary into the Urban Land Use District for approximately 457.54 acres of the subject lands was filed by the State Land Use Commission as Docket No. A76-418 on July 7, 1977, and an Order Granting First Hawaiian Bank, Trustee of the Eric A. Knudsen Trust's Amendment to Motion to Modify Condition Imposed by the Land Use Commission was filed and effective on August 5, 1997. Portions of the land area are referred to as the Knudsen Property and as the Sports Shinko Property.

The Department of Transportation (DOT) objects to the Petitioner's request to delete Condition No. 12 of the Decision and Order in the subject Land Use Commission Docket A76-418, and DOT has the following comments regarding Condition No. 12:

1. The traffic generated by the project will have an impact on Kaumualii Highway, State Route 50, particularly at the intersections of Kaumualii Highway with Maluhia Road and with Koloa Road.

2. The Traffic Impact Analysis Report (TIAR) prepared by Austin, Tsutsumi and Associates, dated December 8, 2003 and finalized September 13, 2005, which we reviewed, analyzes the 210-acre Knudsen Property [TMK: (4) 2-8-013:001 and 2-8-014:001 to 004, 019 and 037].

3. The TIAR identified above did not analyze the other properties in the subject Docket A76-418, including the Sports Shinko Property. If and when the County of Kauai requires an updated TIAR that includes the Sports Shinko Property, the DOT would appreciate the opportunity to review and comment on any updated TIAR, as specified in Condition No. 12.

If you have any questions, please contact Gary Ashikawa, Systems Planning Engineer, Highways Division, Planning Branch, at 587-6336.

ORDINANCE NO. PM-31-79

BILL NO. 585 Draft 1
(As amended)

AN ORDINANCE AMENDING ORDINANCE NO. 164
COMPREHENSIVE ZONING ORDINANCE OF THE
COUNTY OF KAUAI
(Moana Corporation)

BE IT ORDAINED BY THE COUNCIL OF THE COUNTY OF KAUAI, STATE OF HAWAII:

SECTION 1. That the Zoning Map ZM-KO & PO 300 is hereby amended by changing the present "Open District (O)" to "Neighborhood Commercial District (C-N) and Residential Districts (R-20), (R-10), (R-6), (R-4)" for TMK: 2-8-14; Por. 1, 5, 6; 2-8-13: Por. 5, Poipu, Koloa, as recommended by the Planning Commission subject to the following conditions:

1. For the purpose of relieving the housing impact which will result from the proposed development, and in lieu of the 140 home sites to be provided by the Applicant, the Applicant will contribute the sum of $2,000,000 to the County of Kauai to be used for the implementation of a County housing program. The sum will be paid as single family residential lots are sold on the basis of $10,000 per lot sold in the development, but no later than 5 years from the date construction commences in this development. At the end of 5 years, the balance of the $2,000,000 shall be due and payable to the County in one lump sum, unless the Applicant is unable to perform due to economic conditions beyond its control, in which event the Applicant shall seek an extension from the Council.

   This condition shall be subject to the withdrawal by the Land Use Commission of the State of Hawaii of its conditions numbered 1, 2, 3 and 4, relating to housing and the amending of condition No. 9 relating to performance time to provide housing as contained in its Decision and Order in Docket No. A-76-418, dated July 7, 1977.

   The County of Kauai will assist the Applicant in petitioning the Land Use Commission to delete the aforesaid housing conditions from its Decision and Order in the aforesaid Docket No. A-76-418.

2. In order to satisfy the need for employee housing, the Applicant shall make available to employees:

   a) Rental housing at a reasonable cost, which would be based on ability to pay.

   Because not all employees will need housing, the Applicant shall establish qualifying criteria to determine what employees are in need of housing and how many units will be needed.

3. The Applicant shall make the recreational and other amenities of the development such as golf course, golf clubhouse, swimming facilities, tennis courts, and theater and cultural center available for public use at reasonable usage fees.

OP EXHIBIT E

4. That the Applicant dedicate to the County of Kauai approximately 20 acres of land makai of Poipu Beach Road and abutting Poipu Beach Park for expansion of the park.

   With respect to this condition, the dedication shall occur as soon as Applicant may reasonably obtain a subdivision of said property, but shall not be required to make the dedication in less than 2 years from the date of zoning approval but not more than 5 years from that date hereof.

   The Applicant shall further sign an agreement with the County to this effect; such agreement shall give the County the right to occupy and improve the property if necessary.

5. The Applicant shall preserve:

   a) the five (5) archaeological sites identified in the archaeological and biological report and shall cause no construction or alteration or other land disturbances on said sites except for preservation and restoration of the sites.

   b) the two lava tubes containing the habitat of the eyeless big-eyed hunting spider and protect these from man-made encroachments. Permission to re-survey three (3) other caves that are potential habitats, shall be granted for scientific purposes, before these caves are destroyed.

6. No site identified in the report, "Archaeological and Biological Survey of the Proposed Kiahuna Golf Course Village Area, Koloa, Kona, Kauai Island, Hawaii" shall be graded, grubbed, bulldozed, or in any way destroyed unless in accordance with a plan, mutually agreed upon by the Applicant and the archaeologist that has been prepared whereby the archaeological salvage will be accomplished by means of coordinating any grading, grubbing or similar work by the Applicant with the archaeological salvage.

7. That to whatever extent possible within the confines of union requirements and applicable legal prohibitions against the discrimination in employment the Applicant, as represented, shall hire Kauai contractors as long as they are reasonably competitive with other contractors, and employ residents of Kauai in the temporary construction and permanent hotel related jobs. The Applicant may have to employ non-Kauai residents for particular skilled jobs when no Kauai resident possess such skills. However, the Applicant shall cooperate with, and utilize, whatever government training program may be available so that Kauai residents can be trained to fill such jobs. For the purposes of this condition, the Commission relieves the Applicant of this requirement if he is subjected to anti-competitive restraints on trade or other monopolistic practices.

8. The Applicant shall provide a minimum 6 feet wide public pedestrian access from the commercial area to the beach site. Public restrooms and showers shall also be provided and maintained by the Applicant in the vicinity

of the existing beach right-of-way. The Applicant shall further provide alternative parking plans for additional parking stalls for beach-goers in the vicinity of the Hoone Street cul-de-sac. The public parking area proposed by the commercial area shall be used for back-up parking needs for beach goers.

9. When the final route for the by-pass roadway from Poipu to Koloa is determined, the Applicant shall participate in his pro rata share of the cost of the by-pass road. If the alignment of the roadway traverses over the owner's property, then the portion of property required for the roadway shall be dedicated to the County by the owner. The pro rata share will be established in a manner agreed upon by the Applicant and the Department of Planning and Public Works.

   Furthermore, should the by-pass road occur along the East boundary of the project, the owner shall be required to dedicate a 40 feet strip of land abutting Weliweli Subdivision for roadway purposes, and the Applicant shall participate in his pro rata share of the cost of the by-pass road. Until the final by-pass route is determined, no development shall be allowed within this 40 feet strip. Should the by-pass road not occur along the East boundary of the project, the 40 feet strip shall be kept as a buffer zone between the project and the abutting Weliweli Subdivision. The Applicant shall be entitled to use the land area comprising the 40 feet strip in the calculation of the permissible number of lots in the abutting rezoned area.

   Furthermore, should funds not become immediately available to construct the by-pass road, the Applicant shall work with the Planning and Public Works Departments to consider providing an interim alternate road through the site connecting Poipu to Koloa, to resolve potential traffic congestion that would occur on Poipu Road.

10. All interior roadways shall comply with the County standards. Direct lot access to Poipu Road shall not be permitted. Lot accesses shall be from the interior roads.

11. The drainage diversion channels shall be reviewed and approved by the Public Works Department, and settling basins shall be provided if required.

12. The grading of the subject development shall comply with Grading Ordinance No. 262. The maximum area of land that may be opened for grading or grubbing is 20 acres. Additional area shall not be opened for grading or grubbing until measures to prevent dust or erosion problems in the area already graded or grubbed have been satisfactorily completed.

