This Page Left Blank Intentionally
ARCHAEOLOGICAL LITERATURE REVIEW WITH FIELD INSPECTION IN SUPPORT OF THE UH Hilo EDUCATIONAL TELESCOPE AT THE HALEPOHAKU MID-LEVEL SUPPORT FACILITY ON MAUNA Kea, HAWAI’I ISLAND

ARCHAEOLOGICAL PERMIT #: SHPD Permit No. 20-29

PROJECT LOCATION: Mauna Kea Mid-Level Support Facility, Ka’ohe Ahupua’a, Hāmākua District, Island of Hawai’i

PROJECT TMK: TMK (3) 4-4-015:012

LAND OWNER: State of Hawai’i

PROJECT PROONENTS: University of Hawaii - Hilo

PROJECT TASKS: Archaeological Literature Review with Field Inspection

PROJECT ACREAGE: 1,200 square feet (0.03 acres)

PRINCIPAL INVESTIGATOR: Dennis Gosser, M.A.

REGULATORY OVERSIGHT: Hawaii Revised Statutes (HRS) Chapter 6E-7 and 6E-8, and Hawaii Administrative Rules (HAR) Chapter 275

PROJECT BACKGROUND: The project scope of work includes the construction of the observatory building to house the new UH Hilo Educational telescope

SIHP #: None

FINDINGS: Archaeological investigations have documented four historic properties within a 100 meters of the project area; 50-10-23-10314 (pre-Contact lithic scatter), 50-10-23-09074 (historic structure), 50-10-23-09075 (historic structure), and 50-10-23-09076 (historic structure).

HUMAN SKELETAL REMAINS: None identified within the project area.

RECOMMENDED EFFECT DETERMINATION: No historic properties affected

RECOMMENDED COMMITMENTS: Because the proposed project will include ground disturbance in an area near where non-contiguous archaeological deposits have been recorded, it is recommended that a commitment be made to monitor (with an SHPD-approved monitoring plan) ground-disturbing activities during construction.
# TABLE OF CONTENTS

MANAGEMENT SUMMARY .............................................................................................................. i  
TABLE OF CONTENTS ................................................................................................................. iii  
LIST OF FIGURES ....................................................................................................................... iii  
LIST OF TABLES .......................................................................................................................... iii  
1.0 INTRODUCTION ..................................................................................................................... 1  
1.1 PROJECT PURPOSE, REGULATORY GUIDANCE, AND AREA OF POTENTIAL EFFECT (APE) .................. 1  
1.2 METHODS ............................................................................................................................ 1  
2.0 ENVIRONMENTAL BACKGROUND ....................................................................................... 1  
2.1 SETTING .............................................................................................................................. 1  
2.2 CLIMATE, HYDROLOGY, AND FLORA .................................................................................. 5  
3.0 HISTORICAL BACKGROUND ............................................................................................... 5  
3.1 PLACE NAMES, MYTHS, LEGENDS, AND TRADITIONAL HISTORIES ..................................... 5  
3.2 LAND USE ........................................................................................................................... 6  
3.2.1 PRE-CONTACT PERIOD LAND USE .................................................................................. 9  
3.2.2 POST-CONTACT PERIOD LAND USE ................................................................................ 9  
4.0 PREVIOUS ARCHAEOLOGY ............................................................................................... 10  
   SIHP SITE 50-10-23-10314 ........................................................................................................ 12  
   SIHP SITES 50-10-23-09074, 09075, AND 09076 (THE HALEPOHAKU REST CAMP AND COMFORT STATION) ........................................... 12  
3.0 FIELD SURVEY ..................................................................................................................... 13  
4.0 ANTICIPATED FINDS ............................................................................................................ 13  
5.0 PROJECT IMPACT ASSESSMENT ....................................................................................... 13  
5.1 CONSULTATION .................................................................................................................. 13  
5.2 DETERMINING EFFECTS TO SIGNIFICANT HISTORIC PROPERTIES (HAR §13-275-7) .......... 13  
6.0 REFERENCES ......................................................................................................................... 15

# LIST OF FIGURES

Figure 1 Island of Hawai‘i Showing the District, Ahupua‘a, Mauna Kea Science Reserve, Natural Area Reserve, and Project Location .......................................................... 2  
Figure 2 Halepōhaku Mid-Level Facility Showing Proposed Location APE for the New Teaching Telescope (Red Box) .......................................................... 3  
Figure 3. The Summit Plateau Looking Northeast with Pōhakoloa Gulch in the Foreground, Pu‘u Kūkahau‘ula (summit) at the top center, and Pu‘u Makanaka in the Distance. .......... 4  
Figure 4. Map Titled Kaohe and Humuula Hawaii Government Survey Map by C.J. Lyons 1891 (Hawaii State Archives Registered Map 1641) .................................................. 7  
Figure 5. Location of Previous Archaeological Projects ........................................................... 11  
Figure 6. Extent of Field Inspection and Approximate APE ..................................................... 14
1.0 INTRODUCTION

Under contract to SSFM, International (SSFM), Pacific Consulting Services, Inc. (PCSI) has prepared this Archaeological Literature Review with Field Inspection (ALRFI) in support of the proposed location of the UH Hilo Educational Telescope at the Halepōhaku Mid-Level Support Facility on Mauna Kea1, Ka'ōhe Ahupua'a, Hāmākua District, Island of Hawai'i (Figures 1 and 2). The project proponent is the University of Hawai'i-Hilo (UHH). The 19.3-acre Halepōhaku Mid-Level Support Facility is leased from the State of Hawaii and managed by the University of Hawai'i (CDUP No. HA-1819, Tax Map Key [3] 4-4-15:12) and includes modern buildings housing offices and dormitories, the Onizuka Center for International Astronomy (OCIA), the Visitor Information Station (VIS), and several historic buildings.

The new educational telescope facility at Halepōhaku will replace the Hōkū Keʻa Observatory (planned for decommissioning) located at the summit. This new telescope will be used by students for training in modern astronomical observing techniques, developing skills in scientific research, and communicating science to the general public.

1.1 PROJECT PURPOSE, REGULATORY GUIDANCE, AND AREA OF POTENTIAL EFFECT (APE)

The objective of developing this ALRFI is to gather together information concerning historic properties and cultural resources that may be impacted by the proposed UHH Educational Telescope project. The current study draws upon and is in compliance with Hawaii Revised Statutes Chapter 6E-8 as well as Title 13 of the Hawaii Administrative Rules (HAR), Subtitle 13 (State Historic Preservation Division [SHPD] Rules), Chapter 275: (Rules Governing Procedures for Historic Preservation Review for Governmental Projects). The ALRFI will be submitted to SHPD in order to obtain a “determination letter” for the project (HAR §13-275-3). The determination letter will provide a response to the recommended actions (with regards to historic preservation) set forth in this document.

The proposed project activities include:

- Construction of an observatory building to house the telescope and associated equipment; and
- Conduit trench excavations for utilities servicing the telescope.

The Area of Potential Effect (APE) is approximately 1,200 square feet (0.03 acres) bounded on the west by Halepōhaku Dorm “A,” on the north and east by a graded access road, and arbitrarily on the south (see Figure 2).

1.2 METHODS

PCSI staff conducted a historical and archaeological literature review for the Halepōhaku project in order to assess any potential effect on historic properties or other cultural resources. The background research was completed using various documentary and archival resources, including the State Historic Preservation Division's (SHPD) database of archaeological reports, the SHPD report library, a review of historic maps, and a review of Mauna Kea reports on file at PCSI. As part of a HRS 343 environmental impact assessment for the project, community consultation was initiated with community members and groups. The results of the consultation are summarized below.

2.0 ENVIRONMENTAL BACKGROUND

2.1 SETTING

Mauna Kea is the highest (4,205 m² [13,796 ft] above sea level [asl]) and second largest of the five shield volcanoes forming the island of Hawai‘i and is between 600,000 and 1.5 million years old (DePaolo and Stolper 1996; Moore and Clague 1992; Sharp and Rene 2005; Wolfe et al. 1997) (Figure 3). The oldest stage of volcanism consists of a basaltic shield called the Hāmākua Volcanic Series (Stearns and

---

1 Where applicable, geographic names follow the Hawaii Geographic Names Board Place Names (October 2018).
Figure 1 Island of Hawai‘i Showing the District, Ahupua‘a, Mauna Kea Science Reserve, Natural Area Reserve, and Project Location.
Figure 2 Halepōhaku Mid-Level Facility Showing Proposed Location APE for the New Teaching Telescope (Red Box)
Figure 3. The Summit Plateau Looking Northeast with Pōhakoloa Gulch in the Foreground, Puʻu Kūkahauʻula (summit) at the top center, and Puʻu Makanaka in the Distance.
Macdonald 1946) or the Hāmākua Group (Porter 1979). The most recent stage of volcanism consists of andesitic lavas (Macdonald and Abbott 1970:142; Sherrod et al. 2007; Wolfe and Morris 1996; Wolfe et al. 1997) called the Laupāhoehoe Volcanic Series (Stearns and Macdonald 1946) or the Laupāhoehoe Group (Porter 1979). Even though the last eruption occurred sometime between 4,580 and 8,200 years ago (Sherrod et al. 2007:470), the U.S. Geological Survey (USGS) considers Mauna Kea to be an active post-shield volcano (U.S. Geological Survey 2002).

2.2 CLIMATE, HYDROLOGY, AND FLORA

The climate at Halepōhaku is dry and cool, with an annual mean rainfall of approximately 25 inches (635 milimeters) and a temperature range of between 30° and 70°F (Giambelluca et al. 2014). Precipitation in the form of snow is rare at Halepōhaku. Prevailing winds are from the northeast. There are no permanent streams on the south flank of Mauna Kea, and the nearest sources of permanent water are springs and seeps located in Waikahalulu Gulch (Wentworth and Powers 1943) H summit region is dry and cold with little difference in the mean minimum and mean maximum temperature ranges throughout the year. Precipitation at the summit averages approximately 204 mm (8.0 inches) per year (). Prevailing winds at the summit are from the east-northeast.

Halepohaku is situated at the transitional zone between two overlapping vegetation communities: sub-alpine xerophytic scrubland and the mamane (Sophora chrysophylia) parkland. The scrubland is characterized by pukiawe (Styphella tameiaeae), noho-anu (Geranium cuneatum), 'ōhelo (Vaccinium reticulatum), and na'ena'e (Raillardia ciliolate). The parkland is dominated by mamane and 'heahea (Chenopodium oahuense).

3.0 HISTORICAL BACKGROUND

McCoy and Nees (2010) summarized the cultural history and previous archaeological work on Mauna Kea. The overview that follows is based on these studies, which should be consulted for more detail.

3.1 PLACE NAMES, MYTHS, LEGENDS, AND TRADITIONAL HISTORIES

Place names in the Mauna Kea summit region are a mix of traditional and modern nomenclature. Mauna Kea has been interpreted literally as White (Kea) Mountain (Mauna), but also as a reference to the union between the gods Wākea and Papa that formed the mountain (Ellis 1979:292). In an account and mele of Queen Emma’s trip to Lake Waiau in 1881 or 1882, de Silva and de Silva (2007) present details about the names of the mountain and Lake Waiau:

Although Maunakea is popularly translated as “white mountain,” Kea is also an abbreviated form of Wakea, the sky father who, with Papa, the earth mother, stands at the apex of Hawaiian genealogy. Mauna Wakea is thus viewed traditionally as the sacred meeting point of sky and earth, father and mother, Wakea and Papa. Emma’s poets were well-acquainted with the older name and its lasting significance; they refer to Waiau as “ka piko on Wakea”—as the mountain’s navel/genital/umbilical/connecting-point-center (de Silva and de Silva 2007: footnote 7).

The currently used name for the summit is Kūkahau’ula (“Kūkahau’ula of the red-hewed dew or snow”), instead of the formerly used Pu‘u Wekiu, and refers to the legendary husband of Līlīnoe and an ‘aumakua (family deity) of fishermen (Hibbard 1999). Maly and Maly (2005:vi) give the name as Pu‘u o Kūkahau‘ula, which they say was “named for a form of the god Ku, where the piko of new-born children were taken to insure long life and safety.” According to Maly and Maly (2005:vi):

The name Pu‘u of Kukahau’ula is the traditional name of the summit cluster of cones on Mauna Kea, appearing in native accounts and cartographic resources until c. 1932. The recent names, Pu‘u Wekiu, Pu‘u Hau‘oki and Pu‘u Haukea, have...been used since the 1960s (since the development of astronomy on Mauna Kea), and have displaced the significant spiritual and
cultural values and sense of place associated with the traditional name, Puʻu o Kukahau'ula.

The names Kūkahauʻula and Liʻiūnoe are both attributed to cinder cones in the summit region: Kūkahauʻula at the summit and Liʻiūnoe immediately southeast of the summit cluster. These names, along with that of Waiau, appear on Lyon's 1884 sketch map (Figure 4), and Liʻiūnoe and Waiau are repeated in the survey of the summit region conducted in 1892 by Alexander. Kūkahauʻula is given as the name of "the highest peak" even earlier in 1873 land boundary testimonies. Of the place names in the summit region, these three are applied the earliest and most consistently to specific landmarks on the mountain. In compiling the 1892 map of Mauna Kea, W.D. Alexander refers to these as "genuine native names."

Some contemporary Native Hawaiian cultural practitioners continue to view Mauna Kea as a first-born child of Papa and Wākea, and thus, the mountain is revered as "the hiapo, the respected older sibling of all Native Hawaiians" (Kanahele and Kanahele 1997 in Langlas 1999:7). Cultural practitioner Kealoha Piscotta explains that this link to Papa and Wākea "is the connection to our ancestral ties of creation" (Orr 2004:61). Pualani Kanakaʻole Kanahele states that "the very fact that it is the 'Mauna a Wākea' tells you that it is the mauna that is meeting Wākea" (Maly 1999:A-368).

Traditional genealogical mele and moʻolelo (stories, traditions) recount associations between Mauna Kea and Poliʻahu, Liʻiūnoe, Waiau, and Kahoupakane. In a moʻolelo recounting the travels of Pūpūkaniʻoʻe, it was said that Mauna Kea was a mountain "on which dwell the women who wear the kapa hau (snow garments)" (Maly and Maly 2005:31). Another moʻolelo, which dates to the 1300s, explains that Kā-Miki was sent atop Mauna Kea's summit to the royal compound of Poliʻahu, Liʻiūnoe, and their ward, Kapiko-o-Waiau, to fetch water for use in an ‘alai-lolo ceremony (Maly and Maly 2005:42-43).

In 1931, Emma Ahuʻena Taylor, a historian of Hawaiian descent with genealogical ties to the lands of Waimea and Mauna Kea, reported on Poliʻahu's residence at Mauna Kea, but also described the creation of Lake Waiʻau. She wrote:

Poliʻahu, the snow-goddess of Mauna-kea, was reared and lived like the daughter of an ancient chief of Hawaii. She was restricted to the mountain Mauna-kea by her godfather Kane. She had a nurse Lihau who never left her for a moment. Kane created a silvery swimming pool for his daughter at the top of Mauna-kea. The pool was named Wai-au. The father placed a supernatural guard [Mo`o-i-nanea] at that swimming pool so that Poliʻahu could play at leisure without danger of being seen by a man… (Maly and Maly 2005:53).

According to Taylor, on Mauna Kea, Poliʻahu's attendants Liʻiūnoe, Lihau, and Kipuʻupuʻu drove away her suitor, Kūkahauʻula (the pink-tinted snow god). But Moʻo-i-nanea allowed the snow god to embrace Poliʻahu, and to this day, Taylor reports, "Ku-kahau-ula, the pink snow god, and Poliʻahu of the snow white bosom, may be seen embracing on Mauna-kea" (Maly and Maly 2005:53).

Of the several place names in the vicinity of Halepohaku, Puʻu Kalepeamoa (lit. the comb by a chicken) is the only one to appear on early government survey maps and in the literature on late nineteenth century expeditions to the summit (Figure 4). The Mauna Kea-Humuula trail, first plotted by Alexander in 1892, is shown passing near or through the Halepohaku area.

3.2 LAND USE

The summit of Mauna Kea is located in Kaʻohe Ahupuaʻa, Hāmākua District. Kaʻohe is a large ahupuaʻa found in what Lyons referred to as the "almost worthless wastes of interior Hawaii:"

Then there are the large ahupuaas which are wider in the open country than the others, and on entering the woods expand laterally so as to cut off the smaller ones, and extend toward the mountain till they emerge into the open interior country; not however to converge to a point at the tops of the respective mountains. Only a rare few reach those elevations, sweeping past the upper ends of all the others, and by virtue of some privilege in bird-catching, or some analogous right, taking the whole mountain to themselves...The whole main body of Mauna Kea belongs to one land from Hamakua, viz., Kaʻoe, to whose owners belonged the sole privilege of capturing the uaʻu, a mountain-inhabiting but sea-fishing bird.
Figure 4. Map Titled Kaohe and Humuula Hawaii Government Survey Map by C.J. Lyons 1891 (Hawaii State Archives Registered Map 1641).
These same lands generally had the more extended sea privileges. While the smaller ahupuaas had to content themselves with the immediate shore fishery extending out not further than a man could touch bottom with his toes, the larger ones swept around outside of these, taking to themselves the main fisheries much in the same way as that in which the forests were appropriated. Concerning the latter, it should here be remarked that it was by virtue of some valuable product of said forests that the extension of territory took place. For instance, out of a dozen lands, only one possessed the right to kalai waʻa, hew out canoes from the koa forest. Another land embraced the wauke and olona grounds, the former for kapa, the latter for fish-line (Lyons 1875:111).

The boundaries of Kaʻohe, as shown on modern maps, are open to question. A map of the adjoining Humuʻula Ahupuaʻa made by S.C. Wiltse in 1862 (Hawaii State Archives Register Map No. 668) included the adze quarry and Lake Waiau, which was labeled on the map as “Pond Poliahu.” Maly and Maly (2005:280-287) note that

By the time the Commissioners of Boundaries were authorized to certify the boundaries for lands brought before them in 1874, disputes over the boundary of Humuʻula and Kaʻohe had arisen…[and]…by the time of settlement in 1891, the boundary of Humuʻula was taken down to around the 9,000 foot elevation, with Kaʻohe taking in the entire summit region.

The testimony of Kahue of Humuʻula, presented in Maly and Maly (2005:287), mentions the boundary running from a gulch called Kahawai Koikapue, where mele were sung, to Waiau and then to the summit which was called Puʻuʻuokukahauʻula. Parenthetically, there is a note that “half of the water in the gulch belonging to Kaʻohe and half to Humuʻula.”

In addition to the district and ahupuaʻa system of land tenure, there were other traditional land classifications, including one that employed the term wao for a series of natural and cultural zones (Malo 1951:16-18). According to some descriptions, the wao kanaka was a low-lying coastal area where the makaʻāinana were free to move and inhabit. The wao kele was the upland forested area that the makaʻāinana could only access for gathering purposes. The wao akua, which was believed to be inhabited by akua, was the subalpine desert region above the tree line. The makaʻāinana were hesitant to venture into the wao akua and could do so only by offering prayer and displaying great respect (NASA 2005:3-18, 3-19).

The Mauna Kea summit region is commonly described today as lying within the wao akua, which is different, however, from Malo’s description of this zone which placed it at a lower elevation in forested lands (Malo 1951:17). As noted in the footnotes to Malo’s Hawaiian Antiquities (Malo 1951:18), wao akua can also be understood to mean “a remote desolate location where spirits, benevolent or malevolent, lived and people did not live. Usually these places were deep interior regions, inhospitable places such as high mountains, deserts and deep jungles. These areas were not necessarily kapu but were places generally avoided out of fear or respect” (PHRI 1999, 24). When Rev. William Ellis toured Hawaiʻi Island in 1823, he noted the reluctance of native Hawaiians to venture into the summit areas of Mauna Kea:

…numerous fabulous tales relative to its being the abode of the gods, and none ever approach the summit---as, they say, some who have gone there have been turned to stone. We do not know that any have been frozen to death; but neither Mr. Goodrich, nor Dr. Blatchely and his companion, could persuade the natives, whom they engaged as guides up the side of the mountain, to go near its summit (Ellis 1979:292).

Although the ahupuaʻa system (including kapu restrictions) of land and resource management no longer exists legally, knowledge of some traditional kapu have been passed down and endure. In Maly (1999: A-371), Pualani Kanakaʻole Kanahele stated that she learned from her kūpuna that the forested regions are not the realm of humans but rather that the forest’s kupa (citizens) are the trees. Kanahele notes that “when I go maha’oi [intrude] in their realm, I have to ask permission to be up there.” Likewise, Irene Lindsey-Fergerstrom indicated that in the context of taking piko up to the Mauna Kea summit, that her tūtū (grandmother) had knowledge of the kapu restriction that only ali`i were permitted on the summit (Maly 1999:A-390).

During pre-Contact times, the slopes of Mauna Kea, above the limits of agriculture and permanent settlement, were a vast montane “wilderness” probably known to only a small number of Hawaiians...
engaged in primarily “special purpose” activities such as bird-catching, canoe making, stone-tool manufacture, or burial of the dead (McEldowney 1982); ethnographic information relating to specific activity localities is generally lacking although archaeological evidence provides some evidence of past land use in the form of adze production (primarily at the Mauna Kea Adze Quarry but elsewhere as well), human burial, and the erection of shrines.

Early post-Contact ascents of Mauna Kea by Europeans and Hawaiians occurred throughout the nineteenth century, including Queen Emma’s famous visit to Lake Waiau in 1881 or 1882 (de Silva and de Silva 2007). de Silva and de Silva (2007:5) note that

the historical record of pilgrimages to Maunakea is not limited to Emma’s mele and Phillips’s mo’olelo. Steve Desha writes, that as a young man, Kamehameha Pai‘ea went to Waiau to pray and leave an offering of ‘awa. Kamakau tells us that Ka‘ahumanu made the same journey in 1828 in an unsuccessful attempt to retrieve the iwi of her ancestress Lilinoe. Kauikaueo visited Waiau and the summit in 1830, Alexander Liloliho in 1849 and Peter Young Ka‘eo in 1854.

3.2 PRE-CONTACT PERIOD LAND USE

While the summit region was known and accessible to early Hawaiians, the only activity that is known with certainty to have occurred during the pre-contact period is the manufacture of stone adzes. Radiocarbon dates on wood charcoal and 230 Thorium dates on branch coral indicate that the adze quarry was in use over a period of possibly as much as 700 years between ca. A.D. 1100 and 1800 (McCoy 1986:Figure 28; 1990:Figure 4), although a shorter chronology of perhaps just 500 years now seems more likely. When the quarry was abandoned is unknown and may never be known with any certainty, but there is some evidence that it may have occurred as late as European contact in 1778 or shortly thereafter.

An interesting account of the adze quarry was published by Brigham at the turn of the 20th century:

Let us climb to the workshop of the adze maker. All these were in high places, and one on Mauna Kea, Hawaii, was nearly 12,900 ft. above the sea. As good clinkstone was not found in many places the known quarries hardly exceeded half-a-dozen. On Hawaii was the most important of all, that on Mauna Kea, where the workmen could only work in favorable seasons for the snow frequently covered the quarry, but from the immense quantity of fragments and chips the work must have extended over many generations; so far as known, this was the earliest quarry exploited, and it is puzzling how the place was discovered when we consider the aversion the Hawaiians had to even visiting those high, bleak and desert regions, the supposed abode of spirits not always friendly. It is possible that the tradition which speaks of the survivor of the deluge of Kahinalii grounding on Mauna Kea and following the receding waters to the lower levels, discovering the koi pohaku on the way, may point to the considerable antiquity of adze-making in this place, but I am inclined to believe that all traditions of the Hawaiian deluge date after the coming of the Spanish discoverers. It has always seemed strange that the axe-makers did not bring the raw material down to their homes and work it up in comfort instead of freezing in their kapa garments at this great altitude. It may be that the mystery of the place and its very solitude kept the trade in few hands and so enhanced the value of a tool that so many must have (Brigham 1902:75-76).

