DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

Cody Felipe, Capt, USSF
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Tom Eisen, Planner, Environmental Review Program
Office of Planning and Sustainable Development
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

SUBJECT: Request to Post the United States Air Force's Draft Environmental Assessment and Proposed Finding of No Significant Impact for the Secure Integration Support Laboratory.

Dear Tom Eisen

The Air Force Research Laboratory (AFRL) Detachment 15, a unit of the U.S. Space Force, is requesting that the Environmental Review Program post the Draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for the EA entitled "Secure Integration Support Laboratory for Air Force Research Laboratory, Maui, Hawai'i" to the Other TEN Publications section of its SharePoint site for the 23 May 2022 posting. The public comment period for the Air Force's Draft EA/FONSI will end on 22 June 2022. To be considered in the final EA, comments must be received or be postmarked by that date.

Included with this submission is the following documentation:

- Environmental Review Program's NEPA only Publication Form
- A pdf copy of the Draft EA and proposed FONSI for the EA entitled" Secure Integration Support Laboratory for Air Force Research Laboratory, Maui, Hawai'i"

If you have any questions regarding this submission, please feel free to contact me by phone at 808-891-7739 or by e-mail at cody.felipe.2@spaceforce.mil.

Sincerely

FELIPE.CODY.HALEMANUOKAUPOMAMAC.1368926805

Digitally signed by FELIPE.CODY.HALEMANUOKAUPOMAMAC.1368926805
Date: 2022.05.10 08:57:44 -10'00'

CODY H. FELIPE, Capt, USSF
Chief, Installation & Facilities

NEPA Action EA/EIS
Publication Form

Project Name: Secure Integration Support Laboratory for Air Force Research Laboratory, Maui, Hawai'i--Draft EA and Proposed FONSI

Island: Maui/Kihei-Makena

District: Wailuku judicial district

TMK: [2] 2-2-24:15 and [2] 2-2-24:16

Permits:
See draft Environmental Assessment

Applicant or Proposing Agency:
Lieutenant Colonel J. Chris Zingarelli, USSF Commander Air Force Research Laboratory, Detachment 15, a unit of the U.S. Space Force
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96753-6902

Phone: 808-891-7748
Email: AFRL.AMOS.PublicAffairs@us.af.mil

Approving Agency:
Same as Proposing Agency

Consultant:
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Tetra Tech, Inc.
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Salisbury, NC 28144

Phone: 704-433-1524
Email: greg.hippert@tetratech.com

Status: The draft EA and proposed FONSI are available for public review and comment at the following Maui public libraries: Kīhei Public Library, Lahaina Public Library, Makawao Public Library, Wailuku Public Library. The draft EA and proposed FONSI are also available on the Internet at: www.afrl.af.mil/environmental.

The U.S. Air Force will accept comments for a 30-day public comment period beginning on 23 May. Written comments must be postmarked by June 22, 2022 to be considered in the final EA. Written comments on the draft EA and proposed FONSI may be sent by U.S. Postal Service to Tetra Tech, Inc., c/o Julie Kaplan, 9444 Balboa Ave, Suite 215, San Diego, CA 92123 or via email to julie.kaplan@tetratech.com.

Summary: Pursuant to the Council on Environmental Quality Regulations implementing the National Environmental Policy Act, the United States Department of the Air Force (Air Force) gives notice of availability of a draft Environmental Assessment and proposed Finding of No Significant Impact and requests public comment on the proposed construction of a permanent, government-owned secure integration support laboratory (SISL) on Maui, Hawai‘i. The SISL would be a two-story, approximately 56,000-square-foot building with workspace for military, civilian, and contractor personnel. It would have a high-performance data center, laboratories, a remote telescope operations center, rooftop and ground-level domes for telescopes, secure areas and facilities for processing classified information, administrative spaces, a secure entry control point, and warehouse functions. The SISL would consolidate operations from four existing Detachment 15 AFRL facilities on Maui. Construction of the proposed SISL would allow personnel from existing AFRL facilities on Maui to relocate to the SISL. The Air Force is the lead agency for the Proposed Action. The Air Force anticipates the project would result in less than significant impacts on the quality of the human or natural environment.

Revised February 2012

DRAFT FINDING OF NO SIGNIFICANT IMPACT
SECURE INTEGRATION SUPPORT LABORATORY
FOR AIR FORCE RESEARCH LABORATORY
MAUI, HAWAI'I

Pursuant to provisions of the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* §§ 4321–4347), implemented by Council on Environmental Quality (CEQ) regulations (Title 40 of the *Code of Federal Regulations* [CFR] parts 1500–1508) and 32 CFR part 989, *Environmental Impact Analysis Process (EIAP)*, the US Air Force (Air Force) assessed the potential environmental consequences associated with constructing a permanent, government-owned secure integration support laboratory (SISL) on the island of Maui, Hawai'i (the proposed action).

The purpose of the proposed action is to construct a facility on Maui that would consolidate operations from the multiple existing Detachment 15 Air Force Research Laboratory (AFRL) facilities on the island, provide adequate space to meet current mission needs, and provide a direct connection to the Maui Space Surveillance Complex (MSSC) at the summit of Mount Haleakalā using existing dedicated fiber optic telecommunication services at the Maui Research and Technology Park (MRTP) (section 1.3).

The proposed action is needed because the current contractor-leased facilities do not meet the Department of Defense (DoD) and Air Force antiterrorism/force protection (AT/FP) and security requirements of Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*. Currently, the leased facilities—the Detachment 15 AFRL Headquarters (HQ) facility and warehouse—do not meet current AT/FP standards. In addition, the current facilities are not consolidated and do not provide sufficient space for current mission needs (section 1.4).

The proposed action is also needed to increase the number of hours personnel spend on mission-related work by reducing time spent commuting to the summit of Mount Haleakalā. The length of the commute reduces time spent on mission activities and increases wear on vehicles and fuel consumption. Also, altitude sickness is common with employees who must work at the MSSC summit.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the SISL and provides environmental protection measures to avoid or reduce adverse environmental impacts. The EA considers all potential impacts of the proposed action and the no action alternative and considers effects from other reasonably foreseeable projects (section 3.1.3).

PROPOSED ACTION

The proposed action is the construction and operation of a permanent, government-owned SISL on the island of Maui, Hawai'i (section 2.1). The SISL would be a two-story, approximately 56,000-square-foot building. It would have the capacity to provide work space for no more than 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level domes for telescopes; secure areas and facilities for processing classified information; administrative spaces; a secure entry control point; and warehouse space. The building would comply with AT/FP and security requirements in accordance with DoD UFC 4-010-01.

Five alternatives were evaluated as potential SISL sites on Maui (section 2.5):

- Alternative 1: Construction of a SISL at the MRTP site (preferred alternative)
- Alternative 2: Construction of a SISL at the Remote Maui Experiment site
- Alternative 3: Construction of a SISL at the Army National Guard Armory site
- Alternative 4: Construction of a SISL at the Kula Highway site
- Alternative 5: Renovation of MRTP building 550 (the current Detachment 15 AFRL HQ)

The Air Force applied selection standards to these alternatives to determine which alternative(s) could accommodate construction of an SISL and fulfill the purpose of and need for the action (section 2.2). After consideration, the Air Force carried forward for detailed analysis alternative 1 (preferred alternative) and the no action alternative.

NO ACTION ALTERNATIVE

Inclusion of the no action alternative serves to provide a benchmark against which the potential effects of federal actions can be evaluated. Under the no action alternative, Detachment 15 AFRL would not construct an SISL and would instead continue using the four facilities it currently leases (section 2.5.2). These facilities would continue not meeting DoD and Air Force AT/FP requirements, and personnel would continue to make daily drives to the summit, limiting the amount of time spent on advancing research and development, which would continue to place constraints on the Air Force's ability to monitor space activity and secure space assets. Personnel commuting to the summit would continue to suffer from the effects of altitude sickness, and there would be continued vehicle wear and fuel consumption as a result of their commutes.

SUMMARY OF FINDINGS

Based on the analyses of the affected environment and environmental consequences of implementing the proposed action, the Air Force has concluded that no significant adverse effects would result from implementing it (section 2.6). The proposed action would result in less-than-significant adverse impacts on aesthetic and visual resources (section 4.1.2), water resources (section 4.2.2), biological resources (section 4.3.2), geological resources (section 4.4.2), cultural resources (section 4.5.2), air quality (section 4.6.2), noise (section 4.7.2), roadways and traffic (section 4.8.2), infrastructure and utilities (section 4.9.2), socioeconomics (section 4.10.2), and sustainability and greening (section 4.11.2). Further, the Air Force identified no reasonably foreseeable projects that would have a reasonably close causal relationship to the proposed action.

A brief summary of impacts on each resource area is presented below.

***Aesthetic and Visual Resources*.** Minor adverse effects would be expected from construction activities. The proposed SISL facility would comply with MRTP design guidelines, fit within the aesthetic vision for the park, and adhere to applicable county zoning restrictions. Parking lot and security lighting would be full-cutoff, dark-sky-type LED. The project's separation from Piʻilani Highway and the relatively low profile of the building would ensure that the development would not appreciably affect views of Haleakalā from Piʻilani Highway.

***Water Resources*.** The SISL facility would not be near any streams, wetlands, or reservoirs or in any floodplain areas, and activities would not result in degradation of surface waters. Stormwater runoff would be controlled in compliance with the Maui County Code. Construction activities on the property would comply with all applicable regulations and rules for erosion control. Permanent landscaping would be established after construction to provide long-term erosion control. Excessive stormwater flow volumes would be detained on-site in accordance with LID design principles. No impacts on groundwater would be expected. The State of Hawaiʻi Office of Planning conditionally concurred that the proposed project is consistent with the State CZM program

provided the conditions presented in their September 10, 2021, correspondence are met. The State CZM program conditions are found in section 4.2.2.3.

***Biological Resources*.** A BA was prepared to support Section 7 consultation with the USFWS regarding federally protected species. The USFWS concluded that by incorporating specific conservation measures, potential effects to the 14 listed species that could occur on the property are extremely unlikely to occur and are discountable. Therefore, the USFWS concurred that the proposed action may affect but is not likely to affect any of the 14 listed species. Conservation measures required by the USFWS in their July 7, 2021, correspondence are attached.

***Geological Resources*.** BMPs would be implemented in compliance with Maui County Code to control and minimize soil erosion and runoff. Construction activities would comply with applicable federal, state, and county regulations and rules for erosion control. Permanent landscaping would be established after construction to provide long-term erosion control. The proposed SISL would be designed and built for protection from earthquakes in accordance with building codes adopted by the County of Maui. The proposed site has no unique or prime farmland soils.

***Cultural Resources*.** No historic properties were identified within the APE during the consultation process, no cultural resources are located on the surface of the APE, and subsurface cultural resources are unlikely to be identified in this area. The SHPD will make a final determination of whether any additional inventory or mitigation is required to complete the historic preservation review process related to the proposed action. In accordance with National Historic Preservation Act and State of Hawai‘i Revised Statutes, consultation with Native Hawaiian Organizations was conducted for the proposed action.

***Air Quality*.** Emissions would be generated during construction and limited operations at the SISL would create some emissions. Using the results from Air Conformity Applicability Model emission calculations, the Air Force determined emission limits to be below de minimus levels (EA Table 4-1). PSD major source thresholds would not be exceeded and no federal, state, or local air regulation would be violated. The area is in attainment and the General Conformity Rule does not apply. Any new stationary sources of air emissions, such as backup generators or boilers, would be permitted under the state of Hawai‘i’s air permitting regulations, as necessary.

***Noise*.** Noise would result from construction activities and ongoing operations at the facility. No appreciable land-use incompatibilities due to noise would result and no federal, state, or local noise regulation would be violated. A school near the northeast corner of the site would experience intermittent construction noise that could be loud enough to interfere with speech for areas within the school with windows facing the site, but these interruptions would be limited to construction activities within 100 feet of the northeast property boundaries, only occur during heavy equipment operations, and would end with the construction phase.

***Roadways and Traffic*.** Minor increases in vehicular traffic would result during construction, but once completed, construction-related traffic would cease. Traffic volume would increase negligibly from the five relocating employees; the remaining AFRL relocating employees already travel area roads. The increase in daily and peak period traffic volumes near the SISL would be negligible. These changes would have no effects on the level of service or contribute to congestion at any nearby intersections or roadway segments.

***Infrastructure and Utilities*.** Infrastructure and utilities would be used during construction, but consolidating personnel and operations into a single facility with energy-efficient elements would reduce demand on utilities. Some solid waste generated during construction would reduce available landfill capacity by a small amount. Construction contractors would minimize the amount of waste generated, recycle as much as practicable, and dispose of materials in accordance with federal, state, and county requirements. Negligible or no effects on the sanitary sewer system

would be expected. No increase in potable water use would be expected from consolidating operations at the SISL. In compliance with federal regulations, the stormwater system would detain stormwater so it would have no effect on the existing system. Energy-efficient electrical features would reduce electricity usage to less than the amount being used in the separate facilities now occupied by Air Force SISL personnel. A communication system suitable to the facility's purpose would be installed and would have no effect on nearby communication systems.

***Socioeconomics*.** Minor beneficial economic effects would be expected from short-term increases in local employment, income, and business sales from the construction activities.

***Environmental Justice and Protection of Children*.** The project is near the Kīhei Charter School. Safety measures would be implemented and health regulations would be followed to protect the health and safety of the public, including children. Construction contractors would comply with Air Force, OSHA, and local regulations. After construction the project site would not be a risk to children.

***Sustainability and Greening*.** The proposed action would unavoidably create waste during facility construction and convert some open space to impervious surface. Beneficial effects would be expected from the Air Force incorporating sustainability measures into the SISL development process from design through construction to operations.

***Hazardous Materials and Waste*.** Hazardous materials and waste would be generated during construction and once the SISL is operational. Both would be handled and disposed of in accordance with local, state, and federal regulations and established Air Force procedures, where applicable. Construction contractors would be responsible for preventing spills by implementing proper storage, handling, and management procedures. The safe handling, storage, use, and disposal would be conducted in accordance with the AFRL's hazardous waste and hazardous materials management plans and established procedures for mission related activities. The use of above ground diesel fuel storage tanks for backup power generation would be double walled, have leak detection systems, be sited per AT/FP clearance requirements, and comply with NFPA and UFC design requirements. Additionally, a spill prevention, control, and countermeasure (SPCC) plan and operation procedures would be established.

***Health and Safety*.** Risks from construction are unavoidable, however, they would be minimized from the preparation and implementation of health and safety plans that would be protective of workers, the public, and the environment and would be prepared in accordance with DoD and Air Force regulations and would comply with OSHA standards. SISL operations would comply with established Air Force Occupational Safety and Health Programs and the AFRL Safety Office would continue oversight of all activities performed at Detachment 15 AFRL on Maui. Beneficial effects would be expected because the SISL would meet AT/FP measures, fewer vehicle trips to the summit would be required and personnel would spend less time at the summit reducing altitude sickness.

MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

No mitigation measures would be necessary under the proposed action to reduce adverse impacts to below significant levels. Best management practices and conservation measures specified in the EA would be implemented to manage potential impacts.

STAKEHOLDER INVOLVEMENT AND PUBLIC REVIEW

Coordination with appropriate federal, state, and local agencies and consultation with Native Hawaiian Organizations (NHOs), the US Fish and Wildlife Service, and the Hawai'i State Historic Preservation Office was conducted as part of this EA (section 1.5). Following the scoping period, the Draft EA and Draft Finding of No Significant Impact (FONSI) were made available to the public,

agencies, and NHOs for a 30-day review period, beginning with a Notice of Availability in *The Maui News* and the State of Hawai'i Office of Environmental Quality Control *Environmental Notice*. During the public review period, the Draft EA and Draft FONSI were also available online at *www.afrl.af.mil/environmental* and at the Kihei Public Library, Lahaina Public Library, Makawao Public Library, and Wailuku Public Library.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA—conducted under the provisions of NEPA, CEQ regulations, and EIAP and based on the results of the various consultations and review of the public, agency, and NHO comments submitted during the 30-day public comment period—I conclude that the environmental effects of implementing the proposed action at the MRTP site would not be significant. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

_____ _____

SIGNATORY NAME, Rank/Title Date

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DRAFT ENVIRONMENTAL ASSESSMENT
FOR
SECURE INTEGRATION SUPPORT LABORATORY
FOR AIR FORCE RESEARCH LABORATORY
MAUI, HAWAI'I

PREPARED BY:

Department of the Air Force

May 2022

Letters and other written comments provided may be published in the Final Environmental Assessment (EA). As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AFRL	Air Force Research Laboratory
Air Force	US Air Force
AIS	archaeological inventory survey
AMSL	above mean sea level
AMOS	Air Force Maui Optical & Supercomputing Site
AT/FP	antiterrorism/force protection
BA	Biological Assessment
BMP	best management practice
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
COC	Community of Comparison
CZM	Coastal Zone Management
dB	decibel(s)
dBA	A-weighted decibel(s)
DNL	day-night sound level
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	US Environmental Protection Agency
FONSI	finding of no significant impact
ft^2	square feet
GHG	greenhouse gas
HAR	Hawai‘i Administrative Rules
HQ	Headquarters
KWWRF	Kīhei Wastewater Reclamation Facility
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
L_{eq}	equivalent sound level
LID	low impact development
LOS	level of service
µg/m³	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
MGD	million gallons per day
MHPCC	Maui High Performance Computing Center
MRTP	Maui Research and Technology Park
MSSC	Maui Space Surveillance Complex
NA	not applicable
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act of 1966
NOA	Notice of Availability
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places

OEQC	Office of Environmental Quality Control
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppb	parts per billion
ppm	parts per million
PSD	prevention of significant deterioration
PT	physical training
Pub. L.	public law
RME	Remote Maui Experiment
SDA	space domain awareness
SHPD	State Historic Preservation Division
SISL	secure integration support laboratory
SMA	Special Management Area
SO_2	sulfur dioxide
SO_x	oxides of sulfur
TMK	tax map key
tpy	tons per year
U.S.C.	United States Code
UFC	Unified Facilities Criteria
US	United States (adjective only)
USFWS	US Fish and Wildlife Service
VOC	volatile organic compound

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SECTION 1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

Detachment 15 of the U.S. Air Force (Air Force) Research Laboratory (AFRL) proposes to construct a permanent, government-owned secure integration support laboratory (SISL) on the island of Maui, Hawai'i. Detachment 15 AFRL, a unit of the U.S. Space Force, was previously under the Air Force Materiel Command.

The Air Force has prepared this Environmental Assessment (EA) to analyze the potential impacts of this action. It has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 *United States Code* [U.S.C.] 4321 *et seq*.); Council of Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 of the *Code of Federal Regulations* [CFR] parts 1500–1508 and 1515–1518); and the Air Force's Environmental Impact Assessment Process (EIAP) Regulations in 32 CFR part 989.

The information presented in this EA will serve as the basis for deciding whether implementing the proposed action would result in a significant impact on the human or natural environment, which would require the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a finding of no significant impact (FONSI) would be appropriate.

1.2 BACKGROUND

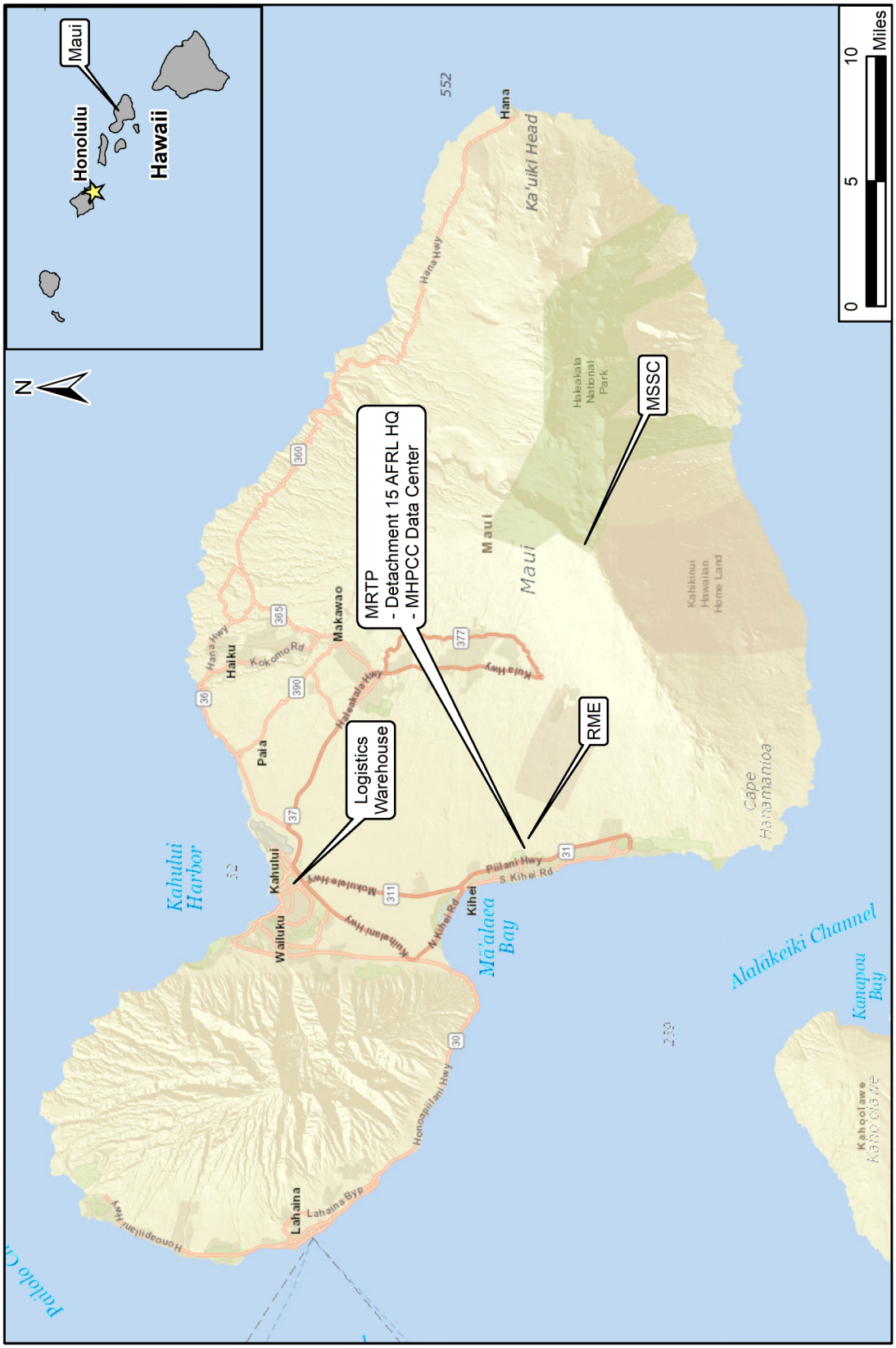
The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is to track the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL must continue to improve its capability to maintain SDA as the numbers, sizes, locations, and capabilities of man-made objects in space change over time.

The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical & Supercomputing Site (AMOS). AMOS has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Mount Haleakalā at an altitude of 10,000 feet (ft) above sea level. The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the Maui Research and Technology Park (MRTP) in Kīhei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistic warehouse in Kahului about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of the Detachment 15 AFRL HQ in a government-owned building on land leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space. Detachment 15 AFRL facilities are shown in Figure 1-1.

1.3 PURPOSE OF THE ACTION

The purpose of the proposed action is to consolidate multiple existing Detachment 15 AFRL operations into one location on Maui, provide adequate space to meet current mission needs, and provide a direct connection to the MSSC at the summit of Mount Haleakalā using existing dedicated fiber optic telecommunication services at the MRTP.



AFRL Facilities on Maui

Figure 1-1

1.4 NEED FOR THE ACTION

The proposed action is needed because the current contractor-leased facilities do not meet the Department of Defense (DoD) and Air Force antiterrorism/force protection (AT/FP) and security requirements of Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*. Currently, the leased facilities—the Detachment 15 AFRL HQ facility and warehouse—do not meet current AT/FP standards. In addition, the Detachment 15 AFRL HQ does not provide sufficient space for current mission needs.

The proposed action is also needed to increase the number of hours personnel spend on mission-related work by reducing time spent commuting to the summit of Mount Haleakalā. Personnel working between the Detachment 15 AFRL HQ and the MSSC must drive 1.5 hours each way along winding narrow roads. The length of the commute reduces time spent on mission activities and increases wear on vehicles and fuel consumption. Also, altitude sickness is common with employees who must work at the MSSC summit.

1.5 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.5.1 Interagency Coordination and Consultations

Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 U.S.C § 4231(a)) federal, state, and local agencies with jurisdiction that could be affected by the proposed action were notified during the development of this EA. Section 5.0 lists the agencies consulted during this analysis and appendix A contains copies of relevant correspondence.

1.5.2 Agency Consultations

Compliance with section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. § 1531 *et seq.*) and implementing regulations (50 CFR part 402), requires communication with the US Fish and Wildlife Service (USFWS) in cases in which a federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. The primary focus of this consultation is to request a determination of whether any of these species occur in the proposal area. If any of these species is present, a determination would be made of any potential adverse effects on the species. For this project, a Biological Assessment (BA) was prepared to support section 7 consultation with the USFWS. The findings from the BA and the USFWS determination are presented in section 4.3.2. Correspondence sent to the USFWS-Honolulu informing them of the proposed action and requesting data regarding applicable protected species is included in appendix B. The BA and the USFWS's determination that the proposed action may affect but is not likely to affect listed species is also provided in appendix B.

The project is also subject to compliance with Section 106 National Historic Preservation Act of 1966 (NHPA) (Public Law [Pub. L.) 102-575) and its implementing regulations, and the Hawai'i State environmental and historic preservation review legislation as presented in Hawai'i Revised Statutes (HRS) §343 and HRS §6E-42/Hawai`i Administrative Rules (HAR) §13-13-284. To fulfill the requirements of HAR §13-13-276 and the Secretary of the Interior's Standards for Archaeology and Historic Preservation, an archaeological inventory survey (AIS) was conducted and an archaeological assessment (AA) report was prepared. The findings from the AIS are presented in section 4.5.2. Correspondence related to section 106 consultation is included in appendix C and the AA is also presented in appendix C.

1.5.3 Consultations with Native Hawaiian Organizations

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (Public Law [Pub. L.) 102-575) and its implementing regulations in 36 CFR part 800 direct federal agencies to consult with

Native Hawaiian Organizations (NHOs) when a proposed or alternative action might have an effect on properties of religious and cultural significance. DoD Instruction 4710.03, *Consultation with Native Hawaiian Organizations*, is consistent with the NHPA. It establishes policy and assigns responsibilities for DoD consultation with NHOs. NHOs are organizations that serve and represent the interests of Native Hawaiians, with a primary and stated purpose of providing services to Native Hawaiians, and have expertise in Native Hawaiian affairs.

NHOs that have been invited to consult with the Air Force regarding the proposed action are listed in section 5.0 and correspondence with NHOs is provided in appendix C.

Aha Moku O Maui, a NHO that has shown interest in the project, requested a conference call with the Air Force to discuss the project and an onsite meeting to observe the proposed project site. The Air Force accommodated their request by holding a conference call on April 22, 2021 and an onsite meeting on May 14, 2021 with the NHO and its associates. The Aha Moku O Maui requested an additional meeting to discuss the project on September 29, 2021. The Air Force responded and requested that Aha Moku O Maui provide a date and time for the meeting. Further attempts have been made by the Air Force to coordinate another meeting with the Aha Moku O Maui, however, the NHO has not responded with a date and time to meet.

1.6 PUBLIC AND AGENCY REVIEW OF EA

Regulations in 32 CFR part 989 guide opportunities for public participation with respect to this EA and decision-making on the proposed action. For this EA, public involvement includes notifying local, Native Hawaiian, state, and federal agencies and the general public about the proposed action and alternatives; presenting the potential impacts that could result from the proposed action and alternatives; and soliciting agency and public comments on and/or issues with the EA analyses.

Following issuance of the Draft EA and Draft FONSI, the Air Force will observe a 30-day public comment period, beginning with the publication of the Notice of Availability (NOA) in *The Maui News* and the State of Hawai`i Office of Planning and Sustainable Development *Environmental Notice*. Correspondence announcing the availability of the Draft EA and FONSI will be sent to key federal, state, and county agencies and identified NHOs prior to the 30-day comment period for review and comment, as noted in section 5.0 of this EA. Interested parties will also be able to review the documents by accessing them online at *www.afrl.af.mil/environmental.* Additionally, copies of the Draft EA and FONSI will be available at the Maui Public Libraries listed below. During this review period, agencies and the public may submit comments regarding the proposed action, the EA, or the FONSI.

- Kīhei Public Library, 35 Waimāhaʻihaʻi Street, Kīhei, HI 96753
- Lahaina Public Library, 680 Wharf Street, Lahaina, HI 96761
- Makawao Public Library, 1159 Makawao Avenue, Makawao, HI 96768
- Wailuku Public Library, 251 S High Street, Wailuku, HI 96793

1.7 DECISION TO BE MADE

The EA evaluates whether the proposed action or alternatives would result in significant impacts on the human or natural environment. If significant impacts are identified, the AFRL would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the proposed action, or abandon the proposed action.

This EA is a planning and decision-making tool that will be used to guide the AFRL in implementing the proposed action in a manner consistent with Air Force standards for

environmental stewardship. The analysis presented in this document and feedback received from the public and from other agencies will inform decisions regarding the proposed project.

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SECTION 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action is the construction and operation of a permanent, government-owned SISL on the island of Maui, Hawai'i. The SISL would be a two-story, approximately 56,000-square-foot (-ft^2) building. The building would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level domes for telescopes; secure areas and facilities for processing classified information; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with AT/FP and security requirements in accordance with DoD UFC 4-010-01.

A conceptual building design of the SISL is shown in Figure 2-1. The first floor, or lower level, would include the warehouse, laboratories, secure areas, data center, operations center, and limited office space. The second floor, or upper level, would primarily be office and conference room spaces. The warehouse space would be accessible to trucks making deliveries or transporting equipment. A consolidated surface parking lot would accommodate about 150 vehicles. The project would also include supporting facilities and amenities such as utilities, paved access and parking, landscaping, bioretention measures to capture surface water runoff, and other site improvements to provide a complete and usable facility.

Figure 2-1. Conceptual SISL Building Design.

Note: The SISL building design could change as the design process progresses. Ground-level telescope domes to be relocated from the RME facility are not shown in the figure, but would be positioned on the southern side of the building (the lower right of the image). The conceptual site plan, shown in Figure 2-3, shows the proposed location of the telescope domes.

The SISL would consolidate operations from four existing Detachment 15 AFRL facilities on Maui: the Detachment 15 AFRL HQ (building 550), data center (building 590), RME facility, and warehouse space. Once the new building is constructed, about 150 personnel from the Detachment 15 AFRL HQ, about six personnel from the RME facility, and about five personnel

from the warehouse would relocate to the SISL. Equipment from those locations would be relocated to the SISL, as needed. No new jobs are anticipated as part of the proposed action.

Once personnel and equipment have been relocated to the SISL, leases would be terminated for buildings 550 and 590 in the MRTP and the warehouse space in Kahului. For the RME facility, after telescopes and other equipment are relocated to the SISL, the property would be returned to the leaseholder, the Haleakalā Ranch Company, in the condition specified by the lease. The RME building might be demolished, depending on the preference of the leaseholder. Closure of the RME lease will require separate NEPA review and is not part of this analysis.

2.2 SELECTION STANDARDS

NEPA and the CEQ regulations mandate the consideration of reasonable alternatives for the proposed action. "Reasonable alternatives" are those that could be used to meet the purpose of and need for the proposed action. Per the requirements of 32 CFR part 989, selection standards are to be used to identify alternatives for meeting the purpose of and need for the proposed action. Only alternatives determined to be reasonable relative to their ability to fulfill the purpose of and need for the proposed action and that meet the selection standards require detailed analysis.

For the SISL proposed action, an alternative must meet the following selection standards:

- Security: The site must be able to accommodate a design that would comply with AT/FP setbacks and other security requirements in accordance with the DoD UFC 4-010-01.
- Location: The Detachment 15 AFRL SISL must be located on the island of Maui, Hawai‘i, to continue supporting SDA research, development, and other mission functions; specifically, the SISL must be connected to the existing MSSC at the summit of Mount Haleakalā via dedicated high-speed fiber-optic links. The links cannot be connected and run off Maui.
- Siting: The site must be located near sea level in order to preclude altitude sickness and must not have conditions that are incompatible with laboratory and optical operations (e.g., it cannot be an extremely dust-prone area). Utility interconnections must be within reasonable proximity of the site, and the site must not present any major impediments, such as being located on a steep slope.
- Operations: Renovation or construction must not adversely impact mission-essential training and support services and it must provide necessary workspace to reduce commutes to the summit of Mount Haleakalā.
- Availability: The site must be readily available for use (i.e., available for acquisition at a reasonable price).
- Land use: Renovation, construction and operation must be consistent with current or identified land use as determined by local zoning requirements.

2.3 SCREENING OF ALTERNATIVES

To identify potential SISL sites on Maui, a notice seeking available land was issued by the Air Force in 2016. The notice was issued solely for planning purposes, and responses to the notice were used for market research to help the Air Force determine a strategy for developing a new SISL facility. The Air Force considered all responses to the notice but identified many as not being advantageous to the United States or mission. Only responses to the notice and site options determined from internal planning that were considered the most advantageous were carried forward for further evaluation and resulted in the following five alternatives:

- Alternative 1: Construction of a SISL at the MRTP site
- Alternative 2: Construction of a SISL at the RME site
- Alternative 3: Construction of a SISL at the Army National Guard Armory site
- Alternative 4: Construction of a SISL at the Kula Highway site
- Alternative 5: Renovation of MRTP building 550 (the current Detachment 15 AFRL HQ)

These alternatives are shown in Figure 2-2. As shown in Table 2-1, the Air Force applied the selection standards described in section 2.2 to these alternatives to determine which alternative(s) could accommodate construction of a SISL and fulfill the purpose of and need for the action.

Table 2-1. Project Alternatives Compared to Selection Standards

Project alternative	Meets selection standards					
	Security	Location	Siting	Operations	Availability	Land use
Alternative 1: Construction of a SISL at the MRTP site	Yes	Yes	Yes	Yes	Yes	Yes
Alternative 2: Construction of a SISL at the RME site	Yes	Yes	Yes	Yes	No	Yes
Alternative 3: Construction of a SISL at the Army National Guard Armory site	Yes	No	No	No	Yes	Yes
Alternative 4: Construction of a SISL at the Kula Highway site	Yes	No	Yes	Yes	No	No
Alternative 5: Renovation of MRTP Building 550 (current Detachment 15 AFRL HQ)	Yes	Yes	Yes	No	No	Yes
No action alternative	NA	NA	NA	NA	NA	NA

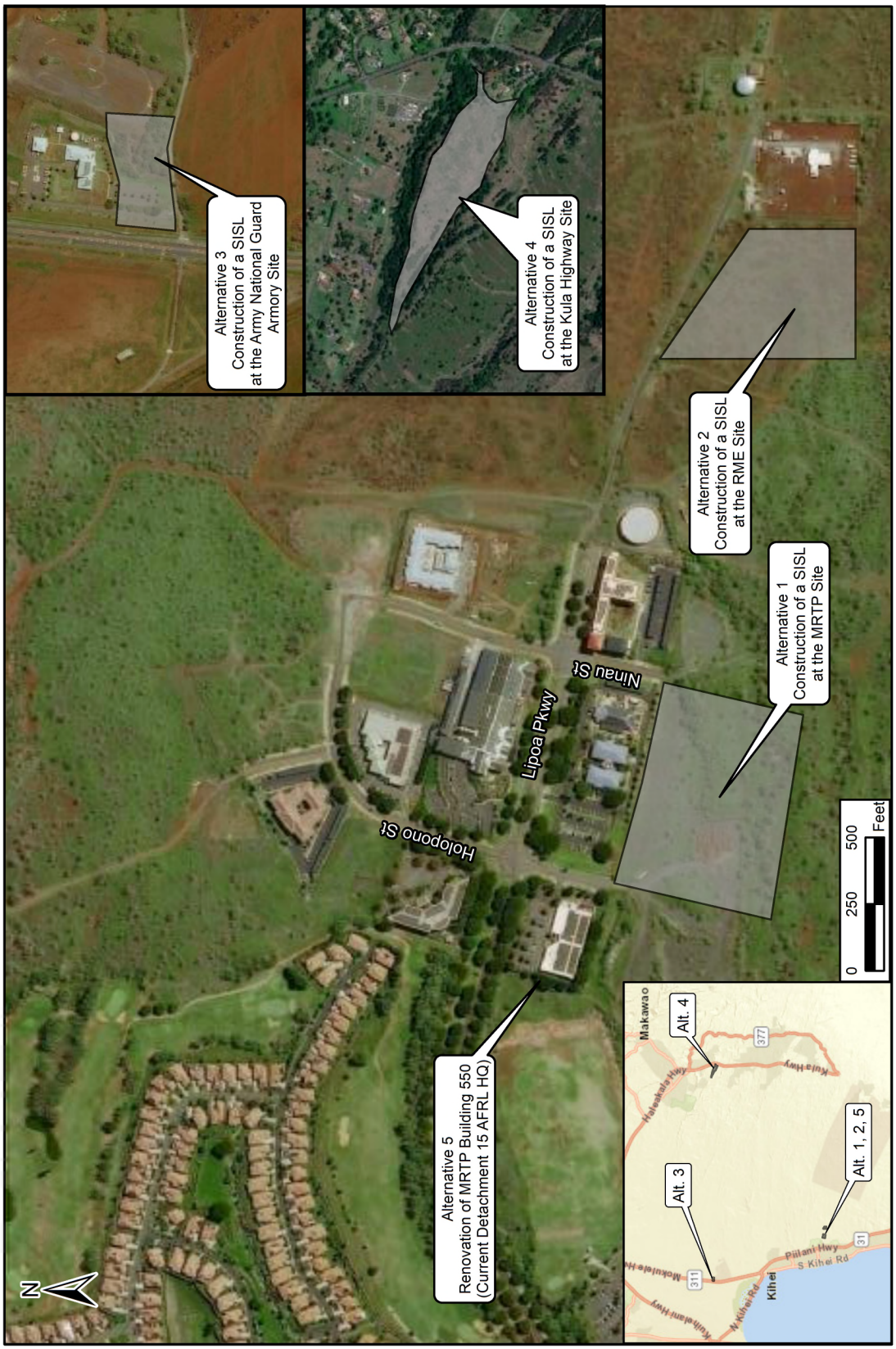
Note: NA = not applicable.

2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The Air Force eliminated alternatives 2 through 5 from further consideration based on the selection and screening process.

2.4.1 Alternative 2: Construction of a SISL at the RME Site

The Air Force evaluated an alternative site referred to as the "RME site," which is located next to the existing RME facility on land owned by the Haleakalā Ranch Company (Figure 2-2). The RME site originally met all the selection standards. The land has become unavailable for use, however, and thus no longer meets all the selection standards.



Location of Proposed Sites for SISL Construction

Figure 2-2

Note: Site boundaries are approximate.

2.4.2 Alternative 3: Construction of a SISL at the Army National Guard Armory Site

The Air Force evaluated an alternative site referred to as the "Army National Guard Armory site," which is located near an Army National Guard recruiting office and the Maui Raceway Park off the Maui Veterans Highway in Kīhei (Figure 2-2). The Army National Guard site did not meet all the selection standards because of concerns associated with utility requirements and unfavorable conditions associated with dust and noise in the area that might affect SISL operations.

2.4.3 Alternative 4: Construction of a SISL at the Kula Highway Site

The Air Force evaluated an alternative site referred to as the "Kula Highway site" which is located off the Kula Highway in Kula, just outside of Pukalani (Figure 2-2). The Kula Highway site did not meet all the selection standards because it is zoned for agricultural use and would need to be subdivided to meet acreage requirements.

2.4.4 Alternative 5: Renovation of MRTP Building 550 (Current Detachment 15 AFRL HQ)

The Air Force also evaluated renovating MRTP building 550. MRTP Building 550 is currently leased as the Detachment 15 AFRL HQ (Figure 2-2). Renovating the building would not meet the purpose of and need for the proposed action because the building would not provide the space needed to consolidate operations from the existing Detachment 15 AFRL facilities; and renovation activities would interrupt operations.

2.5 DESCRIPTION OF THE ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

The Air Force carried forward for detailed analysis alternative 1 and the no action alternative based on the selection and screening process.

2.5.1 Alternative 1: Construction of a SISL at the MRTP Site (Proposed Action)

The Air Force evaluated an alternative site referred to as the "MRTP site," which is located in the MRTP in Kīhei. Directly north of the proposed site, and also within the MRTP, is office and institutional space that includes the existing Detachment 15 AFRL HQ, MHPCC, Maui Research and Technology Center, and Kīhei Charter High School. On the east, south, and west, the site is bounded by undeveloped MRTP land. The site is identified as Tax Map Key (TMK) [2] 2-2-24:15 por., Lot 3-D-2 and Lot 3-D-3, 9.3 acres.

The MRTP is on Maui's south side and is sited near sea level east of Pi'ilani Highway on approximately 432 acres. The MRTP was created in 1986 to attract nonpolluting, high-technology-based industries and manufacturing and research companies to Maui. To encourage development, the MRTP master plan update prepared in 2010 envisioned transforming the single-use large-lot research and technology campus into an integrated and vibrant mixed-use community focused around a regional high-technology employment base (CHPI 2010).

The MRTP site, which meets all the Air Force selection standards, is within an undeveloped area of the MRTP and consists of approximately 10 acres. The site is accessible from South Holopono Street and Ninau Street, which are accessed by Lipoa Parkway, as shown in Figure 2-2. Both South Holopono Street and Ninau Street, as well as utilities, would be extended by the MRTP.

The proposed SISL would be compatible with applicable DoD and Air Force design standards and would be designed as permanent construction in accordance with the DoD UFC 1-200-01, *DoD Building Code*, and UFC 1-200-02, *High Performance and Sustainable Building Requirements*. This design would also comply with DoD AT/FP requirements per UFC 4-010-01. In addition to UFC design requirements, the design would also be governed by International Building Code, Architectural Barriers Act of 1968 (Pub. L. 90-480), and National Fire Protection

Association (NFPA) guidelines and other appropriate standards and references. Collectively, these codes and standards would ensure that the SISL design complies with current regulations, and fire and life safety criteria. Building construction requirements would also comply with Title 16 (for building and construction) and Title 19 (for zoning) of the Maui County Code of Ordinances. A conceptual site plan for the proposed SISL is shown in Figure 2-3.

Further, sustainable strategies and features would be integrated into the design to minimize nonrenewable energy consumption; conserve resources; minimize adverse effects on the environment; and improve occupant productivity, health, and comfort. The design and construction would incorporate UFC 1-200-02 building requirements and comply with Air Force Sustainable Design and Development policy.

2.5.1.1 AT/FP Measures

The site would be considered a military installation after acquisition and development of the property. The design would comply with DoD AT/FP requirements per UFC 4-010-01.

2.5.1.2 Parking

Parking for the SISL facility would consist of a consolidated surface parking lot of 150 spaces, including one space for a trailer used for hauling equipment. The parking lot and access drives would be asphalt and consist of curb and gutter to manage stormwater. Access to the site and parking would be from both South Ninau and South Holopono streets. South Ninau Street access would be used mainly for service and South Holopono Street would be used for general access. Both roads would be extended by the MRTP to provide access to the site.

2.5.1.3 Utilities and Infrastructure

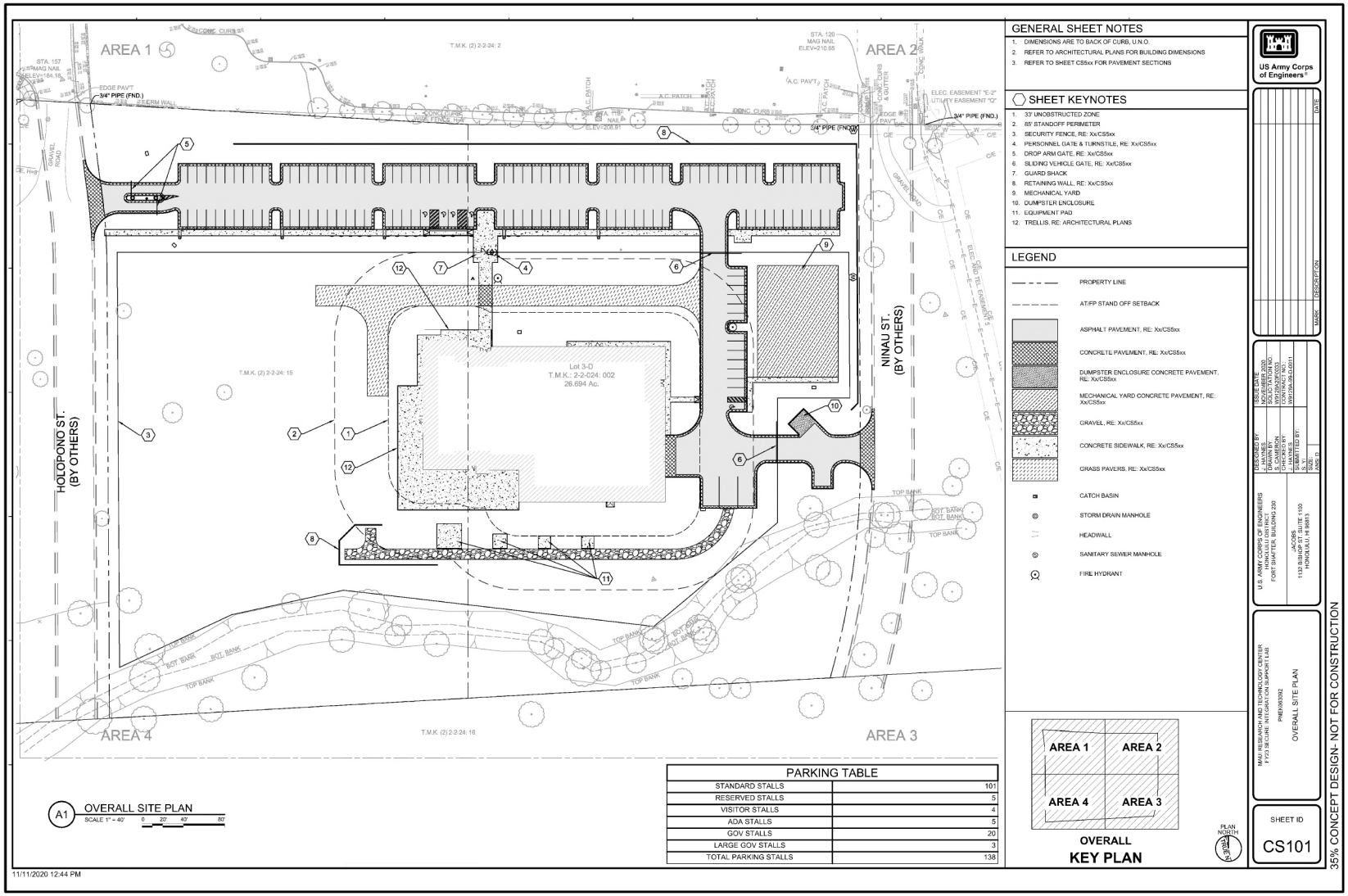
Available utilities within the MRTP include water, sewer, electricity, and communication systems. Service would be extended by the MRTP when South Holopono Street and South Ninau Street are extended along the western and eastern site boundaries. Water for the MRTP is supplied from an existing County of Maui reservoir located at the eastern end of Lipoa Road. Potable water service to the SISL would be provided by a water lateral, including a meter and backflow preventer. Fire water service would be provided by a separate lateral, including a separate meter and backflow preventer, and a fire loop around the building with on-site fire hydrants.

Wastewater would be directed from the SISL to an existing sewer system on South Holopono Street.

An emergency standby generator and fuel supply sized to carry the full building load for a 2-week period is included in the design. The generator needed to meet the project requirements is estimated to be 2,500 kilowatts and would have an exhaust system meeting US Environmental Protection Agency (EPA) and permitting requirements. The diesel fuel system storage would consist of a 12,000-gallon tank and three 20,000-gallon tanks. The horizontal aboveground tanks would be double walled, have leak detection systems, be sited per AT/FP clearance requirements, and comply with NFPA and UFC design requirements.

2.5.1.4 Exterior Lighting

Parking lot lighting would consist of full-cutoff dark-sky-type light-emitting diode (LED) poles. Security lighting sited around the secured perimeter would consist of full-cutoff dark-sky-type LED pole-mounted floodlights. The exterior lighting would be equipped with user-accessible control system overrides to enable personnel to turn lights off when using telescoping equipment.



Conceptual Site Plan

Figure 2-3

2.5.1.5 Stormwater Management

Surface and swale drainage would be constructed to accommodate surface runoff from the increase in impervious site covering from additional parking and roadway areas. The general drainage pattern would be maintained from northeast to southwest of the building via a collection system of drain inlets, underground piping, and a detention basin (bioretention) at a lower corner of the site. These measures would be designed in an integrative process with the site grading, building, hardscape, and landscape design. Low impact development (LID) design would be implemented as described in UFC 3-210-10, *Low Impact Development*, to provide decentralized hydrologic source control for stormwater while maintaining existing predevelopment hydrology to the maximum extent practicable. The design would also comply with local regulations for stormwater management.

Any soil fill material brought to the site for surface compaction and stabilization would be verified for contaminant-free components and properly compacted and keyed into the existing topography so future erosion of the area would be minimized. Review of geotechnical and analytical data would ensure the design adheres to appropriate measures.

2.5.1.6 Construction Staging Areas

Three construction staging areas are being considered for the proposed action, one each of which is sited immediately to the west, east, and south of the proposed SISL site. The selected area or areas would be temporarily used to store equipment and materials required for SISL construction. Once construction was completed, equipment and materials would be removed and the areas graded and soil stabilized as required. The east and west staging areas are sited within TMK [2] 2-2-24:15 and the south staging area is in TMK [2] 2-2-24:16. The staging areas are part of the MRTP and are shown in Figure 2-4.

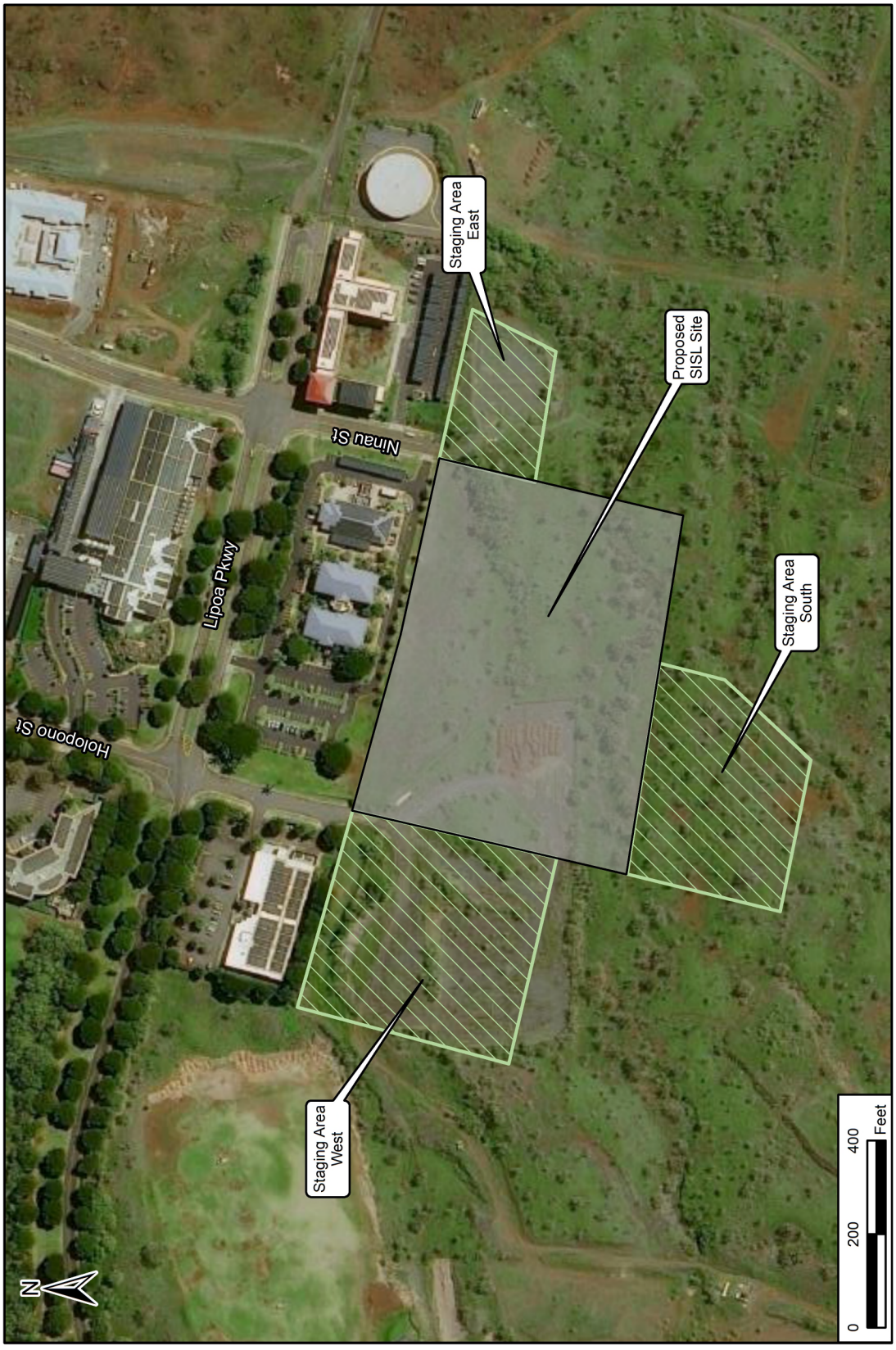
2.5.1.7 Demolition, Removal, and Disposal

The SISL site is an undeveloped lot and would require no demolition activity. The site would be cleared, compacted, and in-filled as necessary to provide stability and a suitable building site for the new construction.

Once operations are relocated from the RME facility to the SISL, the Air Force would return the RME land to the leaseholder in the condition specified by the lease, and the remaining RME building and supporting facilities would either be demolished or remain intact, depending on the preference of the leaseholder. Closure of the RME lease would require separate NEPA review and is not part of this analysis. The RME facility consists of approximately 3.5 fenced acres landscaped with lava rock to allow vehicle access. Buildings within the fenced area include a steel-framed, metal-clad main building that is approximately 4,300 ft^2; a wood-framed guardhouse of approximately 80 ft^2; and a wood-framed, open air physical training (PT) structure of about 1,150 ft^2. Other structures include pad-mounted aluminum and fiberglass domes, a 2,000-gallon septic holding tank, and portable water and fire suppression water tanks. The main building and guardhouse were built in 1988, and the PT structure was built in 2004.

2.5.2 No Action Alternative

Inclusion of the no action alternative, prescribed in regulations issued by CEQ, serves to provide a benchmark against which the potential effects of federal actions can be evaluated. Under the no action alternative, Detachment 15 AFRL would not construct a SISL and would instead continue using the four facilities it currently operates. These facilities would continue not meeting DoD and Air Force AT/FP requirements, and personnel would continue to make daily drives to the summit, limiting the amount of time spent on advancing research and development, which would continue to place constraints on the Air Force's ability to monitor space activity and secure



Proposed Construction Staging Areas

Figure 2-4

Note: Site boundaries are approximate.

space assets. Personnel commuting to the summit would continue to suffer from the effects of altitude sickness, and there would be continued vehicle wear and fuel consumption as a result of their commutes.

2.6 SUMMARY OF POTENTIAL ENVIRONMENTAL CONSEQUENCES

Table 2-2 summarizes the potential impacts associated with the proposed action and the no action alternative. The summary is based on information discussed in detail in Section 4.0 of this EA and includes a concise definition of the issues addressed and the potential environmental impacts.

Table 2-2. Comparison of Effects of the No Action Alternative and the Proposed Action

Resource area	No action alternative	Proposed action
Aesthetic and Visual Resources	No effect attributable to the SISL action. The visual landscape of the proposed site would remain unchanged.	Short-term minor adverse effects from construction activities, which would cease upon completion of project. Long-term negligible adverse effects from the visual presence of the SISL would be expected however, the design, construction, and operation would comply with design guidelines and zoning and the overall aesthetic would remain that of a research and technology park.
Water Resources	No effect attributable to the SISL action. The action would not occur, and there would be no ground disturbance. The proposed site would remain unchanged.	Short-term negligible adverse effects on water resources would be expected from soil disturbance associated with construction, which could result in a minor quantity of sediment in stormwater runoff. Prior to grading activities, authorization would be obtained under the NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activities from the State of Hawai`i Department of Health, and stormwater management requirements would be implemented in accordance with the EISA. No significant adverse effects would be expected on groundwater and coastal consistency.
Biological Resources	No effect attributable to the SISL action. The action would not occur and biological conditions at the site would remain unchanged.	The BA prepared for this effort concluded that the proposed action may affect but is not likely to adversely affect listed species with the potential to occur in the project area. USFWS provided a letter on July 7, 2021 concurring with the determination that the proposed action may affect, but is not likely to adversely affect the 14 listed species from the USFWS list of species that may be present in the Action Area.

Resource area	No action alternative	Proposed action
Geological Resources (topography, soils, seismicity, prime farmland soils)	No effect attributable to the SISL action. The action would not occur, and there would be no ground disturbance. The proposed site would remain unchanged.	Short-term minor adverse effects on soil would be expected from construction activities, which would cease upon completion of project. No significant adverse effects on topography, seismicity, or prime farmland soils would be expected.
Cultural Resources	No effect attributable to the SISL action. The action would not occur, and there would be no ground disturbance. The proposed site would remain unchanged.	No significant adverse effects on cultural resources would be expected. An archaeological inventory survey confirmed that no cultural resources are located on the surface of the APE and subsurface cultural resources are unlikely to be identified.
Air Quality	No effect attributable to the SISL action. The action would have no adverse effects on air quality, and emissions would remain unchanged.	Short- and long-term minor adverse effects would be expected. Short-term effects would be due to emissions generated during construction, and long-term effects would be due to limited operational emissions from the SISL. The Air Force Air Conformity Applicability Model was used to determine air emissions.
Noise	No effect attributable to the SISL action. The overall noise environment would remain unchanged when compared to existing conditions.	Short- and long-term minor adverse effects on the noise environment would be expected. Short-term minor effects would be from construction activities, which would cease upon completion of project construction. Long-term minor effects would be from normal building operation and maintenance.
Roadways and Traffic	No effect attributable to the SISL action. The traffic volume on area roadways would remain unchanged.	Short- and long-term negligible adverse effects and long-term negligible beneficial effects on roadways and traffic would be expected. Short-term effects would be from an increase in construction vehicles supporting SISL construction. Long-term effects would be expected from the 5 AFRL logistics warehouse employees relocating the new SISL. The 156 remaining AFRL employees relocating to the new SISL already travel area roads, including Lipoa Parkway, to the existing AFRL facilities in the MRTP. Beneficial effects would be expected from eliminating vehicular trips to the warehouse and from reduced vehicular trips to the summit.

Resource area	No action alternative	Proposed action
Infrastructure and Utilities	No effect attributable to the SISL action. Existing infrastructure and utility system conditions and usage would remain unchanged.	Short- and long-term minor adverse and long-term beneficial effects on infrastructure and utilities would be expected from implementing the proposed action. Short-term effects would be expected from infrastructure and utilities use during construction. Long-term minor adverse effects would be expected from construction related waste disposed in the local landfill. Long-term beneficial effects would be expected from reduced demand on utilities by consolidating personnel and operations into a single facility with energy-efficient elements built in as compared to a similar number of personnel working in separate older facilities.
Socioeconomics (employment, industry, and income)	No effect attributable to the SISL action. The proposed action would not be implemented. Currently occupied spaces would continue to be leased and personnel would continue to make long commutes.	Short-term minor beneficial economic effects would be expected. The proposed action would result in a short-term minor increase in local employment, income, and business sales from the construction of the SISL.
Environmental Justice and Protection of Children	No effect attributable to the SISL action. The proposed action would not be implemented, and existing conditions would remain unchanged. The no action alternative would not adversely affect environmental health, human health, or safety conditions for environmental justice populations or children in the region.	No effects would be expected on environmental justice or protection of children. The proposed action would not disproportionately affect environmental justice populations or children by excluding persons, denying persons benefits, or subjecting persons to discrimination or disproportionate environmental or human health risks.
Sustainability and Greening	No effect attributable to the SISL action. Currently occupied spaces would continue to use energy and water at their current consumption levels, no new resources would be consumed nor waste created from construction activities, and fuel consumption would remain unchanged from AFRL personnel continuing to make long commutes.	Short-term minor adverse and long-term minor beneficial effects would be expected. Adverse effects would result from resource use and the unavoidable creation of waste during facility construction and converting some open space to impervious surface. Beneficial effects would be expected from incorporating sustainability measures into the SISL development process from design through construction to operations.

Resource area	No action alternative	Proposed action
Hazardous Materials and Waste	No significant adverse effects on hazardous materials and waste would be expected. Existing hazardous material and waste functions would continue at current rates.	Short-term minor adverse effects and long-term negligible adverse effects would be expected. Short-term minor adverse effects would result from the use of hazardous material and generation of waste during construction, Over the long term, negligible adverse effects would result from the handling, use, and management of hazardous materials, the generation of waste, and fuel storage once the SISL is operational
Health and Safety	No significant adverse effects on health and safety would be expected. Mission related activities would continue to be managed using established health and safety plans and procedures and the AFRL would need to reevaluate facility AT/FP and security measures.	Short-term minor adverse effects, negligible adverse effects and long-term beneficial effects would be expected. Short-term minor effects would result from construction activities. Negligible adverse effects would result from continued compliance with health and safety regulations and procedures. Long-term beneficial effects would result from implementing AT/FP measures, fewer vehicle trips to the summit and a reduction in personnel having altitude sickness from working at eh summit.

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SECTION 3.0 AFFECTED ENVIRONMENT

The Air Force has focused its analysis in this EA on the components of the environment that would be affected by implementing the proposed action within the area known as the "region of influence" (ROI). The ROI boundaries vary depending on the nature of each resource carried forward for analysis. For instance, the ROI for air quality, traffic, and socioeconomics can extend over a larger local or regional area. For this analysis, the ROI, unless otherwise stated for a particular resource, is the MRTP, which includes the proposed project site and construction staging areas, as shown in Figure 2-4.

3.1 SCOPE OF ANALYSIS AND ANALYTICAL APPROACH

This section describes the environmental conditions for each resource area, either man-made or natural, that could be affected by implementing the proposed action or the no action alternative. It identifies resource areas eliminated as well as those carried forward for detailed analysis.

3.1.1 Resources Areas Eliminated from Detailed Analysis

Resource areas upon which the proposed action would have no adverse impacts have not been carried forward for detailed analysis in this EA. Those resource areas and the rationale for their elimination are presented below.

Land Use. Implementing the proposed action would not result in any impacts on land use.

The MRTP—and, therefore, the site for the proposed action—are in an area zoned as the "MRTP District" (County of Maui 2021a). There are multiple districts within the MRTP that include mixed-use, employment/campus, residential, civic, and open space/parks. The proposed SISL facility would be in the employment/campus district and construction would be consistent with established zoning requirements and compatible with existing land uses. Further, the proposed action would adhere to established MRTP design and construction guidelines.

Facilities currently occupied by the AFRL, including the Detachment 15 AFRL HQ space, would be returned to leaseholders.

Recreation. Implementing the proposed action would not result in any impacts on recreation resources. The proposed SISL would be constructed in the MRTP on undeveloped land zoned for such development. The site is not in an area actively used for recreational purposes.

Socioeconomics (Population, Public Services). Implementing the proposed action would have no effects on population or public services. The proposed action would not result in changes to the local population as no new SISL operation jobs are anticipated as part of the proposed action; staff would be transferred from other facilities on Maui to the SISL. There would be no increase in demand for public services such as emergency/medical services or public schools.

3.1.2 Resources Areas Carried Forward for Detailed Analysis

The resource areas carried forward for detailed analysis are aesthetics and visual resources, water resources, biological resources, geological resources, cultural resources, air quality, noise, roadways and traffic, infrastructure and utilities, socioeconomics, sustainability and greening, hazardous materials and waste, and health and safety.

3.1.3 Reasonably Foreseeable Actions

Effects on environmental resources can result from individually minor, but collectively substantial, actions taken over time. The CEQ NEPA regulations, issued on July 16, 2020, eliminate use of the term "cumulative impact" as a category of "effects or impacts" (40 CFR § 1508.1(g)(3)). In their definition of "effects or impacts," however, the regulations include effects:

> …that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives. (40 CFR § 1508.1(g))

The regulations limit the review of effects and impacts by acknowledging that "Effects should generally not be considered if they are remote in time, geographically remote, or the product of a lengthy causal chain" (40 CFR § 1508.1(g)(2)).

To fulfill these requirements, this EA considers reasonably foreseeable actions that might have reasonably close causal relationships to the proposed action in this EA analysis. It looks at those actions as well as at current or past actions with ongoing impacts, the effects of which could combine with those of the proposed action to produce an overall impact. This EA does not consider future actions that are speculative.

The core of the MRTP near the proposed SISL site has been gradually developed for over 20 years and has about 10 buildings consisting of office, institutional, and industrial uses with various tenants, including the Detachment 15 AFRL HQ. Most recently, within the last 5 years, a charter school and an office building have been constructed close to the proposed SISL location. All the buildings in the MRTP District are constructed in accordance with approved design guidelines and local zoning and planning requirements. Several lots are available within the MRTP, but no development projects have been proposed for the near term by the proposed SISL site. Within the next couple years, however, some projects could begin at the northern end of the MRTP in its mixed-use and residential areas.

In reviewing a Maui County Department of Planning graphic for Waikapu, Maalaea, and North Kīhei development projects dated 2016 the Air Force identified several committed development projects within about 1 mile of the proposed SISL site, including some in the MRTP. Based on a review of 2020 aerial photography from the Maui County Tax Assessor's Office, however, only three projects near the proposed SISL location have been initiated and are in various stages of construction: construction of Kīhei High School, development of a resort property, and construction of an apartment complex. West of the MRTP, golf villas along Lipoa Parkway have been completed. Of the remaining projects identified as "committed," the closest to the proposed SISL is a proposed housing development immediately west of the site that would overlook the Maui Nui Golf Club.

The Air Force also reviewed pending development permit applications within the Kīhei-Makena Community Plan, which include hotel expansion and improvement projects, residential development, and a cement plant expansion. None of those proposed projects, however, are close to the proposed SISL (County of Maui 2021a).

After reviewing county planning information and communication with MRTP management, the Air Force identified no reasonably foreseeable projects that would have a reasonably close causal relationship to the proposed action. Identified projects were either speculative in nature, were temporally or geographically remote, or would require a lengthy causal chain to connect them with the proposed action; therefore, none of those projects were carried forward for detailed evaluation in this EA. Because no projects were identified, reasonably foreseeable actions are not discussed further in this analysis.

3.2 AESTHETIC AND VISUAL RESOURCES

3.2.1 Definition of Resource

Visual resources for this EA are defined as the natural and human features of the landscape that comprise the aesthetic qualities of an area. The importance of these qualities and the visual character of the SISL facility are influenced by social considerations, including public value placed on the resource, public awareness of the area, and general community concern for visual resources in the area. Scenic views or vistas are the panoramic public view access to natural features, including open space, striking or unusual natural terrain, and unique urban or historic features (Waller and Munekiyo & Higara 2012).

3.2.2 Existing Conditions

The site of the proposed SISL facility is on the southern slope of Mount Haleakalā, mauka (landward) of the town of Kīhei. Notable visual resources in the area include the Pacific Ocean and the island of Kahoolawe to the west, and Haleakalā, the dormant volcano that forms 75 percent of the island of Maui, to the east. The site has a view of the ocean, but it is not located within a scenic corridor. Piʻilani Highway, which is approximately 2,000 ft west of the site, is designated as a scenic corridor of medium resource value by the County of Maui Department of Planning (County of Maui 2009).

The employment/campus subdistrict of the MRTP, where the SISL facility is proposed to be sited, is characterized by short blocks, buildings built on front property lines, and ample pedestrian amenities. Under county zoning regulations, office/research and development lots have a 50-ft maximum building height, a 0-ft minimum and 15-ft maximum front setback, a 5-ft maximum rear setback, and a no-minimum side setback; parking access is by alley, side drive, or secondary street (County of Maui 2021b).

The 2013 EIS for the MRTP master plan update states that nonresidential development at the MRTP will not exceed 50 ft in height and comprehensive design guidelines will restrict building height, size, layout, and architectural design. The master plan update's design guidelines maintain views of the summit of Mount Haleakalā and the Pacific Ocean. Open space is integrated throughout the MRTP and, together with the proposed street layout, creates and frames view corridors throughout the park to the Pacific Ocean and to Haleakalā. All buildings within the MRTP must be designed in accordance with the design guidelines, as well as applicable county standards. Existing buildings at the MRTP do not exceed 45 ft in height and are screened by the existing golf course development when viewed from the Piʻilani Highway. The MRTP site is located between two gulches that provide natural buffers along the northern and southern edges of the property (CHPI 2013).

3.3 WATER RESOURCES

3.3.1 Definition of Resource

Water resources include surface water (oceans, lakes, ponds, rivers, streams, wetlands, and floodplains), stormwater, groundwater, and coastal zone. Federal statutes, policies, and regulations applicable to water resources include the Clean Water Act (CWA) (33 U.S.C. §§ 1251–1387); EO 11988, *Floodplain Management;* EO 11990), *Protection of Wetlands;* EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input;* the Coastal Zone Management Act (CZMA) (16 U.S. C. §§ 1451 et seq.); and the Energy Independence and Security Act of 2007 (EISA) (Pub. L. 110-140).

Section 401 of the CWA regulates discharges into waters of the United States and a federal agency may not issue a permit or license to conduct any activity that might result in any discharge into those waters unless a section 401 water quality certification has been issued. CWA Section

404 regulates the discharge of dredged or fill material into waters of the United States, including wetlands. It requires a permit before dredged or fill material may be discharged into those waters unless the activity is exempt.

EO 11988 sets forth the responsibilities of federal agencies for reducing the risk of flood loss or damage to personal property, minimizing the impacts of flood loss, and restoring the natural and beneficial functions of floodplains.

EO 11990 requires that federal agencies take action to avoid adverse effects associated with the destruction or modification of wetlands, to avoid new construction in wetlands when there is a practicable alternative, and to preserve and enhance the natural beneficial values of wetlands.

EO 13690 incorporates the Federal Flood Risk Management Standard to ensure that agencies expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to address current and future flood risk and ensure that projects funded with taxpayer dollars last as long as intended.

Section 307 of the federal CZMA requires federal agency activities and development projects affecting any coastal use or resource to be undertaken in a manner consistent to the maximum extent practicable with the state's Coastal Zone Management (CZM) Program. Hawai'i's CZM objectives and policies (Hawai`i Revised Statutes section 205A-2) and the Special Management Area (SMA) Rules for the Maui Planning Commission (chapter 202) have been developed to preserve, protect, and, where possible, restore the natural resources of the coastal zone of Hawai'i.

Section 438 of the EISA establishes stormwater design requirements for federal construction projects that disturb a footprint larger than 5,000 ft^2 of land. Guidance is provided in EPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009).

3.3.2 Existing Conditions

3.3.2.1 Surface Water and Stormwater

The SISL project site is located approximately 1.1 miles east of the coastline in a transitional landscape between coastal lands to the west and the steeper volcanic highlands of Haleakalā to the east. There are no surface waters within the project site, and stormwater either infiltrates into the ground or runs off the site as sheet flow in an east-to-west direction towards the Maui Nui Golf Course and Pi'ilani Highway. A drainage ditch runs along the lower south boundary of the project area.

Water resources in the vicinity of the project area are shown in Figure 3-1. According to the USFWS National Wetlands Inventory Map, Waipu'ilani Gulch, a linear freshwater forested/shrub wetland, is approximately six-tenths of a mile north of the project site and Waimāha'iha'i Gulch, a riverine wetland, is approximately one-half mile south of the project site. The next nearest wetland feature is a palustrine wetland located approximately four-fifths of a mile west of the project site. There are no hydric soils or wetlands within the project area (USAF 2021).

The Federal Emergency Management Agency's Flood Insurance Rate Map indicates that the site of the proposed action is not in a floodplain. The site is within Flood Zone X an area of minimal flood hazard defined as higher than the elevation of the 0.2 percent-annual chance (or 500-year) flood (Figure 3-1).

The SISL project site is outside of the Tsunami Evacuation Zone (HEMA 2021).

LEGEND

- Proposed Site
- Staging Area
- Lake/Pond
- Stream

Flood Zone

- AE
- AH
- AO
- VE

Wetland Type

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Riverine

Water Resources

Figure 3-1

Note: Site boundaries are approximate. Source: FEMA 2020; NHD 2020; NWI 2020.

3.3.2.2 Groundwater

Groundwater beneath the MRTP occurs as a brackish basal lens overlying saline groundwater at depth and in hydraulic contact with seawater shore. This groundwater body has been named the Kama‘ole Aquifer by the Hawai‘i Commission on Water Resource Management. A geotechnical investigation conducted in 2021 included six borings ranging from 8 feet to 25 feet in depth and groundwater was not encountered in any of the borings (Masa Fujioka & Associates 2021). A detailed estimate of this aquifer's rate of recharge and resulting groundwater flow rate was provided in *Effects of Agricultural Land-Use Changes and Rainfall on Groundwater Recharge in Central and West Maui, Hawai‘i, 1926–2004* (USGS 2007). The report estimated that the aquifer's total recharge is 37 million gallons per day (MGD), equivalent to an average of about 3.4 MGD per coastal mile of the aquifer. Pumpage in the aquifer at the time was approximately 4–5 MGD, most of it used for golf course irrigation in the Wailea-Makena area to the south and unlikely to significantly influence the rate of flow beneath the MRTP (CHPI 2013).

3.3.2.3 Coastal Consistency

The SISL project site is not located within the SMA limits for the Island of Maui that would fall under county authority and, therefore, does not require an SMA permit. The CZM area encompasses the entire state of Hawai‘i, however, and proposed federal actions affecting any coastal use or resource must be reviewed by the state's CZM Program to ensure that those actions are consistent with state-enforceable policies.

A CZM federal consistency review has been incorporated into this EA and provided as appendix D. The review analyzes the project's consistency with CZM objectives and policies centered around 10 areas: (1) recreational resources, (2) historic resources, (3) scenic and open space resources, (4) coastal ecosystems, (5) economic uses, (6) coastal hazards, (7) managing development, (8) public participation in coastal management, (9) beach protection, and (10) marine resources. Information on the submittal and findings of the CZMA federal consistency determination are provided in Section 4.2.2.3.

3.4 BIOLOGICAL RESOURCES

3.4.1 Definition of Resource

Biological resources include native, non-native, and invasive plants and animals; sensitive and protected floral and faunal species; and the habitats in which they exist, such as wetlands, forests, and grasslands. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. This section describes the primary federal statutes and EOs that form the regulatory framework for the evaluation of biological resources. The project area for biological resources includes the land immediately surrounding the facilities proposed for use.

3.4.1.1 Endangered Species Act

The ESA established protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. Sensitive and protected biological resources include plant and animal species listed as threatened, endangered, or special status by the USFWS and National Marine Fisheries Service. Under the ESA, an "endangered species" is defined as any species in danger of extinction throughout all, or a large portion, of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS maintains a list of species considered to be candidates for possible listing under the ESA. The ESA also allows the designation of geographic areas as critical habitat for threatened or endangered species. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the ESA.

Section 9 of the ESA prohibits the take of federally listed species. "Take" as defined under the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

3.4.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations. Per the MBTA, "take" means "to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR § 10.12). Migratory birds include nearly all species in the United States, except for some upland game birds and non-native species. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires all federal agencies undertaking activities that might negatively impact migratory birds to follow a prescribed set of actions to further implement the MBTA.

EO 13186 directs federal agencies to develop a memorandum of understanding (MOU) with the USFWS that promotes the conservation of migratory birds. On September 5, 2014, the DoD signed a 5-year MOU with the USFWS. In accordance with the MOU, and to the extent possible as per law and budgetary considerations, EO 13186 encourages agencies to implement a series of conservation measures aimed at reinforcing and strengthening the MBTA. According to the DoD Partners in Flight Coordinator, the revised MOU is under review and will be transmitted soon to USFWS for signature and finalization. Until finalization, roles and responsibilities between DoD and USFWS should remain as presented in 2014 MOU.

The National Defense Authorization Act for Fiscal Year 2003 (Pub. L. 107-314, 116 Stat. 2458) granted the Secretary of the Interior the authority to prescribe regulations to exempt the armed forces from the incidental take of migratory birds during authorized military readiness activities. Congress defined "military readiness activities" as all training and operations of the US armed forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

In December 2017, the US Department of the Interior issued M-Opinion 37050 (USDOI, 2017), which concluded that the take of migratory birds from an activity is not prohibited by the MBTA when the purpose of that activity is not the take of a migratory bird. The USFWS interprets the M-Opinion to mean that the MBTA's prohibition on take does not apply when the take of birds, eggs, or nests occurs because of an activity the purpose of which is not to take birds, eggs, or nests.

3.4.1.3 EO 13112, Invasive Species

As defined in EO 13112, an invasive species is "an alien species whose introduction does or is likely to cause economic or environmental harm to human health." Invasive species are highly adaptable and often displace native species. The characteristics that enable them to do so include high reproduction rates, resistance to disturbances, lack of natural predators, efficient dispersal mechanisms, and the ability to outcompete native species.

3.4.2 Existing Conditions

Botanical and fauna surveys have been conducted on the remaining undeveloped land in the MRTP and proposed expansion area of the park (Hobdy 2008; SWCA 2011; Tetra Tech 2021). The surveys covered a total of 365 acres and included properties identified by TMK Nos. (2) 2-2-024:017 (por.), 014 (por.), 054 (por.), 015 (por.) (site of the proposed action), and 016 (por.). The BA prepared for this proposed action is presented in appendix B.

3.4.2.1 Vegetation and Wildlife

No federal- or state-listed threatened, endangered, proposed for listing, or candidate plant species were observed within the project area during the survey. A total of 16 plant species were documented within the project area, two of which are native to the Hawaiian Islands. None of the

observed native plants are considered rare. The remaining 14 plant species observed within the project area are considered non-native to the Hawaiian Islands. Table 3-1 lists the plants observed during the survey.

The entire project area is dominated by non-native *kiawe* (*Prosopis pallida*) with buffelgrass (*Cenchrus ciliaris*) groundcover and has been subject to cattle grazing over many decades. This vegetation type is characterized by open-to-locally dense stands of *kiawe* trees ranging from 4 ft to 15 ft in height with buffelgrass covering roughly 75 percent or more of the rocky soil. Most of the project area has scattered *kiawe* trees; however, tree density increases somewhat in the swale along the southern boundary and at the northwest corner of the project area. Additional common species located within the swale include golden crown-beard (*Verbesina encelioides*) and lion's ear (*Leonotis nepetifolia*).

Part of the western portion of the project area was recently bladed and used for gravel and fill storage. It harbored species that included Russian thistle (*Salsola tragus*), khaki weed (*Althernanthera pungens*), spiny amaranth (*Amaranthus spinosus*), and four-spike heliotrope (*Heliotropium procumbens* var. *depressum*). Approximately 10 healthy *'ilima* (*Sida fallax*) plants were growing within the mounds of topsoil excavated from a recent road improvement project within the MRTP.

The most conspicuous birds found on-site included non-native barred doves (*Geopelia striata*), which were seen flying over the project area and loafing in treetops and high branches of *kiawe* trees. Gray francolins (*Francolinus pondicerianus*), small game birds, were frequently flushed from the dense buffelgrass. Other species seen roosting and feeding in *kiawe* trees and flying over the project area included the common mynah (*Acridotheres tristis*), warbling white-eye (*Zosterops japonicus*), scaly-breasted munia (*Lonchura punctulata*), and red-crested cardinal (*Paroaria coronata*). Smaller Java sparrows (*Lonchura oryzivora*) and common waxbill (*Estrilda astrild*) were seen among grasses and weeds within and near the dry swale that roughly parallels the southern boundary of the project area.

Other naturalized bird species common to the Kīhei lowland region of Maui, but not observed in the project area include wild turkey (*Meleagris gallopavo)*, spotted dove (*Streptopelia chinensis*), red-billed leiothrix (*Leiothrix lutea*), and African silverbill (*Lonchura cantans*).

Four species of birds protected by the MBTA have been reported within the vicinity of the project area and were observed by Tetra Tech in November 2020. Northern cardinals (*Cardinalis cardinalis*) were observed perched in *kiawe* trees and flying low across the project area. A single northern mockingbird (*Mimus polyglottus)* was observed flying parallel to the northern boundary of the parcel, and two Pacific golden plovers (*Pluvialis fulva*) were observed on manicured lawns by the office buildings adjacent to the northern border of the project area. House finches (*Haemorhous mexicanus*) have also been reported. Other MBTA-protected species previously reported in the region and likely to be found periodically within the project area include cattle egret (*Bulbucus ibis*), barn owl (*Tyto alba*), black-crowned night heron (*Nycticorax hoactli*), mourning dove (*Zenaida macroura*), Eurasian skylark (*Alauda arvensis*), wandering tattler (*Tringa incana*), and ruddy turnstone (*Arenaria interpres*).

The Hawaiian short-eared owl, or *pueo* (*Asio flammeus sandwichensis*), may also be found infrequently within disturbed lowland *kiawe*-buffelgrass habitats in the Kīhei-Wailea region of Maui. The Hawaiian short-eared owl is listed by the state of Hawai'i as endangered on O'ahu, but not on Maui. The *pueo* is listed as a *Bird of Conservation Concern 2021* by the USFWS (86 FR 114:32056).

1 **Table 3-1. Plant Species Observed at the SISL Property on November 23, 2020**

The plant names are arranged alphabetically by family and then by species into two groups: monocots and dicots. The taxonomy and nomenclature of flowering plants are in accordance with Wagner et al. (1999, 2012), Wagner and Herbst (2003), Imada (2012), and Staples and Herbst (2005). Hawaiian names are included, if they exist, for the given species.

Scientific name and authorship	Hawaiian/Common name	Status[a]
MONOCOTS		
Poaceae		
Cenchrus ciliaris L.	Buffelgrass	X
Cenchrus echinatus L.	Common sandbur	X
Chloris barbata (L.) Sw.	Swollen fingergrass	X
DICOTS		
Amaranthaceae		
Alternanthera pungens Kunth	Khakiweed	X
Amaranthus spinosus L.	Spiny amaranth	X
Asteraceae		
Verbesina encelioides (Cav.) Benth. & Hook.	Golden crown-beard	X
Boraginaceae		
Heliotropium procumbens var. *depressum* (Cham.) Fosberg	Four-spike heliotrope	X
Chenopodiaceae		
Salsola tragus L.	Russian thistle, tumbleweed	X
Euphorbiaceae		
Euphorbia hirta L.	Hairy spurge	X
Fabaceae		
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	*kiawe*, mesquite	X
Samanea saman (Jacq.) Merr.	Monkeypod	X
Lamiaceae		
Leonotis nepetifolia (L.) R.Br.	Lion's ear	X
Malvaceae		
Sida fallax L.	*'ilima*	I
Nyctaginaceae		
Boerhavia coccinea Mill.	Scarlet spiderling	X
Sterculiaceae		
Waltheria indica L.	*'uhaloa*	I
Verbenaceae		
Citharexylum caudatum L.	Fiddlewood	X

Notes: [a] Biogeographic status:
I = indigenous—native to the Hawaiian Islands and elsewhere.
X = introduced/ non-native—brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's arrival in the islands in 1778).

2

No native land reptiles or amphibians occur in Hawai‘i. Introduced Axis deer (*Axis axis*) are found throughout the project area. Feral pigs are also found, although they are uncommon. Other common mammals likely to occur on the project area include mongoose (*Herpestes auropunctatus),* mice (*Mus musculus*), rats (*Rattus rattus*), and feral cats (*Felis catus*).

3.4.2.2 Threatened and Endangered Species

Fourteen threatened and endangered species listed by the USFWS that might be present in the vicinity of the project area include the Hawaiian hoary bat (*Lasiurus cinereus semotus*); Hawaiian goose (*Branta sandvicensis*); Hawaiian stilt (*Himantopus mexicanus knudseni*); Hawaiian coot (*Fulica alai*); band-rumped storm-petrel (*Oceanodroma castro*); Newell's shearwater (*Puffinus auricularis newelli*); Hawaiian petrel (*Pterodroma sandwichensis*); Blackburn's sphinx moth (*Manduca blackburni*); Anthrician yellow-faced bee (*Hylaeus anthracinus*); yellow-faced bee (*H. assimulans*); longhead yellow-faced bee (*H. longiceps*); lava-field jack-bean (*Canavalia pubescens*); native yellow hibiscus (*Hibiscus brackenridgei*); and Hawai‘i lady's nightcap (*Bonamia menziesii*).

No designated critical habitats for listed species occur within 1 mile of the proposed site. The nearest wetland habitats for endangered waterbirds include the Azeka and Longs Shopping Center mitigation ponds and Laie coastal wetland located just over 1 mile west of the project site.

Only Hawaiian geese (*nēnē*) were observed within the project area, loafing on manicured lawns within the MRTP. The BA of project-related impacts on each of these species concluded that construction and operation of the SISL might affect but is not likely to adversely affect any of these listed species. Specific avoidance and minimization measures to protect these species are identified in the BA (appendix B).

3.5 GEOLOGICAL RESOURCES

3.5.1 Definition of Resource

Geological resources included as part of this assessment are geology and soils, topography, prime farmlands, seismicity, and volcanic hazards. The geology of an area includes its structure and configuration of surface and subsurface features. The principal geologic factors influencing the stability of structures are soil stability and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soils are typically described in terms of their type, slope, physical characteristics, and relative compatibility with or limitations in relation to construction activities and types of land use. Topography addresses surface elevation, slope, and distinct physiographic features. Long-term geological, seismic, erosional, and depositional processes typically influence the topographic relief of an area.

Prime farmland is also addressed in this section. Protected under the Farmland Protection Policy Act of 1981, "prime farmland" is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.

3.5.2 Existing Conditions

3.5.2.1 Geology and Soils

The geology underlying the project area is composed of 140,000-year-old Pleistocene Kula Series Volcanics (Sherrod et al. 2007). These lava flows known as a'a consist of rough rubbly surfaces that have become weathered and interspersed with volcanic ash. Lithic bedrock typically lies 33–43 inches below the soil surface. The specific soil type underlying the project area is primarily Waiakoa Extremely Stony Silty Clay Loam (WID2), which is classified as erodible, interspersed with stones covering 3–15 percent of the surface (NRCS 2021). In most areas, about 50 percent of the surface layer has been eroded away. Runoff is medium, and the erosion hazard is severe.

This soil type belongs to the Waiakoa-Keahua-Molokai association. These soils are characterized as moderately deep and deep, nearly level to moderately steep, well-drained and having a moderately fine textured subsoil. This soil association is located on the low uplands of East Maui and makes up about 15 percent of the island.

A geotechnical investigation was conducted on the SISL project area in June 2021. Six borings were drilled at depths of 8 to 25 feet. The final depth of each boring varied due to the presence of various volcanic materials encountered in the subsurface. No groundwater was encountered in the borings. Laboratory testing indicates that the site soils are primarily clayey gravel with sand, cobbles, and boulders. Percolation tests were conducted in three percolation test holes. Percolation rates ranged from 5.4 to 7.2 inches per hour (Masa Fujioka & Associates 2021).

3.5.2.2 Topography

The project area lies on the western toe slope of the Haleakalā shield volcano. It consists of relatively smooth-to-moderately sloping Kula lands ranging in slope from 3 to 25 percent and, in elevation, from 60 ft at the Piʻilani Highway with Lipoa Parkway, to 280 ft. above mean sea level (AMSL). The nearest prominent natural features are Waipuʻilani Gulch along the northern boundary of the MRTP, and WaimāhaʻihaʻiGulch south of the project area. Both drainage features are located outside the project area. A very shallow, unnamed swale traverses the project area from northeast to southwest along its southern boundary.