13. The Applicant shall be required to tie in its efforts in providing sewage facilities for the project with County Planning for sewage facilities, and shall work with the Department of Health and Department of Public Works towards the development of a regional sewage treatment plant.

14. If Applicant is to use water provided by the Department of Water, Applicant shall be required to contribute to the Department of Water its pro rata share of the cost to provide domestic water to the subject parcel.

15. The proposed amphitheatre site shall be kept and reviewed for possible relocation, if necessary, to minimize noise impacts to Weliweli Subdivision. Site location, stage orientation, facility design, landscaped berms, limitations on uses, and other means of reducing noise impacts shall be utilized in the planning of this facility.

16. All access roads shall be provided to within 250 feet to all sections of all building structures and shall not be less than 20 feet wide. Fire extinguishers installed as required by the NFPA 10, Installation of Fire Extinguishers. Fire hydrants complying with water department standards shall be located within 250 feet and not to exceed 500 feet from the protected buildings.

17. A landscaped buffer zone shall be provided along Poipu Road. Open vistas from Poipu Road to the golf course shall be, however, provided to create a feeling of openness along the Poipu Road.

18. The Applicant shall meet with the Planning Department and Public Works Department relative to the future improvements to Hapa Road, and its relationship to the traffic circulation.

19. Prior to the approval of any subdivision or zoning permit, the Applicant shall provide the following:

    a) Qualifying criteria for employee housing and preferential rates or purchase prices for employees;

    b) Alternative plans for additional parking areas for beachgoers located in the vicinity of Hoonani Road cul-de-sac;

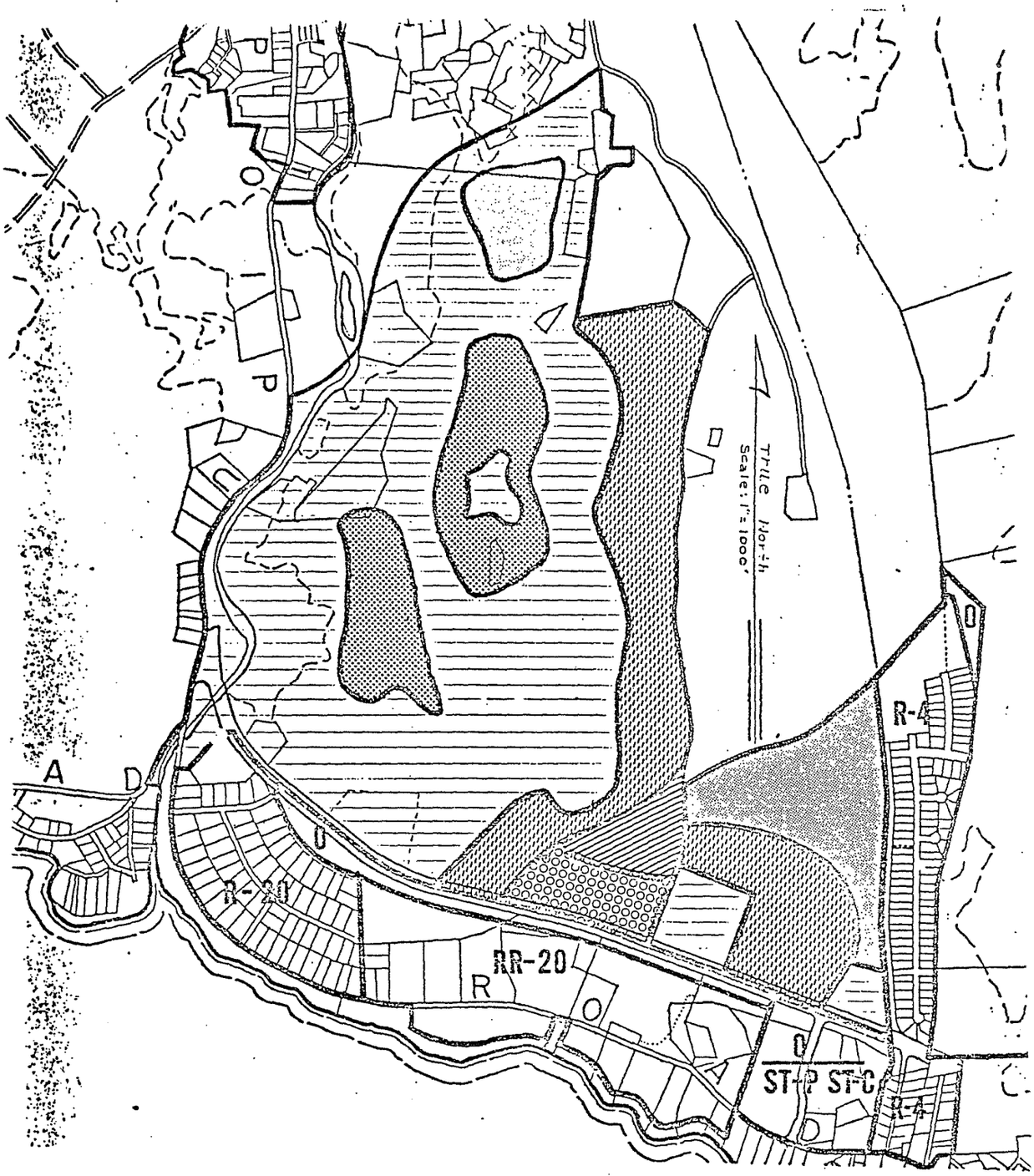
    c) Amphitheatre design criteria, use restrictions and alternative site if relocation is necessary.

20. Applicant shall obtain building permits, electrical permits and plumbing permits prior to starting construction of any structures to be erected on the property.

21. Prior to and during any development or construction, all applicable State and County laws, codes, ordinances, rules and regulations be complied with.

SECTION 2. The Planning Commission is directed to note the change on the official Zoning Map ZM-KO & PO 300 on file with the Commission. All applicable provisions of the Comprehensive Zoning Ordinance shall apply to the district as amended.

SECTION 3. This ordinance shall take effect upon its approval.



L E G E N D

- Proposed Amendment To Zoning Map From Ag. District To R-4 District
- " " " " " " " " " R-6 "
- " " " " " " " " " R-10 "
- " " " " " " " " " R-20 "
- " " " " " " " " " C-N "
- Open District

LOCATION SHOWING

PROPOSED AMENDMENT TO ZONING MAP ZM-KO & PO-30C

FROM

OPEN DISTRICT (O) TO R-4, R-6, R-10, R-20, C-N DISTRICTS

KOLOA, POIPU, KAUAI

ZA-79-3

CERTIFICATE OF THE COUNTY CLERK

I hereby certify that hereto attached is a true and correct copy of Bill No. 585 (Draft 1), As Amended, which was passed on second and final reading by the Council of the County of Kauai at its meeting held on March 20, 1979, by the follow ng vote:

FOR ADOPTION: Baptiste, Hew, Sarita, Tsuchiya, Yadao, Yotsuda — TOTAL - 6,
AGAINST ADOPTION: Yukimura — TOTAL - 1,
ABSENT & NOT VOTING: None — TOTAL - 0.

Dated at Lihue, Kauai, Hawaii,
this 23rd day of
March, A. D. 1979.

Tatsuo Kato
Deputy County Clerk
County of Kauai

Date of transmittal to the Mayor:

March 23, 1979

Approved this 23rd day of
March, A. D. 1979.

Eduardo E. Malapit
Mayor
County of Kauai

EXHIBIT F

attachment B

Kauanoe o Kōloa Project

Draft Biological Resources Survey Report

Prepared for:

Meridian Pacific, LTD

December 2021

TETRA TECH

COMPLEX WORLD CLEAR SOLUTIONS

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1.0 Introduction

Meridian Pacific, LTD (Meridian Pacific) is proposing the Kauanoe o Kōloa Project (Project) in the Kōloa District on the Island of Kaua'i. The proposed Project involves construction of approximately 279 fee-simple condominium homes and associated facilities on 25.4 acres (10.3 hectare) within Tax Map Key (4) 2-8-014:032.