3.2.2 POST-CONTACT PERIOD LAND USE

Changes to traditional Hawaiian lifeways began soon after the arrival of Captain James Cook in 1778. One significant change was the rapid adoption of Western tools, clothing and other items, initially by the chiefs and subsequently by commoners. The impact on traditional technologies is known in a general way from historic accounts, such as diaries and newspapers, but for remote centers of traditional crafts, such as the Mauna Kea Adze Quarry, there is little or no information on how long they continued to be utilized before abandonment.

The first recorded ascent of Mauna Kea by a European was made by the Rev. Joseph Goodrich on August 26, 1823 (Goodrich 1833:200). A number of visits followed shortly thereafter, including ones by
such prominent figures as the renowned botanist David Douglas (see Maly and Maly 2005 for a comprehensive overview of early visits and expeditions to the top of Mauna Kea). Macrae mentions that Goodrich found a “heap of stones” on a cinder cone which many have interpreted as located on the summit. Macrae’s description suggests a cinder cone at a lower elevation on the edge of the summit plateau:

Rev. Joseph Goodrich, who, on this occasion, was unfortunately laid up with mountain sickness, had on 26th August, 1823, reached the summit of Mauna Kea. This is the first recorded instance of the ascent of this mountain, although Mr. Goodrich mentions that on reaching the top of one of the terminal cones that encircle the main plateau of Mauna Kea, he discovered a heap of stones, probably erected by some former visitor. Who this former visitor was is unknown, but he was probably one of the white men that in the early years of the nineteenth century got a living by shooting wild bullocks that roved on the side of Mount Kea. It is very unlikely that any native had reached the top of the terminal cones on the summit, owing to being unprovided with warm clothing to resist the great cold and also to the fact that the natives had a superstitious dread of the mountain spirits or gods. About six months after the date of the first ascent of Mauna Kea by Mr. Goodrich, the peak was scaled by Dr. Abraham Blatchley and Mr. Samuel Ruggle, both connected with the American Mission (Macrae 1922:55).

The early 20th century marked the beginning of a new era in the land use history of Mauna Kea. Large numbers of wild sheep were devastating the forests below the summit in the early part of the century. The extent of the devastation was the impetus for a monumental fencing program undertaken by the CCC in the 1930s. The CCC was also engaged at the same time in improving roads and building facilities for visitors. In 1936 the CCC made improvements to what is believed to have been a section of the old Mauna Kea-Humu‘ula Trail, from near the Humu‘ula Sheep Station at Kalaieha to the summit (Bryan 1939:11). According to Bryan (1939:11), the first stone cabin, from which Halepōhaku takes its name (Hale Pōhaku—“House of Stone”), was built by the CCC about this same time. Prior to the construction of a road above Ho‘okomo, the cabin at Halepōhaku provided a convenient overnight rest spot for hikers and ski enthusiasts (McCoy 1984:8).

4.0 PREVIOUS ARCHAEOLOGY

Ten archaeological investigations have been conducted at or near Halepōhaku, including an archaeological inventory survey conducted for the proposed project; no historic properties have been recorded within approximately 100 meters of the proposed telescope location (Figure 5). Four significant historic properties are located within 100 meters of the proposed telescope location, but would not be adversely impacted by the proposed undertaking:

- SIHP 50-10-23-10314; pre-Contact traditional lithic scatter
- SIHP 50-10-23-09074; historic Halepōhaku Rest House 1
- SIHP 50-10-23-09075; historic Halepōhaku Rest House 2; and
- SIHP 50-10-23-09076; historic Halepōhaku Comfort Station

In 1979, a one-day reconnaissance survey of the Halepōhaku area was conducted for the “Hale Pohaku Mid-Level Complex Development Plan.” No archaeological sites were recorded (McCoy 1979).

Three more surveys were conducted between July 1984 and June 1985 as part of the preparation of a supplemental Environmental Impact Statement (EIS) for a permit to build a new construction laborer camp (McCoy 1985a, 1991). Seven noncontiguous historic properties (five lithic scatters and two shrines) were recorded on both sides of the Mauna Kea Observatory Access Road and were collectively designated as the Pu'u Kalepeamoa Site complex (Statewide Inventory of Historic Places [SIHP] 50-10-23-16244). No formal boundary was defined for Site 16244 and it appears that the limits coincide with the collective extent of individual properties (McCoy 1991); each property was also assigned an SIHP number. Two of the properties (SIHP Sites 10310 and 10311 [both lithic scatters]) are located more than 275 meters south of

3 The archaeological inventory survey was conducted in accordance with Hawaii Revised Statutes (HRS) Chapter 6E, and Title 13 of the Hawaii Administrative Rules (HAR), Subtitle 13, Chapter 276.
Figure 5. Location of Previous Archaeological Projects.
the project area. As noted above, SIHP Site 10314 (lithic scatter) is located approximately 100 m north of the project area.

In 1986, Bonk (Bonk 1986) conducted a reconnaissance survey of a proposed new HELCO transmission line and substation located at Halepōhaku. No historic sites were found during the survey, which extended from an existing 69 KV powerline north of the Saddle Road and west of the Mauna Kea Access Road to the substation location at Halepōhaku.

The subsequent discovery of lithic artifacts in the vicinity of the HELCO substation led to a data recovery project that involved additional survey and surface collections at 11 different lithic scatters and limited test excavations of two of the scatters (Sinoto 1987; McCoy 1991). A total of 2,364 artifacts and 129 faunal remains were collected. In addition to the debris related to adze and octopus sinker manufacture, 20 special purpose bird cooking stones called pohaku `eho were recovered. Three radiocarbon dates from charcoal recovered in fire pits indicate that the site, which has been interpreted as a temporary camp occupied for the ascent to and descent from the Mauna Kea Adze Quarry, is of late pre-contact age (ca. AD 1600-1700).

In 1990, a reconnaissance survey at Halepōhaku was conducted in conjunction with the proposed construction of dormitories for the Japan National Large Telescope (later renamed the Subaru Telescope). The survey covered the southern portion of the area surveyed by McCoy (1985a) and relocated two lithic scatters, which were recommended for data recovery investigations (Robins and Hammatt 1990). The data recovery excavations were conducted in 1993; radiocarbon dates from the project confirmed a late pre-Contact occupation of the area (Hammatt and Shideler 2002).

In 2005, archaeological monitoring was conducted during the installation of four septic tank at Halepōhaku (McCoy 2005). No historic properties or subsurface archaeological deposits were recorded within the current project area during the monitoring.

In 2016 (Gosser 2016), an archaeological survey was conducted near the Visitor Information Station as part of infrastructure improvements. No new historic properties were recorded, although several isolated artifacts were observed.

**SIHP SITE 50-10-23-10314**

SIHP Site 10314 is one of several sites comprising the Pu‘u Kalepeamoa Site Complex (McCoy 1991). The site is characterized as a lithic scatter that includes adze and octopus lure sinker manufacturing by-products and other artifacts possibly used in other activities, such as wood-working (McCoy 1991). SIHP Site 10314 covers approximately 2,000 m². Most of the artifacts were found in a single concentration at the base of a clump of living and dead *mamane* trees situated on what is believed on one of the dunelike bodies of reworked Pu‘u Haiwahine tephra (McCoy 1985b).

The site was re-visited in June of 1985 at which time it was noted that the area had been recently disturbed. Because of the potential for more damage, surface artifacts were collected from the most vulnerable areas. A total of 44 artifacts were mapped and collected in an area covering 9 m² (McCoy 1985b). The majority of the artifacts are dunite and gabbro cored bomb fragments related to the manufacture of octopus lure sinkers and manufacturing tools, which were called fabricators. The concentration contained only two basalt waste flakes from adze manufacture (McCoy 1991). Since 2012, SIHP Site 10314 has been visited annually to assess changes. While some natural erosion has exposed additional lithic material, the site has remained undisturbed.

**SIHP SITES 50-10-23-09074, 09075, AND 09076 (THE HALEPŌHAKU REST CAMP AND COMFORT STATION)**

The Halepōhaku Rest Camp and Comfort Station comprises three buildings immediately south of the Halepōhaku Mid-Level Support Facility. The buildings were constructed between 1936 and 1950; SIHP Sites 09074 and 09075 (Rest Camp) were constructed by the Civilian Conservation Corps between 1936 and 1939, while SIHP 09076 (comfort station) was constructed in 1950 by the Territory of Hawai‘i’s Division of Forestry.

The three buildings of the Halepōhaku Comfort Station and Comfort Station have individually recommended as eligible for the National Register of Historic Places (NRHP) and Hawai‘i’s State Register.
of Historic Places under Criterion A and Criterion C. These historic properties are associated with events that have made a significant contribution to the broad patterns of history, thus fulfilling Criterion A. These properties also embodies the distinctive characteristics of a type, period, or method of construction, thus fulfilling Criterion C.

3.0 FIELD SURVEY

On 18 October 2019 PCSI conducted a pedestrian field survey of approximately 5,420 square feet (0.12 acres) of area that included the APE area for the proposed telescope building footprint (Figure 6). The ground surface has been heavily modified by a dirt access road, the installation of a septic system (see Figure 2), and use of the area for equipment storage. No historic properties or surface archaeological deposits were recorded during the survey. A mamane tree is present to the east of the APE.

4.0 ANTICIPATED FINDS

Based on multiple archaeological projects within the APE that have included both surface and subsurface scrutiny, it is anticipated that no above-ground archaeological resources will be recorded during the proposed Halepōhaku educational telescope project. It is unlikely that subsurface archaeological deposits or human burials will be present within the APE.

5.0 PROJECT IMPACT ASSESSMENT

While no above-ground archaeological properties will be impacted by the proposed project and no subsurface archaeological deposits were recorded during the installation of Cesspool # 2 (within the APE of the proposed project), there is a possibility of subsurface deposits in the area based on the recording of several non-contiguous archaeological sites near the proposed project.

5.1 Consultation

In an effort to more completely understand the cultural and historical background within and around the project area and bring as much information to bear on the decision-making process for this project, PCSI sought community input. Sixty-eight entities (community members, community groups, and State agencies) were sent letters (66 by email and two by post) asking for input concerning historic sites located in or near the project area, as well as cultural traditions, legends, and traditional cultural places and practices pertaining to the area. In addition, the letter provided a link to a website where more background information was provided. The 68 entities were identified by OMKM primarily through interactions as part of previous undertakings within University of Hawaii managed lands on Mauna Kea.

Four responses were returned. None of the responses provided specific information concerning historic properties, cultural resources, or traditional practices within the project area but did provide commentary and recommendations to strengthen the historic preservation documents associated with the project.

5.2 Determining effects to significant historic properties (HAR §13-275-7)

Based on the results of research and consultation, it is recommended that the effect determination for this project is "No historic properties affected." However, because the proposed project will include ground disturbance in an area near where non-contiguous archaeological deposits have been recorded, it is recommended that a commitment be made to monitor (with an SHPD-approved monitoring plan) ground-disturbing activities during construction.
Figure 6. Extent of Field Inspection and Approximate APE.
6.0 REFERENCES

Bonk, William J. 

Brigham, W. T. 

Collins, Sara L., and Patrick McCoy 

CMP (Comprehensive Management Plan) 

DePaolo, D.J., and E.M. Stolper 

de Silva, Kihei, and Mapuana de Silva 

Ellis, William 


Goodrich, Joseph 


Gosser, Dennis, Stephan D. Clark, and Richard C. Nees 

Hammatt, Hallett H., and David W. Shideler 

Hibbard, Don 
1999 Letter of May 3, 1999 to Dr. Robert McLaren (IfA) Regarding Historic Preservation Review of the Proposed W.M. Keck Outrigger Telescopes Project.

Kamakau, Samuel M. 

Kanahele, P.K., and Edward L.H. Kanahele

Langlas, Charles
1999 Supplement to Archaeological, Historical and Traditional Cultural Property Assessment for the Hawai‘i Defense Access Road A-AD-6(1) and Saddle Road (SR200) Project.

Langlas, Charles, Thomas R. Wolfforth, James Head, and Peter Jensen
1997 Archaeological Inventory Survey and Historical and Traditional Cultural Property Assessment for the Hawai‘i Defense Access Road A-AD-6(1) and Saddle Road (SR200) Project, Districts of South Kohala, Hamakua, North Hilo and South Hilo, Island of Hawai‘i. Paul H. Rosendahl Ph.D., Inc., Hilo. Prepared for RUST Environmental and Infrastructure Inc., Phoenix, Arizona.

Lyons, C.
1875 Land Matters in Hawaii. The Islander 1:1-33.

Macrae, James

Macdonald, Gordon A., and Agatin T. Abbott

Malo, David

Maly, Kepa


Maly, Kepa, and Onaona Maly

McCoy, Patrick C., and Richard C. Nees
2010 Archaeological Inventory Survey of the Mauna Kea Science Reserve Ka‘ohe Ahupua‘a, Hāmākua District, Island of Hawai‘i TMK: (3) 4-4-015: 09 (por.). Manuscript on file at SHPD, Kapolei.

McCoy, Patrick


McCoy, Patrick C., Sara Collins, and Stephan D. Clark

McEldowney, Holly

Moore, James G., and D.A. Clague

NASA (National Aeronautics and Space Administration)

Orr, Maria

PHRI (Paul H. Rosendahl, Ph.D., Inc.)

Porter, Stephen C.

Robins, Jennifer, and Hallett H. Hammatt

Sharp, W.D., and P.R. Renne

Sherrod, D.R., J.M. Sinton, S.E. Watkins, and K.E. Brunt

Stearns, H.T., and G.A. Macdonald

U.S. Geological Survey

Wentworth, Chester K., and William E. Powers

Wolfe, Edward W., William S. Wise, and G. Brent Dalrymple

Wolfe, Edward W., and Jean Morris, Compilers
Appendix D

Targeted Soil Screen Report
This page intentionally left blank.
TARGETED SOIL SCREEN REPORT

UNIVERSITY OF HAWAI‘I AT HILO
NEW EDUCATIONAL TELESCOPE
HALEPŌHAKU
MAUNA KEA ACCESS ROAD, BIG ISLAND, HAWAI‘I

Prepared for:
SSFM INTERNATIONAL
99 Aupuni Street, Suite 202
Hilo, Hawai‘i 96720

Prepared by:
LEHUA ENVIRONMENTAL INC.
P.O. Box 1018
Kamuela, Hawai‘i 96743

September 24, 2020
TABLE OF CONTENTS

1.0 CERTIFICATIONS AND LIMITATIONS ................................................................. 1
2.0 EXECUTIVE SUMMARY ................................................................................. 2
3.0 INTRODUCTION/PURPOSE ............................................................................ 4
4.0 METHODOLOGY ............................................................................................. 5
5.0 RESULTS ......................................................................................................... 6
6.0 SUMMARY ....................................................................................................... 7
7.0 REFERENCES .................................................................................................... 8

TABLES

TABLE 1 SOIL SCREEN SURVEY RESULTS ........................................................... APPENDIX I

APPENDICES

APPENDIX I: TABLE OF RESULTS
APPENDIX II: FIGURE 1: DU BOUNDARIES FOR SOIL SCREEN
APPENDIX III: PHOTOGRAPH LOG 1: TARGETED SOIL SCREEN SURVEY
APPENDIX IV: SOIL LABORATORY ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS
LIST OF ACRONYMS

< less than
% percent
%R percent recovery
bgs below ground surface
COPC chemicals of potential concern
DOH State of Hawai‘i Department of Health
DU decision unit
DQO data quality objective
EAL Environmental Action Level
EPA Environmental Protection Agency
ft feet
g gram
HEER Hazard Evaluation and Emergency Response
HUD Housing and Urban Development
IDW investigation derived waste
in inch
LEI Lehua Environmental Inc.
mg/kg milligrams per kilogram
MIS multi-increment sampling
ND not detected
PPE personal protective equipment
RCRA Resource Conservation Recovery Act
SBRC Solubility/Bioavailability Research Consortium
USEPA United States Environmental Protection Agency
1.0 CERTIFICATIONS AND LIMITATIONS

Lehua Environmental Inc. (LEI) has completed this targeted soil screen for the University of Hawaiʻi at Hilo’s New Educational Telescope Project located at Halepōhaku on Mauna Kea Access Road on Maunakea, Big Island, Hawaiʻi. LEI’s findings and recommendations contained herein are based on research, site observations, government regulations and laboratory data, which were gathered at the time and location of the study. Opinions stated in this report do not apply to changes that may have occurred after the services were performed.

LEI has performed specified services for this project with the degree of care, skill and diligence ordinarily exercised by professional consultants performing the same or similar services. No other warranty, guarantee, or representation, expressed or implied, is included or intended; unless otherwise specifically agreed to in writing by both LEI and LEI’s Client.

This report is intended for the sole use of SSFM International, exclusively for the Subject Site. SSFM International may use and release this report, including making and retaining copies, provided such use is limited to the particular site and project for which this report is provided. However, the services performed may not be appropriate for satisfying the needs of other users. Release of this report to third-parties will be at the sole risk of LEI’s Client and/or said user, and LEI shall not be liable for any claims or damages resulting from or connected with such release or any third party's use or reuse of this report.

Prepared By:

Kamalana Kobayashi
State of Hawaiʻi Certified Asbestos Inspector
Certification #: HIASB-0613, Expires: 6/18/21
State of Hawaiʻi Certified Lead Risk Assessor
Certification #: PB-0132, Expires: 5/16/21

Date: September 24, 2020
EXECUTIVE SUMMARY

This report describes the results of LEI’s targeted soil screen (Survey) for the University of Hawai‘i at Hilo’s New Educational Telescope Project located at Halepōhaku on Mauna Kea Access Road on Maunakea, Big Island, Hawai‘i (Subject Site). All site work was completed on September 9, 2020 at the Subject Site.

Project Scope and Objectives

The objective of the Survey was to identify the presence (if any) of arsenic-, barium-, cadmium-, chromium-, lead-, selenium-, silver-, mercury-, and organochlorinated pesticide-contaminated soil within the planned areas of soil disturbance for the New Educational Telescope Project at the Subject Site, so that the information can be incorporated in the design. The results of the Survey were used to determine if these soils may pose a potential health risk to construction workers, building tenants and the general public during the renovation work at the Subject Site and to determine appropriate soil management and disposal practices, if needed.

Summary of Multi-Increment Sampling Soil Screen Survey

LEI’s multi-increment sampling (MIS) soil screen at the Subject Site was conducted on September 9, 2020 and included a surface (0"-6" below ground surface (bgs)) and subsurface (6"-18" bgs) soils screen for the contaminants of potential concern (COPC) at the Subject Site with established Department of Health (DOH) Environmental Action Levels (EALs) to be disturbed during this project. Laboratory analytical results of the soil samples were used to determine if the surface and/or subsurface soils contain COPC that exceed applicable DOH Environmental Action Levels (EALs) for residential (unrestricted) and commercial/industrial (restricted) land use.

The Decision Units (DUs) at the Subject Site were based on the planned soil disturbance activities and included the below described areas. Figure 1 located in Appendix II identifies the DU locations on the site map.

- DU-1: Footprint of Planned Telescope, Walkway and Wall, 0”-6” bgs
- DU-2: Footprint of Planned Telescope, Walkway and Wall, 6”-18” bgs
- DU-3: Footprint of Planned Gate Areas, 0”-6” bgs
- DU-4: Footprint of Planned Gate Areas, 6”-18” bgs

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) 8 METALS

Total arsenic, barium, cadmium, chromium, lead, selenium, silver and mercury were not detected in the surface and subsurface soil samples at concentrations that exceed the RCRA 8 metals DOH EALs for unrestricted land use, where groundwater is a drinking water resource and the distance to the nearest surface water body is > 150 meters. Table 1 located in Appendix I summarizes the results for the Survey at the Subject Site. Additionally, Figure 1 located in Appendix II identifies the DU locations at the Subject Site.
ORGANOCHLORINE PESTICIDES
Organochlorine pesticides were not detected in the surface and subsurface soil samples at concentrations that exceed the lead DOH EAL for unrestricted land use, where groundwater is a drinking water resource and the distance to the nearest surface water body is > 150 meters. Table 1 located in Appendix I summarizes the results for the Survey at the Subject Site. Additionally, Figure 1 located in Appendix II identifies the DU locations at the Subject Site.

Summary and Conclusions
In summary, the contaminants of potential concern were not identified above the Hawai‘i Department of Health environmental action levels in the soils with planned disturbance for the University of Hawai‘i at Hilo’s New Educational Telescope Project at the Subject Site.
3.0 INTRODUCTION/PURPOSE

LEI conducted a targeted soil screen for contaminants of potential concern within the soils of the Subject Site with planned disturbance activities for the University of Hawai’i at Hilo’s New Educational Telescope Project at Halepōhaku on Mauna Kea Access Road on Maunakea, Big Island, Hawai’i.

The objective of the targeted soil screen was to identify the presence (if any) of arsenic-, barium, cadmium-, chromium-, lead-, selenium-, silver-, mercury-, and organochlorinated pesticide-contaminated soil within the planned areas of soil disturbance for the New Educational Telescope Project at the Subject Site, so that the information can be incorporated in the design. Specifically, LEI completed the following tasks:

- Performed site reconnaissance at the Subject Site;
- Identified a total of four (4) decision units within the Subject Site;
- Collected a total of six (6) multi-increment samples from the 4 decision units of the Subject Site, which included a duplicate and triplicate sample per the Hawai’i DOH recommendations. Each MIS included 50 sub-samples collected utilizing DOH recommended hand tools and equipment;
- Submitted the six (6) MIS soil samples to Hawaii Analytical Laboratories, LLC in Honolulu, Hawai’i for the following analysis:
  - MIS laboratory preparation
  - Total Arsenic, Lead, Barium, Cadmium, Chromium, Silver, and Mercury by Environmental Protection Agency (EPA) Method 6010B and 7471A
  - Selenium by EPA Method 6020B
  - Organochlorine Pesticides by EPA Method 8141A/B
- Prepared this report documenting the field activities and the results of the investigation including analytical results, photographs and recommendations.
4.0 METHODOLOGY

Multi-increment sample (MIS) soil sampling was chosen for the Subject Site so that reproducible data, representative of average background concentrations, can be obtained for use as reference control data. A total of four (4) decision units were identified at the Subject Site. Decision unit boundaries were based on the locations of the proposed site work and site characteristics (Figure 1, Appendix II). Each MIS soil sample consisted of 50 increments. Based on sampling theory (Pitard, 1993), a minimum of 30 increments per sample is generally recommended in order to obtain a reliable estimate of the mean concentration. The DOH typically specifies the use of 30 to 100 increments per sample in their Technical Guidance Manual (DOH, 2009b). Each increment was taken from 0-6 inches below ground surface for surface soils and from 6-18 inches below ground surface for subsurface soils. Samples were screened for arsenic-, barium-, cadmium-, chromium-, lead-, selenium-, silver-, mercury-, and organochlorinated pesticide.

The location of each increment was based on a systematic random grid that was developed during the site visit. The grid was drawn with a random starting point for even distribution across the sampling area. The systematic random sampling design provided coverage of the decision unit along a horizontal plane, without the gaps associated with purely random designs.

Each increment was taken and then placed into a double-bagged Ziploc® bag. This process was repeated until 50 increments were collected. MIS soil samples were then placed into a cooler with ice packs for delivery to the laboratory for analysis.

Equipment Decontamination
All sampling equipment used to collect MIS samples were decontaminated prior to use between DUs. The decontamination procedure for sampling equipment is as follows:

1. Clean with distilled water and brush if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with distilled water.
3. Rinse thoroughly with Liquinox™.
4. Rinse with distilled water.