3.5.2.3 Prime Farmland

When used with modern farming methods, "prime" agricultural lands have a soil quality, growing season, and moisture supply necessary to produce sustained crop yields economically. "Unique" agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of a specific crop. "Other important" agricultural lands include those that have not been rated as "prime" or "unique" but are of state-wide or local importance for agricultural use.

The project area is located on lands designated as “E” by the Land Study Bureau of the University of Hawaiʻi at Manoa. Their E77 designation reflects lands in the lowest range of productivity that are composed of non-stony, stony, and rocky lands with a deep soil cover over 30 inches with moderately textured, moderately well-drained soils. The area has also been designated as “unclassified” by the State of Hawaiʻi Department of Agriculture (1977), indicating that they are not of prime or other significant importance to farming. Similarly, there are no soils within the project area identified by the Natural Resources Conservation Service as prime farmland. As a result, there is no further analysis of these farmlands for this project.

3.5.2.4 Seismicity

Earthquakes occur daily in the Hawaiian Islands, most commonly on the Island of Hawaiʻi, where active volcanism still occurs. Most of these tremors are less than 2 magnitude on the Richter scale. However, moderate and disastrous earthquakes have also occurred. Within the past year, five earthquakes have been reported that affected Maui Island, the largest of which was 3.7 magnitude near Haliimaile, Maui, on September 4, 2020.

The 1938 Maui Earthquake, with a magnitude of 6.6 on the Richter scale and an epicenter 6 miles north of Maui, created landslides and forced the closure of the road to Hana. The strongest recorded earthquake that affected Maui was 7.7 magnitude near Lahaina in 1871, which damaged buildings, fences, and water pipes and created landslides and ground fractures on Maui, Lānaʻi, Molokaʻi, and Oʻahu.

3.5.2.5 Volcanic Hazards

East Maui's Haleakalā volcano has witnessed at least ten eruptions in the past 1,000 years, and numerous eruptions have occurred there in the past 10,000 years. The most recent volcanic eruptions closest to the project area occurred on the Southwest Rift Zone of Haleakalā between 540 and 230 years ago resulting lava flows at Kalua o Lapa and Pimoe, between three and six miles southeast of Makena. Although volcanic hazards are not a concern in the South Maui area due to the dormant status of Haleakalā, Haleakalā is capable of further eruptions.

3.6 CULTURAL RESOURCES

3.6.1 Definition of Resource

Cultural resources include prehistoric resources, traditional cultural places (or properties), and historic resources. Prehistoric resources are physical properties resulting from human activities that predate written records and are generally identified as archaeological sites. Traditional and cultural places are tangible places that are important in maintaining the cultural identity of a community or group. Historic resources include resources that postdate the advent of written records in a region. Historic properties are significant cultural resources that meet one or more criteria for eligibility for nomination of the resource for listing on the National Register of Historic Places (NRHP). The NHPA requires federal agencies to consider the preservation of historic and prehistoric resources. Under the NHPA, the Secretary of the Interior is authorized to expand and maintain an NRHP. Section 106 of the NHPA mandates that all federal agencies consider the effects of their actions on historic and prehistoric resources and to afford the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on any action that might affect properties that are listed or are eligible for listing on the NRHP.

Under NHPA section 101, an State Historic Preservation Officer was established in each state and assigned the responsibility of reviewing and commenting on any action affecting NRHP properties or properties eligible for listing on the NRHP. The Area of Potential Effects (APE) for cultural resources in the project area includes the 10-acre proposed SISL site and three staging areas located immediately east, west, and south of the site. The APE defined by AFRL accounts for all project-related ground disturbance, including any potential disturbance associated with access and material staging during project construction.

3.6.2 Existing Conditions

Traditional place names, together with environmental data, suggest that the lands of and surrounding the project site were dry and sparse in an agricultural sense, but rich in marine resources. Previous research on pre-Contact occupation in the region has suggested that most permanent habitations were in the uplands with a smaller permanent population located along the coastline (cf., Kolb 1997).

In 1820, the whaling industry was introduced in Hawai‘i. Although the whaling trade centered on Lāhainā, mainly affecting the Kula/Kīhei area through agricultural demands, Clark (1980, p. 47) notes that “[f]rom the 1840s to the 1860s a small whaling station was maintained at Kalepolepo [Kīhei].” The introduction of whaling to the Maui community brought with it an increased demand for foodstuffs, particularly the long-lasting Irish potato. The California Gold Rush of 1849 further intensified the demand as a California-Hawai‘i potato trade began to flourish. Kula (between 2,000 ft and 5,000 ft AMSL) became the area of highest potato production and was known as “the potato district.” During this time, sugar cultivation and ranching were also established in the Kula region.

The shift in the economics in coastal areas to ranching also was discussed by E.S. Craighill Handy, who noted that large sections of “crown lands,” which had not been claimed as *kuleana* (family homestead property) during the Māhele (1848 and later), were given by the Kingdom to

various ranchers (Handy and Handy 1972). The *kiawe* tree was imported around 1840 and cultivated as a source of cattle feed, and the low plains were soon covered in *kiawe* forests (Handy and Handy 1972). The project site is located within Land Grant 9325:1, and the area immediately above the MRTP continues to be used for cattle pasture.

Two previous archaeological surveys encompassed the project site. In 1986, Archaeological Consultants of Hawai'i, Inc. conducted a preliminary reconnaissance survey for a proposed golf course (Kennedy 1986). No cultural resources or historic properties were identified, and no further work was recommended. In 2008, Scientific Consultant Services, Inc. completed an archaeological inventory survey (AIS) for the EIS for the MRTP master plan update (Dega 2008). The survey covered approximately 338 acres and identified five historic properties: State Inventory of Historic Places Nos. 50-50-10-6239, -6240, -6241, -6587, and -6588. These historic properties included rock walls and mounds associated with pre-Contact land use and post-Contact ranching activities. No historic properties or cultural resources were identified within the project site or within about 1,600 ft. of the project site.

For the proposed action, Cultural Surveys Hawai'i, Inc. (CSH) completed an AIS of the entire project APE with negative findings. The Archaeological Assessment Report is provided in appendix C. A 100 percent coverage pedestrian survey of the APE conducted in December 2020 and February 2021, confirmed that no cultural resources or historic properties are present on the surface. A review of background research and previous archaeological findings conducted during the AIS as well as an analysis of geotechnical borings, has documented a low likelihood of subsurface cultural resources, including human burials, in the area.

3.7 AIR QUALITY

3.7.1 Definition of Resource

EPA Region 4 and the Hawai`i Department of Health regulate air quality in Hawai'i. The Clean Air Act (42 U.S.C. §§ 7401–7671q), as amended, assigns EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) that specify acceptable concentration levels of the following criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]); sulfur dioxide (SO_2); carbon monoxide (CO); and oxides of nitrogen (NO_x), ozone (O_3), and lead (Pb). Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual) have been established for pollutants contributing to chronic health effects. Table 3-2 outlines the NAAQS for each criteria pollutant. Each state has the authority to adopt standards stricter than those established under the federal program, and the state of Hawai`i has air quality standards that are comparable yet slightly stricter than the NAAQS.

3.7.2 Existing Conditions

Federal regulations designate Air Quality Control Regions (AQCRs) that are in violation of the NAAQS as "nonattainment areas." Federal regulations designate AQCRs with concentration levels below the NAAQS as "attainment areas." Maui County (and, therefore, all areas associated with the proposed action) is within the state of Hawai`i AQCR (40 CFR § 81.76). EPA has designated the entire state of Hawai`i as in full attainment for all criteria pollutants (USEPA 2021b).

Kīhei's average high temperature is 88.1 degrees Fahrenheit (°F) in the hottest month of September, and the average low temperature is 63.3 °F in the coldest month of January. Kīhei has average annual precipitation of 57.5 inches per year. The wettest month of the year is March, with an average rainfall of 12.6 inches (Idcide 2021).

Table 3-2. National Ambient Air Quality Standards

Pollutant		Primary/Secondary	Averaging time	Level	Form
Carbon Monoxide (CO)		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		Primary and secondary	Rolling 3-month average	0.15 µg/m³	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and secondary	Annual	53 ppb	Annual mean
Ozone (O_3)		Primary and secondary	8-hour	0.070 ppm	Annual fourth highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter	($PM_{2.5}$)	Primary	Annual	12 µg/m³	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m³	Annual mean, averaged over 3 years
		Primary and secondary	24-hour	35 µg/m³	98th percentile, averaged over 3 years
	(PM_{10})	Primary and secondary	24-hour	150 µg/m³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2021a.
Notes: µg/m³ = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million.

Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the Earth and, therefore, contribute to the greenhouse effect and climate change. Most GHGs occur naturally in the atmosphere but increases in their concentrations result from human activities, such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO_2), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether rainfall would increase or decrease remains difficult to project for specific regions (IPCC 2018).

EO 14008, *Tackling the Climate Crisis at Home and Abroad* (2021), outlines policies to reduce GHG emissions and to bolster resilience to the impacts of climate change. The EO directs CEQ to review, revise, and update its 2016 final guidance titled, “Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews”. When considering GHG emissions and their significance, agencies should use appropriate tools and methodologies for

quantifying GHG emissions and comparing GHG quantities across alternative scenarios. The CEQ guidance specifically requires agencies within the DoD to quantify GHG emissions in NEPA assessments and review federal actions in the context of future climate scenarios and resiliency.

In addition, EO 14008 requires federal agencies to capture the full costs of GHG emissions as accurately as possible, including taking global damages into account. Doing so facilitates sound decision-making, recognizes the breadth of climate impacts, and supports the international leadership of the United States on climate issues. The "social cost of carbon" (SCC) is an estimate of the monetized damages associated with incremental increases in GHG emissions, such as reduced agricultural productivity, human health effects, property damage from increased flood risk, and the value of ecosystem services. The current SCC is estimated at 51 cents per ton (IWG-SCGHG 2021).

3.8 NOISE

3.8.1 Definition of Resource

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic.

Sound varies by both in intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighing," measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Table 3-3 provides sounds encountered in daily life and their dBA levels.

Table 3-3. Common Sounds and Their Levels

Outdoor	Sound level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998.

The sound pressure level noise metric describes steady noise levels, although very few noises are, in fact, constant; therefore, additional noise metrics have been developed to describe noise, including the following:

- Maximum sound level (L_{max})—the maximum sound level.
- Equivalent sound level (L_{eq})—the average sound level over a specific period of time.
- Day-night sound level (DNL)—the long-term average sound energy with a 10-dB penalty added to nighttime levels. DNL is a useful descriptor for noise because it averages ongoing yet intermittent noise and measures total sound energy over a 24-hour period.

The Noise Control Act of 1972 (Pub. L. 92-574) directs federal agencies to comply with applicable federal, state, and local noise control regulations. In 1974, EPA provided information suggesting continuous and long-term noise levels in excess of 65 dBA DNL are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

Hawai'i's Community Noise Control regulation (HAR 11-46) limits sound generated by new or expanded developments and provides for the prevention, control, and abatement of noise pollution. Table 3-4 outlines the L_{max} at the property boundary for permanent stationary sources according to land use. Permanent stationary sources that exceed these levels require a variance permit. Backup generators are specifically exempted "when installed and used as required and necessary for the protection of public health and safety, provided the best available control technology is implemented." Construction activities, including "any or all activities…necessary or incidental to the erection, demolition, renovation, or alteration of buildings" require a permit.

Table 3-4. Hawai'i Maximum Permissible Sound Levels

Land use[a]	Maximum permissible sound level[b]	
	Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
Residential, conservation, preservation, public space, or similar	55 dBA	45 dBA
Multifamily dwellings, business, commercial, hotel, resort, or similar	60 dBA	50 dBA
Agriculture, county, industrial, or similar type	70 dBA	70 dBA

Source: HAR 11-46.
Notes: [a] For mixed zoning districts, the primary land use designation is used to determine the permissible sound level.
[b] Sound limits for impulsive noise is 10 dBA above the maximum permissible sound levels shown.

3.8.2 Existing Conditions

The soundscapes near the proposed project area range from completely natural to predominantly developed. Existing sources of noise include civilian aircraft overflights, road traffic, and other noises such as lawn maintenance equipment, construction, and bird and animal vocalizations. Sound levels vary widely depending on wind and wave conditions and, in general, are louder closer to the main highway and the shore. Notably, some of the completely natural soundscapes are as loud as or louder than those with more intrusive human-affected soundscapes.

Existing noise levels (L_{eq} and DNL) were estimated for the surrounding areas using the techniques specified in the American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-Term Measurements with an Observer Present (American National Standards Institute [ANSI] S12.9-1993 (R2013)/Part 3). Table 3-5 outlines the land use category and the estimated background noise levels for noise-sensitive areas near the proposed SISL facilities.

Table 3-5. Background Noise Levels at Nearby Noise-Sensitive Areas

Closest noise-sensitive area			Estimated existing sound level (dBA)			
					L_{eq}	
Distance (ft)	Direction	Type	Land use category	DNL	Daytime	Nighttime
2,600	West	Residential	Quiet Suburban and Rural Residential	42	40	34
900	North	Residential				
200	Northeast	School				

Source: ANSI S12.9-1993 (R2013)/Part 3.

3.9 ROADWAYS AND TRAFFIC

3.9.1 Definition of Resource

Roadways and traffic include vehicle movement throughout a road and highway network. Roadways are classified into one of three types according to the function each serves in moving traffic: arterial highways, collector roadways, and local streets. The affected environment for this resource is the local and regional transportation networks that provide access to and within the MRTP.

3.9.2 Existing Conditions

About 150 personnel commute to the Detachment 15 AFRL HQ that is about one block away from the proposed SISL site within the MRTP. In addition, about six employees pass the Detachment 15 AFRL HQ in route to the RME. Five personnel use area roads to commute the logistics warehouse in Kahului.

Existing and future conditions of traffic on area roadways near the MRTP have been analyzed in a traffic impact analysis that was prepared in April 2021 for the MRTP (WSP 2021). The purpose of the analysis, which is still under review by the HDOT and the MRTP, was to examine existing and projected traffic conditions related to MRTP development. The traffic analysis projected conditions to the years of 2025, 2030, 2035 and 2040; however, for this EA, only the conditions projected through 2025 were considered. Also, only the Piʻilani Highway/Lipoa Street/Lipoa Parkway intersection, the MRTP's primary Piʻilani Highway access point, was included in this analysis. This section describes the intersection and the results from the traffic assessment.

Piʻilani Highway is the principal regional artery for the area. Between Mokulele Highway and Kilohana Drive, Piʻilani Highway is a four-lane principal arterial roadway. At the MRTP, Piʻilani Highway intersects Lipoa Parkway/Lipoa Street at a signalized intersection. At the intersection, Piʻilani Highway has a right-turn deceleration lane at the southbound approach and exclusive left-turn lanes at both south and northbound approaches. The posted speed limit on Piʻilani Highway is 40 miles per hour (WSP 2021).

Lipoa Parkway is a two-lane, undivided roadway providing access to the MRTP and Maui Nui Golf Club. It is configured to allow for future expansion to a four-lane roadway with raised median. West of Piʻilani Highway, the roadway is named Lipoa Street. It is configured as a two-lane roadway with a painted median for left-turn lanes. The Lipoa Street/Liloa Drive intersection is signalized with exclusive left-turn lanes provided at all approaches. The speed limit on both Lipoa Parkway and Lipoa Street is posted at 20 miles per hour (WSP 2021).

From Lipoa Parkway, the proposed project site is accessed from the southern extension of Holopono Street and Ninau Street. Both are two-lane streets that dead-end at the northern boundary of the proposed project area.

Operating conditions included in the traffic analysis are expressed in a qualitative measure known as "level of service" (LOS) that ranges from A to F, depending on the amount of traffic congestion. LOS A represents free-flow operations with a short delay, while LOS F represents congested conditions with a relatively long delay. The overall intersection LOS is a weighted average of the LOS of individual traffic movement groups. The traffic analysis concluded that the overall operating conditions of the Piʻilani Highway/Lipoa Street/Lipoa Parkway intersection during peak morning and afternoon hours have a LOS of E and D for existing conditions and a predicted 2025 LOS of C and D. The delays associated with existing conditions are related to factors such as high demand for the southbound left-turn movement onto Lipoa Parkway coupled with a long traffic light cycle. The predicted LOS findings assumed that, by 2025, intersection improvements such as additional turn lanes and signal improvements will have been implemented.

3.10 INFRASTRUCTURE AND UTILITIES

3.10.1 Definition of Resource

Infrastructure comprises the basic facilities and services needed for the functioning of an installation or local community. The availability of infrastructure and its capacity to support growth are generally regarded as essential to effective functioning of a military installation or economic growth of a local community. The infrastructure components discussed in this section are the water supply, wastewater treatment, stormwater systems, solid waste, electricity, and telecommunications

EO 13834, *Efficient Federal Operations*, sets goals for federal agencies based on statutory requirements and cost-effectiveness. The goals include achieving and maintaining annual reductions in building energy use, implementing energy efficiency measures that reduce costs, meeting statutory requirements for the consumption of renewable energy and electricity, reducing potable and non-potable water consumption, complying with stormwater management requirements, and ensuring that new construction and major renovations conform to applicable building energy efficiency requirements and sustainable design principles.

3.10.2 Existing Conditions

3.10.2.1 Water Supply

The Kīhei-Makena region is served by the County of Maui's Central Maui Water System. Approximately 75 percent of the water supplied by the system is withdrawn from the Iao Aquifer in the vicinity of Iao Stream and Waiehu Stream. The remaining 25 percent is supplied primarily from the Waihee Aquifer with a small portion coming from surface water sources. Potable water from these wells is pumped into an existing 1.0-million-gallon- (-MG-) capacity concrete water storage tank located in upper Waiehu and then conveyed over 10 miles across the Central Maui isthmus via a 36-inch-diameter transmission main. Kīhei uses approximately 65 percent of this water for irrigation with the remainder going through the sanitary sewer system.

Water for the MRTP is supplied from an existing County of Maui reservoir at the eastern end of Lipoa Road. The existing MRTP distribution system consists of 12-inch waterlines located along existing roadways fed through a pressure reducing valve from a 16-inch transmission line on Lipoa Parkway. There is a 12-inch water main located along North Holopono Street and another 12-inch water main along South Ninau Street. The nearest fire hydrant is approximately 125 ft north of the corner of the project area on North Holopono Street. The next closest fire hydrant is approximately the same distance away on South Ninau Street. Both hydrants are connected to the existing water main. To provide additional water capacity to the area, a new 0.5-MG storage tank is being proposed.

3.10.2.2 Wastewater Treatment

The service area for the county's Kīhei wastewater reclamation system extends from North Kīhei to Wailea. The system consists of several pump stations and force mains that convey wastewater through the county's transmission lines. The combined flows are transported to the Kīhei Wastewater Reclamation Facility (KWWRF), which is located adjacent to the Maui Nui Golf Course approximately one-half mile south of the project area. The existing design capacity of the KWWRF is 8.0 MGD and it currently reclaims between 40 and 50 percent of the wastewater it treats, typically between 1.6 MGD and 2.0 MGD. The rest of the treated effluent is discharged through injection wells located on the KWWRF site. There is an existing 8-inch gravity sewer main on the west side of North Holopono Street that turns just past the end of the street heading north within a utility easement.

The KWWRF produces R-1 quality effluent, which is the highest quality rating for reclaimed water under the State of Hawai'i Department of Health Standards. The County of Maui has established a limited reclaimed water distribution infrastructure to facilitate public reuse of the R-1 quality effluent generated by the KWWRF. The R-1 quality effluent is primarily used for irrigation and is used by the MRTP for watering landscaped common areas and developed parcels.

3.10.2.3 Stormwater System

The stormwater drainage system on the MRTP project area is sheet flow in an east-to-west direction. Sheet flow from areas east of the project area cross the MRTP area. The flow crosses the Maui Nui Golf Course to Pi'ilani Highway, where stormwater culverts pass under the highway. According to the Preliminary Engineering Report for the MRTP prepared in 2013, the magnitude of the combined off-site storm flows that pass through the MRTP is approximately 1,300 cubic feet per second. A drainage ditch runs along the lower, south boundary of the project area. There are no drainage improvements on the project area.

3.10.2.4 Solid Waste

Solid waste, green waste, and recyclables are collected by the County of Maui Department of Environmental Management, Solid Waste Division. Private refuse collectors provide solid waste disposal services for commercial and institutional customers. Solid waste is disposed of at the county's Central Maui Landfill facility, located about 2.5 miles southeast of the Kahului Airport. The landfill also accepts construction and demolition (C&D) waste from the construction, repair, demolition, or razing of buildings, of roads, and other structures. C&D wastes consisting of concrete, asphalt, rock and dirt, clean sand are also collected at commercial recycling facilities.

The existing available capacity of Central Maui Landfill is expected to meet current and projected waste disposal needs in the County up to the year 2026. Capacity could be extended with increased diversion of waste through recycling, composting and other beneficial uses of waste materials (Integrated Solid Waste Management Plan, 2009). To increase available capacity, the County is developing about 41 acres of landfill area that will extend the useful operating life of the landfill to 2042.

3.10.2.5 Electricity and Telecommunications

Electrical, telephone, and cable television services are provided by Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable, respectively. Fiber optic communication services also serve the MRTP and are provided by underground utility distribution lines within the MRTP.

3.11 SOCIOECONOMICS

3.11.1 Definition of Resource

Socioeconomics is the relationship between economic, human, and social factors in a region. The indicators that form a basis for this analysis include employment, industry, and income. The socioeconomic ROI is defined as the area in which the principal effects arising from implementation of the alternatives would likely occur and, for the proposed action, is defined as Maui County, Hawai'i. Socioeconomic indicators are provided for the county, with data for Hawai`i and the United States presented for comparative purposes.

3.11.2 Existing Conditions

3.11.2.1 Employment, Industry, Income

Maui County's 2020 labor force was 83,843, which includes 68,849 people employed and 14,994 unemployed. The county's labor force increased by 5 percent between 2010 and 2020. During the same time period, Hawai'i's labor force showed little change (a decrease of 0.1 percent) and the United States labor force increased by 4 percent. The county, state, and national annual unemployment rates declined from 2010 to 2019 to historically low rates. In 2019, Maui County's unemployment rate was 2.6 percent, Hawai'i's rate was 2.5 percent, and the United States' rate was 3.7 percent. The coronavirus pandemic starting in the spring of 2020 increased unemployment throughout the United States. The 2020 annual unemployment rate for Maui County was 17.9 percent, for Hawai'i, it was 11.6 percent, and for the United States, it was 8.1 percent (BLS 2021).

Maui County's economy is predominantly in tourism, which was severely disrupted by the pandemic. One third of the county's employment is in the accommodation and food services industry and the retail trade industry. The other top three industries in Maui County (on the basis of employment by industry) are (1) government and government enterprises (including federal civilian, military, and state and local government), (2) healthcare and social assistance, and (3) administrative and support and waste management and remediation services. Together the five industry sectors accounted for 58 percent of the county's employment (BEA 2020a). The largest individual employers in the county include resorts (Fairmount, Four Seasons, Grand Wailea, Hyatt Regency, Ritz-Carlton, and Westin) and the Maui Memorial Medical Center (MEDB 2020). AFRL employs workers in the government and the professional, scientific, and technical services sectors. These two sectors combined account for 13 percent of the county's employment (BEA 2020a).

The county's 2020 total personal income was $8.6 billion, an increase of 55 percent from the 2010 total personal income of $5.5 billion. During the same time period, Hawai'i's total personal income increased 41 percent and the United States' increased 48 percent (BEA 2020b). Maui County's income levels were about the same as for the state, but higher than the national levels. The county's per capita personal income of $35,241 was 99 percent of the state per capita income of $35,567 and 103 percent of the national per capita income of $34,103. The county's median household income of $80,948 was 100 percent of the Hawai`i median household income of $81,275 but 129 percent of the national median household income of $62,843 (US Census Bureau 2021a). The cost of living in Hawai`i is higher than in the continental United States. The cost of living index is based on a US average of 100. An amount below 100 means it is less expensive to live in a place than the US average, and an amount above 100 means it is more expensive. The cost of living index for Maui County is 162 and, for the state of Hawai`i, it is 170 (Sperling's 2021).

3.12 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.12.1 Definition of Resource

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies consider disproportionately high and adverse human health or environmental effects of federal government decisions, policies, projects, and programs on minority and low-income populations.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of federal policies, programs, activities, and standards. It recognizes a growing body of scientific knowledge that demonstrates that children might suffer disproportionately from environmental health and safety risks. Those risks arise because children's bodily systems are not fully developed; children eat, drink, and breathe more in proportion to their body weight; their size and weight might diminish protection from standard safety features; and their behavior patterns might make them more susceptible to accidents.

3.12.2 Existing Conditions

3.12.2.1 Environmental Justice

An environmental justice ROI is the region in which the project area is located and provides the context within which the environmental justice analysis will be conducted (Department of the Air Force 1997). To determine if minority or low-income populations constituting an environmental justice community are present in the ROI, the Air Force followed guidance from CEQ's *Environmental Justice Guidance under the National Environmental Policy Act* (CEQ 1997) and the Air Force's *Guide for Environmental Justice Analysis under the Environmental Impact Analysis Process* (Department of the Air Force 1997).

Demographic data from the US Census Bureau was used to identify the composition of the affected population. The US Census Bureau identifies minority populations as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, some other race, persons of two or more races, and persons of Hispanic or Latino origin (ethnicity). Per CEQ guidance, minority populations should be identified where either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Per Air Force guidance, the other appropriate unit of geographic analysis is called the Community of Comparison (COC). The COC is an area surrounding the environmental justice ROI and is the demographic area used to compare and analyze potential environmental justice effects (Department of the Air Force 1997). For this analysis, the environmental justice ROI is the census tract where the proposed action would be implemented and its bordering tracts (census tracts are subdivisions of a county and are shown on Figure 3-2). The COC is Maui County. Per Air Force and CEQ guidance, minority populations are identified where the percentage of persons of a minority race or ethnicity in a census tract is greater than that of the COC or exceeds 50 percent.

Poverty thresholds established by the US Census Bureau are used to identify low-income populations (CEQ 1997), or people living below the poverty level. The Census Bureau defined the poverty level for 2019 as an annual income of $13,011 or less for an individual and $25,926 or less for a family of four (US Census Bureau 2021b). Per Air Force guidance, low-income populations are identified where the environmental justice ROI percentage of persons with income below the poverty level is greater than the COC or exceeds 50 percent.

Table 3-6 presents minority and low-income data for the environmental justice ROI census tracts. The proposed SISL site is in census tract 307.08. Data are provided for the COC (Maui County) and, for comparison, additional data are presented for Hawai`i and the United States. As shown by the data presented in the table, environmental justice communities are present in all the census tracts because they all have either a higher percentage of minority persons or a higher percentage of persons whose income is below the poverty level than the COC, or that exceeds 50 percent.

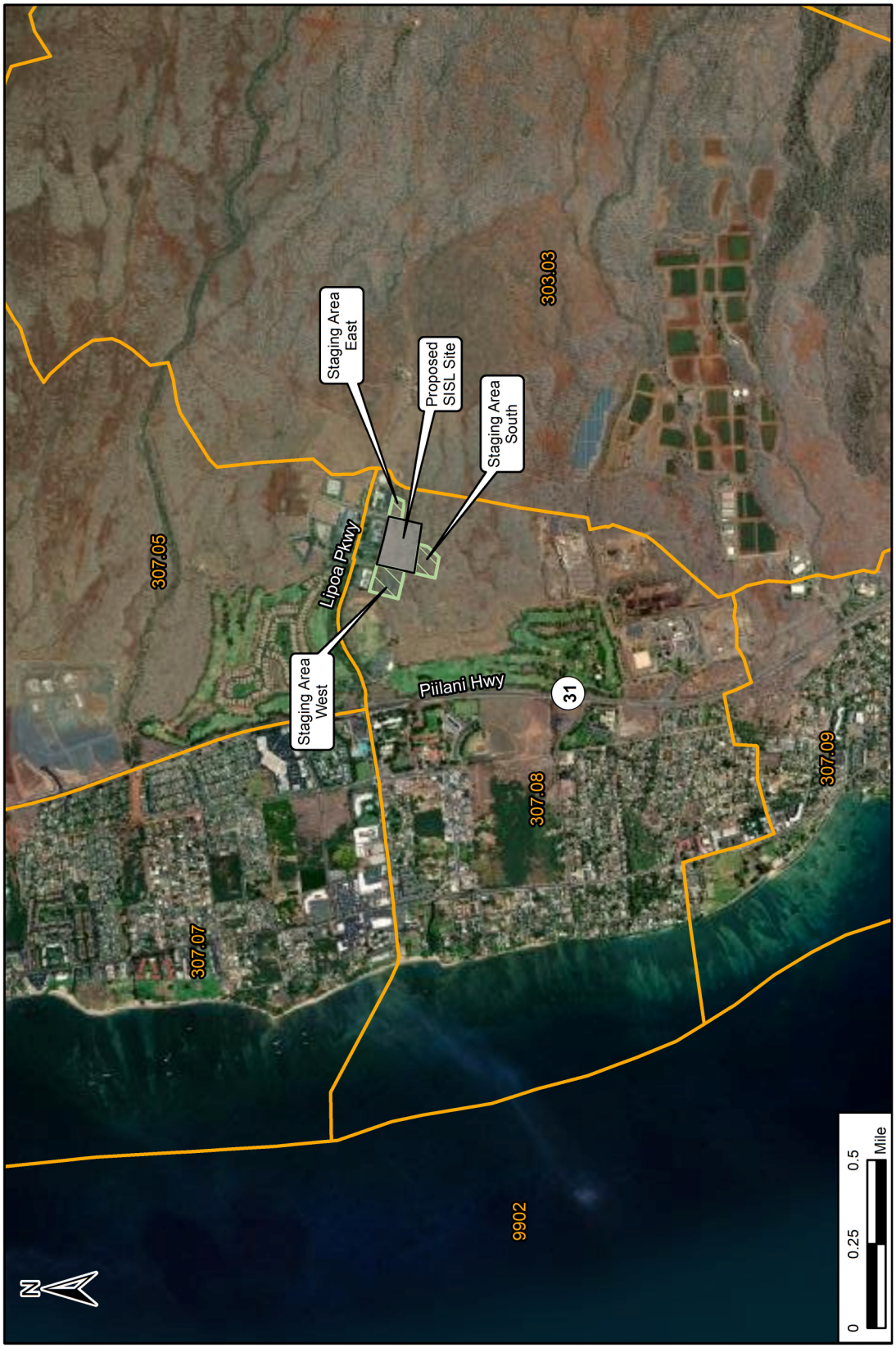
Census Tracts
Staging Area East
Proposed SISL Site
Staging Area South
Staging Area West
Lipoa Pkwy
Piilani Hwy
31
303.03
307.05
307.07
307.08
307.09
9902
N
0
0.25
0.5
Mile
LEGEND
Proposed Site
Staging Area
Census Tract
Note: Site boundaries are approximate. Source: U.S. Census 2019.

Figure 3-2

Table 3-6. Minority and Low-Income Population Data

Geographic area	Minority	Environmental justice minority populations present (yes or no)[a]	Income below poverty level	Environmental justice low-income populations present (yes or no)
United States	39%	--	13%	--
Hawai'i	78%	--	9%	--
COC				
Maui County	70%	--	9%	--
Census tract				
303.03	28%	No	14%	Yes
307.05	86%	Yes	2%	No
307.07	58%	Yes	8%	No
307.08	41%	No	12%	Yes
307.09	31%	No	13%	Yes

Source: US Census Bureau 2021c.

Note:

[a] tract is deemed to have an environmental justice minority or low-income population present if the tract's percentage is higher than that of the COC (which is defined as the county where the tract is located) or exceeds 50 percent.

3.12.2.2 Protection of Children

The percentage of persons under the age of 18 in Maui County is 22 percent, which is very nearly the same as for Hawai`i at 21 percent and the United States at 23 percent (Table 3-7). For census tract 307.08 (which includes the proposed project site) and the tracts to the east and to the south (303.03 and 307.09, respectively), children represent a lower share of the population than they do in the county. In the tracts to the north of the project site (307.05 and 307.07), children represent about the same or a higher share of the population than they do in the county.

Table 3-7. People under 18 Years of Age

Geographic area	Number of children	Share of total population
United States	73,429,392	23%
Hawai'i	304,638	21%
Maui County	36,418	22%
Census tract		
303.03	436	12%
307.05	1,387	29%
307.07	1,847	22%
307.08	525	18%
307.09	408	11%

Source: US Census Bureau 2021c.

The proposed action would be implemented in the MRTP in a planned, mixed-use community (section 2.5.1). The MRTP has offices for commercial, professional, and technical companies as well as a STEM-focused institutional organization (Kīhei Charter High School) where children are present. The Kīhei Charter High School is north of the proposed SISL project site. The closest

residential community is northwest of the proposed site, north of Lipoa Parkway. Kīhei Elementary School and Lokelani Intermediate School are about 1 mile west of the site on the other side of Pi'ilani Highway, and a new high school is under construction in Kīhei about 1.5 miles north of the site.

3.13 SUSTAINABILITY AND GREENING

3.13.1 Definition of Resource

Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs. The concept of sustainability is composed of three pillars: economic, environmental, and social. For the Air Force, the term "sustainable" refers to the capacity to continue the mission without compromise and the ability to operate into the future without decline—either in the mission or the natural and man-made systems that support it. In 2011, the Air Force published its *Air Force Sustainable Design and Development (SDD) Implementation Guidance* and compliance with the guidance was a requirement of all permanent construction on Air Force installations in the United States, including Hawai'i, beginning in Fiscal Year 2012 (Byers 2011). The guidance also incorporated the requirements of statutes and other directives related to energy efficiency and sustainability, including the Energy Policy Act of 2005 (Pub. L. 109-58), the EISA, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, which has since been revoked and replaced by EO 13834.

Greening is an integral part of achieving sustainability. Energy and resource-efficient—or *green*—building design, construction, and retrofit as well as operations and maintenance are key aspects of achieving sustainability. Greening as a concept is integrated into all aspects of construction, operations, and maintenance, including the following

- Energy and water management programs
- Environmental programs
- Integrated pest management
- Landscape management
- Green leasing
- Green products, services, vehicles
- Smart buildings

3.13.2 Existing Conditions

The Air Force's 2011 guidance and EO 13834 require that the Air Force meet a wide range of statutory requirements related to energy and environmental performance, including with respect to facilities, vehicles, and overall operations, in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment.

Requirements for the SISL include that the facility be designed in accordance with DoD UFC 1-200-01 and UFC 1-200-02. UFC 1-200-02 states that new construction projects must comply with all building design and construction requirements or clearly identify and provide justification why requirements are not applicable or fully achievable. Building design and construction requirements address integrating building design into the proposed site, optimizing the energy performance of the building, protecting and conserving water, enhancing indoor environmental quality, and reducing the environmental impact of materials used in construction.

Additionally, UFC 1-200-02 requires all new construction to achieve at a minimum Leadership in Energy and Environmental Design (LEED) Silver certification. The US Green Building Council

developed the LEED rating system (USGBC 2021). It is an internationally recognized green building certification system that provides third-party verification of a building or community having been designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. Projects pursuing LEED certification earn points for various green building strategies across several categories, including Building Design + Construction, Building Operations + Maintenance, and Interior Design + Construction. Based on the number of points earned, a project is certified at one of four LEED rating levels: Certified, Silver, Gold, or Platinum. Silver certification requires that a project earn 50–59 points, and the *Air Force Sustainable Design and Development (SDD) Implementation Guidance* requires that at least 20 of the points earned toward Silver certification must address energy efficiency and water conservation.

3.14 HAZARDOUS MATERIALS AND WASTE

3.14.1 Definition of Resource

Hazardous materials and hazardous wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, might present substantial danger to public health and welfare or the environment when released or otherwise improperly managed

Federal regulations governing hazardous materials and wastes include the EPA's Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act and the Toxic Substances Control Act and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste Amendments.

The Comprehensive Environmental Response, Compensation, and Liability Act defines hazardous materials as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that could cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness or pose a substantial threat to human health or the environment. The Resource Conservation and Recovery Act defines hazardous wastes as any solid, liquid, contained gaseous, or semisolid waste or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

The State of Hawaii, Department of Health, Solid & Hazardous Waste Branch, HAR Title 11 (amended June 2021) provides further regulations governing hazardous waste in Hawaii. HAR Sections 11-260 through 272 control identifying, treating, storing, transporting, handling, labeling, and disposing of hazardous waste. HAR Section 11-273 regulates managing universal waste, and HAR Section 11-279 regulates the management of used oil.

3.14.2 Existing Conditions

AFRL operations include handling, use, and management of hazardous materials and generation of waste to support mission functions. The handling, use and management are conducted as required by applicable federal, state, and local laws and regulations and AFI 32-7086, *Hazardous Material Management* and AFI 32-7042, *Waste Management*. As required, the AFRL maintains hazardous materials and hazardous waste management plans that establish procedures and standards that govern their management and disposal.

An environmental baseline study of the proposed SISL parcel and surrounding area concluded that no release or disposal of hazardous substances or petroleum products has occurred (including no migration of those substances from adjacent areas) on the site.

3.15 HEALTH AND SAFETY

3.15.1 Definition of Resource

Occupational health and safety is the field of public health that proposes and implements strategies and regulations to prevent illnesses and injuries in the worker population. Implementing occupational health and safety practices and regulations ensures work environments have safety precautions in place to prevent work-related injuries.

3.15.2 Existing Conditions

Safety and occupational health includes risks to the public and workers from conducting daily activities and exposure to unsafe or unhealthful environments. Although many routine activities involve some degree of risk, this risk can be minimized through adherence to regulatory requirements that specify operational practices to reduce risks of illness, injury, death, and property damage.

The health and safety of onsite military and civilian workers, the public, and the environment are safeguarded by DoD and Air Force regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA), EPA and as applicable, the Hawaii Occupational Safety and Health Division. These standards specify the amount and type of training required for workers, the use of protective equipment and clothing, engineering controls, maximum exposure limits for workplace stressors such as noise and chemicals, construction site safety such as fencing to prevent unauthorized entry, and controls to prevent release of contaminants to the environment.

To eliminate or reduce risks associated with construction and operation and maintenance activities, contractors are required to prepare project specific health and safety plans that analyze the risks or hazards associated with projects and how to mitigate or control those risks. Reduction or control of risks can include wearing protective clothing and equipment, implementing engineering controls, ensuring personnel are properly trained and that equipment is properly maintained and operated.

SECTION 4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the potential environmental impacts from implementing the proposed action or no action alternative on the resource areas carried forward for detailed analysis.

Criteria used to determine potential impacts are described at the beginning of each resource area subsection. The significance of an action is measured in terms of context and intensity. The types and levels of effects are the following:

- **Short-term or long-term impacts**. Short-term impacts occur during the time required for construction or demolition activities. Long-term impacts are expected to be persistent after the completion of the construction or demolition activities.
- **Negligible, minor, moderate, or significant impacts**. These terms characterize the magnitude or intensity of impacts. Negligible impacts are perceptible but at a low level of detection. Minor impacts are slight but detectable. Moderate impacts are apparent. Significant impacts meet the thresholds for significance set forth in CEQ regulations (40 CFR § 1508.27). Significant impacts warrant more attention and effort in developing mitigation to fulfill the requirements set forth in NEPA.
- **Adverse or beneficial impacts**. Adverse impacts have unfavorable or undesirable outcomes on the environment. Beneficial impacts have positive outcomes.

4.1 AESTHETIC AND VISUAL RESOURCES

4.1.1 Approach to Analysis

The proposed action would have a significant effect on aesthetic and visual resources if it would result in any of the following:

- A substantial adverse effect on a scenic vista
- Substantially damaging scenic resources, including trees, rock outcroppings, and historic buildings along a state scenic highway
- Substantially degrading the existing visual character or quality of the site and its surroundings
- Creating a new source of substantial light or glare that would adversely affect day or nighttime views in the area

The Air Force evaluated each project component on its potential to create visual impacts resulting from changes in scenic vistas, changes or damage to scenic resources, or degrading the visual character of a site. Potential impacts on aesthetic resources would result primarily from construction activities and resulting operational changes and were assessed by comparing project-induced changes to existing conditions. Impacts from potential light sources were also considered based on new lighting and landscaping.

4.1.2 Proposed Action

Short-term minor and long-term negligible adverse effects on scenic and open space resources would be expected from implementing the proposed action. In the short-term, minor adverse effects would be expected in the MRTP area from construction activities. These effects would cease once construction activities cease. Over the long-term, the proposed SISL facility, which is not located within a scenic corridor, would comply with the MRTP design guidelines and would, therefore, fit within the aesthetic vision for the park. It will also adhere to county zoning restrictions for the MRTP District, including height restrictions. Parking lot lighting would consist of full-cutoff, dark-sky-type LED poles. Security lighting sited around the secured perimeter would consist of

full-cutoff, dark-sky-type LED pole-mounted floodlights. Because of the project's separation/buffer from Piʻilani Highway and the relatively low profile of the building, the development would not appreciably affect views of Haleakalā from Piʻilani Highway.

4.1.3 No Action Alternative

Under the no action alternative, the SISL would not be constructed. The aesthetic and visual resources at or near the project site would remain unchanged.

4.2 WATER RESOURCES

4.2.1 Approach to Analysis

The proposed action would have a significant effect on water resources if it would result in any of the following:

- Conflict with water delivery obligations
- Violation of any water quality standards or waste discharge requirement
- Substantial depletion of groundwater supplies or substantial interference with groundwater recharge
- Substantial alteration of the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial erosion or flooding

4.2.2 Proposed Action

Short-term negligible adverse effects on water resources would be expected from implementing the proposed action with the use of standard sediment and erosion control practices. Short-term negligible adverse effects would be the result of ground disturbance and the operation of heavy equipment associated with construction of the SISL facility.

4.2.2.1 Surface Water and Stormwater

The proposed SISL facility would not be near any streams, wetlands, or reservoirs or in any floodplain areas, and activities would not result in degradation of surface waters.

Stormwater runoff during construction can contain high sediment loads and can cause localized areas of erosion because of the lack of vegetation cover. Heavy machinery can leak oil that would be carried in runoff after storm events. Stormwater can carry sediment and other pollutants such as oil and grease, pesticides, herbicides, and fertilizer into receiving waters, resulting in turbidity and other water quality effects.

Stormwater runoff would be controlled in compliance with the Maui County Code 20.08, *Soil Erosion and Sedimentation Control*, including implementing best management practices (BMPs) to address drainage, dust control, vegetation, erosion controls, sediment control, material and waste management, and timing and control of measure implementation.

Construction activities on the property would comply with all applicable federal, state, and county regulations and rules for erosion control. The proposed action will require coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit Authorizing Discharges of Storm Water Associated with Construction Activities. This permit is administered by the State of Hawaiʻi Department of Health and will require development of a Storm Water Pollution Prevention Plan. Stormwater management requirements would be implemented in accordance with the EISA. The project will also require a building permit and a grading and grubbing permit from the County of Maui. All construction activities would also comply with the provisions of Chapter 11-60.1, HAR, section 11-60.1-33, pertaining to fugitive dust.

After construction, permanent landscaping would be established and provide long-term erosion control. The general site drainage pattern would be maintained from northeast to southwest of the building through a collection system of drain inlets, underground piping, and stormwater management features. Runoff from parking areas would be intercepted by area inlets or rock-lined swales with underdrains and conveyed to the grassy area west of the building. Subsurface storm lines would daylight to level spreaders to encourage sheet flow across the grassy area to a detention basin on the southwest corner of the site. The vegetated basin would detain and retain stormwater for infiltration and cleansing before it leaves the site into the drainage channel along the southern perimeter, which is to remain untouched. Stormwater flow volumes in excess of the predevelopment condition would be detained on-site. LID design would be implemented to provide decentralized hydrologic source control for stormwater while maintaining existing predevelopment hydrology, including stormwater runoff rates and quantities, to the maximum extent practicable.

4.2.2.2 Groundwater

No significant adverse effects on groundwater resources would be expected from implementing the proposed action. Groundwater is not anticipated to be encountered during earthwork because it was not encountered in any of the borings conducted during the 2021 geotechnical investigation (Masa Fujioka & Associates 2021).

4.2.2.3 Coastal Consistency

No significant adverse effects on or conflict with the federal CZM objectives and policies for the CZM resources would be expected from implementing the proposed action. A CZMA federal consistency determination was submitted to the State of Hawai‘i Office of Planning, and was determined to be complete and accepted for review on August 3, 2021. The Office of Planning provided a decision letter for the CZMA federal consistency review on September 10, 2021 with a finding of CZM consistency conditional concurrence. Conditions for concurrence include: 1) The proposed activity shall be implemented as represented in the CZMA federal consistency determination and all supporting materials and information provided to the Hawai’i CZM Program. Any changes to the proposed activity shall be submitted to the Hawai’i CZM Program for review and approval. Changes to the proposed activity may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment, and 2) Stormwater runoff would be controlled in compliance with the Maui County Code 20.08, Soil Erosion and Sedimentation Control, including implementing BMPs to address drainage, dust control, vegetation, erosion controls, sediment control, material and waste management, and timing and control of measure implementation. Construction activities on the property would comply with all applicable federal, state, and county regulations and rules for erosion control. After construction, permanent landscaping would be established and provide long-term erosion control. The CZMA federal consistency determination and the decision letter are provided in appendix D.

4.2.3 No Action Alternative

Under the no action alternative, existing conditions would remain unchanged. The surface area of imperviousness on the site would not increase and stormwater would continue to either infiltrate into the ground or run off the site as sheet flow. The no action alternative would have no effect on water resources.

4.3 BIOLOGICAL RESOURCES

4.3.1 Approach to Analysis

The proposed action would be considered to have a significant effect on biological resources if implementing it would result in either of the following:

- Adverse effects on sensitive species, including those listed or proposed for listing as endangered or threatened under the ESA, migratory birds afforded protection by the MBTA and EO 13186, or other species of concern.
- Degrading or destroying sensitive habitats, as defined by the ESA.

4.3.2 Proposed Action

The proposed action may affect but is not likely to adversely affect any of the 14 listed species with the potential to occur in the project area. The project area is highly disturbed former pastureland dominated by *kiawe*-buffelgrass vegetation. Four biological surveys were conducted within the project area between 2008 and 2020. None of these surveys discovered any listed plant species within the project area. As a result, adverse effects on vegetation are not anticipated. *Ilima* (*Sida fallax*), a host plant for listed Hawaiian yellow-faced bees (*Hylaeus* spp.), was found growing within the project area on a recently placed spoil mound of soil and rock excavated during road repair within the MRTP. However, no bees were found during on-site surveys. The Hawaiian goose, or *nēnē*, is the only listed threatened species observed transiting the project area.

A BA was prepared to support Section 7 consultation with the USFWS, which evaluated potential impacts on the 14 listed species (appendix B). Species reviewed were the Hawaiian hoary bat, Hawaiian goose; Hawaiian stilt, Hawaiian coot, band-rumped storm-petrel, Newell's shearwater, Hawaiian petrel, Blackburn's sphinx moth, Anthrician yellow-faced bee, yellow-faced bee, longhead yellow-faced bee, lava-field jack-bean, native yellow hibiscus, and Hawai'i lady's nightcap. There is no critical habitat for listed species within a radius of 1 mile of the project area.

The USFWS concluded that by incorporating specific conservation measures potential effects to all 14 listed species are extremely unlikely to occur and are discountable. Therefore, the USFWS concurred with the determination that the proposed action may affect but is not likely to affect any of the 14 listed species presented above. The USFWS conservation measures as presented in their July 7, 2021, effects determination correspondence are:

General Conservation Measure – To avoid and minimize potential impact to the listed species and designated critical habitats the following best management practices and conservation measures will be implemented:

- Air Force and contractor personnel would be educated about the wildfire concern prior to working in the field.
- No smoking would be allowed in the project area during land clearing and construction.
- All vehicles entering the project area would be equipped with fire extinguishers.
- Vehicles would not be allowed to park near the dry grass when the engines are still hot.
- All site clearing and construction activities would be limited to daylight hours and will not use any nighttime lighting.
- Dark-sky lighting will be employed throughout the new SISL facility.

Species-specific Conservation Measures – To avoid and minimize impacts to listed species, the following measures will be implemented:

For the Hawaiian hoary bat:

- Woody plants and tree greater than 15 feet tall would not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

- The use of barbed or razor wire fencing will be minimized as allowable by facility security requirements.
- No construction activities will be conducted overnight, and site lighting will be kept to a minimum.

For the Hawaiian goose:

- Nēnē found within the Action Area will not be approached, fed, or disturbed.
- If nēnē are observed loafing or foraging within the Action Area during the breeding season (September through April) by Air Force or contractor personnel, work will be halted until a biologist familiar with the behavior of nēnē can survey in and around the Action Area prior to the resumption of any work. Surveys will be repeated after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Work would cease if contractor or Air Force personnel discovers a nest within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins. The USFWS shall be consulted for further guidance.
- Within 4-6 weeks prior to construction, surveys for nēnē will be conducted during the wettest portion of the year (usually November-April) or several weeks after a significant rain.

For Hawaiian waterbirds:

- All construction activities will stop if any of the listed waterbirds are observed within 100 feet of the work area. Work will not be resumed until the waterbirds voluntarily move away from the area.
- Construction personnel will eliminate areas of standing water that may attract listed waterbirds.

For Hawaiian seabirds:

To avoid the risk of fallout, all construction activities will be limited to daylight hours. Parking areas and associated building lighting would consist of full-cutoff dark-sky-type light-emitting-diodes (LED). Security lighting sited around the secured perimeter will consist of full-cutoff dark-sky-type LED pole-mounted flood lights to help prevent fallout of fledgling seabirds. The exterior lighting will be equipped with user-accessible control system overrides to enable personnel to turn lights off when using telescoping equipment. The following measures will be implemented:

- All outdoor lights will be fully shielded so the bulb can only be seen from below bulb height and only use when necessary.
- Unnecessary outdoor lighting will be extinguished at night.
- Large windows at the SISL facility will be shaded at night to keep interior lights from attracting birds.
- If a downed seabird if found at the facility, the protocols prescribed by the State of Hawai‘i Department of Land and Natural Resources Division of Forestry will be followed.

For the Blackburn's sphinx moth:

Pre-clearing/construction biological surveys will be conducted by a knowledgeable biologist for any sign of BSM activity. If tree tobacco over 3 feet in height is found, the project area will be monitored monthly to remove all tree tobacco below 3 feet tall that lack BSM sign. If tree tobacco over 3 feet

tall are found in the project area, USAF will coordinate with USFWS to plan additional surveys and implement conservation measures to ensure the project activities will not cause adverse impacts on the moth. The following additional measures will be implemented:

- Any tree tobacco less than 3 feet tall should be removed.
- The Action Area should be monitored every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.
- Monitoring for tree tobacco prior to and during construction can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Because tree tobacco can readily grow in the disturbed habitats within the Action Area, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. Therefore, the following additional steps will be taken:

- Tree tobacco less than 3 feet tall should be removed.
- The Action Areas should be monitored every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity. Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

For yellow-faced bees:

Pre-clearing/construction biological surveys will be conducted by knowledgeable biologists for any sign of yellow-faced bee activity. The results of these surveys will be shared with the USFWS. ʻIlima and any other host plants for yellow-faced bees will be salvaged and transplanted into other suitable areas.

For Hawaiian plants:

- Construction contractors and Air Force personnel will be educated about the wildfire concern prior to initiating site clearing and construction.
- No smoking will be allowed in the project area.
- All vehicles entering the project area would be equipped with fire extinguishers.
- Vehicles would not be allowed to park near dry litter when the engines are still hot.

Whenever possible native plants would be used for landscaping purposes. Assistance with native plant selection can be found on the Landscape Industry Council of Hawai'i Native Plant Poster (http://hawaiiscape.wpengine.com/publications/), and at Native Hawaiian Plants for Landscaping, Conservation, and Reforestation (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-30.pdf), and Best Native Plants for Landscapes (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-40.pdf).

To avoid the accidental introduction of non-native plant species, equipment, foot wear, clothing, and supplies should be checked and cleaned of contamination (weed seeds, organic matter, or other contaminants) before entering the Action Area. Equipment quarantine areas remote from the Action Area may be considered. Additional information will be sought by contacting the local invasive species committee for Maui Nui (https://mauiinvasive.org/).

Consequences of the Proposed Action

Hawaiian hoary bat

The Hawaiian hoary bat roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or move away from disturbance. Because the project activities will occur outside the Hawaiian hoary bat pupping season and no removal of vegetation 15 feet or taller is planned, project impacts to the Hawaiian hoary bat are extremely unlikely to occur and are considered discountable.

Hawaiian goose

Nēnē are found on the islands of Hawai'i, Maui, Molokai, and Kauai. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands or shrublands, and lava flows. Threats to the species include predation by nonnative mammals and birds, strikes at wind facilities and by vehicles. Noise and activity associated from the proposed could potentially disturb Hawaiian geese, especially if they are nesting close to the drilling activities or movement of equipment. Implementation of the above conservation measures designed to prevent interactions with nēnē during project activities will reduce the potential impacts on the breeding, feeding, and sheltering of nēnē to a level that is insignificant and discountable.

Hawaiian waterbirds

Hawaiian waterbirds are found in a variety of wetland habitats including freshwater marshes and ponds, coastal inlets, artificial reservoirs, taro (*Colocasia esculenta*) patches, irrigation ditches, sewage treatment ponds. Hawaiian stilts may also be found wherever temporary or persistent standing water occurs. Threats to these species include predation by non-native mammals and birds, and habitat loss. Based on the project details provided, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Implementation of conservation measures to eliminate standing water that may attract waterbirds and to stop work within 100 feet of waterbirds will reduce potential impacts to a level that is insignificant and discountable.

Hawaiian seabirds

These species may fly through the action area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). They are attracted to lights and after circling the lights they may become exhausted or disoriented, causing them to ground. Downed seabirds are subject to injury or death due to collision with automobiles, starvation, and predation. Young birds flying through the action area between September 15 and December 15, in their first flights from their nests to the ocean, are particularly vulnerable to light attraction. Nighttime actions requiring temporary lighting or permanent installation of lights are not proposed or anticipated, as all field activities will be limited to daylight hours. Noise generated by the operation of construction equipment will be intermittent and negligible to seabirds. Thus, impacts on seabirds are considered discountable.

Hawaiian yellow-faced bees (*Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*)

The three species of Hawaiian yellow-faced bees are known from coastal and lowland dry forests and shrublands. Documented nectar plants include naupaka, *Sida fallax* ('ilima), *Chamaesyce* spp. ('akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope. Threats to yellow-faced bees include habitat destruction and modification from land use change,

non-native plants, ungulates, and fire, along with predation by non-native ants and wasps. Vehicle traffic and soil disturbances associated with the field activities can cause destruction to the vegetation and reduce food availability. Implementation of conservation measures to prevent the ignition and spread of wildfire will minimize the potential impacts of wildfire on vegetation (food resources). In addition, because similar food resources are available in the general area, any impacts on vegetation from vehicle traffic and soil disturbance are unlikely to have an effect on the food resources available to the bees. Therefore, the impacts on yellow-faced bees are discountable.

Blackburn's sphinx moth

The adult BSM feeds on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), ʻilieʻe (*Plumbago zeylanica*), maiapilo (*Capparis sandwichiana*), and others. Blackburn's sphinx moth larvae feed on non-native tree tobacco (*Nicotiana glauca*) and native ʻaiea (*Nothocestrum* spp.). To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance and removal of vegetation caused by the movement of equipment and drilling activities have the potential to result in injury or mortality of BSM larvae on host plants or in the soil. Prior to work initiation, surveys for BSM and its larval host plants will provide the USAF with the necessary data to either implement measures to remove nonnative tree tobacco less than 3 feet tall (if present) or coordinate with USFWS for additional surveys if tree tobacco plants more than three feet in height are present. Based on implementation of these conservation measures, impacts to BSM are unlikely to occur, and thus are considered discountable.

Listed plants

Three endangered plants, ʻāwikiwiki (*Canavalia pubescens*), maʻo hau hele (*Hibiscus brackenridgei*), and *Bonamia menziesii* may occur in the lowland dry ecosystem on Maui in the vicinity of the proposed project. No direct impacts to the three listed plant species are anticipated as a result of project activities because the closest known individuals of these species are located more than one mile away. Nevertheless, operation of vehicles and equipment as well as human ignition sources (e.g. smoking) introduce the potential for wildfire that could spread and impact listed plant species and/or their habitat. Implementation of conservation measures will reduce the likelihood of ignition and spread of wildfire making the loss of individuals or habitat destruction highly unlikely, and thus discountable.

USFWS CONCLUSION

The USFWS concluded with the following: We have reviewed our data and conducted an effects analysis of your project. By incorporating the conservation measures listed above, potential effects to listed species are extremely unlikely to occur and are therefore discountable. Because impacts from the proposed project are discountable, we concur with your determination that the proposed action may affect, but is not likely to adversely affect the following 14 listed species: the Hawaiian hoary bat; Hawaiian goose; Hawaiian coot and Hawaiian stilt; Newell's shearwater, the Hawai'i Distinct Population Segment of the band-rumped storm petrel, the Hawaiian petrel; Blackburn's sphinx moth; three yellow-faced bees, *Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*; and three plants, *Canavalia pubescens*, *Hibiscus brackenridgei*, and *Bonamia menziesii*.

Our concurrence is based on the information and determination of effects presented in your current Biological Assessment. Our regulations require the preparation of a Biological Assessment within 90 days of a species list verified by the Service (50 CFR 402.12(e)). Because commencement of land acquisition and construction of the SISL is subject to future Air Force Research Lab ranking and MILCON funding and is anticipated to occur in the FY23 or FY24

funding cycles, verification of the species list and project impacts will be required when the Air Force is closer to the start of those activities.

Re-initiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this letter; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action.

The USFWS determination correspondence, including the conservation measures presented above and the BA are provided in appendix B.

4.3.3 No Action Alternative

No effects on biological resources would result under the no action alternative. Existing biological conditions at the project site would remain unchanged.

4.4 GEOLOGICAL RESOURCES

4.4.1 Approach to Analysis

The proposed action would be considered to have a significant effect on geological resources if it would result in any of the following:

- Substantial alteration of the topography or destruction of any unique topographic features
- Exposure of people or structures to potential adverse effects, including the risk of loss, injury, or death involving seismically induced ground failure
- Substantial soil erosion
- Location on a geologic unit or soil that is unstable or that would become unstable because of the project

4.4.2 Proposed Action

4.4.2.1 Topography

No significant adverse effects on local topographic characteristics would be expected from implementing the proposed action. Finished contours of the project area would generally follow existing grades to minimize earthwork costs and maintain existing drainage patterns. Grading would balance cut-and-fill quantities to the greatest extent possible. An NPDES permit would be obtained from the State of Hawai`i Department of Health prior to grading activities.

4.4.2.2 Soils

Short-term minor adverse effects on soils would be expected from implementing the proposed action. Site clearing and excavation activities would temporarily disturb soils, exposing them to erosion. BMPs would be implemented in compliance with Maui County Code 20.08 to control and minimize soil erosion and runoff. BMPs would include using silt fences, coir logs, and temporary diversion berms and swales to limit stormwater runoff and increase soil retention.

All construction activities would comply with all applicable federal, state, and county regulations and rules for erosion control. Before issuance of a grading permit by the County of Maui, the Air Force would complete the final erosion control plan and implement BMPs required for the NPDES permit. After construction, establishing permanent landscaping would provide long-term erosion control.

4.4.2.3 Seismicity

No significant adverse effects on seismicity would be expected from implementing the proposed action. The proposed SISL would be designed and built for protection from earthquakes in accordance with building codes adopted by the County of Maui.

4.4.2.4 Unique and Prime Farmland Soils

No significant adverse effects on unique or prime farmland soils would be expected from implementing the proposed action. The proposed site has no unique or prime farmland soils.

4.4.3 No Action Alternative

No adverse effects on geological resources would be expected under the no action alternative. No changes to existing conditions would result.

4.5 CULTURAL RESOURCES

4.5.1 Approach to Analysis

The proposed action would be considered to have a significant effect on cultural resources if it would adversely impact identified cultural resources or historic properties that are considered significant for the following:

- Association with events that have made a significant contribution to the broad patterns of history
- Access to sacred sites
- Association with the lives of persons significant in the past
- Distinctive characteristics of a type, period, or method of construction that represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction
- Anything that has yielded, or may be likely to yield, information important in prehistory or history

4.5.2 Proposed Action

No significant adverse effects on cultural resources would be expected from implementing the proposed action. An AIS conducted on the project site confirmed that no cultural resources are located on the surface of the APE and subsurface cultural resources are unlikely to be identified in this area. The study was termed an archaeological assessment (AA) in accordance with HAR §13-284-5(5)(A) and no further historic preservation mitigation was recommended. A draft AA report was submitted to the SHPD on April 7, 2021. The SHPD is reviewing the findings of the draft AA report to determine if any additional inventory or mitigation is required to complete the historic preservation review process related to the proposed action.

In accordance with NHPA Section 106 and HRS Chapter 6E-42, consultation with NHOs was conducted for the proposed action. Consultation was initiated via a letter mail-out to NHOs listed in the region by the U.S. Department of the Interior Native Hawaiian Organization Notification List. These NHOs included the Office of Hawaiian Affairs (OHA), Aha Moku o Maui, Inc., and Kuloloi‘a Lineage – I ke Kai ‘o Kuloloi‘a as well as the SHPD. Mr. Manuel Kuloloio responded on behalf of the Kuloloi‘a Lineage – I ke Kai ‘o Kuloloi‘a via email with knowledge of the traditional use of the area for growing sweet potato and *ulu* (breadfruit) until cattle and ranching caused destruction of pre-Contact historic properties. Mr. Kuloloio did not identify any historic properties that may be affected by the proposed action within the APE. Mr. Cody Nemet responded on behalf of Aha Moku o Maui, Inc. via email with a request for a site visit to the APE along with project proponents.

A site visit with Aha Moko o Maui, Inc. representatives Mr. Cody Nemet, Mr. John Kahawai, Mr. Jacob Noury-Adolpho, Ms. Clare Apana, and Ms. Carol Lee was attended by project proponents Capt. Cody Felipe (USAF), Mr. John Ford (Tetra Tech), and Mr. Trevor Yucha (Cultural Surveys Hawai'i) on May 14, 2021. Aha Moku o Maui, Inc. representatives expressed concerns regarding the potential of the area to contain human skeletal remains, impacts to natural drainage patterns and downslope wetland environments, and the potential for surface historic properties along the northern boundary of the APE adjacent to the MRTP. Aha Moku o Maui, Inc. representatives requested the final project design plans and the BA being prepared for the project. No other comments were received during NHPA Section 106 and HRS Chapter 6E-42 consultation. No historic properties were identified within the APE during the consultation process. The Air Force provided the BA and the USFWS determination on August 12, 2021.This draft EA will be furnished to the Aha Moku o Maui, Inc.

4.5.3 No Action Alternative

No adverse effects on cultural resources would be expected under the no action alternative. Not implementing the proposed action would eliminate any possibility of inadvertently harming unknow cultural resources.

4.6 AIR QUALITY

4.6.1 Approach to Analysis

Effects on air quality would be considered significant if total emissions from construction or operations of the proposed action (1) would exceed the prevention of significant deterioration (PSD) major source thresholds, or (2) would contribute to a violation of any federal, state, or local air regulation.

4.6.2 Proposed Action

The proposed action would be expected to have short- and long-term minor adverse effects on air quality. Short-term adverse effects would be the result of emissions generated during construction, and long-term adverse effects would be caused by limited operational emissions from the SISL. The proposed action would not generate emissions that would exceed the PSD major source thresholds or contribute to a violation of any federal, state, or local air regulation.

Using the Air Force Air Conformity Applicability Model (ACAM), construction emissions were estimated for fugitive dust, on- and off-road diesel equipment and vehicles, worker trips, architectural coatings, and paving off-gases (Table 4-1). Operational emissions were estimated for changes in heated space from the new facilities. The area is in attainment and the General Conformity Rule do not apply; therefore, the PSD major source thresholds were carried forward to determine the level of effects under NEPA. The estimated emissions from the proposed action would be below the PSD major source thresholds; therefore, the level of effects would be minor. Detailed emissions calculations are in appendix E.

For this analysis, the Air Force assumed that all construction activities would be compressed into a 12-month period. Therefore, regardless of the ultimate implementation schedule, annual emissions would be less than those specified in this EA. Small changes in facility site and ultimate design, and moderate changes in quantity and types of equipment used would not substantially change these emission estimates and would not change the determination under the General Conformity Rule or level of effects under NEPA.

Table 4-1. Air Emissions Compared to PSD Thresholds

Pollutant	Construction emissions (tpy)	Operational emissions (tpy)	PSD Major Source Threshold (tpy)	Exceeds thresholds? (Yes/No)
VOC	1.2	0.4	250	No
NO_x	3.0	0.5		
CO	7.9	4.9		
SO_2	<0.1	<0.1		
PM_{10}	2.6	<0.1		
$PM_{2.5}$	0.1	<0.1		
Pb	<0.1	<0.1	25	

Source: USAF 2020.
Note: VOC = volatile organic compound.

Any new stationary sources of air emissions, such as backup generators or boilers, could be subject to federal and state air permitting regulations, including New Source Review, PSD, National Emission Standards for Hazardous Air Pollutants, or New Source Performance Standards. They would be permitted under the state of Hawai'i's air permitting regulations, as necessary. Both a new source construction permit and a permit to operate could be required.

Greenhouse Gases and Climate Change. This EA examines GHGs as a category of air emissions. It also looks at issues of temperature and precipitation trends to determine whether the affected environment or the proposed SISL would be affected by climate change. This EA does not attempt to measure the actual incremental effects of GHG emissions from the proposed action. There is a lack of consensus on how to measure those effects. Existing climate models have substantial variation in output and do not have the ability to measure the actual incremental effects of a project on the environment. There are also no established criteria identifying monetized values that are to be considered significant for NEPA purposes. Table 4-2 compares the estimated GHG emissions from the proposed action to the global, nationwide, and statewide GHG emissions. The estimated increase would be minute. The SCC for implementing the proposed action would be $548 per year.

Table 4-2. Global, Countrywide, and Statewide GHG Emissions

Scale	$C0_2e$ emissions (MMT/year)	Change from the Proposed Action
Global	43,125	0.000002%
United States	5,249	0.000019%
Hawai'i	18.6	0.005247%
Proposed Action	0.001	-

Sources: USAF 2020; USEIA 2016.
Note: MMT = million metric tons.

Hawai`i is in the US-Affiliated Pacific Islands region of the United States. Dependable and safe water supplies for Hawaiian communities and ecosystems are threatened by rising temperatures, changing rainfall patterns, sea level rise, and increased risk of extreme drought and flooding. Many islands in the Pacific are already experiencing saltwater contamination caused by sea level rise, which is expected to catastrophically impact food and water security, especially in low-lying atolls. Resilience to future threats relies on active monitoring and management of watersheds and

freshwater systems (NCA 2014). Temperatures are expected to continue to rise into the future but will vary in the extent of warming that occurs based on location, elevation, and changes in ocean conditions. Annual average temperatures are projected to rise by 1.5–3.5 °F by 2050, with the greatest increases in the summer and fall (USEPA 2017).

Table 4-3 outlines potential climate stressors and their effects on the proposed research facilities. The proposed action in and of itself is only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have appreciable effects on any element of the proposed action.

Table 4-3. Effects of Potential Climate Stressors

Potential climate stressor	Effects on the SISL
Sea level rise	Negligible
Increased temperatures	Negligible
Changes in precipitation patterns	Negligible
Increased drought	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: NCA 2014.

BMPs would be required for both construction and operational emissions associated with the proposed SISL. The construction project would be accomplished in full compliance with Hawai`i State Department of Health requirements, by implementing compliant practices and/or products. These requirements include the following:

- Visible emissions (HAR §11-60.1-32)
- Fugitive dust (HAR §11-60.1-33)
- Storage of volatile organic compounds (HAR §11-60.1-39)
- Open burning (HAR §11-60.1-52)

This is not an all-inclusive list. The Air Force and all contractors would comply with all applicable Hawai`i air pollution control regulations.

In addition, no one shall handle, transport, or store any material in a manner that might allow unnecessary amounts of air contaminants to become airborne. During construction, reasonable measures might be required to reduce fugitive dust, which might include the following:

- Using water for control of dust during the grading of roads or the clearing of land
- Paving roadways and maintaining them in a clean condition
- Covering open equipment when conveying or transporting material likely to create objectionable air pollution when airborne
- Promptly removing spilled or tracked dirt or other materials from paved streets
- Providing an adequate water source at the site prior to start-up of construction activities
- Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase
- Stabilizing open storage piles and disturbed areas by covering or applying water where appropriate

- Installing wind fencing and phase grading operations and operating water trucks for stabilization of surfaces under windy conditions
- Preventing spillage and limiting speeds to 15 miles per hour when hauling material and operating non-earthmoving equipment
- Limiting speed of earth-moving equipment to 10 mph

4.6.3 No Action Alternative

No adverse effects on air quality would be expected under the no action alternative. The SISL would not be built, and the existing facility and any associated air emissions would continue. These would include emissions from heating and cooling of the existing building and from personal operating vehicles. Ambient air quality would remain unchanged compared to existing conditions.

4.7 NOISE

4.7.1 Approach to Analysis

Noise effects would be considered significant if the proposed action created appreciable long-term increases in areas of incompatible land use due to noise or would lead to a violation of any federal, state, or local noise regulation.

4.7.2 Proposed Action

The proposed action would be expected to have short- and long-term minor adverse effects on the noise environment. Short-term increases in noise would be caused by construction activities. There would be minor ongoing/long-term sources of noise at the facility due to normal building operation and maintenance. The proposed action would not create appreciable long-term increases in areas of incompatible land use due to noise and would not lead to a violation of any federal, state, or local noise regulation.

Table 4-4 presents typical noise levels (dBA at 50 ft) that EPA has estimated for the main phases of outdoor construction. Individual pieces of construction equipment typically generate noise levels of 80–90 dBA at a distance of 50 ft. With multiple pieces of equipment operating concurrently, the zone of relatively high construction noise typically extends to distances of 400–800 ft from the site of major equipment operations. Construction activities, including "any or all activities…necessary or incidental to the erection, demolition, renovation, or alteration of buildings" require a permit to remain compliant with the state's noise regulation.

In general, noise can interfere with communication in homes, schools, or other buildings adjacent to construction sites. The disruption of routine activities in the home, such as radio or television listening, telephone use, or family conversation, can give rise to frustration and irritation. The quality of speech communication is also important in classrooms, offices, and industrial settings and can cause fatigue and vocal strain in those who attempt to communicate over the noise. The threshold which noise begins to interfere with communication is 50 dBA indoors, and speech interference is often described in terms 75 dBA Lmax outdoors to account for a 25 dBA of noise attenuation provided by buildings such as houses and schools (DNWG 2009a).

There is a school approximately 200 feet from the northeast corner of the proposed SISL site which would experience intermittent construction noise appreciably above background levels. Maximum sound levels from construction equipment would range from 63 to 77 dBA in outdoor areas such as the school parking lot and approximately 38 to 52 dBA inside the school for areas with window facing the site. Construction activities within approximately 100 feet of the northeast corner of the proposed site may be loud enough to interfere with speech for areas within the school with windows facing the site. These interruptions would be limited to construction activities

within 100 feet of the northeast property boundaries, only occur during heavy equipment operations, and would end with the construction phase. These effects would be minor.

There are no other noise-sensitive areas within 800 ft of the construction site that would experience appreciable construction noise. Limited truck and worker traffic might be audible at locations beyond 800 ft. Given the temporary nature of proposed construction activities and the limited amount of noise generated by heavy equipment, these effects would be minor.

Table 4-4. Noise Levels Associated with Outdoor Construction

Construction phase	L_{eq} (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971.

Noise from personal vehicles of SISL employees might be heard on nearby roadways; however, operation of the facility would cause no ongoing or long-term appreciable changes in the noise environment. The proposed SISL mechanical yard is currently planned for the northeast quadrant of the proposed site. This area may include noise generating equipment such as chillers or stand-by generators. In the ultimate design stage, the Air Force would design and operate equipment in full compliance with the State of Hawai'i noise regulation by limiting the noise to 55 dBA in the daytime, and 45 dBA at night, or obtaining a variance. Other than the proposed mechanical area, the overall noise environment would be comparable to existing conditions. The effects would be minor.

Although construction-related noise impacts would be minor, the following BMPs would be implemented to further reduce these already limited effects:

- The Air Force and all contractors would remain in full compliance with the state of Hawai'i's noise control regulations.
- Heavy equipment use would occur primarily during normal weekday business hours.
- Heavy equipment mufflers would be properly maintained and in good working order.
- Personnel, particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

4.7.3 No Action Alternative

No adverse effects on the noise environment would be expected under the no action alternative. The overall noise environment would remain unchanged when compared to existing conditions.

4.8 ROADWAYS AND TRAFFIC

4.8.1 Approach to Analysis

Traffic impacts would be considered significant if the proposed action created conditions in which construction-related traffic exceeded the existing capacity of vehicular transportation networks on and near the MRTP or contributed to a noticeable degradation of existing traffic conditions; and/or

an associated increase in personnel at the proposed SISL that would exceed the capacity of existing vehicular transportation networks on and near the MRTP.

4.8.2 Proposed Action

Short- and long-term negligible adverse effects on roadways and traffic along Piʻilani Highway and Lipoa Parkway would be expected from implementing the proposed action. In the short-term, minor increases in vehicular traffic would be expected during SISL construction from vehicles supporting those activities. Once the SISL is completed, construction-related traffic would cease. Over the long term, a minor increase in traffic volume would be expected from the 5 AFRL logistics warehouse employees relocating to the new SISL. The remaining approximately 156 AFRL employees relocating to the new SISL already travel area roads, including Lipoa Parkway, to the existing Detachment 15 AFRL HQ in the MRTP and the RME. Also, over the long-term, negligible beneficial effects would be realized from fewer commutes to the summit and warehouse by personnel.

Implementing the proposed action would introduce additional vehicles onto nearby roadways due to a net increase of 5 employees in the immediate vicinity of the site. Effects associated with the additional localized traffic would include an incremental increase in daily and peak period traffic volumes on roadways and at intersections adjacent to the new SISL. Table 4-5 provides a detailed breakdown of the weekday increases in traffic expected at the proposed SISL. There would be a net change of 13 vehicles per day (vpd) and 2 vehicles per hour (vph) during the peak traffic period (50% arriving and 50% leaving) from the proposed SISL. These changes in traffic would be negligible and not noticeable beyond the immediate vicinity of the proposed SISL. These changes would have no effects on the level of service or contribute to congestion at any nearby intersections or roadway segments.

Table 4-5. Estimated Trip Generation from the Proposed SISL

	Trip Generation Rate (Trips per Employee)	SISL	HQ	Net Change	Units
Number of Employees	-	161	(156)	5	employees
Weekday	2.67	430	(417)	13	vpd
A.M. Peak Period	0.43	69	(67)	2	vph
P.M. Peak Period	0.41	66	(64)	2	vph

Source: ITE 2003

While the proposed SISL design will accommodate as many as 180 personnel, the Air Force has no plans at this time to increase the number of employees beyond those described above.

4.8.3 No Action Alternative

No adverse effects on roadways or traffic would be expected under the no action alternative. Existing conditions at the site would remain unchanged. The number of hours personnel spend on mission-related work would continue to suffer because of long commute times and wear on vehicles and fuel consumption would not be reduced.

4.9 INFRASTRUCTURE AND UTILITIES

4.9.1 Approach to Analysis

The proposed action would be considered to have a significant effect on infrastructure and utilities if it would create a demand on a system that exceeds its capacity.

4.9.2 Proposed Action

Short- and long-term minor adverse effects and long-term beneficial effects on infrastructure and utilities would be expected from implementing the proposed action. Short-term effects would be expected from infrastructure and utilities use during construction. Long-term minor adverse effects would be expected from construction waste disposed in the local landfill. Long-term beneficial effects would be expected from reduced demand on utilities resulting from consolidating personnel and operations into a single facility with energy-efficient elements built in as compared to a similar number of personnel working in separate older facilities. This section discusses the individual infrastructure and utilities elements.

4.9.2.1 Solid Waste

Long-term minor adverse effects on solid waste would be expected from the generation of waste during construction. Waste generated during construction that is not diverted from the landfill would contribute to the reduction of available landfill capacity. The construction contractors would make an effort to minimize the amount of wastes generated, including paving and building materials, recycle as much generated waste as practicable, and dispose of all other materials in accordance with federal, state, and county requirements.

4.9.2.2 Sanitary Sewer

Negligible or no effects on the sanitary sewer system would be expected from implementing the proposed action. Although a new connection to the sanitary sewer system would be made, most personnel who would occupy the SISL currently occupy nearby facilities connected to the same system.

4.9.2.3 Potable Water

Short-term minor adverse effects on potable water use would be expected from implementing the proposed action. Minor amounts of potable water would be required during construction activities, but no increase in potable water use would be expected from consolidating operations at the SISL.

4.9.2.4 Stormwater System

No significant adverse effects on the stormwater system would be expected from implementing the proposed action. The new system installed as part of site development would be integrated into the existing system to ensure the existing system would be able to handle stormwater runoff generated from the project area. In compliance with federal regulations, the stormwater system would detain stormwater so it would have no effect on the existing system.

4.9.2.5 Electrical Distribution System

No significant adverse effects on the electrical distribution system would be expected from implementing the proposed action. The SISL would have energy-efficient electrical features that would be expected to reduce electricity usage to less than the amount being used in the separate facilities now occupied by Air Force SISL personnel.

4.9.2.6 Communications

No significant adverse effects on communication systems would be expected from implementing the proposed action. A communication system suitable to the facility's purpose would be installed and would have no effect on nearby communication systems.

4.9.3 No Action Alternative

No adverse effects on infrastructure or utilities would be expected under the no action alternative. Existing infrastructure and utility system conditions and usage would remain unchanged.

4.10 SOCIOECONOMICS

4.10.1 Approach to Analysis

Impacts on socioeconomic resources from implementing the proposed action would be considered significant if it would result in substantial gains or losses in employment or income generation.

4.10.2 Proposed Action

4.10.2.1 Employment, Industry, Income

The Air Force developed a quantitative estimate of economic effects from the proposed action using the Impact Analysis for Planning (IMPLAN) model. IMPLAN is an economic model originally developed in 1976 by the US Forest Service for natural resource planning, but later updated and adapted by other government agencies and private sector analysts to use in economic impact analysis. It is now owned by the IMPLAN Group, LLC. IMPLAN is a regional input-output model derived by using local data combined with national input-output accounts. The model uses the most currently available data obtained from the US Bureau of Economic Analysis, US Bureau of Labor Statistics, US Census Bureau, and other federal and state agencies. IMPLAN uses trade flow characteristics to trace economic changes in a regional economy arising from fluctuations in the level of activity in one or more identified industry sectors (IMPLAN 2020).

IMPLAN estimates economic changes (direct, indirect, and induced) for a defined region. *Direct effects* are the initial production changes or expenditures made by producers/consumers as a result of an activity or policy; *indirect effects* are secondary effects of local industries buying goods and services from other local industries (business-to-business transactions); and *induced effects* are the tertiary effects from household spending of labor income. The IMPLAN model estimates changes in regional employment, labor income, value added, and output as a result of a proposed action. *Employment* includes full-time, part-time, and seasonal workers. *Labor income* is all forms of employment income, including employee compensation (wages, salaries, and benefits) and proprietor's income. *Value added* is the difference between an industry's or establishment's total output and the cost of its intermediate inputs. *Output* is the value of industry production (IMPLAN 2021a).

The IMPLAN model estimates the total multiplier effect on a region's economy from increased expenditures associated with a proposed action. For this proposed action, the model was used to estimate impacts on an annual basis for the approximately 2-year design and construction period. The estimated total construction cost of $85 million was divided evenly ($42.5 million per year) across the estimated 2-year build-out period and was entered into the IMPLAN model as the construction industry change for 1 year (the IMPLAN model is designed to evaluate on an annual basis).

Short-term minor beneficial economic effects would be expected from implementing the proposed action. It would result in a short-term minor increase in local employment, income, and business sales from the construction of the SISL. The economic benefits of this activity would be short term, lasting for the duration of the construction period and diminishing as the project reaches completion. The project is estimated to employ 235 direct workers from the construction industry and generate additional indirect and induced employment in associated sectors (Table 4-6). The IMPLAN model derived the employment numbers based on the project's estimated construction expenditures and the model's estimate of workers employed per dollar of expenditure (IMPLAN 2020). Total annual employment (direct, indirect, and induced) expected from the project is estimated to be 373 jobs, with indirect jobs being created in sectors such as architectural and engineering and related services, concrete product manufacturing, retail and wholesale trade, and truck transportation. Induced jobs would be created in service sectors such as food and

beverage, healthcare, and retail. The increase in employment would be modest relative to the size of the county's economy and workforce. The estimated total employment of 373 to be supported by the proposed action would represent a 0.5 percent increase over Maui County's total baseline employment of 68,849. Income would increase by about $24.9 million, or 0.3 percent over the county's baseline total personal income of $8.6 billion.

Reasonably foreseeable actions in Maui County that would also have beneficial economic effects include continued development of the MRTP, construction of the new high school in Kīhei, and ongoing commercial and residential development in Kīhei and other areas on Maui. Like the proposed action, other recent or planned development actions would economically benefit the region by increasing employment, income, and business sales. Although no new SISL operations jobs are anticipated as part of the proposed action because staff would be transferred from other facilities on Maui to the new SISL, the proposed action could have long-term negligible beneficial effects. The new SISL facility would have the capacity to accommodate additional staff from other Air Force facilities on Maui, Hawai'i, or elsewhere.

Table 4-6. IMPLAN Model Output

Impact type	Employment	Labor income	Value added	Output
Direct Effect	235	$18,090,846	$22,125,137	$42,500,000
Indirect Effect	52	$2,633,620	$4,846,993	$9,509,709
Induced Effect	86	$4,180,722	$8,566,498	$13,795,147
Total Effect	373	$24,905,188	$35,538,628	$65,804,856

Source: IMPLAN 2021b.

4.10.3 No Action Alternative

No effects would be expected. The proposed action would not be implemented so the proposed construction project would not occur. It is noted that the Air Force would forgo the potential benefits of implementing the proposed action. If the proposed action is not implemented, the Air Force would not be able to consolidate all four sea level functions (the Detachment 15 AFRL HQ, data center, RME facility, and warehouse space) on Maui into one site; therefore, the no action alternative would not allow the avoidance of lease costs for the four sites (totaling $1.4 million annually). The no action alternative also would not reduce the number of personnel hours spent on the daily 3-hour round-trip drive to and from the summit of Mount Haleakalā or reduce the associated vehicle wear and fuel consumption, both of which result in operational costs to the government.

4.11 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

4.11.1 Approach to Analysis

Impacts on environmental justice or protection of children resources from implementing the proposed action would be considered significant if one of the following would occur:

- Disproportionately high and adverse environmental or human health impacts on an identified minority or low-income population, which appreciably exceed those on the general population around the project area
- Disproportionately high and adverse environmental health or safety risks to an identified population of children, such as the increase in a child's risk of exposure to an

environmental hazard through contact or ingestion or the risk of potential substantial harm to the safety of children.

4.11.2 Proposed Action

4.11.2.1 Environmental Justice

No significant adverse effects would be expected. Implementing the proposed action to construct and operate the SISL would not result in disproportionate adverse environmental or health effects on low-income or minority populations. Construction and operation of the SISL is not actions with the potential to substantially affect human health or the environment by excluding anyone, denying anyone benefits, or subjecting anyone to discrimination or disproportionately high and adverse environmental health or safety risks. The SISL would be in the MRTP in a planned mixed-use community designed to attract nonpolluting high technology businesses around a regional high-technology employment base.

4.11.2.2 Protection of Children

No significant adverse effects would be expected. The proposed project would be near the Kīhei Charter High School. In the short term, because construction sites can be enticing to children, construction activity could be an increased safety risk; however, during construction, appropriate safety measures would be implemented and health regulations would be followed to protect the health and safety of the public. Construction contractors would be responsible for complying with Air Force, Occupational Safety and Health Administration, and local regulations. Barriers and "no trespassing" signs would be placed around the perimeter of the construction site to deter children from entering the area, and construction vehicles and equipment would be secured when not in use. These measures would reduce the risk of potential harm to children. After construction is complete, the project site would be an office building with a fenced perimeter and controlled access in a planned mixed-use community and would not be a risk to children.

4.11.3 No Action Alternative

No effects would be expected. The proposed action would not be implemented, and existing conditions would remain unchanged. The no action alternative would not adversely affect environmental health, human health, or safety conditions for environmental justice populations or children in the region.

4.12 SUSTAINABILITY AND GREENING

4.12.1 Approach to Analysis

Sustainability and greening would be significantly affected if implementing the proposed action would reduce the sustainability of resources, ecosystems, or human communities.

4.12.2 Proposed Action

Short-term minor adverse and long-term minor beneficial effects on sustainability would be expected from implementing the proposed action. Adverse effects would result from resource use—during both construction and facility operation, the unavoidable creation of waste during facility construction, and converting some open space to impervious surface. Resources used during construction and facility operation, except for those that can be recycled, would be irretrievably lost; the space occupied by the facility could be converted back to open space in the future if a time comes when it is no longer needed.

In compliance with statutory and DoD requirements, the Air Force would incorporate sustainability and greening practices and products into the design of the SISL, including the following:

- Energy-efficient lighting, heating, and cooling to minimize energy use, powered by renewable energy sources, if available
- Low-flow water fixtures to minimize potable and non-potable water consumption
- Energy-efficient construction methods and building materials, including recycled materials where practicable, that conform to sustainable design principles
- Waste prevention and recycling measures that comply with federal requirements for solid, hazardous, and toxic waste management and disposal
- Products and services, including electronics, that comply with statutory mandates for purchasing preference, Federal Acquisition Regulation requirements, and other applicable federal procurement policies

Beneficial effects would be expected from the Air Force incorporating these sustainability measures into the SISL development process from design through construction to operations. The facility would be designed to protect landscape integrity and maintain biological diversity. The new facility would meet LEED Silver certification standard designation and would meet or exceed the requirements of the Energy Policy Act of 2005 and the EISA. Operation of the SISL would be expected to result in energy and water savings over the life of the facility compared to continuing operations at the Air Force's multiple existing Detachment 15 AFRL facilities on Maui. Similarly, eliminating commutes to the summit of Mount Haleakalā would result in far fewer miles driven annually, thus generating less GHGs. Reducing GHGs is a key factor of sustainability in light of the climatic effects resulting from their concentration in the atmosphere.

4.12.3 No Action Alternative

No effects would be expected under the no action alternative. The currently occupied spaces would continue to use energy and water at their current consumption levels, no resources would be consumed for new construction or waste created from construction activities, and fuel consumption would remain unchanged from AFRL personnel continuing to make long commutes.

4.13 HAZARDOUS MATERIALS AND WASTE

4.13.1 Approach to Analysis

The proposed action would be considered to have a significant effect on hazardous materials and waste if it would result in any of the following:

- substantially increase the risk of release of a hazardous material or waste (e.g., from spills or other releases) through improper management
- result in noncompliance with applicable installation, local, state, or federal regulations

4.13.2 Proposed Action

The proposed action would be expected to have short-term minor adverse effects and negligible adverse effects over the long-term from the use of hazardous materials and the generation of hazardous waste. Short-term minor adverse effects would be expected during construction, however, the generation of those materials would be minimal and they would be handled and disposed of in accordance with local, state, and federal regulations and with established Air Force procedures, where applicable. Vehicles and machinery used during construction activities would use petroleum, oil, and lubricants, but construction contractors would be responsible for preventing spills by implementing proper storage, handling, and management procedures. Additionally, encountering hazardous materials or wastes during construction is unlikely since an environmental baseline study of the proposed SISL parcel and surrounding area concluded that

no release or disposal of hazardous substances or petroleum products has occurred (including no migration of those substances from adjacent areas).

Over the long term, negligible adverse effects would be expected from the handling, use, and management of hazardous materials and generation of waste once the SISL is operational. Those activities would be expected to involve quantities similar to those already used and generated. The safe handling, storage, use, and disposal of the materials and waste would be conducted in accordance with the AFRL's hazardous waste and hazardous materials management plans and established procedures for mission related activities. Prior to returning existing AFRL facilities to leaseholders, hazardous materials and waste used or generated by the ARFL would be removed and properly managed.