Meridian Pacific contracted Tetra Tech, Inc. (Tetra Tech) to conduct a biological survey for the Project to support various County of Kaua'i permits. The purpose of the biological survey was to characterize the existing biological resources and determine whether species that are federal or state-listed as threatened or endangered (pursuant to the federal Endangered Species Act or Hawai'i Revised Statutes § 195D), or that are otherwise considered rare, have the potential to occur and could be impacted by construction or operation of the Project. Additionally, Meridian Pacific requested Tetra Tech provide an assessment of whether the Project Area is clear of habitats for the endangered Kaua'i cave amphipod and Kaua'i cave spiders worthy of preservation. This report summarizes the results of the biological survey conducted by Tetra Tech on October 23, 2021, and provides recommendations to avoid and minimize impacts to federally and state listed species.

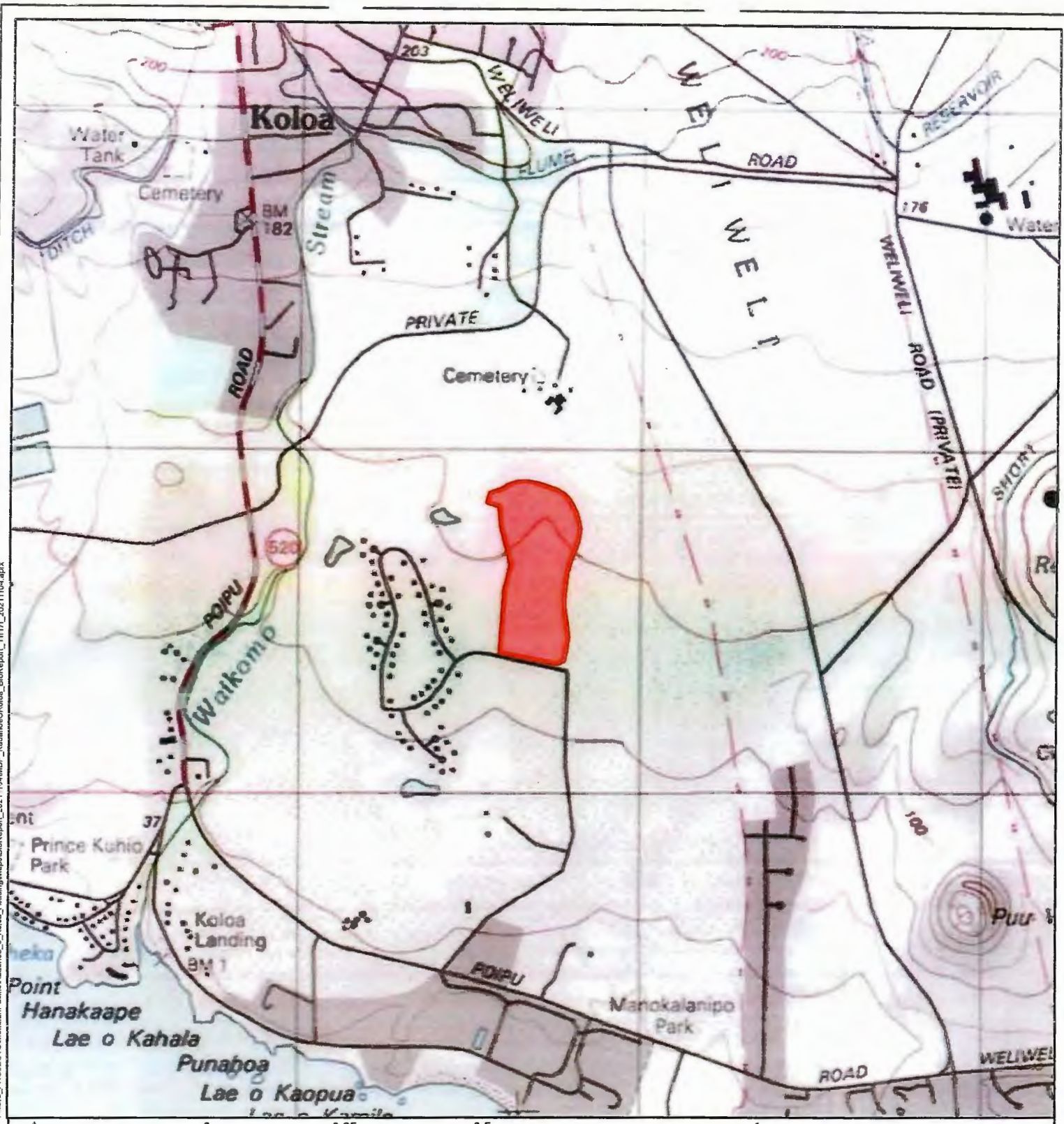
2.0 Description of Study Area

As shown in Figure 1, the Study Area encompasses approximately 25.4 acres (10.3 hectares) in the Kōloa District on the southern portion of Kaua'i (Figure 1). The Study Area is within Tax Map Key (4) 2-8-014:032, which is owned by Pau a Laka LLC and MP Elko II LLC. It is bounded on the east and north by Kiahuna Plantation Drive, on the west by the Kiahuna Golf Course (Hole #6), and on the south by Pa'u A Laka Street and the Pili Mai condominiums.

The Study Area is undeveloped land with no structures or infrastructure. It has previously been grubbed, graded, and disturbed likely multiple times over the last several decades during construction in the vicinity (e.g., Kiahuna Golf Course, Kiahuna Plantation Drive) and during preparation for previously proposed projects by former owners that never materialized (e.g., turf farm) (CSH 2021).

2.1 Climate

The climate in the Study Area is characterized as moderately dry (Price et al. 2012). According to the Online Rainfall Atlas of Hawai'i (Giambelluca et al. 2013), the area receives a mean annual rainfall of approximately 42 inches (1,066 millimeters). Rainfall is typically highest from October-March and lowest from June-July (Giambelluca et al. 2013). The closest functioning National Weather Service rainfall gage to the Study Area (OMAH1 in Omao) recorded close to average rainfall in the months preceding the survey. The year-to-date total for this gage through the end of October 2021 was 60.8 inches (1,544 millimeters), or approximately 134 percent of average (NWS 2021). The National Weather Service rainfall data suggest conditions were within normal range, but slightly wetter than normal when the biological survey was conducted.



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Kauanoe o Kōloa Housing

Figure 1
Study Area and Vicinity

KAUA'I COUNTY, HI

2.2 Topography and Soils

The Study Area is located at approximately 100 feet (30 meters) above mean sea level. Gentle slopes are present within the Study Area, particular near the southwestern and eastern boundaries. Microtopography is uneven in areas with small outcroppings and piles of boulders and debris.

The Natural Resources Conservation Service (NRCS) identifies two soil types in the Study Area: Waikomo very rocky silty clay and Waikomo extremely rocky silty clay (NRCS 2020). The Waikomo series consists of shallow, well-drained stony and rocky soils that formed in material weathered from basic igneous rock with a mixture of volcanic ash and alluvium (Foote et al. 1972).

2.3 Hydrology

The Study Area is within the Waikomo watershed which encompasses roughly 6,912 acres (2,797 hectares) (Parham et al. 2008). No streams or wetlands are present in the Study Area according to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data (NWI 2020), the U.S. Geological Survey (USGS) topographic and National Hydrography Dataset (NHD; NHD 2020), and the State of Hawai'i Division of Aquatic Resources (DAR) dataset (DAR 2008) (Figure 2). Waikomo Stream is located roughly 1,740 feet (530 meters) to the west of the Study Area; it is classified as perennial and drains into Hanakaape Bay. Several man-made surface water features also occur in the vicinity of the Study Area at the Kiahuna Golf Course (see Figure 2).