Soil Sample Analysis
The six (6) MIS soil samples were submitted to Hawaii Analytical Laboratories, LLC for multi-increment preparation and analysis via EPA Method 6010B arsenic-, barium-, cadmium-, chromium-, lead-, silver-, mercury-, EPA Method 6020B for selenium, and EPA Method 8141A/B for organochlorine pesticides.
5.0 RESULTS

The objective of the Survey was to identify the presence (if any) of arsenic-, barium-, cadmium-, chromium-, lead-, selenium-, silver-, mercury-, and organochlorinated pesticide-contaminated soil within the planned areas of soil disturbance for the New Educational Telescope Project at the Subject Site, so that the information can be incorporated in the design. The results of the Survey were used to determine if these soils may pose a potential health risk to construction workers, building tenants and the general public during the renovation work at the Subject Site and to determine appropriate soil management and disposal practices, if needed.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) 8 METALS
Total arsenic, barium, cadmium, chromium, lead, selenium, silver and mercury were not detected in the surface and subsurface soil samples at concentrations that exceed the RCRA 8 metals DOH EALs for unrestricted land use, where groundwater is a drinking water resource and the distance to the nearest surface water body is > 150 meters. Table 1 located in Appendix I summarizes the results for the Survey at the Subject Site. Additionally, Figure 1 located in Appendix II identifies the DU locations at the Subject Site.

ORGANOCHLORINE PESTICIDES
Organochlorine pesticides were not detected in the surface and subsurface soil samples at concentrations that exceed the lead DOH EAL for unrestricted land use, where groundwater is a drinking water resource and the distance to the nearest surface water body is > 150 meters. Table 1 located in Appendix I summarizes the results for the Survey at the Subject Site. Additionally, Figure 1 located in Appendix II identifies the DU locations at the Subject Site.
6.0 SUMMARY

In summary, the contaminants of potential concern were not identified above the Hawai‘i Department of Health environmental action levels in the soils with planned disturbance for the University of Hawai‘i at Hilo’s New Educational Telescope Project at the Subject Site.
7.0 REFERENCES

- State of Hawai‘i, Department of Health. Update to Soil Action Levels for Inorganic Arsenic and Recommended Soil Management Practices (updates default, background arsenic soil action level presented in 2010 guidance to 24 mg/kg; arsenic exposure units in Section 3.0 table corrected to µg/day September 2012), November 2011 (updated September 2012).
Appendix I

TABLE OF RESULTS
Table 1. Soil Screen Sampling Results
University of Hawai‘i at Hilo Educational Observatory
Halepōhaku, Maunakea, Hawai‘i

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Footprint of Planned Telescope, Walkway, and Wall (0°-6&quot; bgs)</th>
<th>Footprint of Planned Telescope, Walkway, and Wall (0°-6&quot; bgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>DU-1</td>
<td>DU-1B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Laboratory Analytical Method</th>
<th>RCRA 8 Metals</th>
<th>Organochlorine Pesticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (Total)</td>
<td>EPA 3051m7061Am</td>
<td>24</td>
<td>2.2 8.4 ND 0.02 Pass</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>EPA 3051m7000Bm</td>
<td>1000</td>
<td>500 20 Pass</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>EPA 3051m7000Bm</td>
<td>14</td>
<td>120 ND 9.9 Pass</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>EPA 3051m7000Bm</td>
<td>1100</td>
<td>1100 ND 79 Pass</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>EPA 3051m7000Bm</td>
<td>200</td>
<td>800 40 Pass</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>EPA 3051m7000Bm</td>
<td>78</td>
<td>1000 ND 2 Pass</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>EPA 3051m7471Bm</td>
<td>4.7</td>
<td>61 ND 4 Pass</td>
</tr>
<tr>
<td>Arsenic (Total)</td>
<td>EPA 3051m7061Am</td>
<td>24</td>
<td>95 2.8 1 Pass</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>EPA 3051m7000Bm</td>
<td>1000</td>
<td>2500 ND 500 Pass</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>EPA 3051m7000Bm</td>
<td>14</td>
<td>120 ND 9.9 Pass</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>EPA 3051m7000Bm</td>
<td>1100</td>
<td>1100 ND 79 Pass</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>EPA 3051m7000Bm</td>
<td>200</td>
<td>800 40 Pass</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>EPA 3051m7000Bm</td>
<td>78</td>
<td>1000 ND 2 Pass</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>EPA 3051m7471Bm</td>
<td>4.7</td>
<td>61 ND 4 Pass</td>
</tr>
</tbody>
</table>

Notes:
- DU = Decision Unit
- DOH = State of Hawai‘i Department of Health
- EPA = Environmental Protection Agency
- ND = Not detected above the laboratory detection limit
- EAL = Environmental Action Level
- mg/kg = Milligrams per kilogram
- bgs = Below ground surface
<table>
<thead>
<tr>
<th>Analyte</th>
<th>Laboratory Analytical Method</th>
<th>Unrestricted Land Use (mg/kg)</th>
<th>Commercial/Industrial Land Use (mg/kg)</th>
<th>DU-1C Result (mg/kg)</th>
<th>Pass/Fail</th>
<th>Laboratory Reporting Limit (mg/kg)</th>
<th>DU-2 Result (mg/kg)</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (Total)</td>
<td>EPA 3051m/7061Am</td>
<td>24</td>
<td>95</td>
<td>2.2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>Pass</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>EPA 3051m/7000Bm</td>
<td>100</td>
<td>2500</td>
<td>ND</td>
<td>500</td>
<td>Pass</td>
<td>580</td>
<td>Pass</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>EPA 3051m/7000Bm</td>
<td>14</td>
<td>120</td>
<td>ND</td>
<td>9.9</td>
<td>Pass</td>
<td>ND</td>
<td>9.9</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>EPA 3051m/7000Bm</td>
<td>1100</td>
<td>1100</td>
<td>ND</td>
<td>79</td>
<td>Pass</td>
<td>ND</td>
<td>79</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>EPA 3051m/7000Bm</td>
<td>200</td>
<td>800</td>
<td>43</td>
<td>40</td>
<td>Pass</td>
<td>81</td>
<td>40</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>EPA 6020HE/3050B</td>
<td>78</td>
<td>1000</td>
<td>ND</td>
<td>2</td>
<td>Pass</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>EPA 3051m/7000Bm</td>
<td>78</td>
<td>1000</td>
<td>ND</td>
<td>20</td>
<td>Pass</td>
<td>ND</td>
<td>20</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>EPA 3051m/7471Bm</td>
<td>4.7</td>
<td>61</td>
<td>ND</td>
<td>4</td>
<td>Pass</td>
<td>ND</td>
<td>4</td>
</tr>
<tr>
<td>RCRA 8 Metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,4'-DDD</td>
<td>EPA 8081A</td>
<td>2.2</td>
<td>8.4</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>4,4'-DDE</td>
<td>EPA 8081A</td>
<td>3.9</td>
<td>8.2</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>4,4'-DDT</td>
<td>EPA 8081A</td>
<td>1.8</td>
<td>5.6</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Aldrin</td>
<td>EPA 8081A</td>
<td>3.9</td>
<td>8.4</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>alpha-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>beta-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Chlor dane (Technical)</td>
<td>EPA 8081A</td>
<td>17</td>
<td>23</td>
<td>ND</td>
<td>0.2</td>
<td>Pass</td>
<td>ND</td>
<td>0.2</td>
</tr>
<tr>
<td>delta-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>EPA 8081A</td>
<td>2.5</td>
<td>24</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endosulfan I</td>
<td>EPA 8081A</td>
<td>13</td>
<td>13</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endosulfan II</td>
<td>EPA 8081A</td>
<td>13</td>
<td>13</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endosulfan sulfate</td>
<td>EPA 8081A</td>
<td>13</td>
<td>13</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endrin</td>
<td>EPA 8081A</td>
<td>3.8</td>
<td>30</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endrin Aldehyde</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Endrin ketone</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>gamma-BHC (Lindane)</td>
<td>EPA 8081A</td>
<td>N/A</td>
<td>N/A</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Heptachlor</td>
<td>EPA 8081A</td>
<td>1.3</td>
<td>5.6</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Heptachlor epoxide</td>
<td>EPA 8081A</td>
<td>0.2</td>
<td>2.7</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>Methoxychlor</td>
<td>EPA 8081A</td>
<td>16</td>
<td>16</td>
<td>ND</td>
<td>0.02</td>
<td>Pass</td>
<td>ND</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Notes: DU = Decision Unit
DOH = State of Hawai‘i Department of Health
EPA = Environmental Protection Agency
ND = Not detected above the laboratory detection limit
EAL = Environmental Action Level
mg/kg = Milligrams per kilogram
bgs = Below ground surface
# Table 1. Soil Screen Sampling Results

**University of Hawai‘i at Hilo Educational Observatory**  
**Halepōhaku, Maunakea, Hawai‘i**

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Footprint of Planned Gate Areas (0”-6” bgs)</th>
<th>Footprint of Planned Gate Areas (6”-18” bgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Sample</strong></td>
<td><strong>DU-3</strong></td>
<td><strong>DU-4</strong></td>
</tr>
<tr>
<td><strong>ID</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analyte</strong></td>
<td><strong>Laboratory Analytical Method</strong></td>
<td><strong>DOH EAL Unrestricted Land Use (mg/kg)</strong></td>
</tr>
<tr>
<td><strong>RCRA 8 Metals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic (Total)</td>
<td>EPA 3051m/7061Am</td>
<td>24</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>EPA 3051m/7000Bm</td>
<td>100</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>EPA 3051m/7000Bm</td>
<td>14</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>EPA 3051m/7000Bm</td>
<td>1100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>EPA 3051m/7000Bm</td>
<td>200</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>EPA 6020HE/3050B</td>
<td>78</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>EPA 3051m/7000Bm</td>
<td>78</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>EPA 3051m/7471Bm</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>Organochlorine Pesticides</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,4’-DDD</td>
<td>EPA 8081A</td>
<td>2.2</td>
</tr>
<tr>
<td>4,4’-DDE</td>
<td>EPA 8081A</td>
<td>1.9</td>
</tr>
<tr>
<td>4,4’-DDT</td>
<td>EPA 8081A</td>
<td>1.8</td>
</tr>
<tr>
<td>Aldrin</td>
<td>EPA 8081A</td>
<td>3.9</td>
</tr>
<tr>
<td>alpha-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>beta-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>Chlor dane (Technical)</td>
<td>EPA 8081A</td>
<td>17</td>
</tr>
<tr>
<td>delta-BHC</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>EPA 8081A</td>
<td>2.5</td>
</tr>
<tr>
<td>Endosulfan I</td>
<td>EPA 8081A</td>
<td>13</td>
</tr>
<tr>
<td>Endosulfan II</td>
<td>EPA 8081A</td>
<td>13</td>
</tr>
<tr>
<td>Endosulfan sulfate</td>
<td>EPA 8081A</td>
<td>13</td>
</tr>
<tr>
<td>Endrin</td>
<td>EPA 8081A</td>
<td>3.8</td>
</tr>
<tr>
<td>Endrin Aldehyde</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>Endrin ketone</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>gamma-BHC (Lindane)</td>
<td>EPA 8081A</td>
<td>N/A</td>
</tr>
<tr>
<td>Heptachlor</td>
<td>EPA 8081A</td>
<td>1.3</td>
</tr>
<tr>
<td>Heptachlor epoxide</td>
<td>EPA 8081A</td>
<td>0.2</td>
</tr>
<tr>
<td>Methoxychlor</td>
<td>EPA 8081A</td>
<td>16</td>
</tr>
</tbody>
</table>

**Notes:**
- DU = Decision Unit
- DOH = State of Hawai‘i Department of Health
- EPA = Environmental Protection Agency
- ND = Not detected above the laboratory detection limit
- EAL = Environmental Action Level
- mg/kg = Milligrams per kilogram
- bgs = Below ground surface
Appendix II

FIGURE 1: DECISION UNIT BOUNDARY MAP
Figure 1. Decision Unit (DU) Locations and Site Layout
University of Hawaiʻi at Hilo New Educational Telescope Project
Appendix III

PHOTOGRAPH LOG 1: TARGETED SOIL SCREEN SURVEY
Photograph Log 1. Targeted Soil Screen Survey
University of Hawai‘i at Hilo
New Educational Telescope Project
Halepōhaku, Maunakea, Hawai‘i

Photo 1: View of Proposed Site for New Educational Telescope

View facing west of DU-1, DU-1B, DU-1C, and DU-2; the proposed site for the educational telescope, walkway, and wall.

Photo 2: View of Proposed Site for Upper Gate

View facing south-east of DU-3 and DU-4; the proposed site for the upper gate.

Photo 3: View of Proposed Site for Lower Gate

View facing south of DU-3 and DU-4; the proposed site for the lower gate.
Appendix IV

SOIL LABORATORY ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Organochlorinated Pesticides #

**EPA Method:** 8081A -m [Gas Chromatography - ECD]

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>4,4'-DDD</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,4'-DDE</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,4'-DDT</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>delta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dieldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan I</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan II</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan Sulfate</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Aldehyde</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Ketone</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor Epoxide</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methoxychlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multi-incremental sampling was performed on the sample.

| 202046842  | DU-1B                       |         |       |               |
| Comments   | 4,4'-DDD                    | < 0.02 mg/kg |     |               |
|            | 4,4'-DDE                    | < 0.02 mg/kg |     |               |
|            | 4,4'-DDT                    | < 0.02 mg/kg |     |               |
|            | Aldrin                      | < 0.02 mg/kg |     |               |
|            | alpha-BHC                   | < 0.02 mg/kg |     |               |
|            | beta-BHC                    | < 0.02 mg/kg |     |               |
|            | delta-BHC                   | < 0.02 mg/kg |     |               |
|            | Dieldrin                    | < 0.02 mg/kg |     |               |
|            | Endosulfan I                | < 0.02 mg/kg |     |               |
|            | Endosulfan II               | < 0.02 mg/kg |     |               |
|            | Endosulfan Sulfate          | < 0.02 mg/kg |     |               |
|            | Endrin                      | < 0.02 mg/kg |     |               |
|            | Endrin Aldehyde             | < 0.02 mg/kg |     |               |
|            | Endrin Ketone               | < 0.02 mg/kg |     |               |
|            | gamma-BHC                   | < 0.02 mg/kg |     |               |
|            | Heptachlor                  | < 0.02 mg/kg |     |               |
|            | Heptachlor Epoxide          | < 0.02 mg/kg |     |               |
|            | Methoxychlor                | < 0.02 mg/kg |     |               |

Multi-incremental sampling was performed on the sample.

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2005. AIHA is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 – 20181015

3615 Harding Avenue, Ste. 308, Honolulu, HI 96816 - Telephone: (808) 735-0422 - Fax: (808) 735-0047
## Organochlorinated Pesticides #

**EPA Method:** 8081A -m [Gas Chromatography - ECD]  

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td></td>
<td></td>
<td>9/16/2020</td>
</tr>
<tr>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,4'-DDD</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,4'-DDE</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,4'-DDT</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alpha-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>delta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dieldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endosulfan I</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endosulfan II</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endosulfan Sulfate</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endrin Aldehyde</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endrin Ketone</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gamma-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heptachlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heptachlor Epoxide</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methoxychlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multi-incremental sampling was performed on the sample.

| 202046844  | DU-2                         |         |       | 9/16/2020     |
| Comments   |                              |         |       |               |
| 4,4'-DDD   | < 0.02 mg/kg                 |         |       |               |
| 4,4'-DDE   | < 0.02 mg/kg                 |         |       |               |
| 4,4'-DDT   | < 0.02 mg/kg                 |         |       |               |
| Aldrin     | < 0.02 mg/kg                 |         |       |               |
| alpha-BHC  | < 0.02 mg/kg                 |         |       |               |
| beta-BHC   | < 0.02 mg/kg                 |         |       |               |
| delta-BHC  | < 0.02 mg/kg                 |         |       |               |
| Dieldrin   | < 0.02 mg/kg                 |         |       |               |
| Endosulfan I | < 0.02 mg/kg           |         |       |               |
| Endosulfan II | < 0.02 mg/kg         |         |       |               |
| Endosulfan Sulfate | < 0.02 mg/kg |         |       |               |
| Endrin     | < 0.02 mg/kg                 |         |       |               |
| Endrin Aldehyde | < 0.02 mg/kg     |         |       |               |
| Endrin Ketone | < 0.02 mg/kg        |         |       |               |
| gamma-BHC  | < 0.02 mg/kg                 |         |       |               |
| Heptachlor | < 0.02 mg/kg                 |         |       |               |
| Heptachlor Epoxide | < 0.02 mg/kg |         |       |               |
| Methoxychlor | < 0.02 mg/kg            |         |       |               |

Multi-incremental sampling was performed on the sample.
**Organochlorinated Pesticides #**

**EPA Method: 8081A -m [Gas Chromatography - ECD]**

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>4,4'-DDD</td>
<td>&lt; 0.02 mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,4'-DDE</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,4'-DDT</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>delta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dieldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan I</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan II</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan Sulfate</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Aldehyde</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Ketone</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor Epoxide</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methoxychlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multi-incremental sampling was performed on the sample.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>4,4'-DDD</td>
<td>&lt; 0.02 mg/kg</td>
<td>9/16/2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,4'-DDE</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,4'-DDT</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>delta-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dieldrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan I</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan II</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan Sulfate</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Aldehyde</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endrin Ketone</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-BHC</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heptachlor Epoxide</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methoxychlor</td>
<td>&lt; 0.02 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multi-incremental sampling was performed on the sample.

---

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2005. AIHA is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 – 20181015
Lab Job No: 202007749  
Date Submitted: 9/11/2020  

### Total Lead (soil)

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>43</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>66</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>43</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>81</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 40</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 40</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2005. AIHA is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 – 20181015.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>2.8</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>2.8</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>2.2</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>3</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 0.99</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 1</td>
<td>mg/kg</td>
<td>9/14/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample No.</td>
<td>Your Sample ID / Description</td>
<td>Results</td>
<td>Units</td>
<td>Date Analyzed</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>---------------</td>
</tr>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 500</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 500</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 500</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>580</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 500</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 500</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EPA Method: 3051m / 7000Bm

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2005. AIHA is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 – 20181015

3615 Harding Avenue, Ste. 308, Honolulu, HI 96816 - Telephone: (808) 735-0422 - Fax: (808) 735-0047
Total Recoverable Cadmium #

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 10</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Total Recoverable Chromium #

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 79 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 80 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 80 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>&lt; 79 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 80 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 80 mg/kg</td>
<td>9/18/2020</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample No.</td>
<td>Your Sample ID / Description</td>
<td>Results</td>
<td>Units</td>
<td>Date Analyzed</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>---------------</td>
</tr>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 4</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lab Job No: 202007749  
Date Submitted: 9/11/2020  

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Your Sample ID / Description</th>
<th>Results</th>
<th>Units</th>
<th>Date Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>202046841</td>
<td>DU-1</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046842</td>
<td>DU-1B</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046843</td>
<td>DU-1C</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046844</td>
<td>DU-2</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046845</td>
<td>DU-3</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202046846</td>
<td>DU-4</td>
<td>&lt; 20</td>
<td>mg/kg</td>
<td>9/18/2020</td>
</tr>
<tr>
<td>Comments</td>
<td>Multi-incremental sampling was performed on the sample.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EPA Method: 3051m / 7000Bm

Hawaii Analytical Laboratory (101812) is accredited by the AIHA LAP, LLC in the EMLAP, IHLAP, and ELLAP programs for the scope of work listed on www.aihaaccreditedlabs.org, in accordance with the recognized ISO/ IEC 17025:2005. AIHA is a NLLAP recognized accrediting body. Controlled doc.: Lead Report, rev. 3 – 20181015
Lehua Environmental Inc.  
P.O. Box 1018  
Kamuela HI 96743  

Lab Job No:  202007749  
Date Submitted:  9/11/2020  

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the “analytical method” referenced above. Modifications to this methodology may have been made based upon the analyst’s professional judgment and/or sample matrix effects encountered. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document proficiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling/collection data is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
# = Analytical methods marked with an “#” are not within our AIHA LAP, LLC Scope of Accreditation.
MRL = Method Reporting Limit.

Jennifer Hsu Liao
Laboratory Manager
### Hawaii Analytical Laboratory Chain of custody - Rev. 20150224

**Site/Project Name:** Mauna Kea, Hale Pohaku Educational Telescope  

**Sample Identification / Description**  

<table>
<thead>
<tr>
<th>Sample Identification / Description*</th>
<th>Date Sampled* (mm/dd/yy)</th>
<th>Collection Medium</th>
<th>Sample Area / Air Volume</th>
<th>Analysis Requested*</th>
<th>Method Reference</th>
<th>Lab ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU-1</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046841</td>
</tr>
<tr>
<td>DU-1B</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046842</td>
</tr>
<tr>
<td>DU-1C</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046843</td>
</tr>
<tr>
<td>DU-2</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046844</td>
</tr>
<tr>
<td>DU-3</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046845</td>
</tr>
<tr>
<td>DU-4</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td></td>
<td>202046846</td>
</tr>
</tbody>
</table>

**Comments / Special Instructions:**  

*Temp. 7.20°C., upon receipt. N/A  
MIS Lab Prep, RCRA 8 metals (As on 24 hr TAT, if As>23mg/kg then Bioaccessible As on 5 day TAT), Organochlorine Pesticides w/ Technical Chlordane*

**PLM POSITIVE STOP** Instructions:  

- [ ] Positive stop per SAMPLE  
- [ ] Positive stop per LAYER

**Sampled By:** Jason Kline  

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>202007749</th>
</tr>
</thead>
</table>

**Received By (Print and Sign):** Anne Anth

**Date/Time:** 9/10/2020 12:00

---

If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.

All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.

*Required fields, failure to complete these fields may result in a delay in your samples being processed.*

---

Page: 1 of 1
# Analytical Report

**Client** | Advanced Analytical Laboratory  
| 544 Ohohia Street #10  
| Honolulu, HI, 96819  
**Acculab WO#** | 20-AL0915-4  
**Project Manager** | Uwe Baumgartner/ Elisa Young  
**Project Name** | Hale Pohaku Educational telescope  
**Client Project#** | 202007749  
**Project#** | V764  

## Metals in Soil by EPA 6020B/EPA3050B

**Accu Lab Batch#** | AL091820-11  

<table>
<thead>
<tr>
<th>Client sample ID</th>
<th>DU-1A</th>
<th>DU-1B</th>
<th>DU-1C</th>
<th>DU-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab ID</td>
<td>MRL</td>
<td>Unit</td>
<td>MTH BLK</td>
<td>LCS</td>
</tr>
<tr>
<td>Matrix</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>2.0 mg/kg</td>
<td>nd</td>
<td>108%</td>
<td>nd</td>
</tr>
</tbody>
</table>

**Acceptable Recovery Limits:**
- LCS: 80-120%
- MS/MSD: 75-125%

**Acceptable RPD limit:** 20%

---

This report is issued solely for the use of the person or company to whom it is addressed.
Any use, copying or disclosure other than by the intended recipient is unauthorized.
## Analytical Report

### Client Information
- **Client**: Advanced Analytical Laboratory
- **Project Manager**: Uwe Baumgartner/ Elisa Young
- **Project Name**: Hale Pohaku Educational telescope
- **Client Project#**: 202007749
- **Project#**: V764

### Accu Lab Information
- **Acculab WO#**: 20-AL0915-4
- **Lab ID**: MRL
- **Unit**: Soil
- **Matrix**: Soil
- **Date Digested**: 9/18/2020
- **Date Analyzed**: 9/18/2020
- **Date Sampled**: 9/9/2020
- **Date Received**: 9/15/2020
- **Date Reported**: 9/18/2020

### Metals in Soil by EPA 6020B/EPA3050B

**Client sample ID**: 2020-AL091820-11

<table>
<thead>
<tr>
<th>Client sample ID</th>
<th>DU-3</th>
<th>DU-4</th>
<th>MS</th>
<th>MSD</th>
<th>RPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab ID</td>
<td>MRL</td>
<td>Unit</td>
<td>20-AL0915-4-5</td>
<td>20-AL0915-4-6</td>
<td>20-AL0915-3-1</td>
</tr>
<tr>
<td>Matrix</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
<td>Soil</td>
</tr>
<tr>
<td>Date Analyzed</td>
<td>9/18/2020</td>
<td>9/18/2020</td>
<td>9/18/2020</td>
<td>9/18/2020</td>
<td>9/18/2020</td>
</tr>
</tbody>
</table>

**Selenium (Se)**: 2.0 mg/kg
- **Acceptable Recovery Limits**:
  - LCS: 80-120%
  - MS/MSD: 75-125%
- **Acceptable RPD limit**: 20%
Analytical Report

<table>
<thead>
<tr>
<th>Client</th>
<th>Advanced Analytical Laboratory</th>
<th>Acculab WO#</th>
<th>20-AL0915-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>Uwe Baumgartner/ Elisa Young</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Name</td>
<td>Hale Pohaku Educational telescope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client Project#</td>
<td>202007749</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project#</td>
<td>V764</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Qualifiers and Comments:

Results reported on dry-weight basis for soil samples.