The installation and use of the above ground diesel fuel storage tanks needed to support backup power generation would be double walled, have leak detection systems, be sited per AT/FP clearance requirements, and comply with NFPA and UFC design requirements. Additionally, a spill prevention, control, and countermeasure (SPCC) plan and operation procedures describing how design and operation of the diesel fuel storage tanks would comply with SPCC rules and prevent oil pollution would be required. Such measures would result in long-term negligible adverse effects.

4.13.3 No Action Alternative

No significant adverse effects on hazardous materials and waste would be expected under the no action alternative. Construction, including the installation of fuel storage tanks, and operation of the proposed SISL would not occur. Existing hazardous material and waste functions would continue to be managed using established management plans. Material usage and generated waste related to mission functions would remain unchanged.

4.14 HEALTH AND SAFETY

4.14.1 Approach to Analysis

The proposed action would be considered to have a significant effect on health and safety if it would result in any of the following:

- substantially increase risks to human health or the environment
- result in noncompliance with applicable installation, local, state, or federal regulations governing occupational health and safety

4.14.2 Proposed Action

Short-term minor and negligible adverse effects would be expected from implementing the proposed action. Short-term minor effects would be associated with risks from constructing the proposed SISL. Negligible adverse effects and long-term beneficial effects would be expected once the SISL is operational.

Construction workers and equipment operators would be exposed to risks associated with construction and maintenance activities; however, those risks would be minimized from the preparation and implementation of project specific health and safety plans. Contractors would be required to prepare health and safety plans to address worker safety prior to commencing the work. The plans would be protective of workers, the public, and the environment and would be prepared in accordance with DoD and Air Force regulations and would comply with OSHA standards.

Once operational, SISL operations would comply with established Air Force Occupational Safety and Health Program, as specified in Air Force Instruction (AFI) 91-202 and AFI 91-204 as

Supplemented by AFRL, and the Air Force Occupational and Environmental Safety, Fire Prevention, and Health (AFOSH) Program. The AFRL Safety Office would continue oversight of all ground and test safety activities performed at Detachment 15 AFRL on Maui. Compliance with these programs would result in negligible adverse effects. Long-term beneficial effects would be expected from a SISL that would meet AT/FP measures. Further, beneficial effects would be realized from fewer vehicle trips to the summit and from personnel spending less time at the summit which would reduce altitude sickness that is common for personnel not acclimated to working there.

4.14.3 No Action Alternative

No significant adverse effects on health and safety would be expected under the no action alternative. Construction and operation of the proposed SISL would not occur. Mission related activities would continue to be managed using established health and safety plans and procedures at each facility. The AFRL would need to reevaluate facility AT/FP and security measures. Current contractor-leased facilities would continue to not meet DoD and Air Force AT/FP and security requirements, continuing to place the government workforce and the mission at risk. Altitude sickness, common with employees who must work at the summit, would continue to be a work-related health issue.

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SECTION 5.0 PARTIES CONSULTED

Table 5-1 lists the agencies, stakeholders, and NHOs contacted in the preparation of this EA.

Table 5-1. Agencies, Stakeholders, and NHOs Consulted

Federal Agencies	
Larry Yamamoto State Conservationist US Department of Agriculture Natural Resources Conservation Service P.O. Box 50004 Honolulu, HI 96850-0001	Tunis McElwain Acting Chief, Regulatory Branch US Army Corps of Engineers US Army Engineer District, Honolulu Regulatory Branch, Building 230 Fort Shafter, HI 96858-5440
Dean Higuchi Pacific Islands Contact Office U.S. Environmental Protection Agency, Region 9 P.O. Box 50003 Honolulu, HI 96850	Michelle Bogardus Island Team Leader US Fish and Wildlife Service Pacific Islands Fish and Wildlife Office P.O. Box 50088 Honolulu, HI 96850-5000
Katherine Mullett Field Supervisor US Fish and Wildlife Service Pacific Islands Fish and Wildlife Office P.O. Box 50088 Honolulu, HI 96850-5000	
State Agencies	
William J. Ailā, Jr. Chairperson Department of Hawaiian Home Lands P.O. Box 1879 Honolulu, HI 96805	Mike McCartney Director Department of Business, Economic Development & Tourism P.O. Box 2359 Honolulu, HI 96804
Elizabeth Char, MD Director Hawai'i Department of Health Kinau Hale, 1250 Punchbowl Street Wailuku, HI 96813	Alec Wong, PE Chief, Clean Water Branch Hawai'i Department of Health 2827 Waimano Home Road, Room 225 Pearl City, HI 96782
Keith Kawaoka Deputy Director, Environmental Health Administration Hawai'i Department of Health 1250 Punchbowl Street Honolulu, HI 96813	Scott Glen Office of Environmental Quality Control Hawai'i Department of Health 235 S. Beretania Street, Suite 702 Honolulu, HI 96813
Suzanne Case Chairperson Hawai'i Department of Land and Natural Resources Kalanimoku Building 1151 Punchbowl Street Honolulu, HI 96813	Alan Downer, PhD Deputy State Historic Preservation Officer Department of Land and Natural Resources 601 Kamokila Blvd., Suite 555 Kapolei, HI 96707
Stephanie Hacker Archaeologist Hawai'i State Historic Preservation Division Kakuhihewa Building 601 Kamokila Blvd., Suite 555 Kapolei, HI 96707	Jade Butay Director Hawai'i Department of Transportation 869 Punchbowl Street Honolulu, HI 96813

Major General Kenneth Hara Director Hawai'i Emergency Management Agency 3949 Diamond Head Road Honolulu, HI 96816-4495	Mary Alice Evans Director State of Hawai'i Office of Planning P.O. Box 2359 Honolulu, HI 96804-2359
Local Agencies	
Eric Nakagawa Director County of Maui Department of Environmental Management 2050 Main Street, Suite 2B Wailuku, HI 96793	David Thyne Fire Chief County of Maui Department of Fire and Public Safety 200 Dairy Road Kahului, HI 96732-2978
Michele McLean Director County of Maui Department of Planning 2200 Main Street Wailuku, HI 96793	Rowena Dagdag-Andaya Director County of Maui Department of Public Works 200 South High Street Kalana O Maui Bldg. 4th Fl Wailuku, HI 96793
Jeffrey Pearson Director County of Maui Department of Water Supply 200 South High Street, Kalana O Maui Bldg, 5th Fl Wailuku, HI 96793	Tivoli Faaumu Chief County of Maui Police Department 55 Mahalani Street Wailuku, HI 96793
Herman Andaya Administrator County of Maui Emergency Management Agency 200 South High Street Kalana O Maui Bldg, 1st Fl Wailuku, HI 96793	
Other Stakeholders	
Michael Moran President, Board of Directors Kīhei Community Association P.O. Box 662 Kīhei, HI 96753	Michael Girder Manager-Engineer Maui Electric Company, Ltd. P.O. Box 398 Wailuku, HI 96793
Marti Townsend Chapter Director Sierra Club of Hawai'i P.O. Box 2577 Honolulu, HI 96803	Michael Williams President Maui Tomorrow Foundation, Inc. 55 N. Church St., Suite A4 Wailuku, HI 96793
Makale'a Ane Chair Maui Conservation Alliance 2200 Main Street, Suite 303 Wailuku, HI 96793	Gabrielle Schuerger Executive Director Malama Maui Nui P.O. Box 757 Pu'unene, HI 96784
Native Hawaiian Organizations	
Ke`eaumoku Kapu Chief Executive Officer Aha Moku O Maui Inc. P.O. Box 11524 Lahaina, HI 96761	Sylvia Hussey, EdD Chief Executive Officer Office of Hawaiian Affairs 560 N. Nimitz Hwy., Suite 200 Honolulu, HI 96817
Manuel Kuloloio Makuakāne Kuloloi'a Lineage – I ke Kai 'o Kuloloi'a	

1

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SECTION 7.0 LIST OF PREPARERS AND CONTRIBUTORS

This EA has been prepared under the direction of the Air Force Civil Engineer Center, and AFRL Detachment 15, under the U.S. Space Force.

Table 7-1 lists the individuals who contributed to the preparation of this EA.

Table 7-1. List of Preparers

Name/Organization	Education	Role/Resource Area
Greg Hippert, Tetra Tech, Inc.	BS, Earth Science, University of North Carolina at Charlotte	Project Manager
Julie Kaplan, Tetra Tech, Inc.	MS, Ecology and Evolution, University of Illinois at Chicago	Deputy Project Manager Water Resources and Aesthetic and Visual Resources
Michelle Canella, Tetra Tech, Inc.	BS, Mineral Economics, Penn State University	Socioeconomics
Penelope Garver, Tetra Tech, Inc.	BS, Journalism, University of Maryland	Editor/Technical Review
John I. Ford, Tetra Tech, Inc.	MS, Zoology, University of Hawai‘i	Biological Resources, Geological Resources, Infrastructure and Utilities, Roadways and Traffic, and Biological Assessment
Jennifer Jarvis, Tetra Tech, Inc	BS, Environmental Resource Management, Virginia Tech	GIS and Document Formatting
Timothy Lavallee, PE, LPES, Inc.	BS, Mechanical Engineering, Tufts University MS, Civil and Environmental Engineering, Northeastern University	Air Quality and Noise
Trevor Yucha, Cultural Surveys Hawai‘i	BS, Archaeology, Mercyhurst University	Archaeological and Cultural Resources

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APPENDIX A

Interagency/Intergovernmental Coordination and Public Participation

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The contact list of stakeholders who were sent a copy of the general scoping letter during the initial scoping process are listed in Table A-1. The general scoping letter is provided in this appendix with a "SAMPLE" watermark. This appendix also includes other correspondence with these and other stakeholders identified through the scoping process for this EA. Scoping letters and other correspondence related to Section 7 consultation, Section 106/native Hawaiian consultation, and CZM federal consistency assessment are provided in Appendix B, Appendix C, and Appendix D, respectively.

Table A-1. Contact list of stakeholders who were sent a copy of the general scoping letter

Federal Agencies	
Larry Yamamoto State Conservationist US Department of Agriculture Natural Resources Conservation Service P.O. Box 50004 Honolulu, HI 96850-0001	Tunis McElwain Acting Chief, Regulatory Branch US Army Corps of Engineers US Army Engineer District, Honolulu Regulatory Branch, Building 230 Fort Shafter, HI 96858-5440
Dean Higuchi Pacific Islands Contact Office U.S. Environmental Protection Agency, Region 9 P.O. Box 50003 Honolulu, HI 96850	Michelle Bogardus Island Team Leader US Fish and Wildlife Service Pacific Islands Fish and Wildlife Office P.O. Box 50088 Honolulu, HI 96850-5000
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Elizabeth Char, MD Director Hawai'i Department of Health Kinau Hale, 1250 Punchbowl Street Wailuku, HI 96813	Alec Wong, PE Chief, Clean Water Branch Hawai'i Department of Health 2827 Waimano Home Road, Room 225 Pearl City, HI 96782
Keith Kawaoka Deputy Director, Environmental Health Administration Hawai'i Department of Health 1250 Punchbowl Street Honolulu, HI 96813	Scott Glen Office of Environmental Quality Control Hawai'i Department of Health 235 S. Beretania Street, Suite 702 Honolulu, HI 96813
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Local Agencies	
Eric Nakagawa Director	David Thyne Fire Chief

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Jeffrey Pearson Director County of Maui Department of Water Supply 200 South High Street, Kalana O Maui Bldg, 5th Fl Wailuku, HI 96793	Tivoli Faaumu Chief County of Maui Police Department 55 Mahalani Street Wailuku, HI 96793
Other Stakeholders	
Michael Moran President, Board of Directors Kīhei Community Association P.O. Box 662 Kīhei, HI 96753	Michael Girder Manager-Engineer Maui Electric Company, Ltd. P.O. Box 398 Wailuku, HI 96793
Marti Townsend Chapter Director Sierra Club of Hawai‘i P.O. Box 2577 Honolulu, HI 96803	Michael Williams President Maui Tomorrow Foundation, Inc. 55 N. Church St., Suite A4 Wailuku, HI 96793
Makale'a Ane Chair Maui Conservation Alliance 2200 Main Street, Suite 303 Wailuku, HI 96793	Gabrielle Schuerger Executive Director Malama Maui Nui P.O. Box 757 Pu’unene, HI 96784

GENERAL SCOPING LETTER SAMPLE

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DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 February 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Mr. Larry Yamamoto, State Conservationist
USDA, Natural Resources Conservation Service
P.O. Box 50004
Honolulu HI 96850-0001

Dear Mr. Yamamoto,

The United States Air Force (Air Force) is preparing an Environmental Assessment (EA) to evaluate the potential impacts on the human and natural environments of constructing and operating a proposed secure integration support laboratory (SISL) on the island of Maui, Hawai'i (Proposed Action). The Air Force Research Laboratory (AFRL) Detachment 15, under the U.S. Air Force Materiel Command, proposes to construct the permanent, government-owned SISL on approximately 10 acres in the Maui Research and Technology Park (MRTP) in Kihei, Maui County, Hawai'i (see Figures 1 and 2, attached). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we are sending this letter to advise you of this effort and to request your assistance in identifying any potential issues related to the Proposed Action.

The EA will be prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 *United States Code* § 4321); the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 *Code of Federal Regulations* [CFR] Parts 1500–1508 and 1515–1518); and the Air Force Environmental Impact Analysis Process, as codified in 32 CFR Part 989. The EA will assess the potential environmental consequences of constructing and operating the SISL. It will also analyze the No Action Alternative, as required by CEQ regulations.

The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Mount Haleakalā at an altitude of 10,000 feet above sea level. The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kihei and is connected to the MSSC with high-speed fiber optic links. Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului about 12

miles from Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of Detachment 15 AFRL HQ in a government-owned building on land leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space. Detachment 15 AFRL facilities are shown in Figure 1.

The purpose of the Proposed Action is to construct a permanent, government-owned SISL on the island of Maui, Hawai'i, that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location, provide adequate space to meet current mission needs, and provide a direct connection to the MSSC at the summit of Mount Haleakalā using dedicated fiber optic cables. The locations of proposed sites for SISL construction Detachment 15 AFRL considered are shown in Figure 2. The Proposed Action is identified as Alternative 1. The other alternative sites shown in Figure 2 did not meet the purpose, need, and/or screening criteria for the Proposed Action so were not carried forward for detailed evaluation.

The SISL would be a two-story, approximately 56,000-square-foot building. It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with Air Force antiterrorism/force protection (AT/FP) and security requirements in accordance with Department of Defense (DoD) Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

The Proposed Action is needed because the current leased facilities do not meet the DoD and Air Force AT/FP and security requirements of UFC 4-010-01, which places the government workforce and the mission at risk. The Proposed Action is also needed to increase the number of hours personnel spend on mission-related work by reducing the amount of time they spend commuting roundtrip to the summit of Mount Haleakalā. Personnel who must divide their work time between Detachment 15 AFRL HQ and the MSSC must drive 1.5 hours each way along winding narrow roads. Also, altitude sickness is common with employees who must work at the MSSC summit.

The Draft EA will be provided in an electronic format when it becomes available. The Air Force intends to maximize the use of electronic transmittals during subsequent coordination phases of this project. If you would prefer to receive a hard copy of any documents, please indicate that preference in your response. Please send any written comments you might have within 30 days of receipt of this letter to the attention of Tetra Tech, the Air Force's consultant on this project. Send comments via U.S. Postal Service to Tetra Tech, Inc., c/o Ms. Julie Kaplan, 9444 Balboa Ave, Suite 215, San Diego, CA 92123 or via email to julie.kaplan@tetratech.com. Thank you for your interest in this project.

Sincerely

ZINGARELLI.JOHN.C.1072738140

Digitally signed by ZINGARELLI.JOHN.C.1072738140
Date: 2021.02.17 12:26:52 -10'00'

J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

2 Attachments:
1. Figure 1. Detachment 15 AFRL Facilities on Maui
2. Figure 2. Locations of Proposed Sites for SISL Construction

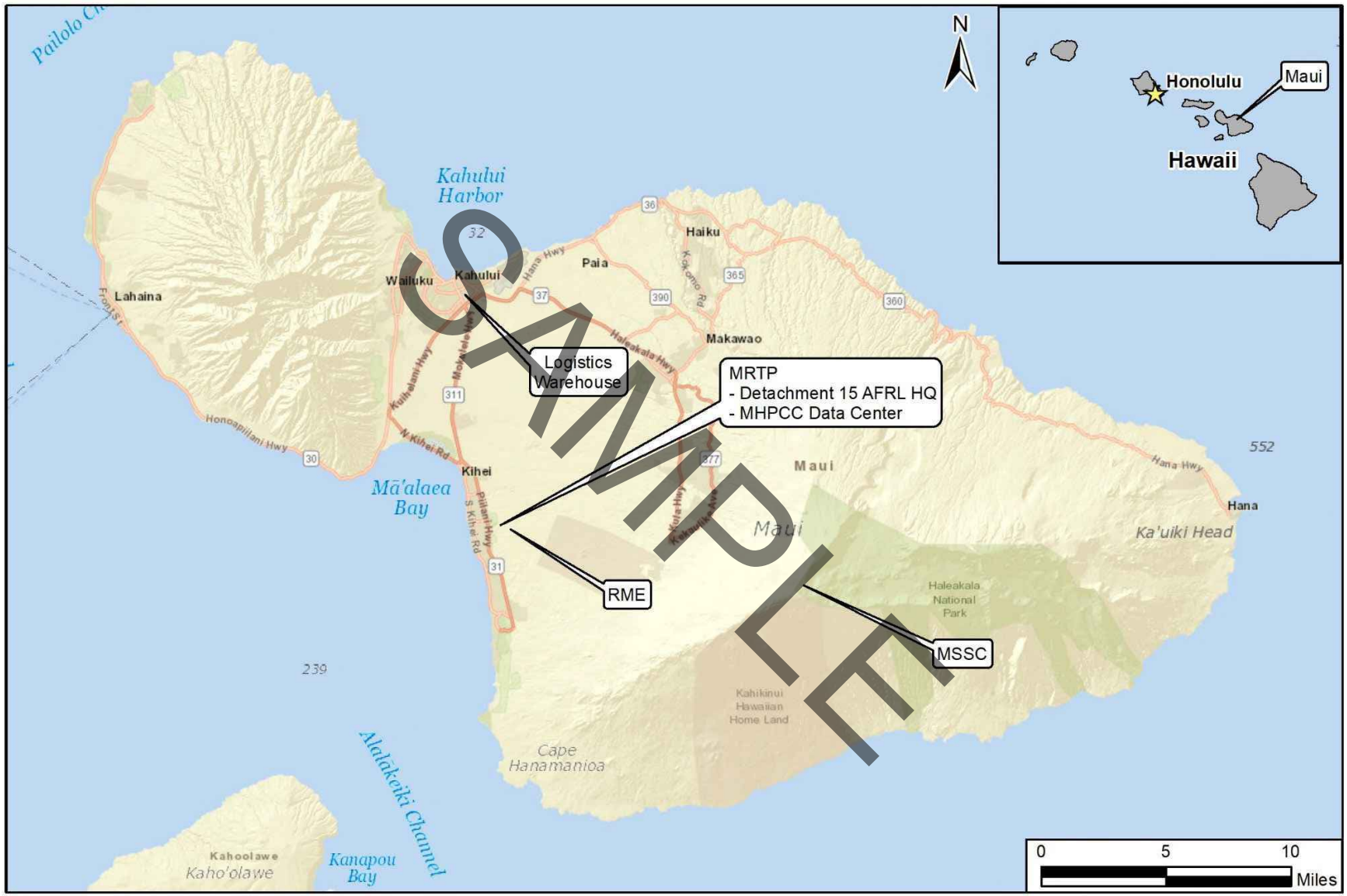

Figure 1. Detachment 15 AFRL Facilities on Maui

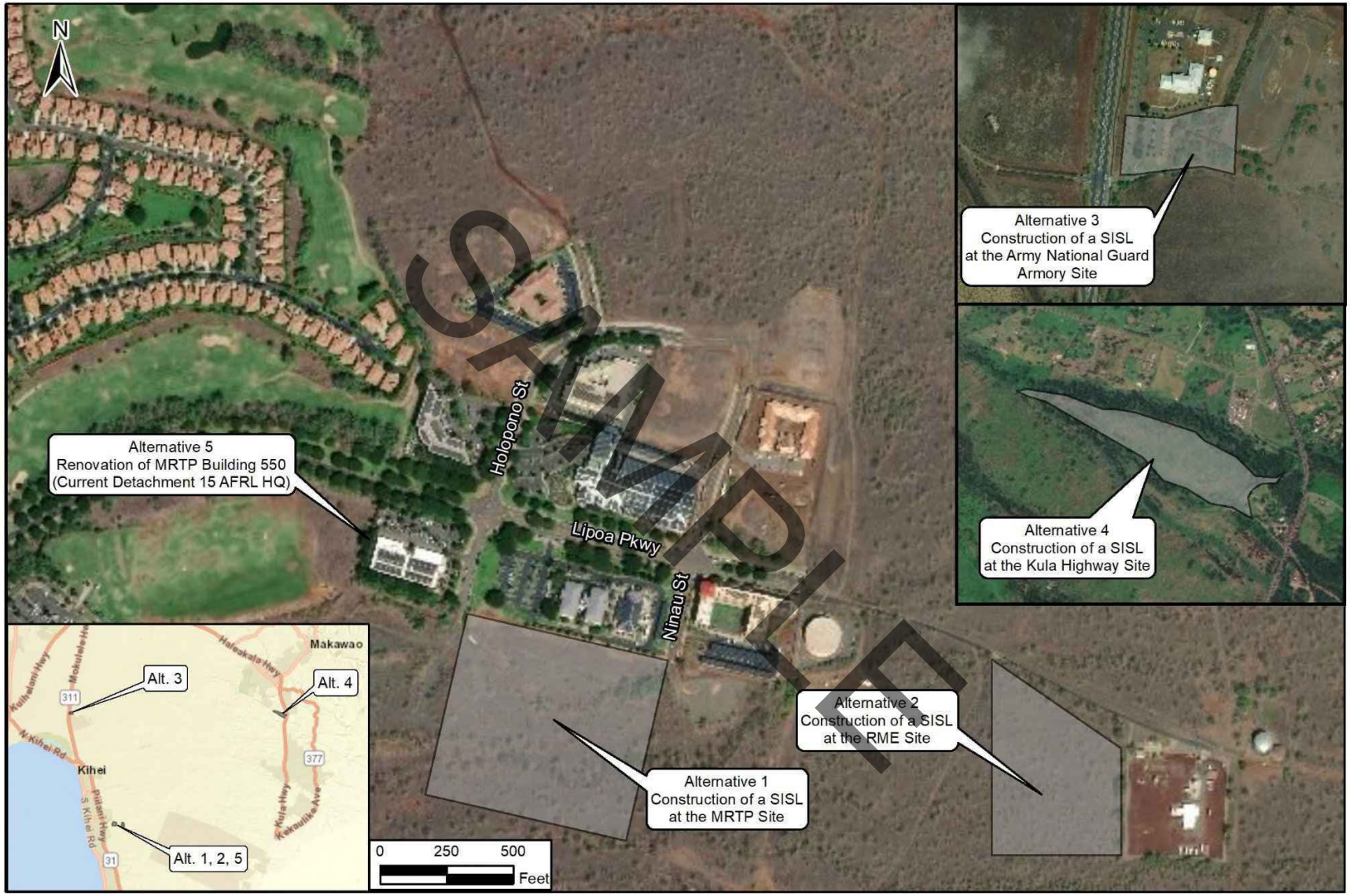

Figure 2. Locations of Proposed Sites for SISL Construction

OTHER SCOPING CORRESPONDENCE

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MICHAEL P. VICTORINO
Mayor

ERIC A. NAKAGAWA, P.E.
Acting Director

SHAYNE R. AGAWA, P.E.
Deputy Director

MICHAEL P. RATTE
Solid Waste Division

SCOTT R. ROLLINS, P.E.
Wastewater Reclamation Division

TAMARA L. FARNSWORTH
Environmental Protection &
Sustainability Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2050 MAIN STREET, SUITE 2B
WAILUKU, MAUI, HAWAII 96793

March 17, 2021

Tetra Tech, Inc.
c/o Ms. Julie Kaplan
9444 Balboa Avenue, Suite 215
San Diego, CA 92123

SUBJECT: SECURE INTEGRATION SUPPORT LABORATORY (SISL)
EARLY CONSULTATION OF ENVIRONMENTAL ASSESSMENT
TMK (2) 2-2-024:015 (POR.) AND 016 (POR.), KIHEI, MAUI, HAWAII

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. None.

2. Wastewater Reclamation Division (WWRD) comments:

   a. Although wastewater system capacity is currently available as of the date of this letter, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
   b. Wastewater contribution calculations are required before building permit is issued.
   c. Developer shall pay assessment fees for treatment plant expansion costs in accordance with ordinance setting forth such fees. The property is located in the Kihei Sewer Service Area.
   d. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
   e. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
   f. Commercial kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens etc.)

g. Non-contact cooling water and condensate should not drain to the wastewater system.

h. The sewer system in the area of the proposed project is privately owned and maintained. Provide a letter from the owner of the private sewer system granting permission to connect to its system and confirming that the system has adequate capacity to accept the estimated wastewater discharge created by the proposed project.

i. R-1 water is available at the Kihei Wastewater Treatment Facility for hauling to the site by the applicant/operator if required. A temporary R-1 use permit would be necessary prior to obtaining water. An application can be found at https://www.mauicounty.gov/1318/Wastewater-Permits-Applications and questions can be addressed to Albert Hahn, Recycled Water Coordinator (808-270-7421, albert.hahn@co.maui.hi.us)

If you have any questions regarding this letter, please contact Shayne Agawa at 270-8230.

Sincerely,

ERIC A. NAKAGAWA, P.E.
Director of Environmental Management

From: Loriann Poaipuni
To: Joy Paredes; Kurt Wollenhaupt; Paul Fasi; Kaplan, Julie
Subject: RFC\2021\0046_USAFSupportResearchLab\Comment
Date: Tuesday, March 23, 2021 5:28:33 PM
Attachments: Comment.pdf

Aloha,

Please see attached.

Mahalo,
Loriann Poaipuni
Current Division
Planning Department

From: Postmaster@mail.co.maui.hi.us on behalf of Kurt Wollenhaupt
To: Kaplan, Julie
Subject: RE: RFC\2021\0046_USAFSupportResearchLab\Comment (Out of Planning Office)
Date: Tuesday, March 23, 2021 5:59:23 PM

I shall be out of the Current Planning office for Maui County. Please contact the main line at 808-270-8205 should you require planning assistance. Thank you. Kurt Wollenhaupt

>>> "Kaplan, Julie" <Julie.Kaplan@tetratech.com> 03/23/21 14:58 >>>

Ms. Poaipuni,

Thank you for your comments on the Secure Integration Support Laboratory (SISL) project. We appreciate your input.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

From: Loriann Poaipuni <Loriann.Poaipuni@co.maui.hi.us>
Sent: Tuesday, March 23, 2021 5:28 PM
To: Joy Paredes <Joy.Paredes@co.maui.hi.us>; Kurt Wollenhaupt <Kurt.Wollenhaupt@co.maui.hi.us>; Paul Fasi <Paul.Fasi@co.maui.hi.us>; Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: RFC\2021\0046_USAFSupportResearchLab\Comment

Aloha,

Please see attached.

Mahalo,
Loriann Poaipuni
Current Division
Planning Department

MICHAEL P. VICTORINO
Mayor

MICHELE CHOUTEAU MCLEAN, AICP
Director

JORDAN E. HART
Deputy Director

DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAII 96793

March 23, 2021

Tetra Tech, Inc.
Ms. Julie Kaplan
9444 Balboa Avenue, Suite 215
San Diego, CA 92123

Dear Ms. Kaplan:

SUBJECT: PRECONSULTATION COMMENTS ON ENVIRONMENTAL ASSESSMANT FOR PROPOSED SECURE INTEGRATION SUPPORT LABORATORY, AT THE MAUI RESEARCH AND TECHNOLOGY PARK, KIHEI, MAUI, HAWAII (RFC 2021/0046)

Should the Department of the Air Force in its review of potential locations for the proposed Secure Integration Support Laboratory (SISL) on the island of Maui choose a location within the Maui Research and Industrial Park, it is critical that any such project conform to the development standards of Chapter 19.38 Maui Research and Technology Park District. This includes following specific lot types by district, setback requirements, and coordinating any project development at the Maui Research and Technology Park with Pacific Rim Land. Other proposed locations may have specific requirements also which the Department of the Air Force will need to review against their proposal.

Consequently, the Department of the Air Force should identify each proposed lot by Tax Map Key (TMK) number and review the development standards for each of these locations.

Thank you for the opportunity to comment. Should you require further clarification of this letter, please contact Staff Planner Kurt Wollenhaupt at kurt.wollenhaupt@mauicounty.gov or at (808) 270-1789.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for MICHELE MCLEAN, AICP
Planning Director

xc: John S. Rapacz, Planning Program Administrator (PDF)
Kurt F. Wollenhaupt, Staff Planner (PDF)
Paul F. Fasi, Staff Planner (PDF)
Julie Kaplan, Consultant (PDF)
Project File

MCM:CIY:KW:lp
K:\WP_DOCS\PLANNING\RFC\2021\0046_USAFSupportResearchLab\Comment.docx

MICHAEL P. VICTORINO
Mayor

ROWENA M. DAGDAG-ANDAYA
Director

JORDAN MOLINA
Deputy Director

GLEN A. UENO, P.E., L.S.
Development Services Administration

RODRIGO "CHICO" RABARA, P.E.
Engineering Division

JOHN R. SMITH, P.E.
Highways Division

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM 434
WAILUKU, MAUI, HAWAII 96793

March 29, 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Department of the Air Force
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei, Maui, Hawaii 96753-6902

Dear Lieutenant Colonel Zingarelli:

SUBJECT: ENVIRONMENTAL ASSESSMENT EARLY CONSULTATION PROPOSED SECURE INTEGRATION SUPPORT LABORATORY (SISL)

We reviewed the early consultation request and have no comments at this time.

If you have any questions regarding this memorandum, please call Jordan Molina at 270-7845.

Sincerely,

Jordan Molina

For ROWENA M. DAGDAG-ANDAYA
Director of Public Works

RMDA:JM:da
xc: Engineering Division
S:\DSA\Engr\CZM\Draft Comments\prop_secure_integration_support_lab_ea_ecr.rtf

MICHAEL P. VICTORINO
MAYOR

OUR REFERENCE

YOUR REFERENCE

POLICE DEPARTMENT

COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

March 10, 2021

Ms. Julie Kaplan
Tetra Tech, Inc.
9444 Balboa Avenue, Suite 215
San Diego, California 92123

Re: United States Air Force Proposed Secure Integration Support Laboratory (SISL)

Dear Ms. Kaplan:

This is in response to the United States Air Forces, Air Force Research Laboratory's letter dated February 10, 2021 requesting comments for the proposed secure integration support laboratory (SISL).

In review of the submitted documents, we have concerns of an increase to traffic in locations 1, 2, and 5. Currently the area has congested streets and intersections as there is nearby residential housing, a golf course, a school, and commercial businesses. This area has seen construction in the last few years which may be ongoing and adding to a more populated civilian environment. There are no comments or recommendations for location 3. Thank you for giving us the opportunity to comment on this project.

Sincerely,

Assistant Chief John Jakubczak
for: TIVOLI S. FAAUMU
Chief of Police

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 24, 2021

Tetra Tech, Inc.
Attn: Ms. Julie Kaplan
9444 Balboa Avenue, Suite 215
San Diego, CA 92123

via email: julie.kaplan@tetratech.com

Dear Ms. Kaplan:

SUBJECT: Pre-Consultation for Environmental Assessment for Proposed Secure Integration Support Laboratory (SISL) located at Maui Research & Technology Park, Waiohuli-Keokea, Kihei, Island of Maui; TMK: (2) 2-2-024:Various on behalf of the Department of Air Force for its **Air Force Research Laboratory**

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, (b) Division of Forestry & Wildlife, and (c) Land Division – Maui 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

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2021

MEMORANDUM

FROM:

~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
___Div. of Boating & Ocean Recreation (richard.t.howard@hawaii.gov)
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
_X_ Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

TO:

~~FROM:~~ Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Pre-Consultation for Environmental Assessment for Proposed Secure Integration Support Laboratory (SISL)
LOCATION: Maui Research & Technology Park, Waiohuli-Keokea, Kihei, Island of Maui; TMK: (2) 2-2-024:Various
APPLICANT: Department of the Air Force on behalf of **Air Force Research Laboratory**

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **March 24, 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.
( ) We have no additional comments.
(✓) Comments are attached.

Signed: *Carty S. Chang*
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Mar 18, 2021

Attachments
cc: Central Files

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

March 19, 2021

REF: RFD.5607.6

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: M. Kaleo Manuel, Deputy Director
Commission on Water Resource Management

SUBJECT: Pre-Consultation for Environmental Assessment for Proposed Secure Integration Support Laboratory (SISL), Maui Research & Technology Park, Waiohuli-Keokea, Kihei

FILE NO.: RFD.5607.6
TMK NO.: (2) 2-2-024:Various

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

- [X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- [ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- [ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- [X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.
- [X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/
- [X] 6. We recommend the use of alternative water sources, wherever practicable.
- [X] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.
- [X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at

http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ OTHER:

If you have any questions, please contact Neal Fujii of the Commission staff at 587-0216.

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2021

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources (kendall.l.tucker@hawaii.gov)
___Div. of Boating & Ocean Recreation (richard.t.howard@hawaii.gov)
_X_Engineering Division (DLNR.ENGR@hawaii.gov)
_X_Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
___Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands (sharleen.k.kuba@hawaii.gov)
_X_Land Division – Maui District (daniel.l.ornellas@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*
SUBJECT: Pre-Consultation for Environmental Assessment for Proposed Secure Integration Support Laboratory (SISL)
LOCATION: Maui Research & Technology Park, Waiohuli-Keokea, Kihei, Island of Maui; TMK: (2) 2-2-024:Various
APPLICANT: Department of the Air Force on behalf of **Air Force Research Laboratory**

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit any comments by **March 24, 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.
(X) We have no comments.
( ) We have no additional comments.
( ) Comments are attached.

Signed: [signature]
Print Name: Daniel Ornellas
Division: MDLO
Date: 3/17/21

Attachments
cc: Central Files

From:	Barayuga, Rosemarie B
To:	Kaplan, Julie
Subject:	HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040
Date:	Friday, April 9, 2021 10:53:59 AM
Attachments:	HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040.pdf

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Good morning,

Please see attachment for your viewing and handling. This email serves as your copy. No hardcopy will be sent.

Thank you

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Director
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0181
HWY-PS 2.5398

April 9, 2021

Ms. Julie Kaplan
Tetra Tech, Inc.
9444 Balboa Avenue, Suite 215
San Diego, California 92123

Dear Ms. Kaplan:

Subject: Request for Comments
Early Consultation for Draft Environmental Assessment
United States Air Force Research Laboratory and Office
Kihei, Maui, Hawaii
Tax Map Key No.: (2) 2-2-024: 015 (Por.)

Thank you for your letter dated February 10, 2021 to review the subject project as an early consultation on the preparation of a Draft Environmental Assessment (DEA) required by the National Environmental Policy Act (Title 42 United States Code 4321), and the Air Force Environmental Impact Analysis Process, as codified in 32 Code of Federal Regulations Part 989. The United States Air Force is proposing a new research laboratory and consolidated offices to occupy approximately 10 acres of land. The project will be located within the Maui Research and Technology Park (MRTP) that will be newly developed.

The proposed work will consist of the construction of a 56,000-square-foot office facility with an operation that employs 180 personnel. The facility will include a data center, laboratories, telescope operation center, telescope domes, and warehouse functions.

The project site at the MRTP is accessible from the State Piilani Highway (Route 31), via Lipoa Parkway.

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

1. A Traffic Assessment or Traffic Impact Analysis Report (TIAR) should be included in the DEA and should be prepared by a Professional Engineer with State license and traffic expertise.

1.1. An analysis should be provided to identify any project impacts on State highway facilities, as well as any mitigation measures that may be required.

2. The MRTP Masterplan TIAR (Revised) dated May 2015, was deemed to be acceptable by the HDOT. The traffic study was based on general land use designated for mix-uses to include residential, commercial retail, and offices. Therefore, both the DEA and the project's traffic study should provide an analysis to demonstrate whether the project trip generation will be consistent with the conclusion and mitigated recommendations of the MRTP Masterplan TIAR.

3. The DEA should provide a discussion relating to the MRTP Masterplan and the Developer's intention to comply with its obligations to the HDOT condition requirements pursuant to Land Use Commission Docket A10-787, of which remains to the fulfilled prior to construction build-out for Phase I by 2024 and any subdivision action.

4. The DEA and the traffic study should also clarify whether each of the Alternative Sites Numbers 1 through 5 are located within the Phase I or Phase II portion of the MRTP Masterplan. The traffic study should also correlate the proposed project with the recommended mitigations of the MRTP Masterplan TIAR.

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 2021-040.

Sincerely,

JADE T. BUTAY
Director of Transportation

From:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
To:	Thirugnanam, Jeyan
Cc:	rosemarie.b.barayuga@hawaii.gov; Hippert, Greg; Kaplan, Julie; Ford, John1
Subject:	Reference HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040
Date:	Wednesday, April 21, 2021 1:40:29 PM
Attachments:	SISL Proposed Site.jpg HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040.pdf ATPFile_CE6EEE48-3663-4393-AEBB-9A55F7C1723F.token

Ms. Thirugnanam,

The U.S. Air Force (Air Force) has received the HDOTs attached response to early consultation for the proposed secure integration support laboratory (SISL) on the island of Maui, Hawaii. Based on HDOTs recommendation that a Traffic Impact Analysis Report (TIAR) be prepared and included in the draft Environmental Assessment (EA), the Air Force respectfully requests that HDOT review the additional project information presented below and to reconsider its recommendation to complete a TIAR for the proposed SISL project.

As described in the 10 February Air Force letter to Mr. Jade Butay, Director of Transportation, the Air Force Detachment 15 AFRL Headquarters (HQ) is currently located in a leased facility in the Maui Research and Technology Park (MRTP) in Kihei. Currently, about 150 personnel commute to the HQ building and about 6 more personnel commute to the AFRL RME facility about one-half mile east of the HQ building. The proposed SISL facility would be sited in the MRTP along Holopono Street immediately to the southeast of the current HQ location (see attached figure). If implemented, about 156 personnel already traveling area roads to the HQ and RME facilities would relocate to the new SISL. Only 5 additional personnel working in a logistic warehouse in Kahului would relocate to the proposed SISL and therefore add to the daily traffic volume. While the proposed SISL design will accommodate as many as 180 personnel, the Air Force has no plans at this time to increase the number of employees beyond those as described above.

Further, the EA will address the 2015 MRTP Masterplan TIAR.

With this additional information, does the HDOT still recommend that a TIAR be completed?

Should you have any questions, please do not hesitate in contacting me or the rest of the team.

v/r,

CODY FELIPE, Capt, USAF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753
W: 808-891-7739

Note: Site boundaries are approximate.

From:	Kaplan, Julie
To:	Barayuga, Rosemarie B
Cc:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Subject:	RE: HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040
Date:	Friday, April 9, 2021 12:14:00 PM

Ms. Barayuga,
Thank you for providing these comments. We appreciate your assistance with this project.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

From: Barayuga, Rosemarie B <rosemarie.b.barayuga@hawaii.gov>
Sent: Friday, April 9, 2021 10:54 AM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: HWY-PS 2.5398, DIR 0181, United State Air Force Research Laboratory Office, PS 2021-040

Good morning,

Please see attachment for your viewing and handling. This email serves as your copy. No hardcopy will be sent.

Thank you

From: Lee, Jenny S
To: Kaplan, Julie
Subject: Re: US Air Force EA SISL (Maui sites)
Date: Wednesday, March 31, 2021 1:22:57 PM

Ok. Thank you, Julie for your clarification!

Jenny Lee
Planner
Highways Division
State Department of Transportation
Tel: 587-1832

From: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Sent: Tuesday, March 30, 2021 3:51 PM
To: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>
Subject: [EXTERNAL] RE: US Air Force EA SISL (Maui sites)

Jenny,
Our project doesn't trigger HEPA, but we will request publication of the Notice of Availability in the OEQC Federal Notices section of the Environmental Notice.

Julie
Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

---

From: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Sent: Tuesday, March 30, 2021 5:57 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: Re: US Air Force EA SISL (Maui sites)

Hi Julie,
Ok. I see. Thanks for confirming.
Then to trigger a local State Chapter 343, normally it is because of State lands and State funds used. What should I say your trigger is from?

Jenny Lee
Planner
Highways Division
State Department of Transportation

From: Kaplan, Julie
To: Lee, Jenny S
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject: RE: US Air Force EA SISL (Maui sites)
Date: Tuesday, March 30, 2021 5:42:00 PM

Hi Jenny,
Yes, we will distribute the Draft EA to OEQC for upload to their website. It should be available early August of this year. Feel free to call my cell if you need anything else.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

---

From: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Sent: Tuesday, March 30, 2021 5:25 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: Re: US Air Force EA SISL (Maui sites)

Hi Julie,

Since I haven't had to review NEPA, and just our local State EA process under Hawaii Chapter 343. Will you be publishing in our local OEQC website following the local guidelines?

I'm trying to figure how to explain this on the description of our letter back to you.

Is it easier to give you a call? It's 2:25 local time here now.

Jenny Lee

Planner

Highways Division

State Department of Transportation

Tel: 587-1832

From: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Sent: Tuesday, March 30, 2021 11:59 AM
To: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Subject: [EXTERNAL] RE: US Air Force EA SISL (Maui sites)

Jenny,
No problem. Thanks for letting me know.

Julie
Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

---

From: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Sent: Tuesday, March 30, 2021 1:40 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: Re: US Air Force EA SISL (Maui sites)

Hi Julie,
Just want to give you a heads up that we were running behind on the review and process of your Early Consultation request. We should be able to get a letter out to you soon. Thank you for your patience.

Jenny Lee

Planner

Highways Division

State Department of Transportation

Tel: 587-1832

From: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Sent: Thursday, March 4, 2021 2:01 PM
To: Lee, Jenny S <jenny.s.lee@hawaii.gov>; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>
Subject: [EXTERNAL] RE: US Air Force EA SISL (Maui sites)

Jenny,
Thank you for your request.

Tax Map Key (TMK) (2) 2-2-024-015 por., Lot 3-D-2 and Lot 3-D-3 is the location of the proposed SISL.
TMK (2) 2-2-024-016 is where the southern temporary staging area is sited, but will not be developed.

We appreciate your review.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

---

From: Lee, Jenny S <jenny.s.lee@hawaii.gov>
Sent: Thursday, March 4, 2021 3:19 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: US Air Force EA SISL (Maui sites)

Hello Julie,

We received your request for comments for the Early consultation with EA. None of the TMK nos were provided. Would you mind emailing them to me as this is very important to our review and records, as well as accurate research for the review a soon as you can?
Thank you.

Jenny Lee
HDOT

OFFICE OF PLANNING
STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR
OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

DTS 202103221441HE

March 25, 2021

Ms. Julie Kaplan
Tetra Tech, Inc.
9444 Balboa Ave, Suite 215,
San Diego, California 92123

Dear Ms. Kaplan:

Subject: Proposed Air Force Research Laboratory Secure Integration Support Laboratory at the Maui Research and Technology Park, Kihei, Maui, Hawaii

Thank you for the opportunity to provide comments on this proposed action and its compatibility with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321-4347), Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Sections 1500-1508), and 32 CFR Part 989, et seq.

It is our understanding that the Air Force Research Laboratory (AFRL) Detachment 15, U.S. Air Force Materiel Command, proposes the construction of a permanent, government-owned Secure Integration Support Laboratory (SISL), on approximately 10 acres in the Maui Research and Technology Park (MRTP), Kihei, Maui.

The construction of the SISL would, according to the review material, consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island of Maui into one location. It would also provide adequate space to meet current mission needs and a dedicated fiber optic cable connection to the Maui Space Surveillance Complex at the summit of Mount Haleakala. The SISL project calls for workspace for 180 AFRL personnel; a high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; a classified information processing area; a secure entry control point; and warehousing structures.

1. Coastal Zone Management Area (CZMA) – Federal Consistency
   As the development of the SISL and its associated support facilities is offered by a federal agency, the proposed action, including the development and installation of fiber optic cables, is subject to CZMA federal consistency review.
   OP is the lead state agency with the authority to conduct this review. Please contact our office regarding the policies and procedures governing CZMA federal consistency reviews.

2. Stormwater Runoff, Erosion, and Coastal Resources
   Pursuant to Title 40, Code of Federal Regulations (CFR) § 1501.3(b)(1) – in considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources; to ensure that nearshore marine resources of Maui remain protected, the negative effects of stormwater inundation and sediment loading near the proposed project site should be evaluated. Issues that may be examined include, but are not limited to, the project area's vulnerability to flood and erosion, potential susceptibility of water resources and the nearshore area, and intensification of stormwater runoff due to the increase of permeable surfaces from the development of the SISL. Pursuant to 40 CFR § 1501.3(b)(2)(i), if necessary, mitigation for the negative effects caused by the proposed action in both the short and long term should be considered.

3. Project Site Location
   The OP recommends that the NEPA Environmental Assessment (EA) include the Tax Map Key (TMK) parcel numbers on which the SISL and its associated support facilities will be located. For State agency purposes, TMK parcels numbers are represented by a nine-digit numerical series as follows: Island code; Zone; Section; Plat; and Parcel. The County of Maui Island number is represented by a number 2. The Plat and Parcel numbers are typically listed with a three-digit value.

   State agencies, such as OP, use TMK parcel information to evaluate such factors as land ownership, jurisdictional controls and oversight roles, and conflicts with administrative issues of concern. Having precise land-use information at the parcel level, will assist agencies in the evaluation process.

4. U.S. Air Force Solar Observatory
   Based on a public outreach and scoping notification from the Missile Defense Agency (MDA), an Environmental Impact Statement is being developed for a Homeland Defense Radar Hawaii (HDR-H) system. The notification states that should a HDR-H deployment decision be made, funded, and constructed on Oahu, it is the intention of MDA to relocate the U.S. Air Force (USAF) Solar Observatory on Oahu to either the AFRL's Remote Maui Experiment site, or to the Pacific Missile Range Facility, Barking Sands, Kauai.

   The EA for the proposed SISL should explain how the relocation of the USAF Solar Observatory to the MRTP may impact or contribute to the current proposed activities. This may include providing information on anticipated impacts to its construction and operation, and examine the cumulative consequences to environmental and cultural resources on such a move.

If you have any questions regarding this comment letter, please contact Joshua Hekekia of our office at (808) 587-2845 on NEPA EA matters, or John Nakagawa at (808) 587-2878 on CZMA federal consistency matters.

Sincerely,

Mary Alice Evans

Mary Alice Evans
Director

From:	Vitulano, Karen
To:	Kaplan, Julie
Cc:	R9.Info
Subject:	FW: Scoping letter for Secure Integration Support Laboratory (SISL) Environmental Assessment
Date:	Monday, March 29, 2021 9:22:21 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png Higuchi_SISL_EA Scoping letter_for IICEP.pdf

Hi Julie – Thank you. I am the contact for this EA. If we have any scoping comments, we will send by the end of April.

Sincerely –

~

Karen Vitulano
U.S. Environmental Protection Agency, Region 9
Environmental Review Branch
Tribal, Intergovernmental and Policy Division
75 Hawthorne St. TIP-2
San Francisco, CA 94105
PHONE 415-947-4178

From: Prijatel, Jean <PRIJATEL.JEAN@EPA.GOV>
Sent: Friday, March 26, 2021 1:53 PM
To: Vitulano, Karen <Vitulano.Karen@epa.gov>
Cc: R9.Info <R9.Info@epa.gov>; Diaz, Alejandro <Diaz.Alejandro@epa.gov>
Subject: FW: Scoping letter for Secure Integration Support Laboratory (SISL) Environmental Assessment

Helga – I am forwarding to Karen Vitulano who is our lead reviewer for Department of Defense projects.

Karen – can you please reply to Julie Kaplan and let her know that you are the primary contact?

Thanks,
Jean

_____

Jean Prijatel
415-947-4167

From: R9.Info <R9.Info@epa.gov>

Sent: Thursday, March 25, 2021 3:25 PM
To: Prijatel, Jean <PRIJATEL.JEAN@EPA.GOV>; Diaz, Alejandro <Diaz.Alejandro@epa.gov>
Cc: R9.Info <R9.Info@epa.gov>
Subject: FW: Scoping letter for Secure Integration Support Laboratory (SISL) Environmental Assessment

Hi Jean and Alejandro,

Could one of you please respond to, or forward as appropriate, this email with attached letter?

Please keep R9.Info@epa.gov in the loop so we can close the matter on our end.

Thank you,
Helga

Helga G. Holoubek, MLIS
Environmental Information Center
(staffed by ASMS)
U.S. Environmental Protection Agency
Pacific Southwest Region/ Region 9
R9.info@epa.gov

From: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Sent: Thursday, March 25, 2021 2:20 PM
To: R9.Info <R9.Info@epa.gov>
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>
Subject: Scoping letter for Secure Integration Support Laboratory (SISL) Environmental Assessment

Dear Sir or Madam,

On behalf of the U.S. Air Force, I would like to provide the U.S. Environmental Protection Agency (USEPA), Region 9 with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence was mailed to the Pacific Islands Contact Office at P.O. Box 50003 in Honolulu, but the USPS has not provided a confirmation of receipt, so I'm hopeful this e-mail reaches you. Attached is the scoping letter that was sent as part of the National Environmental Policy Act (NEPA) process.

We appreciate your assistance with this project. Please provide me with the appropriate point of contact for USEPA Region 9 should you wish to keep informed about this effort.
Thank you.
Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

From:	Zellinger, Andrew
To:	Kaplan, Julie
Subject:	EPA comments EA scoping - Secure Integration Support Laboratory (SISL), Maui
Date:	Monday, April 26, 2021 3:21:13 PM
Attachments:	image001.png 2021-4-26_EPA Comments EA scoping_SISL_Maui.pdf

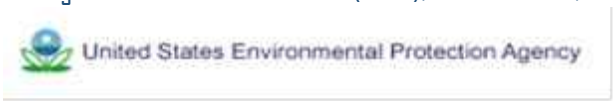
Julie,

Please see attached EA scoping comments from US EPA for the Air Force's Secure Integration Support Laboratory (SISL), Maui project.

Please confirm receipt and let me know if you have any questions. I look forward to reviewing the DEA when it is available.

Thanks,

Andy Zellinger, NEPA reviewer
Environmental Review Branch
Tribal, Intergovernmental, & Policy Division
US Environmental Protection Agency, Region 9
zellinger.andrew@epa.gov | (415) 972-3093
Mailing Address: 75 Hawthorne St. (TIP-2), San Francisco, CA 94105



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

April 26, 2021

Lieutenant Colonel J. Chris Zingarelli,
USAF Commander
Air Force Research Laboratory, Detachment 15 550 Lipoa Parkway
Kihei, Hawaii 96753-6902

c/o
Julie Kaplan
Tetra Tech, Inc.
9444 Balboa Ave, Suite 215
San Diego, California 92123

Subject: Notice of Preparation for an Environmental Assessment for the Secure Integration Support Laboratory, Kihei, Maui County, Hawaii

Dear Lieutenant Colonel Zingarelli:

The U.S. Environmental Protection Agency has reviewed the February 10, 2021 notice requesting comments on the United States Air Force decision to prepare an Environmental Assessment for the Secure Integration Support Laboratory Project on the on the island of Maui, Hawaii. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508) and Section 309 of the Clean Air Act.

The Air Force is proposing to construct a permanent, government-owned support laboratory on approximately 10 acres in the Maui Research and Technology Park in Kihei, Hawaii that would consolidate operations from the multiple existing facilities on the island into one location, provide adequate space to meet current mission needs, and provide a direct connection to the Maui Space Surveillance Complex at the summit of Mount Haleakalā using dedicated fiber optic cables. The EPA has reviewed the scoping notice and provides the following recommendations to consider when preparing the Draft EA.

Nonpoint Source Pollution and Low Impact Development
Section 438 of the Energy Independence and Security Act (42 U.S.C. 17094) establishes storm water design requirements for federal construction projects that disturb a footprint greater than 5,000 ft^2 of land. Guidance is provided in the EPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

The EPA recommends the Air Force identify ways to minimize the project footprint and reduce impervious surfaces. For example, divert runoff from parking areas and roadways into stormwater treatment structures such as bioretention areas, infiltration trenches or basins, or filter strips onsite. These and other low-impact development (LID) features should be included in the project design to ensure sufficient space is allotted to implement these measures. For more information see: https://www.epa.gov/nps/urban-runoff-low-impact-development.

Energy Conservation and Efficiency, Renewable Energy
In the Draft Environmental Assessment, we encourage the Air Force to evaluate energy conservation potential of the proposed action. Include energy efficiency measures as best practices and build these measures into the project description. In addition, the project location is conducive to solar energy generation;[1] therefore, we recommend incorporating rooftop photovoltaics (PV), and/or PV on carports over parking lots. Shading parking areas also reduces evaporative emissions of air pollutants from parked vehicles. We also recommend considering solar water heating.

Air Quality
Although the project area is currently in attainment for all National Ambient Air Quality Standards, we recommend implementing the following fugitive dust mitigation measures to further reduce particulate matter emissions from this project and protect worker health:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both active and inactive sites during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.

Environmental Justice
Executive Order 12898[2] directs federal agencies to pursue environmental justice to the greatest extent possible by identifying and addressing any disproportionately high and adverse human health or environmental effects that the agency's programs, policies, or activities may have on minority and low-income populations. Additionally, *Promising Practices for Environmental Justice Methodologies in NEPA Reviews* (https://www.epa.gov/environmentaljustice /ej-iwg-promising-practices-ej-methodologies-nepa-reviews) is a compilation of methodologies from current agency practices identified by the NEPA Committee of the Federal Interagency Working Group on Environmental Justice. The document focuses on the interface of environmental justice considerations through NEPA processes and provides recommendations on applying EJ methodologies that have been established in federal NEPA practice. The EPA recommends that the Draft EA identify whether the proposed project may disproportionately and adversely affect low income or minority populations in the surrounding area and discuss appropriate mitigation measures for any adverse impacts. Based on our preliminary review using the EPA's EJ Screen tool, the project is less than 1 mile from 3 schools which serve a large minority population (approximately 50%). The EPA recommends the following for development of the EJ analysis:

- Consider *Promising Practices for EJ Methodologies in NEPA Reviews*[3] when developing the EJ section of the Draft EA.
- Include a description of the area of potential impact used for the environmental justice impact analysis and provide the source of demographic information.

---

[1] Based on the National Renewable Energy Laboratory map providing annual average daily total solar resource using 1998-2016 data (PSM v3) the project area has solar potential ≥ 5.75 kWh/m2/Day. This data projects that the project area has the highest potential annual horizontal irradiance on the global horizontal irradiance scale. More information on solar irradiance is provided by the National Renewable Energy Laboratory at: https://www.nrel.gov/gis/solar.html
[2] Available at: https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf
[3] https://www.epa.gov/environmentaljustice /ej-iwg-promising-practices-ej-methodologies-nepa-reviews

- Consider using the EPA's EJ Screen tool found at: https://ejscreen.epa.gov/mapper/.
- Include opportunities for incorporating public input to promote context sensitive design, especially in minority and low-income communities.
- Survey and inventory cultural resources which might be impacted by the project and describe the results in the Draft EA.
- Document the process used for community involvement and communication, including all measures to specifically reach out to low-income and minority communities. Include an analysis of results achieved by this outreach.
- Consider consultation with native populations how to minimize and avoid impacts to cultural resources.

The EPA appreciates the opportunity to comment on preparation of the Draft EA. Once it is released for public review, please provide an electronic copy to me at zellinger.andrew@epa.gov. If you have any questions, please feel free to contact me at (415) 972-3093 or by email.

Sincerely,

/s/ ANDREW ZELLINGER

Digitally signed by ANDREW ZELLINGER
Date: 2021.04.26 15:06:24 -07'00'

Andrew Zellinger
Environmental Review Branch

Kaplan, Julie

From: Kaplan, Julie
Sent: Thursday, March 25, 2021 2:20 PM
To: scott.seu@hawaiianelectric.com
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject: Scoping letter for Secure Integration Support Laboratory (SISL) Environmental Assessment
Attachments: Girder_SISL EA Scoping letter_for IICEP.pdf

Dear Mr. Seu,

On behalf of the U.S. Air Force, I would like to provide Hawaiian Electric with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence was mailed to Mr. Michael Girder at P.O. Box 398 in Wailuku but was returned, so I'm hopeful this e-mail reaches you. Attached is the scoping letter that was sent as part of the National Environmental Policy Act (NEPA) process.

We appreciate your assistance with this project.
Thank you.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

From:	Kaplan, Julie
To:	Okazaki, Ray
Cc:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject:	RE: Department of the Air Force - Research Laboratory
Date:	Monday, April 5, 2021 11:21:00 AM
Attachments:	image002.png image003.png image004.png image005.png image006.png image007.png image008.png image009.png

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Mr. Okazaki,
Thank you for your response. We appreciate your assistance with this project.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

---

From: Okazaki, Ray <ray.okazaki@mauielectric.com>
Sent: Friday, April 2, 2021 12:01 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: Department of the Air Force - Research Laboratory

Ms. Kaplan,
I apologize for the delayed response as I just recently received the attached letter requesting comments.

Attached is a response letter to include in any Environmental Assessment process. [Secure Integration Support Laboratory (SISL) project]

Should you need additional information, please feel free to contact me. It would be best using the email below as we continue to work remotely.

Aloha,
Ray Okazaki
Engineer II, Engineering (Maui County)

O: 808.871.2390
Direct: 808.871.2340
ray.okazaki@hawaiianelectric.com

Hawaiian Electric
PO Box 398, Kahului, HI 96733

April 2, 2021

Ms. Julie Kaplan
Tetra Tech, Inc.
9444 Balboa Ave., Suite 215
San Diego, CA 92123

sent via email: julie.kaplan@tetratech.com

Subject: Department of the Air Force - Air Force Research Laboratory
Environmental Assessment
550 Lipoa Parkway
Kihei, Maui, Hawaii
Tax Map Key: (2) 2-2-024:015

Dear Ms. Kaplan,

Thank you for allowing us to comment on the subject project.

In reviewing our records and the information received, Hawaiian Electric Company has no objections or comments for the subject project at this time in reference on the site you have identified as Alternative 1.

However, we highly encourage the customer's electrical consultant to submit anticipated electrical load calculation per the National Electric Code and a project time schedule as soon as practical so that any facility upgrades and new service can be provided on a timely basis.

Should you have any questions or concerns, please feel free to contact me at ray.okazaki@hawaiianelectric.com.

Sincerely,

Ray Okazaki
Engineer II, Engineering
Hawaiian Electric Company – Maui County

APPENDIX B

Section 7 Consultation and Biological Assessment

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United States Department of the Interior

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

In Reply Refer To:
01EPIF00-2021-I-0307

July 7, 2021

Lieutenant Colonel J. Chris Zingarelli
Commander
AFRL, Detachment 15
550 Lipoa Parkway
Kīhei, HI 96753-6902

Subject: Construction and Operation of U.S. Air Force Secure Integration Support Lab, Maui Research and Technology Park, Kīhei, Maui County, Hawai‘i, Request for Concurrence with Effects Determination of Not Likely to Adversely Affect

Dear Lt. Colonel Zingarelli:

Thank you for your letter dated and received on May 11, 2021, requesting our concurrence with your determination that your actions may affect, but are not likely to adversely affect the following 14 federally-listed species:

- The endangered Hawaiian hoary bat (*Lasiurus cinerus semotus*).
- The threatened Hawaiian goose or nēnē (*Branta sandvicensis*).
- The endangered Hawaiian coot (*Fulica alai*) and endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), collectively referred to as Hawaiian waterbirds.
- The threatened Newell's shearwater (*Puffinus auricularis newelli*), endangered Hawaii Distinct Population Segment of band-rumped storm petrel (*Oceanodroma castro*), and the endangered Hawaiian petrel (*Pterodroma sandwichensis*), collectively referred to as Hawaiian seabirds.
- The endangered Blackburn's sphinx moth (BSM) (*Manduca blackburni*).
- The endangered yellow-faced bees, *Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*.
- The endangered ‘awikiwiki (*Canavalia pubescens*), ma‘o hau hele (*Hibiscus brackenridgei*), and *Bonamia menziesii*.

Our comments are provided in accordance with section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531, et seq.)(ESA), as amended.

Our findings and recommendations are based on the best available information presented in your Biological Assessment, correspondence, and otherwise cited below. A complete decision record

of this consultation is on file at our Pacific Islands Fish and Wildlife Office in Honolulu, Hawaii. Our log number for this consultation is 01EPIF00-2021-I-0307.

ACTION AREA

The site proposed for land purchase and construction of the Secure Integration Support Lab (SISL) is comprised of roughly 10 acres, with an additional 9 acres between three adjoining parcels to the west, south, and east that may be used as staging areas during construction (Figure 1). The proposed SISL site including the temporary staging areas to the west and east are identified as a part of Maui County Tax Map Key (TMK) (2) 2-2-024-015, and the southern staging area is within (TMKs) (2) 2-2-024-015 and (2) 2-2-024-016. The Action Area is bounded to the north and northeast by the Maui Research and Technology Park (MRTP) and to the east, south and west by undeveloped land. Access to the proposed SISL site is from South Holopono and Ninau Streets, located northwest and northeast of the Action Area.

DESCRIPTION OF THE PROPOSED ACTION

The Air Force proposes to construct a two-story, approximately 56,000 square foot building, a surface parking lot consisting of 150 spaces, and a perimeter security fence (Figure 2). The building would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The parking and access drives would be asphalt and consist of curb and gutter to manage stormwater. Access to the site and parking would be from both South Ninau and South Holopono streets. South Ninau Street on the east side of the site. The South Ninau access would be mainly for service and the South Holopono would be for general access. Both roads would be extended by the MRTP to provide access to the site parking. The current fence design incorporates K4 wrought iron fencing and does not include barbed wire.

Ground disturbance such as grading and trenching will be required for construction and installation of utilities (sewer, electricity, and communications). Utilities would be extended by the MRTP when South Holopono Street and Ninau Street are extended along the western and eastern site boundaries. Water for the MRTP is supplied from an existing County of Maui reservoir located at the eastern end of Lipoa Road. Potable water service to the SISL would be provided by a water lateral, including a meter and backflow preventer. Fire water service would be provided by a separate lateral, including a separate meter and backflow preventer, and a fire loop around the building with on-site fire hydrants.

The commencement of land acquisition and construction of the SISL is subject to future Air Force Research Lab ranking and MILCON funding and is anticipated to occur in the FY23 or FY24 funding cycles.

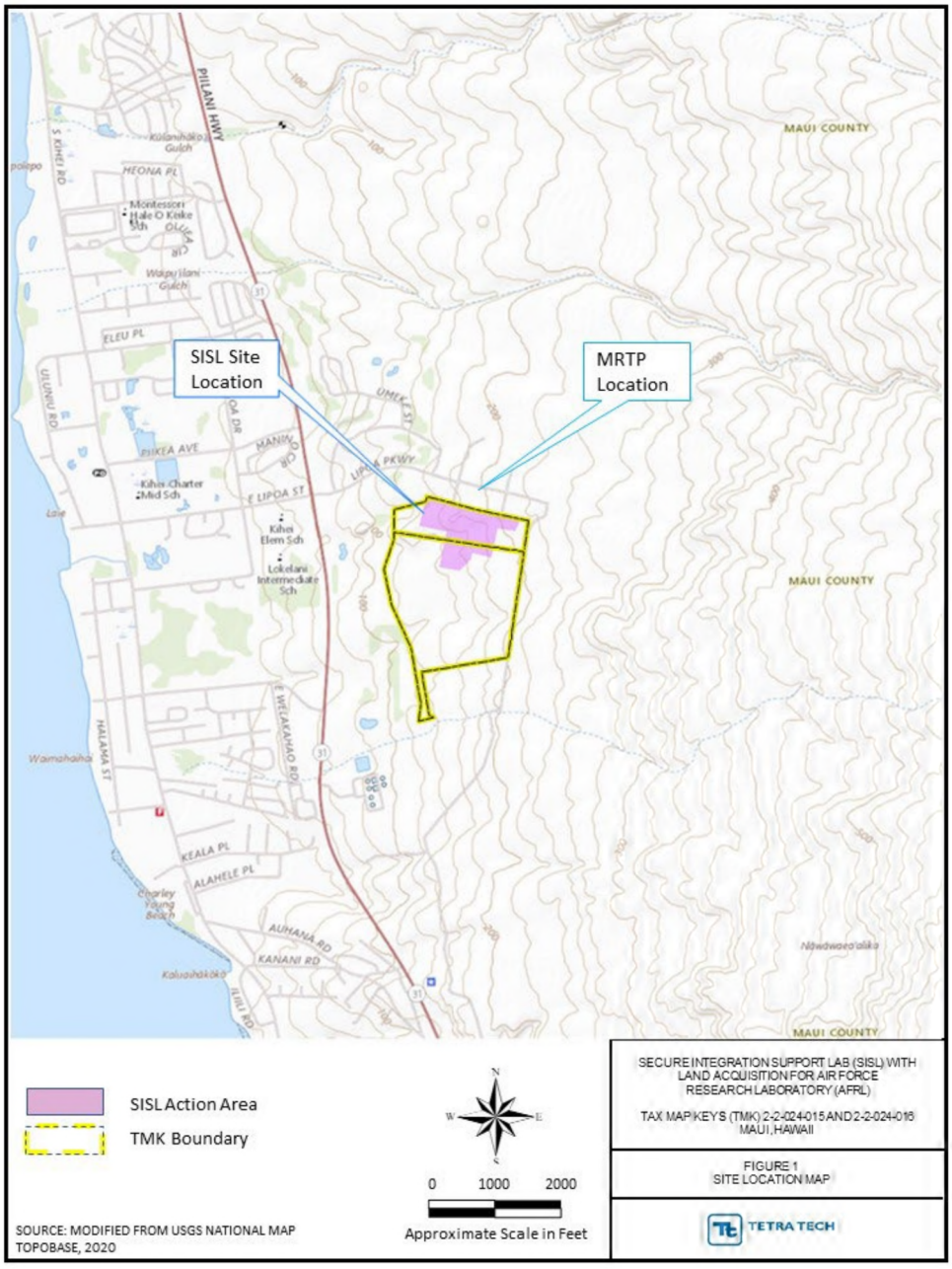

Figure 1. SISL Project Location Map (USAF 2021).

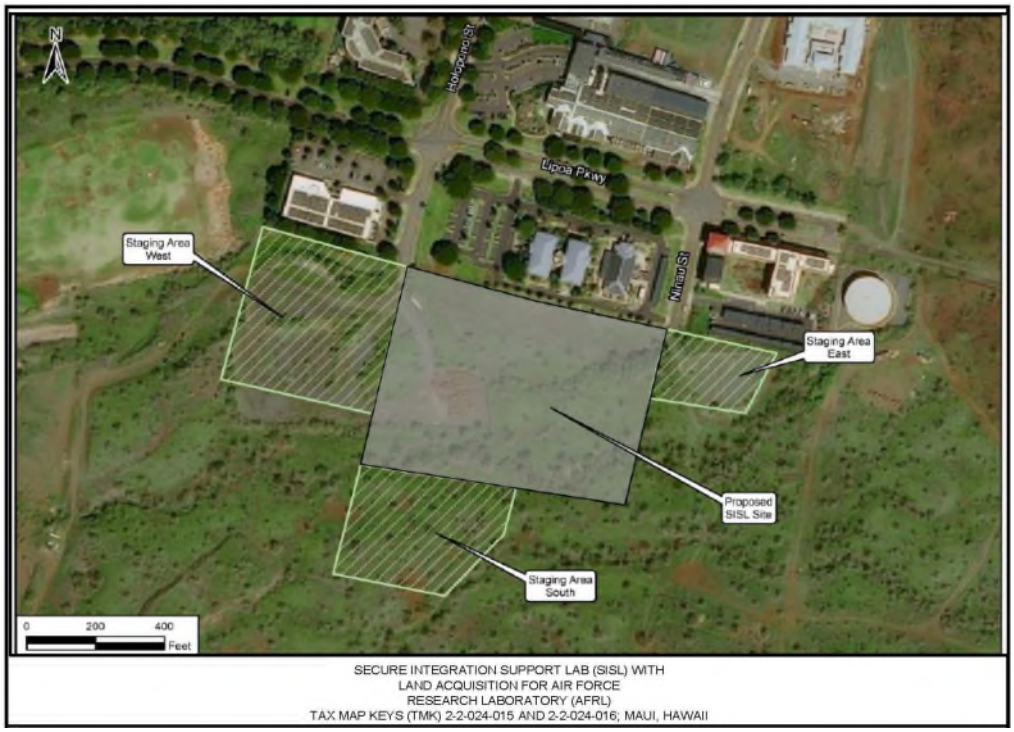

Figure 2. SISL Project Site and Staging Areas (USAF 2021).

Figure 3. SISL Building Design (USAF 2021).

Construction Best Management Practices

Surface and swale drainage will be constructed to accommodate surface runoff from the increase in impervious surface associated with the additional parking and roadway areas. The general drainage pattern will be maintained from northeast to southwest of the building via a collection system of drain inlets, underground piping, and a detention basin (bioretention) at a lower corner of the site. These measures will be designed in an integrative process with the site grading, building, hardscape, and landscape design. Low impact development (LID) design will be implemented as described in UFC 3-210-10, *Low Impact Development*, to provide decentralized hydrologic source control for stormwater while maintaining existing predevelopment hydrology to the maximum extent practicable. The design will also comply with local regulations for stormwater management. Site drainage will meet federal, state, and local regulatory standards. Any soil fill material brought to the site for surface compaction and stabilization will be verified for contaminant-free components and properly compacted and keyed into the existing topography so future erosion of the area would be minimized.

Landscaping around the new SISL facility would be enhanced using non-invasive and native plant species to the maximum extent practicable. The Landscape Industry Council of Hawai‘i (https://www.hawaiiscape.com/ publications/) provides a useful reference to identify suitable native ornamental plants for this location. Appropriate seed stock for suitable native plants can be obtained from local Maui nurseries (e.g. https://laukahi.org/hawaii-seed-bank-partnership/). Although non-native weed species are common in the Action Area, measures will be taken to prevent the unintentional introduction or transport of new invasive species to the area. This includes utilizing on-site gravel, rock, and soil (or purchasing from a local supplier) when practicable; utilizing certified, weed-free seed mixes; and washing and/or visually inspecting construction materials or equipment arriving from outside Maui Island for excessive debris, plant materials, and invasive or harmful non-native species as appropriate.

General Conservation Measures

To avoid and minimize potential impact to the listed species and designated critical habitats the following best management practices and conservation measures will be implemented:

- Air Force and contractor personnel would be educated about the wildfire concern prior to working in the field.
- No smoking would be allowed in the project area during land clearing and construction.
- All vehicles entering the project area would be equipped with fire extinguishers.
- Vehicles would not be allowed to park near the dry grass when the engines are still hot.
- All site clearing and construction activities would be limited to daylight hours and will not use any nighttime lighting.
- Dark-sky lighting will be employed throughout the new SISL facility.

Species-specific conservation measures

To avoid and minimize impacts to listed species, the following measures will be implemented:

For the Hawaiian hoary bat:

- Woody plants and tree greater than 15 feet tall would not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).
- The use of barbed or razor wire fencing will be minimized as allowable by facility security requirements.
- No construction activities will be conducted overnight, and site lighting will be kept to a minimum.

For the nēnē:

- Nēnē found within the Action Area will not be approached, fed, or disturbed.
- If *nēnē* are observed loafing or foraging within the Action Area during the breeding season (September through April) by Air Force or contractor personnel, work will be halted until a biologist familiar with the behavior of *nēnē* can survey in and around the Action Area prior to the resumption of any work. Surveys will be repeated after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Work would cease if contractor or Air Force personnel discovers a nest within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins. The USFWS shall be consulted for further guidance.
- Within 4-6 weeks prior to construction, surveys for *nēnē* will be conducted during the wettest portion of the year (usually November-April) or several weeks after a significant rain.

For Hawaiian waterbirds:

- All construction activities will stop if any of the listed waterbirds are observed within 100 feet of the work area. Work will not be resumed until the waterbirds voluntarily move away from the area.
- Construction personnel will eliminate areas of standing water that may attract listed waterbirds.

For Hawaiian seabirds:

To avoid the risk of fallout, all construction activities will be limited to daylight hours. Parking areas and associated building lighting would consist of full-cutoff dark-sky-type light-emitting-diodes (LED). Security lighting sited around the secured perimeter will consist of full-cutoff dark-sky-type LED pole-mounted flood lights to help prevent fallout of fledgling seabirds. The exterior lighting will be equipped with user-accessible control system overrides to enable personnel to turn lights off when using telescoping equipment. The following measures will be implemented:

- All outdoor lights will be fully shielded so the bulb can only be seen from below bulb height and only use when necessary.
- Unnecessary outdoor lighting will be extinguished at night.
- Large windows at the SISL facility will be shaded at night to keep interior lights from attracting birds.
- If a downed seabird if found at the facility, the protocols prescribed by the State of Hawai‘i Department of Land and Natural Resources Division of Forestry will be followed.

For the Blackburns sphinx moth:
Pre-clearing/construction biological surveys will be conducted by a knowledgeable biologist for any sign of BSM activity. If tree tobacco over 3 feet in height is found, the project area will be monitored monthly to remove all tree tobacco below 3 feet tall that lack BSM sign. If tree tobacco over 3 feet tall are found in the project area, USAF will coordinate with USFWS to plan additional surveys and implement conservation measures to ensure the project activities will not cause adverse impacts on the moth. The following additional measures will be implemented:

- Any tree tobacco less than 3 feet tall should be removed.
- The Action Area should be monitored every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.
- Monitoring for tree tobacco prior to and during construction can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Because tree tobacco can readily grow in the disturbed habitats within the Action Area, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. Therefore, the following additional steps will be taken:

- Tree tobacco less than 3 feet tall should be removed.
- The Action Areas should be monitored every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity. Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

For yellow-faced bees:
Pre-clearing/construction biological surveys will be conducted by knowledgeable biologists for any sign of yellow-faced bee activity. The results of these surveys will be shared with the USFWS. ʻIlima and any other host plants for yellow-faced bees will be salvaged and transplanted into other suitable areas.

For Hawaiian plants:

- Construction contractors and Air Force personnel will be educated about the wildfire concern prior to initiating site clearing and construction.
- No smoking will be allowed in the project area.
- All vehicles entering the project area would be equipped with fire extinguishers.
- Vehicles would not be allowed to park near dry litter when the engines are still hot.

Whenever possible native plants would be used for landscaping purposes. Assistance with native plant selection can be found on the Landscape Industry Council of Hawaiʻi Native Plant Poster (http://hawaiiscape.wpengine.com/publications/), and at Native Hawaiian Plants for Landscaping, Conservation, and Reforestation (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-30.pdf), and Best Native Plants for Landscapes (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-40.pdf).

To avoid the accidental introduction of non-native plant species, equipment, foot wear, clothing, and supplies should be checked and cleaned of contamination (weed seeds, organic matter, or

other contaminants) before entering the Action Area. Equipment quarantine areas remote from the Action Area may be considered. Additional information will be sought by contacting the local invasive species committee for Maui Nui (https://mauiinvasive.org/).

CONSEQUENCES OF THE PROPOSED ACTION

Hawaiian hoary bat

The Hawaiian hoary bat roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or move away from disturbance. Because the project activities will occur outside the Hawaiian hoary bat pupping season and no removal of vegetation 15 feet or taller is planned, project impacts to the Hawaiian hoary bat are extremely unlikely to occur and are considered discountable.

Hawaiian goose

Hawaiian geese are found on the islands of Hawaii, Maui, Molokai, and Kauai. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands or shrublands, and lava flows. Threats to the species include predation by non-native mammals and birds, strikes at wind facilities and by vehicles. Noise and activity associated from the proposed could potentially disturb Hawaiian geese, especially if they are nesting close to the drilling activities or movement of equipment. Implementation of the above conservation measures designed to prevent interactions with nēnē during project activities will reduce the potential impacts on the breeding, feeding, and sheltering of nēnē to a level that is insignificant and discountable.

Hawaiian waterbirds

Hawaiian waterbirds are found in a variety of wetland habitats including freshwater marshes and ponds, coastal inlets, artificial reservoirs, taro (*Colocasia esculenta*) patches, irrigation ditches, sewage treatment ponds. Hawaiian stilts may also be found wherever temporary or persistent standing water occurs. Threats to these species include predation by non-native mammals and birds, and habitat loss. Based on the project details provided, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Implementation of conservation measures to eliminate standing water that may attract waterbirds and to stop work within 100 feet of waterbirds will reduce potential impacts to a level that is insignificant and discountable.

Hawaiian seabirds

These species may fly through the action area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). They are attracted to lights and after circling the lights they may become exhausted or disoriented, causing them to ground. Downed seabirds are subject to injury or death due to collision with automobiles, starvation, and predation. Young birds flying through the action area between September 15 and December 15, in their first flights from their nests to the ocean, are particularly vulnerable to light attraction. Nighttime actions requiring temporary lighting or permanent installation of lights are not proposed or anticipated, as all field

activities will be limited to daylight hours. Noise generated by the operation of construction equipment will be intermittent and negligible to seabirds. Thus, impacts on seabirds are considered discountable.

Hawaiian yellow-faced bees (*Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*)
The three species of Hawaiian yellow-faced bees are known from coastal and lowland dry forests and shrublands. Documented nectar plants include naupaka, *Sida fallax* (‘ilima), *Chamaesyce* spp. (‘akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope. Threats to yellow-faced bees include habitat destruction and modification from land use change, non-native plants, ungulates, and fire, along with predation by non-native ants and wasps. Vehicle traffic and soil disturbances associated with the field activities can cause destruction to the vegetation and reduce food availability. Implementation of conservation measures to prevent the ignition and spread of wildfire will minimize the potential impacts of wildfire on vegetation (food resources). In addition, because similar food resources are available in the general area, any impacts on vegetation from the vehicle traffic and soil disturbance are unlikely to have an effect on the food resources available to the bees. Therefore, the impacts on yellow-faced bees are discountable.

Blackburn’s sphinx moth
The adult BSM feeds on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), ‘ilie‘e (*Plumbago zeylanica*), maiapilo (*Capparis sandwichiana*), and others. Blackburn’s sphinx moth larvae feed on non-native tree tobacco (*Nicotiana glauca*) and native ‘aiea (*Nothocestrum* spp.). To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance and removal of vegetation caused by the movement of equipment and drilling activities have the potential to result in injury or mortality of BSM larvae on host plants or in the soil. Prior to work initiation, surveys for BSM and its larval host plants will provide the USAF with the necessary data to either implement measures to remove nonnative tree tobacco less than 3 feet tall (if present) or coordinate with USFWS for additional surveys if tree tobacco plants more than three feet in height are present. Based on implementation of these conservation measures, impacts to BSM are unlikely to occur, and thus are considered discountable.

Listed plants
Three endangered plants, ‘āwikiwiki (*Canavalia pubescens*), ma‘o hau hele (*Hibiscus brackenridgei*), and *Bonamia menziesii* may occur in the lowland dry ecosystem on Maui in the vicinity of the proposed project. No direct impacts to the three listed plant species are anticipated as a result of project activities because the closest known individuals of these species are located more than one mile away. Nevertheless, operation of vehicles and equipment as well as human ignition sources (e.g. smoking) introduce the potential for wildfire that could spread and impact listed plant species and/or their habitat. Implementation of conservation measures will reduce the likelihood of ignition and spread of wildfire making the loss of individuals or habitat destruction highly unlikely, and thus discountable.

CONCLUSION

We have reviewed our data and conducted an effects analysis of your project. By incorporating the conservation measures listed above, potential effects to listed species are extremely unlikely

to occur, and are therefore discountable. Because impacts from the proposed project are discountable, we concur with your determination that the proposed action may affect, but is not likely to adversely affect the following 14 listed species: the Hawaiian hoary bat; Hawaiian goose; Hawaiian coot and Hawaiian stilt; Newell's shearwater, the Hawaii Distinct Population Segment of the band-rumped storm petrel, the Hawaiian petrel; Blackburn's sphinx moth; three yellow-faced bees, *Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*; and three plants, *Canavalia pubescens*, *Hibiscus brackenridgei*, and *Bonamia menziesii*.

Our concurrence is based on the information and determination of effects presented in your current Biological Assessment. Our regulations require the preparation of a Biological Assessment within 90 days of a species list verified by the Service (50 CFR 402.12(e)). Because commencement of land acquisition and construction of the SISL is subject to future Air Force Research Lab ranking and MILCON funding and is anticipated to occur in the FY23 or FY24 funding cycles, verification of the species list and project impacts will be required when the Air Force is closer to the start of those activities.

Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this letter; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action.

We appreciate your efforts to conserve threatened and endangered species and their habitats. If you have any questions, please contact Fish and Wildlife Biologist, James Kwon at james_kwon@fws.gov, or by telephone at 808-792-9433.

Sincerely,

DARREN LEBLANC Digitally signed by DARREN LEBLANC Date: 2021.07.06 15:54:07 -10'00'

Darren LeBlanc
Planning and Consultation Team Manager

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 May 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Ms. Katherine Mullett
Field Supervisor
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000

Dear Ms. Mullett:

The U.S. Air Force (USAF) is initiating informal Section 7 consultation with the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act of 1973 (ESA) in accordance with 50 CFR 402.12 for proposed construction of a Secure Integration Support Laboratory (SISL) located in the Maui Research and Technology Park (MRTP), Kihei, Maui County, Hawaii [TMK (2) 2-2-24:15, Lot 3-D-2 and Lot 3-D-3, 9.3 acres]. The purpose of the proposed action is to acquire land within the MRTP and construct a permanent, government-owned SISL on Maui, Hawai`i. The proposed action would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island, provide adequate space to meet current mission needs, and provide a direct connection to the MSSC at the summit of Mount Haleakalā using existing dedicated fiber optic telecommunications services at the MRTP.

We are transmitting herewith a Biological Assessment (BA) which has been prepared to evaluate the impacts of the proposed action upon listed endangered and threatened species. On 8 April 2021 we received a list of species which may occur within the vicinity of the Action Area, and measures to ensure their protection, from Melissa Cady of your office. That correspondence signed by Aaron Nadig of your office is appended to the attached BA. Listed species identified in the USFWS 8 April 2021 correspondence and addressed in the attached BA include:

- The endangered Hawaiian hoary bat or *ʻopeʻapeʻa* (*Lasiurus cinereus semotus*).
- The threatened Hawaiian goose or *nēnē* (*Branta sandvicensis*).
- The endangered Hawaiian coot or *ʻalae keʻokeʻo* (*Fulica alai*), and endangered Hawaiian stilt or *aeʻo* (*Himantopus mexicanus*), collectively referred to as Hawaiian waterbirds.
- The threatened Newell's shearwater or *ʻaʻo* (*Puffinus auricularis newelli*), endangered Hawaii Distinct Population Segment (DPS) of band-rumped storm-petrel or *ʻakeʻake* (*Oceanodroma castro*), and the endangered Hawaiian petrel or *ʻuaʻu* (*Pterodroma sandwichensis*), collectively referred to as Hawaiian seabirds.
- The endangered Hawaiian yellow-faced bees (*Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*).
- The endangered Blackburn's sphinx moth (BSM) (*Manduca blackburni*).
- The endangered *Canavalia pubescens* (*ʻawikiwiki*), *Hibiscus brackenridgei* (*maʻo hau hele*), and *Bonamia menziesii* (no common name), collectively referred to as endangered plants.

ACTION AREA

The Action Area is located within the Waiohuli *ahupua'a* and the *moku* of Kula, approximately 1.2 miles from the coastline on the leeward slope of Haleakalā. Elevations range from 135 feet to 210 feet above mean sea level. Waipu'ilani Gulch, located approximately 0.6 mi north of the Action Area, is the nearest (intermittent) stream. The entire Action Area is considered part of the MRTP by the County of Maui.

The dominant vegetation within the Action Area consists of a buffelgrass (*Cenchrus ciliaris*)/kiawe tree (*Prosopis pallida*) savanna, which is a degraded lowland dry plant community. The fauna and flora of the project area is predominantly non-native. Previous biological surveys discussed in the BA did not identify any threatened or endangered species in the Action Area.

The preferred alternative construction site for the SISL is within an undeveloped area of the MRTP and consists of approximately 10 acres. The Action Area is approximately 350 feet south-southeast of the intersection of Lipoa Parkway and South Holopono Street. It is accessible from South Holopono Street or Ninau Street, which are accessed by Lipoa Parkway as illustrated in the attached BA. Directly north of the Action Area, and within the MRTP, is office and institutional space that includes the existing Detachment 15 AFRL HQ, MHPCC, Maui Research Technology Center, and Kihei Charter High School. On the east, south, and west, the Action Area is bounded by undeveloped MRTP land. The Action Area includes the temporary staging areas to the west and east are identified as a part of Maui County Tax Map Keys (TMK) (2) 2-2-024-015. The southern staging area is within (TMK) (2) 2-2-024-015 and (2) 2-2-024-016. The coordinates of the Action Area are latitude 20.7472940° north and longitude 156.4385220° west. The Action Area is bounded to the north and northeast by the MRTP and to the east, south and west by undeveloped land. Access to the Action Area is from South Holopono and Ninau Streets, located northwest and northeast of the Action Area. Maps of the Action Area and conceptual plans for the SISL layout, parking, and building design appear in the attached BA.

PROPOSED ACTION

The SISL is proposed as a two-story, approximately 56,000 square foot building. It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. Parking for the SISL facility would consist of a consolidated surface parking lot of 150 spaces, including one space for a trailer used for hauling equipment. Available utilities within the MRTP include water, sewer, electricity, and communications. Service would be extended by the MRTP when South Holopono Street and Ninau Street are extended along the western and eastern Action Area boundaries. Water for the MRTP is supplied from an existing County of Maui reservoir located at the eastern end of Lipoa Road. Potable water service to the SISL would be provided by a water lateral, including a meter and backflow preventer. Fire water service would be provided by a separate lateral, including a separate meter and backflow preventer, and a fire loop around the building with on-site fire hydrants.

DETERMINATION OF EFFECTS

Based on our analysis of impacts as identified and evaluated in the attached BA, and by applying the conservation measures identified by your staff to avoid and minimize impacts, the USAF has determined that the proposed action may affect but is not likely to adversely affect the threatened and endangered species listed on page 1 of this letter, or destroy or adversely modify the designated critical habitats for any of these species. USAF respectfully requests USFWS concurrence with this determination.

Sincerely,

ZINGARELLI.JOHN.C.1072738140

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J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

Attachment 1: Biological Assessment

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Biological Assessment for the Secure Integration Support Laboratory (SISL) With Land Acquisition for the Air Force Research Laboratory (AFRL)

Tax Map Key (TMK) (2) 2-2-024-015 por.

Kīhei, Maui, Hawai‘i

April 30, 2021

PREPARED BY:

United States Air Force

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EXECUTIVE SUMMARY

The United States Air Force (USAF) Research Laboratory (AFRL) Detachment 15, under the USAF Materiel Command, proposes to construct a permanent, government-owned secure integration support laboratory (SISL) (herein, Proposed Action). The location of the Proposed Action is approximately 350 feet south-southeast of the intersection of Lipoa Parkway and South Holopono Street in Kīhei, Maui, Hawai'i, and is comprised of 19 acres in total (herein, Action Area). Approximately 10 acres of the Action Area will be purchased by the USAF for construction of the SISL. The remaining nine (9) acres will be leased and used for three (3) temporary staging areas located to the west, east, and south of the SISL. The Action Area is bounded to the north and northeast by the Maui Research Technology Center, and to the east, south and west by undeveloped land. Access to the proposed lease areas is via South Holopono Street, located northwest of the Action Area.