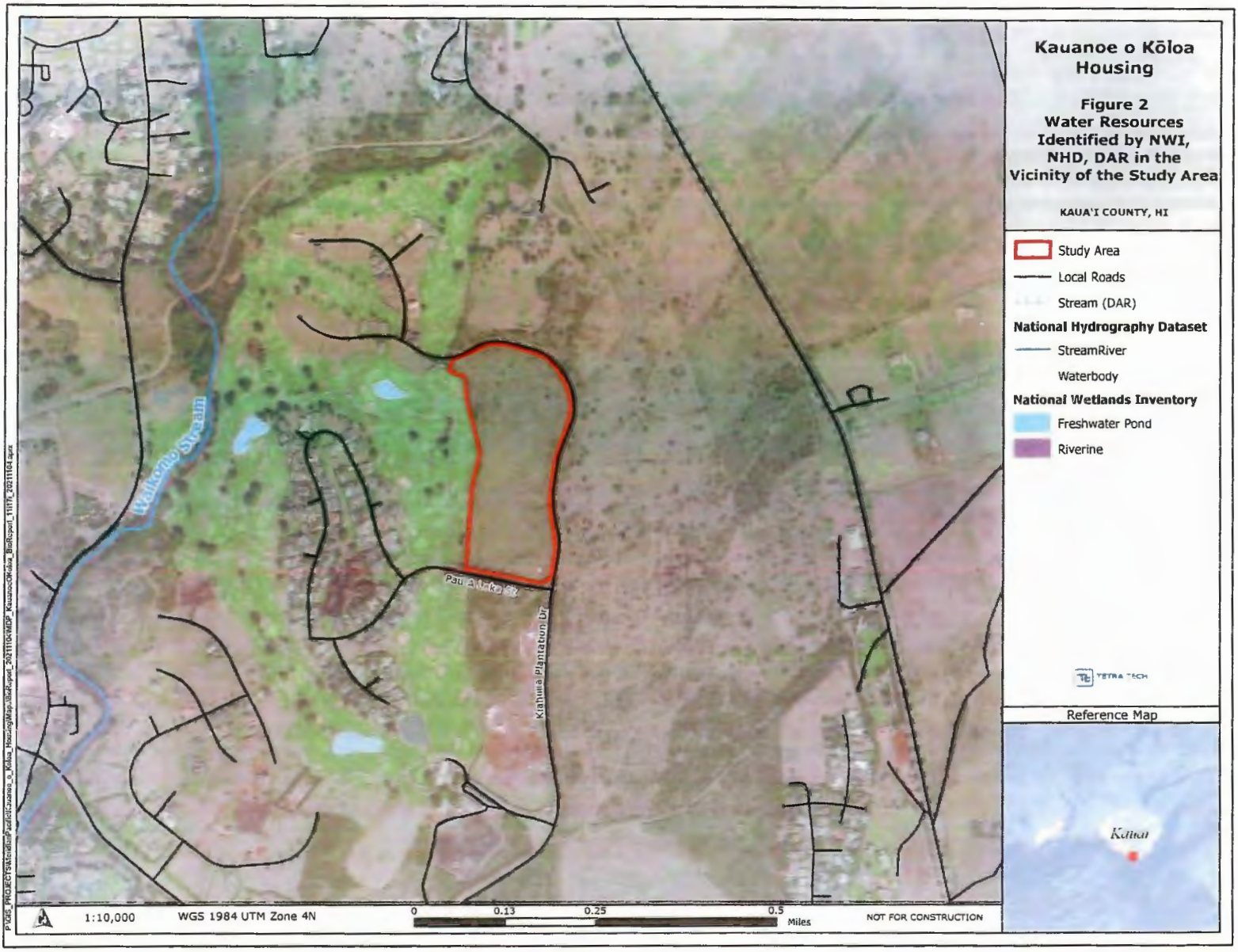
3.0 Methods

Prior to the field survey, Tetra Tech conducted a review of relevant publicly available literature and data relevant to the biological resources in and near the Study Area. Evaluated resources included previous survey reports, environmental assessments and environmental impact statements, public datasets (including NWI, NHD, and DAR), scientific journals and reports, as well as available, unpublished data that are relevant to the natural history and ecology of the area. In addition, Tetra Tech reviewed available geospatial data, aerial photographs, and topographic maps of the Study Area to identify occurrences of federally or state listed or otherwise rare species, or habitats that could harbor these species.

A field survey of the Study Area was conducted on October 23, 2021; the survey was conducted from approximately 9:00 am until 3:00 pm in ideal survey conditions with clear skies, light winds, and warm temperatures. Details regarding the field survey methodologies are provided below.

3.1 Plants

Tetra Tech conducted a pedestrian survey to record common plant species and dominant vegetation types, as well as any listed or rare plant species within the Study Area. Plant identifications were made in the field; plants that could not be positively identified were photo-documented for comparison with the recent taxonomic literature.


Kauanoe o Kōloa Housing
Figure 2
Water Resources Identified by NWI, NHD, DAR in the Vicinity of the Study Area
KAUA'I COUNTY, HI
Study Area
Local Roads
Stream (DAR)
National Hydrography Dataset
StreamRiver
Waterbody
National Wetlands Inventory
Freshwater Pond
Riverine
TETRA TECH
Reference Map
Kauai
Waikomo Stream
Pau A Laka St
Kiahuna Plantation Dr
1:10,000
WGS 1984 UTM Zone 4N
0
0.13
0.25
0.5
Miles
NOT FOR CONSTRUCTION

Plants recorded during the survey are indicative of the season and environmental conditions at the time of the survey. The presence and location of plants can be influenced by seasonal and temporal changes; therefore, it is possible additional species may occur within the Study Area but were not present during this survey.

The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999, 2012), Wagner and Herbst (2003), and Imada (2012, 2019) for native and naturalized flowering plants, Palmer (2003) and Smith et al. (2011) for ferns, and Staples and Herbst (2005) for ornamental plants. Common/Hawaiian names are provided first, followed by scientific names in parentheses. If no common or Hawaiian name is known, only the scientific name is provided.

3.2 Wildlife

Wildlife surveys consisted of observations and identification of birds, mammals, and large invertebrate species encountered while searching the Study Area. Tetra Tech recorded all wildlife seen or heard while walking within the Study Area coupled with visual observation of scat, tracks, and other animal sign. Habitats or plants that could support listed wildlife species were also identified if present (e.g., water features as potential habitat for listed Hawaiian waterbirds).

Observations of large invertebrates encountered were recorded incidentally to plant and wildlife surveys. Invertebrates were identified through visual observations and were not collected in the field. Invertebrates in soil or hidden in vegetation would not typically be incidentally observed during a plant and wildlife survey and this effort includes only large and conspicuous detections.

The Study Area is adjacent to critical habitat for listed cave invertebrates (see Sections 4.0 and 4.1.3 below). Obligate cave-dwelling arthropods live in subterranean mesocaverns (underground spaces, caves, cracks, crevices, voids) with above ground soil deposits of less than 12 inches (305 millimeters). Subterranean invertebrate surveys for listed cave species were not conducted; however, the biologists scanned the Study Area for cave or lava tube openings to inform future surveys.

Specific surveys for the endangered Hawaiian hoary bat or ʻōpeʻapeʻa (*Lasiurus cinereus semotus*) through the use of acoustic bat detectors or nighttime observation were not conducted. Rather, as the USFWS and State of Hawai'i Division of Forestry and Wildlife (DOFAW) recognize all woody vegetation greater than 15 feet (4.5 meters) tall as potential bat roosting habitat (DOFAW 2015, USFWS 2019), Tetra Tech noted the presence/absence of any such vegetation within the Study Area.

Scientific nomenclature for birds follows Birds of the World (Billerman et al. 2020). Scientific names for mammals follow Tomich (1986). Scientific nomenclature follows Nishida (2002) for invertebrates.