MRL- Method Reporting Limit
nd- Indicates the analyte is not detected at the listing reporting limit.
C- Coelution with other compounds.
M- % Recovery of surrogate, MS/MSD is out of the acceptable limit due to matrix effect.
B- Indicates the analyte is detected in the method blank associated with the sample.
J- The analyte is detected at below the reporting limit.
E- The result reported exceeds the calibration range, and is an estimate.
D- Sample required dilution due to matrix. Method Reporting Limits were elevated due to dilutions.
H- Sample was received or analyzed past holding time
Q- Sample was received with head space, improper preserved or above recommended temperature.
I- Due to insufficient sample, LCS/LCS DUP were analyzed in place of MS/MSD.
R- The recovery of this analyte in QC sample failed high, but the analyte was not detected in all related samples. No action was taken.
R-1- The RPD value for the MS/MSD was outside of QC acceptance limits however both recoveries were acceptable. All related samples were “nd”. No action was taken.
R-2- The recovery of the surogate in sample failed high, but all related analytes were not detected in the sample. No action was taken.
ADVANCED ANALYTICAL LABORATORY-CHAIN OF CUSTODY RECORD

CLIENT: Hawaii Analytical Laboratory
ADDRESS: 3615 Harding Ave, Suite 308 - Honolulu HI, 96816
PHONE / EMAIL: 808-735-0422 jhsu@analyzehawaii.com & aantin@analyzehawaii.com
CLIENT PROJECT#: 202007749

PROJECT NAME: Mauna Kea, Hale Pohaku Educational Telescope
COLLECTOR: Jason Kline
DATE OF COLLECTION: 09/09/20
PROJECT MANAGER: Anne Antin

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Type</th>
<th>Container Type</th>
<th>Selenium</th>
<th>Field Notes</th>
<th>Number of containers received</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU-1</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
<tr>
<td>DU-1B</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
<tr>
<td>DU-1C</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
<tr>
<td>DU-2</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
<tr>
<td>DU-3</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
<tr>
<td>DU-4</td>
<td>Soil</td>
<td>1 ziploc</td>
<td>X</td>
<td>MIS 30 incr. 1</td>
<td></td>
</tr>
</tbody>
</table>

RELINQUISHED BY (Signature): Anne Antin
DATE/TIME: 9/14/2020

Sample Receipt:
- TOTAL NUMBER OF CONTAINERS
- CHAIN OF CUSTODY SEALS INTACT
- RECEIVED IN GOOD CONDITION
- TEMPERATURE

LABORATORY NOTES:
Big Island soil samples. MIS was already performed. Please provide QAQC data.
### Hawaii Analytical Laboratory

**Report To:** Kama Kobayashi  
**Company:** Lehua Environmental Inc.  
**Address:** PO BOX 1018  
Kamehameha Hwy  
Kamuela, Hawaii 96743  
**Phone / Cell No.:** 808-494-0365  
**Report results to:** K. Kobayashi  
via email or fax: jkline.geo@gmail.com, lehuaenvironmental@gmail.com

**Invoice To:** Kamalana Kobayashi  
**Company:** Lehua Environmental Inc.  
**Address:** PO BOX 1018  
Kamuela, Hawaii 96743  
**Phone / Cell No.:**  
**Purchase Order No.:**  
**Email Invoice To:** lehuaenvironmental@gmail.com

---

**Site/Project Name:** Mauna Kea, Hale Pohaku Educational Telescope  
**Client Project No.:** 9.10.20  
**Sampled By:** Jason Kline

**Comments / Special Instructions:**  
MIS Lab Prep, RCRA 8 metals (As on 24 hr TAT, if As>23mg/kg then Bioaccessible As on 5 day TAT), Organochlorine Pesticides w/ Technical Chlordane  
PLM POSITIVE STOP Instructions:  
☐ Positive stop per SAMPLE  
☐ Positive stop per LAYER

<table>
<thead>
<tr>
<th>Sample Identification / Description* (Maximum of 30 Characters)</th>
<th>Date Sampled* (mm/dd/yy)</th>
<th>Collection Medium</th>
<th>Sample Area / Air Volume</th>
<th>Analysis Requested*</th>
<th>Method Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU-1</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046841</td>
</tr>
<tr>
<td>DU-1B</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046842</td>
</tr>
<tr>
<td>DU-1C</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046843</td>
</tr>
<tr>
<td>DU-2</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046844</td>
</tr>
<tr>
<td>DU-3</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046845</td>
</tr>
<tr>
<td>DU-4</td>
<td>9/9/2020</td>
<td>Soil</td>
<td></td>
<td>See Comments</td>
<td>202046846</td>
</tr>
</tbody>
</table>

**Reinlhuished By (Print and Sign):**  
Jason Kline  
Date/Time: 9/10/2020 12:00  
Received By (Print and Sign):  
Anne Anh   
Date/Time: 09-11-20 09:40 IN

*Sample description can be paint chips, concrete, specific sample collection location, etc...

If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.

All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.

*Required fields, failure to complete these fields may result in a delay in your samples being processed.

---

Page: ___1__ of ___1___
Appendix E

Pre-Assessment Consultation Comments and Responses
March 4, 2021

SUBJECT: University of Hawai’i at Hilo New Educational Telescope Facility
Maunakea, Hāmākua District, Island of Hawai‘i
Tax Map Key (TMK): (3) 4-4-015:012
Pre-Assessment Consultation for Draft Environmental Assessment

To Whom it may Concern:

The University of Hawai‘i at Hilo (UH Hilo) is proposing a new educational telescope facility at Halepōhaku, the mid-level facility on Maunakea. The proposed project requires the preparation of an environmental assessment (EA), because (1) the proposed action involves the use of state lands and state funds pursuant to Hawai‘i Administrative Rules (HAR) § 11-200.1-8, and (2) due to the proposed land use located within the Conservation State Land Use District pursuant to HAR § 13-5-31.

Project Background

UH Hilo’s current telescope facility site on the summit of Maunakea, named Hōkū Ke‘a, is in the process of being decommissioned (i.e., removal and site restoration). That process is scheduled for completion by 2023. A new 28-inch telescope, 14-foot-high dome enclosure, and related instrumentation were financed by the State of Hawai‘i through Capital Improvement Project (CIP) funding and delivered to UH Hilo in 2016 for installation at a new location. Between 2016 and 2018, UH Hilo evaluated 16 site alternatives before selecting Halepōhaku as the best location for the new educational facility. The selected site within Halepōhaku provides desirable teaching, access, and astronomical conditions. It is currently used for equipment storage.

Halepōhaku, "House of Stone", is located below the summit at 9,200 feet elevation on Maunakea. The name of the site comes from the stone cabins that were built there in the 1930’s. As a mid-elevation site, Halepōhaku has been used by hunters, hikers, astronomers, technicians, and other visitors to the mauna to acclimatize their bodies to the rarified atmosphere at higher elevations. The new educational telescope will be supported by existing on-site infrastructure. Visitor facilities and other Halepōhaku uses would not be affected.

The UH Hilo Astronomy Program requires the new educational telescope facility in order to maintain high standards and provide competitive education by focusing on modern observational astronomy techniques, effective research support, and communicating science with the general public. Significant observing time with the telescope will also be made available to local schools and the community. The availability of an educational telescope that provides hands-on experience for students enables UH Hilo to better address:

- **Increasing competition:** The number of Astronomy Bachelor's Degrees granted annually in the USA has tripled since 2000.
- **Recapturing UH Hilo's niche as providing hands-on student learning:** More worldwide colleges offering astronomy programs are also implementing small, modern telescope facilities.
Adapting to job market: More hands-on experience, research support or transferrable skills are required from college graduates entering the astronomy job market, which includes engineers, software engineers, telescope operators, as well as astronomers.

Outreach efforts: Communicating science with the general public is fundamental at UH Hilo but is currently limited by resources and an adequate astronomical facility is needed to develop more opportunities.

Proposed Action

UH Hilo intends to install a new educational telescope facility which includes a telescope, dome enclosure, and a raised platform and walkway. The 28-inch telescope would be supported by a single pier measuring approximately 3 feet above grade and 6 feet below grade. The prefabricated clamshell-style dome measures approximately 14-feet-tall with a diameter of 18-feet. The dome is proposed to be installed atop a new platform with a potential walkway connection to an existing building at Halepōhaku. The telescope would be mostly operated remotely from the UH Hilo campus or used in a full robotic mode.

The attached project location map outlines the proposed project site, which has been previously graded and is currently being used for storage. The Draft EA will include review of alternatives including the 16 sites considered, the Proposed Action, and a No-Action alternative.

Community Engagement Activities

In order to benefit from a broad range of perspectives from early consultation and at the earliest practicable time, UH Hilo presented early concepts of the project to the Maunakea Management Board and the UH Board of Regents at open public meetings. Based on this early outreach, the project team developed a community outreach plan that aimed to cultivate relationships and provide transparent communication to educate the community about where the telescope will be located, how it will be used, and the anticipated educational and community benefits. The outreach activities consisted of a Virtual Open House (website), Informational and Promotional Material and Stakeholder meetings. Feedback collected from early consultation will be summarized in the EA and considered as part of the planning process.

Request for Comment on Proposed Environmental Assessment

UH Hilo has contracted SSFM International, Inc. to provide environmental due diligence, planning and permitting, and engineering services to support the new educational telescope project. This letter and attachments are being provided to solicit any comments, support, concerns, or regulatory requirements that you may have regarding this project. In addition, we seek your input as to whether the proposed project may have an influence on any of your existing or planned projects, plans, policies, or programs that we should consider when preparing the EA.
We would greatly appreciate your cooperation in providing us with written comments within 30 days of the date of this letter. Please address your written comments to:

SSFM International, Inc.
Attn: Jennifer Scheffel
99 Aupuni Street, Suite 202
Hilo, Hawai‘i 96720

If you have any questions on the proposed action, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Attachment
Aloha Ms. Scheffel,

I appreciate the opportunity to encourage the construction of the UH Hilo New Educational Telescope Facility. This is a wonderful opportunity for the people of Hawaii, to advance human knowledge about the universe, and for the people of the world, to benefit from the rare combination of geography, geology and history that make our islands the best place in the world for such a project.

The original navigators who located our tiny islands in the middle of the vast blue Pacific Ocean used an incredible combination of observation, historical memory, skill, aptitude, technology, and courage. We can and should continue that tradition, with exploration into the vast universe. The observations of the stars and the sky enabled the ancestors to locate Hawaii in the world, and now further observations will continue to help Hawaii and the world locate ourselves in the universe.

We live on the tallest mountain in the world, measured from the sea floor. Our atmosphere is among the clearest in the world. Our people, using the latest astronomical technology, can continue the tradition of exploration.

This is a better use of our minds, hearts and resources than a casino, which only preys on the foolishness and weakness of materialistic culture, and sows greed, preys on ignorance, and invites criminal behavior. This project will be an investment, not a cancer, and will truly help the people of Hawaii, and benefit the rest of the world.

I once visited Halepohaku, "House of Stone" to acclimate to the rarified atmosphere of the mountain. I noticed the colorful but obsolete Apple Emacs in the visitor facilities. Let us bring the latest tools to the people who are exploring the vast unknown universe.

By the way, I’m not meant to be climbing the Himalayas, and got dopey and confused on the way up, and had to be stopped from staggering on, by a helpful ranger... 

I cannot go to the top, but I will do everything I can to help others have access to the mountain, to study the sky.

Mahalo,

Vivian Chang
3093 Pualei Circle #205
Honolulu, HI 96815
808 265-6215
vividchange@mac.com
February 22, 2021

MEMORANDUM

TO: DLNR Agencies:
   ___ Div. of Aquatic Resources
   ___ Div. of Boating & Ocean Recreation
   ___ Engineering Division (DLNR.ENGR@hawaii.gov)
   ___ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
   ___ Div. of State Parks
   ___ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
   ___ Office of Conservation & Coastal Lands
   ___ Land Division – Hawaii District (gordon.c.heit@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for the Proposed University of Hawaii at Hilo New Educational Telescope Facility

LOCATION: Mauna Kea, Hamakua District, Island of Hawaii; TMK: (3) 4-4-015:012

APPLICANT: SSFM International on behalf of University of Hawaii at Hilo

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments by March 8, 2021.

If no response is received by the above date, we will assume your agency has no comments. Should you have any questions about this request, please contact Darlene Nakamura at darlene.k.nakamura@hawaii.gov. Thank you.

( ) We have no objections.

( ) We have no comments.

(✓) Comments are attached.

Signed: ____________________________
Print Name: Gordon C. Heit
Division: Land
Date: 3/3/21

Attachments
cc: Central Files
MEMORANDUM

TO: Russell Y. Tsuji, Land Administrator

FROM: Candace Martin, Land Agent, HDLO

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for the Proposed University of Hawaii at Hilo New Educational Telescope Facility, Maunakea, Hamakua District, Island of Hawaii; TMK: (3) 4-4-015:012.

In response to your request for review and comment dated February 22, 2021 on the above referenced subject matter, we offer the following:

A review of the current general lease\(^1\) issued to the University of Hawaii by the Board of Land and Natural Resources lists the character of use as follows:

“The Lessee shall use or allow the premises leased to be used solely for permanent mid-level facilities, a construction camp, an information station as well as existing facilities purposes.”

The lease also allows:

“Commercial uses. Lessee shall be allowed to sell astronomy-related items and to operate other concessions at the information station and at other University of Hawaii facilities on the premises. Lessee or a concessionaire shall be allowed to operate a service to shuttle visitors from the premises to the Mauna Kea summit for various activities and events; Lessee may charge visitors a fee for use of this service.”

Any uses other than those listed would require approval from the Board of Land and Natural Resources to amend the lease.

If you have any questions, please feel free to contact me at (808) 961-9590. Thank you.

\(^1\) GL S-5529
To: Jennifer M. Scheffel, Sr. Environmental Planner, SSFM International

From: Senator Lorraine Inouye

Date: March 2, 2021

Subject: Comments on the Construction of New Educational Telescope Facility
On Mauna Kea, Hamakua District, Island of Hawaii
For Draft Environmental Assessment

I am writing this statement in support of the construction of a new educational telescope facility on Mauna Kea, Island of Hawaii for the University of Hawaii at Hilo. The 28-inch telescope will be built on a parcel at the Hale Pohaku area below the summit at the 9,200 foot level (TMK): (3)-4-4-015:012.

Access to a state of the art, educational telescope will benefit University of Hawaii students and faculty who pursue the study of astronomy. It may also benefit the community since the telescope will be at a lower elevation. Students and other astronomers could use it as an informational tool to educate the public.

This telescope will be housed in a small, domed structure measuring 14 feet tall and 18 feet wide. The area is presently used for storage. I don’t see any adverse environmental impact to the area that is already developed with several structures that support the astronomy community.

I believe the telescope will be a great supplemental instrument to have on the island as we groom our future astronomers for careers that can keep them in Hawaii. Astronomy is a good, clean, knowledge based industry that contributes to our economy and continues to astonish mankind’s knowledge of our universe.

The University of Hawaii should be allowed to build it.

Sincerely,

Senator Lorraine Inouye
Senator, 4th District of the State of Hawaii
Email received from EXTERNAL sender. Confirm the content is safe prior to opening attachments or links.

Ms. Scheffel

Your emailed letter of March 4 is acknowledged. The last page of your letter invites me to comment on the proposed new telescope and invites me also to ask questions.

Abbreviated preliminary comments interspersed with some questions are as follows:

1. A mere 30 days is not enough time for members of the public like me to comment on a proposal of this magnitude. I seek an additional 60 days to deal effectively with just what your eMail note sets out.
2. The tone of your letter does not sit well with me.
3. There is no profile disclosure statement on who or what 'SSFM International, Inc'. is. I think every member of the public contacted by you is entitled to know (for a variety of reasons including professional courtesy) as to who the members of the Board of Directors of SSFM International, Inc. are. Their full titles and a brief annotation that tells us something significant about each member of the Board, including, especially, level of formal higher education (if any) and institutions from which each member of the Board has earned his or her professional credentials. I request a gender breakdown of members of the Board: how many women, how many men? Please disclose how many people of color (by gender breakdown) are members of the Board and when each present 'colored' member of the Board was appointed. Also, please disclose, the process used to appoint members of the Board. Specifically, amongst the current members of the Board of Directors of SSFM International, Inc. how many, if any, are Pacific Islanders including anyone from Hawaii or from any island from within Polynesia, Melanesia or Micronesia.
Your official designation, below the signature line of your letter says "Sr. Environmental Planner". Please disclose what professional qualifications you have earned and from what institution/s, and when such qualifications were earned. If you have ever published anything that has been peer reviewed, please list all such publications in standard bibliographical format. Please provide me with a short statement disclosing any environmental planning experience that you have had on/in any island anywhere? Do you speak, read or write any first language of any island community in the Pacific? If so, please disclose your level of competence. of any language you identify. Has SSFM International, Inc. done any environmental planning work of the kind traversed in your letter in/on any island anywhere? Please provide brief annotated details.

My general comment about your failure to disclose any of the foregoing information raises what I consider to be a huge matter of concern.

The list of questions I have asked are merely illustrative. There are more questions that I have in mind. And, indeed, more comments.

What is the total anticipated cost of this project?
Do you, or your principals (SSFM International. Inc.) have a position on the proposed TMT project on Mauna Kea?

Does SSFM International, Inc. have any kind of connection/relationship with TMT?

Please provide me with as complete a list as possible of the names and professional qualifications of all members of the faculty of UH Hilo who are associated in any way with this proposed project.

Thank you.

J.M. Anthony, PhD
P.O. Box 1381
Kaneohe, Hawaii 96744

drjimanthony77@gmail.com

On Thu, Mar 4, 2021 at 2:25 PM Jennifer Scheffel <jscheffel@ssfm.com> wrote:

Aloha Dr. Anthony,

Please see attached letter providing information on the University of Hawaii at Hilo’s proposed New Educational Telescope project. Please provide any comments you may have by April 3rd.

Mahalo,

Jennifer Scheffel | Environmental Planner

Gardens for over 1000 special people

NOTICE: This communication and any attachments ("this message") may contain confidential information for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on this message is strictly prohibited. If you have received this message in error, or you are not an authorized recipient, please notify the sender immediately.
by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.
March 5, 2021

Ms. Jennifer M. Scheffel
Senior Environmental Planner
SSFM International, Inc.
99 Aupuni Street, Suite 202
Hilo, Hawaii 96720

Dear Ms. Scheffel:

Your request dated February 8, 2021, requesting written comments on the Pre-Assessment Consultation for Draft Environmental Assessment (EA) for the University of Hawai‘i at Hilo (UH Hilo), New Educational Telescope Facility, Hawai‘i, has been reviewed.

I understand that UH Hilo is proposing a new educational telescope facility at Halepohaku on Mauna Kea. As stated in the request, the proposed project requires a Draft EA because the project involves the use of State lands and State funds pursuant to Chapter 11-200, Hawai‘i Administrative Rules (HAR), and the proposed project site is located in a State Land Use Conservation District pursuant to Chapter 13-31, HAR.

The Department of Budget and Finance notes that legislation currently before the Hawai‘i State Legislature could impact UH’s management of the proposed site. While the project may be eligible for general obligation bond financing when funds are available, future appropriations are subject to legislative approval. At this time, the project as proposed does not impact any existing or planned projects, plans, policies, or programs.

Aloha,

CRAIG K. HIRAI
Director of Finance

No. 1 Capitol District Building, 250 S. Hotel Street, Honolulu, Hawaii 96813
MARCH 8, 2021

SSFM INTERNATIONAL, INC.
ATTN: JENNIFER SCHEFFEL
99 AUPUNI STREET, SUITE 202
HILO, HAWAII 96720
(via email to jscheffel@ssfm.com)

SUBJECT: UNIVERSITY OF HAWAI’I AT HILO NEW EDUCATIONAL TELESCOPE
        FACILITY
        MAUNAKEA, HAMAKUA DISTRICT, HAWAI’I
        TMK: (3)4-4-015:012

We received the subject dated February 8, 2021 and have the following comments:

The subject parcels are in an area designated as Zone D on the Flood Insurance Rate Map
(FIRM) by the Federal Emergency Management Agency (FEMA). Zone D corresponds to
unstudied areas where flood hazards are undetermined, but possible.

All development-generated runoff shall be disposed of on site and not directed toward any
adjacent properties. A drainage study shall be prepared and the recommended drainage
system shall be constructed meeting the approval of the Department of Public Works.

All activities shall comply with the requirements of Hawaii County Code (HCC), Chapter 10,
Erosion and Sedimentary Control.

Should there be any questions concerning this matter, please contact Ms. Robyn Matsumoto in
our Engineering Division at (808) 961-8924.

[Signature]

ALAN K. THOMPSON, Acting Division Chief
Engineering Division

RM
March 8, 2021

Jennifer M. Scheffel
Sr. Environmental Planner
SSFM International, Inc.
99 Aupuni St, Suite 202
Hilo, HI 96720

Dear Ms. Scheffel,

Subject: Pre-Assessment Consultation for Draft Environmental Assessment
Applicant: University of Hawai‘i at Hilo
Project: New Educational Telescope Facility Maunakea, Hāmākua District, Island of Hawai‘i Tax Map Key
TMK: (3) 4-4- 015:012, County & State of Hawai‘i

We understand the University of Hawai‘i is in process of decommissioning Hōkū Ke‘a. Between 2016 and 2018, UH Hilo evaluated 16 site alternatives before selecting Halepōhaku for the new educational facility. The selected site within Halepōhaku is currently used for equipment storage. The subject parcel is approximately 20 acres, located in the State Land Use Conservation District along the Mauna Kea Access Road at approximately 9,000 ft. elevation.

UH Hilo intends to install a new educational telescope facility at this site, which includes a telescope, dome enclosure, and a raised platform and walkway. The 28-inch telescope; approximately 14- feet-tall with a diameter of 18- feet and with dome proposed to be installed atop a new platform with a potential walkway connection to an existing building at Halepōhaku. The telescope would be mostly operated remotely from the UH Hilo campus or used in a full robotic mode.

It is submitted the proposed project requires the preparation of an environmental assessment (EA), because (1) the proposed action involves the use of state lands and state funds pursuant to Hawaii Administrative Rules (HAR) § 11-200.1-8, and (2) due to the proposed land use located within the Conservation State Land Use District pursuant to HAR § 13-5-31.

While we acknowledge the ‘disturbed/previously graded’ nature of the proposed action, continued use(s) of land has unique circumstances and long-term impacts determining any
area(s) of potential effects. The Planning Department is central coordinating agency\footnote{HRS §46-18 Central coordinating agency} for input. The Planning Department is responsible for managing Hawai‘i County’s General Plan (GP), including capital improvements and subsequent Community-level Development Plans (CDP), which, among other topics, focus on community engagement to identify best practices in the promotion and protection of equitable governance. We recommend consultation with stakeholders such as, but not limited to the following:

- Mauna Kea Soil and Water Conservation District
- Hawai‘i Pacific Bird Habitat Joint Venture
- KAHEA: The Hawaiian-Environmental Alliance
- Mauna Kea Watershed Alliance

In closing, we also request the action be presented for input to the County’s Cultural Resource Commission no later than the Draft EA. You may coordinate through our Planning Division; please contact Alex Roy (alex.roy@hawaiicounty.gov) with copies to myself.