Section 7 of the Endangered Species Act (ESA) requires that federal agencies take the necessary steps to ensure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of federally listed species or species proposed for federal listing, or result in the destruction or adverse modification of critical habitat of such species. As part of this process, federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) and National Oceanographic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), as appropriate, to determine if a federal action is likely to affect a listed endangered or threatened species. The purpose of this Biological Assessment (BA) is to evaluate the potential impacts to federally listed species that would result from construction of the SISL and associated parcel development activities.

USFWS provided a species list for the vicinity of the Action Area in correspondence dated 1 December 2020 regarding a geotechnical survey of the site. USFWS provided a new species list on 8 April 2021 specifically for SISL construction and operation. This current species list, provided in Appendix A, identified fourteen (14) listed species that may be present in the Action Area, including: the Hawaiian hoary bat (*Lasiurus cinereus semotus*); Hawaiian goose (*Branta sandvicensis*); Hawaiian stilt (*Himantopus mexicanus knudseni*); Hawaiian Coot (*Fulica alai*); Band rumped storm-petrel (*Oceanodroma castro*); Newell's shearwater (*Puffinus auricularis newelli*); Hawaiian petrel (*Pterodroma sandwichensis*); Blackburn's sphinx moth (*Manduca blackburni*); Anthrician yellow-faced bee (*Hylaeus anthracinus*); Yellow-faced bee (*H. assimulans*); Longhead yellow-faced bee (*H. longiceps*); Lava-field jack-bean (*Canavalia pubescens*); Native yellow hibiscus (*Hibiscus brackenridgei*); and, Hawaii lady's nightcap (*Bonamia menziesii*). The species list also indicated that there is no critical habitat for listed species within one mile of the site.

A pedestrian survey of flora and fauna was conducted within the Action Area by Tetra Tech biologists on 23 November 2020. Information from this pedestrian survey was considered, along with a review of reference materials to assess the potential impact of the SISL project on the listed species identified above. Reference materials that were reviewed include earlier natural resource surveys within the vicinity of the Action Area conducted by Hobdy (2008), SWCA (2011), and Great Ecology (2015). These earlier studies did not report finding any listed endangered species within the Action Area.

Based on our analysis and by applying the conservation measures to avoid and minimize impacts to the listed species, the USAF ***has determined that the proposed action may affect, but is not likely to adversely affect, the 16 listed species listed above.*** No take is requested for this or any other of the 14 species listed above.

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TABLE OF CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AEOS	Advanced Electro-Optical System
AFCEC	Air Force Center for Engineering and Construction
AFRL	Air Force Research Laboratory
AFMC	Air Force Materiel Command
AGL	Above ground level
AMOS	Air Force Maui Optical and Supercomputing Site
AT/FP	Anti-terrorism/force protection
Action Area	Area of Potential Effect
BA	Biological assessment
BMP	Best management practices
BO	Biological opinion
BSM	Blackburn's sphinx moth
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COE	US Army Corps of Engineers
CWA	Clean Water Act
DLNR	Hawai‘i Department of Land and Natural Resources
DoD	Department of Defense
DoDD	Department of Defense Directive
DOFAW	Hawai‘i Division of Forestry and Wildlife
DOPAA	Description of Proposed Action and Alternatives
DPS	Distinct population segment
EA	Environmental Assessment
EBS	Phase I Environmental Baseline Survey
EIS	Environmental Impact Statement
ESA	Endangered Species Act
EO	Executive Order
ESRC	Hawai‘i Endangered Species Recovery Committee
ESU	Evolutionary significant unit
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HRS	Hawai‘i Revised Statutes
HQ	Headquarters

km	Kilometer
MBTA	Migratory Bird Treaty Act
MILCON	Military Construction
MOA	Memorandum of Agreement
MRTP	Maui Research and Technology Park
MSL	Mean sea level
MSSC	Maui Space Surveillance Complex
NAR	Natural Area Reserve
NEPA	National Environmental Policy Act
NLAA	Not likely to adversely affect
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OEQC	State of Hawai‘i Office of Environmental Quality Control
PACAF	Pacific Air Forces
RME	Remote Maui Experimental site
SDA	Situational Domain Awareness
SISL	Secure Integration Support Laboratory
TMK	Tax Map Key
U.S.C.	United States Code
UFC	United Facilities Requirements
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
WID2	Waiakoa Extremely Stony Silty Clay Loam

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

The United States Air Force (USAF) Research Laboratory (AFRL) Detachment 15, under the USAF Materiel Command, proposes to construct and operate a permanent, government-owned secure integration support laboratory (SISL) in Kīhei, Maui, Hawai‘i (herein, Proposed Action). This Biological Assessment (BA) has been prepared to address the effects from constructing and operating the (SISL) on species listed under the Endangered Species Act (ESA). It was prepared in accordance with Section 7 of the ESA of 1973 (16 United States Code [U.S.C.] 1531–1544, as amended) and incorporated the best scientific and commercial information available. The purpose of the Proposed Action is to construct and operate a permanent, government owned SISL on Maui, Hawai`i that would consolidate operations from the multiple existing AFRL Detachment 15 facilities on the island and provide adequate space to meet current mission needs.

The Proposed Action is needed because the current contractor-leased facilities do not meet the Department of Defense (DoD) and Air Force Antiterrorism/Force Protection (AT/FP) and security requirements of Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, which places the government workforce and the mission at risk. The Proposed Action is also needed to increase the number of hours personnel spend on mission-related work by reducing time spent commuting to the summit of Haleakalā. Personnel working between the Detachment 15 AFRL HQ and the MSSC must drive 1.5 hours each way along winding narrow roads. The length of the commute reduces time spent on mission activities and increases wear on vehicles and fuel consumption. Also, altitude sickness is common with employees who must work at the MSSC summit.

1.2 CONSULTATION HISTORY

A Draft EA for the facility was originally prepared by the Air Force Center for Engineering and the Environment (AFCEE 2012). Data presented in that EA was referenced in the preparation of this BA along with data collected during natural resource field surveys conducted on 23 November 2020 (and reported herein) ensuring that the most recent information is used in the assessment of potential effects.

Lt Col John Zingarelli, Commander, AFRL, submitted an initial request to initiate Section 7 consultation with the USFWS on 24 September 2020, requesting USFWS concurrence with the AFRL determination that a geotechnical survey at the SISL project site may affect, but is not likely to adversely affect 16 federally listed species or result in adverse modification of critical habitat. On 1 December 2020, the USFWS provided a response to AFRL in which they concurred that, by incorporating the conservation measures proposed by AFRL for geotechnical surveys, potential effects to listed species are extremely unlikely to occur and are therefore discountable. Hence, USFWS concurred with AFRL's determination that the geotechnical survey may affect but is not likely to adversely affect the 16 listed species of plants and animals discussed therein.

Early coordination and pre-consultation with the USFWS specifically for construction and operation of the SISL facility was initiated via phone conversation between Aaron Nadig of the USFWS's Pacific Islands Office and Mr. John Ford of Tetra Tech on 20 October 2020. By letter dated 10 February 2021, Lt Col Zingarelli reinitiated informal consultation with the USFWS specifically for the construction of the SISL facility at the same site that was evaluated for the geotechnical investigations mentioned above. Further clarification provided via email on 22 March 2021 and a phone conversation on 29 March 2021 was used by USFWS to generate a revised species list which was transmitted to Lt Col Zingarelli on 8 April 2021 identifying only 14 federally listed species within the Action Area (Appendix A). These are the species evaluated in this BA.

2.0 PROJECT DESCRIPTION

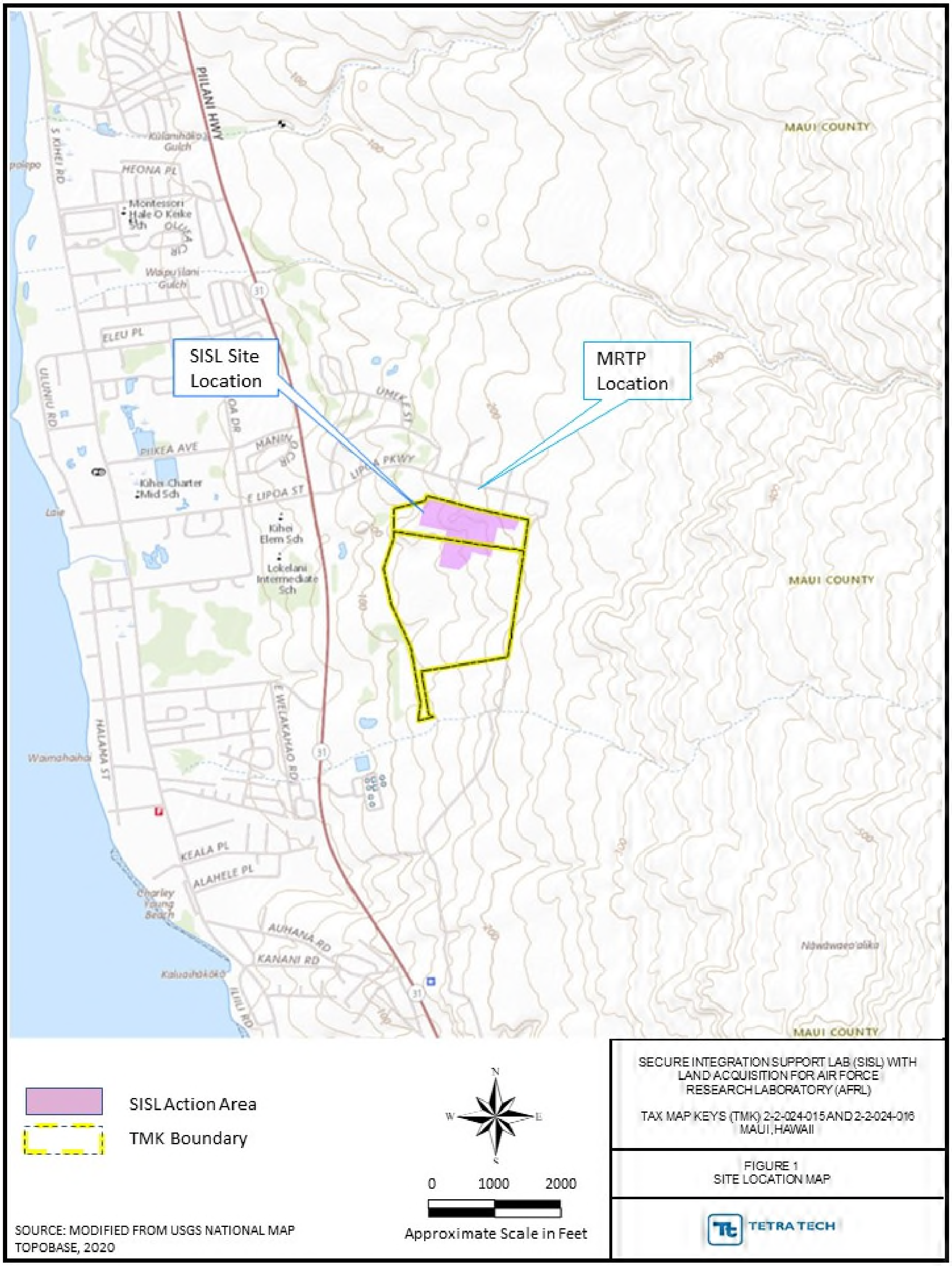
The Action Area is approximately 350 feet south-southeast of the intersection of Lipoa Parkway and South Holopono Street (Figure 1). It located within the Waiohuli *ahupua'a* and the *moku* of Kula, approximately 1.2 miles from the coastline on the leeward slope of Haleakalā. Elevations at the site range from 135 feet to 210 feet above mean sea level. Waipu'ilani Gulch, located approximately 0.6 mi north of the Action Area, is the nearest (intermittent) stream. Foote et al. (1972) identified soils within the entire Action Area as Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). These soils are "gently sloping to moderately steep," "well-drained" uplands soils that "developed in material weathered from basic igneous rock" and contain an upper profile "influenced by volcanic ash" (Foote et al. 1972:126). It is commonly associated with pasture and wildlife habitat.

The entire Action Area is considered part of the MRTP by the County of Maui. A portion of the SISL Action Area adjacent to the MRTP lies within the Urban State Land Use Designation, and a portion (including the staging areas) lies within the Agriculture Land Use Designation. Only the southern staging area lies within TMK (2) 2-2-024-016. The entire Action Area lies outside the Hawai'i Special Management Area (SMA).

The land area identified by the USAF as the proposed site for construction of a two-story, approximately 56,000-square-foot SISL facility is comprised of roughly 10 acres with an additional 9 acres between three adjoining parcels to the west, south, and east that may be used as staging areas during construction (Figure 2). The proposed SISL site including the temporary staging areas to the west and east are identified as a part of Maui County Tax Map Keys (TMK) (2) 2-2-024-015. The southern staging area is within (TMK) (2) 2-2-024-015 and (2) 2-2-024-016. The coordinates of the Action Area are latitude 20.7472940° north and longitude 156.4385220° west. The Action Area is bounded to the north and northeast by the MRTP and to the east, south and west by undeveloped land. Access to the proposed SISL site is from South Holopono and Ninau Streets, located northwest and northeast of the Action Area. The SISL Location Plan and Conceptual Site Layout are included as Figure 3.

The SISL is proposed as a two-story, approximately 56,000 square foot building (Figure 4). It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. Parking for the SISL facility would consist of a consolidated surface parking lot of 150 spaces, including one space for a trailer used for hauling equipment. The parking and access drives would be asphalt and consist of curb and gutter to manage stormwater. Access to the site and parking would be from both South Ninau and South Holopono streets. South Ninau Street on the east side of the site. The South Ninau access would be mainly for service and the South Holopono would be for general access. Both roads would be extended by the MRTP to provide access to the site parking.

Available utilities within the MRTP include water, sewer, electricity, and communications. Service would be extended by the MRTP when South Holopono Street and Ninau Street are extended along the western and eastern site boundaries. Water for the MRTP is supplied from an existing County of Maui reservoir located at the eastern end of Lipoa Road. Potable water service to the SISL would be provided by a water lateral, including a meter and backflow preventer. Fire water service would be provided by a separate lateral, including a separate meter and backflow preventer, and a fire loop around the building with on-site fire hydrants.

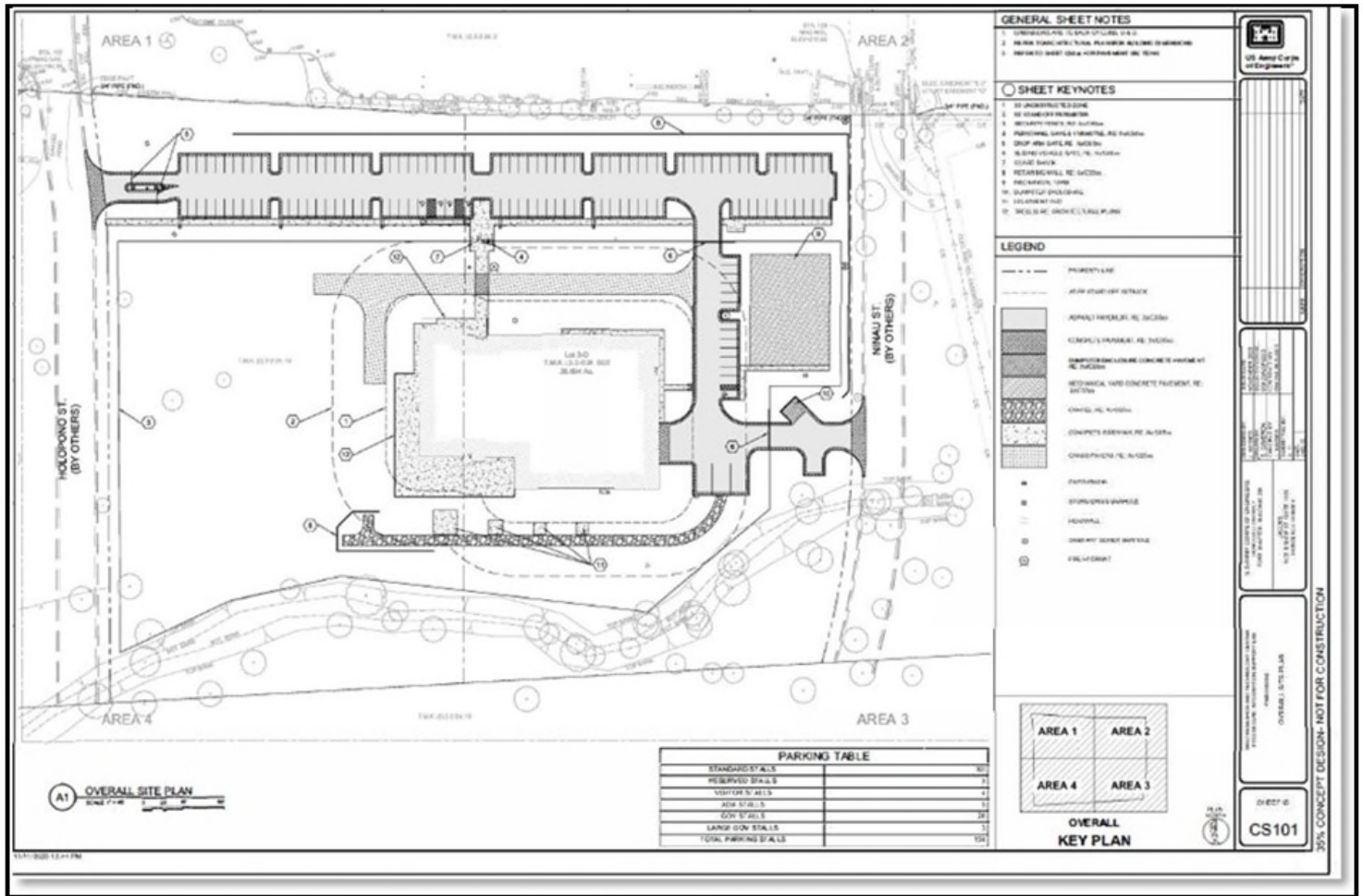


SISL Site Location
MRTP Location
PIILANI HWY
MAUI COUNTY
SISL Action Area
TMK Boundary
SOURCE: MODIFIED FROM USGS NATIONAL MAP TOPOBASE, 2020
0 1000 2000
Approximate Scale in Feet
SECURE INTEGRATION SUPPORT LAB (SISL) WITH LAND ACQUISITION FOR AIR FORCE RESEARCH LABORATORY (AFRL)
TAX MAP KEYS (TMK) 2-2-024-015 AND 2-2-024-016 MAUI, HAWAII
FIGURE 1
SITE LOCATION MAP
TETRA TECH

SECURE INTEGRATION SUPPORT LAB (SISL) WITH
LAND ACQUISITION FOR AIR FORCE
RESEARCH LABORATORY (AFRL)
TAX MAP KEYS (TMK) 2-2-024-015 AND 2-2-024-016; MAUI, HAWAII

FIGURE 2
SITE LAYOUT AND PROPOSED CONSTRUCTION STAGING AREAS

TETRA TECH



SECURE INTEGRATION SUPPORT LAB (SISL) WITH LAND ACQUISITION FOR AIR FORCE LABORATORY RESEARCH (AFRL)
TAX MAP KEYS (TMK) 2-2-024-015 AND 2-2-024-016
MAUI,HAWAII

FIGURE 3
TENTATIVE SISL SITE LAYOUT

TETRA TECH

SECURE INTEGRATION SUPPORT LAB (SISL) WITH LAND ACQUISITION FOR AIR FORCE LABORATORY RESEARCH (AFRL)
TAX MAP KEYS (TMK) 2-2-024-015 AND 2-2-024-016
MAUI,HAWAII

FIGURE 4
OBLIQUE VIEW OF CONCEPTUAL SISL FACILITY

TETRA TECH

3.0 ENVIRONMENTAL SETTING

3.1 LOCATION AND HABITAT CHARACTERIZATION

The Action Area lies on the west toe slope of Haleakalā at an elevation of 135 to 210 feet and consists predominantly of undeveloped land. It lies immediately adjacent to developed portions of the MRTP. The entire project area is underlain with older, moderately weathered Kula Series (KU) lavas (Sherrod, et al., 2007). Soils throughout the entire Action Area are Waiakoa extremely stony silty clay loam (WID2) which consist of highly eroded, well drained volcanic ash. There are no hydric soils, wetlands, ponded water, or perennial or intermittent streams located on the property.

Historically, the project area would most likely have been a native dry forest/shrubland dominated by native species (Hobdy 2008). Native lowland dry forests in Hawai‘i have been degraded by pre-contact fire and deforestation, non-native ungulate grazing, alien species invasions, and conversion of forests for agricultural, urban, and military uses (during WWII). Hobdy (2008) noted that the project area has been seasonally grazed by livestock over the past 150 years which has resulted in the loss of native plant species and their replacement with hardy pasture grasses and weeds. He cited the introduction of axis deer (*Axis axis*) by the former Hawai‘i Division of Fish and Game in 1959 for having strongly degraded environmental conditions on the property. Wildfires, as evidenced by charred tree stumps throughout the property, have also eliminated species not adapted to this stressor (Hobdy 2008)

Habitat quality maps developed by Price, et al. (2007) show the property to have “low (converted)” and “medium (non-native)” habitat value. Today, the US Geological Survey Land-Cover Map for the Island of Maui (version 12, November 2018) classified landcover within the Property as “alien forest” and “fallow grassland”. The dominant vegetation within the action area consists of a non-native buffelgrass (*Cenchrus ciliaris*)/kiawe tree (*Prosopis pallida*) savanna, which represents a degraded lowland dry plant community, and covers 75 percent or more of the rocky soil.

3.2 ENVIRONMENTAL CONTAMINANTS

Historic aerial photographs indicate that the parcels identified for SISL construction and staging areas have been vacant land since at least 1951. The western portion of the area was previously used as a staging area for a wind turbine project in 2010, where wind turbine blades and frame components were temporarily staged. The surrounding properties were vacant land until 1992 when they were developed for purposes like their current uses, including the Maui Research Technology Center to the north and northeast, and residential and light commercial development further to the northwest.

An Environmental Baseline Survey (EBS) was performed within the SISL Action Area (Tetra Tech 2021) and concluded that “…no storage, release, or disposal of hazardous substances or petroleum products or their derivatives has occurred into the environment or structures or disposed on the subject property (including no migration of these substances from adjacent properties).” The real property contains no known hazardous substances as that term is defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601), as amended, or other contamination as specified by the RCRA of 1976, the implementing EPA regulations (40 CFR Parts 261, 262, 263, and 761), and the Federal Property Management Regulations (41 CFR Part 101-47). A complete search of agency files revealed that no hazardous substance has been stored for more than one year, known to have been released, or disposed of on the property (Tetra Tech 2021).

3.3 FLORA AND FAUNA

3.3.1 Surveys Conducted

The flora and fauna of the project area is predominantly non-native (Figure 5). Previous biological surveys did not identify any threatened or endangered species in the project area (Hobdy 2008, SWCA 2011, Great Ecology 2015). Since the last biological survey of the property had been conducted some time ago, a pedestrian re-survey of the property was conducted on 23 November 2020 between the hours of 0720 and 1100 hours by Tetra Tech biologists based in Honolulu, Hawai‘i. All plant species and dominant vegetation types within the property were identified and recorded as part of a pedestrian survey within the property. During the survey, biologists examined areas more likely to support native plants (e.g., rocky outcrops and swales) more intensively. Plants recorded in November 2020 are indicative of the season and environmental conditions at the time of the survey. The presence and location of plants and animals can be influenced by seasonal and temporal changes; therefore, it is possible additional species may be found within the property (e.g. for example after heavy rainfall and during summer months) but were not present during this survey.

Birds, the most conspicuous wildlife found on the property, were identified by their vocalizations and with 10x42 image-stabilizing binoculars. Six 5-minute point count stations were established throughout the property. The relative densities of species were estimated using five-minute 656 ft radius point counts conducted between 0720 and 1100 hours. Five-minute point counts maximize the likelihood of detecting new species during a survey (Lynch 1995). Bird density data and species composition from the study were compared with the findings of Hobdy (2008). Signs of other wildlife including mammals, amphibians, reptiles, mollusks, and insects, were also noted.

3.3.2 Non-listed Plant Species

No federal or state listed threatened, endangered, proposed listed, or candidate plant species were observed on the property during the survey by Hobdy (2008) or by Tetra Tech biologists in November 2020. A total of 16 plant species were documented within the Action Area, two of which are native to the Hawaiian Islands (Table 1). None of the observed native plants are considered rare anywhere in the Hawaiian Islands (Wagner et al. 1999). The remaining 14 plant species observed within the Action Area are non-native to the Hawaiian Islands. A list of plants observed during the survey is presented in Table 1.

The entire Action Area is dominated by non-native *kiawe* (*Prosopis pallida*) with buffelgrass (*Cenchrus ciliaris*) groundcover and has been subject to cattle grazing over many decades. This vegetation type is characterized by open to locally dense stands of *kiawe* trees ranging from 4 to 15 feet in height with buffelgrass roughly covering 75% or more of the rocky soil. Most of the property has scattered *kiawe* trees; however, tree density increases somewhat in the swale located on the southern boundary and at the northwest corner of the property. Additional common species located within the swale include golden crown-beard (*Verbesina encelioides*) and lion’s ear (*Leonotis nepetifolia*).

A portion of the western portion of property was bladed and used for gravel and fill storage. This area harbored species such as, Russian thistle (*Salsola tragus*), khaki weed (*Althernanthera pungens*), spiny amaranth (*Amaranthus spinosus*), and four spike heliotrope (*Heliotropium procumbens* var. *depressum*). Approximately 10 healthy *‘ilima* (*Sida fallax*) plants were growing within the mounds of top soil excavated from a recent road improvement project within the MRTP. Time was taken to observe each plant for signs of listed endangered yellow-faced bees (*Hylaeus* sp.), though none were found.

SECURE INTEGRATION SUPPORT LAB (SISL) WITH LAND ACQUISITION FOR AIR FORCE LABORATORY RESEARCH (AFRL)
TAX MAP KEYS (TMK) 2-2-024-015 AND 2-2-024-016
MAUI,HAWAII

FIGURE 5
KIAWE – BUFFELGRASS LANDS IN THE ACTION AREA

TETRA TECH

Table 1. Plant Species Observed at the SISL Property on November 23, 2020

The plant names are arranged alphabetically by family and then by species into two groups: Monocots, and Dicots. The taxonomy and nomenclature of flowering plants are in accordance with Wagner et al. (1999, 2012), Wagner and Herbst (2003), Imada (2012), and Staples and Herbst (2005). Hawaiian names are included, if they exist, for the given species.

Scientific Name and Authorship	Hawaiian/Common Name	Status[1]
MONOCOTS		
Poaceae		
Cenchrus ciliaris L.	Buffelgrass	X
Cenchrus echinatus L.	Common sandbur	X
Chloris barbata (L.) Sw.	Swollen fingergrass	X
DICOTS		
Amaranthaceae		
Alternanthera pungens Kunth	Khaki weed	X
Amaranthus spinosus L.	Spiny amaranth	X
Asteraceae		
Verbesina encelioides (Cav.) Benth.&Hook.	golden crown-beard	X
Boraginaceae		
Heliotropium procumbens var. *depressum* (Cham.) Fosberg	Four-spike heliotrope	X
Chenopodiaceae		
Salsola tragus L.	Russian thistle, tumbleweed	X
Euphorbiaceae		
Euphorbia hirta L.	Hairy spurge	X
Fabaceae		
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	*kiawe*, mesquite	X
Samanea saman (Jacq.) Merr.	Monkeypod	X
Lamiaceae		
Leonotis nepetifolia (L.) R.Br.	Lion's ear	X
Malvaceae		
Sida fallax L.	*'ilima*	I
Nyctaginaceae		
Boerhavia coccinea Mill.	Scarlet spiderling	X
Sterculiaceae		
Waltheria indica L.	*'uhaloa*	I
Verbenaceae		
Citharexylum caudatum L.	fiddlewood	X

[1] Biogeographic Status:

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

Table 2. List of Birds Observed at the SISL Property by Hobdy (2008) and Tetra Tech (2020)

Common Name	Species Name	Hobdy 2008[1]	Tetra Tech 2020[2]	Biogeographic Status[3]	Special Status[4]	Abundance Rank
Zebra dove	*Geopelia striata*	Common	3.00	**N**		1
Gray francolin	*Francolinus pondicerianus*	Uncommon	2.67	**N**		2
Common mynah	*Acridotheres tristis*	Uncommon	1.50	**N**		3
Warbling white-eye	*Zosterops japonicus*	Rare	1.50	**N**		3
Scaly-breasted munia	*Lonchura punctulata*	Uncommon	1.17	**N**		4
Northern cardinal	*Cardinalis cardinalis*	Rare	1.00	**N**	MBTA	5
Red-crested cardinal	*Paroaria coronata*	Rare	0.83	**N**		6
Java sparrow	*Lonchura oryzivora*	Rare	0.67	**N**		6
Common waxbill	*Estrilda astrild*	x	0.67	**N**		6
Rosy-faced lovebird	*Agapornis roseicollis*	x	0.33	**N**		7
Hawaiian goose	*Branta sandvicensis*	x	0.33	**R**	Threatened	7
Black francolin	*Francolinus francolinus*	Rare	0.33	**N**		7
Pacific golden plover	*Pluvialis fulva*	Rare	0.33	**W**	MBTA	7
Red junglefowl	*Gallus gallus*	x	0.17	**N**		8
Northern mockingbird	*Mimus polyglottos*	Rare	0.17	**N**	MBTA	8
House sparrow	*Passer domesticus*	Uncommon	x	**N**		-
House finch	*Haemorhous mexicanus*	Uncommon	x	**N**	MBTA	-
Spotted dove	*Streptopelia chinensis*	Uncommon	x	**N**		-

[1] Species observed by Hobdy (2008).

[2] Number of birds per 5-minute point count (n=6) recorded by Tetra Tech (2020) on 23 November 2020.

[3] Biogeographic status: **N**=naturalized non-native/introduced resident; **R**=endemic or indigenous resident; **W**=winter visitor.

[4] **END**=listed endangered species; **MBTA**=protected under the Migratory Bird Treaty Act as of December 2, 2013.

ʻIlima is a host flower for native bees. The only other native plant observed was the indigenous *ʻuhaloa* (*Waltheria indica*). This common native plant is scattered along the dirt roadways and throughout the buffelgrass land. The vegetation across the property is typical of other highly disturbed *kiawe*-buffelgrass pastures within the Kīhei-Wailea area (SWCA 2011, 2018).

3.3.3 Non-listed Wildlife Species

The most conspicuous birds found onsite include non-native naturalized barred doves (*Geopelia striata*), which were seen flying over the property and loafing in tree tops and high branches of *kiawe* trees. Gray francolins (*Francolinus pondicerianus*), small game birds, were frequently flushed from the dense buffelgrass (Table 2). Other species seen roosting and feeding in *kiawe* trees and flying over the property include the common mynah (*Acridotheres tristis*), warbling white-eye (*Zosterops japonicus*), scaly-breasted munia (*Lonchura punctulata*), and red-crested cardinal (*Paroaria coronata*). Smaller Java sparrows (*Lonchura oryzivora*) and common waxbill (*Estrilda astrild*) were seen amongst grasses and weeds within and near the dry swale that roughly parallels the southern boundary of the property.

Two non-native rosy-faced lovebirds (*Agapornis roseicollis*) were observed perched in a large *kiawe* tree near the northwest corner of the parcel. Originally released from captivity as domestic pets, lovebirds are commonly found in the Wailea-Makena and nearby Maui Meadows subdivisions of southeast Maui. They have become a nuisance because of their loud calls and fondness for the fruit of native plants and commercial farms. Black francolins (*Francolinus francolinus*) and red junglefowl (*Gallus gallus*) were heard but not seen during the Tetra Tech field survey conducted in November 2020.

Other naturalized introduced birds common to the Kīhei lowland region of Maui, but not observed by us within the Action Area include wild turkey (*Meleagris gallopavo)*, spotted dove (*Streptopelia chinensis*), red-billed leiothrix (*Leiothrix lutea*), and African silverbill (*Lonchura cantans*). This highly disturbed *kiawe*-buffelgrass pasture land is not suitable habitat for native forest birds and none are found here (Hobdy 2008).

Four species of birds protected by the Migratory Bird Treaty Act (MBTA) have been reported within the vicinity of the Action Area (Hobdy 2008) and observed by Tetra Tech in November 2020. Northern cardinal (*Cardinalis cardinalis*) were observed perched in *kiawe* trees and flying low across the property. A single northern mockingbird (*Mimus polyglottus)* was observed flying parallel to the northern boundary of the parcel, and two Pacific golden plovers (*Pluvialis fulva*) were observed on manicured lawns at the office buildings adjacent to the northern border of the property. House finches (*Haemorhous mexicanus*) were reported by Hobdy (2008) but not seen by Tetra Tech in November 2020. Other MBTA-protected species previously reported from the region and likely to be found periodically within the Action Area include cattle egret (*Bulbucus ibis*), barn owl (*Tyto alba*), black-crowned night heron (*Nycticorax hoactli*), mourning dove (*Zenaida macroura*), Eurasian skylark (*Alauda arvensis*), wandering tattler (*Tringa incana*), and ruddy turnstone (*Arenaria interpres*) (SWCA 2011).

Although not reported within the Action Area by Hobdy (2008), or by this study, the Hawaiian short-eared owl or *pueo* (*Asio flammeus sandwichensis*), may also be found infrequently within disturbed lowland kiawe-buffelgrass habitats in the Kīhei-Wailea region of Maui (SWCA 2010). The *pueo* is an endemic subspecies of the nearly cosmopolitan short-eared owl (*Asio flammeus*). This is the only extant owl native to Hawai‘i and is found on all the main islands from sea level to 8,000 feet.

The Hawaiian short-eared owl is listed by the State of Hawai‘i as endangered on O‘ahu, but it is not listed on Maui. *Pueo* are known to feed upon rodents, passerine birds, seabirds, shorebirds, and insects. *Pueo* nest on the ground throughout the year. Nests may be simple scrapes in the ground lined with grasses and feather down. Females tend the nest, and males feed females and defend nests. The young may leave the

nest on foot before they are able to fly and depend on their parents for approximately 2 months (Mitchell et al. 2005). *Pueo* may utilize the *kiawe*-buffelgrass grassland habitat on the property, which may provide foraging and nesting habitat for *pueo.* However, vulnerability to predation is increased in this habitat by rats (*Rattus* spp.), cats (*Felis catus*), and the small Indian mongoose (*Herpestes auropunctatus*), all of which are likely to be present in the Action Area immediately adjacent to developed areas.

No native land reptiles or amphibians occur in Hawai‘i (McKeown 1996). No skinks (Scincidae) or amphibians have been recorded at the property. Signs of axis deer (*Axis axis*) including scat, antler rubbings, tracks, bedding areas, and carcasses are found throughout the property. A single live doe was observed by Tetra Tech biologists in November 2020 in the gulch that parallels the southern boundary of the property. Feral pig sign (scat and disturbed ground) was also found, though uncommon. Other common mammals which are likely to occur on the property include mongoose (*Herpestes auropunctatus),* mice (*Mus musculus*), rats (*Rattus rattus*), and feral cats (*Felis catus*). No cattle were seen on the property or on adjacent parcels by Tetra Tech biologist in November 2020. Table 3 (below) lists other species of wildlife observed on the property in November 2020.

3.3.4 Listed Plants

3.3.4.1 Lava-field Jack-bean or ‘Āwikiwiki (*Canavalia pubescens*)

‘Āwikiwiki was listed as an endangered species in June 2013 by the USFWS. Several *‘āwikiwiki* plants were discovered in 2008 at a site six (6) miles south of the SISL Action Area (SWCA 2010a, 2018). None of the five *‘āwikiwiki* individuals found by SWCA in 2008 were alive during a subsequent survey in April 2013 following a prolonged period of drought. Two additional dead plants (and associated seeds) that were not recorded during the 2008 survey were observed (SWCA 2013). These remaining plants are found in four scattered populations on East Maui, most of which are located on state lands: Keokea and Puʻu O Kali, Papaka Kai, southeast Pohakea, and Honuaula.

Table 3. Other Conspicuous Wildlife Recorded within the Action Area on 23 November 2020

Common Name	Species Name	Hobdy 2008[1]	Tetra Tech 2020[2]	Status[3]
MAMMALS				
Axis deer	*Axis*	Abundant sign	Abundant sign	**N**
Feral pig	*Sus scrofa*	x	Sign	**N**
Cattle	*Bos taurus*	Common sign	x	ID
INSECTS				
Bee, Carpenter bee	*Xylocopa sonorina*	x	Common	**N**
Bee, European honeybee	*Apis mellifera*	x	Common	**N**
Butterfly, monarch	*Danaus plexippus*	x	Rare	**N**
Dragonfly, green darner	*Anax junius*	x	Rare	**N**
Dragonfly, wandering glider	*Pantala flavescens*	x	Common	**I**
Fly, dung	*Musca sorbens*	x	Common	**N**
Wasp, paper	*Polistes exclamans*	x	Rare	**N**

[2] Relative abundance of species based upon observations may on 20 February and 13 March 2020 by Tetra Tech biologists.

[3] Biogeographic status: ID=introduced domestic; **N**=naturalized alien; **I**=indigenous; **INV**=invasive species.

This species is short-lived and its distribution changes over time in response to rainfall events and grazing pressure from axis deer and other ungulates. No *ʻāwikiwiki* were observed within the SISL Action Area during previous surveys or by Tetra Tech biologists in November 2020.

3.3.4.2 Native Yellow Hibiscus or *Maʻo Hau Hele* (*Hibiscus brackenridgei*)

Listed as endangered in November 1994, the native yellow hibiscus (*Hibiscus brackenridgei*) is known from Kauaʻi, Oʻahu, Molokaʻi, Lānaʻi, Maui, Hawaiʻi, and possibly Kahoolawe, and currently comprising two subspecies (USFWS 2016a). At the time the species (and subspecies) was listed as endangered, it was already extirpated on Kauaʻi, Kahoolawe, and Molokaʻi. *Hibiscus brackenridgei* ssp. *brackenridgei,* extant on Lānaʻi, Maui, and the island of Hawaiʻi. It is known to flower continuously from early February through late May, and intermittently at other times of year. Intermittent flowering may possibly be tied to day length (USFWS 2016a). *Hibiscus brackenridgei* ssp. *brackenridgei* occurs in lowland dry to mesic forest and shrubland between sea level and 645 m (2,116 ft). Associated native plant species include *Dodonaea viscosa* (*ʻaʻaliʻi*), *Isachne distichophylla* (*ʻohe*), *Psydrax odorata* (*ʻalaheʻe*), and *Sida fallax* (*ʻilima*).

On Maui, *Hibiscus brackenridgei* ssp. *brackenridgei* occurs in lowland dry forest sometimes with *Erythrina sandwicensis* (*wiliwili*) as the dominant tree at 43 to 771 m (141 to 2,530 ft) and containing one or more of the following associated native plant species: *Achyranthes* spp., *Euphorbia celastroides* var. *lorifolia* (*ʻakoko*), *Chenopodium oahuense* (*ʻāweoweo*), *Diospyros* spp. (*lama*), *Dodonaea viscosa*, *Lipochaeta lavarum* (*nehe*), *Myoporum sandwicense* (*naio*), *Nototrichium* spp. (*kului*), *Panicum* spp. (*konakona*), *Psydrax odorata*, *Schiedea salicaria*, and *Sida fallax*.

No *maʻo hau hele* were observed within the SISL Action Area during previous surveys or by Tetra Tech biologists in November 2020.

3.3.4.3 Hawaiʻi Lady's Nightcap, Hawaiian Name Not Known (*Bonamia menziesii*), and/or its/their critical habitat.

Bonamia menziesii is the only member of the genus that is endemic to the Hawaiian Islands and differs from other genera in the family by its two styles, longer stems and petioles (leaf stalks), and rounder leaves. This member of the Convolvulaceae (morning-glory) family is found on Kauaʻi, Oʻahu, Lānaʻi, Maui, and Hawaiʻi. *Bonamia menziesii* is found in dry and mesic to wet forest at elevations between 351 and 1,415 m (1,151 and 4,644 ft). On Maui, its preferred habitat is dry to mesic forest with *Dodonaea viscosa*, *Nestegis sandwicensis*, *Osteomeles anthyllidifolia* (*ʻūlei*), and *Diospyros sandwicensis*. On Maui, it has been observed flowering in March, July, October, and December on Kauaʻi and in February, April, and May. Lowland Dry Unit 2 located 1.8 miles uphill from the SISL Action Area is the nearest designated critical habitat unit for *Bonamia menziesii* to the proposed project.

No *Bonamia menziesii* or other native plants with which it is commonly associated were observed within the SISL Action Area during previous surveys or by Tetra Tech biologists in November 2020.

3.3.5 Listed Wildlife with No Requested Take

3.3.5.1 Hawaiian Hoary Bat or *ʻŌpeʻapeʻa* (*Lasiurus cinereus semotus*)

The Hawaiian hoary bat, a sub-species of the hoary bat (*Lasiurus cinereus*), is the only native land mammal in the Hawaiian archipelago. Recent statewide population estimates ranged from hundreds to a few thousand bats (Menard 2001). On Maui, Hawaiian hoary bats are believed to occur primarily in moist, forested areas. Bats have been observed between sea level and 2,760 m (9,050 feet) but are most

common below 628 m (2,060 feet) (Gorresen et al. 2013; USFWS 1998). Hawaiian hoary bats roost in native and non-native vegetation from 1 to 9 m (3 to 29 feet) height including *ʻōhiʻa* (*Metrosideros polymorpha*), *hala* (*Pandanus tectorius*), coconut palms (*Cocos nucifera*), ironwood (*Casuarina equisetifolia*), *kukui* (*Aleurites moluccana*), *kiawe* trees, avocado (*Persea americana*), mango (*Mangifera indica*), shower trees (*Cassia javanica*), *pūkiawe (Leptecophylla tameiameiae*), and fern clumps. While roosting during the day, Hawaiian hoary bats are solitary, although mothers and pups roost together (USFWS 1998).

Bats appear to be rare at lower elevations within developed areas in Kīhei. SWCA (2018) reported sighting a single bat some 6 miles south of the Action Area in 2009 at the edge of a remnant native forest. Although the previous botanical and fauna surveys did not detect occurrence of Hawaiian hoary bats within the SISL Action Area, suitable roosting habitat is available throughout the region. It is possible, nevertheless, that bats may use taller *kiawe* trees on the property for roosting and/or pupping. Adult bats leave their young unattended in trees and shrubs while they forage for food. Non-volant pups are particularly vulnerable to vegetation clearing during this period. If trees or shrubs greater than 15 feet in height are cleared during the pupping season (June 1 through September 15), there is a risk that young bats could be harmed or killed.

Hobdy (2008) conducted visual and audio surveys for Hawaiian hoary bats within the SISL Action Area during twilight hours with the assistance of a Batbox IIID bat detector and found no evidence of bat activity. Tetra Tech biologists observed no bat activity during their one-day survey in November 2020. There is no designated critical habitat for bats within or immediately adjacent to the Action Area.

3.3.5.2 Hawaiian Goose or *Nēnē* (*Branta sandvicensis*)

Nēnē are an endemic Hawaiian species similar in appearance to cackling geese (*Branta hutchinsii*) and Canada geese (*Branta canadensis*). *Nēnē* are adapted to a terrestrial lifestyle in the main Hawaiian Islands and are generally not migratory or dependent upon freshwater habitats. They are capable of inter-island flight (Banko et al. 1999; Miller 1937). The Maui population of *nēnē* in 2019 was estimated at about 600, and the statewide population was estimated at 2,000 birds (NPS 2019). In 2019, there were an estimated 600 *nēnē* on Maui; and the south Maui population, including the Haleakalā Ranch population near the SISL site, is estimated at 52 birds (NPS 2019).

Nēnē occupy habitats ranging from beach strand, shrubland, and grassland to lava rock, at elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999). They eat plant material, and the composition of their diet depends largely on the vegetative composition of their surrounding habitats. They appear to be opportunistic in their choice of food plants if the plants meet their nutritional demands (Banko et al. 1999; Woog and Black 2001). Current threats to *nēnē* include predation by non-native mammals, poor nutrition, a lack of lowland habitat, and human-caused disturbance and mortality, behavioral problems related to captive propagation, and inbreeding depression (USFWS 2004). Dogs, cats, rats, and mongoose prey on eggs and goslings. Dogs and mongoose are also responsible for most adult predation (USFWS 2004). *Nēnē* have also been negatively impacted by human recreational activities (e.g., hikers and hunters), and a number have been struck by vehicles including golf carts, mowers, and even golf balls (SWCA 2018). Starvation and dehydration have accounted for significant mortality of goslings (USFWS 2004).

At 1100 hours on 23 November 2020, Tetra Tech biologists heard and observed two *nēnē* flying low across the project site from south to north. The two birds landed on a manicured lawn off Holopono Street just outside the northern boundary of the Action Area and rested there for roughly 10 minutes before flying south and dipping low out of sight across the project site.

3.3.5.3 Hawaiian Waterbirds (Hawaiian Stilt or *Aeʻo* (*Himantopus mexicanus knudseni*), and Hawaiian Coot or *ʻAlea Kea* (*Fulica alai*).

Three listed Hawaiian waterbirds are found in association with fresh and brackish-water marshes and natural or man-made ponds on Maui and are also found in golf course fairways and water features in the Kīhei area. Predominantly nesting in freshwater wetlands, these three waterbirds are also known to frequent upland habitats and may loaf and feed on manicured lawns (Vanderwerf 2012; SWCA 2018; Kawasaki et al. 2020). On Maui, most Hawaiian waterbirds occur at Keālia Pond National Wildlife Refuge and Kanahā Pond State Wildlife Sanctuary. In their 8 April 2020 species list, the USFWS identified only two of these waterbirds, the Hawaiian stilt and coot, as likely to be found within the Action Area vicinity.

Listed as endangered in 1970, the **Hawaiian stilt, or *ae'o***, is a waterbird endemic to the Hawaiian Islands. It is considered a distinct subspecies of the black-necked stilt (*Himantopus mexicanus knudseni*). Between 2003-2008, Hawaiian stilt numbers ranged between approximately 250 to 530 birds (USFWS 2011b). The statewide count of stilt has been increasing over the past 30 years to over 2600 adults during the winter counts (van Rees et al., 2020), with between 400 and 1050 stilt recorded at Kealia National Wildlife Refuge on Maui. Maui's two large coastal wetlands, Kanahā and Keālia, support a significant number of Hawaiian stilts, with important nesting habitat at Keālia. The birds are known to freely move between these two wetlands. Stilt have also been recorded at wetland mitigation ponds behind the Azeka Mauka Shopping Center along South Kīhei Road, approximately one mile east-northeast of the Action Area. Waterbirds have also been recorded at the Lāʻie coastal wetland located one mile east of the Action Area. Loss of suitable wetland habitats due to dredging and filling for real estate development is a leading cause for decline of stilt, as well as the introduction of non-native predators and invasive wetland plants. Predators of Hawaiian stilts include mongooses, black rats (*Rattus rattus*), feral cats, feral dogs, black-crowned night herons, cattle egrets, Hawaiian short-eared owl or *pueo*, and common mynas (*Acridotheres tristis*) (USFWS 2011b).

The **Hawaiian coot or *ʻalae keʻokeʻo*** is endemic to the Hawaiian Islands. The Hawaiian coot was once considered a subspecies of the American coot (*Fulica americana*) and was originally listed under the Endangered Species Act as such, but it is now regarded as a distinct species. The Hawaiian coot is nonmigratory and presumably originated from stray migrants from continental North America that remained as residents in the islands (USFWS 2001b). The Hawaiian coot population on Maui Nui (Maui, Molokaʻi, and Lānaʻi) varies from approximately 200 to 600 birds (USFWS 2011b). On Maui Island, the largest concentrations of Hawaiian coots occur at Kanahā and Keālia Ponds. Annual movements occur between Kanahā and Keālia Ponds and possibly between islands within Maui Nui. Coots have also been seen associated with former sugar cane production and golf course ponds. Hawaiian coots nest on open fresh water and brackish ponds, taro ponds, shallow reservoirs, irrigation ditches, and in small openings of marsh vegetation (USFWS 2011b) where they build floating nests of aquatic vegetation in open water, or semi-floating nests anchored to emergent vegetation or in clumps of wetland vegetation (USFWS 2011b). They appear to be opportunistic when selecting vegetation for nest building. Also, the timing of nesting may also be opportunistic and corresponds with seasonal weather conditions (USFWS 2011b).

No listed waterbirds were observed within the SISL Action Area by previous surveys or by Tetra Tech biologists in November 2020.

3.3.5.4 Hawaiian Seabirds (Band-rumped Storm-Petrel or *ʻUaʻu* (*Oceanodroma castro*), Newell's Shearwater or *Aeʻo* (*Puffinus auricularis newelli*), and Hawaiian Petrel or *ʻAʻo* (*Pterodroma sandwichensis*).

Three listed seabirds may transit the Action Area, primarily at night and early morning hours as they fly to and from their high elevation nest sites to feed at sea. The principal concern regarding seabirds is their propensity to be confused by and collide with bright lights close to the shoreline. This usually results in mortality of birds that are not found and rehabilitated following collision and is considered a serious threat to the species. Penniman (2021) recorded fallout of 15 Hawaiian petrels and 12 wedge-tailed shearwaters just west of MRTP between Pi‘ilani Highway and the coast between 2009 – 2020.

Band-rumped storm-petrels are still considered the rarest breeding seabird in Hawai‘i (Banko et al. 1991; Slotterback 2002). The Hawaiian population was once categorized as a distinct subspecies, but it has been included in a single taxon containing all Pacific band-rumped storm-petrel populations (USFWS 2012a). In the Pacific Ocean, breeding colonies have been documented only in the Galapagos Islands, Japan, the Hawaiian Islands, and possibly Cocos Island near Costa Rica (Pyle and Pyle 2009; USFWS 2012a). Once abundant and widespread throughout Hawai‘i, the species is currently found only in small breeding locations on remote locations on Kaua‘i, Lehua Islet off Ni‘ihau, and Island of Hawai‘i (Mitchell et al. 2005; USFWS 2012a). They have been documented vocalizing within the Haleakalā Crater on Maui, but evidence of breeding is lacking (Pyle and Pyle 2009). Non-native predators such as cats, mongooses, dogs, and barn owls (Wood et al. 2002) may be the most serious land-based predators. Other threats include habitat destruction by introduced ungulates, and disorientation by artificial lighting resulting in collision with structures (Banko et al. 1991), or in individuals becoming grounded (Harrison et al. 1990). The species is thought to breed on Maui at locations over 3,900 feet. Vocalizations of the species were heard in Haleakalā Crater in 1992 and an adult was found dead in Kīhei in 2005 (Pyle and Pyle 2009). As of 2016, no nesting sites have been located on Maui (USFWS 2016b).

The **Newell’s shearwater** is an endemic Hawaiian sub-species of the Townsend’s shearwater (*Puffinus a. auricularis*) of the eastern Pacific. It is listed as a threatened species under the ESA and is considered “Highly Imperiled” by USFWS (2005b) and Kushlan et al. (2002). The most recent population estimate of Newell’s shearwater on the Hawaiian Islands was between 57,000–115,000 birds (Ainley et al. 1997b). Newell’s shearwaters nest on steep slopes vegetated by dense uluhe ferns and scattered ‘ōhi‘a trees. Currently, most Newell’s shearwater colonies are found between 525 to 3,900 feet (160 to 1,200 m) above mean sea level, often in isolated locations and/or on slopes greater than 65 degrees (Ainley et al. 1997b; DOFAW 2005b). The Newell’s shearwaters return to prospect for nest sites in April each year. Egg-laying begins in early June and continues through early July. Chicks fledge after 90 days, usually in October to early December. Population declines are attributed to loss of nesting habitat, predation by introduced mammals (mongoose, feral cats, rats, and feral pigs) at nesting burrows, and fallout of juvenile birds disorientated by ground lighting (Ainley et al. 1997b; Mitchell et al. 2005; Hays and Conant 2007, Penniman 2021).

There is no definitive evidence of Newell’s shearwater nesting on Maui (Ainley et al. 1997b; DOFAW 2005b). Pyle (1983) found one live bird near Peahi Reservoir in eastern Maui in July 1983. Additional evidence comes from a small number of grounded juveniles during the fall fledging season on Maui, but it wasn’t clear whether these fledged from Maui or other islands. Radar data have suggested that small numbers of Newell’s shearwater may be nesting inland in eastern and western Maui.

Hawaiian petrels breed in high-elevation colonies on Maui, Hawai‘i, Kaua‘i, and Lāna‘i (Simons and Hodges 1998; Telfer et al. 1987). Today, most Hawaiian petrel colonies are found at elevations above 2,500 meters (8,200 feet) in habitats ranging from xeric with little or no vegetation, including Haleakalā National Park on Maui. Terrestrial threats to the species include predation of eggs and young by introduced mammalian predators such as mongoose, feral cats, owls, pigs, dogs, and rats. As reviewed in SWCA (2018), population modeling has suggested that this species could face extinction in a few decades if predation is not controlled (Simons 1984). Overgrazing by introduced ungulates can create soil erosion and adversely impact nesting seabirds. Additional hazards include periodic mortality from collisions with

power lines, fences and other structures near breeding sites, and collision with bright lights. Juvenile birds can be grounded when they become disoriented by artificial lighting as they fledge from inland breeding sites to the sea (Simons and Hodges 1998).

Haleakalā National Park on Maui supports the largest known nesting colony of Hawaiian petrels (USFWS 2005a). Approximately 1,000 nests occur in the crater area with the highest concentration on the western rim. Predatory trapping is conducted year-round by National Park Service biologists and others to protect nesting seabirds. There are also nesting burrows elsewhere in the crater and beyond the park boundaries that are not being actively managed (Hodges and Nagata 2001).

None of these three listed seabird species were observed within the Action Area during previous surveys or by Tetra Tech biologists in November 2020.

3.3.5.5 Blackburn's Sphinx Moth or *ʻŌkaʻi ʻAiea* (*Manduca blackburni*)

The Blackburn's sphinx moth (BSM) on the islands of Hawaiʻi, Maui, Lānaʻi, and Kahoolawe from sea level to 5,000 feet. The population numbers of BSM are unknown; however, USFWS (2005c) suggests that its numbers have declined over the past 100 years. The USFWS (2005c) attributes its decline and disappearance from several islands to habitat loss and fragmentation from urban and agricultural development, wildfires, invasive weeds, ungulate grazing, direct impacts on the moth from non-native parasitoid flies and wasps, and insect predators. It is one of largest native insects in Hawaiʻi with a wingspan of up to 12 cm. It is closely related to the North American tomato hornworm (*Manduca quinquemaculata*), with which it has been confused in the past.

The BSM is currently found in topographically diverse landscapes and in areas with low to very high levels of non-native vegetation. Blackburn's sphinx moth larvae foraging, sheltering, and maturation occur on two host plant species in the genus *Nothocestrum* (*N. latifolium* and *N. breviflorum*), both of which themselves are endangered species. At lower elevations, moth larvae are found most often on the non-native tree tobacco (*Nicotiana glauca*) but has also been found on commercial tobacco (*Nicotiana tabacum*), eggplant (*Solanum melongena*), tomato (*Solanum lycopersicum* var. *cerasiforme*) (USFWS 2005c), and the indigenous *pōpolo* (*Solanum americanum*).

Adult moths have been observed feeding on the native morning glory (*Ipomoea indica*) and *halapepe* (*Pleomele auwahiensis*), but they are expected to feed on a range of potential host plants including the native *maiapilo* (*Capparis sandwichiana*) and *ʻilieʻe* (*Plumbago zeylanica*). Non-native plants including tree tobacco may also be used by adult moths for feeding. Larval moths feed on non-native tree tobacco (*Nicotiana glauca*) and native *ʻaiea* (*Nothocestrum sp.*). The naturalized tree tobacco plant is adapted to lowland dry habitats and can invade new areas along road sides, ruderal areas, fallow cane fields, and unpaved lots. Larvae descend from their host plant or tree and search for suitable soil before pupating. They may remain dormant in the soil for up to 1 year (SWCA 2018), as is common with congeneric species.

The BSM recovery plan (USFWS 2005c) cites several factors contributing to the species' continued decline. Based on the assumption that dry and mesic forests play an important role in the moth's habitat requirements (USFWS 2005c), its range has declined approximately over 80% since human arrival on the islands. This habitat loss and fragmentation exacerbate the impact of decreased nectar availability during drought, causing further threat to future viability of population (USFWS 2005c). Alien arthropods are believed to be a major threat to the BSM through predation, parasitism, and direct competition. The main suspected predators include several ant (Formicidae) species including *Pheidole megacephala*, *Iridomyrmex humilis*, *Anoplolepis gracilipes*, *Solenopsis geminata*, *S. papuana*, and *Ochetellus glaber* (USFWS 2005c). Introduced parasites, particularly Braconid and Ichneumonid wasps and Tachinid flies,

are believed to be a major factor limiting recruitment of the BSM. Two parasitic Tachinid flies (*Chaetogaedia monticola*, and *Lespesia archippivora*) have been purposefully introduced to control army worms, and both flies parasitize sphinx moths, and both occur on Maui (Nishida 1997). Because of the relative rarity of the moth, the impact of parasitoids has not been quantified, but introduced parasitic have an abundance of hosts, and are considered a potentially major threat (USFWS 2005c).

As reported by Great Ecology (2015), BSM eggs were found approximately 1.8 miles up-slope to the SISL Action Area. However, none of the vegetation communities, host plants, or significant food sources that support adult and juvenile life stages, or other elements considered important to the recovery of the species by the USFWS (2003c) are found within the highly altered *kiawe*-buffelgrass lands at the SISL Action Area. Surveys for endangered BSM were conducted on the property by Hobdy (2008) and again in 2020 by Tetra Tech biologists.

No listed endangered adult or juvenile BSM or other evidence of their presence have been observed within the Action Area, nor were any host plants during previous survey or by Tetra Tech biologists in November 2020.

3.3.5.6 Hawaiian Yellow-faced Bees or *Nalo Meli Maoli*: Hawaiian Anthracian yellow-faced bee (*H. anthracinus*), Assimulans yellow-faced bee (*H. assimulans*), and Hawaiian yellow-faced bee (*H. longiceps*).

Seven species of yellow-faced bees in the genus *Hylaeus* (family Colletidae) have been listed as endangered by the USFWS since 2016 (USFWS 2016b). Three of these species may occur within the dry lowlands of the south Maui. Individuals of these species are very small in size and appear similar in general structure to other hymenopterans (bees, wasps, ants). They are ground-nesting solitary bees found in coastal and lowland dry habitats on Maui up to 2,000 feet (610 m) (USFWS 2013a, 2013b). Nests are constructed in existing natural cavities in coral rubble, in fallen tree trunks, under bark, or rocks. The adult bees feed on flower nectar, whereas the larvae eat pollen and nectar collected by the adult female (USFWS 2016b). In South Maui, four species of Hawaiian yellow-faced bees occur in native plant communities in coastal and lowland dry shrubland. Much of the life history of these species remains unknown. Small populations exist in patches of coastal and lowland dry ecosystems; however, they have not been observed in the vicinity of the SISL Action Area (Hobdy 2008, Great Ecology 2015, USFWS 2016b). Current habitat conditions within the Action Area are highly unlikely to support breeding populations of the bees. Adult bees, however, may be present as vagrants and feed on the available food resources.

The primary host plant of these yellow-faced bees is *Sida fallax* or *ʻilima* (Daly and Magnacca 2003, USFWS 2013a, 2013b). All Hawaiian yellow-faced bees are believed to visit native plants almost exclusively. *H. assimulans* appears to be closely associated with *ʻilima* and studies thus far suggest this yellow-faced bee species may be more common where this plant is abundant (Daly and Magnacca 2003, Magnacca 2007a). Adult bees have also been observed visiting flowers of *Lipochaeta lobata* (*nehe*) (Daly and Magnacca 2003). They almost exclusively visit native plants to collect nectar and pollen, pollinating those plants in the process, and are very rarely found visiting non-native plants for nectar and pollen (Magnacca 2007). Nectar plants may include *Scaevola taccada naupaka)*, *Chamaesyce* spp. (‘*akoko*), *Argemone glauca* (*pua kala*), *Myoporum sandwicense* (*naio*), and *Tournefortia argentea* (tree heliotrope). They are almost completely absent from habitats dominated by nonnative plant species (Daly and Magnacca 2003).

Destruction, degradation, and loss of coastal and lowland habitat from land development, cattle and feral ungulate grazing, fire, invasive species, and recreational activities are primary threats to Hawaiian yellow-faced bees. Predation by yellow-jacket wasps (*Vespula pensylvanica*) and ants further threatens these

species. Yellow-faced bees also face competition from non-native pollinators such as the honey bee (*Apis mellifera*) (Magnacca 2007). Genetic bottlenecks, random demographic fluctuations, and localized catastrophes make the species vulnerable to extinction (Daly and Magnacca 2003; Magnacca 2007). On Maui, the assimulans yellow-faced bee has been recorded at two sites (Lahainaluna and Waikapū). It may also occur in other inaccessible portions of West Maui (USFWS 2013b). The anthricinan yellow-faced bee has been observed at Wailuku Sand Hills, Kanaio Natural Area Reserve (NAR), and Manawainui Gulch (USFWS 2013a). At the SISL Action Area, *ʻilima* was the only host plant observed during the November 2020 survey where it was growing opportunistically on a temporary mound of recently excavated dirt from road maintenance. No yellow-faced bees were observed on these 10 plants during the Tetra Tech survey conducted in November 2020.

4.0 EFFECTS OF THE ACTION

4.1 DETERMINATION OF EFFECTS

This section was prepared with reference to the *Consultation Handbook: Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act (U.S. Fish and Wildlife Service and National Marine Fisheries Service, March 1998*). It discusses potential beneficial actions, direct and indirect actions, interdependent and interrelated actions, and actions unrelated to the Proposed Action that may result in cumulative effect because of the Proposed Action. The effects assessment is based upon the following factors: dependency of the species on specific habitat components, habitat abundance, population levels of the species, degree of habitat impact, and the potential for mitigation of impacts. Consultation with the National Marine Fisheries Service is not warranted for this project.

Information available from websites, databases, and personnel of the USFWS, State of Hawai‘i Department of Land and Natural Resources Division of Forestry and Wildlife (DOFAW), and sources of academic research were consulted in the process of evaluating impacts. Given the very small acreage of the SISL Action Area, field studies were able to confirm species presence and absence. Species information is abbreviated and summarized with significant Maui-specific information pertaining to life history, habitat and distribution, population dynamics, and other data on factors necessary for survival. In this document, the baseline section and the status of the species/critical habitat section are combined. Effects of the Proposed Action have been analyzed for listed species habitat that are likely to occur in the study area.

The USAF has concluded that the Proposed Action ***may affect but is not likely to adversely affect any of the 16 listed species addressed in this BA.*** Incidental take is NOT requested for any of the 16 listed species identified herein. Impacts of the Proposed Action upon these species is discussed in the following paragraphs. Impacts are summarized in Table 4 at the end of this section.

4.1.1 Endangered Plants: Lava-field Jack-bean, *‘āwikiwiki* (*Canavalia pubescens*), Native Yellow Hibiscus, *ma‘o Hau Hele* (*Hibiscus brackenridgei*), and Hawai‘i Lady's Nightcap, Hawaiian Name Not Known (*Bonamia menziesii*)

4.1.1.1 Analysis of Direct and Indirect Effects

None of these three listed plant species were found within or immediately adjacent to the Action Area during recent surveys (Hobdy 2008, SWCA 2011, Great Ecology 2015, Tetra Tech 2020); therefore, no direct or indirect impacts to these three listed plants species are expected to occur. The three endangered plants identified by USFWS are known to occur in the Maui Lowland Dry Unit 2 critical habitat (USFWS 2016a), approximately 1.8 miles southeast of the Action Area. As measures will be taken to minimize the risk of wildfire during clearing and construction, the Proposed Action will not directly affect designated critical habitat areas.

4.1.1.2 Interrelated and Interdependent Effects

Future actions that could adversely affect these listed plants involve factors that have led to their listing including grazing by feral goats and axis deer and invasive species. Additional threats may include drought and wildfire. Because of anticipated increased impacts resulting from an increasing deer population, *‘āwikiwiki* is believed to be in decline.

4.1.1.3 Cumulative Effects

Future actions that could adversely affect yellow-faced bees involve factors that have led to the listing of these species, including further lowland habitat loss due to development, invasive species, ungulate grazing, and fire, along with predation by non-native ants and wasps.

4.1.1.4 Conservation Measures

Because these plants are found within the Maui Lowland Dry Unit 2, a designated critical habitat area only 1.8 miles southeast of the Action Area, wildfire becomes the most concerning threat. To avoid and minimize fire hazards, the following measures will be implemented:

- Construction contractors and Air Force personnel will be educated about the wildfire concern prior to initiating site clearing and construction.
- No smoking should be allowed in the project area.
- All vehicles entering the project area should be equipped with fire extinguishers.
- Vehicles should not be allowed to park near dry litter when the engines are still hot.

Whenever possible native plants should be used for landscaping purposes. Assistance with native plant selection can be found on the Landscape Industry Council of Hawai‘i Native Plant Poster (http://hawaiiscape.wpengine.com/publications/), and at Native Hawaiian Plants for Landscaping, Conservation, and Reforestation (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-30.pdf), and Best Native Plants for Landscapes (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-40.pdf).

To avoid the accidental introduction of non-native plant species, equipment, foot wear, clothing, and supplies should be checked and cleaned of contamination (weed seeds, organic matter, or other contaminants) before entering the Action Area. Equipment quarantine areas remote from the Action Area may be considered. Additional information will be sought by contacting the local invasive species committee for Maui Nui (https://mauiinvasive.org/).

4.1.1.5 Determination of Effects

No listed plants were found within the Action Area during previous surveys or by Tetra Tech in November 2020. With the implementation of the avoidance measures identified above, project impacts to the listed plants are extremely unlikely to occur and are considered discountable.

4.2.1 Hawaiian Hoary Bat, *Ōpe‘ape‘a* (*Lasiurus cinereus semotus*)

4.2.1.1 Analysis of Direct and Indirect Effects

No *ōpe‘ape‘a* have been observed or detected within the SISL Action Area (Hobdy 2008, Tetra Tech in November 2020). However, direct impacts to *ōpe‘ape‘a* roosting habitat may be caused by the removal of approximately 25 to 50 *kiawe* trees, several of which stand higher than 15 feet in height, within the Action Area. There is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away if trees are felled during the pupping season between June 1 – September 15.

4.2.1.2 Interrelated and Interdependent Effects

The increased noise and human activities associated with site grading, pile driving, filling, and other construction activities is likely to be discountable because the bats would most likely avoid the area

altogether during construction. Trees greater than 15 ft in height that part of the new landscaping associated with SISL may provide future roosting habitat, though this would be unlikely due to daily human activity around the site.

4.2.1.3 Cumulative Effects

Future actions that could adversely affect *ōpeʻapeʻa* involve factors that have led to the listing of the species and loss of habitat, decrease in canopy cover and deforestation, collisions with barbed wire fencing and wind turbines, exposure to pesticides, and the continued introduction of non-native species (USFWS 1998, 2011a). As there would be no additional impacts to *ōpeʻapeʻa* from the operation of the SISL, no cumulative impacts to the species are foreseen.

4.2.1.4 Conservation Measures

Specific measures to avoid and minimize impacts to bats presented below will be taken during construction of the SISL facilities:

- Woody plants and tree greater than 15 feet tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).
- The use of barbed or razor wire fencing will be minimized as allowable by facility security requirements.
- No construction activities should be conducted overnight, and site lighting should be kept to a minimum.

4.2.1.5 Determination of Effects

With the implementation of this important avoidance measure, project impacts to the *ōpeʻapeʻa* are extremely unlikely to occur and are considered discountable (USFWS 2020). Additionally, there are many other suitable roosting trees adjacent to but outside the Action Area that will not be affected by the Proposed Action. As noted above, there are other suitable roosting habitats throughout the Kīhei area if the disturbance temporarily displaces the bats. Since the use of these dry lowland non-native grasslands of Maui appear to be minimal, it is unlikely that the SISL construction and operation will adversely affect bats.

4.3.1 Hawaiian Goose, *Nēnē* (*Branta sandvicensis*)

4.3.1.1 Analysis of Direct and Indirect Effects

Nēnē were recently observed flying low over the SISL Action Area and loafing on manicured west lawn of the adjacent building. The property appears to be used intermittently by *nēnē as* they fly between preferred habitats. Therefore, project construction activities may temporarily disturb and displace *nēnē.* Direct impacts to *nēnē* geese may also be caused by disturbance of the existing ground cover and use of the adjacent staging areas throughout construction. Landscaping of new lawns at the SISL site may create new loafing habitat. Because there are similar habitats available in the general area, the temporary disturbances are unlikely to cause significant direct, indirect, or cumulative negative impacts on *nēnē.*

4.3.1.2 Interrelated and Interdependent Effects

Although the *nēnē* may be exposed to increased noise disturbance during grading, pile driving, filling, and other construction activities, their exposure to the noise is likely to be discountable because they would most likely avoid the area altogether or be found here only infrequently.

4.3.1.3 Cumulative Effects

Future actions that could adversely affect the *nēnē* involve factors that have led to the listing of the species and loss of lowland habitat and human-caused disturbance and mortality. *Nēnē* may be susceptible to loss by collision with vehicles including cars, trucks, and mowers (SWCA 2018); however, no significant increase in local traffic is anticipated as most of the existing staff for SISL will simply relocate to the new SISL facility from other nearby buildings.

4.3.1.4 Conservation Measures

Specific measures to avoid and minimize impacts to *nēnē* presented below will be taken during construction of the SISL facilities:

- Nēnē found within the Action Area will not be approached, fed, or disturbed.
- If *nēnē* are observed loafing or foraging within the Action Area during the breeding season (September through April) by Air Force or contractor personnel, work should be halted until a biologist familiar with the behavior of *nēnē* can survey in and around the Action Area prior to the resumption of any work. Surveys should be repeated after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Work should cease if contractor or Air Force personnel discovers a nest within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins. The USFWS shall be consulted for further guidance.
- Within 4-6 weeks prior to construction, surveys for *nēnē* should be conducted during the wettest portion of the year (usually November-April) or several weeks after a significant rain.

4.3.1.5 Determination of Effects

With the implementation of these important avoidance measures, project impacts to the *nēnē* are extremely unlikely to occur and are considered discountable (USFWS 2020). As noted above, there are other more suitable *nēnē* habitats throughout Kīhei and south Maui.

4.4.1 Hawaiian Waterbirds: Stilt, *Ae'o* (*Himantopus mexicanus knudseni*) and Hawaiian Coot, *'Alea Kea* (*Fulica alai*)

4.4.1.1 Analysis of Direct and Indirect Effects

There are no preferred aquatic nesting or feeding habitats for Hawaiian waterbirds present within the SISL Action Area, and none will be created during construction. These species, however, may traverse the Action Area when flying between preferred habitats and may infrequently be present in the Action Area in low numbers, possibly loafing on manicured lawns. If the birds are present, the project activities have the potential to temporarily disturb and displace the birds. New landscaping created for the SISL may also create suitable loafing habitat.

4.4.1.2 Interrelated and Interdependent Effects

Although waterbirds may be exposed to increased noise disturbance during grading, pile driving, filling, and other construction activities, their exposure to the noise is likely to be discountable because they would most likely avoid the area altogether or occur only infrequently during the construction period.

4.4.1.3 Cumulative Effects

Future actions that could adversely affect these waterbirds involve factors that have led to the listing of the species including loss of lowland habitat and human-caused disturbance and mortality. *Nēnē* may be susceptible to loss by collision with vehicles including cars, trucks, and mowers (SWCA 2018); however, no significant increase in local traffic is anticipated.

4.4.1.4 Conservation Measures

To avoid direct impacts on these listed species, all construction activities should stop if any of the listed waterbirds are observed within 100 feet of the work area. Work should not be resumed until the waterbirds voluntarily move away from the area. Because there are suitable and preferred habitats available elsewhere along the Kīhei coastline and at Kealia Pond, temporary staging and construction are not likely to have any impact upon nesting waterbirds.

4.4.1.5 Determination of Effects

With the implementation of these avoidance measures, project impacts to Hawaiian waterbirds are extremely unlikely to occur and are considered discountable. Additionally, there are many other suitable feeding and loafing sites outside the Action Area that will not be affected by the Proposed Action.

4.5.1 Band-rumped Storm-Petrel, ʻUaʻu (*Oceanodroma castro*), Newell's Shearwater, Aeʻo (Puffinus *auricularis newelli*), and Hawaiian Petrel, ʻAʻo (*Pterodroma sandwichensis*)

4.5.1.1 Analysis of Direct and Indirect Effects

Seabirds do not nest in this lowland dry *kiawe*-buffelgrass habitat. Potential direct impacts occur as the project will increase the number of lights potentially confusing fledgling seabirds and leading to fallout, particularly between September 15 through December 15 (Penniman 2021). Since construction will be limited to daylight hours, little additional lighting will be used at night. However, the completed facility and adjacent parking areas will most likely remain lighted from dusk to dawn for security purposes.

4.5.1.2 Interrelated and Interdependent Effects

The intermittent noise generated by the operation of the land clearing, pile driving, and construction machinery is unlikely to have appreciable negative impacts on seabirds as the noise exposure will be limited to daylight hours.

4.5.1.3 Cumulative Effects

Future actions that could adversely affect these waterbirds involve factors that have led to the listing of the species including the introduction of unshaded artificial lighting resulting in collisions and fallout.

4.5.1.4 Conservation Measures

To avoid the risk of fallout, all construction activities should be limited to daylight hours. Parking areas and associated building lighting would consist of full-cutoff dark-sky-type light-emitting-diodes (LED). Security lighting sited around the secured perimeter would consist of full-cutoff dark-sky-type LED pole-mounted flood lights to help prevent fallout of fledgling seabirds. The exterior lighting would be equipped with user-accessible control system overrides to enable personnel to turn lights off when using telescoping equipment. The following measures will be implemented to avoid negative effects:

- All outdoor lights will be fully shielded so the bulb can only be seen from below bulb height and only use when necessary.
- Night time construction should be avoided during the seabird fledging period, September 15 through December 15.
- Unnecessary outdoor lighting should be extinguished at night.
- Large windows at the SISL facility should be shaded at night to keep interior lights from attracting birds.
- If a downed seabird if found at the facility, the protocols prescribed by the State of Hawai‘i Department of Land and Natural Resources Division of Forestry and Wildlife should be followed: *https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/*.

4.5.1.5 Determination of Effects

With the implementation of these avoidance measures, adverse impacts from the project on Hawaiian seabirds are unlikely to occur.

4.6.1 Blackburn's Sphinx Moth, *‘Ōka‘i ‘Aiea* (*Manduca blackburni*)

4.6.1.1 Analysis of Direct and Indirect Effects

Host plants for Blackburn's sphinx moths (BSM) were not found within the Action Area during previous surveys nor by Tetra Tech (November 2020); therefore, land clearing and construction activities are unlikely to affect BSM.

4.6.1.2 Interrelated and Interdependent Effects

The proposed project will not directly affect individual BSM or their host plants. Designated critical habitat units over 1 mile distant from the SISL Action Area where host plants for BSM are present may be threatened by wildfires that could be accidentally started by construction activities.

4.6.1.3 Cumulative Effects

Future actions that could adversely affect host plants involve factors that have led to the listing of the species including the introduction of artificial lighting resulting in collisions and fallout.

4.6.1.4 Conservation Measures

Pre-clearing/construction biological surveys will be conducted by a knowledgeable biologist for any sign of BSM activity. If tree tobacco over 3 feet in height are found, the project area will be monitored monthly to remove all tree tobacco below three feet tall that lack BSM sign. If tree tobacco over three feet

are found in the project area, USAF will coordinate with USFWS to plan additional surveys and implement conservation measures to ensure the project activities will not cause adverse impacts on the moth. The following additional measures will be implemented to avoid direct and indirect negative effects:

- Any tree tobacco less than 3 feet tall should be removed.
- The Action Area should be monitored every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.
- Monitoring for tree tobacco prior to and during construction can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Because tree tobacco can readily grow in the disturbed habitats within the Action Area, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. Therefore, the following additional steps will be taken:

- Tree tobacco less than 3 feet tall should be removed.
- The Action Areas should be monitored every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity. Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

4.6.1.5 Determination of Effects

With the implementation of these avoidance measures, project impacts to BSM are unlikely to occur and are considered discountable.

4.7.1 Anthrician Yellow-faced Bee, *Nalo Meli Maoli* (*H. anthracinus*), Assimulans Yellow-faced Bee, *Nalo Meli Maoli* (*H. assimulans*), and Longhead Yellow-faced Bee, *Nalo Meli Maoli* (*H. longiceps*)

4.7.1.1 Analysis of Direct and Indirect Effects

Ten native *'ilima* were found within the SISL Action Area rooted in a relatively new mound of soil and asphalt debris deposited following repairs to a roadway within the MRTP (Churchill 2020). The *ilima* are among preferred host plants for yellow-faced bees. Although no bees were observed or reported at the site by Hobdy (2008) or by Tetra Tech biologists in November 2020, the construction of the SISL facility could result in the loss of these ten plants.

4.7.1.2 Interrelated and Interdependent Effects

The Proposed Action would remove a small number of preferred host plants during site clearing; however, it is possible that the *'ilima* plants can be transplanted outside the project area or used for landscaping within the Action Area.

4.7.1.3 Cumulative Effects

Future actions that could adversely affect yellow-faced bees involve factors that have led to the listing of these species including further lowland habitat loss due to development, invasive species, ungulate grazing, and fire, along with predation by non-native ants and wasps.

4.7.1.4 Conservation Measures

Pre-clearing/construction biological surveys will be conducted by knowledgeable biologists for any sign of yellow-faced bee activity. The results of these surveys will be shared with the USFWS. The following additional measures will be implemented to avoid direct and indirect negative effects:

- ʻIlima and any other host plants for yellow-faced bees should be salvaged and transplanted into other suitable areas.

4.7.1.5 Determination of Effects

Similar food resources are available throughout the Kīhei area and the disturbances from the project activity are unlikely to become a limiting factor for the bees. With the implementation of these avoidance measures, project impacts to yellow-faced bees are unlikely to occur and are considered discountable.

Table 4. Summary of Listed Species Status, Presence, and Likely Impact at SISL

Listed Species[1]	Common Name	Hawaiian Name	Status[2]	Seen in Action Area[3]	Likely Impact[4]	Take Requested
Hawaiian hoary bat	*Lasiurus cinereus semotus*	*ʻō peaʻpea*	E	No	NLAA	No
Hawaiian goose	*Branta sandvicensis*	*nēnē*	T	Yes	NLAA	No
Hawaiian stilt	*Himantopus mexicanus knudseni*	*aeʻo*	E	No	NLAA	No
Hawaiian coot	*Fulica alai*	*ʻalea kea*	E	No	NLAA	No
Band-rumped storm-petrel	*Oceanodroma castro*	*ʻuaʻo*	E	No	NLAA	No
Newell's Townsend's shearwater	*Puffinus auricularis newelli*	*aeʻo*	T	No	NLAA	No
Hawaiian petrel	*Pterodroma sandwichensis*	*ʻaʻo*	E	No	NLAA	No
Blackburn's sphinx moth	*Manduca blackburni*	*ʻokaʻi ʻaiea*	E	No	NLAA	No
Anthrician yellow-faced bee	*Hylaeus anthracinus*	*nalo mele maoli*	E	No	NLAA	No
Yellow-faced bee	*Hylaeus assimulans*	*nalo mele maoli*	E	No	NLAA	No
Longhead yellow-faced bee	*Hylaeus longiceps*	*nalo mele maoli*	E	No	NLAA	No
Lava field jack-bean	*Canavalia pubescens*	*ʻawikwiki*	E	No	NLAA	No
Native yellow hibiscus	*Hibiscus brackenridgei*	*maʻo hau hele*	E	No	NLAA	No
Hawaiʻi Lady's Nightcap	*Bonamia menziesii*	- - -	E	No	NLAA	No

[1] Based upon species list in correspondence dated 1 December 2020 to LTC Chris Zingarelli, Commander AFRL Det 15 from Daren LeBlanc, Planning and Consultation Team Manager, USFWS

[2] E = Federally listed endangered; T = Federally listed threatened

[3] Based upon Hobdy (2008) and Tetra Tech (2020) surveys within the APE, and SWCA (2011) surveys in adjacent areas

[4] NE = no effect; NLAA = Not likely to adversely affect

5.0 OTHER IMPACT AVOIDANCE AND MIMIZATION MEASURES

Surface and swale drainage would be constructed to accommodate surface runoff from the increase in impervious site covering from additional parking and roadway areas. The general drainage pattern would be maintained from northeast to southwest of the building via a collection system of drain inlets, underground piping, and a detention basin (bioretention) at a lower corner of the site. These measures would be designed in an integrative process with the site grading, building, hardscape, and landscape design. Low impact development (LID) design would be implemented as described in UFC 3-210-10, *Low Impact Development*, to provide decentralized hydrologic source control for stormwater while maintaining existing predevelopment hydrology to the maximum extent practicable. The design would also comply with local regulations for stormwater management. Site drainage will meet federal, state, and local regulatory standards. Any soil fill material brought to the site for surface compaction and stabilization would be verified for contaminant-free components and properly compacted and keyed into the existing topography so future erosion of the area would be minimized.

Landscaping around the new SISL facility can be enhanced using non-invasive and native plant species to the maximum extent practicable. The Landscape Industry Council of Hawai‘i (https://www.hawaiiscape.com/ publications/) provides a useful reference to identify suitable native ornamental plants for this location. Appropriate seed stock for suitable native plants can be obtained from local Maui nurseries (e.g. https://laukahi.org/hawaii-seed-bank-partnership/). Although non-native weedy species are common in the Action Area, measures will be taken to prevent the unintentional introduction or transport of new invasive species to the area. This includes utilizing on-site gravel, rock, and soil (or purchasing from a local supplier) when practicable; utilizing certified, weed-free seed mixes; and washing and/or visually inspecting construction materials or equipment arriving from outside Maui Island for excessive debris, plant materials, and invasive or harmful non-native species as appropriate. To avoid and minimize potential impact to the listed species and designated critical habitats the following best management practices and conservation measures may be implemented:

- Air Force and contractor personnel should be educated about the wildfire concern prior to working in the field.
- No smoking should be allowed in the project area during land clearing and construction.
- All vehicles entering the project area should be equipped with fire extinguishers.
- Vehicles should not be allowed to park near the dry grass when the engines are still hot.
- All site clearing and construction activities should be limited to daylight hours and will not use any nighttime lighting.
- Dark-sky lighting will be employed throughout the new SISL facility.

6.0 CONCLUSIONS

Based on the above analysis and applying the conservation measures identified by the USFWS in their April 8, 2021 correspondence to avoid and minimize impacts to the listed species, the USAF has determined that the Proposed Action may affect but is not likely to adversely affect the threatened and endangered species listed below. The Proposed Action will not destroy or adversely modify designated critical habitats.

This determination applies to the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered band-rumped storm-petrel (*Oceanodroma castro*), the endangered Hawaiian coot (*Fulica alai*), the threatened Hawaiian goose (*Branta sandvicensis*), the endangered Hawaiian petrel (*Pterodroma sandwichensis*), the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), the threatened Newell's shearwater (*Puffinus auricularis newelli*), the endangered anthricinan yellow-faced bee (*Hylaeus anthracinus*), the endangered assimulans yellow-faced bee (*H. assimulans*), the endangered longhead yellow-faced bee (*H. longiceps*), the endangered Blackburn's sphinx moth (*Manduca blackburni*), the endangered lava-field jack-bean (*Canavalia pubescens*), the endangered native yellow hibiscus (*Hibiscus brackenridgei*), and the endangered (*Bonamia menziesii*) and their critical habitats.

Site preparation and construction activities would cause ground and vegetation clearing, tree removal, fugitive dust, and noise. There is no direct drainage path for stormwaters from the Action Area, located just over 1 mile from the shoreline, to the sea. Best management practices, including detention basins, will retain sediments generated by earthmoving at the site and prevent silt laden stormwaters from entering coastal wetlands and the sea. Consequently, SISL will have no impact upon the marine environment; therefore, consultation with NMFS is not warranted.

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8.0 LIST OF CONTACTS MADE AND PREPARERS

1. CONTACTS MADE

a. **Jay Penniman**, Project Manager at Maui Nui Seabird Recovery Project
Discussion and mapping of seabird fallout in the vicinity of the Action Area

b. **Michael Nishimoto**, Refuge Manager (Retired), Kealia Pond National Wildlife Refuge, Maui
Records of Hawaiian waterbird use of the Azeka and Longs mitigation ponds in Kīhei, Maui

c. **Fern Duvall**, Wildlife Biologist, Hawaii Division of Forestry and Wildlife, Maui
Requested information on seabird occurrence and fallout within the Action Area

d. **Aaron Nadig,** Islands Team Manager, U.S. Fish and Wildlife Service Pacific Islands Fish and Wildlife Office, Honolulu
Original contact to initiate informal consultation by phone

e. **Melissa Cady**, Maui and Hawaii Island Team, U.S. Fish and Wildlife Service Pacific Islands Fish and Wildlife Office, Honolulu
Provided a species list for the SISL project and provided advisory assistance in BA preparation

f. **Cody Nemet,** Representative of Aha Moku O Maui, Inc.
Expressed concerns about stormwater discharge and protection of wetlands along South Kīhei Road and Lāʻie Park

g. **Lucienne de Naie**, Representative of Aha Moku O Maui, Inc.
Expressed concerns about stormwater discharge and protection of wetlands along South Kīhei Road and Lāʻie Park

h. **Erin Mukai,** Project Coordinator, Pacific Rim Land, Inc.
Provided detailed information on past and recent MRTP wildlife studies and mapping

2. PREPARERS

a**. Cody Felipe,** Capt, USAF, Chief, Installation & Facilities AFRL/RDSMI Det 15
Project direction and coordination

b. **John Ford**, Ecologist/Senior Program Manager, Tetra Tech, Honolulu
Biological field surveys and principal author of the BA

c. **Maya LeGrande**, Owner, LeGrande Biological Surveys, Honolulu
Botanical field surveys and reporting

d. **Aaron Ungerleider**, Field Scientist, Tetra Tech, Honolulu
Assisted with field surveys and Environmental Baseline Study (EBS)

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Technical QA/QC

f. **Vicky Aki,** Administrative Assistant, Tetra Tech, Honolulu
Editorial QA/QC

APPENDIX A

United States Department of the Interior

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

In Reply Refer To:
01EPIF00-2021-SL-0230

April 8, 2021

Lieutenant Colonel J. Chris Zingarelli
USAF Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kīhei Hawai‘i 96753-6902

Subject: Species List for Proposed Secure Integration Support Laboratory Kihei, Maui

Dear Colonel Zingarelli:

Thank you for your correspondence received on March 2, 2021, requesting U. S. Fish and Wildlife Service (Service) assistance with an Environmental Assessment (EA) being developed for the proposed secure integration support laboratory (SISL) on the island of Maui, Hawai'i. Further clarification provided via email on March 22, 2021 and a phone conversation on March 29, 2021 provided helpful information and identified the need for a new species list for your use in project development. The EA will assess the potential environmental consequences of both constructing and operating the SISL. The proposed site is approximately 10 acres (TMK 2-2-2-024:015 and 2-2-2-024:016) in the Maui Research and Technology Park in Kīhei, Maui County, Hawai‘i.

The proposed SISL will be a two-story, approximately 56,000-square-foot building. It will have the capacity to provide workspace for about 180 government personnel and will include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions.

The flora and fauna of the project area predominantly non-native. Previous biological surveys conducted in 2008 and 2011 (unpublished data) did not identify any threatened or endangered

species in the project area. Most of the property has scattered kiawe trees from 4 to 15 feet tall of variable density, and buffelgrass covers 75 percent or more of the rocky soil.