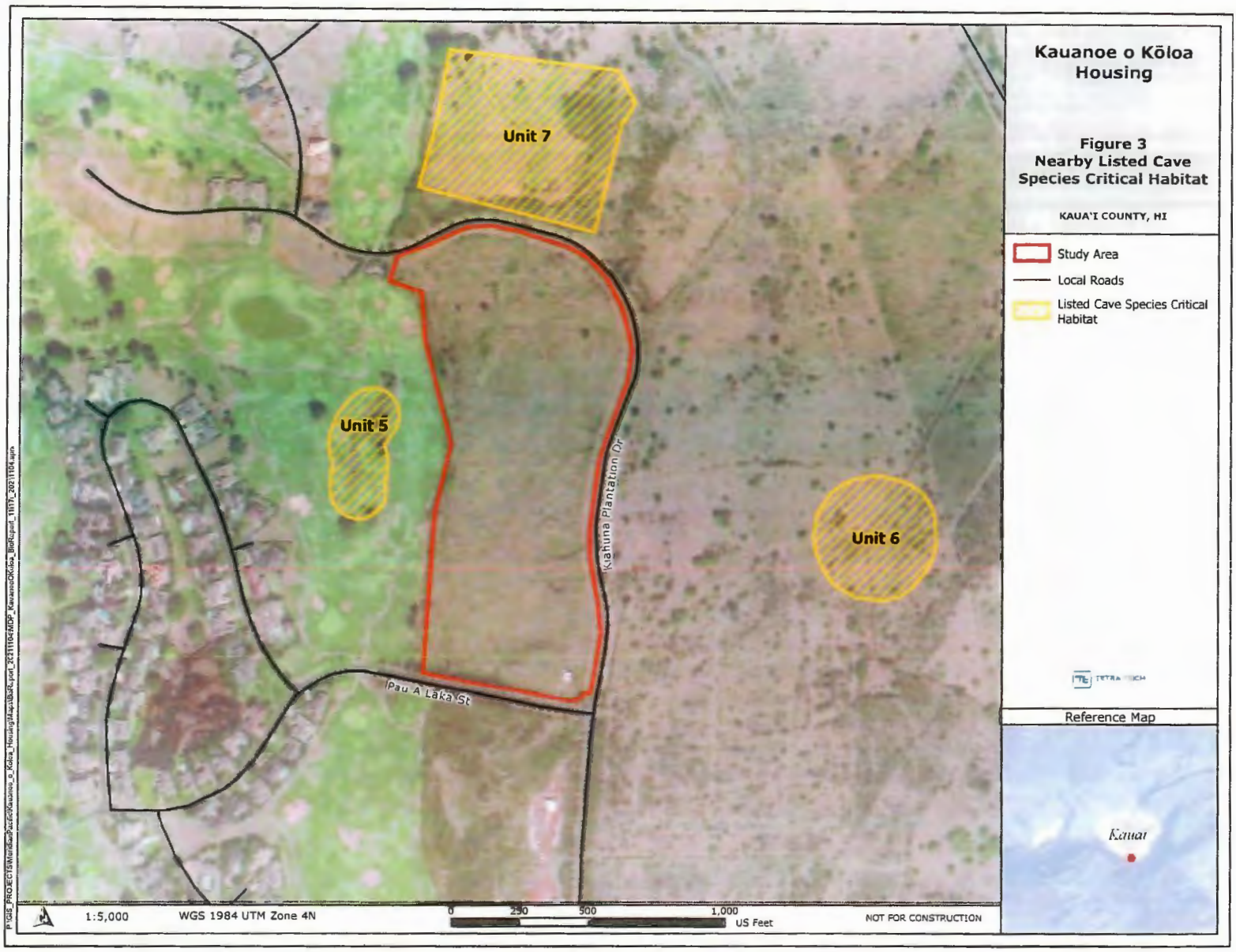
4.0 Results and Discussion

Representative photographs of the Study Area are presented in Appendix A. The Study Area comprises degraded land that has been heavily disturbed by historic agricultural activities, as well as more recent grading and grubbing. Evidence of ground disturbing activities were seen in several areas during the survey and included piles of boulders, rock, asphalt and concrete debris, as well as equipment tracks. Past disturbances, in addition to the introduction of invasive plants and animals, have modified and degraded the native biological resources in the Study Area. The area is dominated by non-native plant and wildlife species, and suitable habitat for native species is limited. Of the native species observed, most are common across Kaua'i and other Hawaiian Islands.

Two state and federally-listed species were detected within the Study Area or immediate vicinity: the endangered Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*)[1] and threatened Hawaiian goose or nēnē (*Branta sandvicensis*). These listed bird species were detected at the Kiahuna Golf Course located immediately to the west of the Study Area. The Hawaiian stilt was heard and the Hawaiian goose was seen on the golf course. Hawaiian geese were also observed flying over the Study Area from the golf course.

Several other state or federally-listed species not observed in the Study Area during the survey may occur in or traverse the Study Area. Although no designated critical habitat for listed species occurs in the Study Area, critical habitat for the endangered Kaua'i cave wolf spider or pe'e pe'e maka'ole (*Adelocosa anops*) and the endangered Kaua'i cave amphipod or 'uku noho ana (*Spelaeorchestia koloana*) occur in the vicinity to the west, north, and east (see Figure 3 and Section 4.1.3). State and federally listed species are discussed in further detail in Section 4.2 below.

[1] USFWS (2021) recently proposed to reclassify the Hawaiian stilt from an endangered species to a threatened species.


Kauanoe o Kōloa Housing
Figure 3
Nearby Listed Cave Species Critical Habitat
KAUA'I COUNTY, HI
Study Area
Local Roads
Listed Cave Species Critical Habitat
Unit 7
Unit 5
Unit 6
Kiahuna Plantation Dr
Pau A Laka St
Reference Map
Kauai
1:5,000
WGS 1984 UTM Zone 4N
0
250
500
1,000
US Feet
NOT FOR CONSTRUCTION

4.1 Plants

No federally or state listed plant species or rare plant species were observed in the Study Area during the survey. A total of 96 plant species were documented within the Study Area. Of these, only two plant species—'uhaloa (*Waltheria indica*) and *Nephrolepis cordifolia* (a fern)—are considered native to the Hawaiian Islands. These indigenous species are not considered rare and are commonly found throughout the islands. A list of plants observed during the survey is presented in Appendix B.

The vegetation within the Study Area is dominated by non-native Guinea grass (*Megathyrsus maximus*) and koa haole (*Leucaena leucocephala*) trees (see Photos 1-4 in Appendix A). Guinea grass reaches over 5 feet (1.5 meters) tall in some portions of the Study Area. Koa haole forms open to dense stands, ranging from 3 to 10 feet (0.9–3 meters) in height, with taller trees along the Study Area boundaries. In areas with denser koa haole canopy cover, Guinea grass is shorter compared to areas with few or no trees. Common species scattered throughout include castor bean (*Ricinis communis*), moon cactus (*Harrisia* spp.), Natal redtop (*Melinis repens*), 'uhaloa, and Mauritius hemp (*Furcraea foetida*). Princess vine (*Cissus verticillata*) is locally abundant along the western boundary of the Study Area, climbing over koa haole trees. Patches of *Portulaca* cv. "Wildfire" and Chinese violet (*Asystasia gangetica*) are sparsely scattered in the Study Area.

Along Kiahuna Plantation Drive right-of-way, the vegetation is regularly maintained and consists primarily of zoysia grass (*Zoysia* sp.) with some Bermuda grass (*Cynodon dactylon*). Common weed species growing in the grass include creeping indigo (*Indigofera spicata*), tick clover (*Desmodium triflorum*), and prostrate spurge (*Euphorbia prostrata*). Foxtail palms (*Wodyetia bifurcata*) are planted along the right-of-way.

4.2 Birds

Fourteen bird species were recorded within the Study Area (Table 1). Common myna (*Acridotheres tristis*), house finch (*Haemorhous mexicanus*), and house sparrow (*Passer domesticus*) were the most common bird species recorded during the survey. The majority of the bird species detected are non-native to the Hawaiian Islands and are commonly found in residential or agricultural areas. One native migratory bird species—the Pacific golden-plover or kōlea (*Pluvialis fulva*)—was observed. As stated in Section 4.0, two state and federally-listed bird species were recorded within the Study Area; a Hawaiian stilt was heard at the nearby golf course and Hawaiian geese were seen at the golf course and flying over the Study Area.