Sincerely,

\[ \text{Signature} \]

ZENDO KERN
Planning Director

Cc:
\textbf{Approving Agency/Accepting Authority:}
Suzanne Case, DLNR
Russell Tsuji, Chairman, BLNR, State of Hawai‘i: DLNR, Land Division, (808) 587-0419, dlnr.land@Hawaii‘i.gov 1151 Punchbowl St., Room 220, Honolulu, HI 96813

\textbf{Applicant cc:}
University of Hawaii Hilo

\textbf{Consultant:}
SSFM
March 10, 2021

Ms. Jennifer Scheffel  
Senior Environmental Planner  
SSFM International, Inc.  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

Dear Ms. Scheffel:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment  
University of Hawaii (Hilo) Telescope Facility  
Mauna Kea, Hilo, Hawaii  
Tax Map Key No.: (3) 4-4-015: 012

Thank you for your letter dated February 8, 2021 and the opportunity to review the above-referenced project. The upcoming preparation of a Draft Environmental Assessment (DEA) required by Chapter 343, Hawaii Revised Statutes is due to the use of State land and State funds, and also the proposed use within the Conservation State Land Use District. The purpose of the DEA is to evaluate alternatives and various locations considered. The University of Hawaii at Hilo is proposing to create a new educational telescope facility at the Mid-Level Support Facility at Mauna Kea by year 2023.

The proposed work will include the installation of the 28-inch telescope with a 14-foot tall dome atop a new platform. The new facility will be connected to an existing building via a new walkway. The project site is accessible directly from the Mauna Kea Access Road.

The Hawaii Department of Transportation (HDOT) has the following comments:

1. We note that our jurisdiction on Mauna Kea Access Road ends 125 feet past the Visitor Center which is below the entrance to the Mid-Level Support Facilities. Therefore, the access point and this portion of the Mauna Kea Access Road leading to the project site (Mid-Level Support Facilities) are outside of the HDOT’s jurisdiction.

2. A full evaluation is required on whether the proposed daily operation related to educational or visitor programs, special events and/or, typical trip patterns will have any local impacts to the roadways and nearby State highways. This should be provided in the DEA and/or if relevant, a Traffic Assessment or a Traffic Impact Analysis Report should be included and prepared by a traffic engineer licensed in the State of Hawaii.
3. A permit is required from the Highways Division, Hawaii District Office to transport oversized and overweight equipment/loads within our State Highway facilities.

If you have any questions, please contact Jeyan Thirugnanam, Systems Planning Engineer, Highways Division, Planning Branch at (808) 587-6336 or by email at jeyan.thirugnanam@hawaii.gov. Please reference file review number PS 2021-029.

Sincerely,

JADE T. BUTAY
Director of Transportation
March 08, 2021

SSFM International, Inc.
Attn: Ms. Jennifer M. Scheffel
Sr. Environmental Planner
99 Aupuni Street, Suite 202
Hilo, Hawaii 96720

Dear Ms. Scheffel:

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment for the Proposed University of Hawaii at Hilo New Educational Telescope Facility located at Maunakea, Hamakua District, Island of Hawaii; TMK: (3) 4-4-015:012 on behalf of University of Hawaii at Hilo

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's Divisions for their review and comments.

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division-Hawaii District on the subject matter. Should you have any questions, please feel free to contact Darlene Nakamura at (808) 587-0417 or email: darlene.k.nakamura@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures
cc: Central Files
March 4, 2021

Jennifer Scheffel
Senior Environmental Planner
SSFM International, Inc.
99 Aupuni Street, Suite 202
Hilo, HI 96720

Re: Early Consultation in Preparation of a Draft Environmental Assessment
University of Hawai‘i at Hilo, New Educational Telescope Facility
Ka‘ohe Ahupua‘a, Hāmākua Moku, Hawai‘i Mokupuni
Tax Map Key: (3)4-4-015:012

Aloha e Ms. Scheffel:

The Office of Hawaiian Affairs (OHA) is in receipt of your letter dated February 8, 2021, inviting us to pre-assessment consultation for the draft environmental assessment (DEA) needed for the planned University of Hawai‘i at Hilo (UHH) new educational telescope facility at the Halepōhaku mid-level facility on Maunakea. SSFM International, Inc., is preparing the DEA on behalf of the UHH pursuant to Hawai‘i Revised Statutes (HRS) Chapter 343. The proposed action will include the following improvements at Halepōhaku: 28-inch telescope supported by a single pier (3 ft. above grade and 6 ft. below grade); a 14 ft. tall (18 ft. diameter) prefabricated clam-shell dome to cover the telescope; and, a new platform with a potential walkway connection to an existing building at Halepōhaku. As the current UHH telescope facility, Hōkū Ke‘a, atop the summit of Maunakea is being planned for decommissioning, an alternative location is being sought. The notice indicates that while 16 alternative locations were evaluated, Halepōhaku is the preferred alternative.

As an initial matter, OHA emphasizes that Maunakea’s lands, resources, and sites are of singular cultural value and significance to Native Hawaiians. Maunakea is considered the first born child of earth-mother Papa and sky-father Wākea, the progenitors of all Native Hawaiians, and thus the mauna serves as a physical connection to ancestral understandings of creation. Given the sacredness of this area, akua (divine ancestral energies) are known to inhabit the remote summit of Maunakea and physically manifest as various pu‘u or features such as Lake Waiau. The appropriate management of such a sacred place is accordingly a matter of great concern to many in the Native Hawaiian community.
Furthermore, OHA reiterates that the Maunakea lands at issue are part of the “ceded” lands trust that are also subject to the Public Land Trust.\(^1\) Accordingly, the State of Hawai‘i holds moral obligations of the highest responsibility and trust when dealing with Maunakea, as both “ceded” lands, to which Native Hawaiians maintain unrelinquished claims, and as Public Land Trust lands, which the Hawai‘i State Constitution mandates must be held as “a public trust for native Hawaiians and the general public.”\(^2\)

The following comments regarding 1) the expiration of the 2000 *Mauna Kea Science Reserve Master Plan*, 2) HRS Chapters 6E (historic preservation review) and 343 compliance, and 3) the assessment of impacts to cultural resources, should therefore be considered in conjunction with the great cultural significance of Maunakea to the Native Hawaiian community, as well as with the specific fiduciary obligations held by the State in its management and administration of Maunakea’s lands and its natural and cultural environment.

**Expiration of the 2000 *Mauna Kea Science Reserve Master Plan***

It is OHA’s understanding that any development and planning actions at Maunakea undertaken by UH are currently guided by the 2000 *Mauna Kea Science Reserve Master Plan* (hereinafter “2000 Master Plan”). While the 2000 Master Plan does call for an expansion of telescope facilities as Halepōhaku, we note that the UH Board of Regents adopted the Master Plan “as the policy framework for the responsible stewardship and use of University-managed lands on Mauna Kea through the year 2020.” Therefore, the master plan itself is currently no longer the policy framework for use of these lands. It is further OHA’s understanding that the 2000 Master Plan is currently in the process of being updated.

Moreover, OHA and the community have expressed longstanding concerns about UH’s mismanagement on Maunakea. Currently, OHA is actively litigating against the State of Hawai‘i and UH over UH’s continued failure to adequately or appropriately implement numerous Comprehensive Management Plan actions.\(^3\) Governor David Ige expressly proclaimed that the state has “failed” the mountain and UH President David Lassner admitted that the university has “not yet met all of [its] obligations to the mountain or the expectations of the community.” Given these mismanagement concerns and the expiration of the 2000 Master Plan operational application, we believe moving forward with the construction of any new telescope is premature and should be delayed at least until a new Master Plan is approved by the UH Board of Regents. Any development not supported by an approved master plan would only be further evidence of mismanagement.

---

2 Haw. Const. art. XII, § 4.
3 See OHA Complaint, *supra* note 1.
HRS Chapters 6E and 343 Compliance

As the Hawai‘i Administrative Rules (HAR) § 11-200.1-18 requires an analysis of impacts to the effected environment, OHA expects the DEA to include an analysis of archaeological and cultural resources since the historic and cultural surroundings are explicitly part of the definition of the environment pursuant to HAR § 11-200.1-2. Typically, sections devoted to analyzing impacts to historic and cultural resources are found within DEAs done in the State of Hawai‘i. Procedurally, OHA has maintained that the identification portion of the HRS Chapter 6E review process should minimally be completed prior to the DEA as this will help to inform what historic properties stand to be impacted by the proposed action and allows the public to comment on any preliminary mitigations the applicant has to offer. **Without such information, OHA believes the HRS 343 process will not be fulfilled as legislatively intended.**

The intent of HRS Chapter 343 is to ensure a project’s impact to the environment is fully considered in the planning process and to integrate mitigation where needed to minimize significant environmental harm. HAR § 11-200.1-18(d)(8) requires that proposed mitigations be included within the DEA. In determining whether historic properties will be adversely impacted, the HRS Chapter 6E review process is essential to identifying historic sites and generating mitigation commitments in consultation with the State Historic Preservation Division (SHPD). Typically, any resulting mitigations made during the HRS Chapter 6E review process are included in the DEA. If recommended mitigations or additional testing work is requested by SHPD at a later time, the DEA would then not be complete as required by the HARs promulgated under HRS Chapter 343. Deferring the HRS Chapter 6E review process would thus hide possible adverse impacts and mitigations from being included in the DEA, skewing any determination and limiting the public’s chance to comment.

OHA notes that we were previously contacted for HRS Chapter 6E consultation in October 2020 and did provide a response on November 24. So, we are aware that HRS Chapter 6E has at least been initiated, but it is unknown whether identification efforts have been completed or if mitigations have been proposed. To date, OHA has not received a response to our inquiries regarding the age of prior archaeological work and whether or not HRS Chapter 6E consultation information would also be used to inform the DEA. While OHA still patiently awaits a response to our HRS Chapter 6E inquiry, we find the inquiry relevant to this DEA pre-assessment notice and thus will recapture our concerns here.

In regard to prior archaeological work, OHA specifically requested that the prior archaeological inventory survey (AIS) report referenced within the HRS Chapter 6E consultation invite be shared with consulting parties so that they may comment on the existing level of archaeological work and also better understand the project area’s archaeological context. It is still unknown how old the AIS report is and whether or not updated archaeological work would be appropriate for the project area. Any comments from SHPD regarding the current HRS Chapter 6E effort and whether or not additional archaeological work will be required should further be provided to consulting parties for comment. Should additional identification efforts be needed,
OHA maintains that such work should be completed first prior to the release of the DEA for public comment.

In regard to information disclosure, it is OHA’s stance that the applicant should disclose to consulting parties how any gathered information will be utilized. If the applicant intends to use information gathered from HRS Chapter 6E consultees for the HRS Chapter 343 process, OHA maintains it would be prudent for the applicant to get permission to use the information in such a manner.

**Assessment of Impacts to Cultural Resources**

Guidelines for assessing cultural impacts are provided by the Office of Environmental Quality Control (OEQC) in the *Guide to Implementation and Practice of the Hawaii Environmental Policy Act*, Exhibit 1-1, 2012 Edition. These guidelines call for an analysis of cultural practices and resources located within “the broad geographical area in which the proposed project is located, as well as their direct or indirect significance or connection to the project site.” Furthermore, the process should involve an attempt to consult with community members and cultural practitioners to ascertain ethnographic information on cultural resources and practices.

Historically, OHA has reviewed many DEAs that do not explicitly state methodologies for assessing cultural impacts or clear efforts to engage the community as part of the HRS Chapter 343 process as envisioned by the OEQC guidelines. OHA recommends that the OEQC guidelines be strictly followed in this case and that a robust outreach effort be conducted to interview community individuals and organizations regarding cultural practices and resources. While not specifically required by the rules or statute, the applicant may want to consider a formal cultural impact assessment (CIA) given the sensitive nature of Maunakea.

OHA would further like to remind the applicant that the approving agency for the DEA also has a responsibility to reasonably preserve and protect traditional and customary Native Hawaiian rights as required by Articles IX and XII of the State of Hawai‘i Constitution. Article XII Section 7 of the State of Hawai‘i Constitution states:

“the State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua’a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778…”

In *Ka Pa‘akai O Ka ‘Aina v. Land Use Commission*, 94 Haw. 31 (2000), hereinafter Ka Pa‘akai, the Hawai‘i Supreme Court reiterated the importance of Section 7 and reaffirmed that the State and its agencies, inclusive of the counties, are obligated to reasonably protect the traditional and customary rights of Hawaiians.

The *Ka Pa‘akai* court decision set forth that a proper analysis of cultural impacts shall include: 1) the identity and scope of valued cultural, historical, or natural resources in the subject
area, including the extent to which traditional and customary native Hawaiian rights are exercised; 2) the extent to which those resources – including traditional and customary native Hawaiian rights – will be affected or impaired by the proposed action; and, 3) the feasible action, if any, to be taken by the (agency) to reasonably protect native Hawaiian rights if they are found to exist. In OHA’s experience, the construct for CIAs and cultural impact studies done as part of the HRS Chapter 343 process have often been used to satisfy these Ka Pa‘akai requirements. In fact, some CIAs have explicitly referenced Ka Pa‘akai requirements as being considered during development of the CIA’s methodology. Thus, we would strongly encourage the applicant to work with the approving agency on any cultural impact study in a manner that could be beneficial to both parties and ensure compliance with both HRS Chapter 343 and Ka Pa‘akai.

Closing Remarks

Mahalo for the opportunity to comment. OHA looks forward to seeing our comments pertaining to the expiration of the 2000 Master Plan, HRS Chapters 6E and 343 compliance, and the assessment of impacts to cultural resources addressed. More importantly, we hope the voices of Native Hawaiians are heard and identified cultural practices and resources are appropriately protected. Should you have any questions, please contact OHA’s Lead Compliance Specialist, Kamakana C. Ferreira at (808) 594-0227 or by email at kamakanaf@oha.org.

‘O wau iho nō me ka ‘oia ‘i’o,

Sylvia M. Hussey, Ed.D.
Ka Pouhana, Chief Executive Officer

SH:kf

CC: Keola Lindsey, Ke Kua ‘O Hawai‘i, OHA Hawai‘i Island Trustee
Shane Akoni Palacat-Nelsen, OHA Community Outreach Advocate (Kona, Hawai‘i Island)
March 8, 2021

Ku Kia’i Mauna – Maunakea is Sacred August

Response of Wahine Practitioners to University of Hawaii/SSFM Pre-Assessment (Alleged) Consultation for a Draft Environmental Assessment for Hoku Ke‘a:

Comments of Wahine Apapalani to SSFM Int. Re: UH “New Educational Telescope”

Background:

For years Hawaiians, including Wahine Apapalani, seeking to preserve & protect Mauna Kea have requested that the BLNR, the University of Hawaii & State follow State law by working with & Consulting with Hawaiian cultural & religious practitioners. Several requests have been made in direct testimony and through written correspondence by myself and other Hawaiian practitioners seeking to exercise rights defined & acknowledged in Article XII Section 7 of the Hawaii State Constitution and the First Amendment of the U.S. Constitution.

In addition, the State Auditors office has repeatedly found that the BLNR (and later the OMKM) had failed to adopt Administrative Rules, care for the Mauna and Consult with Hawaiian cultural practitioners. The Auditors findings & recommendations were ignored, during which time the State, BLNR and University of Hawaii have supported & funded over-development and commercial use of the Mauna by private and State parties, to the detriment of the biodiversity, environment, cultural resources and cultural & religious rights of Hawaiians.

Although 13 telescopes were approved, 22 building were constructed!

A. Wahine Practitioners prior efforts to work with OMKM, DLNR, & University:

Wahine practitioners submitting this testimony have tried for several years to work with those seeking to develop Mauna Kea (including State parties), to resolve the problems on Mauna Kea. Testimony has been submitted by Wahine individually at hearings for Mauna development going back for years to the Subaru, Keck and TMT telescope projects. Wahine supported & helped sponsor & organized the 3-year sunrise ceremonies called the Apapalani ceremonies that drew hundreds of practitioners and were held in conjunction with the Merry Monarch competitions to accommodate visiting Hawaiians & Statewide Halau.

1.
Wahine practitioners were invited to participate in the discussions on the Mauna, and responded by submitting comments & testimony to the KKM on May 18, 2016 and on August 18, 2017. In our testimony of August 2017, we described ourselves, our religious & our cultural practices, the locations of our uses on the Mauna, as well as the problems we encountered.

We suggested 6 things that could be done to resolve these issues and ended with a request for “CONSULTATION”. NO RESPONSE WAS EVER RECEIVED NOR WERE OUR REQUESTS FOR CONSULTATION EVER ACKNOWLEDGED.

We are renewing our request that UH & SSFI host real “Consultations” for Hawaiian cultural practitioners as part of the ongoing work of SSFM under its existing contract. Your representation that SSFM & UH presented this to the Maunakea Management Board & UH Board of Regents at a “public meeting” is not Consultation with Hawaiian practitioners. Outreach to practitioners by “Virtual Open House” fails to take into account the simple fact that many Hawaiian homes have no computer or connectivity.

BACKGROUND:

A. SSFI/UH RECOUNTING OF THE PROJECT HISTORY IS PATENTLY FALSE.

The real historical record can be found in the article entitled “Hope for Hokukea” that appeared in the Fall 2019 edition of Ke Kalakea – a UH publication. See attachment, “Hope for Hoku Kea”, incorporated herein by reference & attachment.

Quotes: “The observatory was originally built in the 1960s for use by NASA and the US Air Force, according to the UH Hilo Educational Observatory (UHHEO) website. In 1970, the University of Hawaii acquired the telescope, then gave control of the telescope to UH Hilo’s Astronomy and Physics Department in order to train undergraduates on the instrument in 2003. The old 24-inch telescope housed in the small observatory was replaced by a new, but defective, 36-inch [See: https://hilo.hawaii.edu/news/kekalahea/hope-for-hoku-kea Page 2 of 4 Hope for Hoku Kea 2/22/21].

The old telescope & site were decommissioned & although significant State funds were used for the first telescope, it was defective & never worked. At the time UH agreed to accept the old discarded NASA facility, Hawaiian practitioners, including signatories to this comment, told the DLNR & UH that they needed to pursue and obtain an agreement with every telescope operator on the Mauna for Hawaii’s student’s to work with the operators to ensure educational opportunities for Hawaii’s students at the telescopes being leased for job training & experience with & on the telescope technologies being used by astronomy on the Mauna. This recommendation was ignored.

2.
The UH accepted the old NASA facility to save NASA the cost & obligation of decommissioning the facility and removing the old building. Then the UH purchased a cheap telescope that never worked. "In a letter retrieved from the Department of Land and Natural Resources (DLNR) website from UH Hilo to the Office of Maunakea Management (OMM), on Sept. 2015, UH Hilo submitted a formal Notice of Intent to Decommission (NOI) for Hōkū Ke’a’s current summit site. “ [See article cited above] . Since that time UH & the Maunakea Management authority have done nothing for UH students majoring in Astronomy. The telescope has been in storage!

B. Where we are now:

According to the SSFM Pre-Assessment letter, there is a need to use the Hale Pohaku for its students to 1) Increase Competition, 2) Recapture a “niche” for “hands on student learning”, 3) Adapting to the Job market and 4) Outreach Efforts of the UH is limited by resources and the need UH has for an adequate facility is unsubstantiated by data and contradicts the statements of the UH when it initially justified accepting the old NASA facility. At that time, Hawaiians & the public were told that the UH needed the NASA facility because they had to be in the best location for Astronomy viewing, at the Summit with all the other telescopes. UH has said & continues to assert that they have many Astronomy students, this proved to be false. It was disclosed in 2018-19 that UH had only 2 students seeking degrees in Astronomy and that there was only 1 Hawaiian ever employed on the Summit by the private sector (Mr. Coleman) who passed in recent years.

How many students does UH actually have majoring in Astronomy at this time? Your document says that since 2000, the number of students in the USA has tripled!!! This is totally irrelevant – you are not dealing with the entire U.S., but Hawaii. The last time UH had to verify these data, it was unable to show more than 2 students – were pursuing BA’s in Astronomy.

Conclusion:

Wahine practitioners request that UH & SSFM disclose when, where & how the “stakeholder meetings” will occur. Wahine practitioners request UH& SSFM send written notice of this Pre-Assessment effort to all Kupuna arrested on Maunakea, and Wahine practitioners request we be included in all communications relating to these meetings, and that UH and SSFM forward written and email communications, news postings. Send to Mililani B. Trask at this email: mililani.trask@iclchawaii.com.

Mahalo,

Mililani B Trask
On behalf on Wahine ApapaLani
telescope in 2010. As a result, the site was unusable for stargazing, leaving students in UH Hilo’s Astronomy program without a dedicated educational telescope. Since 2012, UH Hilo Astronomy professor Dr. R. Pierre Martin has been trying to rectify the situation. Martin, who’s career has focused on operating astronomical observatories, led a team that looked at how to fix the defective telescope, only to finally decide to replace the instrument entirely.

In 2016, a small, modern telescope and other state-of-the-art equipment, including a remote-operated dome, were purchased under his recommendation using a Capital Improvement Project grant. If the telescope is put on Maunakea, Martin says that it will be made available to not only students at UH Hilo, but open to high school students and other members of the public for educational purposes. The new telescope was assembled, and now sits in a lab at UH Hilo’s Science and Technology Building (STB).
Hope for Hoku Kea

UH Board of Regents Motion to Place 28-Inch Educational Telescope on Maunakea

Copy Chief Elijah Kahula
In a meeting on Oct. 16, the University of Hawaiʻi Board of Regents (BOR) brought forth a resolution including, among a series of other Maunakea management items, the new construction of an educational telescope away from Maunakea's summit.

Mentioned by name in the resolution, transcribed on University of Hawaiʻi News' website, the prime candidate location for the telescope is Hale Pohaku, a housing facility for astronomers and support staff below the summit of the mountain. The long resolution, featuring efforts to define and fast-track Maunakea management initiatives, including the decommissioning of a series of telescopes on the mountain, will be voted on by Regents in their next meeting at UH Hilo on Nov. 6.

Hōkū Keʻa, the University of Hawaiʻi at Hilo's defunct, summit-situated educational observatory, has had a long and, recently, tumultuous history. The observatory was originally built in the 1960s for use by NASA and the US Air Force, according to the UH Hilo Educational Observatory (UHHEO) website. In 1970, the University of Hawaii acquired the telescope, then gave control of the telescope to UH Hilo's Astronomy and Physics Department in order to train undergraduates on the instrument in 2003.

The old 24-inch telescope housed in the small observatory was replaced by a new, but defective, 36-inch
telescope in 2010. As a result, the site was unusable for stargazing, leaving students in UH Hilo's Astronomy program without a dedicated educational telescope.

Since 2012, UH Hilo Astronomy professor Dr. R. Pierre Martin has been trying to rectify the situation. Martin, who's career has focused on operating astronomical observatories, led a team that looked at how to fix the defective telescope, only to finally decide to replace the instrument entirely.

In 2016, a small, modern telescope and other state-of-the-art equipment, including a remote-operated dome, were purchased under his recommendation using a Capital Improvement Project grant. If the telescope is put on Maunakea, Martin says that it will be made available to not only students at UH Hilo, but open to high school students and other members of the public for educational purposes. The new telescope was assembled, and now sits in a lab at UH Hilo's Science and Technology Building (STB).

With a telescope for UH Astronomy students finally in reach, other hurdles for students who wished to use Hōkū Keʻa were arising. Despite the modern telescope's approval for purchase having gone through already, the summit site for Hōkū Keʻa was marked to be removed from the mountain in 2015 by the Board of Regents before an alternate site had been approved.

In a letter retrieved from the Department of Land and Natural Resources’ (DLNR) website from UH Hilo to the Office of Maunakea Management (OMM), on Sept. 2015, UH Hilo submitted a formal Notice of Intent to Decommission (NOI) for Hōkū Keʻa's current summit site. The mission of decommissioning telescopes is to return sites to as close to their original natural form as possible.

Addressing the concern of environmental impacts of the newly-proposed Hōkū Keʻa location, Martin says that besides its satisfactory elevation and low light pollution, Hale Pohaku was selected in part because it is on already-broken ground. Because of the small size, he says, the observatory including the telescope and dome can be built on a 20 by 20-foot slab of concrete situated between Hale Pohaku's other facilities.

The decommissioning selection was the result of an effort to comply to Governor Ige's 10-point plan for the improved management of Maunakea, which included bringing down at least 25 percent (at least 3) of the 13 telescopes currently on the summit.