This letter has been prepared under the authority of, and in accordance with, provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.) as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species in accordance with section 7 of the ESA. The Service provides the following comments to assist you in your planning process so that impacts to trust resources can be avoided through site preparation and construction. Our data indicate there is no critical habitat for listed species within one mile of this site, and the following federally listed species may occur or transit through the vicinity of the proposed project area:

- The endangered Hawaiian hoary bat or ʻopeʻapeʻa (*Lasiurus cinerus semotus*).
- The threatened Hawaiian goose or nēnē (*Branta sandvicensis*).
- The endangered Hawaiian coot or ʻalae keʻokeʻo (*Fulica alai*), and endangered Hawaiian stilt or aeʻo (*Himantopus mexicanus*), collectively referred to as Hawaiian waterbirds.
- The threatened Newell's shearwater or ʻaʻo (*Puffinus auricularis newelli*), endangered Hawaii Distinct Population Segment (DPS) of band-rumped storm-petrel or ʻakeʻake (*Oceanodroma castro*), and the endangered Hawaiian petrel or ʻuaʻu (*Pterodroma sandwichensis*), collectively referred to as Hawaiian seabirds.
- The endangered Hawaiian yellow-faced bees (*Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*).
- The endangered Blackburn's sphinx moth (BSM) (*Manduca blackburni*).
- The endangered *Canavalia pubescens* (ʻawikiwiki), *Hibiscus brackenridgei* (maʻo hau hele), and *Bonamia menziesii* (no common name), collectively referred to as endangered plants.

Hawaiian hoary bat

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

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

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

Hawaiian goose

Hawaiian geese are found on the islands of Hawaiʻi, Maui, Molokaʻi, and Kauaʻi. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind energy facilities, and vehicle strikes.

To avoid and minimize potential project impacts to Hawaiian geese we recommend you incorporate the following measures into your project description:

- Do not approach, feed, or disturb Hawaiian geese.
- If Hawaiian geese are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with Hawaiian goose nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.
- In areas where Hawaiian geese are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

Hawaiian waterbirds

Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, *Colocasia esculenta* (kalo or taro) lo`i or patches, irrigation ditches, sewage treatment ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation.

Based on the project details provided, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. Therefore, we recommend you work with our office during project planning so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

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

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design (see enclosed Aquatic Best Management Practices).
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
    - Contact the Service within 48 hours for further guidance.

- Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
- Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

Hawaiian seabirds

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

To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following measures into your project description:

- Fully shield all outdoor lights so the bulb can only be seen from below.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

Hawaiian yellow-faced bees

Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with *Scaevola taccada* (naupaka) and *Heliotropium foertherianum* (tree heliotrope) with either landscaped vegetation, alien *Prosopis pallida* (kiawe), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, but may forage in nearby dry forest where they require native plant pollen and nectar. Documented nectar plants include naupaka, *Sida fallax* (ʻilima), *Chamaesyce* spp. (ʻakoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope. ʻIlima has been documented on the project site.

Threats to yellow-faced bees include habitat destruction and modification from land use change, non-native plants, ungulates, and fire, along with predation by non-native ants and wasps.

To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project description:

- If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.
- For coastal species, protect all coastal strand habitat from human disturbance, including:
  - No fires or wood collecting
  - Leave woody debris in place

- Restrict vehicles to existing roads and trails
- Post educational signs to inform people of the presence of sensitive species.

Blackburn's sphinx moth

The adult Blackburn's sphinx moth feeds on nectar from native plants, including *Ipomoea pes-caprae* (beach morning glory), *Plumbago zeylanica* (ʻilieʻe), *Capparis sandwichiana* (maiapilo), and others. Blackburn's sphinx moth larvae feed on nonnative *Nicotiana glauca* (tree tobacco), and native, federally listed, *Nothocestrum* spp. (ʻaiea). To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.

We offer the following survey recommendations to assess whether the Blackburn's sphinx moth occurs within the project area:

- A biologist familiar with the species should survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants prior to work initiation.
  - Surveys should be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks prior to construction.
  - Surveys should include searches for adults, eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).
  - If moths, eggs, larvae, or native ʻaiea or tree tobacco over 3 feet tall, are found during the survey, please contact the Service for additional guidance to avoid impacts to this species.

If no Blackburn's sphinx moth, ʻaiea, or tree tobacco are found during surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. We therefore recommend that you:

- Remove any tree tobacco less than 3 feet tall.
- Monitor the site every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity.
  - Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Endangered plants

Project activities may affect listed plant species by causing physical damage to plant parts (roots, stems, flowers, fruits, seeds, etc.) as well as impacts to other life requisite features of their habitat which may result in reduction of germination, growth and/or reproduction. Cutting and removal of vegetation surrounding listed plants has the potential to alter microsite conditions (e.g., light, moisture, temperature), damaging or destroying the listed plants and also increasing the risk of invasion by nonnative plants which can result in higher incidence or intensity of fire. Activities such as grazing, use of construction equipment and vehicles, and increased human traffic (i.e. trails, visitation, monitoring), can cause ground disturbance, erosion, and/or soil compaction which decrease absorption of water and nutrients and damage plant root systems and may result in reduced growth and/or mortality of listed plants. Soil disturbance or removal has the potential

to negatively impact the soil seed bank of listed plant species if such species are present or historically occurred in the project area.

In order to avoid or minimize potential adverse effects to listed plants that may occur on the proposed project site, we recommend minimizing disturbance outside of existing developed or otherwise modified areas. When disturbance outside existing developed or modified sites is proposed, conduct a botanical survey for listed plant species within the project action area, defined as the area where direct and indirect effects are likely to occur. Surveys should be conducted by a knowledgeable botanist with documented experience in identifying native Hawaiian and Pacific Islands plants, including listed plant species. Botanical surveys should optimally be conducted during the wettest part of the year (typically October to April) when plants and identifying features are more likely to be visible, especially in drier areas. If surveys are conducted outside of the wet season, the Service may assume plant presence.

The boundary of the area occupied by listed plants should be marked with flagging by the surveyor. To avoid or minimize potential adverse effects to listed plants, we recommend adherence to buffer distances for the activities in the **Table below**. Where disturbed areas do not need to be maintained as an open area, restore disturbed areas using native plants as appropriate for the location. Whenever possible we recommend using native plants for landscaping purposes. The following websites are good resources to use when choosing landscaping plants: Landscape Industry Council of Hawai‘i Native Plant Poster (http://hawaiiscape.wpengine.com/publications/), Native Hawaiian Plants for Landscaping, Conservation, and Reforestation (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-30.pdf), and Best Native Plants for Landscapes (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-40.pdf).

If listed plants occur in a project area, the avoidance buffers are recommended to reduce direct and indirect impacts to listed plants from project activities. However, where project activities will occur within the recommended buffer distances, additional consultation is required. The impacts to the plants of concern within the buffer area may be reduced by placing temporary fencing or other barriers at the boundary of the disturbance, as far from the affected plants as practicable.

All activities, including site surveys, risk introducing nonnative species into project areas. Specific attention needs to be made to ensure that all equipment, personnel and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering project areas. Quarantines and or management activities occurring on specific priority invasive species proximal to project areas need to be considered or adequately addressed. This information can be acquired by contacting local experts such as those on local invasive species committees (Maui Nui: https://mauiinvasive.org/).

Table 1. Recommended buffer distances to minimize and avoid potential adverse impacts to listed plants from activities listed below.

Action		**Buffer Distance (feet (meters)) - Keep Project Activity This Far Away from Listed Plant**	
		Grasses/Herbs/Shrubs and Terrestrial Orchids	**Trees and Arboreal Orchids**
Walking, hiking, surveys		3 ft (1 m)	3 ft (1 m)
Cutting and Removing Vegetation By Hand or Hand Tools (e.g., weeding)		3 ft (1 m)	3 ft (1 m)
Mechanical Removal of Individual Plants or Woody Vegetation (e.g., chainsaw, weed eater)		3 ft up to height of removed vegetation (whichever greater)	3 ft up to height of removed vegetation (whichever greater)
Removal of Vegetation with Heavy Equipment (e.g., bulldozer, tractor, "bush hog")		2x width equipment + height of vegetation	820 ft (250 m)
Use of Approved Herbicides (following label)	**Ground-based Spray Application; hand application (no wand applicator; spot treatment)**	10 ft (3 m)	Crown diameter
	Ground-based Spray Application; manual pump with wand, backpack	50 ft (15 m)	Crown diameter
	Ground-based Spray Application; vehicle-mounted tank sprayer	50 ft (15 m)	Crown diameter
	Aerial Spray (ball applicator)	250 ft (76 m)	250 ft (76 m)
	Aerial Application – herbicide ballistic technology (individual plant treatment)	100 ft (30 m)	Crown diameter
	Aerial Spray (boom)	Further consultation required	Further consultation required

Action		Buffer Distance (feet (meters)) - Keep Project Activity This Far Away from Listed Plant	
		Grasses/Herbs/Shrubs and Terrestrial Orchids	**Trees and Arboreal Orchids**
Ground/Soil Disturbance/Outplanting/Fencing (Hand tools, e.g. shovel, `ō`ō; Small mechanized tools, e.g., auger)		20 ft (6 m)	2x crown diameter
Ground/Soil Disturbance (Heavy Equipment)		328 ft (100 m)	820 ft (250 m)
Surface Hardening/Soil compaction	**Trails (e.g., human, ungulates)**	20 ft (6 m)	2x crown diameter
	Roads/Utility Corridors, Buildings/Structures	328 ft (100 m)	820 ft (250 m)

Definitions (Wagner *et al*. 1999)

Crown: The leafy top of a tree.
Herb: A plant, either annual, biennial, or perennial, with the non-woody stems dying back to the ground at the end of the growing season.
Shrub: A perennial woody plant with usually several to numerous primary stems arising from or relatively near the ground.
Tree: A woody perennial that usually has a single trunk.

Lieutenant

The Service recommends incorporating all applicable avoidance and minimization measures into your project design to avoid and minimize affects on protected species. If you determine 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 ESA compliance. We appreciate your efforts to conserve protected species. If you have questions regarding this letter, please contact Melissa Cady, Fish and Wildlife Biologist at 808-933-6963 or melissa_cady@fws.gov. When referring to this project, please include this reference number: 01EPIF00-2021-SL-0230.

Sincerely,

Aaron Nadig

Digitally signed by Aaron Nadig
Date: 2021.04.08 11:59:21 -10'00'

Island Team Manager
Pacific Islands Fish and Wildlife Office

References

Wagner, W.L., Sohmer, S., and D.R. Herbst. 1999. Manual of the flowering plants of Hawaii, revised edition. Honolulu, Hawaii. University of Hawaii and Bishop Museum Press. 1,919 pp.

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Section 7 Correspondence

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DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 February 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Ms. Katherine Mullett
Field Supervisor
Division of Ecological Services
Fish and Wildlife Service
U.S. Department of the Interior
P.O. Box 50088
Honolulu HI 96850-5000

Dear Ms. Mullett,

On September 24, 2020, the United States Air Force (Air Force), Air Force Research Laboratory (AFRL) initiated consultation under the Endangered Species Act of 1973 (ESA) in accordance with Title 50 of the Code of Federal Regulations (CFR) Part 402.12 for geotechnical investigations in support of the proposed Air Force Secure Integration Support Lab (SISL) project located in Maui Research and Technology Park (MRTP), Kihei, Maui County, Hawai'i [TMK (2) 2-2-24:15, Lot 3-D-2 and Lot 3-D-3, 9.3 acres] (Figure 1 and Attachment 1).

The Air Force determined and sought U.S. Fish Wildlife Service (USFWS) concurrence that the proposed geotechnical investigation is not likely to adversely affect (NLAA) the 15 federally listed threatened and endangered (T&E) species as listed below. The Air Force also requested USFWS concurrence the proposed action is NLAA or destroy or adversely modify the designated critical habitat units for Blackburn's sphinx moth and 18 listed plants.

The Air Force is currently preparing an Environmental Assessment (EA) to evaluate the potential impacts on the human and natural environments of constructing and operating the proposed SISL at the same physical location on Maui as indicated in correspondence regarding the geotechnical investigation. In this letter, Detachment 15 AFRL, under the U.S. Air Force Materiel Command, is initiating informal Section 7 consultation with USFWS for the project. This federally funded project has the potential to affect but is NLAA listed endangered species. This letter presents a detailed description of the undertaking and the proposed project site location, an overview of the environment at the project site, and information on the presence/absence of endangered species in the area. The Air Force is requesting any additional information your organization may have regarding sensitive natural resource concerns in the area.

Proposed Action

The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing Site (AMOS) site. The AMOS site has two assets conducting SDA research

and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories at the summit of Haleakalā at an elevation of 10,000 feet above mean sea level (AMSL). The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kihei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel, and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center in leased space in the MRTP; a leased logistics warehouse in Kahului about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of the Detachment 15 AFRL HQ in a government-owned building on land that is leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space.

The undertaking is to construct a permanent, government owned SISL on the island of Maui that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location and provide adequate space to meet current mission needs. The location of the proposed project site is depicted in Figure 1. Three construction staging areas being considered for the proposed action are sited immediately to the west, east, and south of the proposed SISL site.

The SISL is proposed as a two-story, approximately 56,000 square foot building. It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions.

Environmental Setting

The project site is on approximately 10 acres of privately-owned land in the MRTP, approximately 2.0 km (1.2 mi) from the southern coastline and on the leeward slope of Haleakalā. The Action Area is defined in the ESA as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR §402.02). The proposed project area is in the Maui Research and Technology Park, Kihei, Maui County, Hawai'i [TMK (2) 2-2-24:15, Lot 3-D-2, 9.3 acres]. Elevations at the project site range from 23 m to 73 m (74 ft to 240 ft) AMSL. The nearest stream is within Waipu'ilani Gulch, approximately 1.0 km (0.6 mi) to the north. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the area being proposed for the undertaking consist of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The Waiakoa series consists of "gently sloping to moderately steep," "well-drained" Maui uplands soils that "developed in material weathered from basic igneous rock" and contain an upper profile "influenced by volcanic ash" (Foote et al. 1972:126). This soil is commonly associated with pasture and wildlife habitat. The area immediately above the MRTP is used for cattle pasture.

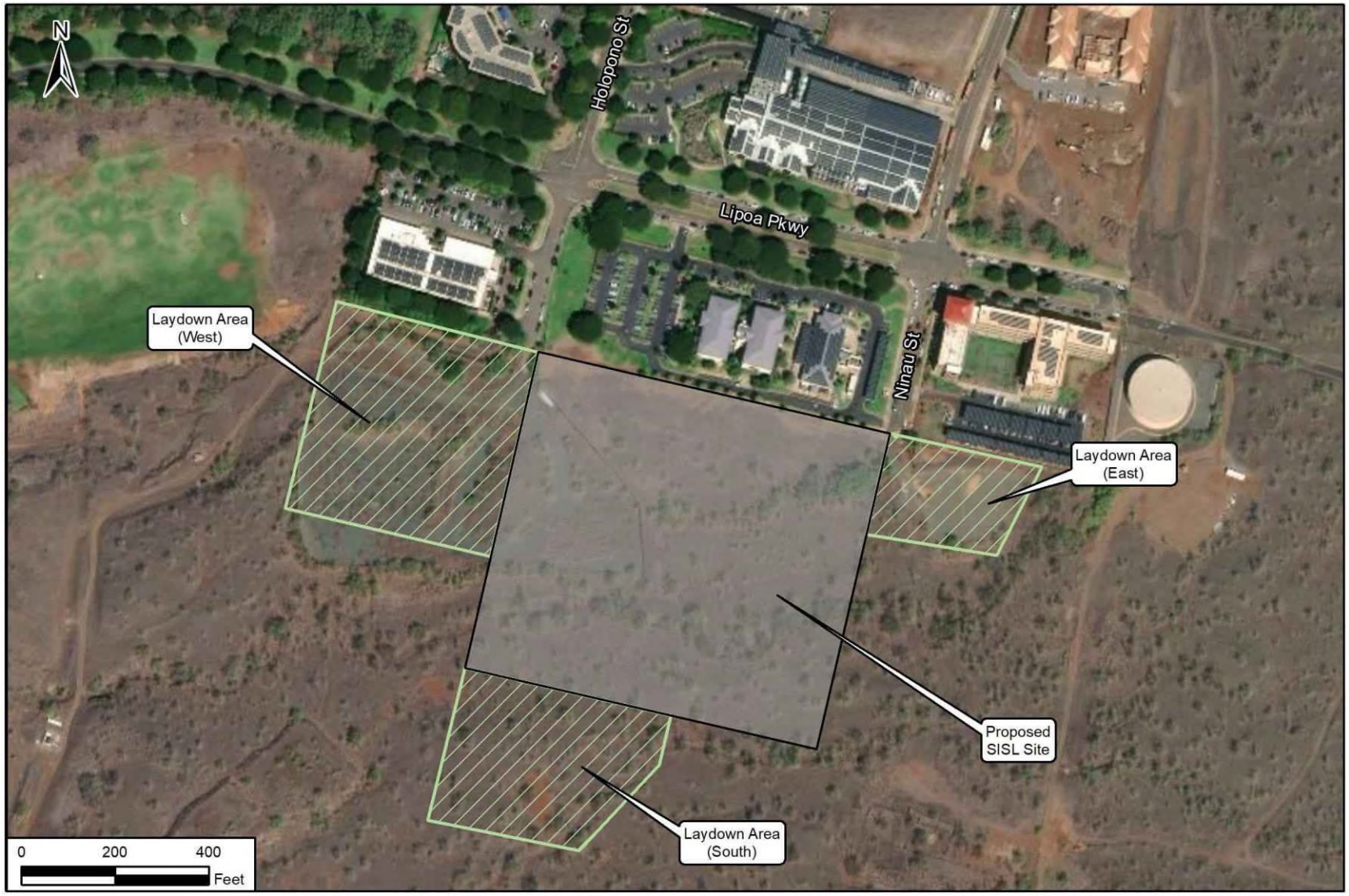

Figure 1. Location of Proposed Site for SISL Construction

Historically, the project area would have been a native dry forest/shrubland dominated by native species according to Hobdy (2008). Native lowland dry forests in Hawai'i have been degraded by pre-contact fire and deforestation, non-native ungulate grazing, alien species invasions, and conversion of forests for agricultural, urban, and military uses (during WWII). Hobdy (2008) noted the project area has been seasonally grazed by livestock over the past 150 years which has resulted in the loss of native plant species and their replacement with hardy pasture grasses and weeds. He cited the introduction of axis deer (*Axis axis*) by the former Hawai'i Division of Fish and Game in 1959 for having strongly degraded environmental conditions on the property. Wildfires, as evidenced by charred tree stumps throughout the property, have also eliminated species not adapted to this stressor (Hobdy 2008).

Habitat quality maps developed by Price, et al. (2007) show the property to have "low (converted)" and "medium (non-native)" habitat value. Today, the US Geological Survey Land-Cover Map for the Island of Maui (version 12, November 2018) classified land cover within the Property as "alien forest" and "fallow grassland" The dominant vegetation within the action area consists of a non-native buffelgrass (*Cenchrus ciliaris*)/kiawe tree (*Prosopis pallida*) savanna, which represents a degraded lowland dry plant community. The vegetation across the property is typical of other highly disturbed kiawe-buffelgrass pastures within the Kihei-Wailea area (SWCA 2011).

The flora and fauna of the project area is also predominantly non-native. Previous biological surveys did not identify any threatened or endangered species in the project area (Hobdy 2008, SWCA 2011, Great Ecology 2015). Since the last biological survey of the property had been conducted 12 years ago, a pedestrian re-survey of the property was conducted on 23 November 2020.

The entire property is dominated by kiawe (*Prosopis pallida*) with buffelgrass (*Cenchrus ciliaris*) groundcover. This vegetation type is characterized by open to locally dense stands of non-native kiawe trees ranging from 4 to 15 feet (1–4.5 m) in height with buffelgrass roughly covering 75% or more of the rocky soil. Most of the property has scattered kiawe trees; however, tree density increases somewhat in the swale along the southern boundary and at the northwest corner of the property. Additional common species within the swale include golden crown-beard (*Verbesina encelioides*) and lion's ear (*Leonotis nepetifolia*). A portion of the western portion of property was bladed and used for gravel and fill storage. This area harbored species such as, Russian thistle (*Salsola tragus*) khaki weed (*Althernanthera pungens*), spiny amaranth (*Amaranthus spinosus*), and *Heliotropium procumbens* var. *depressum*.

No federal or state-listed threatened, endangered, proposed listed, or candidate plant species were observed in the property during the 2020 survey. A total of 16 plant species were documented within the study area, two of which are native to the Hawaiian Islands. None of the observed native plants are considered rare anywhere in the Hawaiian Islands (Wagner et al. 1999). The remaining 14 plant species observed within the Study Area are non-native to the Hawaiian Islands.

Threatened and Endangered Species in the Action Area

Previous USFWS correspondence (Attachment 2) identified fifteen (15) listed species that may be present in the project vicinity and include:

- endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*),
- endangered band-rumped storm petrel (*Oceanodroma castro*),
- endangered Hawaiian coot (*Fulica alai*),
- endangered Hawaiian duck (*Anas wyvilliana*),
- threatened Hawaiian goose (*Branta sandvicensis*),
- endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*),
- endangered Hawaiian stilt (*Himantopus mexicanus knudseni*),
- threatened Newell's shearwater (*Puffinus auricularis newelli*),
- endangered anthricinan yellow-faced bee (*Hylaeus anthracinus*),
- endangered assimulans yellow-faced bee (*H. assimulans*),

- endangered longhead yellow-faced bee (*H. longiceps*),
- endangered Blackburn's sphinx moth (*Manduca blackburni*),
- endangered lava-field jack-bean (*Canavalia pubescens*),
- endangered native yellow hibiscus (*Hibiscus brackenridgei*), and
- endangered Hawaii lady's night-cap (*Bonamia menziesii*).

Two designated critical habitat units were identified in project vicinity (UFWS 2016).

Effects Analysis

The Effects Analysis and proposed avoidance and mitigation measures prepared by the Air Force in the letter to USFWS (Attachment 2) remain valid for the proposed construction of the SISL facility.

Determination of Effects

Based in part upon the analysis presented in the attached correspondence with the USFWS, the Air Force has determined the proposed action may affect but is NLAA the T&E species listed in the previous paragraph or destroy or adversely modify the designated critical habitats for Blackburn's sphinx moth and the 18 plants listed in Attachment 2. The Air Force requests USFWS concurrence with this determination.

We look forward to your response within 60 days of receipt of this letter. Please send any written comments you might have to the attention of Tetra Tech, the Air Force's consultant on this project. Send comments via U.S. Postal Service to Tetra Tech, Inc., c/o Ms. Julie Kaplan, 9444 Balboa Ave, Suite 215, San Diego, CA 92123 or via email to julie.kaplan@tetratech.com.

Sincerely

ZINGARELLI.JOHN.C.1072738140

Digitally signed by ZINGARELLI.JOHN.C.1072738140
Date: 2021.02.22 08:12:51 -10'00'

J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

Attachments

1. References Cited
2. 24 Sept 2020 letter to Katherine Mullett, Field Supervisor, Pacific Islands Fish and Wildlife Office, USFWS, 300 Ala Moana Blvd, Box 50088, Honolulu, HI 96850-5000

Attachment 1. Reference Cited

Great Ecology 2015. Biological Survey at the Remote Maui Experiment Station. Prepared for Wolf Creek Federal Services, Inc.

Hobdy, R.W. 2008. Botanical and Fauna Survey for the Maui Research and Technology Park Proposed Urban Zoning Expansion Project. Appendix C in the Maui Research and Technology Park Master Plan Update Environmental Assessment/Environmental Impact Assessment Preparation Notice. Prepared by Chris Hart & Partners, Inc. Prepared for Land Use Commission, State of Hawaii.

Price, J., S.M. Gon III, J.D. Jacobi, and D. Matsukawa. 2007. Mapping plant species ranges in the Hawaiian Islands: developing a methodology and associated GIS layers. Hawaii Cooperative Studies Unit Technical Report HCSU-008. 67 p.

SWCA 2011. Checklist of Plants Observed in the Maui Research and Technology Park February 23 and March 21, 2011. Appendix C-2 in the Maui Research and Technology Park Master Plan Update Final Environmental Impact Assessment. Prepared by Chris Hart & Partners, Inc. Prepared for Land Use Commission, State of Hawaii.

Wagner, W.L., D.R. Herbst, and S.L. Sohmer. 1999. Manual of the Flowering Plants of Hawaii. Vols. I and II. University of Hawaii Press and Bishop Museum Press, Honolulu.

Attachment 2. 24 Sept 2020 letter to Katherine Mullett, Field Supervisor, Pacific Islands Fish and Wildlife Office, USFWS, 300 Ala Moana Blvd, Box 50088, Honolulu, HI 96850-5000

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

September 24, 2020

Katherine Mullett
Field Supervisor
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000

Lt Col J. Chris Zingarelli
Commander
AFRL, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Dear Ms. Mullett

The U.S. Air Force (USAF) is initiating Section 7 consultation under the Endangered Species Act of 1973 (ESA) in accordance with 50 CFR 402.12 for the geotechnical investigation in support of the proposed U.S. Air Force Secure Integration Support Lab project located in Maui Research and Technology Park, Kihei, Maui County, Hawaii [TMK (2) 2-2-24:15, Lot 3-D-2 and Lot 3-D-3, 9.3 acres] (Attachment 1, Figures 1 and 2).

The USAF has determined and seeks U.S. Fish Wildlife Service (USFWS) concurrence that the proposed geotechnical investigation is not likely to adversely affect (NLAA) the 15 federally listed threatened and endangered (T&E) species as listed in Table 1 (Attachment 2, Table 1). The USAF also requests USFWS concurrence that the proposed action is NLAA and destroy or adversely modify the designated critical habitat units for Blackburn's sphinx moth and 18 listed plants (Attachment 2, Table 1).

The geotechnical investigation is in support of potential proposed future development for a proposed Secure Integration Support Lab. The purpose of the geotechnical investigation is to assess the soil properties for consideration in potential future engineering and design at the site. The fieldwork involves soil boring, percolation tests, and ground-penetration radar investigation. It is expected to require less than 10 days and will be scheduled to be completed by December 31, 2020.

ACTION AREA

The proposed project area is located in the Maui Research and Technology Park, Kihei, Maui County, Hawaii [TMK (2) 2-2-24:15, Lot 3-D-2, 9.3 acres] (Figure 1). The geotechnical investigation field activities involve drilling 10 holes for soil boring and percolation tests and collecting geophysical data with a ground-penetrating radar (Figure 2).

The project area lies on the toeslope on the lower southwest side of Haleakala Mountain at an elevation of 150 to 200 feet. The vegetation consists of a buffelgrass (*Cenchrus ciliaris*)/kiawe tree (*Prosopis pallida*) savanna, which is a degraded lowland dry plant community. The fauna and flora of the project area is predominantly non-native. Previous biological surveys did not identify any threatened or endangered species in the project area (Hobdy 2008, SWCA 2011, Great Ecology 2015).

PROPOSED ACTION

The proposed geotechnical investigation will support the engineering design of the proposed U.S. Air Force Secure Integration Support Lab. A fuel-powered drilling rig will be driven onto the site. The drilling process involves drilling a vertical hole in the ground approximately 20 feet deep for soil boring and up to15 feet for percolation tests. The area of the disturbances at the surface is limited to the diameter of the bore hole, which will be between 4.5 to 9 inches. During the drilling process, there will be periodic noise and exhaust from the engine. The completed boring holes will be covered and refilled after the sampling is completed. Field activities for ground penetrating radar data

collection consists of manually pushing/dragging the radar on a wheeled rack across the sampling area. The fieldwork is expected to require less than 10 days and will be scheduled before December 31, 2020.

To avoid and minimize potential impact to the listed species and designated critical habitats the following best management practices and conservation measures will be implemented:

- All personnel will be educated about the wildfire concern prior to working in the field.
- No smoking will be allowed in the project area.
- All vehicles entering the project area will be equipped with fire extinguishers.
- Vehicles are not allowed to park near the dry litters when the engines are still hot.
- All field activities will be limited to daylight hours and will not use any nighttime lighting.
- All field activities will stop if the threatened or endangered birds are observed within 100 feet of the work area. The project activities will not be resumed until the animal voluntarily moves away from the area.
- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), work will be halted and the USFWS consulted to plan for additional surveys and monitoring to ensure no adverse impacts on nesting nēnē.
- A qualified biologist will survey Blackburn's sphinx moth and its larval host plants prior to work initiation. If no tree tobacco over three feet is found, the project area will be monitored monthly to remove all tree tobacco below three feet tall. However, the need for monitoring growth and removal of tree tobacco plants which are not over three feet is not anticipated as the duration of the fieldwork will not exceed 10-days. If the moth or tree tobacco over three feet is found in the project area, the USFWS will be consulted to plan additional surveys and implement conservation measures to ensure the project activities will not cause adverse impacts to the moth.

T&E SPECIES IN THE ACTION AREA

Previous botanical and fauna surveys that covered the project area have been reviewed and the USFSW website was consulted for a list of species and critical habitat that "may be present" within the project area. Fifteen (15) listed species that may be present in the project vicinity have been identified. These are the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered band-rumped storm petrel (*Oceanodroma castro*), the endangered Hawaiian coot (*Fulica alai*), the endangered Hawaiian duck (*Anas wyvilliana*), the threatened Hawaiian goose (*Branta sandvicensis*), the endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), the threatened Newell's shearwater (*Puffinus auricularis newelli*), the endangered anthricinan yellow-faced bee (*Hylaeus anthracinus*), the endangered assimulans yellow-faced bee (*H. assimulans*), the endangered Blackburn's sphinx moth (*Manduca blackburni*), the endangered longhead yellow-faced bee (*H. longiceps*), the endangered lava-field jack-bean (*Canavalia pubescens*), the endangered native yellow hibiscus (*Hibiscus brackenridgei*), and the endangered Hawaii lady's night-cap (*Bonamia menziesii*). We also identified two designated critical habitat units in project vicinity (Attachment 2, Table 1).

EFFECTS ANALYSIS

In the following paragraphs, analysis of the potential impacts that may be caused by the proposed action on the listed species is presented, as wells as an outline of the conservation measures to avoid or minimize the potential adverse impacts.

Hawaiian Hoary Bat, ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*)

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all main Hawaiian Islands. Hawaiian hoary bats are known to have wide home range and may use lowland ecosystems seasonally for breeding (Bonaccorso et. al 2015).

Although the previous botanical and fauna surveys did not detect occurrence of Hawaiian hoary bats, the project area offers suitable habitat for feeding and roosting and the bats can be expected to be present in low frequency.

If trees or shrubs 15 feet or taller are removed during the nursing season (June 1 through September 15), there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Tree removal, however, is not a proposed project activity.

Although the Hawaiian hoary bats may be exposed to increased noise disturbances as a result of operating the drilling machinery, their exposure to the noise is likely to be discountable because the bats may only be present infrequently in the project vicinity. In addition, there are other roosting habitats in the general area if the disturbance temporarily displace the bats. It is unlikely that the noise will cause significantly adverse impacts on the bats.

Hawaiian Goose, Nēnē (*Branta sandvicensis*)

Nēnē are predominantly found on the islands of Hawai‘i, Maui, Molokai, and Kaua‘i, with a small population found on O‘ahu. They use a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands, and shrublands, and lava flows.

On Maui, the nēnē population is largely found in the high elevation release sites (VanderWerf 2012). Previous fauna surveys did not detect the Hawaiian geese in the project area. Additionally, the fauna survey has found predators, such as wild cats and mongoose, which are considered a major factor limiting the breeding success of nēnē (USFWS 2019). The project area is sparsely vegetated and may be used intermittently by nēnē when they move between preferred habitats.

If nēnē are present, the project activities may temporarily disturb and displace nēnē. To avoid the negative impacts, all field activities will stop if nēnē is observed within 100 feet of the work area. The project activity will not be resumed until the animal voluntarily moves away from the area. Because there are similar habitats available in the general area, we anticipate that the temporary disturbances are unlikely to cause significant negative impacts on nēnē. If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), work will halt and USAF will consult with USFWS for additional surveys and monitoring to ensure no adverse impacts on nesting nēnē.

Hawaiian Stilt, Ae‘o (*Himantopus mexicanus knudseni*), Hawaiian Coot, ‘Alea Kea (*Fulica alai*), Hawaiian duck, Koloa (*Anas wyvilliana*)

The three listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. Hawaiian stilts may also be found in areas where there is ephemeral or persistent standing water. In addition, Hawaiian stilts are known to frequently use upland habitats (VerderWerf 2012; Kawasaki et al. 2020).

On Maui, the majority of Hawaiian waterbirds occur at Keālia Pond National Wildlife Refuge and Kanahā Pond State Wildlife Sanctuary, with a smaller number of populations found at various sugar cane settling ponds. Koloa may also persist in montane streams on the northeastern slope of Haleakalā (VanderWerf 2012). The project area does not provide the preferred feeding and nesting habitats for these waterbirds. These birds, however, may traverse the project area between preferred habitats and be present in the project area in low frequency.

If the birds are present, the project activities have the potential to temporarily disturb and displace the birds. To avoid the negative impacts on the birds, all field activities will stop if any of the listed birds is observed within 100 feet of the work area. Work will not be resumed until the birds voluntarily move away from the area. Because there are similar habitats available in the general area, the temporary disturbances are unlikely to cause measurable negative impacts.

Band-rumped Storm Petrel, ‘Ua‘u (*Oceanodroma castro*), Newell’s Shearwater, Ae‘o (*Puffinus auricularis newelli*), and Hawaiian Petrel, ‘A‘o (*Pterodroma phaeopygia sandwichensis*)

The three listed seabirds use high elevation nest sites and may traverse the project site in flights between their mountain nesting sites and the ocean. A major threat to the seabirds is artificial lighting that can attract and disorient the birds and can result in fallout of the birds due to either exhaustion or collision with objects, which could result in injuries or mortality. To avoid the risk, all field activities will be limited to daylight hours and will not use any nighttime lighting.

The intermittent noise generated by the operation of the soil drilling machinery is unlikely to have appreciable negative impacts because the noise exposure to the passing seabirds will be of short duration and likely be blended with background noise in the nearby urban area.

Blackburn’s Sphinx Moth, ‘Ōka‘i ‘Aiea (*Manduca blackburni*)

The Blackburn’s sphinx moth is generally found on the islands of Hawai‘i , Maui, Lāna‘i, and Kahoolawe from sea level to 5,000 feet. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), ‘ilie‘e (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*); while larvae feed on non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum sp.*). Moth larvae generally feed on the leaves of native aiea and tree tobacco. The larvae burrow into the soil and can remain in a state of pupae for a year or more before emerging from the soil.

In a previous study, an egg of the moth was found about 1.8 miles up slope to the project area (Great Ecology 2015). Although previous botanical surveys did not identify any host plants of the moth in the project area, the non-native tree tobacco is adaptive to the lowland dry environment and may be present in the project area. If the pupae are present, the soil disturbing activities have the potential to cause injuries or mortality.

To avoid the potentially adverse impacts, a qualified biologist will survey Blackburn's sphinx moth and its larval host plants prior to work initiation. If no tree tobacco over three feet is found, the project area will be monitored monthly to remove all tree tobacco below three feet tall. However, the need for monitoring growth and removal of tree tobacco plants which are not over three feet is not anticipated as the duration of the fieldwork will not exceed 10-days. If tree tobacco over three feet is found in the project area, USAF will coordinate with USFWS to plan additional surveys and implement conservation measures to ensure the project activities will not cause adverse impacts on the moth.

Anthrician Yellow-faced Bee, Nalo Meli Maoli (*H. anthracinus*), Assimulans Yellow-faced Bee, Nalo Meli Maoli (*H. assimulans*), and Longhead Yellow-faced Bee, Nalo Meli Maoli (*H. longiceps*)

On Maui, the three Hawaiian yellow-faced bees occur in native plant communities in coastal and lowland dry shrubland. The endangered bees now only exist in small populations in patches of coastal and lowland dry ecosystems and have not been observed in the vicinity of the project area (Great Ecology 2015; USFWS 2016b).

The project area at its current state is unlikely to support breeding populations of the bees. Adult bees, however, may be present as vagrants and feed on the available food resources. ʻIlilma (*Sida fallax*), for example, were observed in previous botanical surveys and is a known nectar plant for the bees (USFWS 2016b).

Vehicle traffic and soil disturbances associated with the field activities can cause destruction to the vegetation and reduce food availability. Similar food resources, however, are available in the general area and the disturbances from the project activity are unlikely to become a limiting factor for the bees. The proposed action is not likely to cause appreciable negative impacts on the listed bees.

Lava-field Jack-bean, ʻĀwikiwiki (*Canavalia pubescens*), Native Yellow Hibiscus, Maʻo Hau Hele (*Hibiscus brackenridgei*), and Hawaiʻi Lady's Nightcap, Hawaiian Name Not Known (*Bonamia menziesii*)

The three endangered plants are known to occur in the Maui Lowland Dry Unit 2 critical habitat that is designed for 18 listed threatened or endangered plants (USFWS 2016a). The critical habitat is about 1.8 miles from the project area on its western border. The project activities will not have direct impacts on the listed plants. The field activities, however, may increase the risk of wildfire that can cause catastrophic impacts on the listed plants.

To avoid and minimize fire hazards, the following measures will be implemented. 1. All personnel will be educated about the wildfire concern prior to working in the field. 2. No smoking will be allowed in the project area. 3. All vehicles entering the project area will be equipped with fire extinguishers. 4. Vehicles are not allowed to park near the dry litters when the engines are still hot.

Based on the above analysis and with the measures to manage fire hazards, the proposed action may affect but is not likely to adversely affect the ʻāwikiwiki, the native yellow hibiscus, and Hawaiʻi lady's nightcap. The USAF requests USFWS concurrence with this determination.

Critical Habitat

Maui Unit 1 Puʻu O Kali, critical habitat designated for Blackburn's sphinx moth, and Maui Lowland Dry Unit 2, critical habitat designated for 18 listed plants.

Similar to the potential impacts of the project action on listed plants, the proposed action will not directly affect the designated critical habitats. However, the fire hazards associated with the project activities have the potential to destroy or adversely modify the designated critical habitats.

To minimize the fire hazards, the following measures will be implemented: 1. All personnel will be educated about the wildfire concern prior to working in the field. 2. No smoking will be allowed in the project area. 3. All vehicles entering the project area will be equipped with fire extinguishers. 4. Vehicles are not allowed to park near the dry litters when the engines are still hot.

DETERMINATION OF EFFECTS

Based on the above analysis and applying the conservation measures to avoid and minimize impacts to the listed species including the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered band-rumped storm petrel (*Oceanodroma castro*), the endangered Hawaiian coot (*Fulica alai*), the endangered Hawaiian duck (*Anas wyvilliana*), the threatened Hawaiian goose (*Branta sandvicensis*), the endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), the threatened Newell's shearwater (*Puffinus auricularis newelli*), the endangered anthricinan yellow-faced bee (*Hylaeus anthracinus*), the endangered assimulans yellow-faced bee (*H. assimulans*), the endangered Blackburn's sphinx moth (*Manduca blackburni*), the endangered longhead yellow-faced bee (*H. longiceps*), the endangered lava-field jack-bean (*Canavalia pubescens*), the endangered native yellow hibiscus (*Hibiscus brackenridgei*), and the endangered Hawaii laday's night-cap (*Bonamia menziesii*) and the critical habitats, the USAF has determined that the proposed action may affect but is

not likely to adversely affect the T&E species listed in Table 1 (Attachment 2) and destroy or adversely modify the designated critical habitats for Blackburn's sphinx moth and the 18 listed plants in Table 1 (Attachment 2). The USAF requests USFWS concurrence with this determination.

This determination is specific to this proposed geotechnical investigation. The USAF will continue to consult with USFWS for the proposed Secure Integration Support Laboratory as design progresses. We look forward to your response within 60 days of receipt of this letter. Should you have any questions or require additional information, please contact Ms. Dawn Lleces at (808) 835-4098 or email dawn.a.lleces@usace.army.mil.

Sincerely,

ZINGARELLI.JOHN.C.1072738140 Digitally signed by ZINGARELLI.JOHN.C.1072738140 Date: 2020.10.02 16:20:15 -10'00'

J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

Attch: Attachment 1 Figures
Figure 1 Project Location and Critical Habitats
Figure 2 Approximate Locations of Proposed Drilling
Attachment 2 Table 1 List of T&E Species

REFERENCES

Bonaccorso, F. J., Todd, C. M., Miles, A. C., & Gorresen, P. M. 2015. Foraging range movements of the endangered Hawaiian hoary bat, *Lasiurus cinereus semotus* (*Chiroptera: Vespertilionidae*). Journal of Mammalogy, 96(1):64-71.

Great Ecology 2015. Biological Survey at the Remote Maui Experiment Station. Prepared for Wolf Creek Federal Services, Inc.

Hobdy, R.W. 2008. Botanical and Fauna Survey for the Maui Research and Technology Park Proposed Urban Zoning Expansion Project. Appendix C in the Maui Research and Technology Park Master Plan Update Environmental Assessment/Environmental Impact Assessment Preparation Notice. Prepared by Chris Hart & Partners, Inc. Prepared for Land Use Commission, State of Hawaii.

Kawasaki, M. T., Hart, P. J., & Paxton, E. H. 2020. Frequent Use of Upland Habitats by the Endangered Hawaiian Stilt (*Himantopus mexicanus knudseni*). Waterbirds, 42(4), 431-438.

SWCA 2011. Checklist of Plants Observed in the Maui Research and Technology Park February 23 and March 21, 2011. Appendix C-2 in the Maui Research and Technology Park Master Plan Update Final Environmental Impact Assessment. Prepared by Chris Hart & Partners, Inc. Prepared for Land Use Commission, State of Hawaii.

[USFWS] U.S. Fish and Wildlife Service. 2016a. Endangered and Threatened Wildlife and Plants; Designation and Nondesignation of Critical Habitat on Molokai, Lanai, Maui, and Kahoolawe for 135 Species. Federal Register 81:17789-18110.

[USFWS] U.S. Fish and Wildlife Service. 2016b. Endangered and Threatened Wildlife and Plants; Endangered Status for 49 Species from the Hawaiian Islands. Federal Register 81: 67786-67860.

[USFWS] U.S. Fish and Wildlife Service. 2019. Endangered and threatened wildlife and plants; reclassifying the Hawaiian goose from endangered to threatened with a 4(d) rule. Federal Register 84: 69918-69947.

VanderWerf, E.A. 2012. Hawaiian Bird Conservation Action Plan. Pacific Rim Conservation, Honolulu, HI.

ATTACHMENT 1: FIGURES

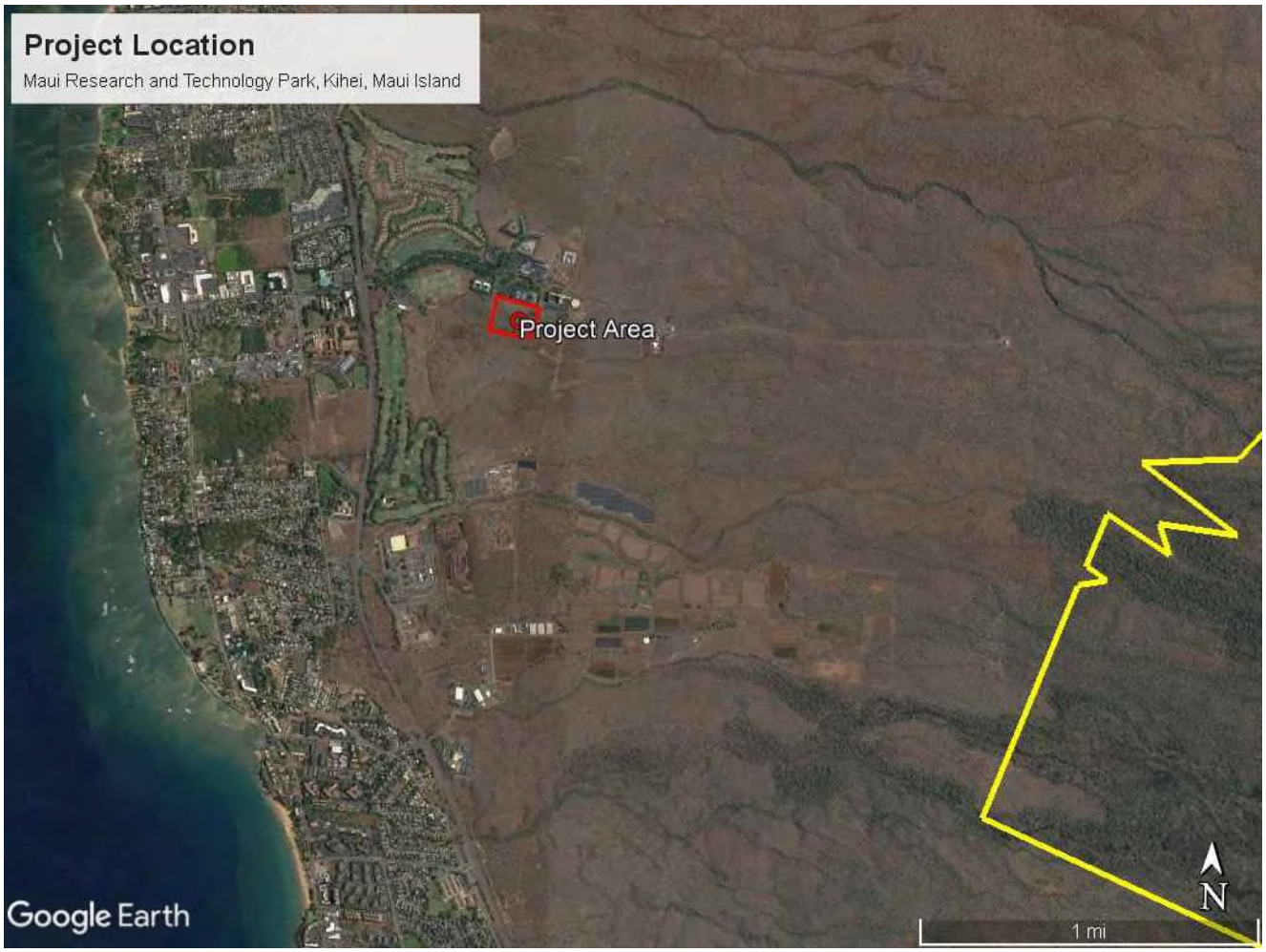

Figure 1. Project Location. Boundary line of the critical habitat is shown in yellow.

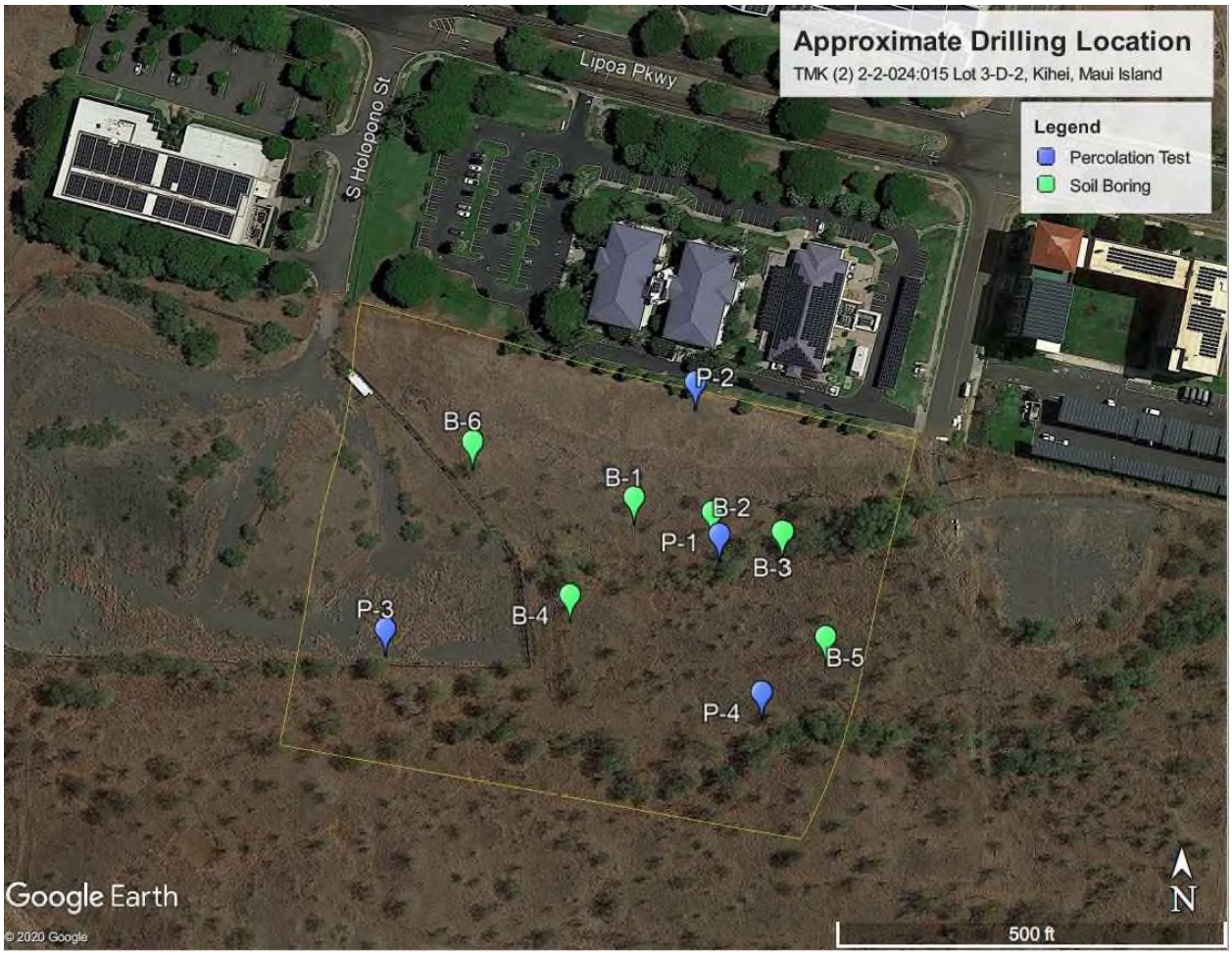

Figure 2. Approximate Drilling Location. The green pins represent the locations for the soil boring, and the blue pins represent the locations for the percolation tests.

ATTACHMENT 2: Table 1 List of Threatened & Endangered (T&E) Species

Common Names	Hawaiian Name	Scientific Name	Status
Mammal			
Hawaiian hoary bat	ʻōpeʻapeʻa	*Lasiurus cinereus semotus*	Endangered
Birds			
Band-rumped storm petrel	'akē'akē	*Oceanodroma castro*	Endangered
Hawaiian coot	ʻalae kea	*Fulica alai*	Endangered
Hawaiian duck	koloa	*Anas wyvilliana*	Endangered
Hawaiian goose	nēnē	*Branta sandvicensis*	Threatened
Hawaiian petrel	'ua'u	*Pterodroma phaeopygia sandwichensis*	Endangered
Hawaiian stilt	ae'o	*Himantopus mexicanus knudseni*	Endangered
Newell's shearwater	ʻaʻo	*Puffinus auricularis newelli*	Threatened
Invertebrates			
Anthricinan yellow-faced bee	nalo meli maoli	*Hylaeus anthracinus*	Endangered
Assimulans yellow-faced bee	nalo meli maoli	*Hylaeus assimulans*	Endangered
Blackburn's sphinx moth	ʻōkaʻi ʻaiea	*Manduca blackburni*	Endangered
Longhead yellow-faced bee	nalo meli maoli	*Hylaeus longiceps*	Endangered
Plants			
Lava-field Jack-bean	ʻāwikiwiki	*Canavalia pubescens*	Endangered
Native yellow hibiscus	ma'o hau hele	*Hibiscus brackenridgei*	Endangered
Hawaiʻi lady's nightcap	Hawaiian name not known	*Bonamia menziesii*	Endangered
Critical Habitat			
Unit Name	**Designated for**		
Maui Unit 1 Puʻu O Kali	*Manduca blackburni*		
Maui Lowland Dry Unit 2	18 listed plants: *Alectryon macrococcus, Bidens micrantha ssp. kalealaha, Bonamia menziesii, Canavalia pubescens, Cenchrus agrimonioides, Colubrina oppositifolia, Ctenitis squamigera, Flueggea neowawraea, Hibiscus brackenridgei, Melanthera kamolensis, Melicope mucronulata, Neraudia sericea, Nototrichium humile, Santalum haleakalae var. lanaiense, Sesbania tomentosa, Solanum incompletum, Spermolepis hawaiiensis, and Zanthoxylum hawaiiense.*		

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OTHER CORRESPONDENCE

From: Cady, Melissa N
To: Ford, John1
Cc: Hippert, Greg; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Kaplan, Julie
Subject: Re: [EXTERNAL] RE: consultation requests for proposed USAF SISL
Date: Friday, March 26, 2021 1:40:02 PM
Attachments: image002.png
image004.png
image006.png
image008.png
image010.png

Aloha Mr. Ford,

Thank you for the additional information. This sounds good. I will send you a revised species list for your use in analysis and consultation.

Have a great weekend!

Melissa Cady
Maui Nui & Hawai‘i Island Team
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
154 Waianuenue Avenue Suite 103
Hilo, Hawai‘i 96720-2452

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Cell Phone: 808-443-9795
Email: melissa_cady@fws.gov

Mailing Address:
U.S. Fish and Wildlife Service
PO Box 653
Hilo, HI 96721

From: Ford, John1 <John.Ford1@tetratech.com>
Sent: Monday, March 22, 2021 8:58 AM
To: Cady, Melissa N <melissa_cady@fws.gov>
Cc: Hippert, Greg <greg.hippert@tetratech.com>; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>; Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: [EXTERNAL] RE: consultation requests for proposed USAF SISL

Aloha Ms. Cady,

On November 28, 2020, the Air Force conducted a field assessment of natural resources within the proposed Action Area including the proposed SISL construction site and all three laydown areas. The results of a previous survey conducted at the same location in 2008 by former DOFAW biologist and consultant Robert Hobdy was used as a baseline. No listed species of plants were observed within the SISL construction site or any of the three laydown areas by us or by Hobdy. Habitat in all areas consisted of *kiawe-buffelgrass* lands and moderately eroded soils. A portion of the construction site and western laydown area were previously cleared by the Maui Research and Technology Park (MRTP) for temporary storage of wind farm blades and turbines. This area is currently being used to store spoil materials (dirt, rock, and macadam) from road improvements within the MRTP. The only host plant for listed endangered species found within the site was *'ilima* (*Sida fallax*); however, no yellow-faced bees were found associated with these plants. The *'ilima* was found growing only on the spoil. No tree tobacco (*Nicotiana glauca*) or other host plants of the listed Blackburn's sphinx moth (*Manduca blackburni*) were found here. During our visit, two listed threatened *nēnē* geese were observed loafing on a manicured lawn at the MRTP. These were the only listed species found within the Action Area during our survey.

All avoidance and minimization parameters described in the previous analysis of the geotechnical investigation still apply for the Hawaiian hoary bat, Hawaiian seabirds, and other listed species. The proposed construction of the SISL was fully described in our letter of February 10. Given the results of our field investigations and literature research, we did not believe that any additional species (other than those provided in your species list for the proposed geotechnical survey) existed within the Action Area with the possible exception of the listed yellow-faced bee *Hylaeus hilaris*, which we added to analysis in the draft Biological Assessment (BA) that we are preparing for the proposed SISL project. The BA incorporates all USFWS guidance for impact avoidance and minimization measures for all the listed species discussed.

If you wish to provide us with a revised list of species for consideration in analysis of the proposed SISL project, we will add these to our BA, and will refine our conclusions accordingly.

We would also be happy to schedule a conference call at your earliest convenience to facilitate resolution of your concerns.

Respectfully,
John

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Pacific Guardian Center, 737 Bishop Street, Suite 2340 | Honolulu, HI 96825 | tetratech.com |

TETRA TECH

From: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Sent: Thursday, March 18, 2021 9:33 AM
To: Cady, Melissa N <melissa_cady@fws.gov>
Cc: Hippert, Greg <greg.hippert@tetratech.com>; Ford, John1 <John.Ford1@tetratech.com>; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Subject: Re: consultation requests for proposed USAF SISL

Aloha Ms. Cady,
Thank you for your e-mail. John Ford with Tetra Tech will reply to your request for additional information. The draft EA should be available early August 2021.

Julie Kaplan

Get Outlook for iOS

From: Cady, Melissa N <melissa_cady@fws.gov>
Sent: Wednesday, March 17, 2021 1:21 PM
To: Kaplan, Julie
Subject: consultation requests for proposed USAF SISL

Aloha Ms. Kaplan,

I have been assigned to review and provide the USFWS response to 2 letters dated February 10, 2021, and received by our office on March 2, 2021. The first letter requests concurrence on a determination made by the U.S. Air Force (USAF) on the proposed construction of the Secure Integration Support Laboratory (SISL). The second letter requests our input on the preparation of an Environmental Assessment (EA) for the above mentioned construction project.

For the second letter, we would normally provide a species list and recommendations for avoidance and minimization to incorporate into the construction project during the early stages of planning. However, based on the content of the first letter, it is unclear to me if the USAF is requesting a species list for this project because they have already made a determination for a list of species outlined in the second letter.

The determination provided refers to a previous determination and concurrence from USFWS for a geotechnical survey conducted in late 2020. The letter states that "The Effects Analysis and proposed avoidance and mitigation measures prepared by the Air Force in the letter to

USFWS (Attachment 2) remain valid for the proposed construction of the SISL facility."

The analysis conducted for the geotechnical survey is not sufficient to support your determinations for impacts to threatened and endangered species that may occur as a result of the construction of the proposed laboratory facility. Here are a few examples why:

- The analysis was based on the geotechnical investigation field activities, including drilling 10 holes for soil boring and percolation tests and collecting geophysical data with a ground-penetrating radar. This is a fundamentally different activity than constructing a 56,000 square foot building with associated parking, lighting, and laydown areas.
- The previous analysis concluded that effects to Hawaiian hoary bats would be discountable because project activities would occur outside of the bat pupping season and that "tree removal [was] not a proposed activity." Do these same parameters apply to the proposed SISL construction?
- The previous analysis asserted that effects to Hawaiian seabirds would be negligible because project activities would not occur at night nor would any temporary or permanent lighting fixtures be installed. Do these same parameters apply to the proposed SISL construction?
- The previous analysis area was approximately 10 acres and did not include the laydown areas. Proposed activities in the laydown areas were not described and were not analyzed in the September 24, 2020 letter. The proposed project area for the laboratory construction appears to be approximately 20 acres including equipment and material staging (laydown) areas (so the project area has roughly doubled in size, not including other alternatives analyzed). Were these laydown areas surveyed for threatened and endangered species as part of the 2020 analysis?

This is not a comprehensive list of issues, but a few illustrative examples that may guide you in revising your request on behalf of the USAF for consultation on a construction project.

Please submit a letter fully describing the project with a request for a species list if a new species list for the construction project is needed. The determination by the USAF should include specific descriptions of the avoidance and minimization measures incorporated into the construction project and a thorough analysis of impacts to species. Avoidance and minimization measures can be found at the PIFWO website provided below. Also, please let us know the status and likely timeline for release of the Draft Environmental Assessment.

Thank you for your efforts to conserve Hawai‘i's threatened and endangered species. Please don't hesitate to call or email if you have questions.

https://www.fws.gov/pacificislands/promo.cfm?id=177175840

PIFWO - Avoidance and Minimization Measures

The USFWS Pacific Islands Fish and Wildlife Office works closely with our partners in Hawaii, American Samoa, the Marianas, and Remote Pacific Islands to conserve fish, wildlife, plants and habitat.

www.fws.gov

Melissa Cady
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PO Box 653
Hilo, HI 96721

From: Kaplan, Julie
To: Cady, Melissa N
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject: RE: email address
Date: Friday, April 2, 2021 8:39:00 AM

Aloha Ms. Cady,
Here is the e-mail address for Lieutenant Colonel J. Chris Zingarelli: john.zingarelli@us.af.mil
Please also include Capt. Cody Felipe (copied here) on the correspondence of the species list that will go to the commander: cody.felipe.2@us.af.mil

Thank you.

Julie
Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

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From: Cady, Melissa N <melissa_cady@fws.gov>
Sent: Thursday, April 1, 2021 6:31 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: email address

Aloha Ms. Kaplan,

Do you have an email address for Lieutenant Colonel J. Chris Zingarelli? The species list I am writing will be addressed to him and cc'd to you.

Mahalo!

Melissa Cady
Maui Nui & Hawai'i Island Team
Pacific Islands Fish and Wildlife Office
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154 Waianuenue Avenue Suite 103
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Cell Phone: 808-443-9795
Email: melissa_cady@fws.gov

Mailing Address:
U.S. Fish and Wildlife Service

From: Kaplan, Julie
To: Cady, Melissa N
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject: RE: email address
Date: Friday, April 2, 2021 5:43:00 PM

Ms. Cady,

The Maui Research and Technology Park (MRTP) property-owner is in the process of designing Lot improvements that will extend utilities infrastructure (electrical, communications, water) that currently exists within MRTP to the 10-acre parcel of land for the SISL MILCON.
The MRTP property-owner will perform construction of the utility extensions and is responsible for associated permitting and environmental approvals.
The MRTP property-owner is planning to perform the Lot improvements prior to the SISL MILCON.
The fiber optic telecommunications service connection at the Maui Space Surveillance Complex will remain unchanged.
The existing fiber optic telecommunications services within the MRTP will be "rehomed/redirected" by the commercial telecommunications company to the SISL facility after it is constructed.

The "rehoming" of telecommunications services will require new fiber optic cables to be installed by the commercial telecommunication provider through the new utilities infrastructure and into the SISL building after it is constructed.

I hope this answers your question. Let me know if you need anything further. Thank you.

Julie

Julie Kaplan | Water Resources Scientist
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From: Cady, Melissa N <melissa_cady@fws.gov>
Sent: Thursday, April 1, 2021 8:15 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: Re: email address

Aloha Ms. Kaplan,

Another quick question about this project. Will there be a need to install fiber optic or other cable connections between this facility and any other facility on Maui? Mainly I am trying to ascertain if there will be any digging, trenching, or overhead utilities installed outside of the approximately 10 acre project site as part of this proposed project.

Mahalo!

Melissa Cady
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PO Box 653
Hilo, HI 96721

From: Cady, Melissa N
Sent: Thursday, April 1, 2021 3:30 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>
Subject: email address

Aloha Ms. Kaplan,

Do you have an email address for Lieutenant Colonel J. Chris Zingarelli? The species list I am writing will be addressed to him and cc'd to you.

Mahalo!

Melissa Cady
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Mailing Address:

United States Department of the Interior

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

In Reply Refer To:
01EPIF00-2021-SL-0230

April 8, 2021

Lieutenant Colonel J. Chris Zingarelli
USAF Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kīhei Hawai'i 96753-6902

Subject: Species List for Proposed Secure Integration Support Laboratory Kihei, Maui

Dear Colonel Zingarelli:

Thank you for your correspondence received on March 2, 2021, requesting U. S. Fish and Wildlife Service (Service) assistance with an Environmental Assessment (EA) being developed for the proposed secure integration support laboratory (SISL) on the island of Maui, Hawai'i. Further clarification provided via email on March 22, 2021 and a phone conversation on March 29, 2021 provided helpful information and identified the need for a new species list for your use in project development. The EA will assess the potential environmental consequences of both constructing and operating the SISL. The proposed site is approximately 10 acres (TMK 2-2-2-024:015 and 2-2-2-024:016) in the Maui Research and Technology Park in Kīhei, Maui County, Hawai'i.

The proposed SISL will be a two-story, approximately 56,000-square-foot building. It will have the capacity to provide workspace for about 180 government personnel and will include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions.

The flora and fauna of the project area predominantly non-native. Previous biological surveys conducted in 2008 and 2011 (unpublished data) did not identify any threatened or endangered

species in the project area. Most of the property has scattered kiawe trees from 4 to 15 feet tall of variable density, and buffelgrass covers 75 percent or more of the rocky soil.

This letter has been prepared under the authority of, and in accordance with, provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species in accordance with section 7 of the ESA. The Service provides the following comments to assist you in your planning process so that impacts to trust resources can be avoided through site preparation and construction. Our data indicate there is no critical habitat for listed species within one mile of this site, and the following federally listed species may occur or transit through the vicinity of the proposed project area:

- The endangered Hawaiian hoary bat or ʻopeʻapeʻa (*Lasiurus cinerus semotus*).
- The threatened Hawaiian goose or nēnē (*Branta sandvicensis*).
- The endangered Hawaiian coot or ʻalae keʻokeʻo (*Fulica alai*), and endangered Hawaiian stilt or aeʻo (*Himantopus mexicanus*), collectively referred to as Hawaiian waterbirds.
- The threatened Newell's shearwater or ʻaʻo (*Puffinus auricularis newelli*), endangered Hawaii Distinct Population Segment (DPS) of band-rumped storm-petrel or ʻakeʻake (*Oceanodroma castro*), and the endangered Hawaiian petrel or ʻuaʻu (*Pterodroma sandwichensis*), collectively referred to as Hawaiian seabirds.
- The endangered Hawaiian yellow-faced bees (*Hylaeus anthracinus*, *H. assimulans*, and *H. longiceps*).
- The endangered Blackburn's sphinx moth (BSM) (*Manduca blackburni*).
- The endangered *Canavalia pubescens* (ʻawikiwiki), *Hibiscus brackenridgei* (maʻo hau hele), and *Bonamia menziesii* (no common name), collectively referred to as endangered plants.

Hawaiian hoary bat

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

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

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

Hawaiian goose

Hawaiian geese are found on the islands of Hawaiʻi, Maui, Molokaʻi, and Kauaʻi. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind energy facilities, and vehicle strikes.

To avoid and minimize potential project impacts to Hawaiian geese we recommend you incorporate the following measures into your project description:

- Do not approach, feed, or disturb Hawaiian geese.
- If Hawaiian geese are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with Hawaiian goose nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.
- In areas where Hawaiian geese are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

Hawaiian waterbirds

Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, *Colocasia esculenta* (kalo or taro) lo`i or patches, irrigation ditches, sewage treatment ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation.

Based on the project details provided, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. Therefore, we recommend you work with our office during project planning so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

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

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design (see enclosed Aquatic Best Management Practices).
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
    - Contact the Service within 48 hours for further guidance.

- Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
- Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

Hawaiian seabirds

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

To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following measures into your project description:

- Fully shield all outdoor lights so the bulb can only be seen from below.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

Hawaiian yellow-faced bees

Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with *Scaevola taccada* (naupaka) and *Heliotropium foertherianum* (tree heliotrope) with either landscaped vegetation, alien *Prosopis pallida* (kiawe), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, but may forage in nearby dry forest where they require native plant pollen and nectar. Documented nectar plants include naupaka, *Sida fallax* ('ilima), *Chamaesyce* spp. ('akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope. 'Ilima has been documented on the project site.

Threats to yellow-faced bees include habitat destruction and modification from land use change, non-native plants, ungulates, and fire, along with predation by non-native ants and wasps.

To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project description:

- If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.
- For coastal species, protect all coastal strand habitat from human disturbance, including:
  - No fires or wood collecting
  - Leave woody debris in place

- Restrict vehicles to existing roads and trails
- Post educational signs to inform people of the presence of sensitive species.

Blackburn's sphinx moth

The adult Blackburn's sphinx moth feeds on nectar from native plants, including *Ipomoea pes-caprae* (beach morning glory), *Plumbago zeylanica* ('ilie'e), *Capparis sandwichiana* (maiapilo), and others. Blackburn's sphinx moth larvae feed on nonnative *Nicotiana glauca* (tree tobacco), and native, federally listed, *Nothocestrum* spp. ('aiea). To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.

We offer the following survey recommendations to assess whether the Blackburn's sphinx moth occurs within the project area:

- A biologist familiar with the species should survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants prior to work initiation.
  - Surveys should be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks prior to construction.
  - Surveys should include searches for adults, eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).
  - If moths, eggs, larvae, or native 'aiea or tree tobacco over 3 feet tall, are found during the survey, please contact the Service for additional guidance to avoid impacts to this species.

If no Blackburn's sphinx moth, 'aiea, or tree tobacco are found during surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth. We therefore recommend that you:

- Remove any tree tobacco less than 3 feet tall.
- Monitor the site every 4-6 weeks for new tree tobacco growth before, during, and after the proposed ground-disturbing activity.
  - Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

Endangered plants

Project activities may affect listed plant species by causing physical damage to plant parts (roots, stems, flowers, fruits, seeds, etc.) as well as impacts to other life requisite features of their habitat which may result in reduction of germination, growth and/or reproduction. Cutting and removal of vegetation surrounding listed plants has the potential to alter microsite conditions (e.g., light, moisture, temperature), damaging or destroying the listed plants and also increasing the risk of invasion by nonnative plants which can result in higher incidence or intensity of fire. Activities such as grazing, use of construction equipment and vehicles, and increased human traffic (i.e. trails, visitation, monitoring), can cause ground disturbance, erosion, and/or soil compaction which decrease absorption of water and nutrients and damage plant root systems and may result in reduced growth and/or mortality of listed plants. Soil disturbance or removal has the potential

to negatively impact the soil seed bank of listed plant species if such species are present or historically occurred in the project area.

In order to avoid or minimize potential adverse effects to listed plants that may occur on the proposed project site, we recommend minimizing disturbance outside of existing developed or otherwise modified areas. When disturbance outside existing developed or modified sites is proposed, conduct a botanical survey for listed plant species within the project action area, defined as the area where direct and indirect effects are likely to occur. Surveys should be conducted by a knowledgeable botanist with documented experience in identifying native Hawaiian and Pacific Islands plants, including listed plant species. Botanical surveys should optimally be conducted during the wettest part of the year (typically October to April) when plants and identifying features are more likely to be visible, especially in drier areas. If surveys are conducted outside of the wet season, the Service may assume plant presence.

The boundary of the area occupied by listed plants should be marked with flagging by the surveyor. To avoid or minimize potential adverse effects to listed plants, we recommend adherence to buffer distances for the activities in the **Table below**. Where disturbed areas do not need to be maintained as an open area, restore disturbed areas using native plants as appropriate for the location. Whenever possible we recommend using native plants for landscaping purposes. The following websites are good resources to use when choosing landscaping plants: Landscape Industry Council of Hawai'i Native Plant Poster (http://hawaiiscape.wpengine.com/publications/), Native Hawaiian Plants for Landscaping, Conservation, and Reforestation (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-30.pdf), and Best Native Plants for Landscapes (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-40.pdf).

If listed plants occur in a project area, the avoidance buffers are recommended to reduce direct and indirect impacts to listed plants from project activities. However, where project activities will occur within the recommended buffer distances, additional consultation is required. The impacts to the plants of concern within the buffer area may be reduced by placing temporary fencing or other barriers at the boundary of the disturbance, as far from the affected plants as practicable.

All activities, including site surveys, risk introducing nonnative species into project areas. Specific attention needs to be made to ensure that all equipment, personnel and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering project areas. Quarantines and or management activities occurring on specific priority invasive species proximal to project areas need to be considered or adequately addressed. This information can be acquired by contacting local experts such as those on local invasive species committees (Maui Nui: https://mauiinvasive.org/).

Table 1. Recommended buffer distances to minimize and avoid potential adverse impacts to listed plants from activities listed below.

Action		**Buffer Distance (feet (meters)) - Keep Project Activity This Far Away from Listed Plant**	
		Grasses/Herbs/Shrubs and Terrestrial Orchids	**Trees and Arboreal Orchids**
Walking, hiking, surveys		3 ft (1 m)	3 ft (1 m)
Cutting and Removing Vegetation By Hand or Hand Tools (e.g., weeding)		3 ft (1 m)	3 ft (1 m)
Mechanical Removal of Individual Plants or Woody Vegetation (e.g., chainsaw, weed eater)		3 ft up to height of removed vegetation (whichever greater)	3 ft up to height of removed vegetation (whichever greater)
Removal of Vegetation with Heavy Equipment (e.g., bulldozer, tractor, "bush hog")		2x width equipment + height of vegetation	820 ft (250 m)
Use of Approved Herbicides (following label)	**Ground-based Spray Application; hand application (no wand applicator; spot treatment)**	10 ft (3 m)	Crown diameter
	Ground-based Spray Application; manual pump with wand, backpack	50 ft (15 m)	Crown diameter
	Ground-based Spray Application; vehicle-mounted tank sprayer	50 ft (15 m)	Crown diameter
	Aerial Spray (ball applicator)	250 ft (76 m)	250 ft (76 m)
	Aerial Application – herbicide ballistic technology (individual plant treatment)	100 ft (30 m)	Crown diameter
	Aerial Spray (boom)	Further consultation required	Further consultation required

Action		Buffer Distance (feet (meters)) - Keep Project Activity This Far Away from Listed Plant	
		Grasses/Herbs/Shrubs and Terrestrial Orchids	**Trees and Arboreal Orchids**
Ground/Soil Disturbance/Outplanting/Fencing (Hand tools, e.g. shovel, `ō`ō; Small mechanized tools, e.g., auger)		20 ft (6 m)	2x crown diameter
Ground/Soil Disturbance (Heavy Equipment)		328 ft (100 m)	820 ft (250 m)
Surface Hardening/Soil compaction	**Trails (e.g., human, ungulates)**	20 ft (6 m)	2x crown diameter
	Roads/Utility Corridors, Buildings/Structures	328 ft (100 m)	820 ft (250 m)

Definitions (Wagner *et al.* 1999)

Crown: The leafy top of a tree.
Herb: A plant, either annual, biennial, or perennial, with the non-woody stems dying back to the ground at the end of the growing season.
Shrub: A perennial woody plant with usually several to numerous primary stems arising from or relatively near the ground.
Tree: A woody perennial that usually has a single trunk.

Lieutenant

The Service recommends incorporating all applicable avoidance and minimization measures into your project design to avoid and minimize affects on protected species. If you determine 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 ESA compliance. We appreciate your efforts to conserve protected species. If you have questions regarding this letter, please contact Melissa Cady, Fish and Wildlife Biologist at 808-933-6963 or melissa_cady@fws.gov. When referring to this project, please include this reference number: 01EPIF00-2021-SL-0230.

Sincerely,

Aaron Nadig

Digitally signed by Aaron Nadig
Date: 2021.04.08 11:59:21 -10'00'

Island Team Manager
Pacific Islands Fish and Wildlife Office

References

Wagner, W.L., Sohmer, S., and D.R. Herbst. 1999. Manual of the flowering plants of Hawaii, revised edition. Honolulu, Hawaii. University of Hawaii and Bishop Museum Press. 1,919 pp.

APPENDIX C

Section 106/Native Hawaiian Consultations and Archaeological Assessment

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DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 February 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Mr. Ke'eaumoku Kapu
Chief Executive Officer
P.O. Box 11524
Lahaina HI 96761
kapukapuakea@gmail.com
(808) 250-1479

Dear Mr. Kapu,

The United States Air Force, Air Force Research Laboratory (USAF-AFRL) wishes to formally initiate National Historic Preservation Act (NHPA) Section 106 consultation and State of Hawai`i Revised Statutes Chapter 6E-42 consultation with your organization. The AFRL Detachment 15, under the U.S. Air Force Materiel Command (AFMC), proposes to construct the permanent, government-owned Secure Integration Support Laboratory (SISL) on approximately 10 acres of privately-owned land in the Maui Research and Technology Park (MRTP), Kīhei, Maui, Hawai`i. This federally-funded project has been determined to be an undertaking as defined in 36 CFR 800.16(y), and involves a type of activity that has the potential to affect historic properties.

In this letter, we present a detailed description of the undertaking and the proposed project site location, an overview of the historical and environmental context, and information on the presence/absence of historic properties in the area. At this time, we are seeking your input on defining the Area of Potential Effect (APE) for this undertaking. We are also requesting any additional information your organization may have regarding cultural resource concerns in the area.

Undertaking

The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing Site (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Haleakalā at an elevation of 10,000 feet above mean sea level (AMSL). The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kīhei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half

mile east of the Detachment 15 AFRL HQ in a government-owned building on land that is leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space.

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DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 February 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Mr. Manuel Kuloloio
Makuakāne
469 Ma'alo Street
Kahului HI 96732
manuel.kuloloio@gmail.com
(808) 479-2377

Dear Mr. Kuloloio,

The United States Air Force, Air Force Research Laboratory (USAF-AFRL) wishes to formally initiate National Historic Preservation Act (NHPA) Section 106 consultation and State of Hawai`i Revised Statutes Chapter 6E-42 consultation with your organization. The AFRL Detachment 15, under the U.S. Air Force Materiel Command (AFMC), proposes to construct the permanent, government-owned Secure Integration Support Laboratory (SISL) on approximately 10 acres of privately-owned land in the Maui Research and Technology Park (MRTP), Kīhei, Maui, Hawai`i. This federally-funded project has been determined to be an undertaking as defined in 36 CFR 800.16(y), and involves a type of activity that has the potential to affect historic properties.

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Lieutenant Colonel J. Chris Zingarelli, USAF
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550 Lipoa Parkway
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Dr. Sylvia M. Hussey, Ed.D.
Ka Pouhana, Chief Executive Officer
560 N. Nimitz Hwy., Suite 200
Honolulu HI 96817
sylviah@oha.org
(808) 594-1835

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Kihei HI 96753-6902

Ms. Suzanne Case
Chairperson and State Historic Preservation Officer
Hawaii Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu HI 96813

CC: Stephanie Hacker, Archaeologist IV
Andrew McCallister, Maui Lead Archaeologist, HP IV

Dear Ms. Case,

The United States Air Force, Air Force Research Laboratory (USAF-AFRL) wishes to formally initiate National Historic Preservation Act (NHPA) Section 106 consultation and State of Hawai`i Revised Statutes Chapter 6E-42 consultation with your organization. The AFRL Detachment 15, under the U.S. Air Force Materiel Command (AFMC), proposes to construct the permanent, government-owned Secure Integration Support Laboratory (SISL) on approximately 10 acres of privately-owned land in the Maui Research and Technology Park (MRTP), Kīhei, Maui, Hawai`i. This federally-funded project has been determined to be an undertaking as defined in 36 CFR 800.16(y), and involves a type of activity that has the potential to affect historic properties.

In this letter, we present a detailed description of the undertaking and the proposed project site location, an overview of the historical and environmental context, and information on the presence/absence of historic properties in the area. At this time, we are seeking your input on defining the Area of Potential Effect (APE) for this undertaking. We are also requesting any additional information your organization may have regarding cultural resource concerns in the area.

Undertaking

The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing Site (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Haleakalā at an elevation of 10,000 feet above mean sea level (AMSL). The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kīhei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of

administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of the Detachment 15 AFRL HQ in a government-owned building on land that is leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space.

The undertaking is to construct a permanent, government-owned SISL on the island of Maui that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location and provide adequate space to meet current mission needs. The location of the proposed project site is depicted in Figure 1.

The SISL is proposed as a two-story, approximately 56,000 square foot building. It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with Air Force Antiterrorism/Force Protection (AT/FP) and security requirements in accordance with Department of Defense (DoD) Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

Historical and Environmental Context

The project site is located within the *ahupua'a* of Waiohuli and the *moku* of Kula, approximately 2.0 km (1.2 mi) from the southern coastline and on the leeward slope of Haleakalā. Elevations at the project site range from 23 m to 73 m (74 ft to 240 ft) above AMSL. The nearest stream is located within Waipu'ilani Gulch, approximately 1.0 km (0.6 mi) to the north. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the area being proposed for the undertaking consist of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The Waiakoa series consists of "gently sloping to moderately steep," "well-drained" Maui uplands soils that "developed in material weathered from basic igneous rock" and contain an upper profile "influenced by volcanic ash" (Foote et al. 1972:126). This soil is commonly associated with pasture and wildlife habitat.

Traditional place names, together with the environmental data, suggest that the lands of and surrounding the project site were dry and barren in an agricultural sense, but rich in marine resources. Previous research on pre-Contact occupation in the region (cf., Kolb et al. 1997) has suggested that most permanent habitations were in the uplands with a smaller permanent population located along the coastline.

In 1820, the whaling industry was introduced in Hawai`i. Although the whaling trade centered on Lāhainā, mainly affecting the Kula/Kīhei area through agricultural demands, Clark (1980:47) notes that "[f]rom the 1840s to the 1860s a small whaling station was maintained at Kalepolepo [Kīhei]." The introduction of whaling to the Maui community brought with it an increased demand for foodstuffs, particularly, the long-lasting Irish potato. The California Gold Rush of 1849 further intensified the demand as a California-Hawai`i potato trade began to flourish. Kula became the area (between 2000 and 5000 ft AMSL) of highest potato production and was known as "the potato district." During this time, sugar cultivation and ranching were also established in the Kula region.

The shift in the economics of coastal areas to ranching also was discussed by E.S. Craighill Handy, who noted that large sections of "Crown Lands" which had not been claimed as *kuleana* [family homestead property] during the Māhele (1848 and later) were given by the Kingdom to various ranchers. The *kiawe* tree was imported and cultivated around 1840 as a source of cattle feed, and the low plains were soon covered in *kiawe* forests (Handy and Handy 1972:510-511). The project site is located within Land Grant

9325:1, and the area immediately above the MRTP continues to be used for cattle pasture.

The MRTP is a 400-acre mixed-use development that began in the 1980s with "local private and public sector leaders intent on economic diversification and job creation" (Maui Research and Technology Park 2011; Tanji 1986). The first businesses opened in 1992 and about 400 people are presently employed at over 20 companies including various commercial, technological, and medical organizations as well as the Kihei Charter School campus.

Identification of Historic Properties

Two previous archaeological surveys encompassed the project site. In 1986, Archaeological Consultants of Hawai`i, Inc. (ACH) conducted a preliminary reconnaissance survey for a proposed golf course (Kennedy 1986). No historic properties were identified, and no further work was recommended. In 2008, Scientific Consultant Services, Inc. (SCS) completed an archaeological inventory survey (AIS) for the Environmental Impact Statement (EIS) for the MRTP Master Plan Update Project (Dega 2008). The survey covered approximately 338 acres and identified five historic properties including State Inventory of Historic Places (SIHP #s 50-50-10-6239, -6240, -6241, -6587, and -6588). These historic properties included rock walls and mounds associated with pre-Contact land use and post-Contact ranching activities. No historic properties were identified within the project site. No historic properties have been identified within 500 m of the project site.

For the current undertaking, Cultural Surveys Hawai`i, Inc. (CSH) has completed a 100 percent coverage pedestrian inspection of the project site with no significant findings. There are no indications that subsurface historic properties are present within the footprint of the project site. Once defined, CSH will complete an AIS of the entire APE.

Defining the Area of Potential Effect

We look forward to consulting with you regarding the definition of the APE for this undertaking. At present, the APE is anticipated to include the project site and adjacent areas for construction storage and equipment staging as well as points of access and egress into the project site. We appreciate your comments regarding the APE and any additional information your organization may have regarding cultural resource concerns in the area. Please send any written comments you might have within 30 days of receipt of this letter to the attention of Tetra Tech, the Air Force's consultant on this project. Send comments via U.S. Postal Service to Tetra Tech, Inc., c/o Ms. Julie Kaplan, 9444 Balboa Ave, Suite 215, San Diego, CA 92123 or via email to julie.kaplan@tetratech.com. Thank you for your interest in this project.

Sincerely

ZINGARELLI.JOHN.C.1072738140

Digitally signed by ZINGARELLI.JOHN.C.1072738140
Date: 2021.02.18 15:59:57 -10'00'

J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

Attachments

Figure 1. Location of Proposed Site for SISL Construction

References

Clark, John R. K.

1980 *The Beaches of the Maui County*. University of Hawai`i Press, Honolulu.

Dega, Michael

2008 *An Archaeological Inventory Survey of Multiple Land Parcels Located within the Maui Research and Technology Park, Ahupua'a of Waiohuli & Keokea, Wailuku (Kula) District, Maui Island, Hawai'i [TMK: 2-2-24: 012 por., 014 por., 16 por., 17, and por. 54]*. Scientific Consultant Services, Inc., Honolulu.

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1972 *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Soil Conservation Service, United States Department of Agriculture, Washington, D.C.

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1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

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Kolb, Michael J., Patty J. Conte, and Ross Cordy

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Maui Research and Technology Park

2011 About MRTP. http://mauitechpark.com/about-mrtp/, accessed 2020.

Tanji, Edwin

1986 Maui High-tech Park is Already Attracting Potential Tenants. *Honolulu Star-Bulletin* 5 October. Honolulu.

Figure 1. Location of Proposed Site for SISL Construction

OTHER CORRESPONDENCE

From:	Kuloloio, Manuel M (US)
To:	Kaplan, Julie; cody.felipe.2@us.af.mil
Cc:	manuel.kuloloio@[redacted]; Kuloloio, Manuel M (US); Hippert, Greg; Les (pokaiuli2@[redacted])
Subject:	Kuloloi"a Lineage - I ke Kai "o Kuloloi"a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai"i
Date:	Thursday, March 25, 2021 5:53:23 AM
Attachments:	image011.png image012.png image013.png image014.png image015.png image001.png image002.jpg image003.jpg image004.png image005.png Kuloloio_SISL EA Scoping letter_for IICEP.pdf Kuloloio_SISL Section 106_6E letter.pdf Moku"ula and Kuloloia, Waine"e, Maui.pdf Kuloloia, O"ahu in 1810.pdf ATPFile_CE6EEE48-3663-4393-AEBB-9A55F7C1723F.token

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Aloha Lieutenant Colonel J. Chris Zingarelli, USAF, Commander, Air Force Research Laboratory, Detachment 15:

WE thank you for your extraordinary efforts to reach out to our Kuloloi'a Lineage – I ke Kai 'o Kuloloi'a, as our Kupunakane Leslie Apiu Aipalena Kuloloio passed on the evening of February 29, 2020 surrounded by lightning of Kahekili and the covering of snow atop our majestic and sacred Haleakala.

I am in receipt of your February 10, 2021 letters initiating formal Section 106 consultations and notification of NEPA Environmental Assessment evaluations.

WE understand your undertaking to consolidate the operations of existing Detachment 15 AFRL facilities with the construction of a permanent, government-owned SISL at Waiohuli, Maui, Hawai'i is required to comply with Air Force antiterrorism/force protection and security requirements. The SISL Proposed Action identified as Alternative 1 would increase personnel mission-related work hours by reducing commuting times between the MSSC on the summit of Haleakala and Detachment 15 AFRL HQ, and it would reduce altitude related sickness of employees. The SISL Proposed Action, two-story building is needed to provide adequate space to meet current needs and to provide a direct connection to the MSSC at the summit of Haleakala using dedicated fiber optic cables.

I concur with your present APE inclusion of the Proposed Action (Alternative 1) project site, Laydown Areas (South, East, and West), and points of access and egress into the project site and Laydown Areas. If subsurface excavation is required to relocate/realign limited lengths of high-speed fiber optic links between the MSSC and the Proposed Action project site within the Maui Research and Technology Park (MRTP), this should also be considered as an APE, and I request Uncle Hal Hammatt, Cultural Surveys Hawai'i, Inc. (CSH) cultural/archaeological monitoring of such limited action.

Our Grandfather Wallace Aipalena Kuloloia was born in Waiohuli and his parents were buried in Waiohuli. Our Kuloloia family claimed kuleana lands before the Board of Commissioners to Quiet Land Titles, but they could not afford the required fees to secure a Patent and title by metes and

bounds. The kupuna grew sweet potato and ulu in the dry areas and in the contiguous Honua'ula District. It is well established that the introduction of cattle and ranching culminated in the trampling, demolishing, and destruction of pre-Contact land use historic properties. Thank you for acknowledging the MRTP Master Plan Update Project EIS identified pre-Contact land use rock walls and mounds. Though you describe that these lands were "dry and barren in an agricultural sense," we, of the Honua'ula District, associate these lands to the once abundant dry land cultivation boundary as described by the noted Great Mahele Scholar Aunty Marion Kelly in her "*Na Mala O Kona".*

I applaud the visionary leadership and confluence of events to establish, maintain, and sustain the Maui Research and Technology Park. I am mindful of the interconnectivity and supporting facilities of our Departments of Defense and Energy, having been atop Haleakala, to Idaho National Environmental Laboratory and Albuquerque with Lockheed Martin, and in the PMRF at Mana, Kaua'i. Please ensure you are hpervigilant in your handling, containment, and disposal of solid and liquid waste and hazardous waste generated from the building, demolition, operation, and maintenance actions to effectuate this Proposed Action. I am confidant, prayerful and hopeful that US Air Force will continue to do what is right, demand the BEST of the BEST, so as to distance itself from the perceived "lack of good-faith" stewardship of Hawaiian burials disposition at Mokapu, remaining unexploded ordnance on Kaho'olawe Island, and reported depleted uranium usage at Schofield and Pohakuloa.