Although not observed in the Study Area during the survey, several other federally and state listed bird species may fly over or use habitat in the Study Area. These listed bird species are discussed in further detail below. In addition, although not seen during the survey, the Hawaiian short-eared owl or pueo (*Asio flammeus sandwichensis*) could likely occur in the Study Area and has been observed in nearby areas (Bruner 2002). The Hawaiian short-eared owl is a culturally significant endemic subspecies of the widespread short-eared owl. It is only listed by the State on the Island of O'ahu.

Table 1. Birds Recorded in the Study Area and Immediate Vicinity During the Survey

Common Name	Scientific Name	Status	MBTA	ESA/SOH
Cattle egret	*Bubulcus ibis*	NN	X	
Common myna	*Acridotheres tristis*	NN		
House finch	*Haemorhous mexicanus*	NN	X	
House sparrow	*Passer domesticus*	NN		
Java sparrow	*Padda oryzivora*	NN		
Hawaiian goose, nēnē	*Branta sandvicensis*	E		Thr
Hawaiian stilt, ae'o [1]	*Himantopus mexicanus knudseni*	E		End
Nutmeg mannikin	*Lonchura punctulata*	NN		
Pacific golden-plover, kōlea	*Pluvialis fulva*	M	X	
Red crested cardinal	*Paroaria coronata*	NN		
Red junglefowl	*Gallus gallus*	NN		
Rose-ringed parakeet	*Psittacula krameri*	NN		
Spotted dove	*Streptopelia chinensis*	NN		
Zebra dove	*Geopelia striata*	NN		

Status: E = Endemic, M = Migrant, NN = non-native established species.

MBTA = Migratory Bird Treaty Act; ESA = Endangered Species Act, SOH = State of Hawaii; End = endangered; Thr = threatened

1. Indicates bird seen or heard outside the Study Area, but within the immediate vicinity.

Listed Waterbirds

Listed waterbird species that occur on Kaua'i include the Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*), Hawaiian coot or 'alae kea (*Fulica alai*), Hawaiian gallinule or 'alae 'ula (*Gallinula galeata sandvicensis*), and the Hawaiian duck or koloa (*Anas wyvilliana*); these species are collectively referred to as listed waterbirds. Listed waterbirds are found primarily in and around fresh and brackish-water marshes and natural or man-made ponds. Hawaiian stilts may also be found in fields, and where ephemeral or persistent standing water may occur (Kawasaki et al. 2019). No suitable habitat for listed waterbirds occurs in the Study Area; however, Tetra Tech detected a Hawaiian stilt at the adjacent golf course. It is likely Hawaiian stilts could traverse the Study Area while moving to and from the golf course.

Hawaiian Goose

The threatened Hawaiian goose was observed at the adjacent golf course and seen flying over the Study Area. Hawaiian geese use various habitat types, including beach strand, shrubland, grasslands to lava rock (Banko et al. 2020). They are also known to use landscaped/maintained areas, such as golf courses, grazed pastures, playing fields, and lawns. It is possible that Hawaiian geese may fly through the Study Area when in transit to and from areas with known populations. Hawaiian geese also have the potential

to be attracted to the Study Area during or after construction if foraging habitat is created (i.e., mowed lawns).

Listed Seabirds

Federally and state listed seabird species that occur on Kaua'i include the endangered Hawaiian petrel or 'ua'u (*Pterodroma sandwichensis*), threatened Newell's shearwater or a'o (*Puffinus newelli*), and the endangered band-rumped storm-petrel or 'akē'akē (*Oceanodroma castro*); these species are collectively referred to as listed seabirds. These birds spend most of their life far offshore, but return to land to breed. Nests are typically located in high elevation mountainous areas.

Suitable nesting and foraging habitat for listed seabirds does not occur in the Study Area. However, suitable nesting habitat for listed seabirds exists at upper elevations in many areas of Kaua'i. Therefore, it is possible these seabirds could fly over the Study Area at night between April and December while transiting between nest sites and the ocean.

Listed seabirds may be attracted to construction or operational lights at night. Juvenile birds are particularly vulnerable to light attraction, especially during their post-fledging departure. Disorientation and fallout as a result of light attraction could occur for individuals attracted to nighttime construction lighting and unshielded nighttime facility lighting. Grounded seabirds can become injured or suffer from predation or vehicle strikes (Rodríguez et al. 2017, DOFAW 2020).

4.2.1 Mammals

Evidence of non-native pigs (*Sus scrofa*) were detected within the Study Area. Although not observed, other introduced mammals, such as the house mouse (*Mus musculus*), rats (*Rattus* spp.), cats (*Felis catus*), and dogs (*Canis lupus familiaris*), are likely to occur within the Study Area.

Hawai'i's only native, extant terrestrial mammal—the endangered Hawaiian hoary bat—may transit, roost, or forage in portions of the Study Area. During the survey only some trees over 15 feet (4.5 meters) tall were observed (e.g., koa haole, *Macaranga tanarius*, chinaberry, African tulip). These taller trees occur along the northern and eastern boundaries; however, shorter trees within the Study Area may grow to over 15 feet (4.5 meters) tall and have the potential to function as bat roost trees, per USFWS (2019) and DOFAW (2015).

4.2.2 Invertebrates

Macro-invertebrates incidentally observed during the survey include: the Western honey bee (*Apis mellifera*), carpenter bee (*Xylocopa sonorina*), globe skimmer (*Pantala flavescens*), garden spider (*Argiope* sp.), monarch butterfly (*Danaus plexippus*), large orange sulphur (*Phoebis agarithe*), lantana scrub-hairstreak (*Strymon bazochii*), a grasshopper (Acrididae), and ants (Formicidae). Shells of rosy wolf snails (*Euglandina rosea*) and giant African land snails (*Achatina fulica*) were also observed. Of these, only the globe skimmer is native to the Hawaiian Islands; this dragonfly is common in Hawai'i.

Listed Cave Invertebrates

In 2003, the USFWS designated 14 critical habitat units in the Kōloa- Po'ipū area for the endangered Kaua'i cave wolf spider and Kaua'i cave amphipod (USFWS 2003). Three of the critical habitat units occur in the vicinity of the Study Area; Unit 5 is 164 feet (50 meters) to the west on the Kiahuna Golf Course (see Photo 6 in Appendix A), Unit 7 is 65 feet (20 meters) to the north of the Study Area just mauka of Kiahuna Plantation Drive, and Unit 6 is located 820 feet (250 meters) to the east (see Figure 3). The Kaua'i cave wolf spider and Kaua'i cave amphipod are obligate cave-dwelling arthropods that live in subterranean mesocaverns (underground spaces, caves, cracks, crevices, voids) with above ground soil deposits of less than 12 inches (305 millimeters). Roots from surface vegetation are important for Hawaiian cave arthropods to ensure a dependable food supply is available, and surface modifications can damage cave communities (USFWS 2003, 2006).

No cave openings were found in the Study Area during the biological survey and caves were also not identified during the archaeological field inspection (CSH 2021). Given the amount of previous disturbance in the area (e.g., grading, geotechnical work, herbicide applications), suitable habitat for listed cave invertebrates may not occur.

5.0 Conclusions and Recommendations

As described in Section 4, the majority of the plants and animals observed in the Study Area are introduced, non-native species. However, the state and federally-listed Hawaiian stilt and Hawaiian goose were detected in the Study Area or immediate vicinity. Although no designated critical habitat for listed species occurs in the Study Area, critical habitat for the endangered Kaua'i cave wolf spider and the endangered Kauai cave amphipod occurs in the immediate vicinity. Several other listed wildlife species have the potential to occur in or transit through the Study Area. Recommended measures to avoid and minimize impacts to these federally and state listed species, as well as other native species, are outlined below.