Though the NOI also featured the possibility of a future educational telescope at a different site on the mountain, students would be without a dedicated training telescope in the meantime. "The educational needs that Hōkū Keʻa was intended to meet will instead be met with observing time on other Maunakea telescopes and possible future installation of an educational telescope at an alternate site away from the Maunakea summit," reads the NOI. Since Hōkū Keʻa's current site on the mountain still housed a non-operational telescope at the time (which has since been removed from its housing), the decision to decommission the site may have seemed obvious to the BOR.

The plan was met with opposition by community stakeholders in astronomy and education, however. In May 2016, the series of public comments prompted the Maunakea Management Board (MMB) to defer the decommissioning of the telescope site until further community input was collected.
In a meeting in September 2019, more than three years after the initial deferment, MMB held another public hearing on the telescope, as well as its possible relocation. Among others, Callie Crowder, an alumni of the Physics and Astronomy Department at UH Hilo and remote observer at the Canada France Hawaii Telescope (CFHT), spoke to advocate for the need of an educational telescope on the mountain.

In a video of the testimony by Hawaii Video News Now, Crowder states, “Today, Hoku Kea sits in a windowless room and has for three years now. This is a giant waste of space, money, and scientific potential. It’s a tremendous loss for every University of Hawai‘i and high school student who could be using it right now.”

In a phone interview, Crowder told Ke Kalahea that she attributes her current position directly to the experience she gained her senior year in working with Dr. Martin to set up and operate the new Hoku Kea telescope. She claims that it was a critical experience that resulted in gaining her current position for the CFHT. For students seeking careers in astronomy to have experience with operating a telescope is invaluable, says Crowder.

Martin echoes this sentiment. “Our students have been suffering from a lack of this telescope for years now,” he says.

According to Martin, the list of educational opportunities that the new, state-of-the-art telescope will allow is long. He says the telescope will allow observers to monitor asteroids, comets, chemical evolutions in stars and supernovas, and impacts on the moon, among many other capabilities. Because the telescope can be operated remotely and would become a part of an international network of astronomy, the telescope would be able to track phenomena occurring in very short time periods.

Martin says that the major advantage Hōkū Keʻa would offer to students is extensive time and autonomy using the telescope, an invaluable resource for training budding astronomers. Having ample time on a telescope allows students to design and conduct research projects that would enable them valuable praxis, including constructive learning opportunities from error. Martin says, “I don’t mind if people make mistakes. If [a student] takes a picture on it on accident, so be it. That means they’ll learn something.”

Should the BOR vote to pass the resolution, the university’s target deadline for Hōkū Keʻa’s construction will be April 2021.
March 11, 2021

Ms. Jennifer Scheffel
SSFM International, Inc.
99 Aupuni Street, Suite 202
Hilo, HI 96720

Dear Ms. Scheffel:

Subject: Pre-Environmental Assessment Consultation for Draft Environmental Assessment
University of Hawai‘i at Hilo New Educational Telescope Facility
Maunakea, Hāmākua District, Island of Hawai‘i
Tax Map Key (3) 4-4-015:012

This is in response to your Pre-Environmental Assessment Consultation request dated February 8, 2021.

We have no comments or objections as there are no Department of Water Supply facilities in the area that will be affected.

Should there be any questions, please contact Mr. Ryan Quitoriano of our Water Resources and Planning Branch at 961-8070, extension 256.

Sincerely yours,

[Signature]

Keith K. Okamoto, P.E.
Manager-Chief Engineer

RQ:dfg
Aloha Ms. Scheffel,

RE: University of Hawai‘i at Hilo New Educational Telescope Facility at Halepohaku, Mauna Kea, Hamakua District, Island of Hawai‘i; Pre-Assessment Consultation for Draft Environmental Assessment

Jennifer, I am in receipt of your February 8, 2021 letter, US Post marked FEB 10 2021, received this weekend at my Royal Kunia, O‘ahu residence.

You state that the selected site within Halepohaku provides desirable teaching, access, and astronomical conditions, and “(t)he telescope would be mostly operated remotely from the UH Hilo campus or used in a full robotic mode.”

I have had the privilege and honour to visit the Halepohaku facilities and telescopes atop Mauna Kea under the auspices of the University of Hawaii, Institute for Astronomy. WE thank you and SSFM International for your Subject Matter Expertise, thoughtful review, and care in the malama of this special place and sensitive tasking.

My expectation is that any debris, waste, gray water, and sewage generated from any activity and/or any personnel associated with this New Halepohaku Educational Telescope be collected (in accordance with the BEST of the Best Management Practices) and disposed “off-site”, as its final disposition. I would expect that there be appropriate temporary storage facilities to accommodate this future planned usage at its MAXIMUM potential, to preclude any despoiling of such sacred and special sites under our State of Hawaii control and stewardship and to preclude vitiation of its sanctity and high intention. My expectation is that any person associated with this project be given a mandatory INDOCTRINATION Program, of sorts, that includes an “Environmental Awareness, Protection, and Stewardship Training” briefing, in much the same manner we conducted “Safety and Cultural Awareness Training” for the Model and Omnibus Kaho‘olawe Island UXO Clearance Programs under the auspices of the US Navy; each person will attest their understanding and acknowledgement with a name, signature and dated Objective Quality Evidence. WE need to be hypervigilant and hold each other accountable, if the highest is the most sacred, and Mauna Kea is the most highest in Hawai‘i Nei.

Thank you for your letter. I pray this finds you and your loved ones safe, healthy, and in good spirits in the pu‘uhonua of family and home.

_E leha aku au i ko‘u mau maka i na mauna,_
_Malaila mai ko‘u kokua e hiki mai ai._
_Mai lehova mai ko‘u kokua,_
_Nana no i hana i ka lani a me ka honua._
_Halelu (Psalms) 121: 1-2_

_LA‘A; MA‘A; PA‘A!_

Aloha Ke Akua,
Me Ke Aloha Maluhia,
Manuel Makahiapo Kuloloio
Quality Assurance Manager
Ship Repair, Hawaii Shipyards
BAE Systems Platforms & Services
BAE Systems, Inc.
M: 808 479 2377  |  E: manuel.kuloloio@baesystems.com
Bravo 13, Pearl Harbor, Hawai‘i, 96860, U.S.A.
www.baesystems.com

Connect with BAE Systems:  

IMPORTANT! This e-mail, including all attachments, constitute BAE Systems records and property that is intended only for the use of the individual or entity to which it is addressed. It also may contain information that is privileged, proprietary, or otherwise protected from disclosure under applicable law. If the reader of this e-mail transmission is not the intended recipient or the employee or agent responsible for delivering the transmission to the intended recipient, you are hereby notified that any dissemination, distribution, copying or use of this e-mail or its contents is strictly prohibited. If you have received this e-mail in error, please notify the sender by responding to the e-mail and then delete the e-mail immediately.
SUBJECT: University of Hawaii at Hilo, New Educational Telescope Facility, Maunakea, Island of Hawaii, HI, Department of the Army File No. POH-2021-00043

Ms. Ligaya Hill
University of Hawaii
200 W Kawili Street
Hilo, Hawaii 96720

Dear Ms. Hill:

The Honolulu District, U.S. Army Corps of Engineers (Corps), Regulatory Branch received your letter requesting consultation for the proposed construction of a new educational telescope facility, Maunakea, Island of Hawaii, HI. Your request has been assigned Department of the Army (DA) file number POH-2021-00043. Please reference this number in all future correspondence with our office relating to this action.

Based on the limited information provided in regard to your proposed development project, the Corps is unable to determine if your project would be located in a jurisdictional waters of the United States (U.S.)

The Corps authorities are based on two laws: Section 404 of the Clean Water Act (33 U.S.C. 1344; “Section 404”) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403; “Section 10”).

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District.
DA authorization is required if you propose to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S.

To make a request for a jurisdictional determination, please visit our website at https://www.poh.usace.army.mil/Portals/10/docs/jurisdictionaldeterminations/JD%20Request%20form%20POH%20Nov%202016.pdf to obtain a Request for Corps Jurisdictional Determination form and contact information for submission. Please be advised that whether or not a DA permit is required for your proposed project, you are responsible for obtaining all other applicable Federal, state, or local authorizations required by law.

Thank you for your cooperation with the Honolulu District Regulatory Program. Should you have any questions related to this determination, please contact me via e-mail at Kristi.D.Fluker@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. For additional information about our Regulatory Program, please visit our web site at http://www.poh.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Kristi D. Fluker
Regulatory Specialist

Cc: Jennifer Scheffel jscheffel@ssfm.com
Hi,

I've received letter regarding the subject. Where can I find data supporting the statements after INCREASING COMPETITION, and Recapturing UH Hilo's niche....

Thank you.

Bimo Akiona
808-896-1033
February 16, 2021

SSFM International, Inc.
Attn: Jennifer Scheffel
99 Aupuni Street, Ste 202
Hilo, HI 96720

Dear Ms Scheffel:

The top of Mauna Kea is one of the outstanding astronomical observatory locations in the world and has been so for many decades. Adding a new 28-inch telescope to this location will provide additional employment for the Hawaiian economy, bring cutting edge technology, science and educational opportunities to our communities and be a natural fit with the other observatories already located on the summit. It will enable the University of Hawaii Hilo Astronomy Program to continue being a world-class teaching operation, helping the youth of our state to stay here with good paying jobs.

The impact of this project on the mountain, the atmosphere and the biosphere will be almost totally negligible, while the economic, scientific and educational impacts will be very positive. The proposed site has been used previously and the new construction will enhance and clean it up.

Any claims that this project would somehow violate the sanctity of the mountain space is nothing but an attempt by a small minority of individuals to obstruct progress. This particular telescope and its attendant facilities will be totally unseen on the slopes of Mauna Kea.

Please make this project a success in Hawaii.

Best of luck!

James A Monk
Ms. Jennifer Scheffel  
SSFM International, Inc.  
99 Aupuni Street, Suite 202  
Hilo, Hawaii 96720

Dear Ms. Scheffel:

Subject: Pre-Assessment Consultation for Draft Environmental Assessment  
University of Hawaii at Hilo  
New Educational Telescope Facility  
Maunakea, Hamakua District, Island of Hawaii  
Tax Map Key (TMK): (3) 4-4-015:012

Thank you for the opportunity to provide comments on the subject project. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, your staff may call Mr. David DePonte of the Planning Branch at 586-0492, or email at david.c.deponte@hawaii.gov.

Sincerely,

CHRISTINE L. KINIMAKA  
Public Works Administrator

DD  
c: Ms. Mari Joy Angsioco, DARGS Hawaii District
SSFM International Inc
Attn: Jennifer Scheffel
99 Aupuni Street
Hilo HI 96720

Dear Ms. Scheffel

I am writing to express our strong support for a new high quality teaching telescope on Mauna Kea.

As a mountain in the middle of an ocean, Mauna Kea is perhaps the best location in the planet for optical microscopy and Hawaii island should be the location of a world class astronomy facility and school. Such a facility clearly needs a state of the art teaching telescope for UH students.

The telescope should be available not just for the students who will become professional astronomers but for students in other disciplines so that UH can encourage a greater awareness of the importance of astronomy in the wider community. This would hopefully go so way to counter the unfortunate tendency in the local community to prefer backward looking attitudes based on mythology rather than the quest to understand some of the fundamental questions of the creation of our planetary system and the universe.

Sincerely

Dr. Dennis F. Elwell
Mrs. Carol A. Elwell
February 17, 2021

Dear Jennifer Scheffel,

Thank you for including us in your request for comments about the construction of a new educational telescope on Mauna Kea. As retired teachers, my wife and I both encourage the construction of this telescope. I think that the more educational opportunities we can provide for our children the better. After all, if our little speck in the mid-pacific can produce Nobel Prize winning chemists, why not do the same for astronomy. This would be a first step to that goal. So, yes, let’s build it!

Jim Skibby
PO Box 213
Kailua Kona, HI 96745

jskibby@hawaii.rr.com
808.326.3297
Aloha Jennifer, thank you for reaching out in regards to the new educational telescope facility proposal located on Maunakea. I've assigned your project to Kristi Fluker. She will be reaching out to you shortly with a project number. Linda

Linda Speerstra
Chief, Regulatory Branch
U.S. Army Corps of Engineers
Honolulu District
808-835-4300
Aloha Jennifer,

We have assigned the following Department of Army project number to the inquiry aforementioned in the subject line above:

POH-2021-00043

Please provide the name, address, phone number, and email for your contact at the University of Hawai‘i at Hilo.

Mahalo,

Kristi Fluker  
Biologist/Regulatory Specialist  
Honolulu District  
U.S. Army Corps of Engineers  
Building 230  
Fort Shafter, Hawaii  96858-5440  
Kristi.D.Fluker@usace.army.mil

Aloha Jennifer, thank you for reaching out in regards to the new educational telescope facility proposal located on Maunakea. I’ve assigned your project to Kristi Fluker. She will be reaching out to you shortly with a project number. Linda

Linda Speerstra  
Chief, Regulatory Branch  
U.S. Army Corps of Engineers  
Honolulu District  
808-835-4300
February 19, 2021

Jennifer M. Scheffel  
Sr. Environmental Planner  
SSFM International  
99 Aupuni Street, Suite 202  
Hilo, HI 96720  

Dear Ms. Scheffel:

RE: Pre-Assessment Consultation for Draft Environmental Assessment  
University of Hawai‘i at Hilo New Educational Telescope Facility  
Maunakea, Hāmākua District, Island of Hawai‘i  
TMK: (3) 4-4-015:012

In regard to your request dated February 8, 2021, for the above-entitled matter, the following shall be in accordance:

**NFPA 1, UNIFORM FIRE CODE, 2006 EDITION**

*Note: Hawai‘i State Fire Code, National Fire Protection Association 2006 version, with County of Hawai‘i amendments. County amendments are identified with a preceding “C~” of the reference code.*

Chapter 18 Fire Department Access and Water Supply

**18.1 General.** Fire department access and water supplies shall comply with this chapter.

For occupancies of an especially hazardous nature, or where special hazards exist in addition to the normal hazard of the occupancy, or where access for fire apparatus is unduly difficult, or areas where there is an inadequate fire flow, or inadequate fire hydrant spacing, and the AHJ may require additional safeguards including, but not limited to, additional fire appliance units, more than one type of appliance, or special systems suitable for the protection of the hazard involved.

**18.1.1 Plans.**

**18.1.1.1 Fire Apparatus Access.** Plans for fire apparatus access roads shall be submitted to the fire department for review and approval prior to construction.
18.1.1.2 Fire Hydrant Systems. Plans and specifications for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

C- 18.1.1.2.1 Fire Hydrant use and Restrictions. No unauthorized person shall use or operate any Fire hydrant unless such person first secures permission or a permit from the owner or representative of the department, or company that owns or governs that water supply or system. Exception: Fire Department personnel conducting firefighting operations, hydrant testing, and/or maintenance, and the flushing and acceptance of hydrants witnessed by Fire Prevention Bureau personnel.

18.2 Fire Department Access.

18.2.1 Fire department access and fire department access roads shall be provided and maintained in accordance with Section 18.2.

18.2.2* Access to Structures or Areas.

18.2.2.1 Access Box(es). The AHJ shall have the authority to require an access box(es) to be installed in an accessible location where access to or within a structure or area is difficult because of security.

18.2.2.2 Access to Gated Subdivisions or Developments. The AHJ shall have the authority to require fire department access be provided to gated subdivisions or developments through the use of an approved device or system.

18.2.2.3 Access Maintenance. The owner or occupant of a structure or area, with required fire department access as specified in 18.2.2.1 or 18.2.2.2, shall notify the AHJ when the access is modified in a manner that could prevent fire department access.

18.2.3 Fire Department Access Roads. (*may be referred as FDAR)

18.2.3.1 Required Access.

18.2.3.1.1 Approved fire department access roads shall be provided for every facility, building, or portion of a building hereafter constructed or relocated.

18.2.3.1.2 Fire Department access roads shall consist of roadways, fire lanes, parking lots lanes, or a combination thereof.

18.2.3.1.3* When not more than two one- and two-family dwellings or private garages, carports, sheds, agricultural buildings, and detached buildings or structures 400ft² (37 m²) or less are present, the requirements of 18.2.3.1 through 18.2.3.2.1 shall be permitted to be modified by the AHJ.
18.2.3.1.4 When fire department access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades, or other similar conditions, the AHJ shall be authorized to require additional fire protection features.

18.2.3.2 Access to Building.

18.2.3.2.1 A fire department access road shall extend to within in 50 ft (15 m) of at least one exterior door that can be opened from the outside that provides access to the interior of the building. Exception: 1 and 2 single-family dwellings.

18.2.3.2.1.1 When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, the distance in 18.2.3.2.1 shall be permitted to be increased to 300 feet.

18.2.3.2.2 Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 ft (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility.

18.2.3.2.2.1 When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, the distance in 18.2.3.2.2 shall be permitted to be increased to 450 ft (137 m).

18.2.3.3 Multiple Access Roads. More than one fire department access road shall be provided when it is determined by the AHJ that access by a single road could be impaired by vehicle congestion, condition of terrain, climatic conditions, or other factors that could limit access.

18.2.3.4 Specifications.

18.2.3.4.1 Dimensions.

C~ 18.2.3.4.1.1 FDAR shall have an unobstructed width of not less than 20ft with an approved turn around area if the FDAR exceeds 150 feet. Exception: FDAR for one and two family dwellings shall have an unobstructed width of not less than 15 feet, with an area of not less than 20 feet wide within 150 feet of the structure being protected. An approved turn around area shall be provided if the FDAR exceeds 250 feet.

C~ 18.2.3.4.1.2 FDAR shall have an unobstructed vertical clearance of not less then 13ft 6 in.

C~ 18.2.3.4.1.2.1 Vertical clearances may be increased or reduced by the AHJ, provided such increase or reduction does not impair access by the fire apparatus, and approved signs are installed and maintained indicating such approved changes.

C~18.2.3.4.1.2.2 Vertical clearances shall be increased when vertical clearances or widths are not adequate to accommodate fire apparatus.
C-18.2.3.4.2 Surface. Fire department access roads and bridges shall be designed and maintained to support the imposed loads (25 Tons) of the fire apparatus. Such FDAR and shall be comprised of an all-weather driving surface.

18.2.3.4.3 Turning Radius.

C-18.2.3.4.3.1 Fire department access roads shall have a minimum inside turning radius of 30 feet, and a minimum outside turning radius of 60 feet.

18.2.3.4.3.2 Turns in fire department access road shall maintain the minimum road width.

18.2.3.4.4 Dead Ends. Dead-end fire department access roads in excess of 150 ft (46 m) in length shall be provided with approved provisions for the fire apparatus to turn around.

18.2.3.4.5 Bridges.

18.2.3.4.5.1 When a bridge is required to be used as part of a fire department access road, it shall be constructed and maintained in accordance with county requirements.

18.2.3.4.5.2 The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus.

18.2.3.4.5.3 Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ.

18.2.3.4.6 Grade.

C-18.2.3.4.6.1 The maximum gradient of a Fire department access road shall not exceed 12 percent for unpaved surfaces and 15 percent for paved surfaces. In areas of the FDAR where a Fire apparatus would connect to a Fire hydrant or Fire Department Connection, the maximum gradient of such area(s) shall not exceed 10 percent.

18.2.3.4.6.2* The angle of approach and departure for any means of fire department access road shall not exceed 1 ft drop in 20 ft (0.3 m drop in 6 m) or the design limitations of the fire apparatus of the fire department, and shall be subject to approval by the AHJ.

18.2.3.4.6.3 Fire department access roads connecting to roadways shall be provided with curb cuts extending at least 2 ft (0.61 m) beyond each edge of the fire lane.

18.2.3.4.7 Traffic Calming Devices. The design and use of traffic calming devices shall be approved the AHJ.

18.2.3.5 Marking of Fire Apparatus Access Road.
18.2.3.5.1 Where required by the AHJ, approved signs or other approved notices shall be provided and maintained to identify fire department access roads or to prohibit the obstruction thereof of both.

18.2.3.5.2 A marked fire apparatus access road shall also be known as a fire lane.

18.2.4* Obstruction and Control of Fire Department Access Road.

18.2.4.1 General.

18.2.4.1.1 The required width of a fire department access road shall not be obstructed in any manner, including by the parking of vehicles.

18.2.4.1.2 Minimum required widths and clearances established under 18.2.3.4 shall be maintained at all times.

18.2.4.1.3* Facilities and structures shall be maintained in a manner that does not impair or impede accessibility for fire department operations.

18.2.4.1.4 Entrances to fire departments access roads that have been closed with gates and barriers in accordance with 18.2.4.2.1 shall not be obstructed by parked vehicles.

18.2.4.2 Closure of Accessways.

18.2.4.2.1 The AHJ shall be authorized to require the installation and maintenance of gates or other approved barricades across roads, trails, or other accessways not including public streets, alleys, or highways.

18.2.4.2.2 Where required, gates and barricades shall be secured in an approved manner.

18.2.4.2.3 Roads, trails, and other access ways that have been closed and obstructed in the manner prescribed by 18.2.4.2.1 shall not be trespassed upon or used unless authorized by the owner and the AHJ.

18.2.4.2.4 Public officers acting within their scope of duty shall be permitted to access restricted property identified in 18.2.4.2.1.

18.2.4.2.5 Locks, gates, doors, barricades, chains, enclosures, signs, tags, or seals that have been installed by the fire department or by its order or under its control shall not be removed, unlocked, destroyed, tampered with, or otherwise vandalized in any manner.

18.3 Water Supplies and Fire Hydrants

18.3.1* A water supply approved by the county, capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of the
facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ. For on-site fire hydrant requirements see section 18.3.3.

EXCEPTIONS:
1. When facilities or buildings, or portions thereof, are completely protected with an approved automatic fire sprinkler system the provisions of section 18.3.1 may be modified by the AHJ.
2. When water supply requirements cannot be installed due to topography or other conditions, the AHJ may require additional fire protection as specified in section 18.3.2 as amended in the code.
3. When there are not more than two dwellings, or two private garage, carports, sheds and agricultural. Occupancies, the requirements of section 18.3.1 may be modified by AHJ.

18.3.2* Where no adequate or reliable water distribution system exists, approved reservoirs, pressure tanks, elevated tanks, fire department tanker shuttles, or other approved systems capable of providing the required fire flow shall be permitted.

18.3.3* The location, number and type of fire hydrants connected to a water supply capable of delivering the required fire flow shall be provided on a fire apparatus access road on the site of the premises or both, in accordance with the appropriate county water requirements.

18.3.4 Fire Hydrants and connections to other approved water supplies shall be accessible to the fire department.

18.3.5 Private water supply systems shall be tested and maintained in accordance with NFPA 25 or county requirements as determined by the AHJ.

18.3.6 Where required by the AHJ, fire hydrants subject to vehicular damage shall be protected unless located within a public right of way.

18.3.7 The AHJ shall be notified whenever any fire hydrant is placed out of service or returned to service. Owners of private property required to have hydrants shall maintain hydrant records of approval, testing, and maintenance, in accordance with the respective county water requirements. Records shall be made available for review by the AHJ upon request.

C~ 18.3.8 Minimum water supply for buildings that do not meet the minimum County water standards:

Buildings up to 2000 square feet, shall have a minimum of 3,000 gallons of water available for Firefighting.

Buildings 2001- 3000 square feet, shall have a minimum of 6,000 gallons of water available for Firefighting.
Buildings, 3001-6000 square feet, shall have a minimum of 12,000 gallons of water available for firefighting.

Buildings, greater than 6000 square feet, shall meet the minimum County water and fire flow requirements.

Multiple story buildings shall multiply the square feet by the amount of stories when determining the minimum water supply.

Commercial buildings requiring a minimum fire flow of 2000gpm per the Department of Water standards shall double the minimum water supply reserved for firefighting.

Fire Department Connections (FDC) to alternative water supplies shall comply with 18.3.8 (1)-(6) of this code.

**NOTE:** In that water catchment systems are being used as a means of water supply for firefighting, such systems shall meet the following requirements:

1) In that a single water tank is used for both domestic and firefighting water, the water for domestic use shall not be capable of being drawn from the water reserved for firefighting;

2) Minimum pipe diameter sizes from the water supply to the Fire Department Connection (FDC) shall be as follows:
   a) 4” for C900 PVC pipe;
   b) 4” for C906 PE pipe;
   c) 3” for ductile Iron;
   d) 3’ for galvanized steel.

3) The Fire Department Connection (FDC) shall:
   a) be made of galvanized steel;
   b) have a gated valve with 2-1/2 inch, National Standard Thread male fitting and cap;
   c) be located between 8 ft and 16 ft from the Fire department access. The location shall be approved by the AHJ;
   d) not be located less than 24 inches, and no higher than 36 inches from finish grade, as measured from the center of the FDC orifice;
   e) be secure and capable of withstanding drafting operations. Engineered stamped plans may be required;
   f) not be located more than 150 feet of the most remote part, but not less than 20 feet, of the structure being protected;
   g) also comply with section 13.1.3 and 18.2.3.4.6.1 of this code.

4) Commercial buildings requiring a fire flow of 2000gpm shall be provided with a second FDC. Each FDC shall be independent of each other, with each FDC being capable of flowing 500gpm by engineered design standards. The second FDC shall be located in an area approved by the AHJ with the idea of multiple Fire apparatus’ conducting drafting operations at once, in mind.
5) Inspection and maintenance shall be in accordance to NFPA 25.

6) The owner or lessee of the property shall be responsible for maintaining the water level, quality, and appurtenances of the system.

**EXCEPTIONS TO SECTION 18.3.8:**

1) Agricultural buildings, storage sheds, and shade houses with no combustible or equipment storage.

2) Buildings less than 800 square feet in size that meets the minimum Fire Department Access Road requirements.

3) For one and two family dwellings, agricultural buildings, storage sheds, and detached garages 800 to 2000 square feet in size, and meets the minimum Fire Department Access Road requirements, the distance to the Fire Department Connection may be increased to 1000 feet.

4) For one and two family dwellings, agricultural buildings, and storage sheds greater than 2000 square feet, but less than 3000 square feet and meets the minimum Fire Department Access Road requirements, the distance to the Fire Department Connection may be increased to 500 feet.

5) For buildings with an approved automatic sprinkler system, the minimum water supply required may be modified.

If there are any questions regarding these requirements, please contact Assistant Fire Chief Ian Smith at (808) 932-2907.

Sincerely,

[Signature]

ROBERT R. K. PERREIRA
Acting Fire Chief

RRKP:cf
Aloha Jennifer,

Would you please send us the distribution list for the attached Pre-consult draft EA? mahalo.

Kevin Sullivan, AICP
Planner IV Long Range Division,
County of Hawaii Planning Department
808-961-8135
February 23, 2021

SSFM International, Inc.
99 Aupuni Street, Suite 202
Hilo, HI 96720

ATTENTION: JENNIFER SCHEFFEL

Subject: University of Hawaii at Hilo New Educational Telescope Facility
Maunakea, Hamakua District, Island of Hawaii
Tax Map Key (TMK): (3) 4-4-015:012
Pre-Assessment Consultation for Draft Environmental Assessment

The above proposed project is slated to be constructed on State of Hawaii land at Halepohaku, a State of Hawaii facility, and as such we have no comment or position on the matter.

Thank you for giving us an opportunity to review your project.

Please contact Captain Reed Mahuna, commander of the South Hilo Patrol Division, at 961-2214 or via e-mail at reed.mahuna@hawaiicounty.gov should you need any further assistance in this matter.

JAMES B. O'CONNOR
ASSISTANT POLICE CHIEF
AREA I OPERATIONS

RM.ill/21HQ0155

"Hawai'i County is an Equal Opportunity Provider and Employer"
Pepeulu’ali 23, 2021

SSFM International, Inc. ATTM:
Jennifer Scheffel
99 Aupuni Street, Suite 202
Hilo, HI 96720

Dear Sirs:

Thank you for giving me the opportunity to voice my mana’o to your development on Mauna A Wakea.

I am against your intentions of building any structure on this sacred mauna/mountain to put it lightly. As an indigenous Hawaiian born and raised on Moku o Keawe and over some 60 years, I have witnessed all that was promised not come to filtraiton. Therefore, please stop your desecration of our mountain. You have not employed any local people that are struggling and without a degree after you have built your buildings and leaving it up there to rot away in the wind with only false promises. Enough is enough. No more developing of any sort of any areas on any of our mountains here on my island “Moku o Keawe which I call home.

Thank you very much.

Kawehi

kkn.
February 24, 2021

Ms. Jennifer M. Scheffel
SSFM International, Inc.
99 Aupuni Street, Suite 202
Hilo, Hawaii 96720

Dear Ms. Scheffel:

Thank you for your submittal requesting comments to the Pre-Consultation for Draft Environmental Assessment of the University of Hawaii at Hilo New Educational Telescope Facility, Maunakea, Hamakua District, Island of Hawaii, Tax Map Key (3) 4-4-015:012.

Project activities shall comply with the following Administrative Rules of the Department of Health:

- Chapter 11-41 Lead-based Paint Activities
- Chapter 11-46 Community Noise Control
- Chapter 11-501 Asbestos Requirements
- Chapter 11-503 Fees for Asbestos Removal & Certification
- Chapter 11-504 Asbestos Abatement Certification Program

Should you have any questions, please contact me at (808) 586-4700.

Sincerely,

[Signature]

Daryn A. Yamada
Acting Program Manager
Indoor and Radiological Health Branch
Solid and Hazardous Waste Branch Standard Comments

Solid and Hazardous Waste Branch
Standard Comments
November 26, 2018

The Solid and Hazardous Waste Branch administers programs in the areas of:
1) Management of hazardous waste;
2) Management of solid waste; and
3) Regulation of underground storage tanks.

Our general comments on projects are below. For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226. All chapters of the Hawaii Revised Statutes (HRS) are at https://www.capitol.hawaii.gov/hrscurrent/.

Hazardous Waste Program

- The state regulations for hazardous waste and used oil are in chapters 11-260.1 to 11-279.1. Hawaii Administrative Rules (HAR) [http://health.hawaii.gov/shwb/hwrules/]. These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste and used oil. Generators, transporters and treatment, storage, and disposal facilities of hazardous waste and used oil must adhere to these requirements. Violations are subject to penalties under chapter 342J, HRS.

Solid Waste Section


- The purpose of the rules is to establish minimum standards governing the design, construction, installation, operation, and maintenance of solid waste disposal, recycling, reclamation and transfer systems.

- All facilities that accept solid wastes are required to obtain a solid waste management permit from the SWS. Examples of the types of facilities governed by these regulations include landfills, transfer stations and convenience centers, recycling facilities, composting facilities, and salvage facilities. Medical waste, infectious waste, and foreign waste treatment facilities are also included.

- Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.

For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226.
Solid and Hazardous Waste Branch Standard Comments

maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

- Solid waste management plans seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

Underground Storage Tank Program

- The state’s underground storage tank (UST) regulations, found in chapter 11-280.1, HAR_ [http://health.hawaii.gov/shwb/underground-storage-tanks/], include specific requirements that UST owners and operators must meet when installing, operating, and permanently closing their UST systems and addressing releases from USTs. Violations are subject to penalties under chapter 11-280.1, HAR, and chapter 342L, HRS.

- A permit is required prior to the installation and operation of a UST. Any new UST system that will be installed must have secondary containment with interstitial monitoring. Refer to subchapters 2, 3, 4, and 12 of chapter 11-280.1, HAR. The installation permit expires 1 year from the date of issuance. The operation permit expires 5 years from the date of issuance.

- §11-280.1-50, HAR, requires owners and operators of USTs or tank systems to notify DOH within twenty-four (24) hours and follow the procedures in §11-280.1-52, HAR, if any of the following occur, with specific exceptions found in the rules:
  1) The discovery by any person of evidence of regulated substances which may have been released at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, or nearby surface water);
  2) Unusual UST system operating conditions observed or experienced (such as the erratic behavior of product dispensing equipment, the sudden loss of product from the UST, or an unexplained presence of water in the tank); or
  3) Monitoring results from a release detection method required under §§11-280.1-41 or 11-280.1-42 indicate a release may have occurred.


For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226.
PO Box 30848  
Anahola, Hawai‘i 96703-0848  

25 February 2021  

SSFM International, Inc  
Attention: Jennifer M. Scheffel, Sr. Environmental Planner  
99 Aupuni Street – Suite 202  
Hilo, Hawai‘i 96720  

RE Maunakea  
Pre-Assessment Consultation for Draft Environmental Assessment (dEA) for proposed  
New Educational Telescope Facility by University of Hawaii at Hilo (UH-H)  

To Whom it May Concern:  

Aloha – We are against the proposal of UH-Hilo to construct a new educational telescope facility at Halepohaku on Maunakea. Furthermore, “Lawmakers want new management for Hawaii’s tallest mountain” by Audrey McAvoy, AP of The Telegraph (2/2/2021) the University of Hawaii management of Maunakea is thankfully being seriously altered at this time by Hawaii Legislature and there should be no action on Maunakea.  

Maunakea most sacred / spiritual Wahi Pana – zenith of Hawaiian peoples’ ancestral lineage to creation.  

The environmental review process ought to be stopped now and the funding immediately diverted to support the myriad tragic statistics concerning Hawaiian people which has a severe disparity vs. Hawaii’s population.  

The 11th August 2002, as published in the Honolulu Advertiser, “… Native Hawaiians impoverished state in health, education, drug abuse, divorce, child abuse, suicide, alcoholism and incarceration …” – that – was twenty (20) years ago.  

Statistics have become more dire. Mike Stobbe, AP Medical Writer reported in the Star Advertiser 20th July 2017: “… Native Hawaiians … more likely to suffer asthma, diabetes and obesity. They also were more often under severe psychological stress …”.  

Mauitime, on 2nd April 2018, Anthony Pignataro wrote: “… Let me reiterate: Native Hawaiians, the first people to live in Hawaii, currently “have the highest poverty rates for individuals and families” in Hawaii. This is a tragedy and a travesty that those of us in Hawaii who aren’t Native Hawaiian ignore at our peril”.

1
Hawaiian people unfortunately represent the worst in data: social, health, houselessness and top the charts in mortality rates for heart disease, ALL types of cancer, substance abuse, DV, CSA, obstructive lung disease, chronic kidney disease, metabolic syndrome – in short, prevalent data of the poor health of Hawaiian people’s can be traced to the continued disrespect of Hawaiian religion and cultural, traditional, customary practices.

The wanton destruction and desecration at Maunakea must cease and desist…

– Venerated integrity of sacred Maunakea – the requisite – upheld, UH-Hilo ought to seek new educational facilities for the betterment of Hawaiian peoples’
– an Endangered Species – in crises.

Mahalo Loa – in making pololei (correct) decision; and keep us abreast via USPS mailing list for all updates please.

Sincerely With ALOHA,

Bonnie P. Bator and `Ohana (Keana`aina, Kai`aokamalie, Keli`ikoa & Kai)

C Pele Defense Fund (PDF)
March 2, 2021

To Whom It May Concern,

This is to acknowledge receipt of your letter requesting a review of an environmental assessment (EA) or environmental impact statement (EIS), see attached. The Environmental Center at the University of Hawai’i at Mānoa, which for a time was linked to the Water Resources Research Center (WRRC), has been discontinued. As a result of the closure of the Environmental Center, we regret that WRRC no longer has the capacity to review environmental documents.

Sincerely,

[Signature]

Thomas Giambelluca
Director

Attachment
Ms. Jennifer Scheffel  
SSFM International, Inc.  
99 Aupuni Street, Suite 202  
Hilo, Hawai‘i 96720  

Subject: Response to Request for Technical Assistance  

Dear Ms. Scheffel:  

Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended.  

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the ‘Occurs In or Near Project Area’ column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.  

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac/.
Under section 7 of the ESA, it is the Federal agency’s (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project “may affect” federally listed species or designated critical habitat. A “may affect, not likely to adversely affect” determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a “may affect, likely to adversely affect” determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have “no effect” on federally listed species and/or critical habitat do not require additional coordination or consultation.

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a “may affect, not likely to adversely affect” determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

Sincerely,

Island Team Manager
Pacific Islands Fish and Wildlife Office

Enclosures (3)
The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. For your guidance we marked species that may occur in the vicinity of your project, this list is not comprehensive and should only be used for general guidance. We have also attached our biosecurity protocol for projects in or near natural areas.

**Enclosure 1. Federal Status of Animal Species**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name / Hawaiian Name</th>
<th>Federal Status</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lasiurus cinereus semotus</em></td>
<td>Hawaiian hoary bat/ʻōpeʻapeʻa</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chelonia mydas</em></td>
<td>green sea turtle/honu - Central North Pacific distinct population segment (DPS)</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Eretmochelys imbricata</em></td>
<td>Hawksbill sea turtle/honu ʻea</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Anas wyvilliana</em></td>
<td>Hawaiian duck/koloa</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Branta sandvicensis</em></td>
<td>Hawaiian goose/nēnē</td>
<td>T</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Fulica alai</em></td>
<td>Hawaiian coot/ʻalae kea</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gallinula galeata sandvicensis</em></td>
<td>Hawaiian gallinule/ʻalae ʻula</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Himantopus mexicanus knudseni</em></td>
<td>Hawaiian stilt/aeʻo</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Oceanodroma castro</em></td>
<td>band-rumped storm-petrel Hawaiʻi DPS/ʻakēʻakē</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pterodroma sandwichensis</em></td>
<td>Hawaiian petrel/ʻuaʻu</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Puffinus auricularis newelli</em></td>
<td>Newell’s shearwater/ʻaʻo</td>
<td>T</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ardenna pacificus</em></td>
<td>wedge-tailed shearwater/ʻuaʻu kani</td>
<td>MBTA</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Buteo solitarius</em></td>
<td>Hawaiian hawk/ʻio</td>
<td>MBTA</td>
<td>☒</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gygis alba</em></td>
<td>white tern/manu-o-kū</td>
<td>MBTA</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Manduca blackburni</em></td>
<td>Blackburn’s sphinx moth</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Megalagrion pacificum</em></td>
<td>Pacific Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Megalagrion xanthomelas</em></td>
<td>orangeblack Hawaiian Damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Megalagrion nigrohamatum nigrolineatun</em></td>
<td>blackline Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
</tbody>
</table>
## Enclosure 2. Federal Status of Plant Species

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name or Hawaiian Name</th>
<th>Federal Status</th>
<th>Locations</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argyroxiphium sandwicense ssp. sandwicense</td>
<td>'Ahinahina</td>
<td>E</td>
<td>M, H</td>
<td>☒</td>
</tr>
<tr>
<td>Bonamia menziesii</td>
<td>no common name</td>
<td>E</td>
<td>K, O, L, M, H</td>
<td>☐</td>
</tr>
<tr>
<td>Canavalia pubescens</td>
<td>‘āwikiwiki</td>
<td>E</td>
<td>Ni, K, L, M</td>
<td>☐</td>
</tr>
<tr>
<td>Colubrina oppositifolia</td>
<td>kauila</td>
<td>E</td>
<td>O, M, H</td>
<td>☐</td>
</tr>
<tr>
<td>Cyperus trachysanthes</td>
<td>Pu‘uka’a</td>
<td>E</td>
<td>K, O</td>
<td>☐</td>
</tr>
<tr>
<td>Gouania hillebrandii</td>
<td>no common name</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td>Hibiscus brackenridgei</td>
<td>ma‘o hau hele</td>
<td>E</td>
<td>O, Mo, L, M, H</td>
<td>☐</td>
</tr>
<tr>
<td>Ischaemum byrone</td>
<td>Hilo ischaemum</td>
<td>E</td>
<td>K, O, Mo, M, H</td>
<td>☐</td>
</tr>
<tr>
<td>Isodendrion pyrifolium</td>
<td>wahine noho kula</td>
<td>E</td>
<td>O, H</td>
<td>☐</td>
</tr>
<tr>
<td>Marsilea villosa</td>
<td>‘ihī‘ihī</td>
<td>E</td>
<td>Ni, O, Mo</td>
<td>☐</td>
</tr>
<tr>
<td>Mezoneuron kavaiense</td>
<td>uhiuhi</td>
<td>E</td>
<td>O, H</td>
<td>☐</td>
</tr>
<tr>
<td>Nothocestrum breviflorum</td>
<td>‘aia</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td>Panicum fauriei var. carteri</td>
<td>Carter’s panicgrass</td>
<td>E</td>
<td>Molokini Islet (O), Mo</td>
<td>☐</td>
</tr>
<tr>
<td>Panicum niihauense</td>
<td>lau‘ehu</td>
<td>E</td>
<td>K</td>
<td>☐</td>
</tr>
<tr>
<td>Peucedanum sandwicense</td>
<td>makou</td>
<td>E</td>
<td>K, O, Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td>Pleomele (Chrysodracon) hawaiensis</td>
<td>halapepe</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td>Portulaca sclerocarpa</td>
<td>‘ihī</td>
<td>E</td>
<td>L, H</td>
<td>☐</td>
</tr>
<tr>
<td>Portulaca villosa</td>
<td>‘ihī</td>
<td>E</td>
<td>Le, Ka, Ni, O, Mo, M, L, H, Nihoa</td>
<td>☐</td>
</tr>
<tr>
<td>Pritchardia affinis (maideniana)</td>
<td>loulu</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td>Pseudognaphalium sandwicensium var. molokaiense</td>
<td>‘ena‘ena</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td>Scaevola coriacea</td>
<td>dwarf naupaka</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td>Schenkelia (Centaurium) sebaeoides</td>
<td>‘āwiwi</td>
<td>E</td>
<td>K, O, Mo, L, M</td>
<td>☐</td>
</tr>
<tr>
<td>Sesbania tomentosa</td>
<td>‘ōhai</td>
<td>E</td>
<td>Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa</td>
<td>☐</td>
</tr>
<tr>
<td>Tetramolopium rockii</td>
<td>no common name</td>
<td>T</td>
<td>Mo</td>
<td>☐</td>
</tr>
<tr>
<td>Vigna o-wahuensis</td>
<td>no common name</td>
<td>E</td>
<td>Mo, M, L, H, Ka</td>
<td>☐</td>
</tr>
</tbody>
</table>

Location key: O=O‘ahu, K=Kaua‘i, M=Maui, H=Hawai‘i Island, L=Lāna‘i, Mo=Moloka‘i, Ka=Kaho‘olawe, Ni=Ni‘ihau, Le=Lehua
Enclosure 3. BIOSECURITY PROTOCOL – HAWAIʻI ISLAND

The following biosecurity protocol (based on National Park Service, State of Hawaiʻi, U.S. Fish and Wildlife, U.S. Geological Survey, and the DOI Office of Native Hawaiian Relations guidance) should be followed when operating on the island of Hawaiʻi to prevent the introduction of harmful invasive species including frogs, ants, weeds, and fungi into local natural areas (e.g., Hawaiʻi Volcanoes National Park, Hakalau Forest National Wildlife Refuge, State of Hawaiʻi “Natural Areas”) and areas with native habitat (habitat that is primarily composed of native vegetation), other islands in Hawaiian archipelago, or the U.S. mainland. The protocol also includes suggestions for keeping field staff safe from certain invasive species.

1. All work vehicles, machinery, and equipment should be cleaned, inspected by its user, and found free of mud, dirt, debris and invasive species prior to entry into the natural areas or native habitat.
   a. Vehicles, machinery, and equipment must be thoroughly pressure washed in a designated cleaning area and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs) and other vertebrate species such as rats, mice and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers, grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material (intentionally placed or fallen from trees) are prime sites for hitchhikers).
   b. The interior and exterior of vehicles, machinery, and equipment must be free of rubbish and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats shall be sanitized with a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.
   c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat. Treatment is the responsibility of the equipment or vehicle owner and operator.

2. Little Fire Ants – All work vehicles, machinery, and equipment should be inspected for invasive ants prior to entering the natural areas or native habitat.
   a. A visual inspection for little fire ants should be conducted prior to entry into natural areas or native habitat.
   b. Hygiene is paramount but even the cleanest vehicle can pick up a little fire ant. Place MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) into refillable tamper resistant bait stations. An example of a commercially available refillable tamper resistant bait station is the Ant Café Pro (https://www.antcafe.com/). Place a bait station (or stations) in vehicle. Note larger vehicles, such as trucks, may require multiple stations. Monitor bait stations frequently (every week at a minimum) and replace bait as needed. If the station does not have a sticker to identify the contents, apply a sticker listing contents to the station.
c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat until it is sanitized and re-tested following a resting period. Infested vehicles must be sanitized following recommendations by the Hawai‘i Ant Lab (http://www.littlefireants.com/) or other ant control expert and in accordance with all State and Federal laws. Treatment is the responsibility of the equipment or vehicle owner.

d. Gravel, building materials, or other equipment such as portable buildings should be baited using MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) or AmdroPro (0.73% hydramethylnon) following label guidance.

e. Storage areas that hold field tools, especially tents, tarps, and clothing should be baited using MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) or AmdroPro (0.73% hydramethylnon) following label guidance.

3. **Base yards and staging areas inside and outside project sites must be kept free of invasive species.**
   a. Base yards and staging areas should be inspected at least weekly for invasive species and any found invasive removed immediately. Pay particular attention to where vehicles are parked overnight, keeping areas within 10-meters of vehicles free of debris. Parking on pavement and not under trees, while not always practical is best.

   b. Project vehicles or equipment stored outside of a base yard or staging area, such as a private residence, should be kept in a pest free area.

4. **All cutting tools must be sanitized to prevent the Rapid ʻŌhiʻa Death (ROD) disease.**
   a. Avoid wounding ʻōhiʻa trees and roots with mowers, chainsaws, weed eaters, and other tools. Cut only the minimal number of trees and branches as approved for the project.

   b. All cutting tools, including machetes, chainsaws, and loppers must be sanitized to remove visible dirt and other contaminants prior to entry into natural areas or areas with native habitat, and when moving to a new project area within the native habitat area. Tools may be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution. One minute after sanitizing, you may apply an oil-based lubricant to chainsaw chains or other metallic parts to prevent corrosion.

   c. Only dedicated tools and chainsaws should be used to sample known or suspected ROD infected trees.

   d. Vehicles, machinery, and equipment must be cleaned as described in (1) above.
5. **Imported firewood, logs, and ʻōhiʻa parts:**
   a. ʻŌhiʻa firewood, ʻōhiʻa logs, and ʻōhiʻa parts should not be transported.

6. **For individuals working in the field:**
   a. Before going into the field, visually inspect and clean your clothes, boots, pack, radio harness, tools and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. A small brush is handy for cleaning boots, equipment and gear. Soles of shoes should be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.
   
   b. Immediately before leaving the field, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personnel gear and equipment, for seeds, soil, plant parts, insects, and other debris. Soles of shoes should be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.
   
   c. Little fire ants’ nest in trees. If you are under a tree and that tree is bumped or somehow stressed, the threat response of the ants is to fall from the leaves and sting the person under the tree. If you are subject to an ant attack, do not panic. The ants are extremely small, but their stings are painful so make sure you remove all ants from your body and clothing. The stings cause inch long welts that are itchy and painful and can last for weeks. Treat stings as you would other insect stings. In some persons stings can produce life threatening reactions. Stocking antihistamine in the first aid kit is a reasonable precaution.
   
   d. Rat Lungworm disease is caused by a parasite that can infect humans who consume raw or undercooked infected snails or slugs or consume raw produce that contains a small infected snail or slug. Infection is rare but can be serious. Symptoms can include severe headache, neck stiffness, low grade fever, nausea, and vomiting anywhere from 1 to 6 weeks after exposure. The disease is not spread person to person. Anyone who handles snails or slugs should wear gloves and/or wash hands. Eating unwashed produce is discouraged.
Ms. Jennifer Scheffel  
SSFM International, Inc.  
99 Aupuni Street, Suite 202  
Hilo, Hawai‘i 96720  

Subject: Response to Request for Technical Assistance  

Dear Ms. Scheffel:

Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the ‘Occurs In or Near Project Area’ column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac/.
Under section 7 of the ESA, it is the Federal agency’s (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project “may affect” federally listed species or designated critical habitat. A “may affect, not likely to adversely affect” determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a “may affect, likely to adversely affect” determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have “no effect” on federally listed species and/or critical habitat do not require additional coordination or consultation.

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a “may affect, not likely to adversely affect” determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

Sincerely,

Aaron
Nadig
Digitally signed by
Aaron Nadig
Date: 2021.03.02
08:16:15 -10'00'
Island Team Manager
Pacific Islands Fish and Wildlife Office

Enclosures (3)
The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. For your guidance we marked species that may occur in the vicinity of your project, this list is not comprehensive and should only be used for general guidance. We have also attached our biosecurity protocol for projects in or near natural areas.

Enclosure 1. Federal Status of Animal Species

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name / Hawaiian Name</th>
<th>Federal Status</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lasiurus cinereus semotus</td>
<td>Hawaiian hoary bat/‘ōpe‘ape‘a</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chelonia mydas</td>
<td>green sea turtle/honu - Central North Pacific distinct population segment (DPS)</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td>Eretmochelys imbricata</td>
<td>Hawksbill sea turtle/honu ‘ea</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anas wyvilliana</td>
<td>Hawaiian duck/koloa</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Branta sandvicensis</td>
<td>Hawaiian goose/nēnē</td>
<td>T</td>
<td>☒</td>
</tr>
<tr>
<td>Fulica alai</td>
<td>Hawaiian coot/‘alae kea</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Gallinula galeata sandvicensis</td>
<td>Hawaiian gallinule/‘alae ‘ula</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Himantopus mexicanus knudseni</td>
<td>Hawaiian stilt/ae‘o</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Oceanodroma castro</td>
<td>band-rumped storm-petrel Hawai‘i DPS/‘akē‘akē</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td>Pterodroma sandwichensis</td>
<td>Hawaiian petrel/‘ua‘u</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td>Puffinus auricularis newelli</td>
<td>Newell’s shearwater/‘a‘o</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td>Ardenna pacificus</td>
<td>wedge-tailed shearwater/‘ua‘u kani</td>
<td>MBTA</td>
<td>☐</td>
</tr>
<tr>
<td>Buteo solitarius</td>
<td>Hawaiian hawk/‘io</td>
<td>MBTA</td>
<td>☒</td>
</tr>
<tr>
<td>Gygis alba</td>
<td>white tern/manu-o-kū</td>
<td>MBTA</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Insects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manduca blackburni</td>
<td>Blackburn’s sphinx moth</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Megalagrion pacificum</td>
<td>Pacific Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Megalagrion xanthomelas</td>
<td>orangeblack Hawaiian Damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td>Megalagrion nigrohamatum nigrolineatum</td>
<td>blackline Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
</tbody>
</table>
## Enclosure 2. Federal Status of Plant Species

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name or Hawaiian Name</th>
<th>Federal Status</th>
<th>Locations</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Argyroxyphium sandwicense</em> ssp. <em>sandwicense</em></td>
<td>‘Ahinahina</td>
<td>E</td>
<td>M, H</td>
<td>☒</td>
</tr>
<tr>
<td><em>Bonamia menziesii</em></td>
<td>no common name</td>
<td>E</td>
<td>K, O, L, M, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Canavalia pubescens</em></td>
<td>‘āwikiwiki</td>
<td>E</td>
<td>Ni, K, L, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Colubrina oppositifolia</em></td>
<td>kaula</td>
<td>E</td>
<td>O, M, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Cyperus trachysanthos</em></td>
<td>Pu‘uka‘a</td>
<td>E</td>
<td>K, O</td>
<td>☐</td>
</tr>
<tr>
<td><em>Gouania hillebrandii</em></td>
<td>no common name</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Hibiscus brackenridgei</em></td>
<td>ma‘o hau hele</td>
<td>E</td>
<td>O, Mo, L, M, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Ischaemum byrone</em></td>
<td>Hilo ischaemum</td>
<td>E</td>
<td>K, O, Mo, M, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Isodendrion pyrifolium</em></td>
<td>wahine noho kula</td>
<td>E</td>
<td>O, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Marsilea villosa</em></td>
<td>‘ihiihi</td>
<td>E</td>
<td>Ni, O, Mo</td>
<td>☐</td>
</tr>
<tr>
<td><em>Mezoneuron kavaiense</em></td>
<td>uhiuhi</td>
<td>E</td>
<td>O, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Nothocestrum breviflorum</em></td>
<td>‘aiea</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Panicum fauriei</em> var. <em>carteri</em></td>
<td>Carter’s panicgrass</td>
<td>E</td>
<td>Molokini Islet (O), Mo</td>
<td>☐</td>
</tr>
<tr>
<td><em>Panicum niihauense</em></td>
<td>lau‘ehu</td>
<td>E</td>
<td>K</td>
<td>☐</td>
</tr>
<tr>
<td><em>Peucedanum sandwicense</em></td>
<td>makou</td>
<td>E</td>
<td>K, O, Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Pleomele (Chrysodracon) hawaiensis</em></td>
<td>halapepe</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Portulaca sclerocarpa</em></td>
<td>‘ihii</td>
<td>E</td>
<td>L, H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Portulaca villosa</em></td>
<td>‘ihii</td>
<td>E</td>
<td>Le, Ka, Ni, O, Mo, M, L, H, Nihoa</td>
<td>☐</td>
</tr>
<tr>
<td><em>Pritchardia affinis</em> (maideniana)</td>
<td>loulu</td>
<td>E</td>
<td>H</td>
<td>☐</td>
</tr>
<tr>
<td><em>Pseudognaphalium sandwicensium</em> var. <em>molokaiense</em></td>
<td>‘ena‘ena</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Scaevola coriacea</em></td>
<td>dwarf naupaka</td>
<td>E</td>
<td>Mo, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Schenkia</em> (Centaurium) <em>sebaeoides</em></td>
<td>‘āwiwi</td>
<td>E</td>
<td>K, O, Mo, L, M</td>
<td>☐</td>
</tr>
<tr>
<td><em>Sesbania tomentosa</em></td>
<td>‘ōhai</td>
<td>E</td>
<td>Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa</td>
<td>☐</td>
</tr>
<tr>
<td><em>Tetramolopium rockii</em></td>
<td>no common name</td>
<td>T</td>
<td>Mo</td>
<td>☐</td>
</tr>
<tr>
<td><em>Vigna o-wahuensis</em></td>
<td>no common name</td>
<td>E</td>
<td>Mo, M, L, H, Ka</td>
<td>☐</td>
</tr>
</tbody>
</table>

Location key: O=O‘ahu, K=Kaua‘i, M=Maui, H=Hawai‘i Island, L=Lāna‘i, Mo=Moloka‘i, Ka=Kaho‘olawe, Ni=Ni‘ihau, Le=Lehua
Enclosure 3. BIOSECURITY PROTOCOL – HAWAI‘I ISLAND

The following biosecurity protocol (based on National Park Service, State of Hawai‘i, U.S. Fish and Wildlife, U.S. Geological Survey, and the DOI Office of Native Hawaiian Relations guidance) should be followed when operating on the island of Hawai‘i to prevent the introduction of harmful invasive species including frogs, ants, weeds, and fungi into local natural areas (e.g., Hawai‘i Volcanoes National Park, Hakalau Forest National Wildlife Refuge, State of Hawai‘i “Natural Areas”) and areas with native habitat (habitat that is primarily composed of native vegetation), other islands in Hawaiian archipelago, or the U.S. mainland. The protocol also includes suggestions for keeping field staff safe from certain invasive species.

1. All work vehicles, machinery, and equipment should be cleaned, inspected by its user, and found free of mud, dirt, debris and invasive species prior to entry into the natural areas or native habitat.
   a. Vehicles, machinery, and equipment must be thoroughly pressure washed in a designated cleaning area and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs) and other vertebrate species such as rats, mice and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers, grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material (intentionally placed or fallen from trees) are prime sites for hitchhikers).
   b. The interior and exterior of vehicles, machinery, and equipment must be free of rubbish and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats shall be sanitized with a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.
   c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat. Treatment is the responsibility of the equipment or vehicle owner and operator.

2. Little Fire Ants – All work vehicles, machinery, and equipment should be inspected for invasive ants prior to entering the natural areas or native habitat.
   a. A visual inspection for little fire ants should be conducted prior to entry into natural areas or native habitat.
   b. Hygiene is paramount but even the cleanest vehicle can pick up a little fire ant. Place MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) into refillable tamper resistant bait stations. An example of a commercially available refillable tamper resistant bait station is the Ant Café Pro (https://www.antcafe.com/). Place a bait station (or stations) in vehicle. Note larger vehicles, such as trucks, may require multiple stations. Monitor bait stations frequently (every week at a minimum) and replace bait as needed. If the station does not have a sticker to identify the contents, apply a sticker listing contents to the station.
c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat until it is sanitized and re-tested following a resting period. Infested vehicles must be sanitized following recommendations by the Hawai‘i Ant Lab (http://www.littlefireants.com/) or other ant control expert and in accordance with all State and Federal laws. Treatment is the responsibility of the equipment or vehicle owner.

d. Gravel, building materials, or other equipment such as portable buildings should be baited using MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) or AmdroPro (0.73% hydramethylnon) following label guidance.

e. Storage areas that hold field tools, especially tents, tarps, and clothing should be baited using MaxForce Complete Brand Granular Insect Bait (1.0% hydramethylnon) or AmdroPro (0.73% hydramethylnon) following label guidance.

3. Base yards and staging areas inside and outside project sites must be kept free of invasive species.
   a. Base yards and staging areas should be inspected at least weekly for invasive species and any found invasive removed immediately. Pay particular attention to where vehicles are parked overnight, keeping areas within 10-meters of vehicles free of debris. Parking on pavement and not under trees, while not always practical is best.
   b. Project vehicles or equipment stored outside of a base yard or staging area, such as a private residence, should be kept in a pest free area.

4. All cutting tools must be sanitized to prevent the Rapid ‘Ōhi‘a Death (ROD) disease.
   a. Avoid wounding ‘ōhi‘a trees and roots with mowers, chainsaws, weed eaters, and other tools. Cut only the minimal number of trees and branches as approved for the project.
   b. All cutting tools, including machetes, chainsaws, and loppers must be sanitized to remove visible dirt and other contaminants prior to entry into natural areas or areas with native habitat, and when moving to a new project area within the native habitat area. Tools may be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution. One minute after sanitizing, you may apply an oil-based lubricant to chainsaw chains or other metallic parts to prevent corrosion.
   c. Only dedicated tools and chainsaws should be used to sample known or suspected ROD infected trees.
   d. Vehicles, machinery, and equipment must be cleaned as described in (1) above.
5. **Imported firewood, logs, and ‘ōhi‘a parts:**
   a. ‘Ōhi‘a firewood, ‘ōhi‘a logs, and ‘ōhi‘a parts should not be transported.

6. **For individuals working in the field:**
   a. Before going into the field, visually inspect and clean your clothes, boots, pack, radio harness, tools and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. A small brush is handy for cleaning boots, equipment and gear. Soles of shoes should be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.

   b. Immediately before leaving the field, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personnel gear and equipment, for seeds, soil, plant parts, insects, and other debris. Soles of shoes should be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.

   c. Little fire ants’ nest in trees. If you are under a tree and that tree is bumped or somehow stressed, the threat response of the ants is to fall from the leaves and sting the person under the tree. If you are subject to an ant attack, do not panic. The ants are extremely small, but their stings are painful so make sure you remove all ants from your body and clothing. The stings cause inch long welts that are itchy and painful and can last for weeks. Treat stings as you would other insect stings. In some persons stings can produce life threatening reactions. Stocking antihistamine in the first aid kit is a reasonable precaution.

   d. Rat Lungworm disease is caused by a parasite that can infect humans who consume raw or undercooked infected snails or slugs or consume raw produce that contains a small infected snail or slug. Infection is rare but can be serious. Symptoms can include severe headache, neck stiffness, low grade fever, nausea, and vomiting anywhere from 1 to 6 weeks after exposure. The disease is not spread person to person. Anyone who handles snails or slugs should wear gloves and/or wash hands. Eating unwashed produce is discouraged.
<table>
<thead>
<tr>
<th>#</th>
<th>Agency</th>
<th>Person Commenting</th>
<th>Date of Letter</th>
<th>Comments Received</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Vivian Chang</td>
<td>2/14/21</td>
<td>I appreciate the opportunity to encourage the construction of the UH Hilo New Educational Telescope Facility. This is a wonderful opportunity for the people of Hawaii, to advance human knowledge about the universe, and for the people of the world, to benefit from the rare combination of geography, geology and history that make our islands the best place in the world for such a project. The original navigators who located our tiny islands in the middle of the vast blue Pacific Ocean used an incredible combination of observation, historical memory, skill, aptitude, technology, and courage. We can and should continue that tradition, with exploration into the vast universe. The observations of the stars and the sky enabled the ancestors to locate Hawaii in the world, and now further observations will continue to help Hawaii and the world locate ourselves in the universe. We live on the tallest mountain in the world, measured from the sea floor. Our atmosphere is among the clearest in the world. Our people, using the latest astronomical technology, can continue the tradition of exploration. This is a better use of our minds, hearts and resources than a casino, which only preys on the foolishness and weakness of materialistic culture, and sows greed, preys on ignorance, and invites criminal behavior. This project will be an investment, not a cancer, and will truly help the people of Hawaii, and benefit the rest of the world. I once visited Halepohaku, &quot;House of Stone&quot; to acclimate to the rarified atmosphere of the mountain. I noticed the colorful but obsolete Apple Emacs in the visitor facilities. Let us bring the latest tools to the people who are exploring the vast unknown universe. By the way, I'm not meant to be climbing the Himalayas, and got dopey and confused on the way up, and had to be stopped from staggering on, by a helpful ranger... I cannot go to the top, but I will do everything I can to help others have access to the mountain, to study the sky. Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). The University of Hawaii at Hilo (UH Hilo) appreciates your support for the proposed New Educational Telescope project. Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at <a href="mailto:jscheffel@ssfm.com">jscheffel@ssfm.com</a>.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Bimo Akiona</td>
<td>2/16/21</td>
<td>I've received letter regarding the subject. Where can I find data supporting the statements after INCREASING COMPETITION, and Recapturing UH Hilo’s niche.... Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at <a href="mailto:jscheffel@ssfm.com">jscheffel@ssfm.com</a>.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>U.S. Army Corps of Engineers</td>
<td>Linda Speerstra, Chief-Regulatory Branch</td>
<td>2/18/21</td>
<td>Aloha Jennifer, thank you for reaching out in regards to the new educational telescope facility proposal located on Maunakea. I’ve assigned your project to Kristi Fluker. She will be reaching out to you shortly with a project number. Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). Kristi Fluker provided Project Number POH-2021-00043 on February 18, 2021. The University of Hawaii at Hilo looks forward to further consultation, as needed. Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process.</td>
<td></td>
</tr>
</tbody>
</table>
We have assigned the following Department of Army project number to the inquiry aforementioned in the subject line above:

POH-2021-00043

Please provide the name, address, phone number, and email for your contact at the University of Hawaiʻi at Hilo.

Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). All future correspondence will reference Project Number POH-2021-00043. The University of Hawaiʻi at Hilo (UH Hilo) looks forward to further consultation, as needed.

The UH Hilo contact person for the project is:

Ligaya Hill, Project Manager
Facilities Planning
University of Hawaiʻi at Hilo
200 W. Kawili Street
Hilo, Hawaiʻi 96720-4091
(808) 932-7947
ligayah@hawaii.edu

Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

Would you please send us the distribution list for the attached Pre-consult draft EA?

Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). The list of people and entities who directly received a copy of the pre-assessment consultation letter for the Draft EA are listed in Appendix E.

Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

Aloha – We are against the proposal of UH-Hilo to construct a new educational telescope facility at Halepohaku on Maunakea. Furthermore, “Lawmakers want new management for Hawai‘i’s tallest mountain” by Audrey McAvoy, AP of The Telegraph (2/2/2021) the University of Hawai‘i management of Maunakea is thankfully being seriously altered at this time by Hawaii Legislature and there should be no action on Maunakea.

Maunakea most sacred / spiritual Wahi Pana – zenith of Hawaiian peoples’ ancestral lineage to creation.

The environmental review process ought to be stopped now and the funding immediately diverted to support the myriad tragic statistics concerning Hawaiian people which has a severe disparity vs. Hawai‘i’s population.

The 11th August 2002, as published in the Honolulu Advertiser, “ ... Native Hawaiians impoverished state in health, education, drug abuse, divorce, child abuse, suicide, alcoholism and incarceration ... ” – that was twenty (20) years ago.

Statistics have become more dire. Mike Stobbe, AP Medical Writer reported in the Star Advertiser 20th July 2017;’ ... Native Hawaiians ... more likely to suffer asthma, diabetes and obesity. They also were more often under severe psychological stress ... ”. Mauitime, on 2nd April 2018, Anthony Pignataro wrote: “ ... Let me reiterate: Native Hawaiians, the first people to live in Hawai‘i, currently “have the highest poverty rates for individuals and families” in Hawai‘i. This is a tragedy and a travesty that those of us in Hawaii who aren’t Native Hawaiian ignore at our peril”.
Hawaiian people unfortunately represent the worst in data: social, health, houselessness and top the charts in mortality rates for heart disease, ALL types of cancer, substance abuse, DV, CSA, obstructive lung disease, chronic kidney disease, metabolic syndrome – in short, prevalent data of the poor health of Hawaiian people’s can be traced to the continued disrespect of Hawaiian religion and cultural, traditional, customary practices. The wanton destruction and desecration at Mauna kea must cease and desist...

– Venerated integrity of sacred Mauna kea – the requisite – upheld, UH-Hilo ought to seek new educational facilities for the betterment of Hawaiian peoples’ – an Endangered Species – in crises.

Mahalo Loa – in making pololei (correct) decision; and keep us abreast via USPS mailing list for all updates please.

| 7 | University of Hawaii, Water Resources Research Center | Thomas Giambelluca, Director | 3/2/21 | This is to acknowledge receipt of your letter requesting a review of an environmental assessment (EA) or environmental impact statement (EIS), see attached. The Environmental Center at the University of Hawaii at Manoa, which for a time was linked to the Water Resources Research Center (WRRC), has been discontinued. As a result of the closure of the Environmental Center, we regret that WRRC no longer has the capacity to review environmental documents.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the ‘Occurs in or Near Project Area’ column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac.

Under section 7 of the ESA, it is the Federal agency’s (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a "may affect, likely to adversely affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect"

| 8 | U.S. Fish and Wildlife Service | Aaron Nadig, Island Team Manager | 3/2/21 | Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the ‘Occurs in or Near Project Area’ column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac.

Under section 7 of the ESA, it is the Federal agency’s (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project “may affect” federally listed species or designated critical habitat. A “may affect, not likely to adversely affect” determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a “may affect, likely to adversely affect” determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have “no effect”
on federally listed species and/or critical habitat do not require additional coordination or consultati

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a "may affect, not likely to adversely affect" determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

[See letter for Enclosures]

---

9 Hawaii State Senate Senator Lorraine Inouye 3/3/21

I am writing this statement in support of the construction of a new educational telescope facility on Mauna Kea, Island of Hawaii for the University of Hawaii at Hilo. The 28-inch telescope will be built on a parcel at the Hale Pohaku area below the summit at the 9,200 foot level (TMK): (3)-4-015.012.

Access to a state of the art, educational telescope will benefit University of Hawaii students and faculty who pursue the study of astronomy. It may also benefit the community since the telescope will be at a lower elevation. Students and other astronomers could use it as an informational tool to educate the public.

This telescope will be housed in a small, domed structure measuring 14 feet tall and 18 feet wide. The area is presently used for storage. I don’t see any adverse environmental impact to the area that is already developed with several structures that support the astronomy community.

I believe the telescope will be a great supplemental instrument to have on the island as we groom our future astronomers for careers that can keep them in Hawaii. Astronomy is a good, clean, knowledge-based industry that contributes to our economy and continues to astonish mankind’s knowledge of our universe.

The University of Hawaii should be allowed to build it.

Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). The University of Hawaii at Hilo (UH Hilo) appreciates your support for the proposed New Educational Telescope project.

Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

10 N/A Dr. J.M. Anthony 3/4/21

Your emailed letter of March 4 is acknowledged. The last page of your letter invites me to comment on the proposed new telescope and invites me also to ask questions.

Abbreviated preliminary comments interspersed with some questions are as follows:

1. A mere 30 days is not enough time for members of the public like me to comment on a proposal of this magnitude. I seek an additional 60 days to deal effectively with just what your email note sets out.
2. The tone of your letter does not sit well with me.
3. There is no profile disclosure statement on who or what ‘SSFM International, Inc.’ is. I think every member of the public contacted by you is entitled to know (for a variety of reasons including professional courtesy) as to who the members of the Board of Directors of

Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA).

The pre-assessment consultation letter was sent to various agencies and members of the community pursuant to Chapter 11-200.1 of the Hawaii Administrative Rules (HAR) in order to consult with the community prior to the preparation of an EA. The intent of this early consultation is to seek the advice and input of the agencies, citizen groups, and individuals that may be affected (HAR § 11-200.1-18). The University of Hawaii at Hilo (UH Hilo) identified you as an individual who could provide their perspective on the proposed project.

In addition to the 30-day pre-assessment consultation period, there will be additional opportunities to provide comments throughout the environmental due diligence and
SSFM International, Inc. are. Their full titles and a brief annotation that tells us something significant about each member of the Board, including, especially, level of formal higher education (if any) and institutions from which each member of the Board has earned his or her professional credentials. I request a gender breakdown of members of the Board; how many women, how many men? Please disclose how many people of color (by gender breakdown) are members of the Board and when each present ‘colored’ member of the Board was appointed. Also, please disclose, the process used to appoint members of the Board.

Specifically, amongst the current members of the Board of Directors of SSFM International, Inc.

how many, if any, are Pacific Islanders including anyone from Hawaii or from any island from within Polynesia, Melanesia or Micronesia.

Your official designatory, below the signature line of your letter says,”Sr. Environmental Planner”. Please disclose what professional qualifications you have earned and from what institution/s, and when such qualifications were earned. If you have ever published anything that has been peer reviewed, please list all such publications in standard bibliographical format. Please provide me with a short statement disclosing any environmental planning experience that you have had on/in any island anywhere? Do you speak, read or write any first language of any island community in the Pacific? If so, please disclose your level of competence of any language you identify.

Has SSFM International, Inc. done any environmental planning work of the kind traversed in your letter in/on any island anywhere? Please provide brief annotated details.

My general comment about your failure to disclose any of the foregoing information raises what I consider to be a huge matter of concern.

The list of questions I have asked are merely illustrative. There are more questions that I have in mind. And, indeed, more comments.

What is the total anticipated cost of this project?

Do you, or your principals (SSFM International, Inc.) have a position on the proposed TMT project on Mauna Kea?

Does SSFM International, Inc. have any kind of connection/relationship with TMT?

Please provide me with as complete a list as possible of the names and professional qualifications of all members of the faculty of UH Hilo who are associated in any way with this proposed project.

Thank you for giving me the opportunity to voice my mana’o to your development on Mauna A Wakea.

I am against your intentions of building any structure on this sacred mauna/mountain to put it lightly. As an Indigenous Hawaiian born and raised on Moku o Keawe and over some 60 years, I have witnessed all that was promised not come to fruition.

Therefore, please stop your desecration of our mountain. You have not employed any local people that are struggling and without a degree after you have built your buildings and leaving it up there to rot away in the wind with only false promises. Enough is enough. No more developing of any sort of any areas on our mountains here on my island “Moku o Keawe which I call home.

Thank you for giving us an opportunity to review your project.

Thank you for your response to the pre-assessment consultation letter for the Draft Environmental Assessment (EA). The University of Hawaii at Hilo (UH Hilo) acknowledges your opposition to the proposed New Educational Telescope project. Section 3.11 of the Draft EA discusses the economic benefits of the Proposed Action, including attracting students to UH Hilo’s Physics and Astronomy program, as well as the potential for collaboration with other observatories around the world.

Your letter, along with this response letter, will be included in the forthcoming Draft EA. SSFM and UH Hilo appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding the proposed project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.