Will this Proposed Action directly and/or indirectly facilitate the potential relocation of the US Air Force Solar Observatory on O'ahu to your AFRL Remote Maui Experiment site on Maui, as is being currently scoped under the Missile Defense Agency, Homeland Defense Radar-Hawaii Environmental Impact Statement?

Please forward your Draft EA, in electronic format, to my email below, to manuel.kuloloio[redacted], and to my sister Leina'ala Vedder at puniawalei@[redacted]. Please also forward a hard copy of your Draft EA to my O'ahu address at [redacted] Waipahu, HI 96797. My personal cell phone is [redacted].

The Sea, Awa, Reef, Sand, Beach, Shoreline, Paia, Stream, Pond, and House of Kuloloi'a thank you for your hypervigilant protection of our family and thoughtful care to malama our sacred Waiohuli, Haleakala, Maui, and Hawaii Nei.

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 Iehova 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!

Sea of KULOLOIA (now known as Honolulu Harbor)

Aloha Ke Akua,
Me Ke Aloha Maluhia,

Manuel WMD Kuloloia

Manuel Makahiapo Kuloloio
Quality Assurance Manager
[redacted]

Sent from my iPhone

From: "Kaplan, Julie" <Julie.Kaplan@tetratech.com>
Date: March 24, 2021 at 12:21:08 PM HST
To: "manuel.kuloloio@[redacted]" <manuel.kuloloio@[redacted]>
Cc: "FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI" <cody.felipe.2@us.af.mil>, "Hippert, Greg" <greg.hippert@tetratech.com>
Subject: Scoping/consultation letters for Secure Integration Support Laboratory (SISL) Environmental Assessment

Mr. Manuel Kuloloio,
On behalf of the U.S. Air Force, I would like to provide Kuloloiʻa Lineage – I ke Kai 'o Kuloloiʻa with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence mailed to 469 Maʻalo Street in Kahului was returned, so I'm hopeful this e-mail reaches you. Attached are two letters:

- A scoping letter sent as part of the National Environmental Policy Act (NEPA) process.
- A Section 106 consultation / State of Hawai`i Revised Statutes Chapter 6E-42

consultation letter

We appreciate your assistance with this project. Please confirm that you are the appropriate point of contact for Kuloloi'a Lineage and provide me with updated contact information should you wish to keep informed about this effort.
Thank you.

Julie
Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

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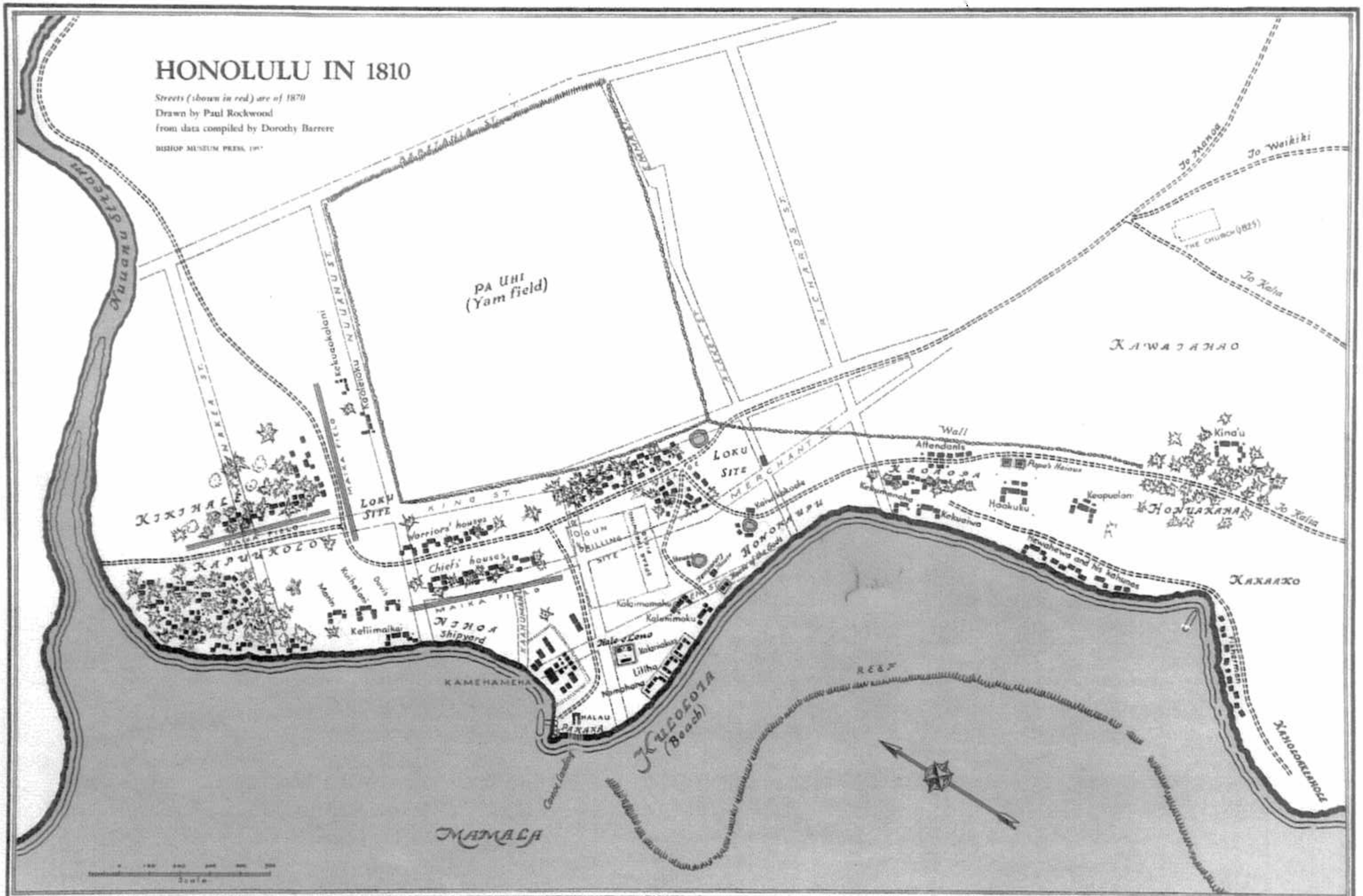

HONOLULU IN 1810
Streets (shown in red) are of 1870
Drawn by Paul Rockwood
from data compiled by Dorothy Barrere
BISHOP MUSEUM PRESS
Nuuanu Stream
PA UHI
(Yam field)
NUUANU ST.
RICHARDS ST.
KING ST.
MERCHANT ST.
NAKEA ST.
MAIKA FIELD
Kekuaokalani
Kaoleioku
LOKU SITE
KIKIHALE
KAPUUKOLO
Warriors' houses
Chiefs' houses
NIHOA
Shipyard
KAAHUMANU
Keliimaikai
Davis
Kuihelani
Manini
KAMEHAMEHA
HALAU
PAKAKA
Canoe Landing
Hale o Lono
Kalaimamahu
Kalanimoku
Lilihu
Namahana
Kuloloia
(Beach)
OLUN
SPEAR THROWING SITE
HONOKAUPU
Kaimukiki
House of the Gods
KAOPOA
Kekuaiwa
Attendants
Wall
Papa's Houses
Haokuku
Keopuolani
Kina'u
HONUAKAHA
KAWAIAHAO
THE CHURCH (1825)
To Manoa
To Waikiki
To Kalia
KAKAAKO
KANOLOKAIAHOLE
REEF
MAMALA
Scale

Monsarrat sketch

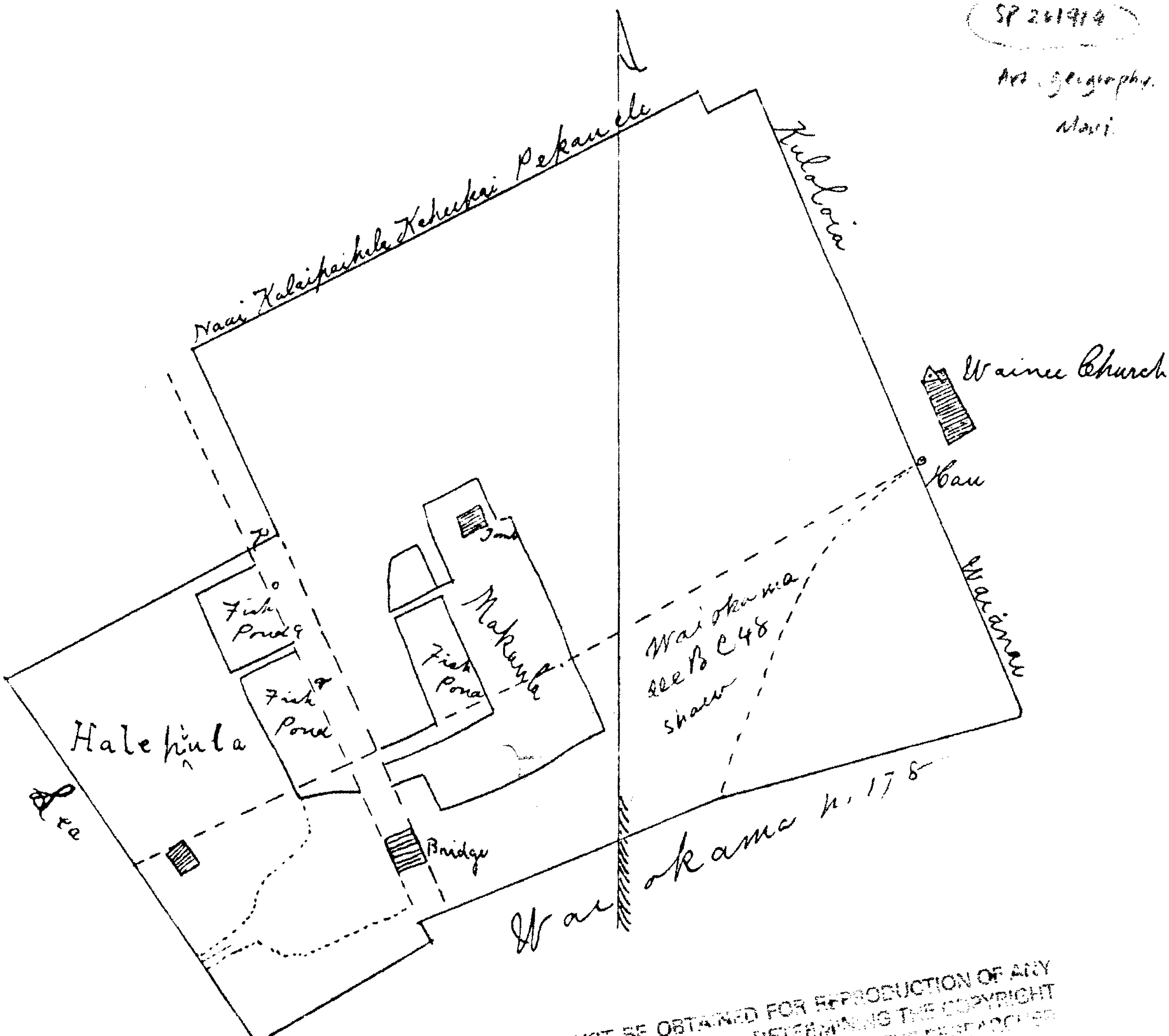
Mokuʻula area

late 1840's

SP 201914

Art. Geography.

Maui



From:	Manuel Kuloloio
To:	Kaplan, Julie
Cc:	manuel.kuloloio@[redacted]; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg; Manuel Kuloloio
Subject:	Re: Kuloloi"a Lineage - I ke Kai "o Kuloloi"a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai"i
Date:	Wednesday, March 31, 2021 6:50:29 PM

Aloha Ms. Kaplan,

I thank you and US Air Force CAPT Felipe for your immediate, timely, and transparent response.

I appreciate your circling back to me. I am at peace with your undertaking, and I pray your TEAM safe implementation, thoughtful care in execution with skill, and mission success.

Me Ke Aloha Ha'aha'a,
Manuel Wayne Makahiapo DeCosta Kuloloia

Sent from my iPhone

> On Mar 30, 2021, at 2:25 PM, Kaplan, Julie <Julie.Kaplan@tetratech.com> wrote:
>
> Mr. Kuloloia,
> See the information provided below by Capt. Felipe, with Air Force Research Laboratory (AFRL), in response to the question you posed.
>
> Thank you.
> *Julie*
> **Julie Kaplan** | Water Resources Scientist
> Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com
>
>
>
> ---
>
> **From:** FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
> **Sent:** Thursday, March 25, 2021 4:34 PM
> **To:** Kaplan, Julie <Julie.Kaplan@tetratech.com>; Hippert, Greg <greg.hippert@tetratech.com>
> **Cc:** GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; MURTA, RICHARD N DO-03 USAF AFMC AFRL/RDSMI <richard.murta.1@us.af.mil>
> **Subject:** RE: Kuloloi'a Lineage - I ke Kai 'o Kuloloi'a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai'i
>
> Julie/Greg,

In reference to Mr. Kuloloio's comment:

"Will this Proposed Action directly and/or indirectly facilitate the potential relocation of the US Air Force Solar Observatory on O'ahu to your AFRL Remote Maui Experiment site on Maui, as is being currently scoped under the Missile Defense Agency, Homeland Defense Radar-Hawaii Environmental Impact Statement?"

We have already coordinated with the Missile Defense Agency (MDA) stating that we were not planning to hold the Remote Maui Experiment site lease for the long term and will not be in a position to support the relocation of the Solar Observatory.

The MDA was not able to incorporate the changed status of the AFRL alternative into the approved scoping materials, but once the scoping period concludes, they will change the status of that alternative to an alternative that was considered, but not carried forward in their EIS.

V/r,
Capt Felipe

From: Kuloloio, Manuel M (US) <manuel.kuloloio[redacted]>
Sent: Thursday, March 25, 2021 2:51 AM
To: julie.kaplan@tetratech.com; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Cc: manuel.kuloloio@[redacted]; Kuloloio, Manuel M (US) <manuel.kuloloio[redacted]>; greg.hippert@tetratech.com; Les (pokaiuli2@[redacted]) <pokaiuli2[redacted]>
Subject: [Non-DoD Source] Kuloloi'a Lineage - I ke Kai 'o Kuloloi'a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai'i

Aloha Lieutenant Colonel J. Chris Zingarelli, USAF, Commander, Air Force Research Laboratory, Detachment 15:

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Please forward your Draft EA, in electronic format, to my email below, to manuel.kuloloio[redacted], and to my sister Leina'ala Vedder at puniawalei@[redacted]. Please also forward a hard copy of your Draft EA to my O'ahu address at [redacted]. My personal cell phone is [redacted].

The Sea, Awa, Reef, Sand, Beach, Shoreline, Paia, Stream, Pond, and House of Kuloloi'a thank you for your hypervigilant protection of our family and thoughtful care to malama our sacred Waiohuli, Haleakala, Maui, and Hawaii Nei.

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!

Sea of KULOLOIA (now known as Honolulu Harbor)

Aloha Ke Akua,
Me Ke Aloha Maluhia,

Manuel WMD Kuloloia

Manuel Makahiapo Kuloloio
[redacted]
[redacted] E: manuel.kuloloio[redacted]
Connect with [redacted]
<image001.png>
[redacted]

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.

Sent from my iPhone

From: "Kaplan, Julie" <Julie.Kaplan@tetratech.com>
Date: March 24, 2021 at 12:21:08 PM HST
To: "manuel.kuloloio@[redacted]" <manuel.kuloloio@[redacted]>
Cc: "FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI" <cody.felipe.2@us.af.mil>, "Hippert, Greg" <greg.hippert@tetratech.com>
Subject: Scoping/consultation letters for Secure Integration Support Laboratory (SISL) Environmental Assessment

Mr. Manuel Kuloloio,
On behalf of the U.S. Air Force, I would like to provide Kuloloiʻa Lineage – I ke Kai 'o Kuloloiʻa with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence mailed to 469 Maʻalo Street in Kahului was returned, so I'm hopeful this e-mail reaches you. Attached are two letters:

- A scoping letter sent as part of the National Environmental Policy Act (NEPA) process.
- A Section 106 consultation / State of Hawai`i Revised Statutes Chapter 6E-42 consultation letter

We appreciate your assistance with this project. Please confirm that you are the appropriate point of contact for Kuloloiʻa Lineage and provide me with updated contact information should you wish to keep informed about this effort.
Thank you.

Julie
Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

Tetra Tech | Complex World, Clear Solutions™
9444 Balboa Ave, Suite 215 | San Diego, CA 92123 | tetratech.com

From:	Ke"eaumoku Kapu
To:	Kaplan, Julie
Cc:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg; cody nemet
Subject:	Re: Scoping/consultation letters for Secure Integration Support Laboratory (SISL) Environmental Assessment
Date:	Monday, March 29, 2021 10:22:00 PM
Attachments:	image011.png image012.png image013.png image014.png image015.png image013.png

---

Aloha Julie,

Mahalo for your email and the scope of work being done

I have forwarded this information to our Kihei Moku representative cody nemeth and also added him to this correspondance he will get back to you asap.

Mahalo nui and stay well.

Ke'eaumoku Kapu
(CEO) Aha moku o Maui Inc.

On Wed, Mar 24, 2021, 12:20 PM Kaplan, Julie <Julie.Kaplan@tetratech.com> wrote:

> Mr. Ke`eaumoku Kapu,
>
> On behalf of the U.S. Air Force, I would like to provide Aha Moku O Maui Inc. with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence was mailed to P.O. Box 11524 in Lahaina, but the USPS has not provided a confirmation of receipt, so I'm hopeful this e-mail reaches you. Attached are two letters:
>
> - A scoping letter sent as part of the National Environmental Policy Act (NEPA) process.
> - A Section 106 consultation / State of Hawai`i Revised Statutes Chapter 6E-42 consultation letter
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> We appreciate your assistance with this project. Please confirm that you are the appropriate point of contact for Aha Moku O Maui Inc. and provide me with updated contact information should you wish to keep informed about this effort.
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> Thank you.
>
> *Julie*
>
> **Julie Kaplan** | Water Resources Scientist
> Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

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From: cody nemet
To: Ke"eaumoku Kapu
Cc: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg; Kaplan, Julie
Subject: Re: Scoping/consultation letters for Secure Integration Support Laboratory (SISL) Environmental Assessment
Date: Monday, March 29, 2021 11:40:05 PM

Aloha, Cody here, please send me scope of work, I didn't see anything attached, mahalo.

On Mon, Mar 29, 2021 at 7:21 PM Ke'eaumoku Kapu <kapukapuakea@[redacted]> wrote:

> Aloha Julie,
>
> Mahalo for your email and the scope of work being done
>
> I have forwarded this information to our Kihei Moku representative cody nemeth and also added him to this correspondance he will get back to you asap.
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> Mahalo nui and stay well.
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> Ke'eaumoku Kapu
> (CEO) Aha moku o Maui Inc.
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> > Mr. Ke`eaumoku Kapu,
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> >
> > **Tetra Tech** | Complex World, Clear Solutions™

From:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
To:	kokoroots@[redacted]
Cc:	GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI; Hippert, Greg; Trevor Yucha; Ford, John1; Kaplan, Julie
Subject:	Aha Moku O Maui Informational Call Summary
Date:	Thursday, April 29, 2021 7:13:03 PM
Attachments:	Meeting Summary for Aha Moku O Maui Inc. Call 4-22-2021.docx ATPFile_CE6EEE48-3663-4393-AEBB-9A55F7C1723F.token

Aloha Mr. Nemet,

Mahalo for taking the time to talk with us last week and for sharing your knowledge with the rest of our team. There was a lot of good discussion between our groups and we value of lot of your input. Please see the attached meeting summary and forward to the rest of your team.

Does your team have two dates in May that you would prefer to conduct a site visit for the proposed project? Once we select a date, we can coordinate site access with the Maui Research Tech Park. Trevor Yucha, John Ford, and I would like join you on that site visit. Thank you for your time and look forward to hearing from you soon.

Aloha,
Cody

CODY FELIPE, Capt, USAF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753

From:	Kaplan, Julie
To:	manuel.kuloloio@[redacted]
Cc:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI; Hippert, Greg
Subject:	FW: Kuloloi"a Lineage - I ke Kai "o Kuloloi"a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai"i
Date:	Tuesday, March 30, 2021 5:25:00 PM
Attachments:	image001.png image004.png image005.png image006.png image007.png image008.png image009.png image010.png

Mr. Kuloloia,
See the information provided below by Capt. Felipe, with Air Force Research Laboratory (AFRL), in response to the question you posed.

Thank you.

Julie

Julie Kaplan | Water Resources Scientist
Direct **+1 (858) 609-1631** | Cell **+1 (858) 276-8730** | julie.kaplan@tetratech.com

From: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Sent: Thursday, March 25, 2021 4:34 PM
To: Kaplan, Julie <Julie.Kaplan@tetratech.com>; Hippert, Greg <greg.hippert@tetratech.com>
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; MURTA, RICHARD N DO-03 USAF AFMC AFRL/RDSMI <richard.murta.1@us.af.mil>
Subject: RE: Kuloloi'a Lineage - I ke Kai 'o Kuloloi'a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai'i

Julie/Greg,

In reference to Mr. Kuloloio's comment:

"Will this Proposed Action directly and/or indirectly facilitate the potential relocation of the US Air Force Solar Observatory on O'ahu to your AFRL Remote Maui Experiment site on Maui, as is being currently scoped under the Missile Defense Agency, Homeland Defense Radar-Hawaii Environmental Impact Statement?"

We have already coordinated with the Missile Defense Agency (MDA) stating that we were not planning to hold the Remote Maui Experiment site lease for the long term and will not be in a position to support the relocation of the Solar Observatory.

The MDA was not able to incorporate the changed status of the AFRL alternative into the approved scoping materials, but once the scoping period concludes, they will change the status of that

alternative to an alternative that was considered, but not carried forward in their EIS.

V/r,
Capt Felipe

From: Kuloloio, Manuel M (US) <manuel.kuloloio@[redacted]>
Sent: Thursday, March 25, 2021 2:51 AM
To: julie.kaplan@tetratech.com; FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Cc: manuel.kuloloio@[redacted]; Kuloloio, Manuel M (US) <manuel.kuloloio[redacted]>; greg.hippert@tetratech.com; Les (pokaiuli2@[redacted]) <pokaiuli2@[redacted]>
Subject: [Non-DoD Source] Kuloloi'a Lineage - I ke Kai 'o Kuloloi'a: AFRL Detachment 15 HQ, Secure Integration Support Laboratory (SISL) at Waiohuli, Maui, Hawai'i

Aloha Lieutenant Colonel J. Chris Zingarelli, USAF, Commander, Air Force Research Laboratory, Detachment 15:

WE thank you for your extraordinary efforts to reach out to our Kuloloi'a Lineage – I ke Kai 'o Kuloloi'a, as our Kupunakane Leslie Apiu Aipalena Kuloloio passed on the evening of February 29, 2020 surrounded by lightning of Kahekili and the covering of snow atop our majestic and sacred Haleakala.

I am in receipt of your February 10, 2021 letters initiating formal Section 106 consultations and notification of NEPA Environmental Assessment evaluations.

WE understand your undertaking to consolidate the operations of existing Detachment 15 AFRL facilities with the construction of a permanent, government-owned SISL at Waiohuli, Maui, Hawai'i is required to comply with Air Force antiterrorism/force protection and security requirements. The SISL Proposed Action identified as Alternative 1 would increase personnel mission-related work hours by reducing commuting times between the MSSC on the summit of Haleakala and Detachment 15 AFRL HQ, and it would reduce altitude related sickness of employees. The SISL Proposed Action, two-story building is needed to provide adequate space to meet current needs and to provide a direct connection to the MSSC at the summit of Haleakala using dedicated fiber optic cables.

I concur with your present APE inclusion of the Proposed Action (Alternative 1) project site, Laydown Areas (South, East, and West), and points of access and egress into the project site and Laydown Areas. If subsurface excavation is required to relocate/realign limited lengths of high-speed fiber optic links between the MSSC and the Proposed Action project site within the Maui Research and Technology Park (MRTP), this should also be considered as an APE, and I request Uncle Hal Hammatt, Cultural Surveys Hawai'i, Inc. (CSH) cultural/archaeological monitoring of such limited action.

Our Grandfather Wallace Aipalena Kuloloia was born in Waiohuli and his parents were buried in Waiohuli. Our Kuloloia family claimed kuleana lands before the Board of Commissioners to Quiet Land Titles, but they could not afford the required fees to secure a Patent and title by metes and

bounds. The kupuna grew sweet potato and ulu in the dry areas and in the contiguous Honua'ula District. It is well established that the introduction of cattle and ranching culminated in the trampling, demolishing, and destruction of pre-Contact land use historic properties. Thank you for acknowledging the MRTP Master Plan Update Project EIS identified pre-Contact land use rock walls and mounds. Though you describe that these lands were "dry and barren in an agricultural sense," we, of the Honua'ula District, associate these lands to the once abundant dry land cultivation boundary as described by the noted Great Mahele Scholar Aunty Marion Kelly in her "*Na Mala O Kona".*

I applaud the visionary leadership and confluence of events to establish, maintain, and sustain the Maui Research and Technology Park. I am mindful of the interconnectivity and supporting facilities of our Departments of Defense and Energy, having been atop Haleakala, to Idaho National Environmental Laboratory and Albuquerque with Lockheed Martin, and in the PMRF at Mana, Kaua'i. Please ensure you are hpervigilant in your handling, containment, and disposal of solid and liquid waste and hazardous waste generated from the building, demolition, operation, and maintenance actions to effectuate this Proposed Action. I am confidant, prayerful and hopeful that US Air Force will continue to do what is right, demand the BEST of the BEST, so as to distance itself from the perceived "lack of good-faith" stewardship of Hawaiian burials disposition at Mokapu, remaining unexploded ordnance on Kaho'olawe Island, and reported depleted uranium usage at Schofield and Pohakuloa.

Will this Proposed Action directly and/or indirectly facilitate the potential relocation of the US Air Force Solar Observatory on O'ahu to your AFRL Remote Maui Experiment site on Maui, as is being currently scoped under the Missile Defense Agency, Homeland Defense Radar-Hawaii Environmental Impact Statement?

Please forward your Draft EA, in electronic format, to my email below, to manuel.kuloloio@[redacted], and to my sister Leina'ala Vedder at puniawalei@[redacted]. Please also forward a hard copy of your Draft EA to my O'ahu address at [redacted]. My personal cell phone is [redacted].

The Sea, Awa, Reef, Sand, Beach, Shoreline, Paia, Stream, Pond, and House of Kuloloi'a thank you for your hypervigilant protection of our family and thoughtful care to malama our sacred Waiohuli, Haleakala, Maui, and Hawaii Nei.

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 Iehova 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!

Sea of KULOLOIA (now known as Honolulu Harbor)

Aloha Ke Akua,
Me Ke Aloha Maluhia,

Manuel WMD Kuloloia

Manuel Makahiapo Kuloloio
[redacted]
Connect with [redacted]

Sent from my iPhone

From: "Kaplan, Julie" <Julie.Kaplan@tetratech.com>
Date: March 24, 2021 at 12:21:08 PM HST
To: "manuel.kuloloio[redacted]" <manuel.kuloloio[redacted]>
Cc: "FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI" <cody.felipe.2@us.af.mil>, "Hippert, Greg" <greg.hippert@tetratech.com>
Subject: Scoping/consultation letters for Secure Integration Support Laboratory (SISL) Environmental Assessment

Mr. Manuel Kuloloio,
On behalf of the U.S. Air Force, I would like to provide Kuloloiʻa Lineage – I ke Kai 'o Kuloloiʻa with information on the Secure Integration Support Laboratory (SISL) project on Maui and the associated Environmental Assessment effort, and to request assistance in identifying issues, if any, related to the Proposed Action. Correspondence mailed to 469 Maʻalo Street in Kahului was returned, so I'm hopeful this e-mail reaches you. Attached are two letters:

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consultation letter

We appreciate your assistance with this project. Please confirm that you are the appropriate point of contact for Kuloloi'a Lineage and provide me with updated contact information should you wish to keep informed about this effort.
Thank you.

Julie

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1 # *Archaeological Assessment Report*

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Draft

Archaeological Assessment Report for the Secure Integration Support Laboratory Project, Waiohuli Ahupua‘a, Makawao District, Maui Island, TMK: [2] 2-2-024:015 por.

Prepared for
Tetra Tech

Prepared by
Jonas Madeus, B.A.,
Jay Rapoza, B.A.,
Layne Krause, M.A.,
Josephine M. Yucha, M.S.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Wailuku, Hawai‘i
(Job Code: WAIOHULI 4)

September 2021

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P.O. Box 1114
Kailua, Hawai‘i 96734
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Fax: (808) 262-4950

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Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Assessment Report for the Secure Integration Support Laboratory Project, Waiohuli Ahupua‘a, Makawao District, Maui Island, TMK: [2] 2-2-024:015 por. (Madeus et al. 2021)
Date	September 2021
Project Number	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: WAIOHULI 4
Investigation Permit Numbers	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological fieldwork permit numbers 20-07 (for 2020) and 21-10 (for 2021), issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	United States Air Force, Air Force Research Laboratory (USAF-AFRL); SHPD
Land Jurisdiction	Lipoa Investments LLC
Funding	USAF-AFRL
Location	The proposed project is located within undeveloped land on the southern side of the Maui Research and Technology Park, east of Pi‘ilani Highway, and south of Lipoa Parkway. The location of the proposed project site is depicted on a portion of the 2013 Puu o Kali U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Undertaking	The AFRL is responsible for advancing technologies that improve the nation’s capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth’s orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing Site (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Haleakalā at an elevation of 10,000 feet above mean sea level (AMSL). The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kīhei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC. Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului,

	about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of the Detachment 15 AFRL HQ in a government-owned building on land that is leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space. The undertaking is to construct a permanent, government-owned Secure Integration Support Laboratory (SISL) on the island of Maui that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location and provide adequate space to meet current mission needs. The SISL is proposed as a two-story, approximately 56,000-square-foot building. It would have the capacity to provide workspace for about 180 government personnel and include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with Air Force Antiterrorism/Force Protection (AT/FP) and security requirements in accordance with Department of Defense (DoD) Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.
Historic Preservation Regulatory Context	This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to USAF-AFRL funding and oversight, this project is a Federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA). As a USAF-AFRL project on privately-owned land, the project is also subject to Hawai‘i State environmental and historic preservation review legislation Hawai‘i Revised Statutes (HRS) §343 and HRS §6E-42/HAR §13-13-284, respectively. This AIS investigation was prepared to fulfill the requirements of HAR §13-13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for any cultural resources/historic properties. As there were no cultural resources/historic properties identified during the AIS, this study is termed an archaeological assessment (AA) in accordance with §13-284-5(5)(A). This report is also intended to support any project-related historic preservation consultation with stakeholders, such as State and County

	agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable. While not specific to the current undertaking, the SHPD and State Historic Preservation Officer (SHPO) provided a 13 November 2020 NHPA Section 106 review of a proposed geotechnical soil investigation undertaking within the current APE (SHPD Log No.: 202.02460; Doc. No.: 2011SH09). The letter requested that a qualified and permitted archaeologist conduct a reconnaissance survey in transects spaced no further than 5 m apart and prepare a field inspection report for SHPD review. In order to address the requests of the SHPD, the USAF-AFRL, through their partner agency, the U.S. Army Corps of Engineers (USACE), completed a supplemental AIS (Desilets 2021) of the APE with negative findings that was submitted to the SHPD for review. The SHPD responded in a 27 May 2021 NHPA Section 106 review concurring that the proposed geotechnical investigation within the current APE will result in “no historic properties affected” (HICRIS Project No.: 2020PR34567; Doc. No.: 2105SH12). Furthermore, the SHPO recommended that the results of the geotechnical survey be provided to qualified archaeologists for analysis to determine the probability of subsurface archaeological data present within the APE. In an effort to accommodate the request of the SHPO, CSH was provided with the results of the geotechnical engineering study for analysis and inclusion within this report (Masa Fujioka & Associates 2021).
Area of Potential Effect (APE) and Survey Area	The APE for this undertaking includes the project site, a western construction laydown/staging area, a southern construction laydown/staging area, and an eastern construction laydown/staging area. The entire APE was covered by this survey.
APE Acreage	20.34 acres (8.24 hectares)
Fieldwork Effort	Fieldwork was conducted on 1 December 2020 and 3 February 2021 by CSH archaeologists Jonas Madeus, B.A., Jay Rapoza, B.A, Trevor Yucha, B.S., and Layne Krause, M.A., under the general supervision of principal investigators Josephine M. Yucha, M.S., and Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete. In addition to the archaeological fieldwork conducted by CSH, a geotechnical survey of the APE was conducted by Masa Fujioka & Associates that included six geotechnical test bores and three percolation tests. The results of the geotechnical study were supplied to CSH and are included within this document in order to assess the potential for subsurface stratigraphy and deposits.

Historic Properties/Cultural Resources Identified	No historic properties or cultural resources were identified within or adjacent to the APE.
Effect Recommendation	In accordance with Federal regulations (36 CFR 800.5), the project-specific effect recommendation is “no adverse effect.” Under Hawai‘i State historic preservation review legislation, the project’s effect recommendation is “no historic properties affected” (in accordance with HAR §13-13-284-7).
Mitigation Recommendation	No further historic preservation mitigation is recommended for this undertaking. A 100 percent coverage pedestrian survey of the APE has confirmed that there are no historic properties on the surface. A review of background research and previous archaeological findings documents an absence of subsurface historic properties, including human burials, in this region.

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Section 1 Introduction

1.1 Project Background

At the request of Tetra Tech, Cultural Surveys Hawai‘i, Inc. (CSH) conducted an archaeological inventory survey (AIS) for the Secure Integration Support Laboratory (SISL) Project, Waiohuli Ahupua‘a, Makawao District, Maui Island, TMK: [2] 2-2-024:015 por. As there were no cultural resources/historic properties identified during the AIS, this study is termed an archaeological assessment (AA) in accordance with §13-284-5(5)(A). The proposed SISL is located within undeveloped land on the southern side of the Maui Research and Technology Park, east of Pi‘ilani Highway and south of Lipoa Parkway. The area of potential effect (APE) for this undertaking includes the project site, a western construction laydown/staging area, a southern construction laydown/staging area, and an eastern construction laydown/staging area. The APE is 20.34 acres (8.24 hectares), and the entirety of the APE was covered by this survey. The location of the APE is depicted on a portion of the 2013 Puu o Kali U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map key (TMK) (Figure 2), a 2018 aerial photograph (Figure 3), and a client-provided aerial photograph (Figure 4).

The proposed project is located on private property owned by Lipoa Investments LLC. The proposed project is federally funded by the United States Air Force, Air Force Research Laboratory (USAF-AFRL). The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing Site (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Haleakalā at an elevation of 10,000 ft above mean sea level (AMSL). The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the Maui Research and Technology Park (MRTP) in Kīhei and is connected to the MSSC with high-speed fiber optic links. The Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului about 12 miles from the Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of the Detachment 15 AFRL HQ in a government-owned building on land that is leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space.

The undertaking is to construct a permanent, government-owned SISL on the island of Maui that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location and provide adequate space to meet current mission needs.

The SISL is proposed as a two-story, approximately 56,000-square-foot building. It would have the capacity to provide workspace for about 180 government personnel and include a modern,

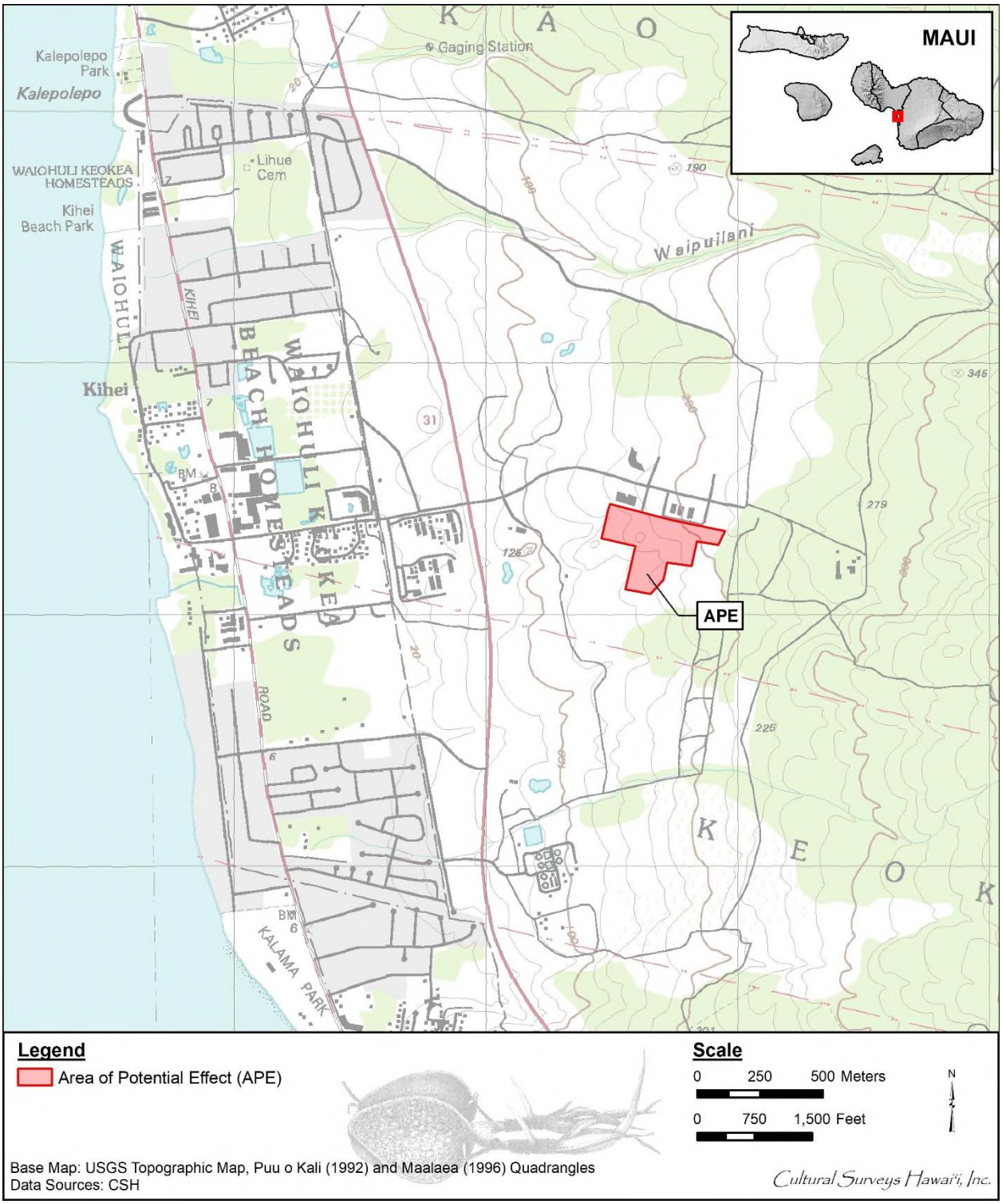


Figure 1. Portion of the 1992 Puu o Kali and 1996 Maalaea USGS 7.5-minute topographic quadrangles showing the location of the APE (U.S. Geological Survey 1992b, 1996)

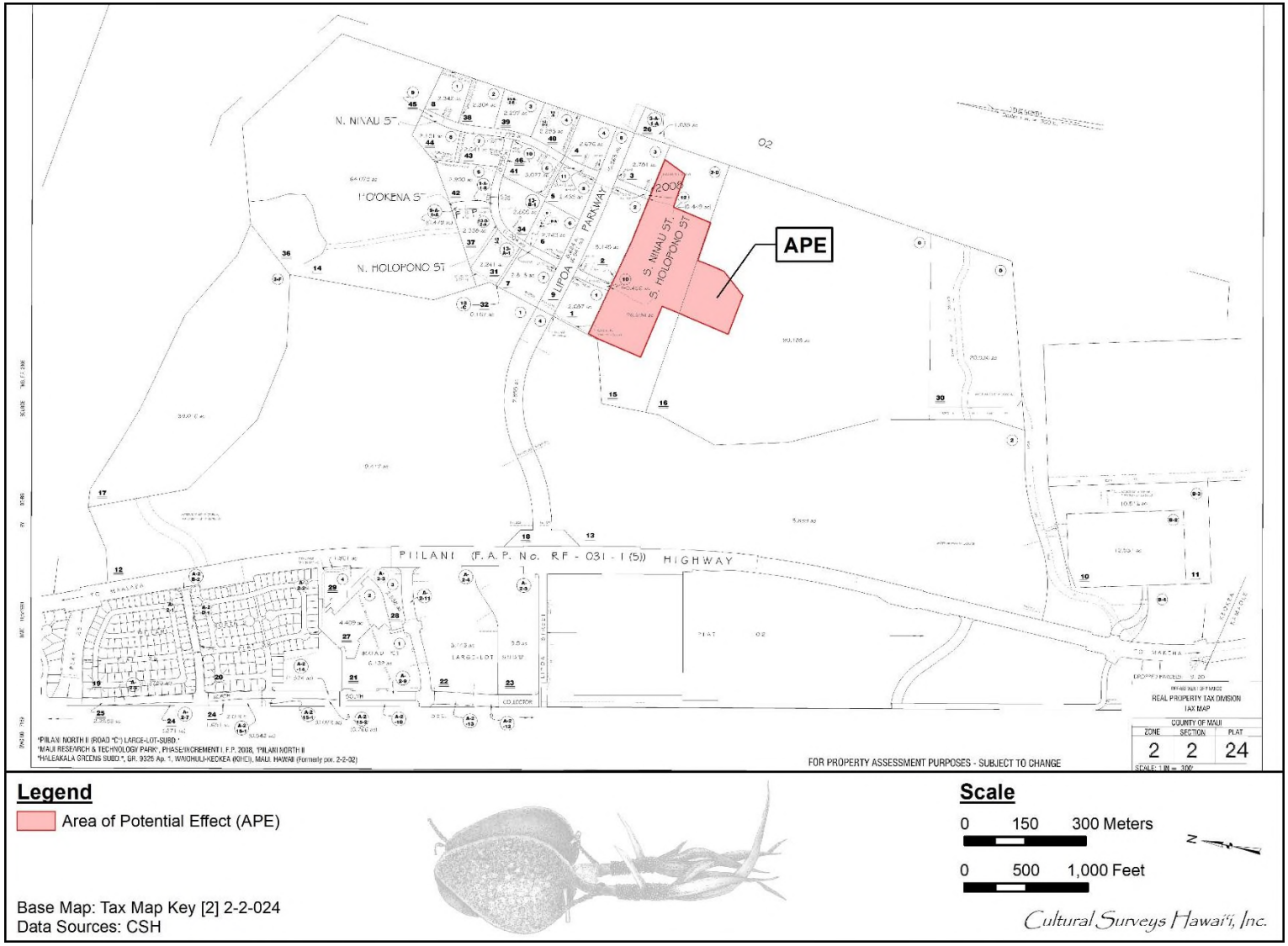


Figure 2. Tax Map Key [2] 2-2-024 showing the APE (Hawaii TMK Service 2014)

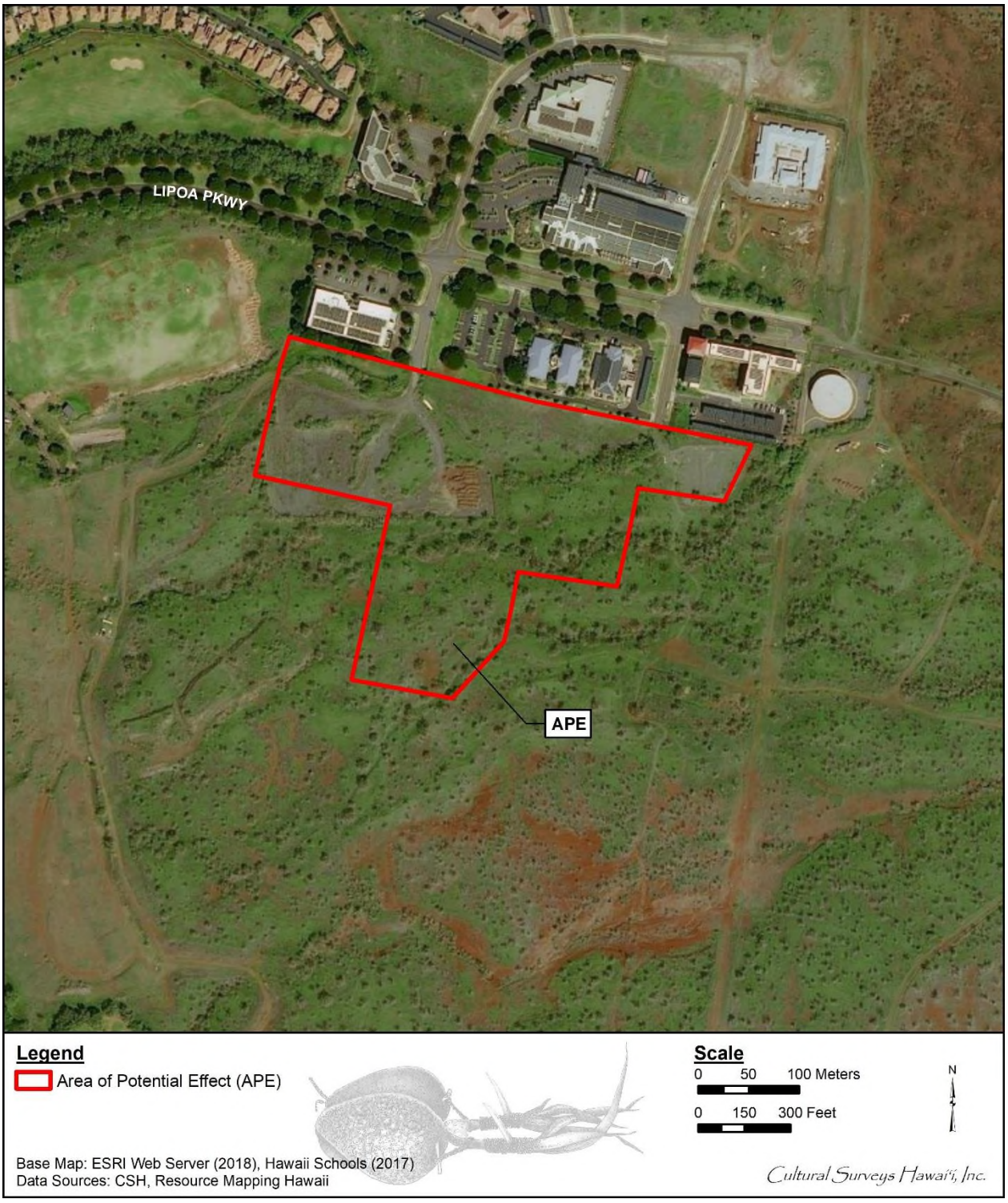


Figure 3. Aerial image of the APE (Esri 2018; Resource Mapping Hawai‘i 2017)

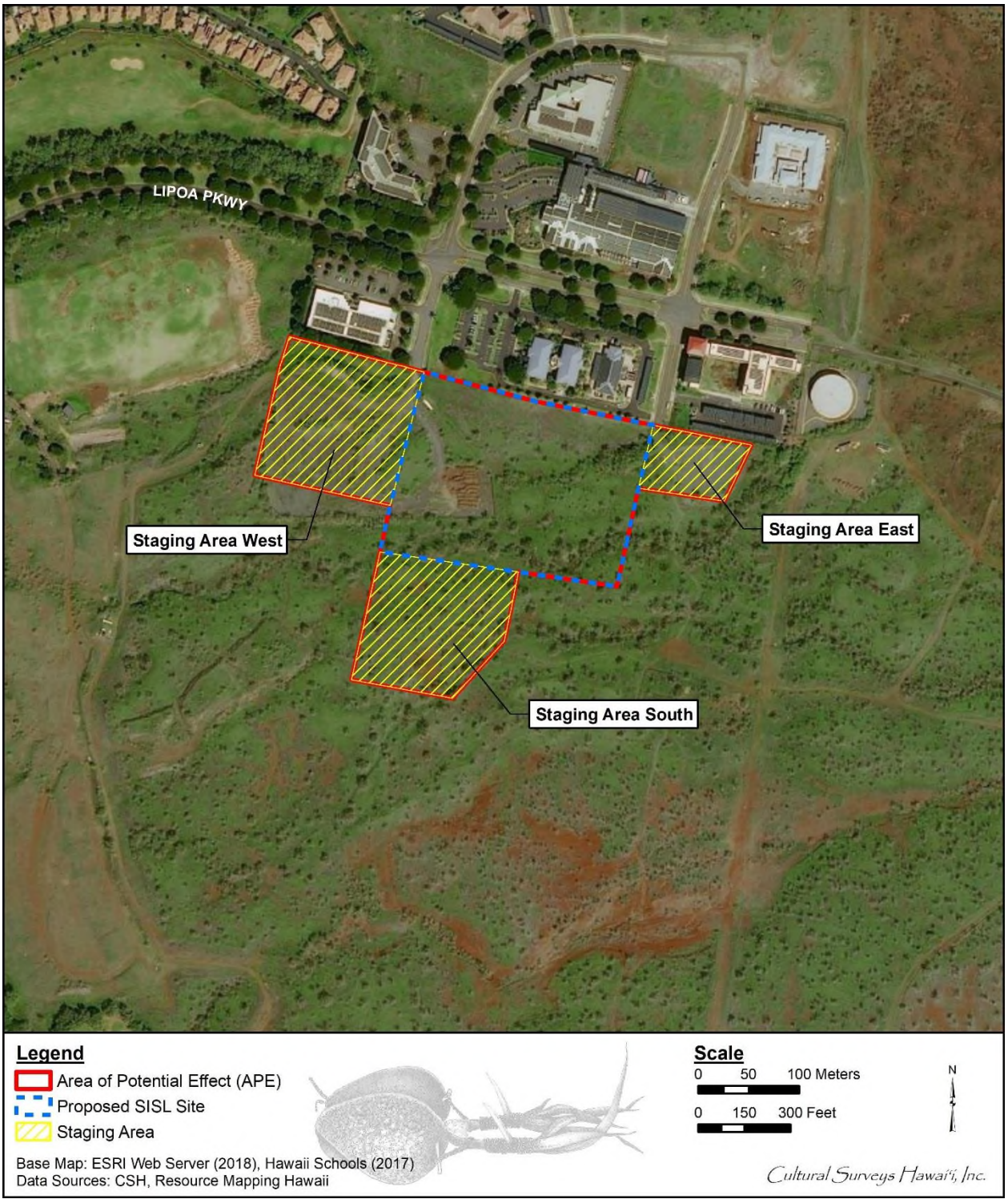


Figure 4. Aerial image showing the components of the APE (Esri 2018; Resource Mapping Hawai‘i 2017)

high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with Air Force Antiterrorism/Force Protection (AT/FP) and security requirements in accordance with Department of Defense (DoD) Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

1.2 Historic Preservation Regulatory Context

This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to USAF-AFRL funding and oversight, this project is a Federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA). As USAF-AFRL project on privately-owned land, the project is also subject to Hawai‘i State environmental and historic preservation review legislation according to Hawai‘i Revised Statutes (HRS) §343 and HRS §6E-42/HAR §13-13-284, respectively.

This AIS investigation was prepared to fulfill the requirements of HAR §13-13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for any cultural resources/historic properties. As there were no cultural resources/historic properties identified during the AIS, this study is termed an archaeological assessment (AA) in accordance with §13-284-5(5)(A).

This report is also intended to support any project-related historic preservation consultation with stakeholders, such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable.

While not specific to the current undertaking, the SHPD and State Historic Preservation Officer (SHPO) provided a 13 November 2020 NHPA Section 106 review of a proposed geotechnical soil investigation undertaking within the current APE (SHPD Log No.: 202.02460; Doc. No.: 2011SH09; Appendix A). The letter requested that a qualified and permitted archaeologist conduct a reconnaissance survey in transects spaced no further than 5 m apart and prepare a field inspection report for SHPD review.

In order to address the requests of the SHPD, the USAF-AFRL, through their partner agency, the U.S. Army Corps of Engineers (USACE), completed a supplemental AIS (Desilets 2021) of the APE with negative findings that was submitted to the SHPD for review.

The SHPD responded in a 27 May 2021 NHPA Section 106 review concurring that the proposed geotechnical investigation within the current APE will result in "no historic properties affected" (HICRIS Project No.: 2020PR34567; Doc. No.: 2105SH12; Appendix A). Furthermore, the SHPO recommended that the results of the geotechnical survey be provided to qualified archaeologists for analysis to determine the probability of subsurface archaeological data present within the APE.

In an effort to accommodate the request of the SHPO, CSH was provided with the results of the geotechnical engineering study for analysis and inclusion within this report (Masa Fujioka & Associates 2021).

1.3 Environmental Setting

1.3.1 Natural Environment

The APE is located approximately 1.98 km (about 1.23 miles) east of the coastline on the lower portion of the southwestern, leeward slope of Haleakalā with elevations ranging from 43 m to 66 m (141 ft to 217 ft) above mean sea level (AMSL). This region is in an area of scarce freshwater resources resulting from the rain shadow effect of Haleakalā. The nearest intermittent stream gulch is Waipu‘ilani Gulch at approximately 1.0 km (0.62 mi) to the north.

In 2014, the average annual air temperature for the APE was between 21.45°C (70.61°F) in February and 25.46°C (77.83°F) in August, with an average annual air temperature of 23.51°C (74.32°F) (Giambelluca et al. 2014). According to the University of Hawai‘i 2011 *Online Rainfall Atlas of Hawaii,* the vicinity of the APE received a mean annual rainfall of 294.2 mm (11.6 in) between 1978 and 2007 (Giambelluca et al. 2013). The mean monthly rainfall varied between 3.0 mm (0.2 in) in July and 70.1 mm (2.8 inches) in January.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the APE's soils consist of only Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2) (Figure 5).

The Waiakoa series consists of "gently sloping to moderately steep," "well-drained" Maui uplands soils that "developed in material weathered from basic igneous rock" and contain an upper profile "influenced by volcanic ash" (Foote et al. 19925:126). WID2 soils are described as follows:

> This soil is similar to Waiakoa very stony silty clay loam, 3 to 7 percent slopes, except that it is eroded and stones cover 3 to 15 percent of the surface. In most areas about 50 percent of the surface layer has been removed by erosion. Runoff is medium, and the erosion hazard is severe. Included in mapping were small, steep areas. Also included were a few cinder cones.
>
> This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

The soils, topography, and rainfall pattern would have once sustained a dry shrubland and grassland environment (Pratt and Gon 1998:122). Prior to human modification, the grass and shrubland biota may have included *pili* (*Heteropogon contortus*) grasslands and *ʻaʻaliʻi* (*Dodonaea variabilis*), dry cliff vegetation, small patches of *maʻo* or Hawaiian cotton (*Gossypium tomentosum*), and *ʻākoko* (*Chamaesyce* sp.) (Pratt and Gon 1998:127-128). The natural landscape of the APE has been more recently described as a Hawaiian introduced perennial grassland (Giambelluca et al. 2014).

1.3.2 Built Environment

The APE was undeveloped at the time of the survey. The APE is located immediately south of the MRTP, which includes numerous commercial buildings, the Kihei Charter School campus, and related infrastructure. Tenants of the MRTP include the Maui Economic Development Board, Inc., the Pacific Disaster Center, Oceanit, Goodfellow Bros. Inc. Corporate Offices, Boeing LTS, and the Air Force Research Laboratory Det 15. Residential development along Lipoa Parkway consists of Hokulani Golf Villas, a resort community surrounded by Maui Nui Golf Course.

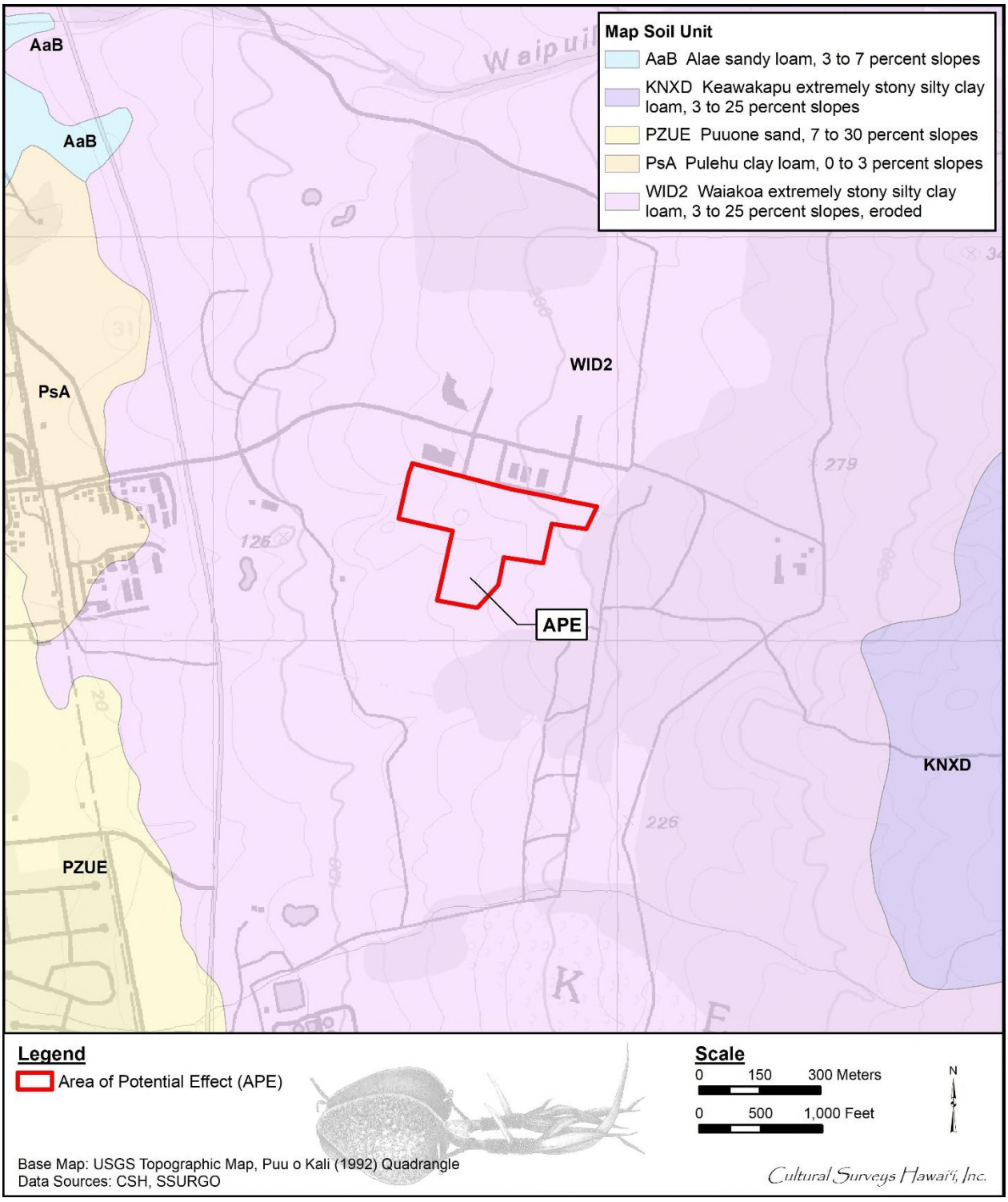


Figure 5. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the APE (U.S. Department of Agriculture 2001)

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological permit number 20-07 (for 2020) and 21-10 (for 2021), issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 1 December 2020 and 3 February 2021 by CSH archaeologists Jonas Madeus, B.A., Jay Rapoza, B.A., Trevor Yucha, B.S., and Layne Krause, M.A., under the general supervision of principal investigators Josephine M. Yucha, M.S., and Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete. In general, fieldwork included 100% pedestrian inspection of the APE, GPS data collection, and written/photographic recordation.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project area was undertaken for the purpose of historic property identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart. Ground visibility was excellent as the surface consisted predominantly of open, previously graded land with sparse dry grasses.

2.1.2 GPS Data Collection

A hand-held Garmin GPS unit (accuracy +/- 3 m) uploaded with a shapefile of the APE boundaries was used to track and complete the pedestrian survey. No historic properties or cultural resources were identified; therefore, no additional GPS data collection was required.

2.1.3 Recordation

As there were no findings during the survey, documentation included descriptions and photographs of the natural and built environment observed throughout the APE. Descriptions and photographs were recorded using Apple Ipads equipped with standard digital form software and with digital cameras.

2.2 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina (2000) database. This research provided the environmental, cultural, historic, and archaeological background for the APE.

Section 3 Background Research

3.1 Traditional and Historical Background

The *moku o loko*, or *moku* as it is most commonly called, literally means “to cut across, divide, separate” (Lucas 1995:77). When used as a term of traditional land tenure, a *moku* is similar to a political district that can contain smaller divisions of land such as *‘okana, kalana, ahupua‘a, ‘ili,* and *mo‘o*. The division of Maui’s lands into several *moku* occurred during the rule of Kaka‘alaneo, under the direction of his *kahuna*, Kalaiha‘ōhi‘a (Beckwith 1970:383). This division resulted in 12 *moku* during traditional times: Kula, Honua‘ula, Kahikinui, Kaupō, Kīpahulu, Hāna, Ko‘olau, Hāmākua Loa, Hāmākua Poko, Wailuku, Kā‘anapali, and Lāhainā. By 1932, the 12 traditional *moku* had been consolidated into the four modern tax districts of Lāhainā, Wailuku, Makawao, and Hana (Sterling 1998:4). The APE is located in the Kīhei area of South Maui, which is in Waiohuli Ahupua‘a within the traditional *moku* of Kula and the modern district of Makawao.

3.1.1 Mythological and Traditional Accounts

3.1.1.1 Place Names

In *Native Planters in Old Hawaii,* Handy et al. (1991:23-24,42) summarize the relationship that traditional Hawaiians have had with the natural environment:

> The sky, sea, and earth, and all in and on them are alive with meaning indelibly impressed upon every fiber of the unconscious as well as the conscious psyche. Hawaiian poetry and folklore reveal this intimate rapport with the elements.
>
> …. [T]he relationship which existed from very early times between the Hawaiian people …is abundantly exemplified in traditional mele (songs), in pule (prayer chants), and in genealogical records which associate the ancestors, primordial and more recent, with their individual homelands, celebrating always the outstanding qualities and features of those lands. (Handy et al. 1991:23-24, 42)

Regarding Hawaiian place names, Pukui et al. (1974) cite a description by Samuel Elbert:

> Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and *heiau*, canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place.
>
> Place names are far from static… names are constantly being given to new houses and buildings, land holdings, airstrips, streets, and towns and old names are replaced by new ones… it is all the more essential, then to record the names and the lore associated with them now. (Pukui et al. 1974:x)

While creative writings and traditional accounts of Kīhei are relatively scarce, an analysis of the *wahi pana* (legendary places/sacred sites) meanings for the region may yield some insight into the patterns of life in the area prior to Western contact. Table 1 provides translations for *wahi pana* and other place names in the general APE vicinity, which are cited from Pukui et al. (1974) unless otherwise noted.

Table 1. Kīhei *wahi pana* and other place names near the APE

Place Name	Literal Translation	Meaning
‘Alae	Mudhen	Name of *ahupua‘a* north of the APE
Kale‘ia	The abundance	Possibly referring to resources available from the fishponds and offshore fishing grounds
Kalepolepo	The dirt	Name of a fishpond approximately 2 km northwest of the APE
Kaluaihākōkō	The pit (for) wrestling	Hākōkō was the name of a chief
Kama‘ole	Childless	Name of *ahupua‘a,* homesteads, and beach parks south and *makai* of the APE
Ka‘ono‘ulu	The desire (for) breadfruit	Name of a gulch and a 3,051-ft peak; also, an *ahupua‘a* north and adjacent to Waiohuli Ahupua‘a
Keāhuaiwi	The bone pile	The name of a gulch adjacent to and north of Waiakoa Gulch
Keālia	Salt encrustation	*Lit.,* “;” a pond near Kīhei and major salt pan location (Sterling 1998:95)
Kekuawaha‘ula‘ula	The red-mouth god	
Kēōkea	The white sand	Name of a village, park and homesteads south and upslope from the APE; Kēōkea Ahupua‘a borders Waiohuli Ahupua‘a to the south
Kīhei	cape or cloak	Sandy point and boundary marker between Pūlehu Nui and Waikapu (Sterling 1998:255); commonly used place name for the South Maui area
Kīheipūko‘a	*Kīhei* literally translates as “cape or cloak” and *pūko‘a* literally translates as “coral head	Kīheipūko‘a was a place near Keālia between Kalepolepo and Ma‘alaea (Sterling 1998:257)
Kōheo	To show off or to twirl	An *ahupua‘a* north and adjacent to Waiohuli Ahupua‘a
Kō‘ie‘ie	A plaything for floating in the rapids	Ancient name of Kalepolepo (Sterling 1998:252)

Kula (*moku*)	Plain	Always an arid region (Handy in Sterling 1998:242)
Lā‘ie	*‘Ie* literally translates to leaf	Coastal area west of the APE
Līpoa		“An edible brown seaweed with many branches and a unique aroma. A popular food which many people gather from the ocean” (Budnick 1991:99); name of the parkway comprising most of the APE and name of the street extending from the parkway to the ocean
Nāwāowaeo‘Alika	The feet of Alex or the feet of Arctic	May be a new name
Pūlehu Nui	Large *pūlehu*	Where *pūlehu* is literally translated as “broiled;” Possibly in reference to abundant sweet potato cultivation in the uplands; name of an *ahupua‘a* north of the APE
Pu‘u o Kali	Hill of waiting	Quadrangle and 1,481-ft high hill; believed once a *mo‘o*, the wife of nearby Pu‘uhele; their child, Pu‘uoinaina (hill of wrath) was placed on Ko‘oolawe and later was a lover of Pele’s sweetheart, Lohi‘au (p.203); the APE is in Pu‘u o Kali quadrangle; the hill by the same name is southeast of the APE
Waiakoa	Water (used) by warrior	Name of a gulch and an *ahupua‘a* north of the APE
Waimāha‘iha‘i	Broken water	Coastal area southwest of the APE; name of a shallow, intermittent stream that appears to have once flowed just south of the APE
Waiohuli	Water of change	Name of the *ahupua‘a* containing the APE, a gulch approximately 0.8 km north of the APE, and a village/homesteads upland from the APE
Waipu‘ilani	Waterspout	Name of gulch nearest and north of the APE

3.1.1.2 Settlement and Subsistence

The APE is the lower midland portion of Waiohuli, Ahupua‘a and Kula Moku, a region scarce of water due to the rain shadow of Haleakalā. Traditional land-use in Kula Moku was known for potato cultivation:

> Kula was always an arid region throughout its long low seashore, vast stony *kula* [pasture] lands, and broad uplands. On the coast, where fishing was good, and the lower westward slopes of Haleakala, a considerable population existed, fishing and raising occasional crops of potatoes along the coast, and cultivating large crops of potatoes inland, especially in the central and northeastern section including Keokea, Waiohuli, Koheo, Kaonoulu, and Waiakoa, where rainfall drawn round the northwest slopes of Haleakala increases toward Makawao. (Handy 1940:161)

Coastal Kīhei also shows a few vestiges of lifestyles and subsistence activities of the *maka‘āinana* (commoner) that lived there as well as the works of powerful *ali‘i*. Keālia Pond has been known as a source of high quality salt from the pans in its immediate vicinity. Van James (2002:71) describes Keālia as follows :

> It is also the name and site of a former fishpond. Little is known about the ancient history of Keālia fishpond, but judging from its size, it must have been an important producer of fish stock, particularly *awa* (milkfish) and *‘ama‘ama* (mullet). Ditches and sluice gates were built at least 400 years ago to let these and other nearshore fish into the pond. A *ko‘a* (fishing shrine) or possible *heiau* platform stands near the site. (James 2002:71)

Given its location on the leeward shores of the central isthmus of Maui, and its regular access to the freshwater runoff emanating from Waikapū Stream to the north and Kolaloa Stream to the southeast, the area had access to many resources (salt, fish, irrigation, etc.) valued and used by the population. This wetland environment also attracts many species of waterfowl in the winter months when water levels in the pond rise with seasonal flooding. These would have also served as a potential source of nourishment for subsistence communities in the region (James 2002:72).

Further testament of resource gathering in the area comes from neighboring Kō‘ie‘ie Fishpond, which can still be seen along the Kīhei coastline in ruins (Figure 7). This fishpond was once part of a broader distribution of these types of structures along the coast:

> In ancient times at least three or four *kuapā* (walled) fishponds were built along the Kīhei (“cloak”) coastline. With the exception of Ko‘ie‘ie pond, the names of the other ponds have been lost, and little is known about any of their histories. In such cases it was said that *menehune* constructed them.
>
> It [Kō‘ie‘ie] is a small pond of three arces. At low tide, another fishpond ruin can be seen just south of Kō‘ie‘ie Fishpond, and still further south along the coast is yet another nameless ancient pond wall. (James 2002:73-74)

The associations of these fishponds to the *menehune*, placing their times of construction in deep antiquity, suggest that this site may have been in use in very early times. What is known regarding the fishponds here is that they had been rebuilt several times prior to and during the first days of Western contact:

Figure 6. Ko‘ie‘ie Fishpond ruins as viewed from the shore, near former site of Kalepolepo (James 2002:73)

Figure 7. Shoreline extent of Ko‘ie‘ie Fishpond ruins in proximity to condominium development (Wikimedia 2008)

> It is here at Kalepolepo that Kamehameha I is said to have beached his canoes for battle against Central Maui. The beaches were black with his fleet, and the Waikapū Stream that empties into nearby Keālia Pond was declared *kapu*. Later, Kamehameha, who noticed Kō‘ie‘ie to be in disrepair, had the fishpond rebuilt. It is recorded that chief ‘Umilīloa, in the mid-1500s, also had the pond walls rebuilt. (James 2002:73-74)

Based on its history of rehabilitation from conquering Hawai‘i Island chiefs, the fishpond at Kō‘ie‘ie is believed to have been “a royal pond always stocked with the best fish” (James 2002:74). Further associations between Hawaiian royalty and Kō‘ie‘ie Fishpond are also exemplified by a story from the early historic period in which Kihawahine, the family *‘aumakua* of the Kamehameha line of chiefs, appeared at Kō‘ie‘ie Fishpond in saffron-yellow robes following the death of one of Kamehameha’s sons at Kalepolepo in 1815 (James 2002:74).

Meanings of place names, together with the environmental data, suggest that the lands of and surrounding coastal Kīhei were dry and barren in an agricultural sense but rich in marine resources. Previous research on pre-Contact occupation in Kula District (Kolb et al. 1997) has suggested that most permanent habitations were in the uplands with a smaller permanent population located along the coastline. While a reconstruction of the coastal archaeological landscape of Kula Moku underscores the importance of the uplands as a focus of agriculture and habitation, Hawaiian traditions and the presence of four fishponds are evidence that the coastal environs were also a focus of settlement and marine resource collection. However, the relative scarcity of recorded coastal place names may be an indication of a smaller population that was widely spread out across the leeward coast.

3.1.1.1 Political Conflicts

Kīhei lands were also a site of conflict between the Hawai‘i Island chief Kalani‘ōpu‘u and Maui Island chief Kahekili and is perhaps the historic origins for such place names as “Waiakoa” and “Keāhuaiwi.” The earliest account concerning Kīhei and Hawaiian politics is given by Samuel Kamakau (1961:70) during the time of Alapa‘i and Kekaulike:

> Alapa‘i sailed from Kohala on Hawai‘i... But when he landed at Mokulau in Kaupō (Maui) and heard that Ke-kau-like was dying, he gave up all thought of war and wished only to meet Ke-kau-like and his (half) sister Ke-ku‘i-apo-iwa-nui ... He landed at Kīheipukoa with all his chiefs and fighting men...While he was at Kīhei, Alapa‘i heard that the ruling chief of Oahu was making war upon Molokai. Most of the chiefs of Molokai... were of Hawai‘i... Alapa‘i’s sympathy was aroused, for these were his own brothers and children (relatives), and he made ready to go to their help on Molokai. (Kamakau 1961:70)

Other accounts involve the continuing conflict between Kahekili of Maui Island and Kalani‘ōpu‘u of Hawai‘i Island during the late eighteenth century. Following a losing battle at Kaupō in 1775, Kalani‘ōpu‘u dedicated several war *heiau* on Hawai‘i Island to aid in the defeat of Kahekili. Upon hearing this news, Kahekili sent for the *kahuna* (priest) Kaleopu‘upu‘u who directed construction of the *heiau* of Kaluli and Pu‘uohala on the north side of Wailuku. When Kaluli Heiau was completed Kaleopu‘upu‘ said to Kahekili, “This is the house of your god; open the sluice gate that the fish may enter” (Kamakau 1961:85).

In 1776, the army of Kalani‘ōpu‘u landed at Keoneo‘o‘io, with their war canoes extending to Makena at Honua‘ula, and proceeded to ravage the countryside. Kalani‘ōpu‘u landed with additional forces at Kīhepuko‘a at Kealia to Kapa‘ahu, 800 strong and eager to drink the waters of Wailuku:

> Across the plains of Pu‘u‘ainako (Can-trash-hill) and Kama‘oma‘o shone the feather cloaks of the soldiers… Ka-hekili was at Kalanihale just below Kihahale and above the plateau of Ka‘ilipoe at Pohakuaokahi… Kaleopu‘upu‘u [said] to Kahekili, “The fish have entered the sluice; draw in the net.” (Kamakau 1961:85)

The forces of Kahekili descended upon and destroyed the soldiers of Kalani‘ōpu‘u, slaying the Alapa (elite soldiers of Kalani‘ōpu‘u) on the Sand Hills at the southeast of Kalua. Only two men escaped to Kīheipuko‘a to tell Kalani‘ōpu‘u the news of their defeat. After a second day of warfare, Kalani‘ōpu‘u sued for peace and was granted such by Kahekili and his messengers at Kīheipuko‘a (Kamakau 1961:88-89).

3.1.2 Early Historic Period

Kīhei was one of the locations visited by Captain George Vancouver. A monument at Mai Poina ‘Oe Ia‘u Beach Park in Kīhei commemorates Vancouver’s on-shore expedition in 1792, when he first met the ruling chief Kahekili. With its sheltered coastline and easy access to Upcountry resources over a vast slope, Kīhei would continue to be a common stop for visiting ships.

During the early and middle 1800s, the Hawaiian demography was affected by two dramatic factors: radical depopulation resulting from Western disease and nucleation around the developing port towns. The traditionally Hawaiian population was largely dispersed and, although there were royal centers and areas of more concentrated population, these areas never came close to rivaling the populations of the historic port towns that developed on Hawai‘i’s shorelines during the 1800s. Kuykendall (1938:313) notes the following about the period from 1830 to 1854:

> The commercial development during this period, by magnifying the importance of a few ports, gave momentum and direction to a townward drift of population; the population of the kingdom as a whole was steadily going down, but the population of Honolulu, Lahaina and Hilo was growing. (Kuykendall 1938:313)

Kuykendall’s observation likely captures the demographic pattern at the Kalepolepo entrepot, a hub of early historic activity for Kīhei and eventually all of Kula Moku, located approximately 2 km northwest of the current APE (Kolb et al. 1997:69). The development of Kalepolepo as an entrepot and a focus of Christian life in the 1840s and 1850s likely increased the population in the immediate vicinity above the pre-Contact population figures, contrary to the island-wide trend of depopulation.

That the population and areal extent of the Kalepolepo community reached its zenith during the mid-1800s, appears to be supported by Kolb et al. (1997:68):

> The ancient village of Kalepolepo was relatively small, and was built around an economy primarily based upon the exploitation of ocean resources--primarily the excellent fishing grounds as well as three large fishponds. However, as the number of visiting ships increased, Kalepolepo soon became an important provisioning

> area. By 1850 we know that the economic opportunities were attracting a number of European entrepreneurs. (Kolb et al. 1997:68)

In 1820, the whaling industry was introduced in Hawai‘i. Although the whaling trade centered on Lāhainā, mainly affecting the Kula/Kīhei area through agricultural demands, Clark (1980:47) notes that from “the 1840s to the 1860s a small whaling station was maintained at Kalepolepo [Kīhei]”. The introduction of whaling to the Maui community brought with it an increased demand for foodstuffs, particularly, the long-lasting Irish potato.

After 1830, dryland agriculture in the old Kula District expanded with a focus on Irish potato cultivation. The California Gold Rush of 1849 further intensified the demand as a California-Hawai‘i potato trade began to flourish. Kula became the area (between 2000 and 5000 ft AMSL) of highest potato production and was known as “the potato district.” During this time, sugar cultivation and ranching were established in the Kula region. According to Helen Wong Smith, sugar was present prior to 1846, with six sugar producers operating on the slopes of Haleakalā, and ranching occurred in the area prior to the 1840s (Brown and Haun 1989:C-7 and C-6). Much of the produce, sugar, and livestock moved down the Kalepolepo and Kekuawaha‘ula‘ula Trails to the landing at Kalepolepo. Donham (1992:5) notes that the inundation of land clearing and cultivation associated with the Gold Rush resulted in “deforestation [which] adversely affect[ed] the amount of rainfall in the district, and periods of drought became more common.”

Around 1849, John Halstead built the Koa House at Kalepolepo in Kīhei (Figure 8). The building, part store and part residence, thrived on both the trade of the whaling industry and the then booming potato industry. During the Gold Rush years, the store became “an emporium for Irish potatoes” and served as a gathering place for the whaling sailors (Burgett and Spear 1995:6). David Malo created a balance for the boisterous whaling crowd by constructing the Kilolani Church at Kalepolepo around 1852 (Figure 9). Potato production prospered in Kula from 1830-1850 until successful potato cultivation and production in California and Oregon resulted in a decline in the Hawai‘i trade (Burgett and Spear 1995:6-7). Halstead ran his store until 1876, closing shop when the potato industry diminished (Janion 1977:25-31).

3.1.3 The Māhele and the Kuleana Act

Initiated by the Organic Acts of 1845 and 1846, the most significant change in land-use patterns and land allocation came with the Māhele of 1848 and the privatization of land in Hawai‘i. This action hastened the shift of the Hawaiian economy from subsistence-based to market-based. During the Māhele, all lands in the Kingdom of Hawai‘i were divided between *mō‘ī* (king), *ali‘i* (chiefs), *konohiki* (resident overseers of an *ahupua‘a*), and *maka‘āinana* (tenants of the land), which allowed the land to pass into the Western land tenure model of private ownership. On 8 March 1848, Kauikeaouli (Kamehameha III) further divided his personal holdings into lands he would retain as private holdings and parcels he would give to the government. This act paved the way for government land sales to foreigners (Chinen 1958).

Native Hawaiians who desired to claim the lands on which they resided were required to present testimony before the Board of Commissioners to Quiet Land Titles. Upon acceptance of a claim the Board granted a Land Commission Award (LCA) to the individual. The awardee was then required to pay in cash an amount equal to one-third of the total land value or to pay in unused land. Following this payment, a Royal Patent was issued that gave full title of ownership to the

Figure 8. The Koa House at Kalepolepo built by John Halstead circa 1849 (Wilcox 1921:66)

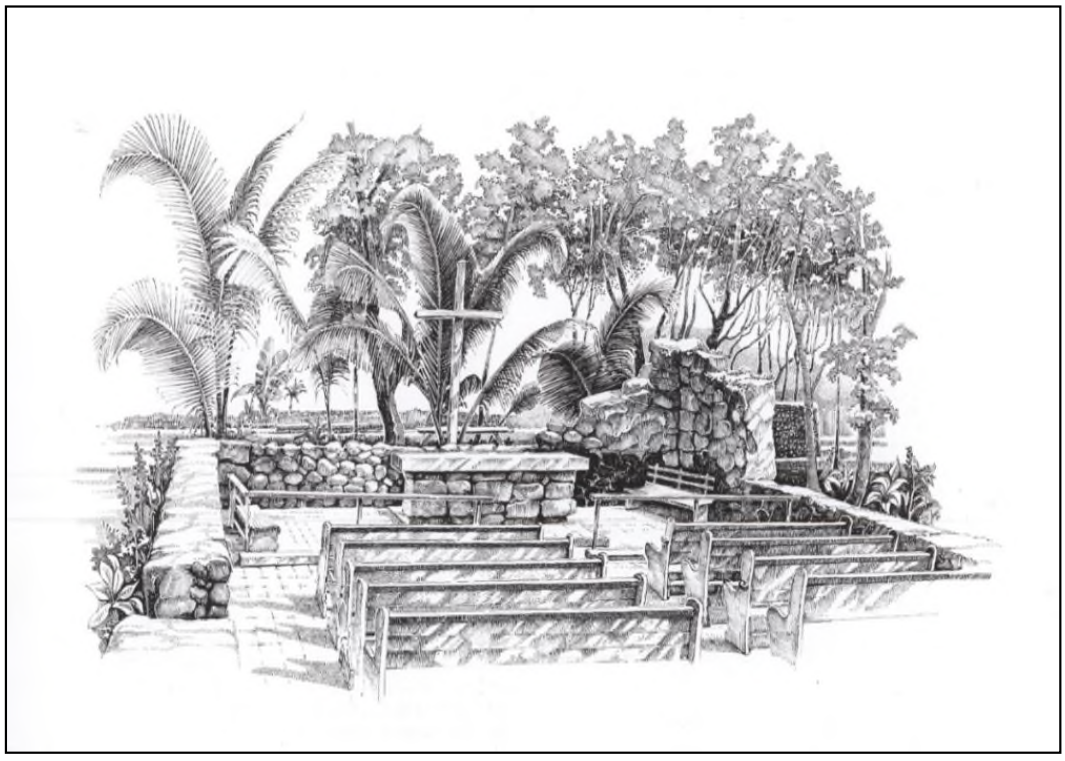


Figure 9. Artist rendition of Kilolani Church, also known as Trinity By the Sea (Skolleborg 1993:65); the church was reputedly burned circa 1893 and further destroyed by a storm in 1900; congregations began attending the church ruins in the late 1970s; open-air services are still held at the ruins today (Trinity Church By-the-Sea 2020)

tenant (Chinen 1958:8-14). In this way, the government of Hawai‘i offered land for sale to both Native Hawaiians and foreigners. Such lands were referred to as Royal Patent Grants or as Grants.

On 19 October 1849, the Hawaiian Privy Council adopted resolutions to protect the rights of Native tenants, the *maka‘āinana* (common people/tenants of the land). The Kuleana Act of 1850 confirmed these rights. Under this act, the claimant was required to produce two witnesses who knew the claimant and boundaries of the land, knew that the claimant had lived on the land for a minimum of two years, and knew that no one had challenged the claim. The land also had to be surveyed. Native tenants or naturalized foreigners who could prove occupancy on the parcels before 1845 could be awarded lands they occupied or that they cultivated as *kuleana* (land holding of a tenant or *hoa‘āina* residing in the *ahupua‘a*) awards. No commutation fee was necessary to apply for a Royal Patent for a *kuleana* award, as the commutation fee had presumably already been paid by *ali‘i/konohiki* who had been awarded the entire *ahupua‘a*, or an *‘ili* (a land division within an *ahupua‘a*) in which the native tenant claimed his own small parcels (Chinen 1958:29-30).

Despite the effort to allocate lands to the *maka‘āinana*, the *ali‘i* control of the majority of lands persevered and much of these lands were ultimately obtained by foreigners for commercial agriculture and ranching enterprises. In many cases, land sales to foreigners were vast and often encompassed large portions of the *ahupua‘a* in which they were located. Additionally, while *kuleana* awards were granted to native tenants in fee simple and free of commutation at Honua‘ula, payment to the government surveyors and Land Commission to cover costs to survey the lots also became a factor in decisions to keep or abandon claims. According to Alexander (1890:119), between 1850 and 1860, nearly all desirable government lands were sold.

An 1885 Hawaii Territorial Government Survey map shows the current APE within Crown Lands which the king divided into large land grants (Figure 10). The APE is within Land Grant 9325:1 (Figure 11). CSH does not currently have additional information regarding Land Grant 9325:1.

3.1.4 Late 1800s through Early 1900s

By the time John Halstead closed shop in 1876, the boom years of Kalepolepo had passed. By 1880, the government survey of the Kula area showed the demarcation of only a few LCAs, and those who had received awards had replaced them with grants. Lower Kula consisted primarily of pastureland for ranching (Wong Smith in Donham 1992:B-6). Kennedy (1992:9) notes that at this time *kiawe* (*Prosopis pallida*) was imported to feed cattle and provide wood.