5.1 Plants

The vegetation types and plant species recorded in the Study Area are not considered unique. No federal or state listed plant species were observed. Nearly 98 percent of the plant species observed are not native to the Hawaiian Islands. No endemic plant species were found and the two indigenous plant species commonly occur throughout Hawai'i. Regardless, Tetra Tech recommends the following measures related to plants to avoid and minimize potential impacts of the Project:

- If landscaping is installed as part of the Project, use non-invasive plants and incorporate native plant species to the maximum extent practicable.
- Although non-native weedy species are common in the Study Area, implement invasive species minimization measures to avoid the unintentional introduction or transport of new invasive species to the area. This includes utilizing on-site gravel, rock, and soil (or purchasing from a local supplier) when practicable; utilizing certified, weed-free seed mixes; and washing

construction equipment and/or visually inspecting for excessive dirt, debris, plant materials, and invasive or harmful non-native species, as appropriate. Consult with Kaua'i Invasive Species Committee if needed.

5.2 Wildlife

The majority of the animal species recorded in the Study Area are not native to the Hawaiian Islands. However, as described above, two listed bird species, the migrant Pacific golden-plover, and one native dragonfly species were detected. Tetra Tech recommends the following general measures to avoid and minimize potential impacts to listed wildlife species:

- Establish a wildlife education and observation program for all construction and operational personnel. Staff should be trained about the presence of listed species on-site and in the vicinity. The program should help staff identify listed wildlife that may be found on-site and their suitable habitat (including listed waterbirds, the Hawaiian goose, listed seabirds, and caves for listed cave invertebrates) and to take appropriate steps if listed wildlife species or caves are found.
- If downed listed species are observed at the Project, notify USFWS and DOFAW.
- Post and implement speed limits on site to reduce the risk of collision to listed wildlife.

5.2.1 Listed Waterbirds

The Study Area does not provide suitable nesting or foraging habitat for listed Hawaiian waterbirds because there is no standing water; however, listed waterbirds may fly through the Study Area in transit to and from other areas or forage in the Study Area in the event of temporary flooding. If these species land within the Study Area, they could be impacted by construction and operation activities. Tetra Tech recommends the following avoidance measures adapted from USFWS (2019):

- Avoid creating areas with temporary or permanent standing water to avoid attracting listed waterbirds.
- If listed waterbirds are found in the Project Area during active construction, cease all activities within 100 feet (30 meters) of the bird(s), and do not approach the bird(s). If appropriate nesting habitat is present, a biological monitor that is familiar with the species' biology should conduct Hawaiian waterbird nest surveys. Repeat nest surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which birds may attempt nesting). If a nest of a listed waterbird is not discovered, work may continue after the listed waterbird leaves the area of its own accord.
- If a nest of a listed waterbird is discovered, contact USFWS and DOFAW within 24 hours, and establish a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.

5.2.2 Hawaiian Goose

It is possible that Hawaiian geese may fly through the Study Area when in transit to and from areas with known populations. Should this species occur within the Study Area, it could be impacted by construction and operation activities. Tetra Tech recommends the following avoidance measures adapted from USFWS (2019):

- Do not feed, approach, or disturb any Hawaiian geese observed.
- If Hawaiian geese are observed loafing or foraging within the Project Area during the breeding season (September through April), halt work and have a biologist familiar with nesting behavior survey for nests in the area prior to the resumption of work. Repeat nest surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which birds may attempt nesting). If a nest is discovered, cease all work within 150 feet (46 meters) and contact USFWS and DOFAW for further guidance. If a nest is not discovered, work may continue after the bird leaves the area of its own accord.
- In areas where Hawaiian geese are known to be present, post and implement reduced speed limits.

5.2.3 Listed Seabirds

The Study Area does not provide suitable nesting or foraging habitat for the listed Hawaiian seabirds. However, listed seabirds may fly over the Study Area in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1–December 15) and may be attracted to nighttime lighting. Tetra Tech recommends the following measures to avoid and minimize potential impacts to listed seabirds:

- Avoid nighttime construction during the seabird fledgling period (September 15–December 15).
- If nighttime construction is required outside the seabird fledging period, construction lighting should be shielded and directed downward and fit with non-white lights to minimize the attractiveness of construction lights to seabirds.
- Operational on-site lighting should be fully shielded and directed downward to prevent upward radiation, triggered by a motion detector and/or timer controls when human activity is not occurring, and fitted with non-white light bulbs to the extent possible. Other possible lighting recommendations may include: placing lights under eaves; shifting lighting according to moon phase; decreasing visibility of interior lights; planting vegetation around lights to reduce light visibility; and using longer light wavelengths (DOFAW 2020).
- Minimize construction of overhead lines to reduce collision risk.
- For powerlines, guywires, and other cables, minimize exposure above vegetation height and vertical profile.

- If a grounded seabird is found, contact the Save Our Shearwaters (SOS) program at (808) 635-5117.

5.2.4 Hawaiian Hoary Bat

The USFWS (2019) provides the following avoidance and minimization measures for the Hawaiian hoary bat:

- Avoid trimming or removing woody vegetation (trees or shrubs) taller than 15 feet (4.5 meters) between June 1 and September 15, when juvenile bats are not yet capable of flying and may be roosting in the trees, resulting in the potential to be impacted.
- To prevent entanglement, do not use barbed wire for fencing.

Tetra Tech recommends that if some trimming or removal of woody vegetation taller than 15 feet (4.5 meters) is necessary between June 1 and September 15, consult with USFWS and DOFAW to ensure impacts to the Hawaiian hoary bat are avoided.

5.2.5 Listed Cave Invertebrates

Tetra Tech recommends the following based on USFWS' (2019) avoidance and minimization measures for the Kaua'i cave wolf spider and Kaua'i cave amphipod:

- Prior to ground disturbance, contract a qualified biologist to survey the Project Area for depth of soil deposits and the presence of caves. Any areas with soil deposits greater than 12 inches (305 millimeters) are not likely to provide appropriate habitat or have the species present.
- If caves or areas with soil deposits less than 12 inches are found, contact USFWS and DOFAW and do not disturb the vegetation or soil in the area.
- If a cave is found during construction, stop work around the cave immediately and contact USFWS and DOFAW immediately for guidance to minimize and mitigate adverse effects. Work should only continue upon implementation of the guidelines or actions developed during consultation with USFWS and DOFAW.

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APPENDIX A

REPRESENTATIVE PHOTOGRAPHS OF THE KAUANOE O KŌLOA PROJECT STUDY AREA

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Photo 1. Overview of the Study Area looking west toward Kiahuna Golf Course. Location: 21.88726, -159.457925.

Photo 2. View of koa haole (*Leucaena leucocephala*) trees and Guinea grass (*Megathyrsus maximus*) in the southern portion of the Study Area, looking toward Pa'u A Laka Street. Location: 21.888078, -159.458721.

Photo 3. Looking toward Kiahuna Plantation Drive, showing short koa haole (*Leucaena leucocephala*) trees with dense Guinea grass (*Megathyrsus maximus*) understory. Location: 21.888551, -159.457916.

Photo 4. Taller trees along northern boundary along Kiahuna Plantation Drive. Location: 21.891425, -159.458582.

Photo 5. Showing maintained right-of-way along Kiahuna Plantation Drive. Location: 21.889233, -159.457043.

Photo 6. Looking west from the Study Area to the critical habitat on the Kiahuna Golf Course. Location: 21.890406, -159.458838.

Photo 7. Boulder pile showing previous disturbance in northern portion of the Study Area. Location: 21.891419, -159.45825.

APPENDIX B

LIST OF PLANT SPECIES OBSERVED DURING SURVEYS OF THE KAUANOE O KŌLOA STUDY AREA

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Table B-1 provides a list of plant species observed in the Study Area by Tetra Tech on October 23, 2021. The plant names are arranged alphabetically by family and then by species into three groups: Ferns, Monocots, and Dicots. The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999, 2012), Wagner and Herbst (2003), and Imada (2012, 2019) for native and naturalized flowering plants, Palmer (2003) and Smith et al. (2011) for ferns, and Staples and Herbst (2005) for ornamental plants. If no common or Hawaiian name is known, only the scientific name is provided.

Status:

- I = indigenous = native to the Hawaiian Islands and elsewhere
- X = introduced/ non-native = all those plants brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's arrival in the islands in 1778)

Table B-1. List of Plant Species Observed During Surveys for the Kauanoe O Koloa Project

Scientific Name and Authorship	Hawaiian/Common Name(s)	Status
FERNS		
Nephrolepidaceae		
Nephrolepis cordifolia (L.) C. Presl		I
Polypodiaceae		
Microsorum grossum (Langsd. & Fisch.) S.B.Andrews	laua'e, maile-scented fern	X
Pteridaceae		
Cheilanthes viridis (Forssk.) Sw.	green cliff brake	X
MONOCOTS		
Asparagaceae		
Dracaena trifasciata (Prain) Mabb.	mother-in-law's tongue	X
Furcraea foetida (L.) Haw.	Mauritius hemp	X
Commelinaceae		
Commelina benghalensis L.	day flower, hairy honohono	X
Cyperaceae		
Cyperus brevifolius (Rottb.) Hassk.	green kyllinga	X
Cyperus mindorensis (Steud.) Huygh	white kyllinga, kili'o'opu	X
Cyperus rotundus L.	nut grass	X
Poaceae		
Botriochloa pertusa (L.) A. Camus	pitted beardgrass	X
Cenchrus purpureus (Schumach.) Morrone	cane grass, elephant grass	X
Chloris barbata Sw.	swollen fingergrass	X
Chloris radiata (L.) Sw.	radiate fingergrass	X

Scientific Name and Authorship	Hawaiian/Common Name(s)	Status
Cynodon dactylon (L.) Pers.	Bermuda grass	X
Digitaria insularis (L.) Mez ex Ekman	sourgrass	X
Eleusine indica (L.) Gaertn.	wiregrass	X
Eragrostis amabilis (L.) Wight & Arn.	lovegrass	X
Eragrostis pectinacea (Michx.) Nees var. *pectinacea*	Carolina lovegrass	X
Megathyrsus maximus (Jacq.) B.K.Simon & S.W.L. Jacobs	Guinea grass	X
Melinis repens (Willd.) Zizka	Natal redtop	X
Sporobolus diandrus (Retz.) P. Beauv.	Indian dropseed	X
Sporobolus sp.		X
Zoysia sp.	zoysia grass	X
DICOTS		
Acanthaceae		
Asystasia gangetica (L.) T. Anderson	Chinese violet	X
Amaranthaceae		
Amaranthus spinosus L.	spiny amaranth	X
Amaranthus sp.	--	X
Anacardiaceae		
Mangifera indica L.	mango	X
Apocynaceae		
Thevetia peruviana (Pers.) K. Schum.	be-still tree, yellow oleander	X
Catharanthus roseus (L.) G. Don	periwinkle	X
Araliaceae		
Schefflera actinophylla (Endl.) Harms	octopus tree	X
Arecaceae		
Wodyetia bifurcata A. K. Irvine	foxtail palm	X
Asteraceae		
Bidens pilosa L.	Spanish needle, beggartick	X
Conyza bonariensis (L.) Cronquist	hairy horseweed	X
Eclipta prostrata (L.) L.	false daisy	X
Emilia fosbergii Nicolson	pualele	X
Parthenium hysterophorus L.	false ragweed	X
Pluchea carolinensis (Jacq.) G. Don	sourbush	X
Sonchus oleraceus L.	sow thistle	X
Tridax procumbens L.	coat buttons	X

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Verbesina encelioides (Cav.) Benth. & Hook.	golden crown-beard	X
Youngia japonica (L.) DC.	Oriental hawksbeard	X
Bignoniaceae		
Spathodea campanulata P. Beauv	African tulip tree	X
Brassicaceae		
Lepidium virginicum L.	Virginia pepperwort	X
Cactaceae		
Cereus uruguayanus F. Ritter ex R. Kiesling	hedge cactus	X
Harrisia bonplandii (Parm. Ex Pfeiff.) Britton & Rose		X
Harrisia mortinii (Labour.) Britton & Rose	moon cactus	X
Hylocereus undatus (Haw.) Britton & Rose	night-blooming cereus	X
Cleomaceae		
Cleome gynandra L.	wild spider flower	X
Convolvulaceae		
Ipomoea obscura (L.) Ker Gawl.	--	X
Ipomoea triloba L.	morning glory, little bell	X
Crassulaceae		
Kalanchoe pinnata (Lam.) Pers.	air plant	X
Cucurbitaceae		
Momordica charantia L.	bitter melon	X
Euphorbiaceae		
Euphorbia hirta L.	hairy spurge	X
Euphorbia hypericifolia L.	graceful spurge	X
Euphorbia prostrata Aiton	prostrate spurge	X
Macaranga tanarius (L.) Müll. Arg.	--	X
Ricinis communis L.	castor bean	X
Fabaceae		
Chamaecrista nictitans (L.) Moench. subsp. *patellaria* (DC. ex Collad.) H.S.Irwin & Barneby	partridge pea	X
Crotalaria incana L.	fuzzy rattlepod	X
Crotalaria pallida Aiton	smooth rattlepod	X
Desmanthus pernambucanus (L.) Thell.	slender mimosa	X
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	X
Desmodium triflorum (L.) DC.	tick clover	X
Indigofera spicata Forssk.	creeping indigo	X

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Indigofera suffruticosa Mill.	indigo	X
Leucaena leucocephala (Lam.) de Wit subsp. *leucocephala*	koa haole	X
Macroptilium atropurpureum (DC.) Urb.	twining cow pea	X
Mimosa pudica L. var. *unijuga* (Duchass. & Walp) Griseb.	sensitive plant, sleeping grass	X
Neonotonia wightii (Wight & Arn.) Lackey	--	X
Pithecellobium dulce (Roxb.) Benth.	'opiuma	X
Samanea saman (Jacq.) Merr.	monkeypod	X
Senna occidentalis (L.) Link	coffee senna	X
Senna surattensis (Burm. F.) H. S. Irwin & Barneby	kolomona	X
Vachellia farnesiana (L.) Wight & Arn.	klu	X
Heliotropiaceae		
Heliotropium procumbens Mill. var. *depressum* (Cham.) Fosberg		X
Lamiaceae		
Leonotis nepetifolia (L.) R. Br.	lion's ear	X
Ocimum gratissimum L.	wild basil	X
Malvaceae		
Abutilon grandifolium (Willd.) Sweet	hairy abutilon, ma'o	X
Sida acuta Burm. f. subsp. *carpinifolia* (L. f.) Borss. Waalk.	--	X
Sida ciliaris L.	red 'ilima	X
Sida rhombifolia L.	Cuba jute	X
Waltheria indica L.	'uhaloa	I
Nyctaginaceae		
Boerhavia coccinea Mill.	scarlet boerhavia	X
Meliaceae		
Melia azedarach L.	chinaberry	X
Moraceae		
Ficus microcarpa L. F.	Chinese banyan	X
Myrtaceae		
Syzygium cumini (L.) Skeels	Java plum	X
Petiveriaceae		
Rivina humilis L.	coral berry	X

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Phyllanthaceae		
Phyllanthus debilis Klein ex Willd.	niruri	X
Portulaceae		
Portulaca oleracea L.	pigweed	X
Portulaca pilosa L.	hairy pigweed	X
Portulaca cv. "Wildfire"		X
Solanaceae		
Solanum seaforthianum Andrews	Brazilian nightshade	X
Urticaceae		
Pilea microphylla (L.) Liebm.	artillery plant	X
Verbenaceae		
Lantana camara L.	lantana	X
Stachytarpheta jamaicensis (L.) Vahl	Jamaica vervain, ōwī	X
Vitaceae		
Cissus verticillata (L.) Nicolson & C. E. Jarvis	princess vine	X