Regarding the settlement at Kalepolepo and the impact of the changes associated with the conversion to ranching on the general area known as Kīhei, Clark (1980:48) comments:

> Halstead finally closed his store in 1876, as demands for his goods had steadily decreased, and moved to Ulupalakua… By this time the once thriving Hawaiian village at Kalepolepo had been almost totally abandoned as well. The slopes of Haleakala had gradually become denuded of their forests and torrential rains had caused heavy soil runoffs into the Kalepolepo shoreline. Cattle had trampled down the brush and grassy fields, causing sand dunes to drift and fill up the pond. Clouds of dust filled the air instead of cooling winds. Except for a handful of fishing families, Kalepolepo [and likely the Kīhei area in general] was deserted. (Clark 1980:48)

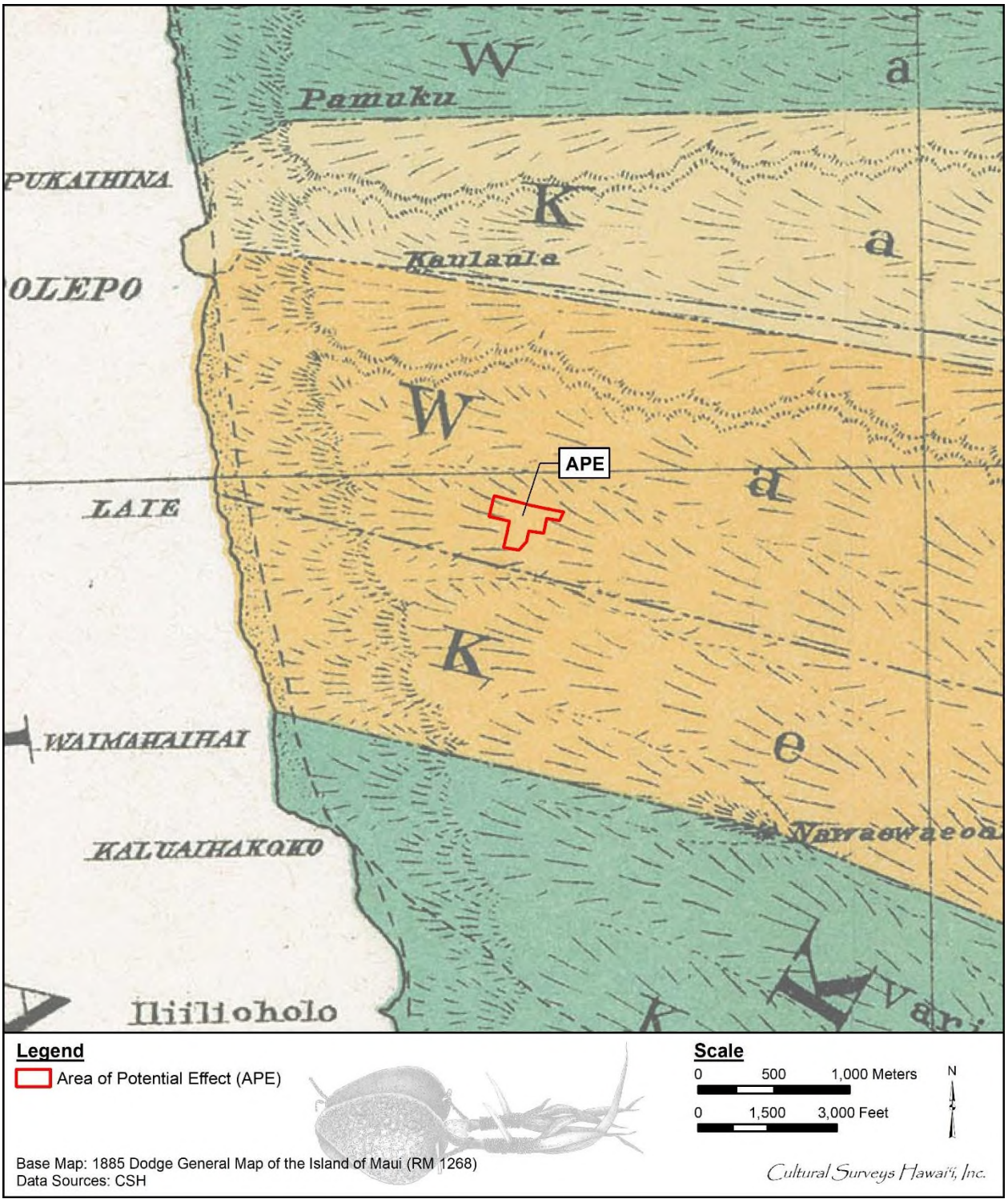


Figure 10. Portion of Dodge (1885) map showing the APE within Crown Lands

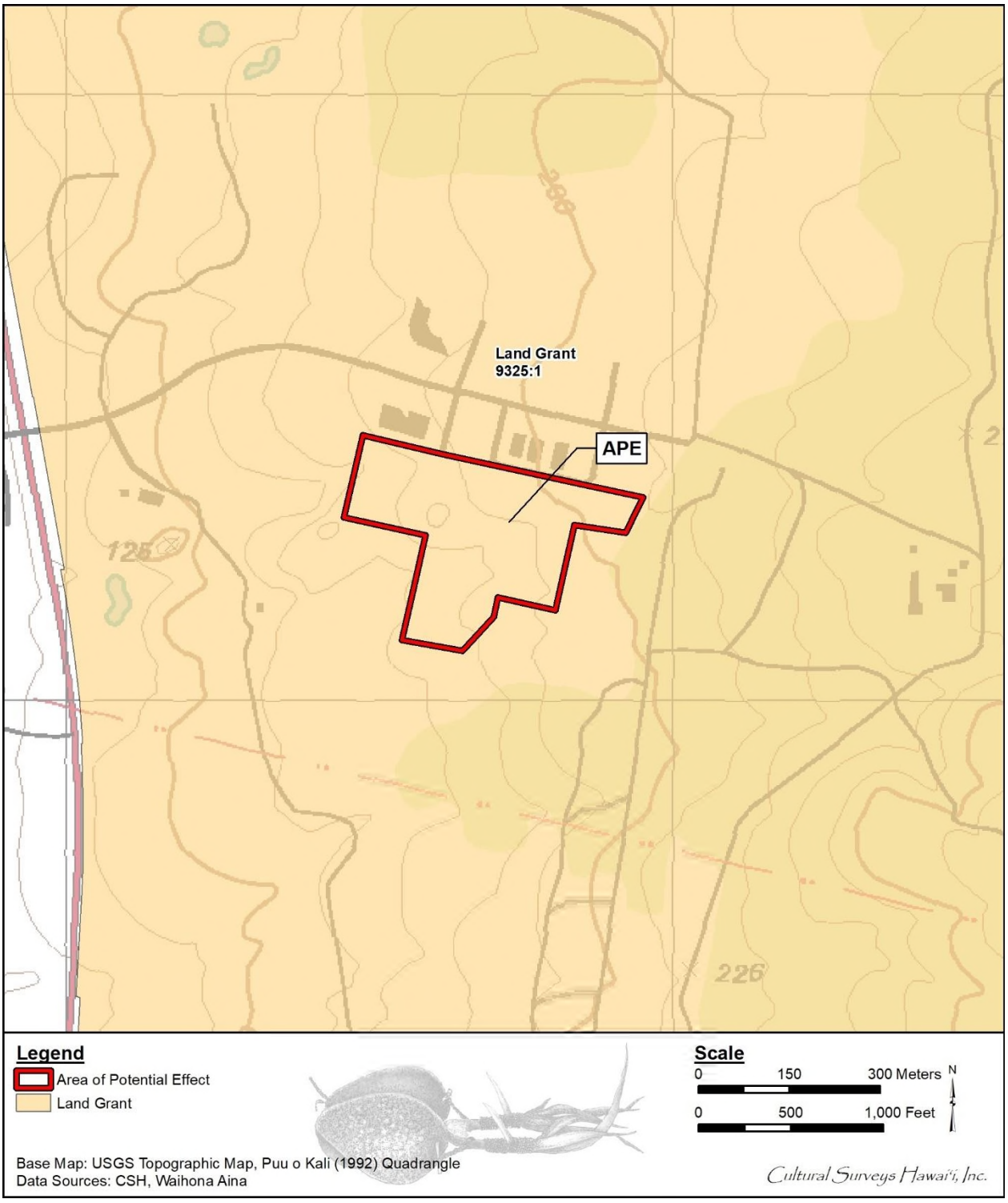


Figure 11. Portion of the 1992 Puu o Kali USGS 7.5-minute topographic quadrangle showing the APE within Land Grant 9325:1 (U.S. Geological Survey 1992a)

In 1920, the U.S. Congress passed the Hawaiian Homes Commission Act to administer and manage some 200,000 acres of land that belonged to the government of the Kingdom of Hawai‘i or were recognized as Crown lands. Agricultural homesteads were to be leased to Native Hawaiians; with leasehold terms generally lasting 99 years at one dollar a year. The following year, the program began attracting people to Moloka‘i where Kalaniana‘ole Colony was the first homestead established under the Hawaiian Homestead Act of 1920 (Keesing 1936). By 1929, the program had expanded, and Waiakoa Homesteads had been established north of the APE (Figure 12). By 1933, Kama‘ole Homesteads were present southwest of the APE (Figure 13). A 1954 map shows additional homesteads, Waiohuli-Keokea Beach Homesteads, spanning across lands west of the APE (Figure 14). The Hawaiian Homes Commission encouraged agricultural pursuits, raising livestock, and ranching on homestead lands.

The shift in the economics of coastal areas to ranching was also discussed by E.S. Craighill Handy, who noted that large sections of “Crown Lands” which had not been claimed as *kuleana* [family homestead property] during the Māhele (1848 and later) were given by the Kingdom to various ranchers. The *kiawe* tree was imported and cultivated around 1840 as a source of cattle feed, and the low plains were soon covered in *kiawe* forests (Handy and Handy 1972:510-511). In this manner, upland agricultural pursuits gradually gave way to ranching activities. A 1933 map shows the APE and surrounding lands labeled as grazing lots (see Figure 13).

3.1.4.1 Sugar Cultivation

Hawaiian sugar plantations played a crucial role in establishing global consumer capitalism. Missionary ideologies that define life, land, and labor as expendable bred the foundation for plantation economics; a system where expansive monocrop production, international trade, profits and the rhythm of the factory come to dominate all social and political life. In Hawaii, plantation agriculture emerged as the premier colonizing force as just five companies, Castle & Cooke, Alexander & Baldwin, C. Brewer & Co., American Factors, and Theo H. Davies & Co. (known colloquially as “the Big 5”), maintained complete control over Hawai‘i’s economy for nearly 100 years. Such a thorough consolidation of political and commercial power ensured that many of Hawai‘i’s social and commercial institutions operated solely for the benefit of the corporate sugar industry, with plantations, utility companies, shipping companies, railroads, schools and banks all controlled either directly by the Big 5, or as part of their interlocking network of boards of directors (MacLennan 2014:83).

Between 1840 and 1940, vast private fortunes were made within this system, and similar systems quickly spread throughout the globe, sparking widespread cultural and environmental degradation. An explosion of industrial and commercial development also occurred in Hawai‘i at this time, with sugar plantations and their surrounding towns coming to resemble the industrial centers of the United States and Europe. Dense populations, mills, refineries, and transplanted peoples, plants, and animals quickly came to dominate the local Hawaiian landscape and still do to this day (MacLennan 2014:4).

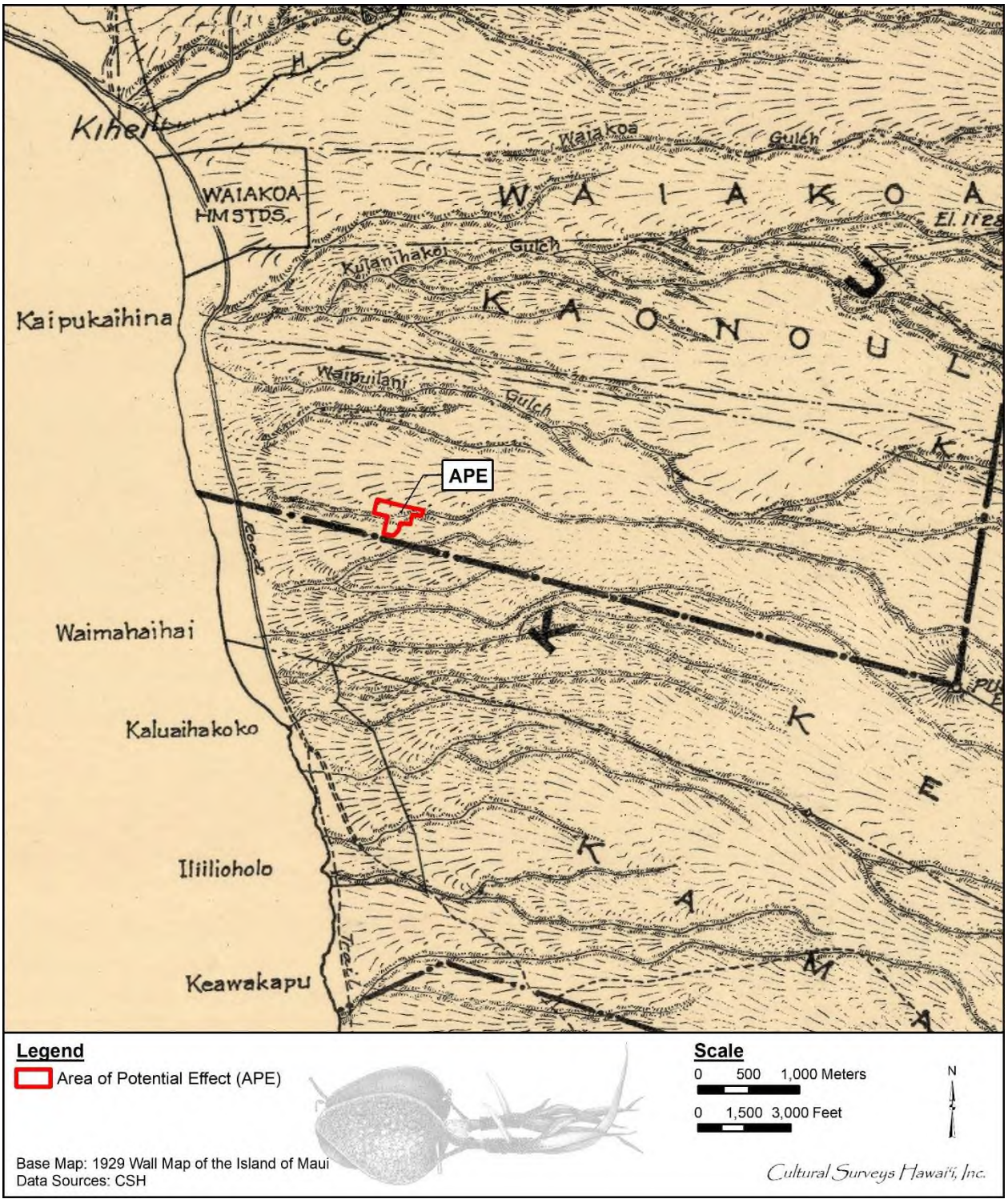


Figure 12. Portion of a Wall (1929) map of Maui showing Waiakoa Homesteads and a segment of HC&S railroad north of the APE

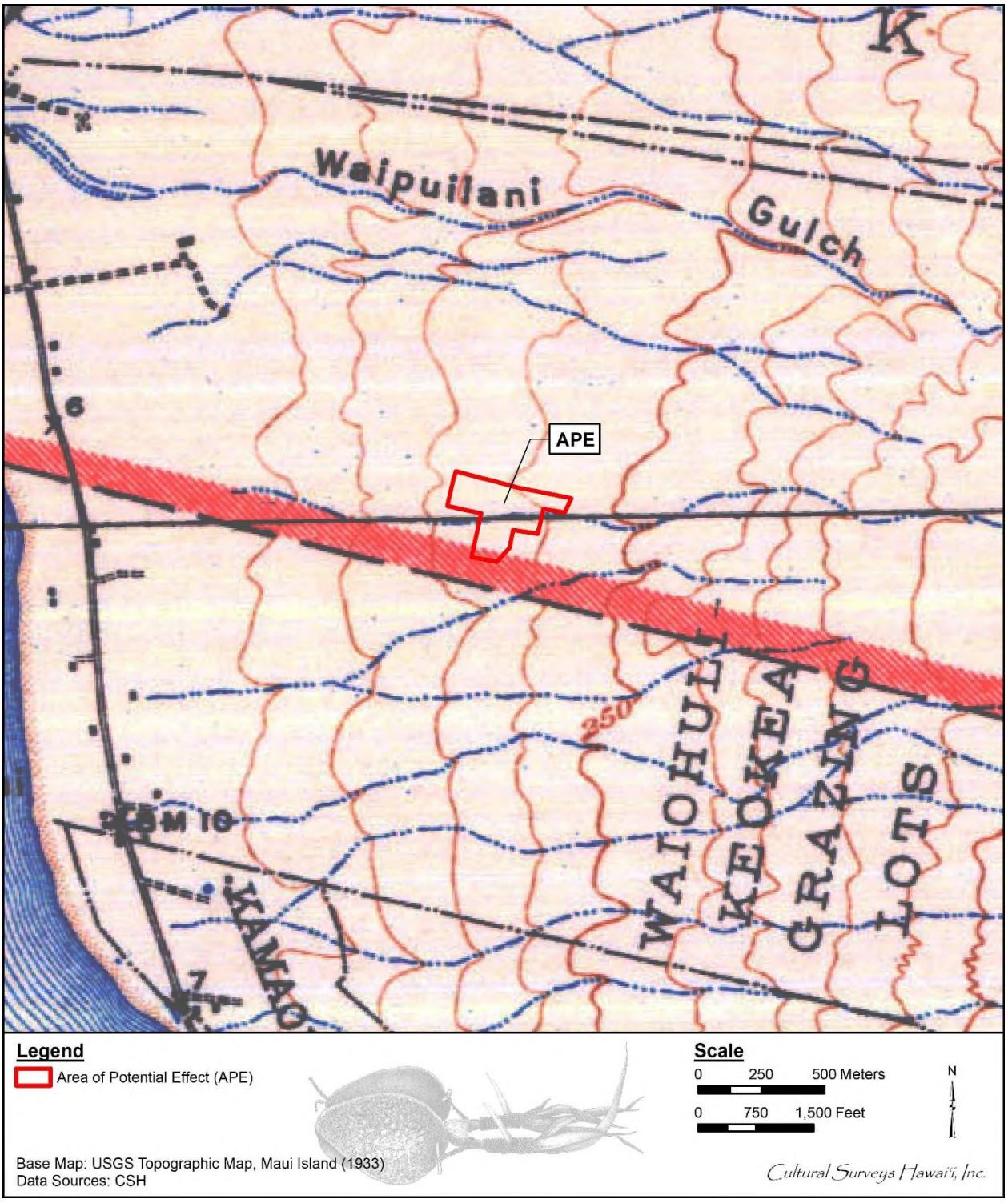


Figure 13. Portion of a 1933 USGS topographic map of Maui showing the APE south of Waiokoa Homesteads, north of Kama‘ole Homesteads, and within and surrounded by grazing lots (U.S. Geological Survey 1933)

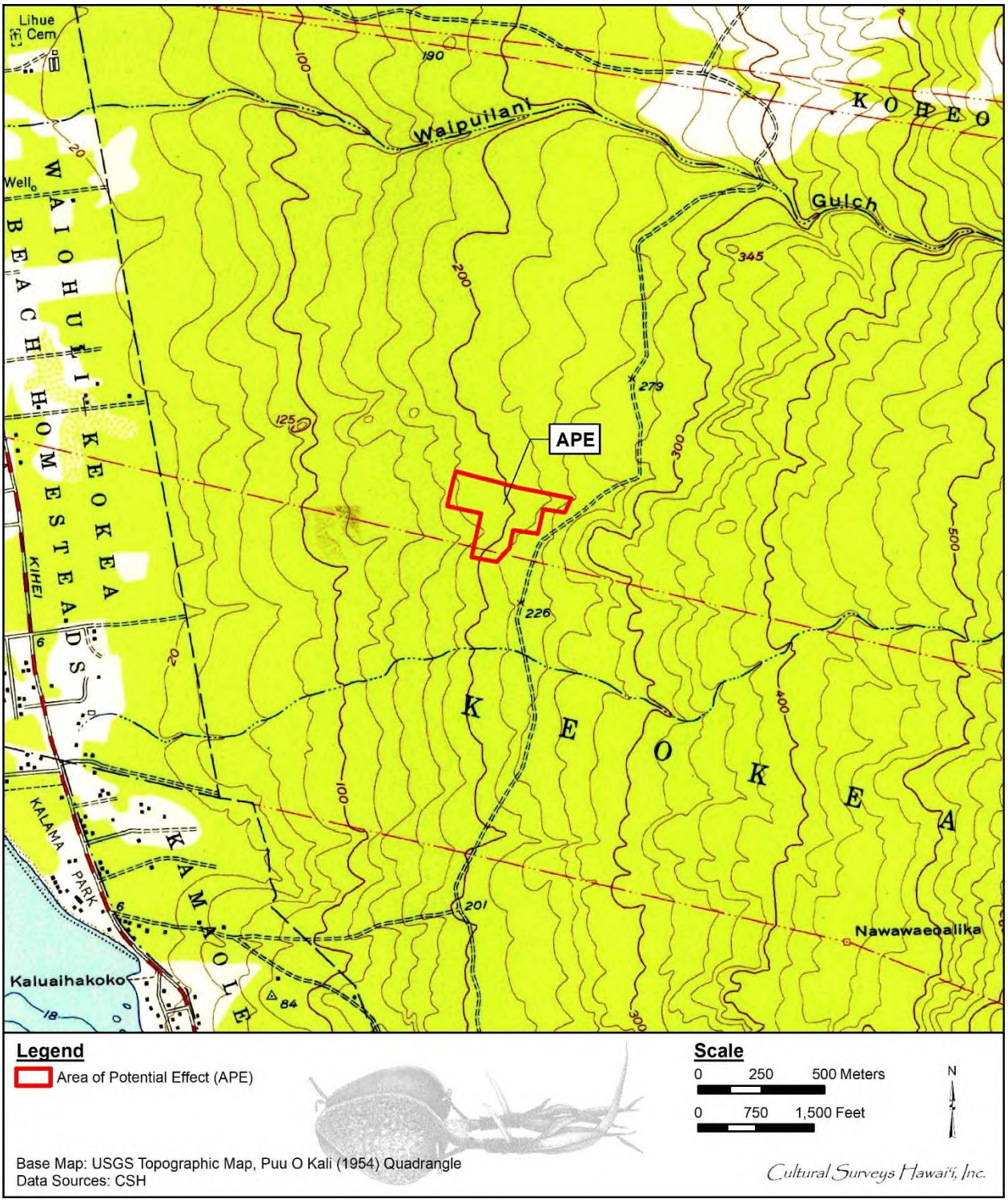


Figure 14. Portion of 1954 Puu o Kali USGS topographic quadrangle showing Hawaiian homesteads along coastal areas north (Waiokoa), west (Waiohuli-Keokea Beach), and south (Kama‘ole) of the APE (U.S. Geological Survey 1954)

In late 1898, plantation economics reached the leeward shores of Maui after the discovery of a large underground reservoir of freshwater. The reservoir was located just inland from the coast in North Kīhei, between Keālia Pond and the Waiakoa Homestead Lands. In 1898, sugar prices were rising, as were tensions between the United States and Spain. With the fervor for the Spanish American War at its peak, Henry P. Baldwin of HC&S saw an opportunity to expand his profits. Baldwin struck a partnership with O‘ahu businessman Benjamin F. Dillingham to convert Lorrin A. Thurston’s landholdings in Kīhei into a large sugar enterprise (Dean 1950:62). Then, 60,000 shares (at $50 per share) were quickly capitalized and the Kīhei Plantation Company (KPC) was born. Soon after, a 60-ft well was drilled vertically through the Honomanū basalts and then tunneled laterally to tap freshwater for the new plantation.

However, due to mismanagement and poor ecological understanding, the underground reservoir was fully depleted just four years after drilling. Up to that time, sugar cultivation within the central isthmus of Maui was centered around the main towns of Wailuku and Kahului, where water from the West Maui Mountains was readily available. However, through the construction of an elaborate network of bridges, tunnels and ditches, KPC established a system that diverted nearly 10 million gallons of upland water per day to meet the needs of their 4,873 acre sugar operation (Gilmore 1936). In this system, West Maui Mountain water was used to irrigate fields as far away as Mā‘alaea. Water from the windward rain belt of Kailua also ran through a network of ditches from East Maui to Pā‘ia, to irrigate fields as far as Pu‘unēnē (Wilcox 1996).

The ditches used a series of siphons to propel water a distance of 21.9 miles, through and across gulches as deep as 350 ft deep. One such ditch as named after HC&S manager William J. Lowrie. The Lowrie Ditch brought additional water to the Kīhei plains from the Pāpa‘a‘ea Reservoir. The siphoned water was quickly commodified and divided, one tenth going to Pā‘ia Plantation (an 11/20ths share), another tenth to Haikū Plantation (a 9/20ths share), and the remainder to Kihei (Thrum 1900).

More water was required from East Maui watershed. In 1901, Samuel T. Alexander ordered the construction of a new ditch, tapping the water sources from Nāhiku to Honomanū. Kihei Plantation Company would receive yet another 2/9ths of the capacity from the enterprise (Dean 1950).

The plantation in Kīhei would ultimately fail in 1908, but not before Baldwin had made his fortune, and not before KPC’s irrigation systems had drastic and irreversible effects on Maui’s freshwater ecosystem. The lands of Kihei Plantation Company were divided up between five new subsidiaries of HC&S: Kailua Plantation Company (994 acres); Kalialinui Plantation Company (923 acres); Kula Plantation Company (996 acres); Makawao Plantation Company (982 acres); and Pulehu Plantation Company (978 acres), which acquired the remaining acreage not included in the railroad right-of-way. Water rights reverted to HC&S, and were reapportioned between the new plantations (Dean 1950).

3.1.4.2 Railway Operations

Kihei Plantation Company also constructed a railway to move their cane. The sugar agency of William Dimond & Company placed an order for a locomotive from the Baldwin Locomotive Works in Philadelphia. The order was placed April 1899, and the plantation locomotive “Haleakala” was built and sent on to Maui (Condé and Best 1973).

By March 1900, the first annual report of the Kihei Sugar Company stated, “It was our intention to complete the main [rail]road only as far as Camp #2, or for about 2 miles, but as the development of Camp #3 required pushing on of the road one and a half miles further, this has been done, having been completed the 15th of February” (Condé and Best 1973:230). An additional six miles of track connected the Kīhei wharf to the various well pumping stations, and north to meet up with HC&S track (Condé and Best 1973). Establishing the railroad at Kīhei made possible harvesting and transporting over 2,000 tons of sugar in a single year (Figure 15) (Dean 1950).

The laying of the railroad and the cultivation of the sugar cane was performed primarily by Japanese field labor. Kīhei’s plantation Camp #1 was set up inland of the Kīhei wharf and mooring pier. Two stables and a plantation store were located at Camp #1. Hospital services were provided by HC&S in Pu‘unēnē. Kihei Camp #3 was located 2.5 miles north of Kihei Camp 1 at Kolaloa Gulch, along the North Kīhei line of the HC&S railroad (Shoemaker 1907).

When the plantation was forced to close in 1908 due to diminished returns and underdeveloped water sourcing, the entirety of the company’s rolling stock was absorbed by a subsidiary of HC&S. This included a Baldwin 10-ton locomotive, two large flat cars, and approximately 235 cane cars. After this merger, the rolling stock of the KPC was absorbed into the larger system that connected Kahului and Kīhei to plantations further east of the central isthmus. After acquiring the locomotive, the name was changed from “Haleakala” to “Hawaiian Commercial & Sugar #4,” becoming renamed again in 1910 as “Kihei” (Figure 16) (Condé and Best 1973:230-231). A portion of HC&S railroad into Kīhei is depicted in 1929 and 1933 maps of Maui (see Figure 12 and Figure 13).

3.1.5 1900s

While World War I had little impact on Maui, World War II brought with it a significant military presence. U.S. Marines resided and trained at Camp Maui in Kokomo, and held training maneuvers on Kaho‘olawe and at Ma‘alaea Bay, including amphibious landing training along beaches and other exercises carried out in *kiawe* groves east of the bay (Allen 1950; Speakman 1978). U.S. Navy presence on Maui included the Combat Demolition Training Station at Kama‘ole and two naval air stations, one at Pu‘unēnē and the other at Kahului (Allen 1950). The training station at Kama 'ole was responsible for research work at Kīhei as early as 1940.

The Kīhei shoreline served as an invaluable training ground for amphibious warfare in the Pacific during World War II. Of all the Navy training in the Hawaiian Islands, probably the most rigid and intense was that of the Combat Demolition Training Station at Kama‘ole, Maui, where, after the autumn of 1943, 40 teams of 100 men each were prepared for reconnaissance and demolition work (Allen 1950:191). As early as May 1942, servicemen from the 108th Infantry Regimental Combat Team of the 27th Infantry Division guarded the south Maui beach areas (Love 1949:19). Structures that remain from the World War II garrison forces include intact reinforced concrete pillbox positions, one of which is located at the beach adjacent to the Hale Hui Kai Condominium on Keawakapu Beach and another at the seaward edge of Ulua Beach in Wailea.

Statehood in 1959 resulted in the adoption of new civic plans for South Maui. Beginning in the 1960s, development of the coastal Kīhei area shifted from sugar plantation and related railroad operations to vacation condominium development. Kihei underwent a rapid residential and commercial development beginning in the 1970s. Clark (1980:49) notes that the groundwork for this development was established in the late 1950s when investors began purchasing coastal property. However, the construction boom of high rise apartments, hotels, and condominiums and

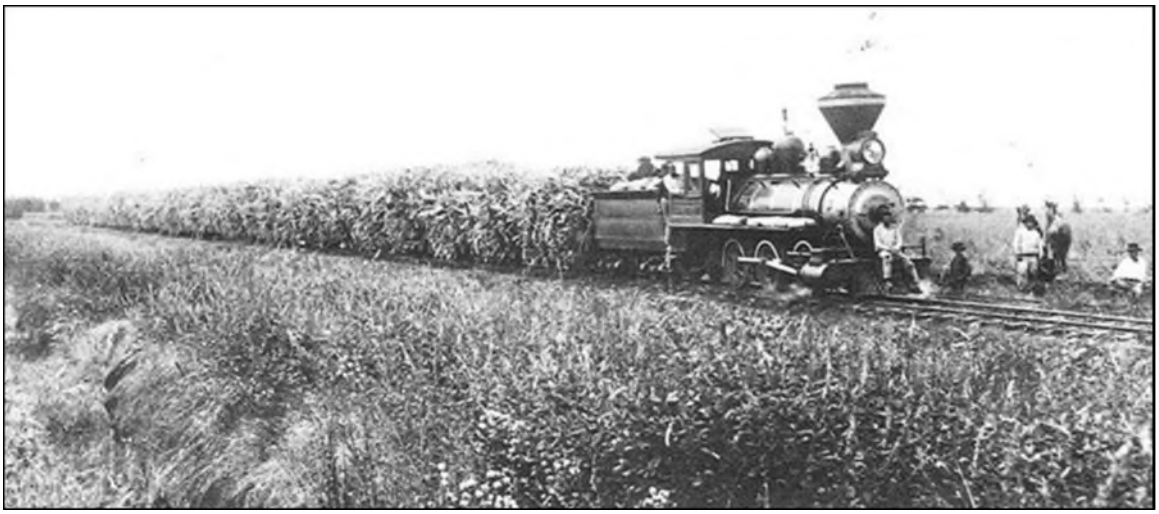


Figure 15. KPC locomotive “Haleakala” transporting cane from Kīhei fields to the mill at Pu‘unēnē, circa 1905 (Condé and Best 1973:231)

Figure 16. KPC locomotive servicing HC&S mill as “Hawaii Commercial & Sugar No. 4” (Condé and Best 1973:231)

corresponding shopping centers, restaurants, and real estate offices did not occur until the 1970s. Along with the condominiums and "classy" hotels (Maui's "hallmark") came the construction of millionaire homes in the dry hills overlooking Kihei and the view beyond of Kaho‘olawe and Moloka‘i (Speakman 1984:188). Speakman (1984:188-189) comments on the congestion and overcrowding that resulted from this development:

> It was partially blamed on the fact that Kihei was owned by many proprietors or speculators, each with individual plans uncoordinated with general planning, and partly on the failure of the County planners to hold the line against the runaway development. Kihei became the model for the wrong way to go about expansion. (Speakman 1984:188-189)

Between 1970 and 1996 vacation rental units increased from 2,641 to 17,442. The leeward coasts, including Kīhei, became popular tourist destinations (Juvik 1998:14). Groundbreaking for Pi‘ilani Highway, which constitutes a portion of the current APE, occurred in October 1979 (The Honolulu Advertiser 1979). This bypass highway was constructed to ease the congested Kihei traffic which resulted from commercial and residential development and expansion of the tourist industry. A series of aerial images shows development of areas within and surrounding the APE from 1950 until the year 2000 (Figure 17 through Figure 20).

As discussed by Wong Smith, agriculture and cattle raising continued to be important activities in the Kula area through the twentieth century (Brown and Haun 1989:C-7). Haleakala Ranch Co., Kaonoulu Ranch Co., Ltd., Maui Land and Pineapple Co., Ltd., the State of Hawai‘i, and Hawaiian Homes Lands were major landholders in the area. Ulupalakua Ranch, Inc. is another significant ranching enterprise in the Kula area. During the 1970s, Kula produced the majority of Hawai‘i's locally grown produce; livestock ranches comprised most of the remaining land use. At present, non-residential areas are still in use as centers of agricultural production, particularly in the "potato district" of Kula (Donham 1992:5). Haleakala, Ulupalakua and Kaonoulu Ranches are also still in operation. Lands surrounding the APE were still being used as grazing grounds for cattle in the year 2000 (Kikiloi et al. 2000).

3.1.6 Contemporary Land Use

3.1.6.1 Maui Research and Technology Park

The current APE is near Lipoa Parkway, which transects a portion of the Maui Research and Technology Park, a 400-acre mixed-use development project east of Pi‘ilani Highway and Elleair Golf Course (Maui Research and Technology Park 2011c), also known as Maui Nui Golf Course. Planning for the Maui Research and Technology Park began in the 1980s with "local private and public sector leaders intent on economic diversification and job creation" (Maui Research and Technology Park 2011a; Tanji 1986).

The first businesses and building opened in 1992 (Tanji 1992). Additional tenants secured space in the following years. Currently, five buildings are open, which includes approximately 180,000 sq ft of office, laboratory, and data center space (Maui Research and Technology Park 2011c). About 400 people are presently employed at over 20 companies at Maui Research and Technology Park (Maui Research and Technology Park 2011c), including various commercial, technological, and medical organizations as well as a Kihei Charter School campus.

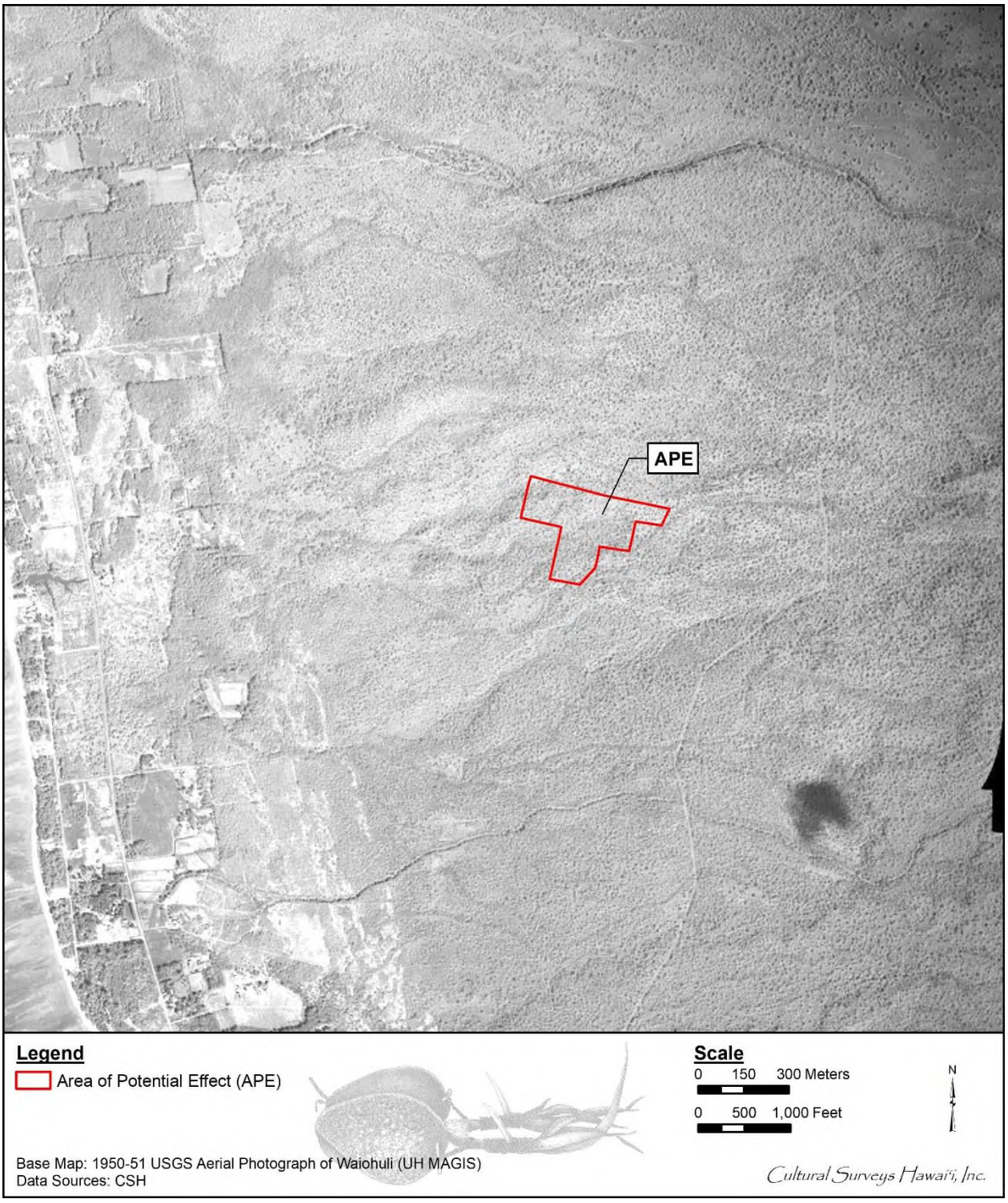


Figure 17. Aerial image showing the APE undeveloped in 1950-51; tracts of land *makai* from the APE appear to be in initial stages of development (U.S. Geological Survey 1950-51)

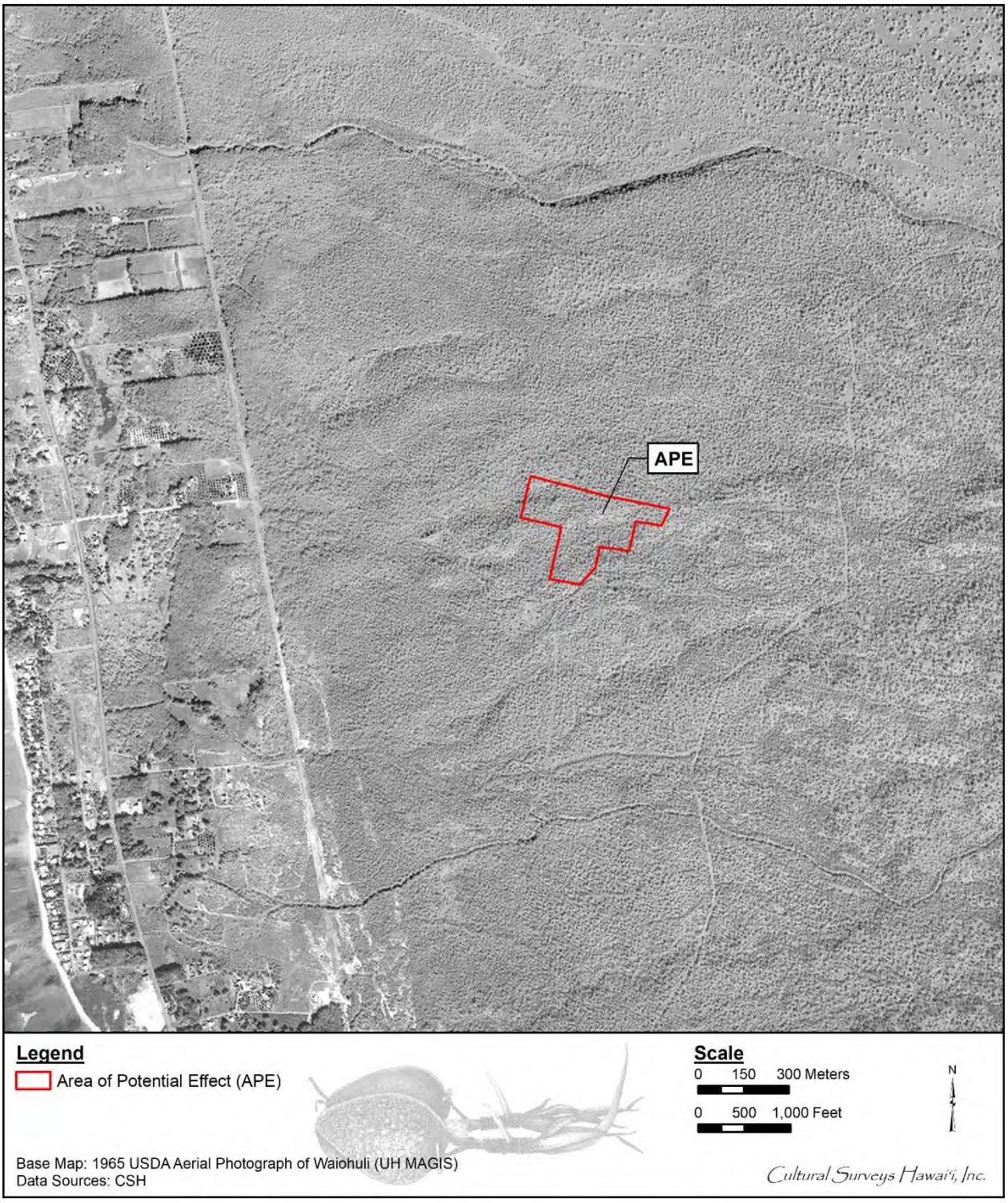


Figure 18. A 1965 aerial image showing the APE undeveloped and some development minor developments *makai*, along the coast (USDA 1965)

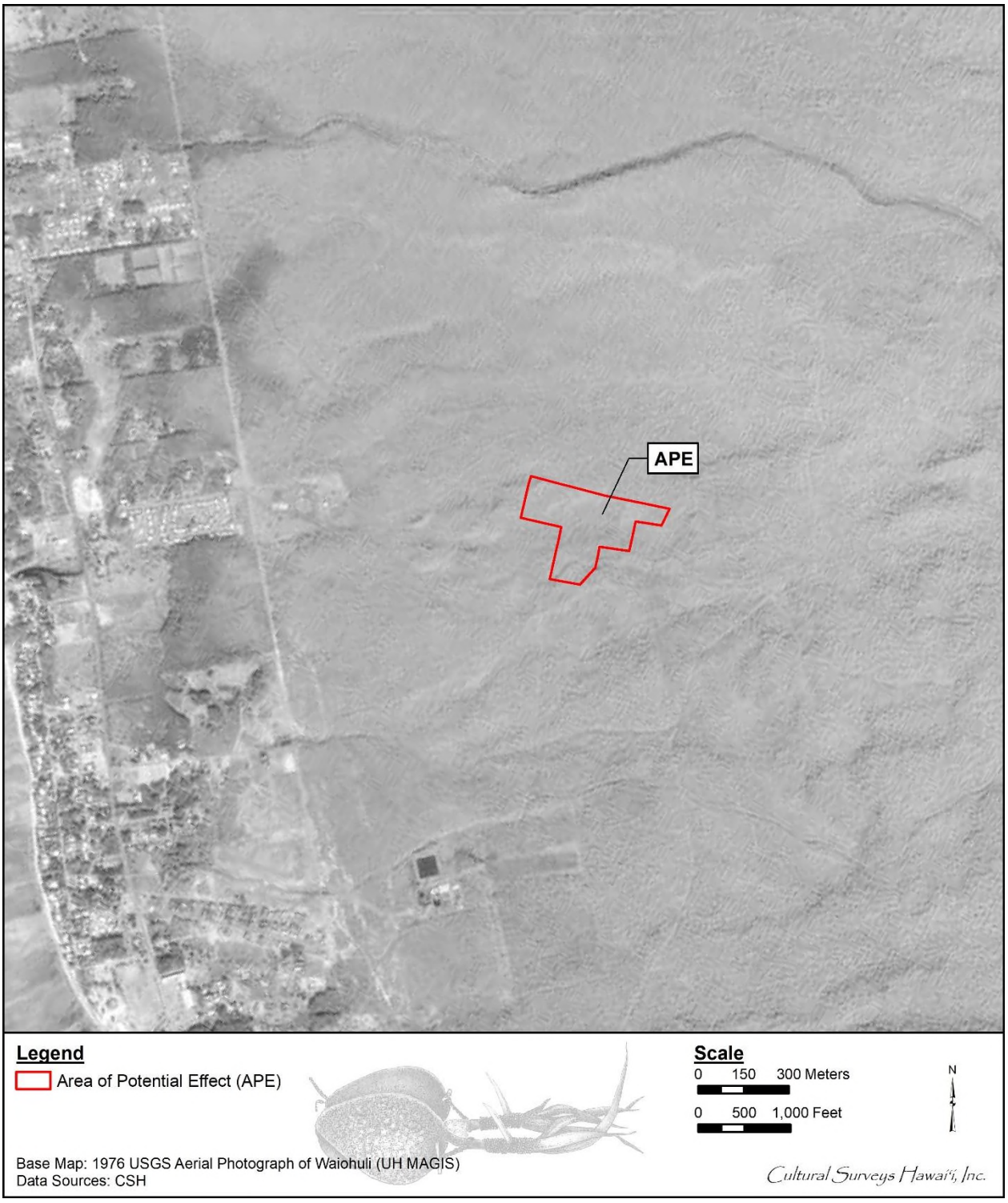


Figure 19. A 1976 aerial image showing the APE undeveloped, though with some development adjacent to its western border; coastal development has increased since the prior decade (U.S. Geological Survey 1976)

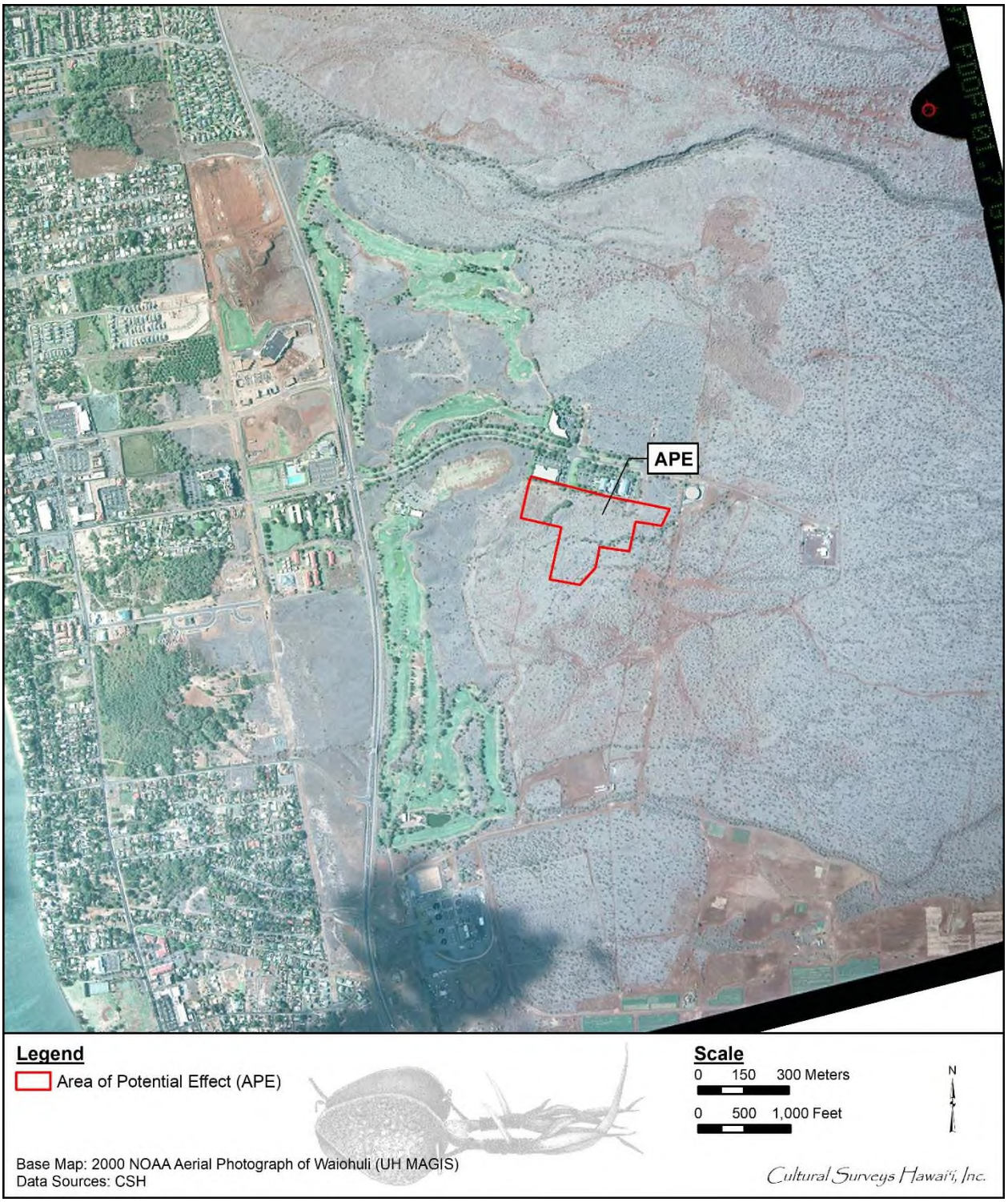


Figure 20. A 2000 aerial image showing paved roadways within the APE, developments of adjacent areas of Maui Research and Technology Park, and moderate to heavy developments along coastal areas (NOAA 2000)

Future plans for development include areas for knowledge industry expansion, residential construction, additional mixed-use center development, open spaces, parks, and trails and associated hardscape, landscape, and utility infrastructure (Maui Research and Technology Park 2011b). These improvements are expected to increase a diverse job capacity by over 5,000 new employees. The master plan is still being updated; however, “land and space are available in the interim for projects that are a good fit with the Park’s plans for the future” (Maui Research and Technology Park 2011a).

3.2 Previous Archaeological Research

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1917; Walker 1931). These studies tended to focus on the generation of descriptive lists of large-scale architecture or traditional ceremonial *heiau* sites. No *heiau* or other archaeological sites were documented in the immediate vicinity of the current APE during these early studies.

Following the passage of the National Historic Preservation Act in 1966 and HRS Chapter 6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. Since 1976, lands surrounding the current APE have been subject to a variety of archaeological studies, including reconnaissance, AIS investigations, and data recovery. Three of these prior studies have included at least a portion of the current APE. No historic properties have been previously identified within the current APE. Historic properties previously identified near the vicinity include pre-Contact and/or historic features used for ranching, agriculture and/or habitation. The following subsections and Table 2 summarize known archaeological studies that have been conducted within the APE and vicinity. Locations of these studies and previously identified historic properties area depicted on Figure 21 and Figure 22, respectively.

3.2.1 Cox (1976)

On 20 and 29 January 1976, Archaeological Research Center Hawaii, Inc. (ARCH) conducted a surface survey of the proposed Pi‘ilani Highway Right-of-Way; subsequent testing and salvage excavations were carried out on 17 April 1976 (Cox 1976). The study area transects a portion of the current APE. Six historic properties were identified: SIHP # 50-50-09-0219, an *ahu* (stone marker) interpreted as either a boundary marker or possible monument burial; SIHP # -0220, an alignment of unknown function; SIHP #s -0221 and -0222, historic house complexes; SIHP # -0223, a pair of low, C-shaped shelter walls; and, SIHP # -0224, a temporary dwelling cave with an associated fire pit. These historic properties are all beyond the immediate vicinity of the current APE and are not depicted on Figure 22.

3.2.2 Cordy (1977)

From 18 and 22 July 1977, the Environmental Resources Section of the U.S. Corps of Engineers, Pacific Ocean Division conducted the fieldwork component of an archaeological reconnaissance survey and literature search for the Kihei Flood Control Project (Cordy 1977). The flood control APE consisted of coastal sections of nine gulches and a 200-ft wide transect along 6.5 miles of the Pi‘ilani Highway corridor and transected seven *ahupua‘a*, including Waiohulu Ahupua‘a and a portion of the current APE. Thirty-eight historic properties were identified; four

Table 2. Previous archaeological studies conducted within the APE

Reference	Type of Study	Location	Results (SIHP # 50-50-10)
Cox (1976)	Surface survey, testing, and salvage excavations	Pi‘ilani Hwy, including a portion of the APE	Identified six historic properties, SIHP #s 50-50-09-0219 through -0224, including an *ahu* (stone marker), an unknown alignment, two historic house complexes, a pair of low, C-shaped shelter walls, and a temporary dwelling cave with an associated fire pit; though none are within the current APE vicinity
Cordy (1977)	Archaeological reconnaissance and literature search	Included a segment of Pi‘ilani Hwy containing a portion of the APE	Identified 38 historic properties; four were in the immediate vicinity of the current APE: SIHP #s -1706, mound and wall; -1707, low enclosure; -1710, high-walled enclosure; and -1712, low enclosure; SIHP #s -1707, -1710, and -1712 were interpreted as pre-Contact temporary housing; SIHP # -1706 function is unknown
Miura (1982)	Archaeological reconnaissance	Approximately 190 acres in Kihei; TMK: [2] 2-2-002:042 por.	Identified nine historic properties; two were in the immediate vicinity of the current APE: Site 9, a loosely stacked alignment, and Site 1, an L-shaped wall and a C-shape, later designated as SIHP #s -2476 and -2523, respectively (Donham 1990a, b)
Kennedy (1986)	Preliminary reconnaissance	Area for a proposed golf course at TMK: [2] 2-2-002; included the entire current APE	No historic properties identified
Donham (1990a)	AIS	Piilani Residential Community; TMK: [2] 2-002:042 por.	Identified 12 historic properties within the APE vicinity: SIHP # -1709, a low agricultural enclosure previously identified by Cordy (1977) as a temporary habitation feature consisting of two low enclosures; and SIHP #s

Reference	Type of Study	Location	Results (SIHP # 50-50-10)
			-2513 through -2523, agricultural and/or habitation features
Donham (1990b)	Archaeological data recovery	Piilani Residential Community; SIHP # 50-50-10-2475	Interpreted SIHP # -2475 as an agricultural small stone alignment terrace complex
Fredericksen et al. (1993)	AIS and data recovery	Lokelani Intermediate School	Identified SIHP # -3193, pre-Contact rockshelter
Fredericksen and Fredericksen (1995)	AIS	Pi‘ilani Hwy	Identified SIHP # -3529, rockshelter (likely pre-Contact) beyond the APE vicinity
Hammatt and Shideler (2000)	AIS	Approximately 5 acres for a proposed algae farm; TMK: [2] 2-2-002:042 por.	No historic properties identified
Kikiloi et al. (2000)	AIS	20 acres for a proposed algae farm; TMK: [2] 2-2-002:042 por.	No historic properties identified
McDermott (2001)	AIS	Proposed area for Pi‘ilani Mauka Detention Basin No 1.; TMK: [2] 2-2-024:014 por.	Identified SIHP #s 50-50-09-5072 through -5078, traditional Hawaiian temporary habitation and/or marker features
Dega (2008)	AIS	Undeveloped parcels for the MRTP Project; TMKs: [2] 2-2-024:012 por., 014 por., 016 por., 017 por., and 054 por.	Identified five historic properties; SIHP #s -6239 and -6240 are modified outcrops, and -6587 is an L-shape wall, all post-Contact era; SIHP # -6241 is a linear rock wall and traditional pre-Contact boundary wall, and SIHP # -6588 is a complex of three pre-Contact rock mounds (traditional markers)

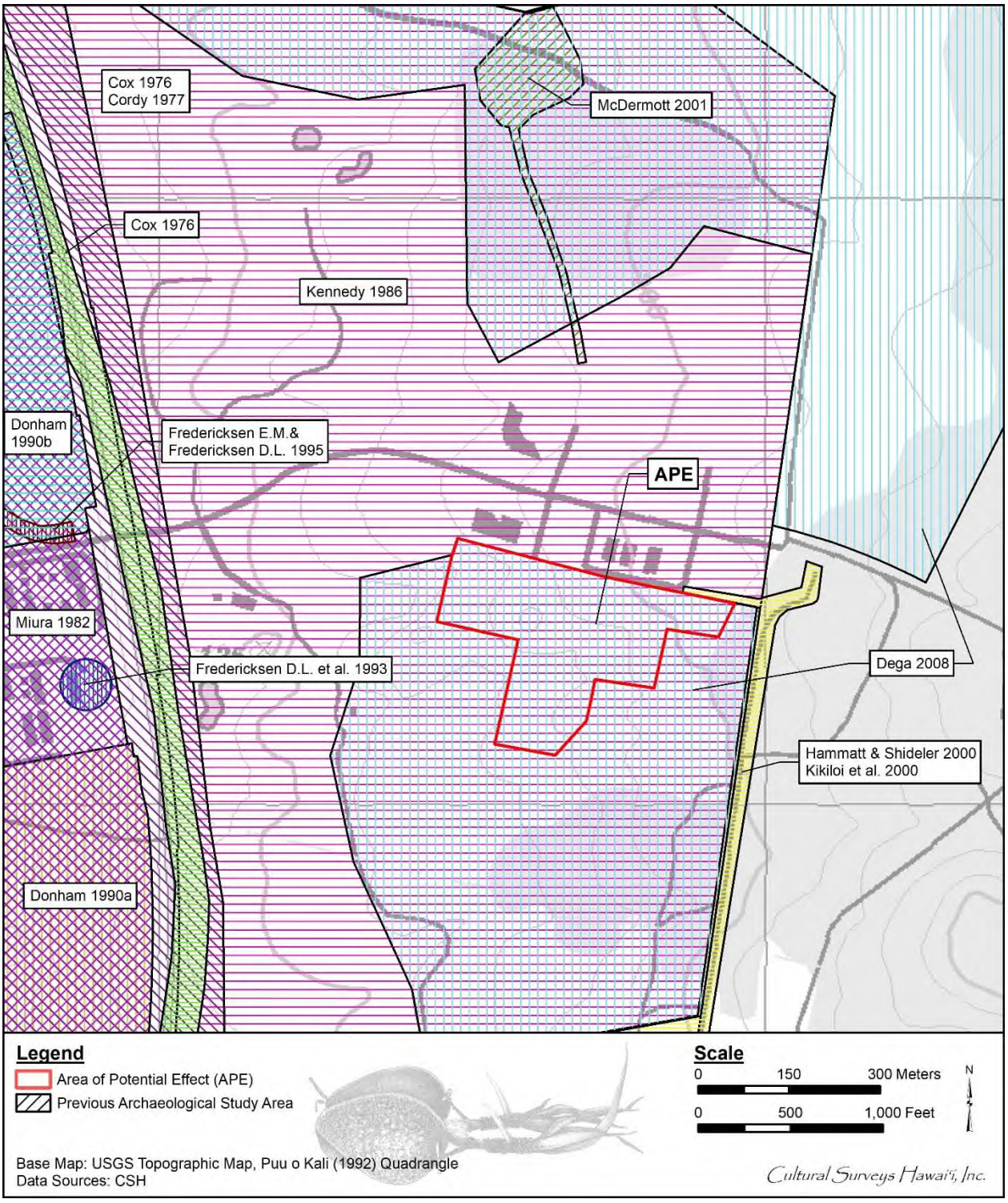


Figure 21. Portion of the 1992 Puu o Kali USGS 7.5-minute topographic quadrangle showing previous archaeological studies conducted within the APE and immediate vicinity (U.S. Geological Survey 1992a)

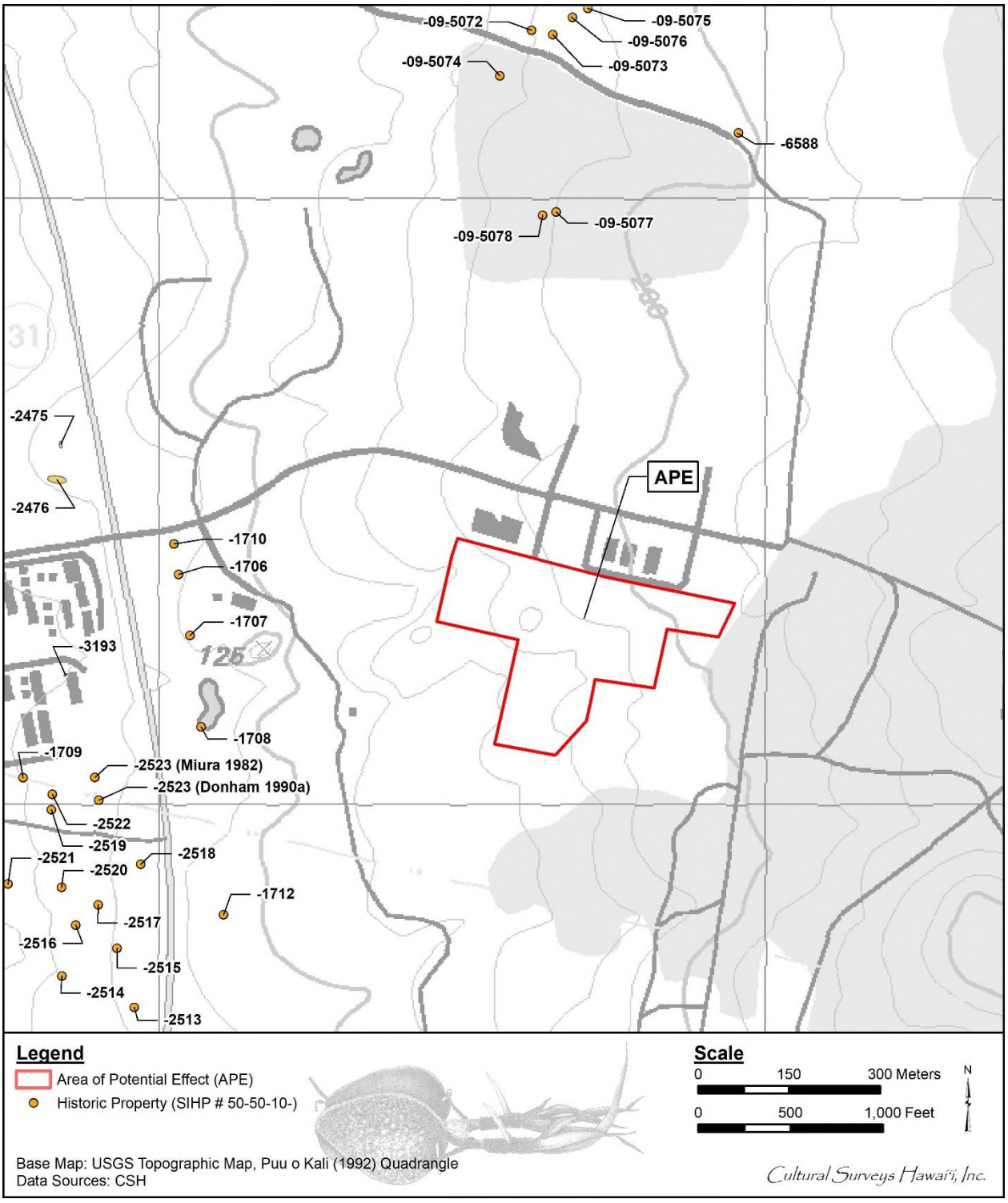


Figure 22. Portion of the 1992 Puu o Kali USGS 7.5-minute topographic quadrangle showing historic properties previously identified within the APE vicinity (U.S. Geological Survey 1992a)

of these historic properties, SIHP #s 50-50-10-1706, -1707, -1710, and -1712, were located within the vicinity of the current APE.

Cordy (1977:58) interpreted SIHP #s -1707, -1710, and -1712 as pre-Contact temporary housing sites. SIHP # -1707 is a low enclosure. SIHP # -1710 was identified as likely a ranch-related, high-walled enclosure “on sandy soil and against a high out-crop” located near the western extent of Lipoa Parkway (Cordy 1977:36), and SIHP # -1712 is a low rectangular enclosure.

SIHP # -1706 is a mound and wall of unknown function. Cordy (1977:59) notes that the mound is “associated with a wall and is adjacent to a temporary house [SIHP # -1707],” and it does not “have features characteristic of burials… Agricultural functions have been suggested for similar mounds, … but it has been difficult to prove this point. In a barren zone, where agriculture is largely unexpected… some unknown function seems likely.” Cordy (1977:60) provides a “barren zone utilization” hypothesis, which suggests that the temporary housing sites were “rest stops along transportation routes leading to inland portions of the ahupua‘a,” and SIHP # -1706 would also have been associated with such a trail system. However, no other evidence of trails was identified during the reconnaissance.

3.2.3 Miura (1982)

From 5 to 7 June 1982, Environmental Impact Study Corp (EISC) conducted an archaeological reconnaissance of approximately 190 acres comprising a portion of TMK: [2] 2-2-002:042 (Miura 1982). While a total nine historic properties were identified during the study, only two were documented in the immediate vicinity of the current APE. Miura (1982) identified these two historic properties as Site 9 and Site 1, which were later designated as SIHP #s -2476 and -2523, respectively (Donham 1990a). SIHP # -2476 is a loosely stacked alignment, and SIHP # -2523 consists of an L-shaped wall and a C-shaped alignment. SIHP # -2523 was documented by Paul H. Rosendahl, Ph.D., Inc. (PHRI) in 1990 (Donham 1990a), although the location was recorded as a few meters south of that given by Miura (1982). Both locations are plotted on Figure 22.

3.2.4 Kennedy (1986)

In February 1986, Archaeological Consultants of Hawaii, Inc. (ACH) completed a preliminary reconnaissance of a proposed golf course at TMK: [2] 2-2-002 (Kennedy 1986), which included all of the current project area. The study was conducted on foot and in a four-wheel-drive vehicle, with a greater focus on areas near Waipuilani Gulch, which was dry at the time. Visibility was high during the reconnaissance due to arid conditions and sparse vegetation. No historic properties were identified. Kennedy (1986) concluded that encountering historic properties during development would be unlikely; as such, no further archaeological work was recommended.

3.2.5 Donham (1990a)

From November 1989 through January 1990, PHRI conducted an AIS for the Phase II increment of the Piilani Residential Community Project at TMK: [2] 2-002:042 por. (Donham 1990a). Sixteen historic properties were identified, which included three historic properties (SIHP #s -1709 through -1711) that were previously identified by the U.S. Corps of Engineers, Pacific Ocean Division (Cordy 1977) and 13 newly identified historic properties (SIHP #s -2512 through -2524). Twelve of the historic properties, SIHP #s -1709 and -2513 through -2523, documented

by Donham (1990a) were located in the vicinity of the current APE, south of the Lipoa Parkway/Pi‘ilani Highway intersection.

Seven of these 12 historic properties were interpreted as agricultural sites: SIHP #s -1709 and -2513 are low enclosures; SIHP # -2515 is a modified outcrop; SIHP # -2518 is a complex with two terraces, one rock pile, and one alignment; SIHP # -2519 is a terrace; SIHP # -2520 is a complex with three terraces and one rock pile; and SIHP # -2523 is a complex with two C-shapes. Three of the historic properties were identified as habitation features: SIHP # -2514 is a platform, and SIHP #s -2517 and -2521 are midden scatters. A mix of agricultural and habitational function was determined for the remaining two historic properties: SIHP # -2516 is a complex of two enclosures (one for agriculture; one for temporary habitation), and SIHP # -2522 is a complex with a box C-shape and a terrace.

Donham (1990a:8) describes the most common observed terraces as “stepped soil flats defined by aligned boulders and cobbles.” While an agricultural function is interpreted for these terraces and other features, the study does not indicate any specific type of agriculture. Donham (1990a:12) also notes that C-shapes are often associated with World War II features; however, due to the condition of the C-shapes identified during this project, these shapes “cannot be readily associated with modern military construction.”

Discrepancies have been noted between the documentation of SIHP #s -1709 and -1710 by Donham (1990a) and the previous documentation by Cordy (1977). SIHP # -1709 was described by Cordy (1977) as two low enclosures that functioned as temporary habitation features in an area south and beyond the current APE vicinity. However, Donham (1990a) documented the location of SIHP # -1709 approximately 300 m southwest of the current APE and identified it as one low agricultural enclosure. The position of SIHP # -1710 on Figure 22 reflects the point where Cordy (1977) recorded it, since Donham (1990a) identified this historic property further southwest and beyond the immediate APE vicinity. Cordy (1977) and Donham (1990a) both identified the historic property as a high-walled enclosure; however, Cordy (1977) suggested that SIHP # -1710 was associated with ranching, while Donham (1990a) interpreted it as an agricultural and temporary habitation feature.

3.2.6 Donham (1990b)

On 2 and 5 January 1990, PHRI conducted archaeological data recovery at SIHP # -2475, an agricultural complex of small stone alignments (Donham 1990b), located approximately 75 m northwest of the current APE. SIHP # -2475 was previously identified as consisting of two cairns (Features A and B) during an AIS conducted by PHRI in May 1989 for the Phase I Piilani Residential Community Project. The report for this project has not been made available to CSH. Donham (1990b) reports that limited subsurface investigations occurred in 1989, including the disassembly of a cairn (Feature A), under which potential evidence of a subsurface feature, possibly a burial, was encountered, prompting a recommendation for additional data recovery and provisional preservation. The data recovery investigation resulted in the surface observation of stone alignments interpreted as “the eroded remains of a terrace complex,” and the previously identified cairns (Features A and B) were determined to be “artificial terraces that were subsequently built up with surface rocks during the clearing of adjacent soil flats,” which “may also have functioned as planting mounds” Donham (1990b:6). A small piece of waterworn coral

and a used basalt flake were observed at shallow depths below Feature A. No significant subsurface cultural deposits were encountered. Further archaeological work was not recommended.

3.2.7 Fredericksen et al. (1993)

In July and August 1993, Xamanek Researches conducted an AIS and data recovery for Lokelani Intermediate School at proposed on-campus sites for a shower and locker room building and a playcourt (Fredericksen et al. 1993). The study identified SIHP # 50-50-10-3193, a pre-Contact rockshelter with associated midden and artifacts including various species of shell, coral files, adze fragments, a possible hammerstone, and more than 100 volcanic glass flakes. In addition, a human molar, incisor, canine, and phalanx were identified. Regarding these human remains, Fredericksen et al. (1993:7) noted that “each was found in a different horizontal and/or vertical location, which suggests casual deposition rather than intentional burial.” Artifact analysis combined with radiocarbon dating indicated that SIHP # -3193 was used for temporary habitation during the late pre-Contact period. Approximately 75% of the rockshelter floor was excavated; therefore, Xamanek Researches determined that the site was no longer significant and would not yield additional information. However, archaeological monitoring was recommended due to the possibility of a sealed lava tube being present.

3.2.8 Fredericksen and Fredericksen (1995)

In May 1994, Xamanek Researches conducted an AIS along the 150-ft wide proposed corridor for Road C, a road connecting South Kihei Road to Pi‘ilani Highway (Fredericksen and Fredericksen 1995). The study identified SIHP # -3529, a low overhang rockshelter containing midden, coral tools, fish bone tools, basalt flakes, and volcanic glass flakes. Based on the types of artifacts recovered and data collected from previous archaeological studies that identified similar rockshelters nearby, SIHP # - 3529 was considered likely a pre-Contact temporary habitation site. Fredericksen and Fredericksen (1995:19) note that DLNR accepted a data recovery plan for SIHP # -3529 in June 1994, and a data recovery project was underway during the drafting of the AIS report. A report documenting the data recovery findings has not been made available to CSH. SIHP # -3529 was identified beyond the immediate vicinity of the current APE.

3.2.9 Hammatt and Shideler (2000)

On 31 January 2000, CSH conducted an AIS of approximately five acres for a proposed algae farm site at TMK: [2] 2-2-002:042 por. (Hammatt and Shideler 2000). Fieldwork consisted of a 100 percent coverage pedestrian survey, which included an access road that borders the southern portion of the eastern end of the current APE (see Figure 21). Evidence of recent bulldozing was observed along the corridor of this access road, and electric and utility lines were previously buried down the center of the road. Within the remaining portion of the surveyed area, the land had been altered for telephone lines and post 1950’s ranching activities. Evidence of these alterations included graded roads and bulldozer scarring on exposed bedrock surfaces. The presence of several cattle carcasses and bovine excrement indicated contemporary ranching land-use. No historic properties were identified. Further archaeological work was not recommended for the study area; however, an additional AIS was recommended for the adjacent lands proposed for expansion of the algae farm.

3.2.10 Kikiloi et al. (2000)

On 26 July 2000, CSH completed an AIS for the expanded 20-acre algae farm site at TMK: [2] 2-002:042 por. (Kikiloi et al. 2000). This survey was supplemental to the AIS conducted by CSH in January 2000 (Hammatt and Shideler 2000). As with the earlier study, the northern extent of this study area borders a portion of the eastern end of the current APE. Kikiloi et al. (2000) noted that the area had been altered by heavy machinery, likely within the 50 years prior to the survey. Bulldozer push-piles and excavations for utility installation, cleared roadways, and decaying cattle were observed during the study. No historic properties were identified, and no additional archaeological work was recommended.

3.2.11 McDermott (2001)

From 13 February through 2 March 2001, CSH conducted an AIS of the proposed Pi‘ilani Mauka Detention Basin No. 1 Project at TMK: [2] 2-2-024:014 por. (McDermott 2001). Fieldwork included a 100% pedestrian survey and controlled excavation within select features. Seven historic properties were identified: SIHP #s -5072, a modified outcrop enclosure and stacked stone cairn; -5073, a rectangular enclosure; -5074, a U-shaped enclosure and two stacked stone cairns; -5075, a C-shaped enclosure and stacked stone cairn; -5076, a complex that includes a modified knoll with terraces, enclosures, stacked stone cairns, and stone linear alignments; -5077, two low stacked stone mounds, one circular, single stone alignment, and an enclosure; and -5078, a stacked stone cairn.

SIHP #s -5072 through -5077 were interpreted as temporary habitation sites, while SIHP # -5078, along with the other identified stone cairns, were identified as markers. All of these historic properties were interpreted as traditional Hawaiian features. were No further work was recommended for SIHP #s -5072 through -5074. SIHP #s -5075 through -5078 were identified just outside the project area boundaries; therefore, an AIS was recommended for further investigation these historic properties.

3.2.12 Dega (2008)

In 2006 and 2008, Scientific Consultant Services, Inc. (SCS) conducted an AIS of multiple undeveloped land parcels (TMKs: [2] 2-24:012 por., 014., por., 016 por., 017 por., and 054 por.) totaling over 338 acres in Waiohuli and Keokea Ahupua‘a for the MRTP Master Plan Update (Dega 2008). Fieldwork included a 100% pedestrian survey and controlled excavation within selected features. Five historic properties were identified: SIHP #s -6239 and -6240 are post-Contact modified outcrops, SIHP # -6241 is a linear rock wall and traditional pre-Contact boundary wall, SIHP # -6587 is a post-Contact L-shaped wall, and SIHP # -6588 is a complex of three pre-Contact rock mounds (traditional markers). No further work was recommended for SIHP #s -6239, -6240, -6587, and -6588. However, SCS recommended that the landowner informally preserve the entirety of SIHP # -6241 (boundary wall) and orange construction fencing was installed around the undocumented rockshelters below Waipuilani Gulch during construction near the site.

Section 4 Results of Fieldwork

CSH conducted the fieldwork component of this AIS on 1 December 2020 and 3 February 2021 by CSH archaeologists Jonas Madeus, B.A., Jay Rapoza, B.A., Trevor Yucha, B.S., and Layne Krause, M.A., under the general supervision of principal investigators Josephine M. Yucha, M.S., and Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete. In general, fieldwork included 100% pedestrian inspection of the APE, GPS data collection, and written/photographic recordation. In addition to the archaeological fieldwork conducted by CSH, a geotechnical survey of the APE was conducted by Masa Fujioka & Associates that included six geotechnical test bores and three percolations tests. The results of the geotechnical study were supplied to CSH and are included within this document in order to assess the potential for subsurface stratigraphy and deposits.

4.1 Pedestrian Inspection Results

Approximately 95% of the APE had been surveyed previously by SCS during an AIS for the MRTP Master Plan Update. No historic properties were identified by this previous study within the APE (Dega 2008). As part of the current study, CSH completed a 100%-coverage pedestrian survey through systematic sweeps with archaeologist spaced 5 m apart. Ground visibility was excellent as the surface consisted predominantly of open, previously graded land with sparse dry grasses. No historic properties or cultural resources were identified within or adjacent to the APE.

Natural and modern features were encountered within the APE. These features include a shallow, dry, unnamed stream bed crossing in the southern section of the APE, some *kiawe* wood and dirt stockpiles throughout the APE, a modern concrete and boulder rock wall in the northwestern portion of the APE associated with the construction of the MRTP, and an old dust fence with dirt piles in the western portion of the APE (Figure 23 through Figure 28). None of these features are believed to be older than 50 years or archaeologically significant.

Figure 23. Overview of the APE, view to west

Figure 24. General view of the central portion of the APE, view to south

Figure 25. General view of the APE from the southwest corner showing modern grading, view to north

Figure 26. General view of the dry, unnamed streambed marked by large *kiawe* trees, view to north

Figure 27. General view of a modern wall in the northwestern portion of the APE adjacent to the MRTP, view to northwest

Figure 28. General view of the old dust fence and dirt piles with asphalt and concrete pieces in the western portion of the APE, view to north

4.2 Geotechnical Survey Analysis

Geotechnical investigation and sampling were conducted by Masa Fujikoa & Associates from 1 through 6 June 2021. Geotechnical test bores and percolation test locations were chosen by the USACE following a geophysical survey, also conducted by Masa Fujikoa & Associates (Figure 29). The bores were drilled using a track-mounted drill rig equipped with a 4-inch diameter solid flight auger (Fujikoa & Associates 2021).

The archaeological analysis of the geotechnical survey focused on the results of the six geotechnical test bores, which provided subsurface data relevant to assess the potential for subsurface archaeological data as requested by the SHPO. The approximate depths of Bore #s 1 through 3 and 6 ranged between 20 and 25 ft (6.1 and 7.6 m) below surface, while the depths for Bore #s 4 and 5 were from 8.0 to 8.5 ft (2.4 to 2.6 m) below surface. The final depth of each bore was determined by the location of sterile volcanic material. When borings were conducted, percent recovery (percentage of rock core recovered from the bore) and rock quality designation (RQD: a formula which yields a percentage of classification of rock density and quality) were determined for each core run. The assessment of results yielded no evidence to indicate the presence archaeological deposits or subsurface historic properties.

Overall, each bore contained soil consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). This soil type is not commonly connected to traditional land use, unlike soils such as Pu‘uone sand, which are commonly associated with human interment. Historically, this soil type is associated with pastureland (Foote et al. 1972:127), which is on-going in the immediate vicinity of the APE.

4.2.1 Bore 1

Bore 1 contained dense to very dense clayey gravel with sand, cobbles, and boulders extending to approximately 10.0 ft (3.0 m) below surface. The remainder of the test bore consisted of sterile igneous basalt rock to the final depth at 20.0 ft (6.1 m) below surface (Figure 30).

The soils identified within Bore 1 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 1 does not indicate the presence of archaeological deposits or subsurface historic properties.

4.2.2 Bore 2

Bore 2 contained medium dense clayey sand with gravel extending to 10 ft (3.0 m) below surface. From 10.0 ft (3.0 m) to 20.0 ft (6.1 m) below surface, the material consisted of medium and very dense, poorly graded gravel with clay and sand. From 20.0 ft (6.1 m) to the final depth at 20.5 ft (6.2 m) below surface, the material was described as very dense clayey sand with gravel to the final boring depth (Figure 31).

The soils identified within Bore 2 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 2 does not indicate the presence of archaeological deposits or subsurface historic properties.

Figure 29. Aerial photograph depicting the location of the geotechnical test bores and percolation tests within the APE (Masa Fujioka & Associates 2021:30)

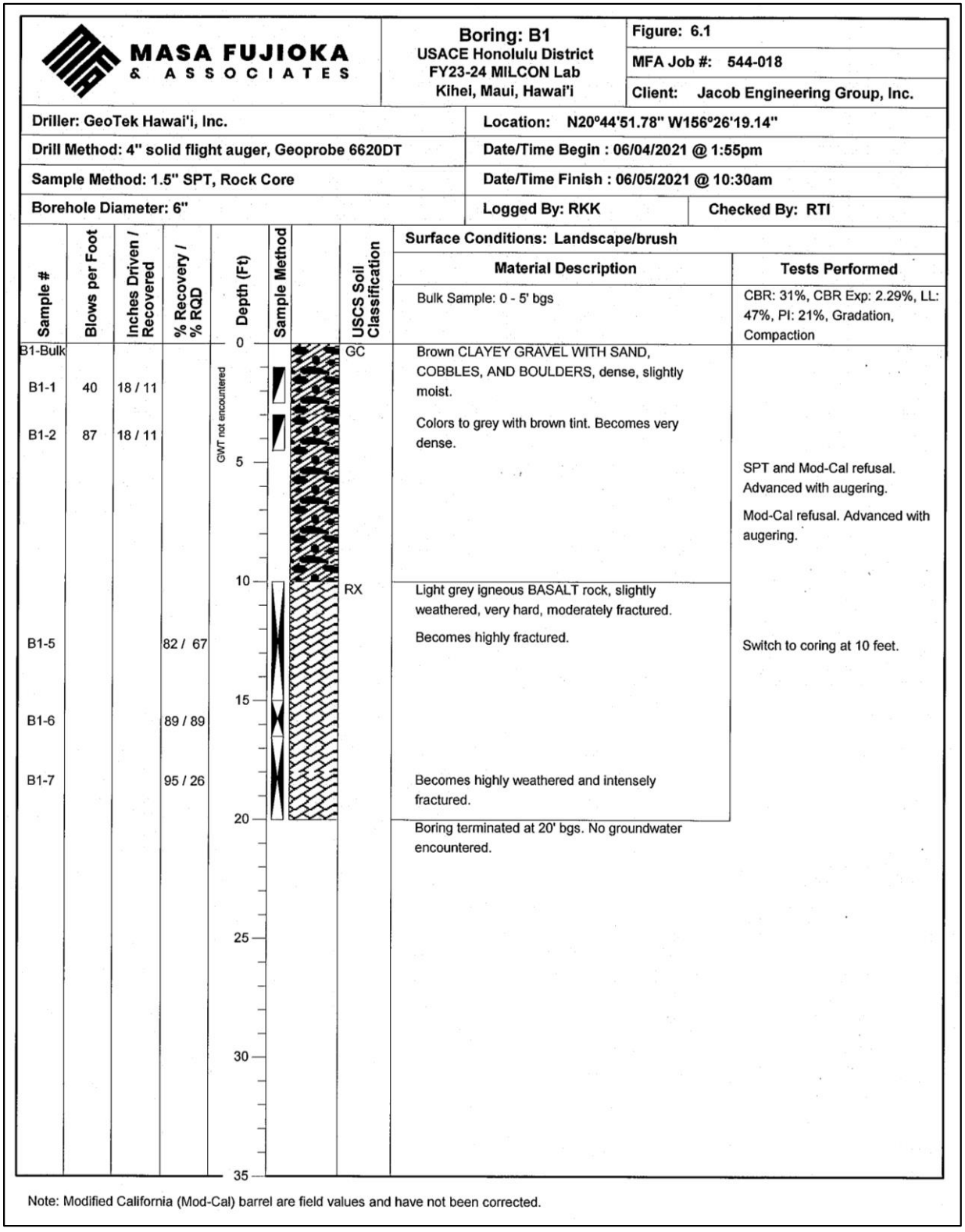


Figure 30. Bore 1 geotechnical log (Masa Fujioka & Associates 2021:31)

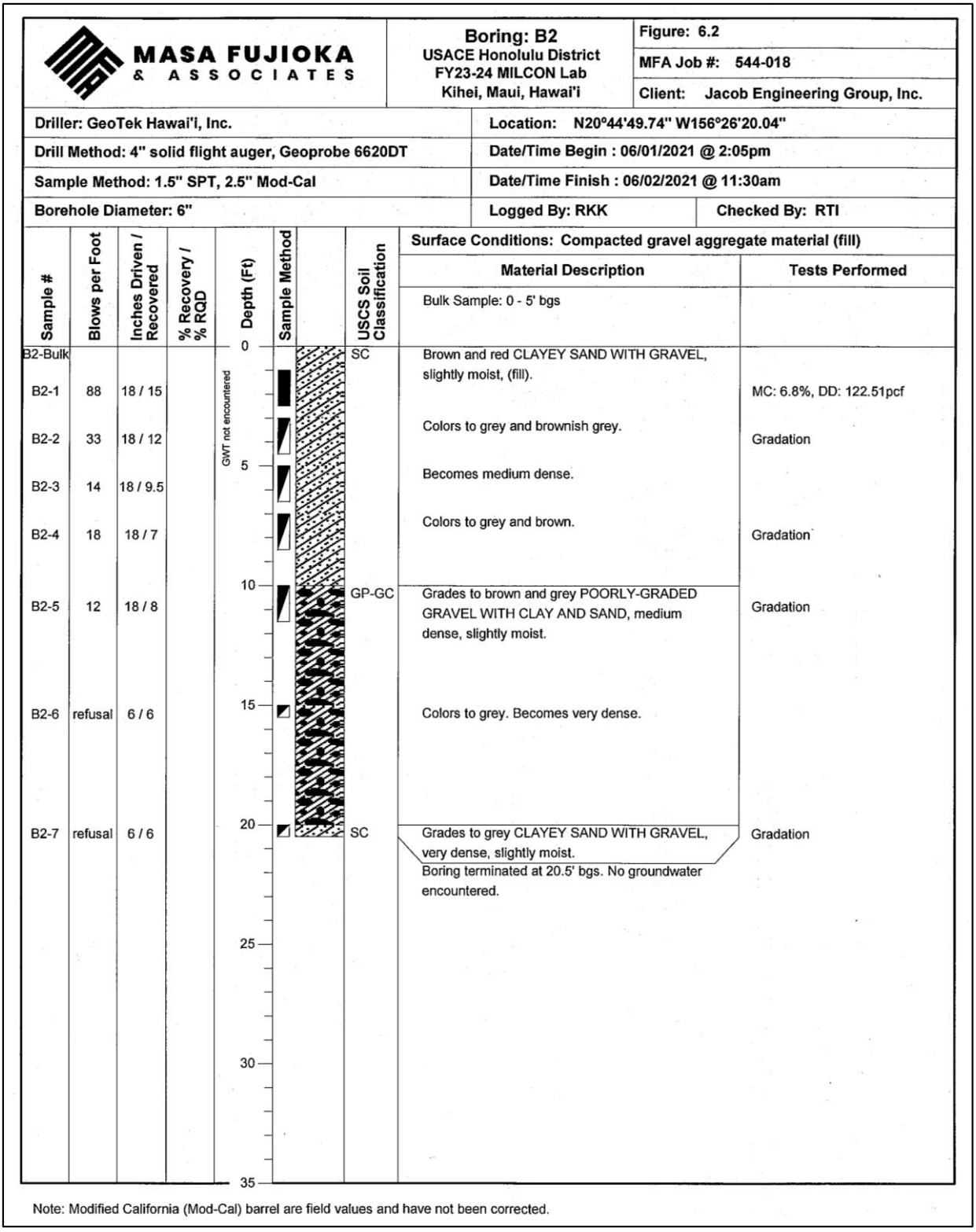


Figure 31. Bore 2 geotechnical log (Masa Fujioka & Associates 2021:32)

4.2.3 Bore 3

Boring 3 contained medium to very dense clayey gravel with sand, cobbles, and boulders to the final depth of 25.0 ft (7.6 m) below surface (Figure 32). At 15.0 ft (4.6 m), 20 ft (6.1 m), and 25 ft (7.6 m) below surface, the boring hole caved in upon pulling out the auger. Sampling of Bore 3 was unsuccessful.

The soils identified within Bore 3 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 3 does not indicate the presence of archaeological deposits or subsurface historic properties.

4.2.4 Bore 4

Bore 4 contained very dense clayey gravel with sand, cobbles, and boulders to approximately 4.0 ft (1.2 m) below surface. The remainder of the test bore consisted of sterile igneous basalt rock to the final depth at 8.5 ft (2.6 m) below surface (Figure 33).

The soils identified within Bore 4 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 4 does not indicate the presence of archaeological deposits or subsurface historic properties.

4.2.5 Bore 5

Bore 5 contained clayey gravel with sand, cobbles, and boulders to approximately 1.0 ft (0.3 m) below surface. The remainder of the test bore consisted of sterile igneous basalt rock to the final depth at 8.0 ft (2.4 m) below surface (Figure 34).

The soils identified within Bore 5 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 5 does not indicate the presence of archaeological deposits or subsurface historic properties.

4.2.6 Bore 6

Bore 6 contained medium dense and dense clayey gravel with sand, cobbles, and boulders to approximately 10.0 ft (3.0 m) below surface. At 10.0 ft (3.0 m) below surface, the bore material was described as dense silty gravel to the final boring depth of 24.0 ft (7.3 m) below surface (Figure 35). At 15.0 ft (4.6 m), 20.0 ft (6.1 m), and 24.0 ft (7.3 m) below surface, the boring hole caved in upon pulling out the auger, and sampling of Bore 6 was unsuccessful.

The soils identified within Bore 6 appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). The documentation of Bore 6 does not indicate the presence of archaeological deposits or subsurface historic properties.

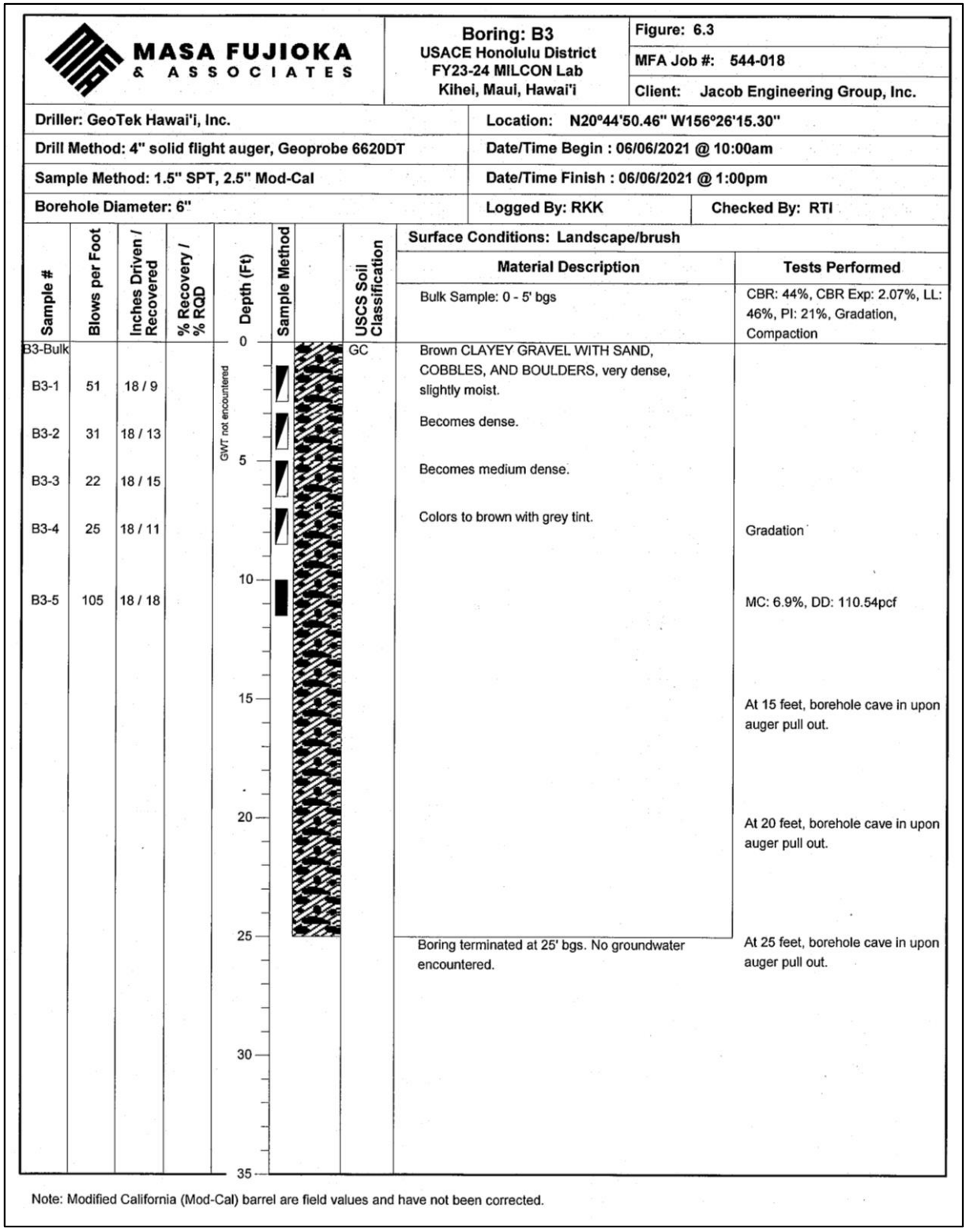
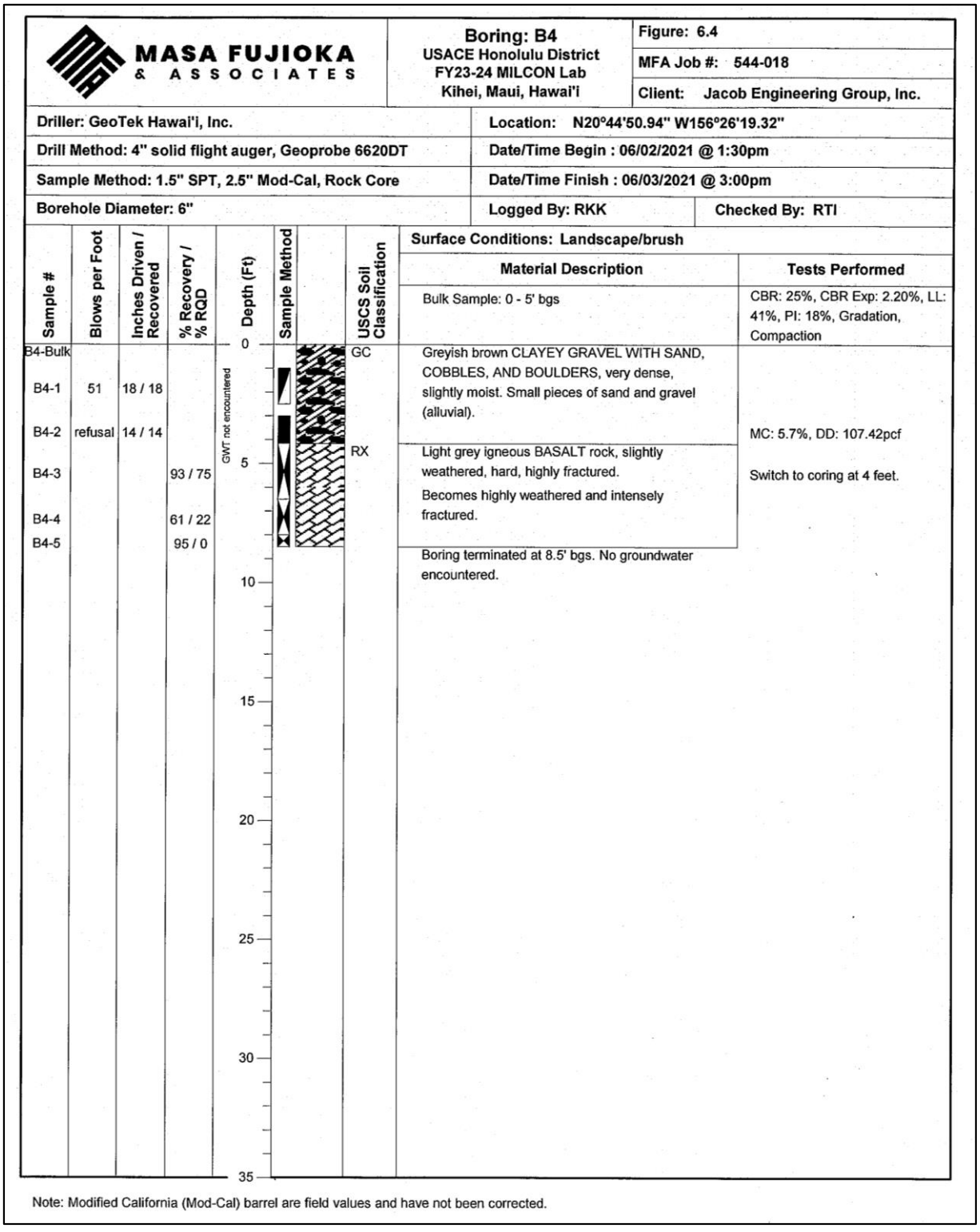


Figure 32. Bore 3 geotechnical log (Masa Fujioka & Associates 2021:33)



MASA FUJIOKA & ASSOCIATES

Boring: B4
USACE Honolulu District
FY23-24 MILCON Lab
Kihei, Maui, Hawai'i

Figure: 6.4
MFA Job #: 544-018
Client: Jacob Engineering Group, Inc.

Driller: GeoTek Hawai'i, Inc.
Location: N20°44'50.94" W156°26'19.32"
Drill Method: 4" solid flight auger, Geoprobe 6620DT
Date/Time Begin : 06/02/2021 @ 1:30pm
Sample Method: 1.5" SPT, 2.5" Mod-Cal, Rock Core
Date/Time Finish : 06/03/2021 @ 3:00pm
Borehole Diameter: 6"
Logged By: RKK
Checked By: RTI

Surface Conditions: Landscape/brush

Sample #	Blows per Foot	Inches Driven / Recovered	% Recovery / % RQD	Depth (Ft)	Sample Method	USCS Soil Classification	Material Description	Tests Performed
B4-Bulk				0		GC	Bulk Sample: 0 - 5' bgs	CBR: 25%, CBR Exp: 2.20%, LL: 41%, PI: 18%, Gradation, Compaction
B4-1	51	18 / 18					Greyish brown CLAYEY GRAVEL WITH SAND, COBBLES, AND BOULDERS, very dense, slightly moist. Small pieces of sand and gravel (alluvial).	
B4-2	refusal	14 / 14		GWT not encountered				MC: 5.7%, DD: 107.42pcf
B4-3			93 / 75	5		RX	Light grey igneous BASALT rock, slightly weathered, hard, highly fractured.	Switch to coring at 4 feet.
B4-4			61 / 22				Becomes highly weathered and intensely fractured.	
B4-5			95 / 0					
				10			Boring terminated at 8.5' bgs. No groundwater encountered.	
				15				
				20				
				25				
				30				
				35				

Note: Modified California (Mod-Cal) barrel are field values and have not been corrected.

Figure 33. Bore 4 geotechnical log (Masa Fujioka & Associates 2021:34)

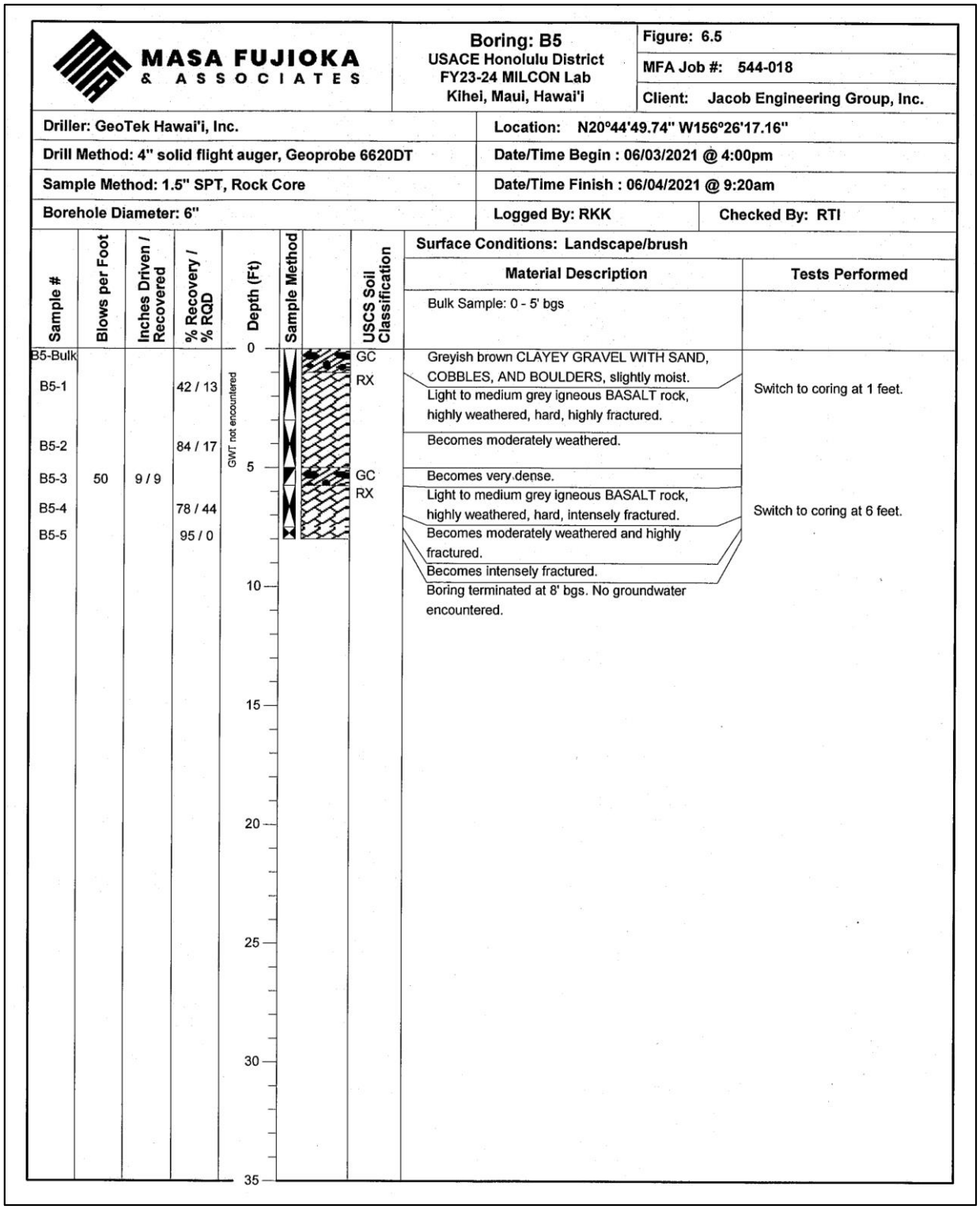
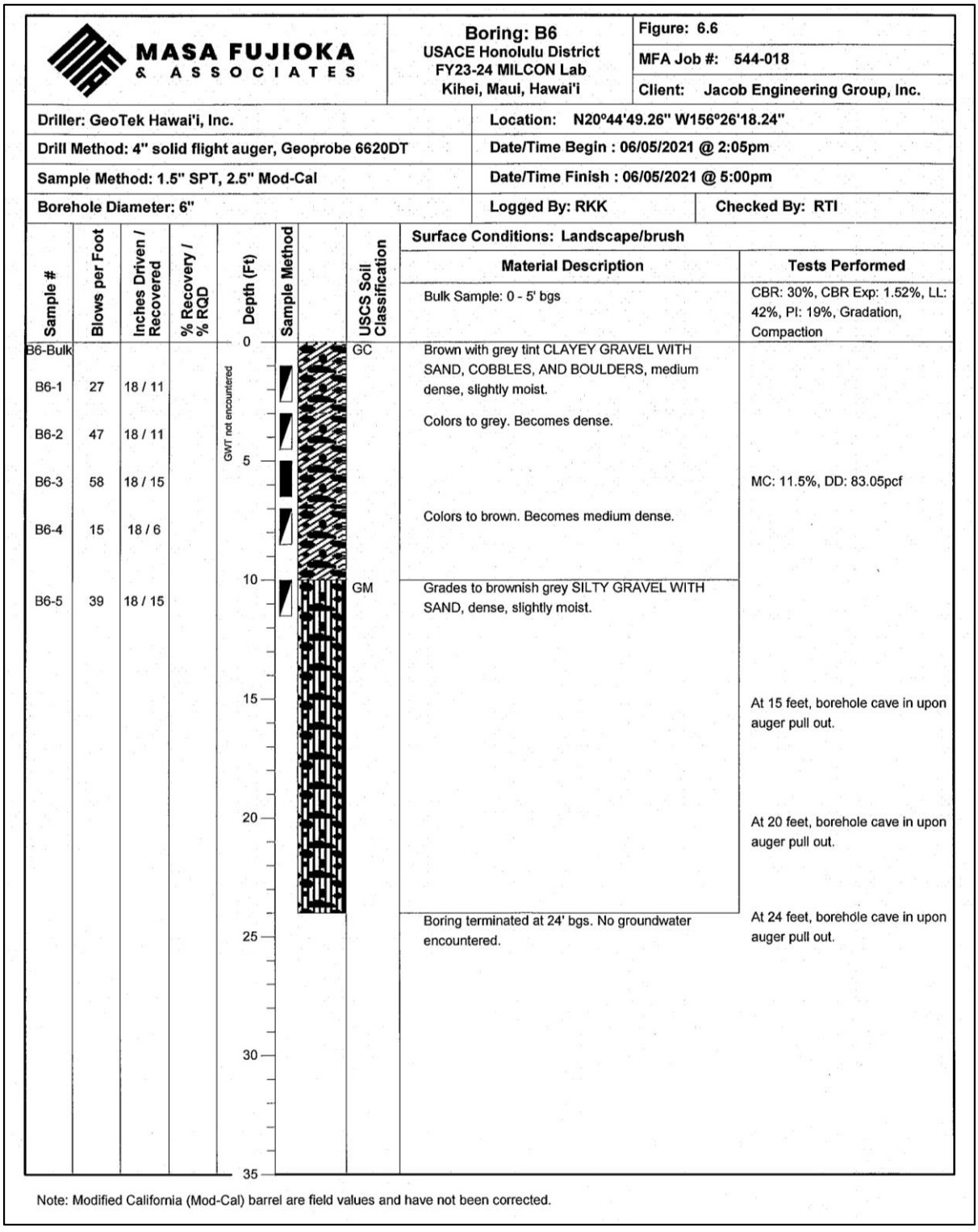


Figure 34. Bore 5 geotechnical log (Masa Fujioka & Associates 2021:35)



MASA FUJIOKA & ASSOCIATES

Boring: B6
USACE Honolulu District
FY23-24 MILCON Lab
Kihei, Maui, Hawai'i

Figure: 6.6
MFA Job #: 544-018
Client: Jacob Engineering Group, Inc.

Driller: GeoTek Hawai'i, Inc.
Location: N20°44'49.26" W156°26'18.24"
Drill Method: 4" solid flight auger, Geoprobe 6620DT
Date/Time Begin : 06/05/2021 @ 2:05pm
Sample Method: 1.5" SPT, 2.5" Mod-Cal
Date/Time Finish : 06/05/2021 @ 5:00pm
Borehole Diameter: 6"
Logged By: RKK
Checked By: RTI

Surface Conditions: Landscape/brush

Sample #	Blows per Foot	Inches Driven / Recovered	% Recovery / % RQD	Depth (Ft)	Sample Method	USCS Soil Classification	Material Description	Tests Performed
B6-Bulk				0		GC	Bulk Sample: 0 - 5' bgs	CBR: 30%, CBR Exp: 1.52%, LL: 42%, PI: 19%, Gradation, Compaction
B6-1	27	18 / 11					Brown with grey tint CLAYEY GRAVEL WITH SAND, COBBLES, AND BOULDERS, medium dense, slightly moist.	
B6-2	47	18 / 11					Colors to grey. Becomes dense.	
B6-3	58	18 / 15		5				MC: 11.5%, DD: 83.05pcf
B6-4	15	18 / 6					Colors to brown. Becomes medium dense.	
B6-5	39	18 / 15		10		GM	Grades to brownish grey SILTY GRAVEL WITH SAND, dense, slightly moist.	
				15				At 15 feet, borehole cave in upon auger pull out.
				20				At 20 feet, borehole cave in upon auger pull out.
				25			Boring terminated at 24' bgs. No groundwater encountered.	At 24 feet, borehole cave in upon auger pull out.
				30				
				35				

GWT not encountered

Note: Modified California (Mod-Cal) barrel are field values and have not been corrected.

Figure 35. Bore 6 geotechnical log (Masa Fujioka & Associates 2021:36)

Section 5 Summary

At the request of Tetra Tech, CSH conducted an AIS for the proposed SISL Project, Waiohuli Ahupua‘a, Makawao District, Maui, TMK: [2] 2-2-024:015. As there were no cultural resources/historic properties identified during the AIS, this study is termed an AA in accordance with §13-284-5(5)(A). The APE for this undertaking includes the project site, a western construction laydown/staging area, a southern construction laydown/staging area, and an eastern construction laydown/staging area. The APE encompasses 20.34 acres (8.24 hectares) east of Pi‘ilani Highway and south of Lipoa Parkway, just south of the MRTP. On 1 December 2020 and 3 February 2021, CSH conducted the fieldwork component of this study, which included 100% pedestrian inspection of the APE, GPS data collection, and written/photographic recordation.

The undertaking is to construct a permanent, government-owned Secure Integration Support Laboratory (SISL) on the island of Maui that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location and provide adequate space to meet current mission needs.

The SISL is proposed as a two-story, approximately 56,000-square-foot building. It would have the capacity to provide workspace for about 180 government personnel and include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with AT/FP and security requirements in accordance with DoD UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

Traditional background research included a review of place names, legendary accounts, and documentation of pre-Contact land use within Waiohuli Ahupua‘a within the traditional *moku* of Kula and the modern district of Makawao. The project area is the lower midland portion of Waiohuli, Ahupua‘a and Kula Moku, a region scarce of water due to the rain shadow of Haleakalā. Traditional land-use in Kula Moku was known for potato cultivation. Meanings of place names, together with the environmental data, suggest that the lands of and surrounding coastal Kīhei were dry and barren in an agricultural sense but rich in marine resources. Previous research on pre-Contact occupation in Kula District (Kolb et al. 1997) has suggested that most permanent habitations were in the uplands with a smaller permanent population located along the coastline.

Historic background research presented a regional perspective of the early Western accounts recorded in Kīhei. It was one of the locations visited by Captain George Vancouver. A monument at Mai Poina ‘Oe Ia‘u Beach Park in Kīhei commemorates Vancouver’s on-shore expedition in 1792, when he first met the ruling chief Kahekili. With its sheltered coastline and easy access to Upcountry resources over a vast slope, Kīhei would continue to be a common stop for visiting ships. In 1820, the whaling industry was introduced in Hawai‘i. Although the whaling trade centered in Lahaina, mainly affecting the Kula/Kīhei area through agricultural demands, Clark (1980:47) notes that “[f]rom the 1840s to the 1860s a small whaling station was maintained at Kalepolepo [Kīhei].” The introduction of whaling to the Maui community brought with it an increased demand for foodstuffs, particularly, the long-lasting Irish potato. Data from the Māhele of 1848 provides information on past land-use and shows a shift in the economics of coastal areas to ranching.

Previous archaeological research in the vicinity of the current APE have identified pre-Contact and post-Contact historic properties including mounds, walls, low and high enclosures, modified outcrops, alignments, and rockshelters. No historic properties have been previously documented within the current APE.

Approximately 95% of the APE had been surveyed previously by SCS during an AIS for the MRTP Master Plan Update. No historic properties were identified by this previous study within the APE (Dega 2008). As part of the current study, CSH completed a 100%-coverage pedestrian survey through systematic sweeps with archaeologist spaced 5 m apart. Ground visibility was excellent as the surface consisted predominantly of open, previously graded land with sparse dry grasses. No historic properties or cultural resources were identified within or adjacent to the APE.

At the request of the SHPD, CSH also completed an archaeological analysis of the results of geotechnical testing within the APE. Six geotechnical test bores were completed by Masa Fujioka & Associates within the APE with depths ranging from 8.0 to 25.0 ft (2.4 to 7.6 m) below ground surface. Basalt bedrock was encountered within Bore 1 at 20 ft (6.1 m), Bore 4 at 4.0 ft (1.2 m), and Bore 5 at 1.0 ft (0.3 m). The remainder of the test bores predominately consisted of dense clay soils with sand, gravel, boulders, and cobbles. The soils identified during geotechnical testing appear to be consistent with the USDA description of Waiakoa extremely stony silty clay loam, 3 to 25 percent slopes, eroded (WID2). This soil type is not commonly connected to traditional land use, unlike soils such as Pu‘uone sand, which are commonly associated with human interment. Historically, this soil type is associated with pasture land (Foote et al. 1972:127), which is on-going in the immediate vicinity of the APE. Overall, the documentation of geotechnical testing does not indicate the presence of archaeological deposits or subsurface historic properties within the APE.

Section 6 Significance Assessments

Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai‘i Registers. To be considered eligible for listing on the National and/or Hawai‘i Registers a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria (in accordance with 36 CFR 60.4 and HAR §13-13-198-8):

A. Reflects major trends or events in the history of the state or nation.

B. Associated with the lives of persons significant in our past.

C. Excellent example of a site type/work of a master.

D. Has yielded, or may be likely to yield, information important in prehistory or history.

Cultural resource integrity and significance are assessed based on the guidance provided in National Register Bulletin # 15, “How to Apply the National Register Criteria for Evaluation.”

No historic properties or cultural resources were identified within the current APE, therefore no historic properties or cultural resources were assessed for significance.

Section 7 Project Effect and Mitigation Recommendations

No historic properties were documented within or adjacent to the APE.

7.1 Project Effect Recommendation

In accordance with Federal regulations (36 CFR 800.5), CSH's project-specific effect recommendation is "no adverse effect." Under Hawai‘i State historic preservation review legislation, the project's effect recommendation is "no adverse effect, with agreed upon mitigation commitments" (in accordance with HAR §13-13-275-7).

7.2 Mitigation Recommendation

No further historic preservation mitigation is recommended for this undertaking. A 100 percent coverage pedestrian survey of the APE has confirmed that there are no historic properties on the surface. A review of background research and previous archaeological findings documents an absence of subsurface historic properties, including human burials, in this region.

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Appendix A SHPD Correspondence

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STATE HISTORIC PRESERVATION DIVISION
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November 13, 2020

IN REPLY REFER TO:
Log No.: 2020.02460
Doc. No.: 2011SH09
Archaeology

Lieutenant Colonel J. Chris Zingarelli
Commander
Air Force Research Laboratory, Detachment 15
Department of the Air Force
550 Lipoa Parkway
Kihei, Hawai'i 96753-6902
Email Reply to: Michael.Desilets@usace.army.mil

Dear Lieutenant Colonel Zingarelli:

SUBJECT: **National Historic Preservation Act (NHPA) Section 106 Review –**
Initiation of Consultation and Request for Concurrence with the Effect Determination
Geotechnical Soil Investigation at Lots 3-D-2 and 3-D-3, Maui Research and Technology Center
Kaonoula Ahupua'a, Makawao District, Island of Maui
TMK: (2) 2-2-024:015 por.

On October 16, 2020, the State Historic Preservation Division (SHPD) received a letter dated September 24, 2020 from the United States Air Force, Air Force Research Laboratory (USAF-AFRL) to initiate Section 106 consultation, request SHPD's input on the Area of Potential Effects, request information regarding cultural resources, and request the State Historic Preservation Officer's (SHPO's) concurrence with the effect determination for a Geotechnical Soil Investigation project in Lots 3-D-2 and 3-D-3 at the Maui Research and Technology Center on the island of Maui.

The geotechnical soil investigation will be carried out jointly by the USAF-AFRL and the U.S. Army Corps of Engineers, Honolulu District. The proposed project has been determined a federal undertaking as defined in 36 CFR 800.16(y) and is therefore subject to compliance with Section 106 of the NHPA. The USAF-AFRL is the designated lead agency for NHPA Section 106 consultation.

According to the letter received, the proposed project consists of geotechnical investigation activities on Lots 3-D-2 and 3-D-3 in Kihei, Maui to assess soil properties in anticipation of possible future development at the site. Geotechnical activities will include soil boring at six locations and percolation testing at four locations. The borings and percolation test holes will each have diameters at a maximum of 9-inches. The borings will extend to a maximum depth of 20 feet below surface. The percolation tests holes will extend to a maximum depth of 15 feet below surface. The boring and percolation work will be accomplished via a truck-mounted or track-mounted drill rig. No roads will be constructed so the vehicle will necessarily traverse the parcels in order to access the work locales.

The Area of Potential Effects (APE) for the undertaking is located immediately south of the Hawaii Small Business Development Center in Kihei, Maui. It is an undeveloped parcel which can be accessed from the termini of either South Holopono Street or South Ninau Street. The APE includes the entire 9.3 acres encompassed by Lots 3-D-2 (4.61 ac.) and 3-D-3 (4.69 ac.). The two lots form a rectangle measuring approximately 150 by 235 meters. The

Lieutenant Colonel J. Chris Zingarelli
November 16, 2020
Page 2

USAF states that although the work will be highly localized within this area, there is potential that some borings may need to be shifted. Also, the precise access pathways between work locales cannot be confidently identified in advance. Therefore, the entire two lots is considered to comprise the undertaking's APE. The proposed APE accounts for all geotechnical investigation activities, including access, vehicle parking, equipment staging, and soil boring.

The USAF reports that two archaeological investigations have been conducted which overlap the APE. The first was a reconnaissance level by Joseph Kennedy in 1986 for the proposed Maui Research and Technical Park (Kennedy 1986). This was exclusively a pedestrian survey and produced no evidence of cultural resources within the subject parcels, or in the rest of the approximately 150-acre study area. More recently, the parcels were included in an archaeological inventory survey completed by Scientific Consultant Services, Inc. (SCS) in 2008 for the *Final Environmental Impact Statement for Maui Research & Technology Park Master Plan Update* (Dega 2008). Five sites were identified in the 338-acre survey area, all of which are 850 to 1000 meters north of the APE. The sites identified were determined to be comprised of historic ranching or modern military features. No historic properties were identified in the APE by either of the previous archaeological investigations. The USAF also referenced A Cultural Impact Assessment conducted by Hana Pono, LLC (Hana Pono 2006) in support of Hawaii Environmental Policy Act compliance for the Final Environmental Impact Statement for Maui Research & Technology Park Master Plan Update. According to the USAF, the study included 12 interviews with local kupuna and Hawaiian cultural practitioners familiar with the Maui Research & Technology Park project area, including the current APE. The investigators concluded, based on the oral history/ethnohistorical data: "No known cultural resources located directly on project parcel, interviewees recall the area as being used for kiawe and ranching."

The USAF has determined the proposed project will result in *no historic properties affected*. **The SHPO does not concur** at this time due to the need for additional fieldwork to identify historic properties should they be present within the APE as well as documentation of the USAF's Section 106 consultation.

The Dega (2008) report states that the reconnaissance survey of the entire 338-acre project area was conducted using transects spaced 10-15 meters apart. Photographs featured in the Dega (2008) report portray a landscape with fairly high grass in areas, which may have limited visibility of surface archaeological sites and features during a survey involving transects were spaced 10-15 meters (30-45 ft) apart. Due to concerns that vehicles will be traversing the APE to access work locales and could impact unidentified archaeological surface sites, **the SHPD requests** a qualified and permitted archaeologist conduct a reconnaissance survey in transects spaced no further than 5 meters apart, adjusting for narrower transects in areas with dense overgrowth that may further affect visibility. Please provide a field inspection report of the findings to SHPD for review.

Additionally, with future correspondence please provide documentation of the USAF's Section 106 consultation with interested parties, Native Hawaiian Organizations, and the public for the proposed undertaking as well as copies, or summaries of, any comments received.

The SHPD looks forward to continuing the Section 106 process for the proposed project.

The USAF and the U.S. Army Corps of Engineers are the offices of record for this undertaking. Please maintain a copy of this letter with your environmental review record for this undertaking.

Please contact Stephanie Hacker, Historic Preservation Archaeologist IV, at Stephanie.Hacker@hawaii.gov or at (808) 692-8046 for matters regarding archaeological resources or this letter.

Aloha,
Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Andrew McAllister, SHPD Maui Lead Archaeologist

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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
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STATE HISTORIC PRESERVATION DIVISION
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May 27, 2021

IN REPLY REFER TO:
Project No.: 2020PR34567
Submission No.: 2020PR34567.002
Doc. No. 2105SH12
Archaeology

Lieutenant Colonel J. Chris Zingarelli
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Department of the Air Force
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Email Reply to: Michael.Desilets@usace.army.mil

Dear Lieutenant Colonel Zingarelli:

SUBJECT: **National Historic Preservation Act (NHPA) Section 106 Review –**
Continued Consultation and Request for Concurrence with the Effect Determination
Geotechnical Soil Investigation at Lots 3-D-2 and 3-D-3 at Maui Research and Technology Center
Kaonoula Ahupua'a, Makawao District, Island of Maui
TMK: (2) 2-2-024:015 por.

On October 16, 2020, the State Historic Preservation Division (SHPD) received a letter dated September 24, 2020 from the United States Air Force, Air Force Research Laboratory (USAF-AFRL) to initiate Section 106 consultation, request SHPD's input on the Area of Potential Effects (APE), request information regarding cultural resources, and request the State Historic Preservation Officer's (SHPO's) concurrence with the effect determination for a Geotechnical Soil Investigation project in Lots 3-D-2 and 3-D-3 at the Maui Research and Technology Center on the island of Maui. In a letter dated November 13, 2020, the SHPO did not concur with the finding of effect for the proposed project due to the need for additional fieldwork to identify historic properties, should they be present within the APE, as well the need for documentation of the USAF's Section 106 consultation. The SHPD requested a qualified archaeologist conduct a reconnaissance survey across the APE (SHPD HICRIS Submission No. 2020PR34567.001 [Formerly SHPD Log No. 2020.02640], SHPD Doc. No. 2011SH09). On May 24, 2021, the SHPD received a letter dated March 10, 2021 from the USAF to continue consultation, provide the results of the reconnaissance survey and the Section 106 consultation efforts, and request the SHPO's concurrence with the effect determination for the proposed project (SHPD HICRIS Submission No. 2020PR34567.002).

The geotechnical soil investigation will be carried out jointly by the USAF-AFRL and the U.S. Army Corps of Engineers, Honolulu District. The proposed project has been determined a federal undertaking as defined in 36 CFR 800.16(y) and is therefore subject to compliance with Section 106 of the NHPA. The USAF-AFRL is the designated lead agency for NHPA Section 106 consultation.

According to the letter received in October 2020, the proposed project consists of geotechnical investigation activities on Lots 3-D-2 and 3-D-3 in Kihei, Maui to assess soil properties in anticipation of possible future development at the site. Geotechnical activities will include soil boring at six locations and percolation testing at four locations. The borings and percolation test holes will each have diameters at a maximum of 9-inches. The borings will extend to a maximum depth of 20 feet below surface. The percolation tests holes will extend to a maximum depth of 15 feet below surface. The boring and percolation work will be accomplished via a truck-mounted or track-mounted drill rig. No roads will be constructed so the vehicle will necessarily traverse the parcels in order to access the work locales.

The APE for the undertaking is located immediately south of the Hawaii Small Business Development Center in Kihei, Maui. It is an undeveloped parcel which can be accessed from the termini of either South Holopono Street or South Ninau Street. The APE includes the entire 9.3 acres encompassed by Lots 3-D-2 (4.61 ac.) and 3-D-3 (4.69 ac.).

Lieutenant Colonel J. Chris Zingarelli
May 27, 2021
Page 2

The two lots form a rectangle measuring approximately 150 by 235 meters. The USAF states that although the work will be highly localized within this area, there is potential that some borings may need to be shifted. Also, the precise access pathways between work locales cannot be confidently identified in advance. Therefore, the entire two lots is considered to comprise the undertaking's APE. The proposed APE accounts for all geotechnical investigation activities, including access, vehicle parking, equipment staging, and soil boring.

In response to the SHPO's request for a reconnaissance survey, USAF-AFRL, through the services of partner agency U.S. Army Corps of Engineers, Honolulu District, conducted a Supplemental Archaeological Inventory Survey. The purpose of the survey was to provide a higher level of transect resolution in order to verify the findings of earlier archaeological surveys conducted by Kennedy (1986) and Dega (2008). The survey was completed on January 21, 2021 by Principal Investigator, Michael Desilets, MA, RPA, and the findings are presented as a Supplemental Archaeological Inventory Survey. The reconnaissance survey was submitted by the Air Force as an attachment to the subject letter. The survey titled, *Supplemental Archaeological Inventory Survey Lots 3-D-2 and 3-D-3, Maui Research and Technology Center, Kihei Waiohuli Ahupua'a, Wailuku District, Maui Island, Hawaii TMK (2) 2-2-024:015 por.* (Desilets) consisted of linear pedestrian transects and no subsurface testing was conducted. The archaeological survey area included the entire APE for the undertaking, which consists of a 9.3-acre rectangular area measuring 235 meters (east-west) by 150 meters (north-south).

Is was observed that approximately 3.7 acres of the 9.3-acre APE was previously disturbed, leaving approximately 5.6 acres of critical survey area. The Air Force states visibility was good during the survey and the results were reported with a high degree of confidence. Desilets report affords the following conclusion:

> The results of this survey confirm the earlier findings of Kenney (1986) and Dega (2008), to the effect that no traditional Hawaiian or early historic features are present on the subject parcels. The present survey produced no evidence of such features on the semi-active pasture lands. The parcels appear not to have been utilized by Pre-Contact or early Post-Contact Hawaiians in ways that left a delible mark on the landscape. Furthermore, no features associated with early historic agriculture, ranching, or other forms of Historic Period land-use were identified.

In summary, detailed close-transect survey of the APE produced no evidence of traditional Hawaiian or early historic cultural features.

The USAF has determined the proposed project will result in *no historic properties affected*. **The SHPO concurs**.

Additionally, in support of the possible future development at the site, **the SHPO recommends** the results of the geotechnical survey be provided to qualified archaeologists in order for them to analyze and determined the probability of subsurface archaeological data present within the APE.

The USAF and the U.S. Army Corps of Engineers are the offices of record for this undertaking. Please maintain a copy of this letter with your environmental review record for this undertaking.

Please contact Stephanie Hacker, Historic Preservation Archaeologist IV, at Stephanie.Hacker@hawaii.gov or at (808) 692-8046 for matters regarding archaeological resources or this letter.

Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Cody Felipe, U.S. Air Force (cody.felipe.2@us.af.mil)
Trevor Yucha, Cultural Surveys Hawai'i, Inc. (tyucha@culturalsurveys.com)
Iolani Kuahane, SHPD Maui Archaeologist
Andrew McAllister, SHPD Maui Lead Archaeologist

APPENDIX D

CZM Federal Consistency Assessment

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STATE OF HAWAII
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: https://planning.hawaii.gov/

DTS202107161557NA

Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Program

September 10, 2021

Captain Cody Felipe
U.S. Space Force
550 Lipoa Parkway
Kihei, Hawaii 96753
cody.felipe.2@us.af.mil

Dear Captain Felipe:

Subject: Coastal Zone Management Act Federal Consistency Determination for Development of the Secure Integration Support Lab for the Air Force Research Laboratory at Maui Research and Technology Park, Kihei, Maui

The Hawaii Coastal Zone Management (CZM) Program has reviewed the U.S. Space Force Coastal Zone Management Act (CZMA) consistency determination for the development of the Secure Integration Support Lab (SISL) for the Air Force Research Laboratory (AFRL) at Maui Research and Technology Park (MRTP), Kihei, Maui (proposed activity), that was deemed complete on August 3, 2021. This federal consistency review covers the construction of the government owned SISL on approximately 10 acres in the MRTP. The SISL, as reviewed, will be a two-story, approximately 56,000-square-foot building with the capacity to provide workspace for about 180 government personnel and would include: a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; warehouse functions; and connection to fiber optic communications cables from within the MRTP to existing MSSC fiber optic cables. According to information provided to the Hawaii CZM Program, the existing fiber optic cables connecting the AFRL to the Maui Space Surveillance Complex (MSSC) at Haleakala will be used to service the SISL facility, so there will be no new installation and laydown outside of the MRTP.

The Hawaii CZM Program published a public notice in the State Environmental Review Program publication, "The Environmental Notice," on August 23, 2021, with the public review and comment period concluding on September 7, 2021. During the public notice period no public comments or inquiries were received.

We conditionally concur with the U.S. Space Force determination that the proposed activity is consistent to the maximum extent practicable with the enforceable policies of the Hawaii CZM Program based on the following conditions.

1. The proposed activity shall be implemented as represented in the CZMA federal consistency determination and all supporting materials and information provided to the Hawaii CZM Program. Any changes to the proposed activity shall be submitted to the Hawaii CZM Program for review and approval. Changes to the proposed activity may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment. This condition is necessary to ensure that the proposed activity is implemented as reviewed for consistency with the enforceable policies of the Hawaii CZM Program. Hawaii Revised Statutes (HRS) Chapter 205A Coastal Zone Management, is the federally approved enforceable policy of the Hawaii CZM Program that applies to this condition.

2. Stormwater runoff and erosion controls. As represented in the Hawaii CZM Program Federal Consistency Assessment Form, page 6: "Stormwater runoff would be controlled in compliance with the Maui County Code 20.08, Soil Erosion and Sedimentation Control, including implementing best management practices (BMPs) to address drainage, dust control, vegetation, erosion controls, sediment control, material and waste management, and timing and control of measure implementation. Construction activities on the property would comply with all applicable federal, state, and county regulations and rules for erosion control. After construction, permanent landscaping would be established and provide long-term erosion control." This condition is necessary to ensure consistency with Hawaii CZM Program federally approved enforceable policy HRS Chapter 205A Coastal Zone Management, Section 205A-2 Coastal Ecosystems.

If the requirements for conditional concurrences specified in 15 CFR § 930.4(a), (1) through (3), are not met, then all parties shall treat this conditional concurrence letter as an objection pursuant to 15 CFR Part 930, subpart C. The U.S. Space Force shall notify the Hawaii CZM Program if the conditions are not acceptable in accordance with 15 CFR § 930.4(a)(2). Otherwise, acceptance of the conditions shall be presumed at the end of the 90-day federal consistency notification period on November 1, 2021. In accordance with 15 CFR § 930.41(c), final federal agency action shall not be taken sooner than November 1, 2021, unless the U.S. Space Force notifies the Hawaii CZM Program that the conditions of concurrence are acceptable, thereby confirming this concurrence and closing the federal consistency notification period on the date of receipt of the acceptance of the conditions.

This CZM consistency conditional concurrence does not represent an endorsement of the proposed activity nor does it convey approval with any regulations administered by any state or

county agency. Thank you for your cooperation in complying with the Hawaii CZM Program. If you have any questions, please contact John Nakagawa of our CZM Program at john.d.nakagawa@hawaii.gov or (808) 587-2878.

Sincerely,

Mary Alice Evans

Mary Alice Evans
Director

cc: Julie Kaplan, Tetra Tech (by email)
Maui County Planning Department (by email)

From:	Nakagawa, John D
To:	FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Cc:	GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI; Hippert, Greg; Kaplan, Julie; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT; Nihipali, Justine W; Mendes, Debra L; Li, Shichao; Barcina, Keelan MK; CARL, KRISTIN A Maj USAF AFMC AF/JAOE-FSC (AFMC)
Subject:	ACCEPTED: Hawaii CZMA Application - Secure Integration Support Laboratory, Kihei, Maui
Date:	Tuesday, August 03, 2021 8:33:07 PM

Captain Felipe:

The U.S. Air Force, U.S. Space Force, CZMA consistency determination for the SISL, Kihei, Maui, is complete and accepted for review on August 3, 2021, with the submittal of "Attachment C - Supplemental Information on Fiber Optic Cables." The start date for the 60-day CZMA federal consistency review period is August 4, 2021, with the end date October 4, 2021. Federal regulations at 15 CFR 930 allow for a 15-day extension if necessary. If the 15-day extension is needed, then we will notify you at a later date.

The public notice for the CZM review will be published in the State Environmental Review Program publication, "The Environmental Notice," on August 23, 2021, with the public review and comment period ending on September 7, 2021. If any public and/or agency comments or questions are received, then they will be referred to you for responses to the Hawaii CZM Program.

Please contact me if you have any questions throughout the CZM review.

John Nakagawa
Hawaii Coastal Zone Management Program

From: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Sent: Tuesday, August 3, 2021 1:50 PM
To: Nakagawa, John D
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI; Hippert, Greg; Kaplan, Julie; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT; Nihipali, Justine W; Mendes, Debra L; Li, Shichao; Barcina, Keelan MK; CARL, KRISTIN A Maj USAF AFMC AF/JAOE-FSC (AFMC)
Subject: [EXTERNAL] RESPONSE: Hawaii CZMA Application - Secure Integration Support Laboratory, Kihei, Maui

Mr. Nakagawa,

We are in receipt of the letter you provided on July 21, 2021 which states that the Coastal Zone Management Act (CZMA) federal consistency determination for development of the Secure Integration Support Lab (SISL) at Kihei, Maui is incomplete and identifies additional information needed to complete the consistency determination. Please find the attached Supplemental Information on the Installation of Fiber Optic Cables which can be included as Attachment C to the Hawaii CZM Program Federal Consistency Assessment Form. We hope that this information will be

sufficient to complete the CZMA consistency determination.

v/r,

CODY FELIPE, Capt, USSF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753
W: 808-891-7739

From: Nakagawa, John D <john.d.nakagawa@hawaii.gov>
Sent: Wednesday, July 21, 2021 2:26 PM
To: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>; Kaplan, Julie <Julie.Kaplan@tetratech.com>; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT <joseph.volza@us.af.mil>; Nihipali, Justine W <justine.w.nihipali@hawaii.gov>; Mendes, Debra L <debra.l.mendes@hawaii.gov>; Li, Shichao <shichao.li@hawaii.gov>; Barcina, Keelan MK <keelan.mk.barcina@hawaii.gov>
Subject: [Non-DoD Source] INCOMPLETE Hawaii CZMA Application - Secure Integration Support Laboratory, Kihei, Maui

Captain Felipe:

See the attached letter informing you that the CZMA federal consistency determination for development of the SISL at Kihei, Maui, is incomplete and what information is required to complete the consistency determination.

John Nakagawa
Hawaii Coastal Zone Management Program

From: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Sent: Monday, July 19, 2021 7:45 AM
To: Nakagawa, John D
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI; Hippert, Greg; Kaplan, Julie; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT; Nihipali, Justine W; Mendes, Debra L; Li, Shichao; Barcina, Keelan MK
Subject: [EXTERNAL] RE: Secure Integration Support Laboratory, Kihei, Maui - Hawaii CZMA Application

Mr. Nakagawa, we do plan on providing the EA to the Hawaii CZM Program when it is finalized. It is currently in draft.

v/r,

CODY FELIPE, Capt, USSF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753
W: 808-891-7739

From: Nakagawa, John D <john.d.nakagawa@hawaii.gov>
Sent: Friday, July 16, 2021 3:31 PM
To: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>; Kaplan, Julie <Julie.Kaplan@tetratech.com>; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT <joseph.volza@us.af.mil>; Nihipali, Justine W <justine.w.nihipali@hawaii.gov>; Mendes, Debra L <debra.l.mendes@hawaii.gov>; Li, Shichao <shichao.li@hawaii.gov>; Barcina, Keelan MK <keelan.mk.barcina@hawaii.gov>
Subject: [Non-DoD Source] Re: Secure Integration Support Laboratory, Kihei, Maui - Hawaii CZMA Application

Captain Felipe:

Will the Environmental Assessment for the proposed action be provided to the Hawaii CZM Program as part of the CZMA consistency determination?

John Nakagawa
Hawaii Coastal Zone Management Program

From: Nakagawa, John D
Sent: Friday, July 16, 2021 2:02 PM
To: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI <cody.felipe.2@us.af.mil>
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>; Kaplan, Julie <Julie.Kaplan@tetratech.com>; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT <joseph.volza@us.af.mil>; Nihipali, Justine W <justine.w.nihipali@hawaii.gov>; Mendes, Debra L <debra.l.mendes@hawaii.gov>
Subject: Re: Secure Integration Support Laboratory, Kihei, Maui - Hawaii CZMA Application

Captain Felipe:

Confirming receipt of the US Space Force CZMA consistency determination (CD) for development of the Secure Integration Support Laboratory, Kihei, Maui. We will evaluate the CD for completeness in accordance with 15 CFR sec. 930.39 and will either confirm or inform you if additional information is required.

John Nakagawa
Hawaii Coastal Zone Management Program

From: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Sent: Friday, July 16, 2021 1:49 PM
To: Nakagawa, John D
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI; Hippert, Greg; Kaplan, Julie; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT
Subject: [EXTERNAL] FW: Secure Integration Support Laboratory, Kihei, Maui - Hawaii CZMA Application

Mr. Nakagawa, attempting again with your alternate email per your out-of-office message.

v/r,

CODY FELIPE, Capt, USSF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753
W: 808-891-7739

From: FELIPE, CODY H Capt USAF AFMC AFRL/RDSMI
Sent: Friday, July 16, 2021 1:34 PM
To: 'jnakagawa@dbedt.hawaii.gov' <jnakagawa@dbedt.hawaii.gov>
Cc: GARDNER, JAMES V II CIV USAF AFMC AFRL/RDSMI <james.gardner.29@us.af.mil>; Hippert, Greg <greg.hippert@tetratech.com>; 'Kaplan, Julie' <Julie.Kaplan@tetratech.com>; VOLZA, JOSEPH M DR-03 USAF AFMC AFRL/RDMT <joseph.volza@us.af.mil>
Subject: Secure Integration Support Laboratory, Kihei, Maui - Hawaii CZMA Application

Mr. Nakagawa,

The Air Force Research Lab, Detachment 15, under the U.S. Air Force Materiel Command located on Maui, HI would like to initiate a Coastal Zone Management Application with your office. We are preparing an Environmental Assessment to evaluate the potential impacts on the human and natural environments of constructing and operating a proposed Secure Integration Support Laboratory (SISL) on the island of Maui. We are proposing to construct a permanent, government-owned two-story 56,000 sq ft building on approximately 10 acres in the Maui Research and Technology Park (MRTP) in Kihei, Maui. The project team is currently in the planning stages and are developing the Environmental Assessment, building design is currently at 35%, we have not received approval yet to purchase the 10 acre parcel, and the goal would be to construct in fiscal year 2024. Please let us know if you have any questions during your review.

Thank you for our time.

v/r,

CODY FELIPE, Capt, USSF
Chief, Installation & Facilities
AFRL/RDSMI Det 15
550 Lipoa Parkway
Kihei, HI 96753
W: 808-891-7739

Attachment C

Supplemental Information on the Installation of Fiber Optic Cables

Supplemental Information on the Installation of Fiber Optic Cables

Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the Maui Research and Technology Park (MRTP) in Kīhei and is connected to the Maui Space Surveillance Complex (MSSC) at Haleakala with high-speed fiber optic links. These existing fiber optic cables will be used to service the SISL facility, so there will be no new installation and laydown outside of the MRTP. The fiber optic telecommunications service connection at MSSC will remain unchanged.

The existing fiber optic telecommunications services at 550 Lipoa Parkway, 590 Lipoa Parkway, and the Remote Maui Experiment (RME) facility will be "rehomed/redirected" by the commercial telecommunications company to the SISL facility after it is constructed. The "rehoming" of telecommunications services will require new fiber optic cables to be installed by the commercial telecommunication provider through the new utilities infrastructure and into the SISL building after it is constructed. The commercial telecommunication provider will not install the new fiber optic cables on behalf of the Air Force but will do so as a standard extension of their service to a new facility.

CZM Application

Hawaii CZM Program
Coastal Zone Management

www.hawaii.gov/dbedt/czm

APPLICATION FOR CZM FEDERAL CONSISTENCY REVIEW

Project/Activity Title or Description: Secure Integration Support Lab (SISL) for Air Force Research Laboratory (AFRL)

Location: Kihei, HI

Island: Maui

Tax Map Key: [2] 2-2-24:15 and [2] 2-2-24:16

Applicant or Agency

Cody Felipe, Capt. U.S. Space Force
Name of Applicant or Agency

550 Lipoa Parkway
Mailing Address

Kihei, HI 96753
City / State / Zip Code

808-891-7739
Phone

cody.felipe.2@us.af.mil
E-mail Address

Agent or Representative for Applicant

Agent or Representative for Applicant

Mailing Address

City / State / Zip Code

Phone

E-mail Address

CZM Consistency Determination or Certification

✓ Check the applicable type of federal action below and sign.

☑ Federal Agency Activity

CZM Consistency Determination: "The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawaii Coastal Zone Management Program."

Signature FELIPE.CODY.HALEMANUOKAUPO MAMAC.1368926805 Digitally signed by FELIPE.CODY.HALEMANUOKAUPO.MAMAC.1368926805 Date: 2021.07.16 12:38:04 -10'00'

Date 16 July 2021

☐ Federal Permit or License

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____

☐ Federal Grants and Assistance

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____

Mail Application To: Office of Planning, State of Hawaii, P.O. Box 2359, Honolulu, Hawaii 96804

HAWAII CZM PROGRAM
FEDERAL CONSISTENCY ASSESSMENT FORM

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

1) Improve coordination and funding of coastal recreational planning and management.
2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
   a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas.
   b) Requiring replacement of coastal resources having significant recreational value including, but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable.
   c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value.
   d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation.
   e) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources.
   f) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters.
   g) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing.
   h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Hawaii Revised Statutes, section 46-6.

RECREATIONAL RESOURCES (continued)

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Will the proposed action occur in or adjacent to a dedicated public right-of-way, e.g., public beach access, hiking trail, shared-use path?	☐	☑
2. Will the proposed action affect public access to and along the shoreline?	☐	☑
3. Does the project site abut the shoreline?	☐	☑
4. Is the project site on or adjacent to a sandy beach?	☐	☑
5. Is the project site in or adjacent to a state or county park?	☐	☑
6. Is the project site in or adjacent to a water body such as a stream, river, pond, lake, or ocean?	☐	☑
7. Will the proposed action occur in or affect an ocean recreation area, swimming area, surf site, fishing area, or boating area?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The secure integration support laboratory (SISL) project site is situated over 1 mile from the shoreline in an area zoned as Maui Research and Technology Park. The proposed project is not anticipated to affect existing coastal recreational resources.

HISTORIC RESOURCES

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

1) Identify and analyze significant archaeological resources.
2) Maximize information retention through preservation of remains and artifacts or salvage operations.
3) Support state goals for protection, restoration, interpretation, and display of historic resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Is the project site within a designated historic or cultural district?	☐	☑
2. Is the project site listed on or nominated to the Hawaii or National Register of Historic Places?	☐	☑
3. Has the project site been surveyed for historic or archaeological resources?	☑	☐
4. Does the project parcel include undeveloped land which has not been surveyed by an archaeologist?	☐	☑
5. Is the project site within or adjacent to a Hawaiian fishpond or historic settlement area?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

Two previous archaeological surveys encompassed the project site. In 1986, Archaeological Consultants of Hawai'i, Inc. (ACH) conducted a preliminary reconnaissance survey for a proposed golf course. No cultural resources or historic properties were identified, and no further work was recommended. In 2008, Scientific Consultant Services, Inc. (SCS) completed an archaeological inventory survey (AIS) for the Environmental Impact Statement (EIS) for the MRTP Master Plan Update Project. The survey covered approximately 338 acres and identified five historic properties including State Inventory of Historic Places (SIHP #s 50-50-10-6239, -6240, -6241, -6587, and -6588). These historic properties included rock walls and mounds associated with pre-Contact land use and post-Contact ranching activities. No historic properties or cultural resources were identified within the project site or within about 1,600 feet of the project site.

For the current undertaking, Cultural Surveys Hawai'i, Inc. (CSH) completed an AIS of the entire project Area of Potential Effect (APE). A 100 percent coverage pedestrian survey of the APE confirmed that there are no cultural resources or historic properties on the surface. A review of background research and previous archaeological findings conducted during the AIS has documented a low likelihood of subsurface cultural resources, including human burials, in this area. The Proposed Action is not anticipated to have an adverse impact on historical or cultural resources.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

1) Identify valued scenic resources in the coastal zone management area.
2) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
3) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources.
4) Encourage those developments that are not coastal dependent to locate in inland areas.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Will the proposed action alter any natural landforms or existing public views to and along the shoreline?	☐	☑
2. Does the proposed action involve the construction of a multi-story structure?	☑	☐
3. Is the project site located on or adjacent to an undeveloped parcel, including a beach or oceanfront land?	☐	☑
4. Does the proposed action involve the construction of a structure visible between the nearest coastal roadway and the shoreline?	☐	☑
5. Will the proposed action involve constructing or placing a structure in waters seaward of the shoreline?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The proposed SISL facility is not located within a scenic corridor. The SISL will comply with the Maui Research and Technology Park (MRTP) Design Guidelines and will therefore fit within the aesthetic vision for the Park. It will also adhere to county zoning restrictions for the MRTP District, including height restrictions. Under county zoning regulations, office/research and development lots have a 50-ft maximum building height. The proposed improvements are not contrary to the objectives and policies for scenic and open space resources.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources.
2) Improve the technical basis for natural resource management.
3) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance.
4) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs.
5) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Does the proposed action involve dredge or fill activities?	☐	☑
2. Is the project site within the Special Management Area (SMA) or the Shoreline Setback Area?	☐	☑
3. Is the project site within the State Conservation District?	☐	☑
4. Will the proposed action involve some form of discharge or placement of material into a body of water or wetland?	☐	☑
5. Will the proposed action require earthwork, grading, clearing, or grubbing?	☑	☐
6. Will the proposed action include the construction of waste treatment facilities, such as injection wells, discharge pipes, or septic systems?	☐	☑
7. Is an intermittent or perennial stream located on or adjacent to the project parcel?	☐	☑
8. Does the project site provide habitat for endangered species of plants, birds, or mammals?	☐	☑
9. Is any such habitat located in close proximity to the project site?	☐	☑

COASTAL ECOSYSTEMS (continued)

	Yes	No
10. Is a wetland located on the project site or parcel?	☐	☑
11. Is the project site situated in or abutting a Natural Area Reserve, a Marine Life Conservation District, or an estuary?	☐	☑
12. Will the proposed action occur on or in close proximity to a reef or coral colonies?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The Proposed Action is not expected to adversely impact coastal ecosystems. The proposed SISL facility would not be near any streams, wetlands, or reservoirs or in any floodplain areas, and activities would not result in degradation of surface waters. Stormwater runoff would be controlled in compliance with the Maui County Code 20.08, Soil Erosion and Sedimentation Control, including implementing best management practices (BMPs) to address drainage, dust control, vegetation, erosion controls, sediment control, material and waste management, and timing and control of measure implementation. Construction activities on the property would comply with all applicable federal, state, and county regulations and rules for erosion control.

After construction, permanent landscaping would be established and provide long-term erosion control. The general site drainage pattern would be maintained from northeast to southwest of the building through a collection system of drain inlets, underground piping, and stormwater management features. Runoff from parking areas would be intercepted by area inlets or rock-lined swales with underdrains and conveyed to the grassy area west of the building. Subsurface storm lines would daylight to level spreaders to encourage sheet flow across the grassy area to an extended detention basin on the southwest corner of the site. The vegetated basin would detain and retain stormwater for infiltration and cleansing before it leaves the site into the drainage channel along the southern perimeter, which is to remain untouched. Stormwater flow volumes in excess of the predevelopment condition would be detained on-site. LID design would be implemented to provide decentralized hydrologic source control for stormwater while maintaining existing predevelopment hydrology, including stormwater runoff rates and quantities, to the maximum extent practicable.

The dominant vegetation within the project area consists of a non-native buffelgrass (Cenchrus ciliaris)/kiawe tree (Prosopis pallida) savanna, which represents a degraded lowland dry plant community. No federal or state listed threatened, endangered, proposed listed, or candidate plant species were observed on the property during a biological survey by Hobdy in 2008 or by Tetra Tech biologists who conducted a pedestrian survey of flora and fauna in November 2020. Previous biological surveys conducted in 2008, 2011, and 2015 did not identify any threatened or endangered species in the project area. Tetra Tech biologists observed one federally threatened species, the Hawaiian goose (nēnē), within the project area during the November 2021 faunal survey, loafing on lawns within the MRTP. The SISL project may affect but is not likely to significantly affect listed species. Specific avoidance and minimization measures will be implemented to protect these species.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

1) Concentrate coastal development in appropriate areas.
2) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area.
3) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
   a) Use of presently designated locations is not feasible;
   b) Adverse environmental effects are minimized; and
   c) The development is important to the State's economy.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Does the proposed action involve a harbor or port?	☐	☑
2. Is the proposed action a visitor industry facility or a visitor industry related activity?	☐	☑
3. Does the project site include agricultural lands or lands designated for such use?	☐	☑
4. Does the proposed action relate to commercial fishing or seafood production?	☐	☑
5. Is the proposed action related to energy production or transmission?	☐	☑
6. Is the proposed action related to seabed mining?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The project site is situated over 1 mile inland from the shoreline in an area of existing urbanized uses and pasture land planned for future development. The Proposed Action will support short-term construction and construction-related jobs.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies:

1) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards.
2) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards.
3) Ensure that developments comply with requirements of the Federal Flood Insurance Program.
4) Prevent coastal flooding from inland projects.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Is the project site on or abutting a sandy beach?	☐	☑
2. If "Yes" to question no. 1, has the project parcel or adjoining shoreline areas experienced erosion?	☐	☐
3. Is the project site within a potential tsunami inundation area? Refer to tsunami evacuation maps at http://www.scd.hawaii.gov	☐	☑
4. Is the project site within a flood hazard area according to a FEMA Flood Insurance Rate Map (https://msc.fema.gov)?	☐	☑
5. Is the project site within a subsidence hazard area?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The project site is located within Flood Zone X, which is an area determined to be outside of the 0.2 percent annual chance (or 500-year) floodplain. The project site is also located outside of the tsunami evacuation zone. No significant adverse drainage impacts to downstream properties are anticipated from the proposed project. There are no other site-specific natural hazard conditions affecting the site.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

1) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development.
2) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements.
3) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. List the permits or approvals required for the proposed action and provide the status of each in the Discussion section below.		
2. Does the proposed action conform with state and county land use designations for the site?	☑	☐
3. Has the public been notified of the proposed action?	☐	☑
4. Has an environmental impact statement or environmental assessment been prepared for the proposed action?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The Proposed Action has been evaluated in compliance with 40 CFR 1500-1508 – CEQ Regulations for Implementing the Procedural Provisions of NEPA, Title 32 CFR Part 989 – Environmental Impact Analysis Process (EIAP), and AFI 32-7061 – The Environmental Impact Analysis Process. In addition, applicable state and county requirements will be adhered to in the design and construction of the proposed project. In complying with CZMA development management requirements and objectives, the Proposed Action will not involve substantial degradation of environmental quality nor would it require substantial energy or resource consumption. The development management process regarding the Proposed Action falls within the appropriate parameters of the Park build-out.

The Proposed Action would eventually require development, building, grading, and NPDES permits prior to construction. As part of the NEPA process, the Proposed Action requires State Historic Preservation Division (SHPD) concurrence. The Archaeological Assessment Report for the SISL Project has been submitted to the SHPD for review. The Proposed Action also requires U.S. Fish and Wildlife Service (USFWS) approval of the Biological Assessment (BA) for the SISL. The Draft BA is currently under review by USFWS.

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

1) Promote public involvement in coastal zone management processes.
2) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities.
3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Has information about the proposed action been disseminated to the public?	☐	☑
2. Has the public been provided an opportunity to comment on the proposed action?	☐	☑
3. Has or will a public hearing or public informational meeting be held?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The proposed project is located over 1 mile inland from the shoreline and is not anticipated to impact shoreline activities and beach processes. An Environmental Assessment (EA) is being prepared for the project, in accordance with the National Environmental Policy Act (NEPA). Public involvement associated with the NEPA process for this project has included notifying local, state, and federal agencies; native Hawaiian organizations; and other stakeholders about the Proposed Action and soliciting agency/stakeholder comments and issues. Agencies, stakeholders, and the public will have an opportunity to review and provide comments on the Draft EA/Draft Decision Document upon its release.

BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

Policies:

1) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.
2) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities.
3) Minimize the construction of public erosion-protection structures seaward of the shoreline.
4) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor.
5) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Will the proposed action occur on or adjacent to a beach?	☐	☑
2. Is the proposed action located within the shoreline setback area?	☐	☑
3. Will the proposed action affect natural shoreline processes?	☐	☑
4. Will the proposed action affect recreational activities?	☐	☑
5. Will the proposed action affect public access to and along the shoreline?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The proposed project would not impact beaches or public use recreational areas. The project is not adjacent to beaches or existing coastal recreational activities. As previously noted, the proposed project is located over 1 mile from the shoreline.

MARINE RESOURCES

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

1) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial.
2) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency.
4) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone.
5) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources.
6) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section:

	Yes	No
1. Will the proposed action involve the use or development of marine or coastal resources?	☐	☑
2. Will the proposed action affect the use or development of marine or coastal resources?	☐	☑
3. Does the proposed action involve research of ocean processes or resources?	☐	☑

Discussion: (If more space is needed, attach a separate sheet.)

The proposed project is not anticipated to have adverse effects upon marine and coastal resources in the vicinity. As previously noted, the proposed project is located over 1 mile from the shoreline. Construction activities on the property will comply with all applicable Federal, State and County regulations and rules for erosion control.

Attachment A

SISL EA Scoping Letter to Office of Planning 2-10-2021

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY

10 February 2021

Lieutenant Colonel J. Chris Zingarelli, USAF
Commander
Air Force Research Laboratory, Detachment 15
550 Lipoa Parkway
Kihei HI 96753-6902

Ms. Mary Alice Evans, Director
Office of Planning, State of Hawaii
PO. Box 2359
Honolulu HI 96804-2359

Dear Ms. Evans,

The United States Air Force (Air Force) is preparing an Environmental Assessment (EA) to evaluate the potential impacts on the human and natural environments of constructing and operating a proposed secure integration support laboratory (SISL) on the island of Maui, Hawai'i (Proposed Action). The Air Force Research Laboratory (AFRL) Detachment 15, under the U.S. Air Force Materiel Command, proposes to construct the permanent, government-owned SISL on approximately 10 acres in the Maui Research and Technology Park (MRTP) in Kihei, Maui County, Hawai'i (see Figures 1 and 2, attached). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we are sending this letter to advise you of this effort and to request your assistance in identifying any potential issues related to the Proposed Action.

The EA will be prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 *United States Code* § 4321); the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 *Code of Federal Regulations* [CFR] Parts 1500–1508 and 1515–1518); and the Air Force Environmental Impact Analysis Process, as codified in 32 CFR Part 989. The EA will assess the potential environmental consequences of constructing and operating the SISL. It will also analyze the No Action Alternative, as required by CEQ regulations.

The AFRL is responsible for advancing technologies that improve the nation's capability to maintain space domain awareness (SDA). One responsibility is tracking the approximately 19,000 space objects and pieces of debris larger than 4 inches in diameter in Earth's orbit. The AFRL has nine directorates, including the Air Force Office of Scientific Research, which provides command and control for the Air Force Maui Optical and Supercomputing (AMOS) site. The AMOS site has two assets conducting SDA research and development on Maui. The first facility is the Maui Space Surveillance Complex (MSSC), which maintains multiple telescopes and laboratories located at the summit of Mount Haleakalā at an altitude of 10,000 feet above sea level. The second facility—Detachment 15 AFRL Headquarters (HQ)—is a leased facility in the MRTP in Kihei and is connected to the MSSC with high-speed fiber optic links. Detachment 15 AFRL HQ, sited near sea level, houses approximately 150 personnel and consists of administrative, laboratory support, and data center functions that support the MSSC.

Other supporting operations include the Maui High Performance Computing Center (MHPCC), which is another data center located in leased space in the MRTP; a leased logistics warehouse in Kahului about 12

miles from Detachment 15 AFRL HQ; and the Remote Maui Experiment (RME) facility about one-half mile east of Detachment 15 AFRL HQ in a government-owned building on land leased from the Haleakalā Ranch Company. The RME facility has about six personnel and houses telescopes, computing areas, and administrative space. Detachment 15 AFRL facilities are shown in Figure 1.

The purpose of the Proposed Action is to construct a permanent, government-owned SISL on the island of Maui, Hawai'i, that would consolidate operations from the multiple existing Detachment 15 AFRL facilities on the island into one location, provide adequate space to meet current mission needs, and provide a direct connection to the MSSC at the summit of Mount Haleakalā using dedicated fiber optic cables. The locations of proposed sites for SISL construction Detachment 15 AFRL considered are shown in Figure 2. The Proposed Action is identified as Alternative 1. The other alternative sites shown in Figure 2 did not meet the purpose, need, and/or screening criteria for the Proposed Action so were not carried forward for detailed evaluation.

The SISL would be a two-story, approximately 56,000-square-foot building. It would have the capacity to provide workspace for about 180 government personnel and would include a modern, high-performance data center; laboratories; a remote telescope operations center; rooftop and ground-level telescope domes; secure areas and facilities where classified information could be processed; administrative spaces; a secure entry control point; and warehouse functions. The building would comply with Air Force antiterrorism/force protection (AT/FP) and security requirements in accordance with Department of Defense (DoD) Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

The Proposed Action is needed because the current leased facilities do not meet the DoD and Air Force AT/FP and security requirements of UFC 4-010-01, which places the government workforce and the mission at risk. The Proposed Action is also needed to increase the number of hours personnel spend on mission-related work by reducing the amount of time they spend commuting roundtrip to the summit of Mount Haleakalā. Personnel who must divide their work time between Detachment 15 AFRL HQ and the MSSC must drive 1.5 hours each way along winding narrow roads. Also, altitude sickness is common with employees who must work at the MSSC summit.

The Draft EA will be provided in an electronic format when it becomes available. The Air Force intends to maximize the use of electronic transmittals during subsequent coordination phases of this project. If you would prefer to receive a hard copy of any documents, please indicate that preference in your response. Please send any written comments you might have within 30 days of receipt of this letter to the attention of Tetra Tech, the Air Force's consultant on this project. Send comments via U.S. Postal Service to Tetra Tech, Inc., c/o Ms. Julie Kaplan, 9444 Balboa Ave, Suite 215, San Diego, CA 92123 or via email to julie.kaplan@tetratech.com. Thank you for your interest in this project.

Sincerely

ZINGARELLI.JOHN.C.1072738140

Digitally signed by ZINGARELLI.JOHN.C.1072738140
Date: 2021.02.17 12:35:22 -10'00'

J. CHRIS ZINGARELLI, Lt Col, USAF
Commander

2 Attachments:
1. Figure 1. Detachment 15 AFRL Facilities on Maui
2. Figure 2. Locations of Proposed Sites for SISL Construction

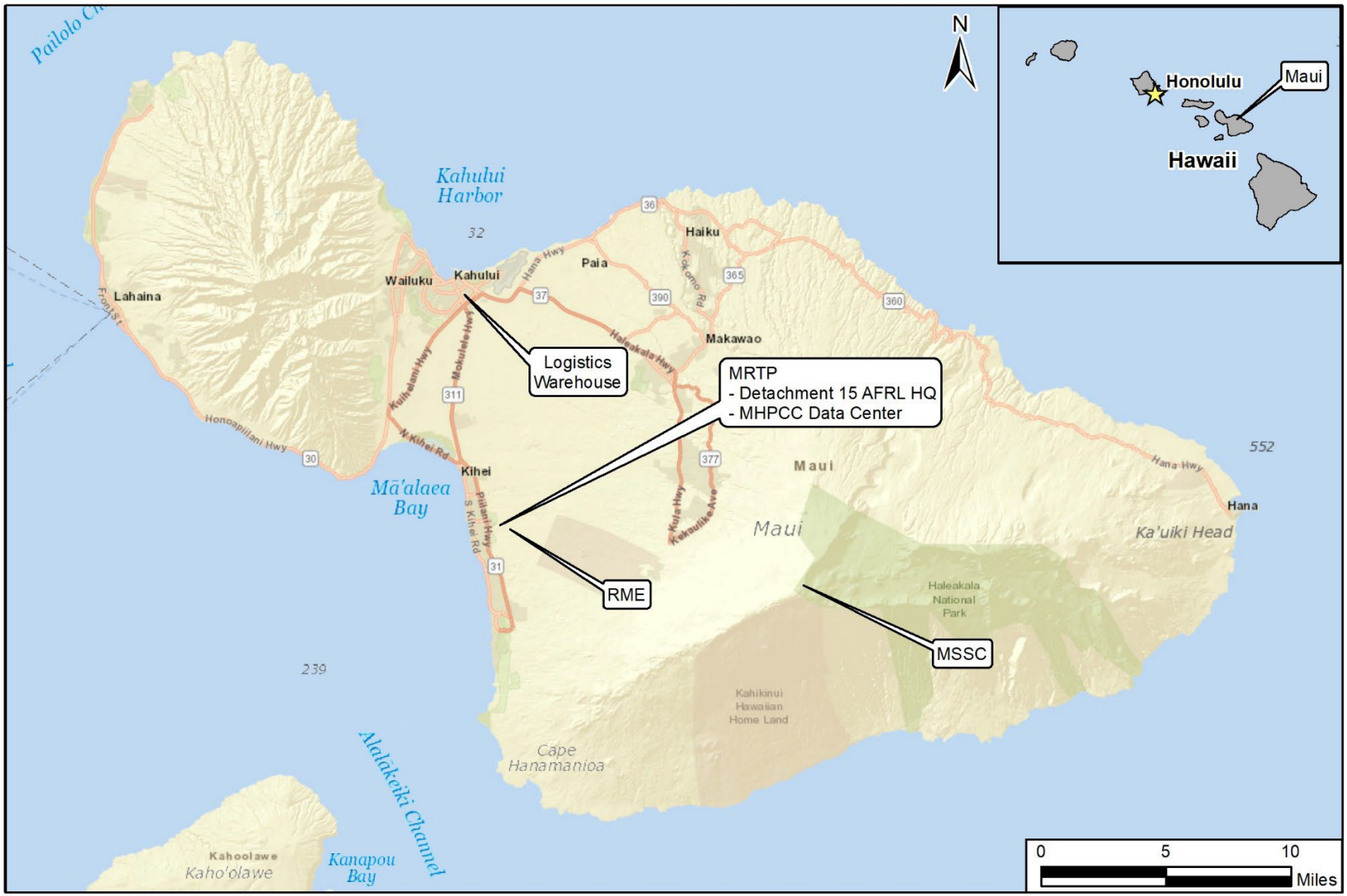


Figure 1. Detachment 15 AFRL Facilities on Maui

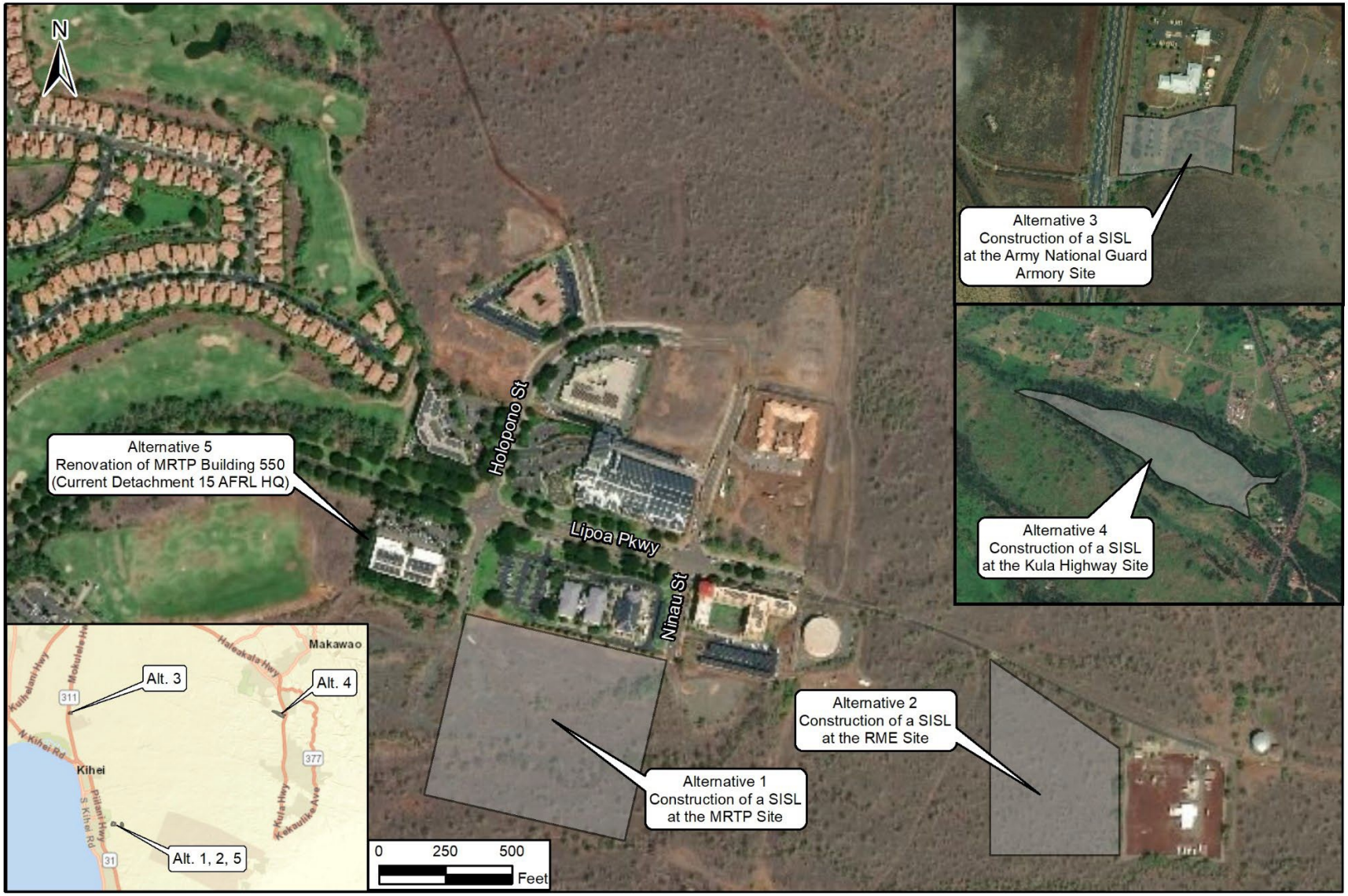


Figure 2. Locations of Proposed Sites for SISL Construction

Attachment B

Additional Figures

Figure A. Conceptual SISL Building Design

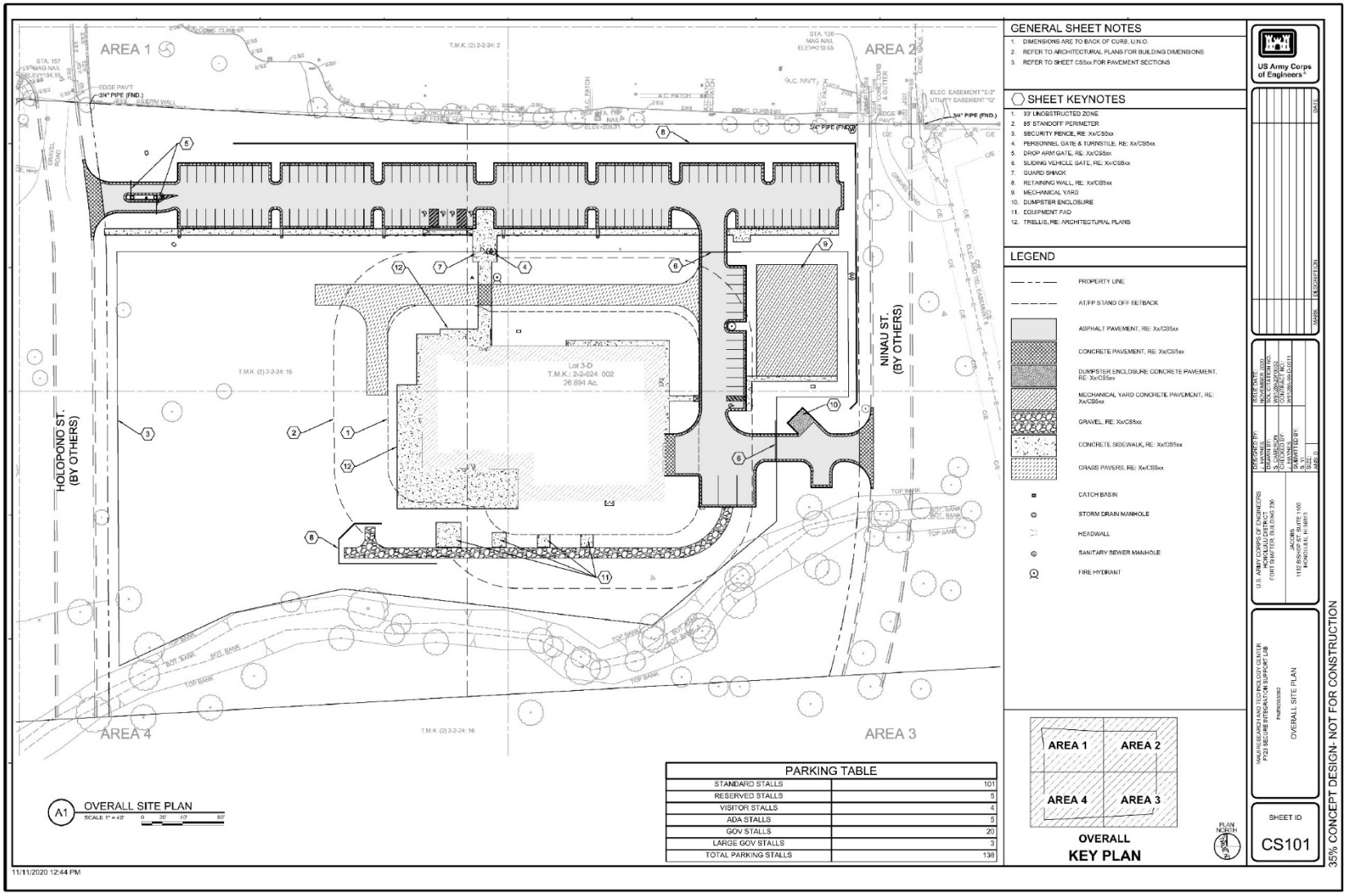
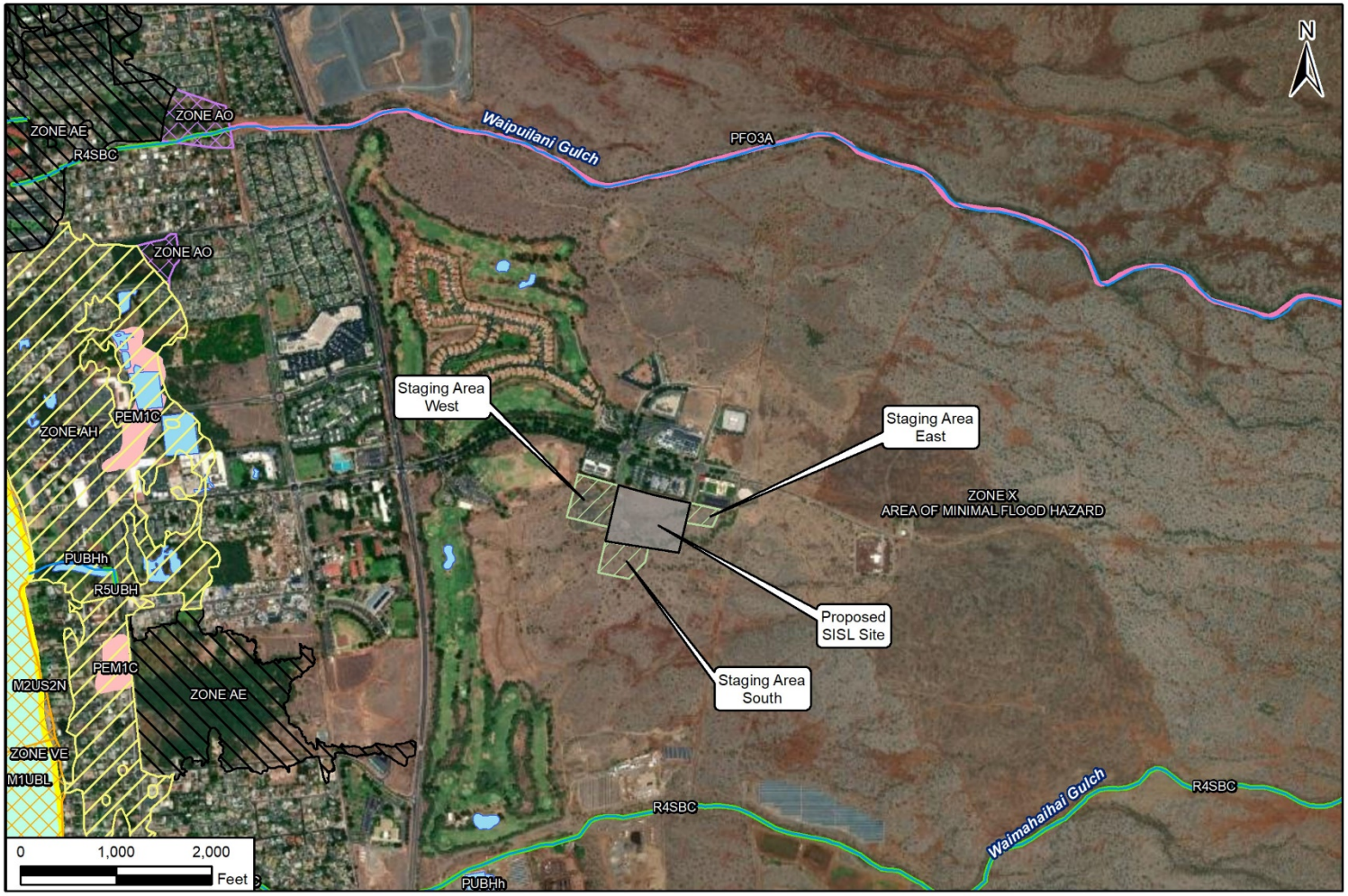


Figure B. Conceptual Site Plan

Note: Site boundaries are approximate.

Figure C. Proposed Construction Staging Areas



LEGEND

Proposed Site	**Flood Zone**		**Wetland Type**
Staging Area	AE	AO	Estuarine and Marine Deepwater
Lake/Pond	AH	VE	Estuarine and Marine Wetland
Stream			Freshwater Emergent Wetland
			Freshwater Forested/Shrub Wetland
			Riverine

Note: Site boundaries are approximate. Source: FEMA 2020; NHD 2020; NWI 2020.

Figure D. Water Resources

APPENDIX E

Air Quality Supporting Documentation

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AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
State: Hawaii
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: SISL

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2022

e. Action Description:

Build SISL

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below. None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality.Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs.No further air assessment is needed.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

Construction

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.173	250	No
NOx	2.998	250	No
CO	7.909	250	No
SOx	0.010	250	No
PM 10	2.566	250	No
PM 2.5	0.122	250	No
Pb	0.000	25	No
NH3	0.027	250	No
CO2e	1073.6		

Operaions

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.406	250	No
NOx	0.508	250	No
CO	4.867	250	No
SOx	0.004	250	No
PM 10	0.021	250	No
PM 2.5	0.020	250	No
Pb	0.000	25	No
NH3	0.025	250	No
CO2e	620.8		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.406	250	No
NOx	0.508	250	No
CO	4.867	250	No
SOx	0.004	250	No
PM 10	0.021	250	No
PM 2.5	0.020	250	No
Pb	0.000	25	No
NH3	0.025	250	No
CO2e	620.8		

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
State: Hawaii
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: SISL

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2022

- Action Purpose and Need:
Build SISL

- Action Description:
Build SISL

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Build SISL
3.	Heating	Heating Building
4.	Personnel	Personnel

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Honolulu
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Build SISL

- Activity Description:
56000 sqft building

- Activity Start Date
Start Month: 1
Start Month: 2022

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2022

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.776911

Pollutant	Total Emissions (TONs)
PM 2.5	0.115693

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

SO_x	0.006917
NO_x	2.670468
CO	3.193360
PM 10	2.559033

Pb	0.000000
NH_3	0.002066
CO_2e	669.8

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 80000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 1
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 5600
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8

Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1

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Start Year: 2022

- Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Commercial or Retail
Area of Building (ft^2): 56000
Height of Building (ft): 12
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0797	0.0013	0.5505	0.3821	0.0203	0.0203	0.0071	128.81
Forklifts Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0274	0.0006	0.1265	0.2146	0.0043	0.0043	0.0024	54.457
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0340	0.0006	0.2783	0.2694	0.0116	0.0116	0.0030	61.069
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0260	0.0003	0.1557	0.1772	0.0077	0.0077	0.0023	25.661

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.32 / 1000): Conversion Factor ft^3 to trips (0.32 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.05 / 1000): Conversion Factor ft^3 to trips (0.05 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 1
Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 28000
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

2.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

- Phase Start Date

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Start Month: 1
Start Quarter: 1
Start Year: 2022

- Phase Duration
Number of Month: 3
Number of Days: 0

2.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 56000

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0806	0.0014	0.4657	0.5731	0.0217	0.0217	0.0072	132.92
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0507	0.0012	0.2785	0.3488	0.0105	0.0105	0.0045	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**

Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

2.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Honolulu
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating Building

- Activity Description:
Heating Building

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.009915
SO_x	0.001082
NO_x	0.180267
CO	0.151424
PM 10	0.013700

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.013700
Pb	0.000000
NH_3	0.000000
CO_2e	217.0

3.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

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Area of floorspace to be heated (ft^2): 56000
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

3.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

3.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value ($MMBTU/ft^3$)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

4. Personnel

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Honolulu
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Personnel

- Activity Description:
Personnel

- Activity Start Date
Start Month: 1

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Start Year: 2022

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.396522
SO_x	0.002710
NO_x	0.327442
CO	4.715322
PM 10	0.006801

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.006137
Pb	0.000000
NH_3	0.024910
CO_2e	403.7

4.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 0
Civilian Personnel: 180
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)
Civilian Personnel: 5 Days Per Week (default)
Support Contractor Personnel: 5 Days Per Week (default)
Air National Guard (ANG) Personnel: 4 Days Per Week (default)
Reserve Personnel: 4 Days Per Month (default)

4.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

4.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.280	000.002	000.208	003.467	000.005	000.005		000.023	00332.267
LDGT	000.373	000.003	000.374	004.989	000.007	000.006		000.024	00427.713
HDGV	000.801	000.005	000.972	016.626	000.015	000.013		000.046	00789.621
LDDV	000.079	000.003	000.127	002.707	000.004	000.004		000.008	00325.337
LDDT	000.218	000.004	000.362	004.629	000.007	000.006		000.008	00461.106
HDDV	000.300	000.013	003.537	001.358	000.165	000.152		000.026	01490.613
MC	002.824	000.003	000.676	013.057	000.025	000.023		000.053	00392.231

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons