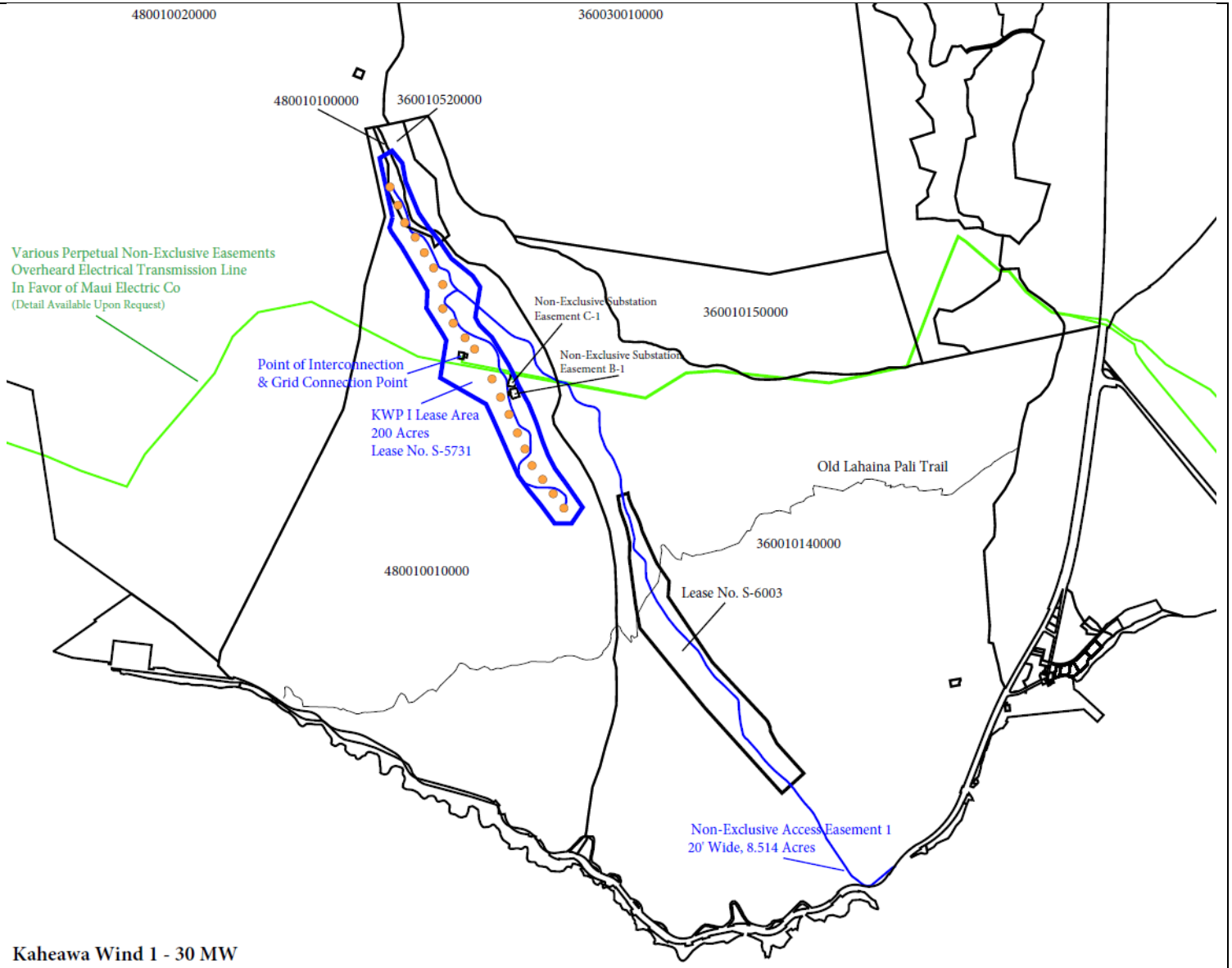
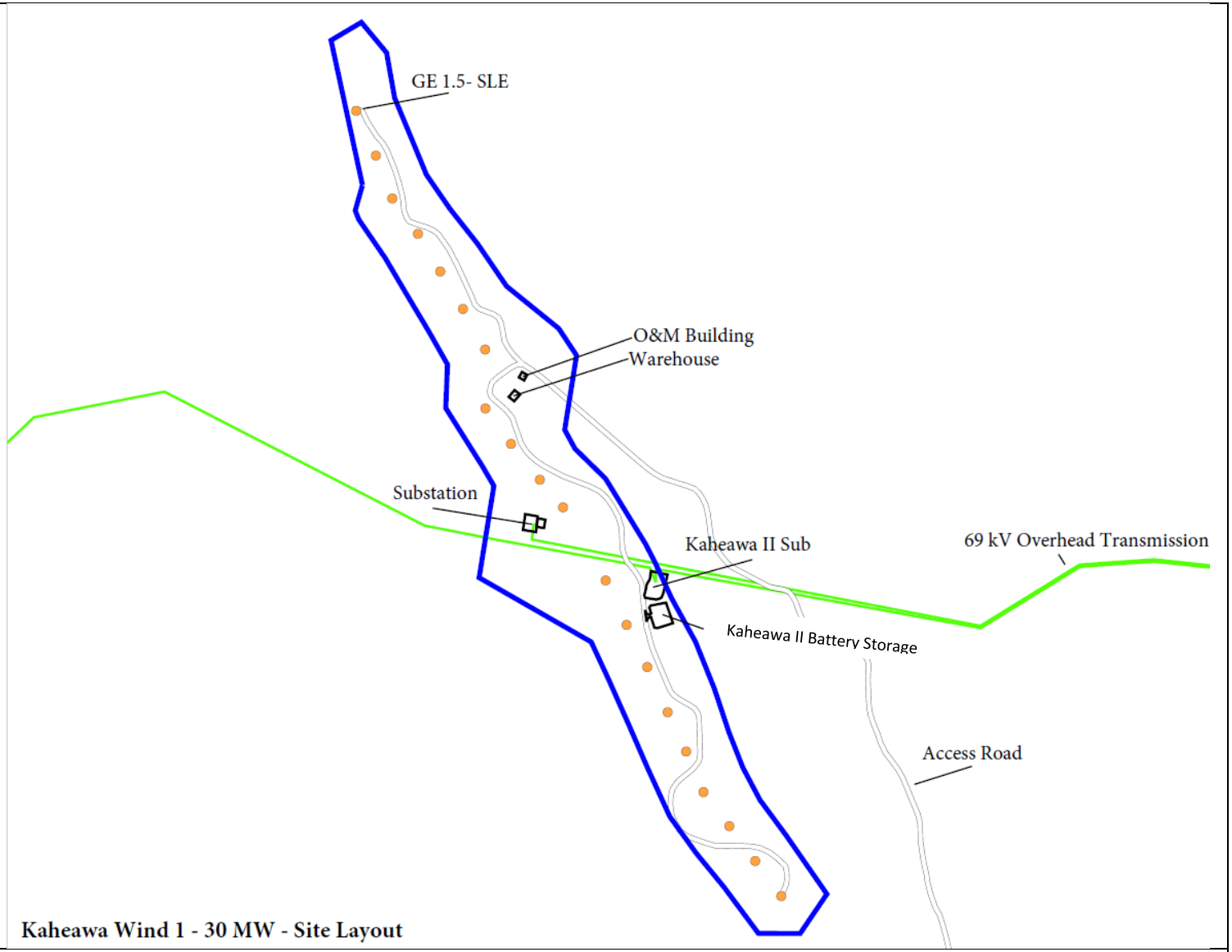
Kaheawa Wind 1 Project Summary (<u>Proposes No Changes to Existing Facility</u>)

Project Details

Proposer Name	Kaheawa Wind Power, LLC
Parent Company	TerraForm Power (Subsidiary of Brookfield Renewable US)
Project Name	Kaheawa Wind I
Project Capacity	30 MW (No change from existing)
Proposed Location	Existing KWP I wind farm site near Maalaea (No change from existing)
TMKs of Facility Location	Kaheawa Wind Power LLC TMK: 4-8-001-001-6001 (applicable project), which is accessed via Kaheawa Wind Power II LLC TMK: 3-6-001-014-6001
Point of Interconnection's Circuit	Existing KWP I substation (No change from existing)
Project Description	Kaheawa Wind 1, Maui's first wind farm, is pleased to present Maui with an opportunity to continue operation of the wind farm with no changes and deliver new benefits for Maui today and for future generations. Since 2006, Kaheawa Wind 1 has proudly served the people of Hawai'i, locally generating enough clean energy to power approximately 15,000 Maui homes annually and contributing to energy affordability, energy security, and the state's movement toward a sustainable, renewable energy future and goal of 100% renewable energy by 2045. Combined, Kaheawa Wind 1 & 2 power approximately 25,000 Maui households annually at 30 and 21 MWs respectively. In response to the Stage 3 Request for Proposals from Hawaiian Electric, our proposal reflects an opportunity to continue generating local, renewable energy at below the cost of fossil fuels and below its current rate **<u>with no changes to the existing wind farm – no change to the wind turbines, no change to layout, and the facility will remain as-is in its present configuration</u>**. Kaheawa will undertake maintenance to the facility to support continued operations over the term of a new contract with Hawaiian Electric. We are committed to designing and delivering a new community benefits program in collaboration with the community, and furthering a legacy of safety, environmental stewardship, and respect for the land and community.
Project Site Map	Map below reflects existing site configuration, no changes will be made to layout, turbines, etc.

	
Site Layout Plan	Map below reflects existing site configuration, **no changes will be made to layout, turbines, etc.**

	
Interconnection Route	See above maps; project to utilize existing point of interconnection and existing transmission infrastructure with no changes.

Environmental Compliance and Permitting Plan

Please Note: Below information is draft and subject to change based on factors including but not limited to discretion of relevant agencies, stakeholders, and community engagement.

Overall land use and environmental permits and approvals strategy	Kaheawa Wind Power, LLC (Kaheawa Wind) has operated the Kaheawa Wind Power I (KWP I) and Kaheawa Wind Power II (KWP II) wind energy generation facilities in West Maui, which were approved in 2006 and 2010, respectively. Over their lifespans, KWP I and KWP II have been successfully operated in compliance with all applicable federal, state, and local regulations. The purpose of the KWP I Continued Use Project is to extend the operation of the KWP I wind generation facility. With the proposed Project, Kaheawa Wind will continue to generate wind energy with the existing 20 GE 1.5 MW wind generating turbines and ancillary facilities (e.g., substation, maintenance facility, access road, and transmission interconnection). The power generated by the Project will be sold to Hawaiian Electric under a new 20-year power purchase agreement to be approved by the Public Utilities Commission. **No changes to KWP I operations or new infrastructure/equipment are proposed.** Although new permits, permit amendments, or approvals will be needed for the Project, they will be substantially the same as those in place for the existing facility. This allows for a solid understanding of approval timelines and permit requirements, which is expected to in turn facilitate a timely and predictable permit approval process. Key elements of the strategic permitting approach include (1) consultation with the appropriate agencies early and often through the permitting process; (2) updating existing and performing additional due diligence studies for any resources that may be impacted by the continued use; and (3) integration with a proactive community outreach effort.
Sequencing of permit applications	Figure 1 shows the expected schedule of potential permits and approvals required for the Project. **Below timeline is draft and subject to modification.**

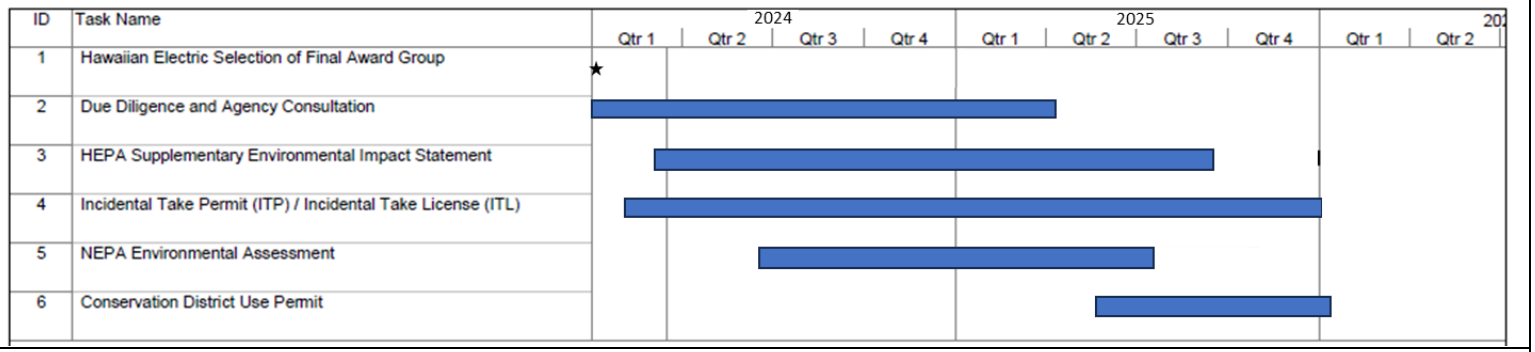
	
City Zoning and Land Use Classification	The Project Site is located within the County of Maui Agricultural Zoning District.
Discretionary and non-discretionary permits and list of permits and approvals	Table 2 below identifies all potential discretionary and non-discretionary land use, environmental and construction permits, and approvals potentially to be required for development, financing, construction, and operation of the Project. The rationale for the permits that will likely be needed and the estimated timeline for approvals was provided by a permitting with extensive experience coordinating permitting efforts with DLNR and USFWS on Maui. The permitting team has been providing natural resources management planning, environmental impact assessments, community involvement, regulatory compliance, permitting, environmental engineering, and other environmental services for more than 31 years in the Hawaiian Islands. In that time the team has compiled an extensive portfolio of project experience assisting key decision makers with complex project evaluations specifically for renewable energy projects. Specifically, the permitting team has National Environmental Policy Act (NEPA) and Hawai'i Environmental Policy Act (HEPA) compliance experience; terrestrial and aquatic wildlife and botanical survey experience; and has completed Habitat Conservation Plans (HCPs) for wind energy projects in Hawaii. The team has been providing HCP monitoring and reporting services for KWP I since 2019. This includes working with regulatory agency staff that will be involved in the assessment of this proposed Project. The combination of past experience at KWP I and broad experience in Hawaii has allowed the permitting team to thoroughly evaluate what is likely to be needed to gain project approvals and to allocate appropriate time frames for that work to occur.

Table 2. Potential Discretionary and Non-Discretionary Permits and Approvals

Permit Name	Agency Having Jurisdiction	Estimated Time Frame for Approval	Permit Dependencies
Incidental Take Permit (ITP) and preparation of federal Habitat Conservation Plan (HCP)	USFWS, Pacific Islands Fish and Wildlife Office	Six months for HCP amendment (not including NEPA) One year for new HCP (not including NEPA)	To be completed concurrently with State ITL. Joint federal and state HCP is anticipated. ITP Triggers NEPA environmental review.
National Environmental Policy Act (NEPA) Compliance	USFWS	1 year	Completion of HCP.
National Historic Preservation Act (NHPA), Section 106 Consultation.	Hawai‘i DLNR State Historic Preservation Officer (SHPO)	6 to 12 months	The Section 106 consultation for the ITP issuance will run concurrent with the HRS 6E process with SHPD.
Determination of No Hazard and Notice of Proposed Construction or Alteration	Federal Aviation Administration (FAA), Western-Pacific Regional Office	2 to 3 months	None
Conservation District Use Permit (Board Permit)	DLNR OCCL and Board of Land and Natural Resources	6 to 12 months	HEPA environmental review required in order to approve CDUP.
Incidental Take License (ITL) and preparation of a state HCP	Hawai‘i DLNR, DOFAW	1 to 2 years	To be completed concurrently with the Federal ITP. Joint federal and state HCP is anticipated.
HEPA/HRS Chapter 343 Compliance	Approving Agency (assumed to be DLNR)	1 to 2 years Mandatory 30-day EIS Public Notice (scoping) review period; 45-day draft EIS review period; 60-day appeal period.	None
Historic Preservation, HRS Chapter 6E/Historic Sites Review, HAR §13-276	Hawai‘i DLNR SHPD	6 to 12 months	In parallel with Sec 106

Preliminary environmental	See Appendix A: Preliminary Environmental Assessment of the Site

assessment of the Site	
Cultural Resources	Please see our Community Outreach Plan, which includes an analysis of valued cultural, historical, or natural resources in the area. Kaheawa Wind 1 is proposing no changes to the existing facility.
Community Outreach	See Community Outreach Plan available for download at kaheawawind.com

Preliminary Environmental Assessment

FOR
HAWAIIAN ELECTRIC COMPANIES
REQUEST FOR PROPOSALS
FOR
RENEWABLE DISPATCHABLE GENERATION AND ENERGY STORAGE

KAHEAWA WIND POWER I CONTINUED USE PROJECT MAUI ISLAND, HAWAIʻI

Prepared by:

TETRA TECH

737 Bishop Street, Suite 2340

Honolulu, HI 96813

March 2023

Table of Contents

List of Tables

Acronyms and Abbreviations

Applicant	Kaheawa Wind Power LLC
BMP	best management practices
dB	decibels
DLNR	Hawai‘i Department of Land and Natural Resources
DOFAW	Division of Forestry and Wildlife
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GHG	greenhouse gas
HAR	Hawai‘i Administrative Rule
HDOH	Hawai‘i Department of Health
HMWMP	Hazardous Materials and Waste Management Plan
kV	kilovolt
LSB	Land Study Bureau’s
LUC	Land Use Commission
MCC	Maui County Comprehensive
MW	megawatt
NHD	National Historic Database
PPA	power purchase agreement
Project	Kaheawa Wind Power I Continued Use Project
RFP	Request for Proposals
SPCC	Spill, Prevention, Containment, and Countermeasure
SWPPP	Storm Water Pollution and Prevention Plan
TESC	Temporary Erosion and Sediment Control
TMK	Tax Map Key
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 Introduction

In response to the Hawaiian Electric Companies’ (Hawaiian Electric) Request for Proposals (RFP) to provide renewable energy projects on Maui Island, Kaheawa Wind Power LLC (Kaheawa Wind / Applicant) has prepared this preliminary environmental assessment (EA). This preliminary EA provides a summary of the anticipated impacts to resources for the proposed Kaheawa Wind Power (KWP) I Continued Use Project (Project) located within the Kaheawa Pastures area of Ukumehame in West Maui, Hawai‘i.

This preliminary environmental assessment provides a high-level review of pre-existing environmental conditions, and potential short and long-term impacts associated with, or resulting from the proposed Project – including direct, indirect, and cumulative impacts associated with development, operation, and maintenance of the proposed Project in each of the environmental areas identified below. Effects of the proposed Project are divided into short-term and long-term effects. Short-term effects are typically related to construction activities and are relatively short in duration. This project, however, will not require any construction efforts; the KWP I facility would continue current operations. Long-term effects refer to the effects caused from implementation of the proposed Project and are longer in duration.

Data was obtained from publicly available resources as well as the Final Environmental Impact Statement (EIS) (WSB-Hawaii 1999) and Final Environmental Assessment (EA) (WSB-Hawaii 2004) for the KWP I facility, and Final EIS for the KWP II facility (Planning Solutions Inc. 2010) just south of KWP I. There is no proposed alternative site or project currently being considered and therefore no alternative is evaluated in this preliminary environmental assessment. This is the continued use of an existing facility so no alternative project or locations would be considered. The assessment does describe proposed avoidance and minimization measures for each of the major environmental areas as presented below.

1.1 Project Description

Kaheawa Wind owns and operates the existing 30-megawatt (MW) KWP I wind farm in the Kaheawa Pastures area of West Maui. The wind generating turbines and ancillary facilities (e.g., substation, maintenance facility, access roads, and transmission interconnection) are located on approximately 200 acres of Tax Map Key (TMK) 4-8-01:01 and the internal access roads and a parking/staging area are granted through access easements (20 feet wide and 8.5 acres) within TMK 3-6-001:014 (Project area). Use of the Project area is secured through a long-term lease from the State of Hawai‘i Department of Land and Natural Resources (DLNR) (General Lease No. S-5731). The Project location, TMK boundaries, and plat map are shown in Figures 1, 2, and 3.

The wind energy generation facility consists of 20 GE 1.5 MW wind-generating turbines, situated in a single articulated row at an elevation extending from approximately 2,000 to 3,200 feet. The height of each turbine tower is 55 meters (180 feet), and the diameter of the rotors is 70.5 meters (231 feet), for a total structural height (maximum blade tip height) of approximately 90 meters (296 feet). Each turbine is set on an approximately 163 square meter (1,752 square foot) foundation. In addition to the turbines the facility includes an operations and maintenance facility, a substation and wind monitoring equipment, all situated in proximity to the turbines. The intraturbine power collection system and connection to the substation are all located underground. Power generated by the facility enters the existing Hawaiian Electric 69kV (kilovolt) transmission line that passes directly through the southern end of the Project area. KWP I is accessed by an existing four-wheel-drive roadway that leads from Honoapiilani Highway through KWP II to KWP I.

The purpose of the KWP I Continued Use Project is to extend the operation of the KWP I wind generation facility for an additional 20-year period and continue to contribute to State’s Renewable Portfolio Standard energy goals of generating 100 percent of the state’s energy from renewable sources by 2045. With the proposed Project, Kaheawa Wind would continue to generate wind energy with the existing 20 GE 1.5 MW wind generating turbines and ancillary facilities. No changes to KWP I operations or new infrastructure or equipment are proposed, with the exception of standard maintenance associated with operations.

The Project would maintain and utilize its existing interconnection with HECO’s island-wide grid, and the power generated by the Project would be sold to Hawaiian Electric under a new 20-year power purchase agreement (PPA) to be approved by the Public Utilities Commission.

Once evaluated through the HRS Chapter 343 environmental review process and permitted by DLNR and USFWS, the Project could be implemented immediately to meet the anticipated demands. No construction is required to continue operations beyond the lifespan of the current PPA and lease beyond standard maintenance activities.

2.0 Natural Environment

2.1 Air Quality

2.1.1 Existing conditions

In general, existing air quality in the vicinity of the Project area is good. Airborne emissions are relatively low due to low levels of development and automobile emissions and prevailing trade winds that help disperse the accumulation of emissions. Sources of pollutant air emissions in the vicinity include vehicle exhaust from Honoapiʻilani Hwy/Hawaiʻi Route 30, dust from agricultural cultivation and construction, occasional smoke from wildfires, and emissions from the Maui Electric Company Ltd.'s Maʻalaea Generating Station located approximately 4 miles east-southeast of the Project area. The existing KWP I facilities does not contribute new air emissions, with the exception of vehicles driving to and from the facility for operations and maintenance.

The State of Hawaiʻi Department of Health (HDOH) maintains air quality monitoring stations throughout the state to measure ambient air quality based on established federal and state standards. Seven parameters are regulated: particulate matter (PM), sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone, and lead. The Hawaiʻi ambient air quality standards (HAAQS). are more stringent than the comparable national standards (NAAQS), except for those pertaining to sulfur dioxide and particulate matter, which are equivalent. A summary of Hawaiʻi's air quality data is published annually, the most recent summary available is for 2020 (HDOH 2021).

The closest air quality monitoring station to the Project area is the Kahului Station, located in a residential area off Mauilani Parkway approximately 6 miles northeast of the Project area. This station monitors $PM_{2.5}$ only. The nearest monitoring stations for PM_{10}, sulfur dioxide, carbon monoxide, and ozone are at Honolulu, Pearl City, and Kapolei on the Island of Oahu. During 2020, the HAAQS or NAAQS standards were not exceeded at the Kahului, Honolulu, Pearl City, or Kapolei stations (HDOH 2021).

2.1.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related emission sources are anticipated.

No long-term, adverse impacts to air quality are expected from operation of the Project because none of the equipment associated with the wind farm emits air pollutants. Some emissions would result from operations and maintenance vehicles, but these would be limited in number and frequency. Emissions from vehicular combustion would be minimized as described in Section 2.1.3.
and would be too low and their distance from sensitive receptors too great, for combustion emissions to have a significant effect on air quality.

Overall, the operations of the Project operation would result in beneficial impact to air quality by continuing to displace emissions from fossil fuel consumption.

2.1.3 Best Management Practices and Minimization Measures

All Project vehicles and equipment used during construction would be maintained in proper working order and be in compliance with state and federal emission standards. Air emissions by the Project would be negligible. No additional avoidance, minimization, or mitigation measures are likely to be required.

2.2 Biology

This assessment is based on biological surveys and assessments that were conducted prior to the construction of the existing facility (Medeiros 1996, Nishibayashi 1997, Medeiros 1998, Nishibayashi 1998, Day and Cooper 1999, Cooper and Day 2004, Hobdy 2004, Hobdy 2004b, KWP 2006), as well as the 16-year post-construction monitoring and observations during operations at the existing facility as part of compliance with its Habitat Conservation Plan (HCP) (KWP 2022, DLNR Division of Forestry and Wildlife [DOFAW] n.d.). That information is supplemented by general knowledge of biological resources in this region.

2.2.1 Natural Habitats and Ecosystems

2.2.1.1 Existing Conditions

The primary habitat in the Project area is non-native grassland and woody shrubs, with a mix of non-native grasslands and native shrublands in the uppermost elevations above 915 meters (3,000 feet). No unique habitats or ecosystems occur in the Project area. The natural resources and ecosystems in the Project area are mostly disturbed from past land use and, in part, due to the construction and operation of the existing wind facility. Wildfires, including a recent fire in 2019, have further transformed the habitats and ecosystems in the area. The Project area does not support any perennial streams or wetlands (see section 7.0).

2.2.1.2 Short and Long Term Impacts

Short- and long-term impacts to natural habitats and ecosystems are described in detail within sections 2.2.2 (Wildlife), 2.2.3 (Vegetation), 2.4 (Soils), and 7.0 (Water Quality).

2.2.1.3 Best Management Practices and Minimization Measures

Best management practices and minimization measures related to natural habitats and ecosystems are described in detail within sections 2.2.2 (Wildlife), 2.2.3 (Vegetation), 2.4 (Soils), and 7.0 (Water Quality).

2.2.2 Wildlife

2.2.2.1 Existing Conditions

The Project area provides habitat for both native and introduced wildlife. On-site knowledge of these species is well-known given years of post-construction monitoring and other HCP compliance activities in the Project area vicinity (KWP 2022). The Project area is an operating wind facility and much of the area around the turbine pads and the site access roads is disturbed from the ongoing use.. Non-native species recorded are those common in lowland and mid-elevation environments, including avian species Eurasian skylark (*Alauda arvensis*), ring-necked pheasant (*Phasianus colchicus*), black francolin (*Francolinus francolinus*), gray francolin (*Ortygornis pondicerianus*), African silverbill (*Euodice cantans*), and house finch (*Carpodacus mexicanus*), and mammals such as mice (*Mus musculus*), rats (*Rattus* spp.), mongoose (*Herpestes javanicus*), feral cats (*Felis catus*), and dogs (*Canus familiaris*) (DOFAW n.d., KWP 2006).

Several native birds protected by the Migratory Bird Treaty Act (MBTA) are known to or have the potential to occur in or fly through the Project area; these include the indigenous Pacific golden plover/kōlea (*Pluvialis fulva*), wandering tattler/ʻūlili (*Heteroscelus incanus*), white-tailed tropicbird/koaʻe kea (*Phaethon lepturus*), and the endemic Hawaiian short-eared owl/pueo (*Asio flammeus sandwichensis*) (Nishibayashi 1997, Nishibayashi 1998, KWP 2006, KWP 2022). The Hawaiian short-eared owl has the potential to forage in or traverse the Project area; it is not listed on Maui but is state listed as endangered on the island of Oʻahu.

Four federally and state-listed wildlife species have the potential to occur or use habitat in the Project area: the Hawaiian hoary bat/ʻōpeʻapeʻa (*Lasiurus cinereus semotus*), Hawaiian goose/nēnē (*Branta sandvicensis*), Hawaiian petrel/ʻuaʻu (*Pterodroma sandwichensis*), and Newell's shearwater/ʻaʻo (*Puffinus newelli*) (KWP 2006). Additionally, based on the Project location, two other listed species have the potential to occur in or transit the Project area or its vicinity—the band-rumped storm-petrel/ʻakēʻakē (*Oceanodroma castro*), and Blackburn's sphinx moth (*Manduca blackburni*). These listed species are discussed in further detail below.

Hawaiian hoary bat (ʻōpeʻapeʻa)

The endangered Hawaiian hoary bat has been recorded in the Project area and vicinity. Acoustic monitoring using detectors has been on-going within the existing wind farm since 2008 and intensive fatality monitoring has occurred since operations began in June 2006 (KWP 2022). Results of acoustic monitoring show an increasing trend in detection rates across years, with bat activity detected on 9.5 percent of detector nights sampled during the period from July 2021 through June 2022 (KWP 2022). This is likely the result of ever-improving detection technology rather than changes in bat populations generally. The Hawaiian hoary bat roosts in both native and non-native trees over 15 feet tall and forages over a wide variety of habitats and elevational ranges (USFWS 2021, Bonaccorso et al. 2015). U.S. Fish and Wildlife Service (USFWS) and State of Hawaiʻi Division of Forestry and Wildlife (DOFAW) recognize all woody vegetation greater than 15 feet tall as potential bat roosting habitat (DOFAW 2015, USFWS 2022a). Although trees are not abundant within the Project area, trees over 15 feet are present (e.g., Christmas berry [*Schinus terebinthifolia*] and ironwood [*Casuarina equisetifolia*]) and have the potential to be used for roosting and foraging.

Hawaiian goose (Nēnē)

Nēnē (*Branta sandvicensis*) is listed as threatened by the USFWS and endangered by DOFAW. Nēnē have been regularly observed and documented within the Project area, and active breeding has been recorded on-site (Tetra Tech, Unpublished Data). The Hanaʻula nēnē release pen exists 0.34 miles to the northwest of the Project's highest elevation point (KWP 2006). Nēnē is a Covered Species under the HCP of the existing wind farm and has been detected as fatalities during regular downed wildlife monitoring that occurs at the existing wind farm as part of HCP compliance (KWP 2006, KWP 2022). Nēnē have been observed to seek cover and nest under on-site vegetation, and to fly through or within the vicinity of the Project area in transit to and from areas with known populations. In addition to having strong breeding site fidelity, nēnē appear to be attracted to habitat features that are within the site, such as woody vegetation.

Listed Seabirds

The endangered Hawaiian petrel/ ʻuaʻu, the threatened Newell's shearwater/ ʻaʻo, and the endangered band-rumped storm-petrel/ ʻakēʻakē (collectively referred to as listed seabirds) have been observed within or transiting the Project area (ʻuaʻu and ʻaʻo) or have the potential to occur (ʻākeʻāke). Suitable nesting habitat does not exist in the Project area. However, because suitable nesting habitat exists in nearby areas at upper elevations, it is possible these birds could fly over the Project area at night while transiting between nest sites and the ocean during the breeding season. Results from radar and night-visual surveys during the fledging period observed low

numbers of both the Hawaiian petrel and Newell's shearwater regularly flying over the Project area to and from their nesting sites in the uplands of the West Maui mountains (Cooper and Day 2004). Hawaiian petrel fatalities have also been detected during monitoring at the existing wind farm (KWP 2022). If needed, updated seabird fatality modeling may be completed as part of the HCP processes for continuing operations of the existing facility, using KWP I post-construction monitoring data.

Blackburn's Sphinx Moth

The endangered Blackburn's sphinx moth occurs in dry to mesic areas on the islands of Maui, Hawai'i, and Kaho'olawe. Larvae of the Blackburn's sphinx moth feed on plants in the nightshade family (Solanaceae), including two listed 'aiea (*Nothocestrum*) species and the non-native tree tobacco (*Nicotiana glauca*). (USFWS 2005). Larvae take 65 days to develop to adulthood, but pupae may remain in torpor in the soil for up to a year. Adult moths are believed to feed on several native plant species, including hala pepe (*Pleomele auwahiensis*), maiapilo (*Capparis sandwichiana*), 'ilie'e (*Plumbago zeylanica*), and koali'awa (*Ipomea indica*) (USFWS 2003, USFWS 2005).

The native, larval host plants for Blackburn's sphinx moth [which are considered primary constituent elements required by the moth larvae for foraging, sheltering, maturation, and dispersal (USFWS 2003)] do not occur in the Project area. The non-native tree tobacco, one of its host plants, is common in disturbed lowland dry areas on Maui. While the non-native tree tobacco has rarely been observed in the Project area, current operation staff remove tree tobacco under 3 feet (according to agency guidelines; USFWS 2022a) to prevent attracting Blackburn's sphinx moth. By implementing this avoidance and minimization measure provided by USFWS, Blackburn's sphinx moth is unlikely to occur in the Project area.

Wildlife Critical Habitat

Critical habitat has been designated by the U.S. Fish and Wildlife Service within the Project area for two endangered forest bird species—the crested honeycreeper/'akohekohe (*Palmeria dolei*) and Maui parrotbill/kiwikiu (*Pseudonestor xanthophrys*) (USFWS 2012; Figure 4). Montane Mesic – Unit 5 encompasses approximately 11 acres of the northernmost portion of the Project area, and is unoccupied critical habitat for the crested honeycreeper and Maui parrotbill. Neither of these forest bird species are known to occur within or near the Project area. Additional critical habitat for these two birds occurs in the vicinity of the Project area including in Lowland Mesic – Unit 3 to the northwest and Wet Cliff – Unit 6 and Montane Wet –Unit 7 to the north (Figure 4; USFWS 2016).

2.2.2.2 Short- and Long-Term Impacts

Short- and long-term direct and indirect impacts on the listed Hawaiian hoary bat, Hawaiian goose, Hawaiian petrel, Newell's shearwater, and band-rumped storm-petrel could occur during continued operation of the Project based on the known risk of wind turbines and meteorological towers as potential strike hazards for these species. Additionally, disorientation and fallout of listed seabirds as a result of light attraction could occur from operational lighting or if nighttime work is required. However, existing vegetation has been modified in the Project area due to construction and operation of the existing wind farm so that little habitat for listed species does exists within the Project. Anticipated impacts to wildlife during operations is summarized in the 16 annual reports for the existing wind farm (DOFAW n.d.). Recent research and the results and analysis of 16 years of post-construction monitoring data from the existing wind farm would inform detailed impact analysis as part of developing a new or amended HCP for the Project as part of continued operations of the existing wind farm. Measures to avoid and minimize impacts to listed species with the potential to occur and be impacted by the Project would be implemented as identified in the new or amended HCP. In addition, as part of the HCP development process for the Project's continued use of the existing wind facility, Kaheawa Wind will continue to

consult with USFWS and DOFAW, to collaboratively develop measures to avoid, minimize, and mitigate impacts No significant impacts to federal- or state-protected wildlife are anticipated.

Short-term direct and indirect impacts on Blackburn's sphinx moth could occur if its preferred nonnative host plant, tree tobacco, establishes in the Project area. However, because the proposed Project does not involve new construction, it will not create newly disturbed habitat within which tree tobacco could readily establish. In addition, operations staff will continue to remove any occasional tree tobacco plants that establish (per recommended agency guidelines; USFWS 2022a). Therefore, the Project is not expected to adversely impact the Blackburn's sphinx moth.

No impacts to critical habitat for the crested honeycreeper or Maui parrotbill are anticipated.

2.2.2.3 Best Management Practices and Minimization Measures

The Applicant will consult and coordinate with the USFWS and DOFAW regarding potential impacts to federal and state-protected species potentially occurring within or transiting the Project area during the new HCP or HCP amendment process. Consultation will include discussion of any recommended surveys (and associated survey protocols) for assessing potential impacts to listed and sensitive species. The Project would utilize 16 years of post-construction monitoring data from implementation of the HCP for the existing wind farm to assess risk to listed species. A new HCP or HCP amendment would be prepared to address potential impacts to listed species in the Project area as part of continued use of the existing wind facility and outline mitigation measures.

General BMPs that may be implemented to minimize and avoid impacts to listed wildlife species include restriction of construction activities to daylight hours during the seabird peak fallout period (September 15–December 15), avoiding the use of nighttime lighting that could attract seabirds, and the use of operational on-site lighting at Project facilities known to minimize attraction. The Project will also avoid creating areas with standing water and will manage woody vegetation to minimize attracting the Hawaiian goose. The Project will avoid trimming or removal of vegetation taller than 15 feet (4.6 meters) between June 1 and September 15, when juvenile Hawaiian hoary bat that are not yet capable of flying may be roosting in the trees and fitting any fences that are erected as part of the Project with barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. Additionally, to minimize impacts on Hawaiian hoary bat the Project may include low wind speed curtailment, bat deterrents, or other new technologies that may be available at the time operations continue. Additional measures are expected to include (but may not be limited to) contractor training and education, and stop work requirements if a listed species is observed on site during construction or operations. With implementation of these measures and a mitigation program as part of the Project's new or amended HCP, and the resulting net recovery benefit to listed species, no significant impacts to listed wildlife covered under the Project's HCP are anticipated.

2.2.3 Vegetation

2.2.3.1 Existing Conditions

Vegetation at the Project location is dominated by non-native species and consists of primarily nonnative grasslands and shrublands in the lower elevation areas, and a mixture of non-native grasslands and predominately native shrublands in the uppermost elevations above 915 meters (3,000 feet). Native shrubland vegetation consists of low stature ʻōhiʻa lehua (*Metrosideros polymorpha*), ʻaʻaliʻi (*Dodonaea viscosa*), ʻulei (*Osteomeles anthyllidifolia*), and uluhe fern (*Dicranopteris linearis*). Vegetation has been disturbed from historic grazing, particularly in the mid- to lower elevations of the Project area, and construction and operation of the existing wind facility; vegetation is currently managed within the wind facility and along access roads using

mechanical and chemical methods (KWP 2022). Native vegetation appears to become increasingly more dominant above the Project area toward the summit of Mauna Kahālāwai (Jacobi et al. 2017).

Listed Plant Species

No listed or otherwise rare plant species have been recorded in the Project area in previous surveys for the existing wind farm (Medeiros 1996, Medeiros 1998, Hobdy 2004a, Hobdy 2004b). Additionally, no listed plant species or rare plants have been observed at the existing wind farm during operations or post-construction monitoring over the last 16 years (DOFAW n.d.).

Critical Plant Habitat

Although no listed plant species are known to occur in the Project area, USFWS have designated critical habitat for 28 listed plant species within the Project area (Figure 4). Montane Mesic Unit 5 encompasses approximately 11 acres of the northernmost portion of the Project area and is designated critical habitat for 10 listed plant species. The unit was only occupied by two of the species, *Remya mauiensis* and *Santalum haleakalae* var. *lanaiense*, at the time of designation (USFWS 2016). None of the 10 listed species with critical habitat in Montane Mesic Unit 5 occur in the Project area.

Lowland Dry Unit 5 encompasses approximately 98 acres of the Project area (see Figure 4) and is designated critical habitat for 18 listed species. At the time of designation, this unit was occupied by nine of the species: *Asplenium dielerectum*, *Bidens campylotheca* subsp. *pentamera*, *Cenchrus agrimonioides, Gouania hillebrandii, Kadua coriacea, Remya mauiensis, Santalum haleakalae* var. *lanaiense*, *Spermolepis hawaiiensis,* and *Tetramolopium capillare* (USFWS 2016). However, none of the 18 listed species with critical habitat in Lowland Dry Unit 5 occur in the Project area. The DOFAW Manawainui Plant Sanctuary, which is situated in Lowland Dry Unit 5 and located adjacent to the upper eastern boundary of the Project area, harbored two listed plant species, *Remya mauiensis* and *Asplenium dielerectum*, at the time of critical habitat designation (USFWS 2016).

2.2.3.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project; thus, short-term direct and indirect impacts are expected to be insignificant given that no listed or otherwise rare species occur, and the Project area is dominated by non-native vegetation that is already under management by the existing wind farm as part of operations and HCP compliance. No long-term significant impacts to vegetation are likely to occur because the proposed Project will not involve construction and the existing wind farm facility would continue current operations. Since this is already an active site, a vegetation management program is already in place, minimizing invasive species on site.

The introduction and spread of invasive species associated with Project construction would be minimized through the continued implementation of standard BMPs (see below). With BMPs in place, continuing operations are not expected to have a significant effect on increasing invasive species in the Project area.

No impacts to critical plant habitat are expected.

2.2.3.3 Best Management Practices and Minimization Measures

BMPs and minimization measures for vegetation would likely include the following:

- Minimizing the introduction and spread of invasive species associated with Project operations through the implementation of standard BMPs, such as washing equipment prior to entering the site from other areas.

- Implementing a Vegetation Management Plan to prevent the establishment of weeds within the Project area, including vegetation maintenance around turbine pads and relevant areas to eliminate any nēnē foraging attractions of new growth.
- Implementing a Wildland Fire Prevention and Response Plan to minimize fire impacts to vegetation.

2.3 Climate

2.3.1 Existing Conditions

The Hawaiian Islands have a tropical climate, characterized by relatively mild temperatures and moderate humidity throughout the year (except at high elevations), persistent northeasterly trade winds, notable differences in rainfall across short distances, and infrequent, severe storms. Two primary seasons are recognized, including a 5-month summer season (May through September) when northeasterly trade winds are prevalent, and a winter period between October and April (Giambelluca and Schroeder 1998). Summer is typically warmer and drier than winter, with few storm events. Winter is characterized by more frequent cloud cover and rainfall as well as southerly and westerly winds (Giambelluca and Schroeder 1998). Due to the tempering influence of the surrounding Pacific Ocean and their low-latitude location, the Hawaiian Islands experience extremely small diurnal and seasonal variations in ambient temperature.

Local climate conditions in Hawai‘i are influenced by its rugged, mountainous topography and the persistent flow of the trade winds (Giambelluca and Schroeder 1998). The proposed Project is located on the leeward side of the island of Maui. Mean annual rainfall in the Project area ranges from 14.23 inches to 71.91 inches, from lower elevation entrypoint off Honoapi‘ilani Hwy to the uppermost portion of area, respectively (Giambelluca et al. 2014). Relatively higher rainfall typically occurs in winter months between November to March (Giambelluca et al. 2014).

In this vicinity, moisture zones are described as ranging from arid at the lowermost point of the Project area (i.e. the staging area) to very dry, dry, and seasonal mesic, in ascending order with increasing elevation throughout the Project area (Price et al. 2012). The daytime temperatures average in the 70s to 80s degrees Fahrenheit and nighttime temperatures in the 60s to 70s degrees Fahrenheit (Giambelluca et al. 2014). The prevailing wind direction is from the east.

The existing KWP I facility contributes a minor amount of greenhouse gases to the environment in the form of exhaust from vehicles traveling to and from the site. The operation of KWP I offsets the negligible GHG emissions generated during operations by displacing GHG emissions produced by fossil fuel power sources.

2.3.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related emission sources are anticipated.

No long-term, adverse impacts to climate are expected from operation of the Project. Although modeling shows that extremely large-scale wind farms can have an effect on local climate conditions (Roy et al. 2004), the proposed Project is of a scale (20 turbines) at which those effects are unlikely to occur. The Project would contribute a minor amount of greenhouse gases to the environment in the form of exhaust from maintenance and operations equipment and vehicles. However, emissions would be temporary, localized, and would occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. In the long term, Project operations would have a beneficial impact on the climate by replacing energy generated by the combustion of fossil fuels, thereby reducing emissions of greenhouse gases.

2.3.3 Best Management Practices and Minimization Measures

All Project vehicles and equipment, including the generators used during operation, would be maintained in proper working order and in compliance with state and federal emission standards.

This would ensure that the amount of greenhouse gases emitted by the Project would be negligible. No additional avoidance, minimization, or mitigation measures are likely to be required.

2.4 Soils

2.4.1 Existing Conditions

Soils in the Project area are derived from the volcanic history of the island and subsequent erosional processes. According to the U.S. Department of Agriculture (USDA) Web Soil Survey [National Resource Conservation Service (NRCS) 2019], there are six soil associations in the area of proposed Project facilities: Naiwa silty clay loam, 3 to 10 percent slopes (51%); Olelo silty clay, 3 to 15 percent slopes (13%); Oli silt loam, 3 to 10 percent slopes (23%); rock land (3%); rock outcrop (<1%); and rough broken and stony land (10%) (Figure 5).

According to the *Soil Survey of the State of Hawai'i* (Foote et al. 1972), these soil types are generally not suited to mechanized production of common field crops without special management; hence their agricultural usefulness is limited to pasture and wildlife habitat. In addition, the lands in the Project area exhibit properties such as seasonal wetness, erodibility, limited rooting zone, slope, flooding, and drought that exclude them from being classified as prime or unique agricultural land.

The Land Study Bureau's (LSB) Detailed Land Classification rates the agricultural suitability of soils using a five-class productivity rating. The rating is expressed using the letters "A", "B", "C", "D" and "E", with "A" representing lands of the highest productivity, and "E" the lowest or very poorly suited for agricultural production. Project facilities are located on soils classified by the LSB as Class D and E (Statewide GIS Program, Office of Planning 2020a)(Figure 6) . The State of Hawai'i Department of Agriculture's Agricultural Lands of Importance to the State of Hawai'i (ALISH) indicates the Project area is not located on "prime" or "unique" designated agricultural land but is located on "other important" designated agricultural land (Statewide GIS Program, Office of Planning 2020b).

Soils within the Project area have been disturbed from previous land uses including the construction and operation of the existing KWP I wind facility.

2.4.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts to soils are anticipated.

Long-term impacts to soils are expected to be minimal because the Project will utilize the existing turbines and auxiliary facilities and no new ground disturbance is proposed. Long-term impacts to soils typically occur from alteration of soil function under Project structures including pads, generator-tie line poles, buildings, and widened access roads. However, because the Project is within previously disturbed areas the loss of soil function from the proposed Project is expected to be negligible. There would be some continued risk of soil erosion during the Project operations resulting from changes in water flow through the site around site structures during the rainy period. Long term impacts to soils could also occur from the use of vehicles to facilitate routine servicing of all operational components of the proposed Project such as vegetation management and access road maintenance. However, typical servicing would not require heavy equipment, and disturbance to soil and

increases in erosion would be minimal. As such, long-term impacts to soil resources in the Project area would be less than significant.

2.4.3 Best Management Practices and Minimization Measures

The Project will utilize the existing turbines and auxiliary facilities and no new ground disturbance is proposed. Industry-standard BMPs would be implemented to avoid and minimize any impacts to soil resources during operations. No additional avoidance, minimization, or mitigation measures are likely to be required.

2.5 Topography and Geology

2.5.1 Existing Conditions

The Project is located on the southwestern slope of the West Maui shield dome volcano on the dry leeward side of the island of Maui. The Project area and vicinity is underlain by basaltic and silicious rocks known as the Wailuku Volcanics (1.3 – 2.0 million years old) and Honolua Volcanics (1.1 – 1.3 million years old), respectively (Stearns and Macdonald 1942). The Wailuku basalts are highly permeable and characterized by swarms of dikes that confine water at higher elevations. The Honolua rocks are relatively less porous and poor conductors of water (Stearns and Macdonald 1942).

The Project is located on a narrow band of land running mauka to makai between Manawainui Gulch and Papalaua Gulch; the terrain within the Project area slopes downward, an average of 8percent, toward the coastline (WSB-Hawaii 1999) (Figure 7). Other notable topographic features in the vicinity of the Project area are Kealaloloa Ridge and two dome-shaped hills, or puʻu, located to the east (Puʻuanu and Puʻumoe), Puʻuluau and Pōhakuloa downslope of the Project area, and the gulches and ridges of West Maui Forest Reserve to the west (Figure 7).

Topography within the Project area has been modified from previous land uses including the construction and operation of the existing KWP I wind facility.

2.5.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts to landscape function are anticipated.

No long-term impact to the landscape during operations are anticipated as the Project will utilize the existing turbines and auxiliary facilities and no new ground disturbance is proposed.

2.5.3 Best Management Practices and Minimization Measures

Impacts to geology and topography would be less than significant. No avoidance, minimization, or mitigation measures are required.

3.0 Land Regulation

3.1 Land Uses

3.1.1 Existing Conditions

The Project area is currently used for the existing 30-MW KWP I wind farm including the turbines, ancillary facilities (e.g., substation, maintenance facility), internal access roads and a parking/staging area. Land within the Project area is within the State Conservation District (Figure 8), County Agricultural (AG) Zone (Figure 9) and is located on the boundary of the West Maui and Kihei-Makena Community Plans. The very lower portion of the access road (approx. 1,200 ft) and the parking lot/staging area is within the Special Management Area (SMA) (Figure 9).

3.1.1.1 Existing Land Uses

In addition to the KWP I wind farm facilities, a few low intensity uses are present near the area:

- The area *mauka* and west of the Project site is part of the West Maui Forest Reserve.
- The area makai and south of the Project site is the KWP II wind farm facility.
- The Lahaina Pali Trail traverses the hillside at an elevation of approximately 1,500 feet south of the Project area. The trail passes through the upper portion of the adjacent KWP II facility.
- Two Hawaiian Electric transmission line easements cross Kaheawa Pastures in a southwesterly direction from Māʻalaea. The first easement (with 2 power lines) crosses the existing KWP I facility at an elevation of approximately 2,300 feet; the second easement (with 1 power line) crosses about 1,900 feet makai of the Project site.

Maalaea, the closest town located approximately 2.5 miles southeast of the Project area encompasses a diverse mix of land uses, including residential, business, and resort. The Project area is also located approximately 9 miles southwest of the Kahului International Airport and 12 miles southeast of Kapalua airport.

3.1.1.2 State Land Use District

The entire Project site is within state conservation district. HRS Chapter 205-5 specifies that conservation districts shall be governed by the State of Hawaiʻi DLNR pursuant to HRS Chapter 183C; uses in the Conservation District are regulated by the DLNR OCCL under Hawaiʻi Administrative Rules (HAR) Title 13, Chapter 5.

HAR § 13-5 classifies conservation lands into five subzones: protective, limited, resource, general, and special. HAR § 13-5 identifies the land uses that are allowed in each of the subzones and the specific type of permit required for those land uses, per the following designations: (A) requires no permit from the department or board, (B) requires a site plan approval by the department, (C) requires a departmental permit, or (D) requires a board permit and where indicated, a management plan.

The Project Site is within the general and protective subzones. KWP I currently operates under the terms and conditions of CDUP No. MA-3103 as approved by the Board on January 24, 2003, and amended on June 24, 2005.

The Project is anticipated to be defined as "power generation from renewable resources," which is a permitted use in all subzones with a board permit. Per HAR § 13-5-22, P-12: Power Generation from Renewable Resources is defined to include:

(D-1) Hydroelectric, wind generation, ocean thermal energy conversion, wave, solar, geothermal, biomass, and other renewable power generation facilities from natural resources; includes generation, conversion, and transmission facilities and access roads. Renewable energy projects shall minimize impacts to natural, cultural, and recreational resources, and shall be expedited in the application review and decisions-making process. A management plan approved simultaneously with the permit, is also required.

The criteria for issuance of a board permit are outlined in HAR § 13-5-30(c) and include consistency with HRS Chapter 205A (Coastal Zone Management), impacts to surrounding areas, intensity of land use, natural beauty and open space characteristics, and public welfare. Application for a board permit requires public notification and a public hearing. Standard conditions which apply to any land use allowed in the conservation district are presented in HAR § 13-5-42; additional project-specific conditions may be added through the permitting process. The Project will also require a management plan in accordance with HAR § 13-5-39 and HAR §13-5 *Exhibit 3 Management Plan Requirements: August 12, 2011*. The Management Plan describes the best management practices and mitigation measures to be implemented during project construction and operation and is submitted and reviewed concurrently with the permit application. P-12 includes a provision for expedited review and processing for renewable energy projects.

3.1.1.3 Maui County Zoning

Land use is also regulated by the county through zoning districts, within which district standards are specified according to different types of use. The County of Maui's Comprehensive Zoning Ordinance (CZO) identifies the uses that are considered appropriate in each of the County's zoning districts and establishes the minimum standards and conditions that should be met if those uses are to be permitted.

The Project is located in County Zone (AG) Agriculture. As the Project is within the State Conservation District, pursuant to HRS §205-5, land use is governed by DLNR.

3.1.1.4 Maui County Special Management Area

The SMA is a designated area extending inland from the shoreline (ranging from one hundred yards to several miles in width) and is regulated by the counties under the Hawai'i CZM program. Within the Project area, the very lower portion of the access road (approx. 1,200 ft) and the parking lot/staging area are within the SMA. Kaheawa Wind's intention is to utilize existing roads and staging areas and avoid development in the SMA. Therefore, no SMA assessment or permit will be required.

3.1.1.5 West Maui and Kihei-Makena Community Plans

The Project site is located on the boundary of the West Maui and Kihei-Makena Community Plans. The Community Plans are vision plans and are not regulatory; however, the West Maui and KiheiMakena Community Plans include policies in support of alternative energy.

3.1.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

No long-term impacts to the Project area's current land use would occur as the land is currently used for wind energy generation. The Project is not anticipated to impact the current land uses in the areas adjacent to the

Project area and would not interfere with continuing recreational use of the Lahaina Pali trail. With the decommissioning and removal of Project facilities at the end of the Project's useful life (estimate 20 year) the land would be restored back to its previous use (open space) and would therefore have no long-term impacts.

3.1.3 Best Management Practices and Minimization Measures

While impacts to land use are expected to be minimal, the Project would continue to implement industry standard BMPs to minimize potential impacts to the surrounding land uses from the operation of KWP I. No avoidance, minimization, or mitigation measures are required.

3.2 Natural Hazards

3.2.1 Existing Conditions

A natural hazard is a naturally occurring event that could negatively affect people, infrastructure, and/or the environment. Many natural hazards can be triggered by another event, though they may occur in different geographical locations; for example, an earthquake can trigger a tsunami in an entirely different geographic area. Natural hazards that can affect Hawai'i include tsunamis, flooding, hurricanes and tropical storms, earthquakes, volcanic eruptions, and wildfire.

Potential flood hazards are identified by the Federal Emergency Management Agency (FEMA) National Flood Insurance Program and are mapped on Flood Insurance Rate Maps (FIRM). The maps classify land into zones depending on the potential for damage and inundation during flood events. The Project area is mapped by FIRM as being located entirely within Zone X (FEMA 2021) (Figure 10). Zone X includes areas determined to be outside the 0.2-percent-annual-chance (or 500year) floodplain. No base flood elevations or depths are shown within this zone.

Tsunamis are large, rapidly moving ocean waves triggered both by disturbances around the Pacific Rim (i.e., teletsunamis) and by earthquakes and landslides near Hawai'i (i.e., local tsunamis). No portion of the proposed Project is in the Civil Defense Tsunami Evacuation Zone (NOAA 2015) (Figure 11).

The Hawaiian Islands are seasonally affected by Pacific hurricanes from the late summer to early winter months. The Central Pacific Hurricane season runs from June 1 to November 30. Hurricanes are relatively rare in Hawai'i; only five hurricanes have caused serious damage to the main Hawaiian Islands since 1950 (NOAA 2022). No recorded hurricane has made landfall on the Island of Maui, although Hurricane Estelle (in 1986) affected Maui through high winds and surf (Businger 1998). Tropical storms are similar to hurricanes, except that the sustained winds are below 74 miles per hour (Businger 1998). These events can also produce torrential rains. Tropical storms occur more frequently in Hawai'i than hurricanes and typically pass sufficiently close to Hawai'i every 1 to 2 years to affect the weather and cause serious damage in some part of the islands.

Earthquakes in Hawai'i are often linked with volcanic activity and the majority occur on and around the Island of Hawai'i associated with its presently active volcanoes of Kīlauea, Hualālai, and Mauna Loa, and Kama'ehuakanaloa off the coast (USGS 2022a). Numerous small volcanic earthquakes are triggered by eruptions and magma movement within these active volcanoes. The entire island of Maui is in seismic zone 2B, in which a force of 0.15g to 0.20g is expected to occur once every 50 years (USGS 1997). Presumably this designation was the governing seismic code for the original KWP I turbines and would similarly inform the design of the proposed replacement turbines.

Emissions of volcanic gases, such as sulfur dioxide, can react with oxygen and atmospheric moisture to produce volcanic smog (also known as vog) and acid rain (USGS 2017). Volcanic gases are emitted not only during all

types of eruptions, but can also be released by inactive eruptive vents and fumaroles. Volcanic smog can increase air pollution, decrease visibility and pose a health hazard by aggravating pre-existing respiratory conditions. Emissions of volcanic sulfur dioxide can also combine with water to form sulfuric acid which poses hazards to human health and can harm structures made of metal and other materials (USGS 2017).

Wildfires have resulted in extensive damage to life and property and pose an ecological threat to endemic flora and fauna in the Hawaiian Islands (DLNR 2016). With the cessation of cattle-grazing in the West Maui Mountains, a number of grass and weed species have proliferated, creating a heightened fire hazard. A large fire swept across the mountain in 1999 and again in 2006 (after the KWP I facility commenced operation), which affected a large portion of the West Maui Mountains from the coastal highway to the existing facility (Planning Solutions, Inc. 2010). The existing KWP I facility was not the cause of the fire, and the wind farm equipment was protected from damage by multiple firebreaks constructed by KWP I staff and by extensive watering. The roadways constructed for the KWP I project were instrumental in providing firefighting crews access to the fire line (Planning Solutions, Inc. 2010). On-site fire-fighting resources at the existing KWP I facility include fire extinguishers in the O&M building, at the substation, and in all project vehicles, as well as shovels and backpack pumps in the O&M building and maintenance vehicles. The existing facility also maintains graveled, vegetation free buffers around the O&M building, the substation, and the WTG foundation pads.

3.2.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

Short- and long-term impacts to Project operations are not expected from tsunamis, flooding, or volcanic eruption, as the Project is outside the Civil Defense Tsunami Evacuation Zone; outside an active volcanic eruption zone; and in a Flood Zone X, which is assigned to those areas that are determined to be outside the 1 percent annual chance floodplain. Although the occurrence rate is very low, operations of the proposed Project could be impacted in the short- or long-term by an earthquake or hurricane.

As discussed in Section 3.2.1, the entire island of Maui is in Seismic Zone 2B. Structural analyses conducted by the manufacturer prior to installation of the current turbines, suggest that the turbines are capable of withstanding seismic forces well above those that the standards are intended to protect against. The auxiliary structures on site also conform to Seismic Zone 2B Building Standards. Hence, it would take an extremely rare seismic event to damage the facilities. In the event such an extreme event was to occur it could lead to the toppling of one or more towers. Because of the large separation (minimum 400 feet) between each of the turbines and the turbines' equally large separation from the substation, warehouse, and other above-ground facilities, there is no potential for the collapse of one tower to cause damage to others on the site.

Hawai'i is periodically exposed to tropical storms and hurricanes that impose high wind loads on structures. Recognizing this, KWP I has adopted a standard operating procedure (SOP) for implementation in the event of a "Weather Emergency." The SOP stipulates that when the National Weather Service has issued a severe weather watch for the site (for events such as a hurricane, a tornado, or a severe thunderstorm), the operations manager or his designee would determine if the warning affects its site location, and if so, immediately warn employees of the pending emergency.

Because of their height and location in generally open areas wind turbines are subject to lightning strikes. While the grounding systems that are inherent in their design minimize the potential for adverse effect from this source, there have been instances where lightning strikes have shattered blades. Most of the blades have stayed partially attached to the turbines, but in a few instances broken pieces of blade have detached and been thrown

some distance. The distance of the facility from residences and other public areas makes it highly unlikely that an equipment failure would not cause significant damage to life or property.

There is a minor risk of potential wildfires during operations due to the use of vehicles and electrical equipment. The turbines and other facilities that would be present for the operating life of the facility do not contain equipment or involve activities that represent an unusual fire hazard. If a fire does occur on (or spreads to) the KWP I facility, some equipment damage is possible but is not expected to be significant. The towers supporting the turbines are steel, mounted on concrete foundations; the interconnecting electrical systems are below ground. The axillary operations and maintenance facilities are constructed of noncombustible construction and exterior finishes. Damage from fire to the on-site substation would potentially disrupt the facility's provision of electricity to Hawaiian Electric, though it would not jeopardize Hawaiian Electric's ability to provide electricity services to its customers. Overall, the impacts related to wildfires are anticipated to be less than significant with minimization measures in place.

3.2.3 Best Management Practices and Minimization Measures

The potential for impacts from natural hazards is anticipated to be less than significant. The structural aspects of the KWP I turbines and axillary structures were designed and constructed in accordance with governing local codes to reduce the risk of earthquake and hurricane damage. In the event that a storm watch or warning is issued, the site construction manager would be responsible for implementing the appropriate procedures in accordance with a developed Site Safety Handbook to ensure the safety of staff.

3.3 Noise

The State of Hawai'i regulates noise through HAR, Title 11, Chapter 46, "Community Noise Control," and provides for the prevention, control, and abatement of noise pollution in the State. "Noise" is defined as *"any sound that may produce adverse physiological or psychological effects or interfere with individual or group activities, including but not limited to communication, work, rest, recreation and sleep*." Under certain conditions, noise can interfere with human activities at home or work and affect human health and well-being (HAR §11-46.2).

The HDOH regulates noise levels by imposing maximum allowable sound levels at property boundaries for various zoning districts (Table 1). These noise limits are absolute (i.e., not relative to ambient conditions), are prescribed by receiving zoning class and time period, and are enforceable at the facility property boundaries. Zoning districts are determined by ordinances adopted by the applicable local, county or state government agencies. For mixed zoning districts, the primary land use designation is used to determine the applicable zoning district class and maximum permissible sound level.

Table 1. Hawai'i Maximum Permissible Sound Levels by Zoning District

Receiving Zoning Class District	Maximum Permissible Sound Level (dBA)	
	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Class A Zoning districts include all areas equivalent to land zoned residential, conservation, preservation, public space, or similar type.	55	45
Class B Zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50

Class C Zoning districts include all areas equivalent to lands zoned agriculture, county, industrial, or similar type.	70	70

Source: HAR §11-46, "Community Noise Control"

Noise levels may exceed the prescribed limits up to 10 percent of the time within any 20-minute period. The maximum permissible sound level for impulsive noise is 10 dBA above the maximum permissible sound levels for the given receiving zoning class district. HAR § 11-46-5 provides further exemptions to these limits. Additionally, with issuance of a construction permit, noise produced by portable or movable equipment, such as construction equipment, are not subject to the 70 dBA limit under HDOH noise regulations. Instead, construction noise levels above these limits are regulated using a curfew system whereby noisy construction activities are not normally permitted during nighttime periods, on Sundays, and on holidays. Thus, with issuance of a construction permit, construction activities, which could typically exceed the sound level limit, are normally allowed during the normal daytime work hours on weekdays and on Saturdays. If construction activities exceeding the maximum permissible levels would take place outside of these allowed construction hours, a community noise variance must be obtained from HDOH.

Pursuant to HAR § 11-46-7 and HAR § 11-48-8 a permit or variance may be obtained for operation of an excessive noise source beyond the maximum permissible sound levels. Factors that are considered in granting of such permits and variances include whether the activity is in the public interest and whether the best available noise control technology is being employed.

Because the KWP I site is in the State Conservation District, the Class A limits are applicable.

3.3.1 Existing Conditions

HAR defines "ambient or background noise" as the totality of sounds in a given place and time, independent of sound contribution of the specific source being measured. There are several ambient sound sources in the Project area. These include the turbines at the existing KWP I facility, vehicles traveling along the facility access road, rain, wind blowing through low brush and grass, insects, birds, and mammals.

3.3.2 Short- and Long-Term Impacts

No new construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

The results of noise modeling for KWP II, which is adjacent to KWP I, suggest that the continued use of the KWP I facility would be in general compliance with the 55 dBA daytime limit but may exceed the Community Noise Rule, Class A nighttime property line sound level limit of 45 dBA during operations. However, the only persons who would be in a position to hear the facility are (i) individuals working at the KWP I and II facilities, (ii) persons using the existing road to access the forest and conservation land above the KWP I and II facilities, and (iii) individuals and groups using the Lahaina Pali Trail. The first two categories of people are engaged in activities that would not be adversely affected by the forecast sound levels, either because they are present as part of their work on the wind farm itself or are simply briefly transiting the area. If compliance is not possible using reasonable noise mitigation measures, the Applicant may seek a permit or variance from HDOH.

3.3.3 Best Management Practices and Minimization Measures

The potential for impacts from noise is anticipated to be less than significant. BMPs that would implemented to minimize noise impacts during operations include:

- Restricting loud procedures to weekdays during daylight hours to minimize noise impacts;

- Establishing and enforcing access road speed limits;
- Only using noise-producing signals, including horns, whistles, alarms, and bells, for safety warning purposes;
- Ensuring that no Project-related public address or music system would be audible at any adjacent receptor; and
- Equipping noise-producing equipment and vehicles using internal combustion engines with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noisereducing features, ensuring these items are in good operating condition that meet or exceed original factory specification.

3.4 Transportation Facilities

3.4.1 Existing Conditions

3.4.1.1 Roadways and Traffic

The existing KWP I wind farm facility is accessed by the Kaheawa Pastures access road that begins at Honoapiʻilani Highway and runs north to the conservation lands mauka of the KWP I facility. The existing Kaheawa Pastures access road is owned by the State of Hawaiʻi and was upgraded in conjunction with the development of KWP I. Access is controlled by DLNR, which shares responsibility for the road's upkeep with KWP I LLC.

Honoapiʻilani Highway is one of Maui's major coastal roadways; the State-owned highway is heavily traveled by tourists and commuters, especially during daylight hours. The State Department of Transportation (HDOT) conducts regular traffic counts on Honoapiʻilani Highway, the annual average daily traffic count near the KWP access road (between MP 6.11 and 17.65) is 25,900 vehicles (HDOT 2022). It connects with other major highways and provides ready access to the harbor facilities at Kahului where the equipment and other construction materials needed for the proposed project would be landed.

3.4.1.2 Harbors

Kahului Harbor is the only harbor on Maui suitable for unloading heavy equipment and materials.

3.4.1.3 Airports

The Project site is located approximately 12 miles from the Kapalua Airport and about 9 miles from Kahului International Airport. Because of the height of the proposed replacement turbines, the Federal Aviation Administration (FAA) reviewed the existing KWP I turbines and determined that, with proper lighting, they would not constitute a hazard to air navigation (Planning Solutions Inc. 2010).

3.4.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

The continued operation and maintenance of the KWP I facility would not generate significant amounts of passenger or cargo traffic on Maui's roads, harbors, or airports. Impacts on traffic during operations are expected to be negligible. Any major pieces of equipment for the maintenance of the KWP I facility would need to be imported through Kahului Harbor. However, the individual pieces are of a size and nature that allows them to be handled as general containerized cargo. Hence, they would not place an unusual demand on the harbor facilities. As described above, the FAA determined that so long as they were properly lighted, the KWP I turbines would not constitute a hazard to air navigation (Planning Solutions Inc. 2010).

3.4.3 Best Management Practices and Minimization Measures

The proposed Project is not anticipated to have a significant effect on transportation facilities. Therefore, no avoidance, minimization, or mitigation measures are required.

3.5 Utilities

3.5.1 Existing Conditions

3.5.1.1 Electric

Hawaiian Electric provides electrical service to the Island of Maui. A Hawaiian Electric transmission line easement containing two 69kV transmission circuits cross the Project area in a southwesterly direction from Māʻalaea. The existing KWP I facility obtains the electrical power it needs for operational loads from the uppermost of the three circuits via step-down transformers located at the existing KWP I substation. Likewise, power generated by the KWP I facility is fed into the Hawaiian Electric grid via the same circuit.

3.5.1.2 Telecommunications

A number of operators provide telephone, wireless, and internet services on the island of Maui. Telephone, wireless, and internet services are available throughout the urbanized areas of the West Maui region with minimal gaps in service (Chris Hart & Partners, Inc. 2007). Telecommunications provided by Hawaiian Telcom exist at the KWP I substation.

3.5.1.3 Water and Wastewater

There are no Maui County wastewater or water systems that service the existing KWP I facility. All of the water needed for the facility is trucked up to the site.

3.5.1.4 Solid Waste

The County of Maui Solid Waste Division operates and maintains all solid waste collection and transfer stations on the island. The Central Maui Landfill services the Project area.

3.5.1.5 Gas

Hawaii Gas is the only company responsible for providing gas to the State and is regulated by the Hawaii Public Utilities Commission. The KWP I facility is not connected to the Hawaii Gas supply.

3.5.2 Short- and Long-Term Impacts

The Project is not expected to negatively impact the existing electric, telecommunication, water and wastewater system, solid waste and gas utilities.

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

During operations, the proposed Project would consume only small amounts of electrical power, and this would be delivered through the existing substation and power distribution equipment. All of the water needed for the facility would be trucked up to the site; no new potable water service would be required. Similarly, no significant impacts on telecommunications or other utilities are anticipated. The proposed Project would continue to

provide a renewable source of electricity to the existing power grid. Therefore, the proposed Project would beneficially impact electric supply.

3.5.3 Best Management Practices and Minimization Measures

The Project is not anticipated to have a significant effect on existing electric, telecommunication, water and wastewater system, solid waste and gas utilities. Therefore, no avoidance, minimization, or mitigation measures are required.

4.0 Socio-Economic Characteristics

4.1 Existing Conditions

No one lives on the parcel of the existing KWP I facilities or on immediately adjoining parcels. The nearest settlements are Māʻalaea, which is approximately 2 miles to the southeast and Olowalu, which is approximately 5 miles to the west. Māʻalaea's population in 2020 was approximately 310 and approximately 100 in Olowalu (U.S. Census Bureau 2020). The median household income in Māʻalaea was $91,250 in 2021 and $95,313 in Olowalu, which is higher than the median household income in Maui County, which was estimated at $88,249 in 2021 (U.S. Census Bureau 2021).

The exisitng KWP I facility contributes to the local economy by providing jobs to residents (which are relatively limited), expenditures for materials and outside services, and state revenues in the form of excise taxes, lease revenues, and other taxes.

4.2 Short- and Long-Term Impacts

The proposed Project is not expected to have an adverse impact on the existing population near the Project area and no persons would be displaced by the Project. Additionally, the Project is not anticipated to place unexpected demands or additional burdens on infrastructure, housing, or public services in the Project's vicinity.

Direct economic effects of the continued operation of the KWP I facility include: (1) ongoing employment of facility staff (which would be relatively limited); (2) ongoing expenditures for materials and outside services; and (3) State revenues in the form of excise taxes, lease revenues, and other taxes.

4.3 Best Management Practices and Minimization Measures

Operation of the Project would not affect the demographics or socioeconomic status of the surrounding communities. No avoidance, minimization, or mitigation measures are required.

5.0 Aesthetic/Visual Resources

5.1 Existing Conditions

The Project site is located on the upper slope of Ukumehame, above McGregor Point. The ridge and table lands afford sweeping panoramas of Haleakalā and Māʻalaea Bay to the east, of Kahoʻolawe and Molokini Islands to the south, and of the West Maui Mountains to the west. The existing KWP I wind farm axillary facilities (e.g., substation, operation and maintenance building) are relatively low-lying; these structures are not visible/barely visible from the lowland areas where most people are present. However, the existing KWP I turbines are visible from a substantial part of the island, including Mokulele Highway (at distances ranging from 5 to 8 miles) and the Kīhei and Wailea shorelines (at distances of 6 to 23 miles) to the east (Planning Solutions 2010). The existing KWP I turbines are also visible from portions of the Lahaina Pali Trail and from aircraft on approach to Kahului

airport. The mountainous terrain obstructs most views of the KWP I facility from the north and west; the existing turbines are not visible from Kahului, from Honoapiʻilani Highway or Highway 380 as they cross the Maui isthmus from Kahului to Māʻalaea, or from Māʻalaea Harbor (Planning Solutions 2010). The existing turbines are also not visible from any points on West Maui except the mountainous area immediately surrounding the existing facilities.

HAR 11.200.1-13 requires applicants to identify potential adverse impacts on scenic vistas and view planes identified in county of state plans or studies. Neither the Maui Island Plan (County of Maui Planning Department 2012) nor the West Maui Community Plan (County of Maui Planning Department 2022) or Kihei-Makena Community Plan (County of Maui Planning Department 1998) identify scenic sites or visual plains within the Project area. However, it is the general policy of the Maui Island Plan and community plans to protect mauka-to-makai and makai-to mauka view planes and protection of views of significant geographic features and landforms including Mauna Kahalawai (West Maui Mountains) – especially as these views/view planes relate to public views from scenic roadways, parks, and other public access points. The Scenic Resources Inventory and Scenic Corridor Report (Chris Hart & Partners, Inc. 2006) was developed as part of the 2030 Maui County General Plan but was never formally adopted into law by Maui County. It is used as a reference for identifying important scenic vistas and view planes on the Island of Maui. The following "Exceptional Scenic Corridors" are located in the vicinity of the Project Area:
Honoapiʻilani Highway just south of the Project Area, Makena Road near Makena beach, and Piʻilani Highway northeast of Makena.

5.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

Long-term visual impacts would be associated with the operation and maintenance phase of the Project. As stated above, the low-lying axillary structures would not be visible/barely visible from the populated, lower lying areas. The existing turbines are approximately 90 meters (296 feet) and are visible from a substantial part of the island, including Mokulele Highway (at distances ranging from 5 to 8 miles) and the Kīhei and Wailea shorelines (at distances of 6 to 23 miles) to the east (Planning Solutions 2010). Because the proposed Project is a continuation of the existing KWP I facility, the turbines do not represent a new feature on the mountainside. For viewers who have grown accustomed to the existing wind farm and have positive attitudes toward renewable energy, the continuation of the KWP I facility would tend to go largely unnoticed. For those who are already bothered by the intrusion of large structures into an area that is otherwise natural, the continued presence of the turbines would likely still be considered an imposition.

5.3 Best Management Practices and Mitigation

Impacts to aesthetic and visual resources from the proposed Project would be minor. No additional avoidance, minimization, or mitigation measures are likely to be required.

6.0 Hazardous Materials

6.1 Existing Conditions

The Phase I Environmental Site Assessment (ESA) for KWP I was completed in 2005 and again in 2007, once the facility was in operation (Vuich Environmental Consultants 2005, Malama Environmental, LLC 2007). The 2005 Phase I ESA identified a few products of concern relating to any future development project or land-clearing activity (Vuich Environmental Consultants 2005). These consisted of earthen material (silt), paints,

oils, antifreezes, and other fluids from automobile or on-site machinery, or leaks from on-site stocked items. All of these were present in small quantities and were determined not to constrain use of the area.

Operation of the existing KWP I facility requires storage of small quantities of several materials that require special handling and storage. These include mineral oil, hydraulic oil, waste oil, and cleaner/degreaser. These materials are presently stored in three container areas on the site: (1) the existing O&M building, (2) the 20 wind turbine sites; and (3) the existing substation. A Spill Prevention, Countermeasure, and Control (SPCC) Plan is in place for the facility and is updated every five years. The 2007 Phase I ESA report noted that regulated wastes and petroleum products are effectively managed on-site, and that secondary containment of petroleum-based wastes and effective spill management have been implemented in the daily operations of the facility (Malama Environmental, LLC 2007). Further, it noted that petroleum-based wastes and all other regulated wastes generated on-site are being properly managed and disposed of by certified waste contractors.

6.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

Possible short- and long-term impacts during Project operations are from routine transport, use, storage, and disposal of hazardous materials, and accidental spills and release of hazardous materials. However, industry-standard BMPs, and Project-specific plans (e.g., Site Safety Handbook, SPCC Plan and Hazardous Materials and Waste Management Plan (HMWMP) minimize the potential for inadvertent releases.

6.3 Best Management Practices and Mitigation

Iindustry-standard BMPs and Project-specific plans (e.g., Site Safety Handbook, SPCC Plan, and HMWMP) with sufficient detail to address the purpose of the plan. Additionally, the plans would readily translate into the actions necessary to comply with relevant regulations would be implemented related to hazardous and regulated materials and wastes resulting in less than significant impacts.

7.0 Water Quality

7.1 Existing Conditions

The Project area is within the boundaries of the Island of Maui aquifer system areas of Waikapū and Ukumehame (USGS 2019).

There are no perennial streams or wetlands within the Project area. According to the National Hydrography Dataset and National Wetlands Inventory data, two surface water features intersect portions of the Project's access road (Figure 12; USFWS 2022c, USGS 2022b). Malalowaiaole Gulch, an intermittent stream, parallels a portion of the Project's access road and passes under the access road near the road's entry point off Hoʻopiʻilani Hwy (Figure 12). An unnamed stream in Manawainui Gulch originates northeast of the Project area, parallels a portion of its eastern boundary and passes under the Project's access road, and continues southwest to the Pacific Ocean (Figure 12). NWI and NHD characterize both of these streams as intermittent and seasonally flooded (USFWS 2022c, USGS 2022b).

Relative to the coastline, the Project area is approximately 200-feet from the shoreline at its lowest elevation near McGregor Point, near the Project's entrypoint, and is approximately 4-miles distant from its uppermost elevation point. Near shore marine waters off the coast near McGregor Point are classified as class "A" by the HDOH (Office of Planning 2020). According to HDOH Water Quality Standards, Class "A" waters are described as "waters that their use for recreational purposes and aesthetic enjoyment be protected" (HAR 11-54-03).

The existing KWP I facility includes impervious and semi-impervious surfaces, which contributes to a minor increase in stormwater runoff. The KWP I facility employs stormwater BMPs and vegetation management to minimize erosion and sedimentation.

7.2 Short- and Long-Term Impacts

The existing access roads and stream crossings would be utilized and the two non-perennial streams in the Project area avoided. The proposed Project involving continued operation of the existing wind farm is not anticipated to have direct effects to freshwater resources. Stormwater would be managed by implementing appropriate BMPs to prevent stormwater from transporting pollutants associated with continued Project operations offsite. With the implementation of BMPs described below, the Project is not anticipated to have significant adverse impacts to surface water resources.

This project will not require any construction efforts; the KWP I facility would continue current operations. Thus, short-term impacts to marine water or surface water quality are expected to be minimal. The Project has the potential to cause short-term impacts to marine water quality as part of continued operations during use of hazardous materials such as fuels, lubricants, cleaning solvents, and paints, through the conveyance of soils or hazardous materials during periods of heavy rainfall when the streams convey runoff from the surrounding area to coastal waters. The Project also has the potential to pose a hazard to groundwater quality due to the use of hazardous materials such as fuels, lubricants, cleaning solvents, and paints leaching into the soil. Appropriate BMPs and erosion control measures would be implemented to minimize the potential for sediments and pollutants from reaching surface waters through stormwater runoff. In addition, a Project SPCC Plan would be implemented, which would reduce potential impacts to groundwater. Therefore, short-term impacts to water quality from the Project are expected to be less than significant.

Because the proposed Project involves continued operations of the existing wind facility, there will be no increase in area of the amount of impervious and semi-impervious surfaces contributing to stormwater runoff, nor any expected result in changes to groundwater recharge different from that of current conditions at the existing facility. Thus, the long-term impact to water quality associated with this Project is expected to be negligible.

7.3 Best Management Practices and Mitigation

Standard BMPs would be implemented to minimize potential impacts to water quality associated with continued operations of the existing wind facility. Existing access roads and stream crossings within the Project area would be utilized. Stormwater management to protect downstream marine waters would be implemented. With the implementation of these measures, impacts associated with soil erosion and stormwater runoff resulting from Project construction and operation would be minimized. Therefore, impacts to water resources would be less than significant.

8.0 Public Safety Services

8.1 Existing Conditions

The nearest hospital to the proposed KWP I site is the Maui Memorial Hospital in Wailuku. In case of emergencies, paramedic/ambulance services are available from the Wailuku and Kīhei areas. The Maui Police Headquarters is located on Mahalani Street in Wailuku. The main Maui fire station is in Kahului on Dairy Road; additional fire stations are located in Wailuku, Kīhei and Lahaina.

8.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

The long-term operation of the KWP I facility would not be expected to significantly impact the current service levels. The facility is accessed through a locked gate and has 24-hour on-site security staff and a video monitoring system. The facility includes fire water storage and other fire protection facilities, thus reducing the potential for additional burden on the Fire Department. All facilities comply with the National Fire Protection Association's (NFPA) recommendations, local codes, and other applicable fire protection regulations. Impacts related to wildfires are anticipated to be less than significant with mitigation measures in place.

8.3 Best Management Practices and Mitigation

The implementation of a Site Safety Plan and observance of safe working practices are expected to substantially reduce the potential for serious accidents. In the event of an incident, fire, police, and emergency services would all be available, and expected to be adequate to accommodate the demand. Project facilities is equipped with a fire suppression equipment and vegetation maintenance to reduce fire hazards. Additionally, maintenance (e.g., servicing, inspection and repair) of mechanical and electrical systems would be conducted on a routine basis to decrease the risk of an emergency, including fire. With the implementation of these measures, impacts to public safety services from operation of the Project would be negligible.

9.0 Recreation

9.1 Existing Conditions

Recreational facilities in the vicinity of the Project area include hiking trails, golf courses, beaches, historic sites, small boat harbors, and other facilities. In the immediate vicinity of the Project area is the Lahaina Pali Trail, McGregor Point and Lighthouse, and Papawai Scenic Lookout. The coastline west and east of the Project area has several resort hotels, golf courses, and notable beaches within approximately 10 miles of the Project area. The area is a tourist hot spot with Lāhainā and Kīhei offer many recreational activities including swimming, surfing and fishing, golfing, helicopter tours, as well as nearshore activities including SCUBA diving, boating, and fishing.

9.2 Short- and Long-Term Impacts

No construction is required to implement the proposed Project. Therefore, no short-term, construction-related impacts are anticipated.

No short- or long-term direct or indirect impacts to recreational resources are anticipated from operations of the proposed Project. Although the KWP I facility would continue to be visible from the Lahaina Pali Trail and other recreational areas in the vicinity, no Project infrastructure would be placed within any existing recreation resource area.

9.3 Best Management Practices and Mitigation

Impacts to recreational resources from operation of the proposed Project would be less than significant. No avoidance, minimization, or mitigation measures are required.

10.0 Potential Cumulative and Secondary Impacts

The ongoing and reasonably foreseeable actions considered in the cumulative impacts analysis are those that would overlap in time and space with the effects of operation of the Project. Hawaii's economy is expected to continue to recover from the COVID-19 pandemic. The 4th Quarter 2022 Report of DBEDT's *Outlook for the Economy* estimates that Hawaii's real gross domestic product (GDP) will increase by 2.6% in 2022, 1.7% in 2023, 2.1% in 2024, and 2.0% in 2-25. This outlook is based on the most recent developments in the national and global economies, the performance of Hawaii's tourism industry, labor market conditions, and the growth of personal income and slowing of the consumer inflation rates (DBEDT 2022). Hawaii will welcome an estimated 9.3 million visitors in 2022. Visitor arrivals are projected to increase to 9.8 million in 2023, 10.2 million in 2024, and 10.5 million in 2025 (DBEDT 2022).

The resources and issues that have been evaluated for potential cumulative impacts in this section include air quality, biology, climate, noise, roadways and traffic, socioeconomic characteristics, aesthetic/visual resources, hazardous materials and solid waste, water quality, public safety, and recreation. The resource and issues that are considered to not create impacts outside the Project footprint are not discussed further in this section, and include land uses, topography and geology, soils, and natural hazards. In all resource areas evaluated, less than significant cumulative impact and no significant secondary impacts are anticipated to result from operations of the proposed Project.

Air pollutant and GHG emissions may increase somewhat in the area due to higher vehicle traffic, construction equipment and addition of homes and tourist developments. The increases in emissions may, however, be ameliorated by improved operational efficiencies, equipment, and technology; use of cleaner-burning fuels; and adherence to pollution control rules and regulations. The proposed Project would have a beneficial effect on climate change and air quality by reducing the use of fossil fuels and GHG emissions, and as such, would not contribute negatively to cumulative impacts on climate and air quality.

Noise due to non-Project traffic may increase in the future. There would also be unavoidable, potentially significant noise impacts related to construction related to development; however, these would be temporary and mitigatable. The proposed Project would not contribute significantly to cumulative noise impacts.

Traffic volumes in the area may increase over time due to growth in West Maui. However, the Project would not increase traffic and would not contribute significantly to cumulative impacts to roadways and traffic.

Solid waste from development and construction sites in the region will place additional demands on construction debris disposal facilities in the area. However, it is predicted that increases in recycling and waste-to-energy will reduce the waste that goes to the landfill in the coming years. Waste from the continued operation of the KWP I facility would not contribute significantly to cumulative impacts on solid waste management.

The proposed Project would be visible from the tourism hotspots of Kīhei and Wailea, approximately 6 miles and 10 miles from the Project area, respectively as well as from several residential areas and highways east and south of the Project area (See Section 5.0). The Project would not affect visual resources significantly; as such, cumulative impact would be less than significant.

The Project and nearby projects may have impacts associated with hazardous materials, primarily during transportation and if there are accidental spills. Cumulatively, with continued growth in the region, future specific uses could also increase the possibility of hazardous material impacts. Given strict adherence to petroleum operation rules and regulations, hazardous materials handling rules, and BMPs, the Project's contribution to cumulative impacts would be less than significant.

Generally, water quality may be affected by the development in the region because there will be an increase in impervious surfaces and reduced infiltration through soils potentially increasing storm water runoff and

introducing sediment and other pollutants to the nearshore environment. The Project would not create new impervious surfaces and would implement BMPs to control, treat, or reduce runoff before entering nearby surface waters. As such the Project's contribution to cumulative impacts would be less than significant.

The cumulative demands on public safety services of developments in the region over time will generate the need for additional police, fire, and medical services. The Project would continue to employee a small number of people and would not result in significant impacts to emergency services. Therefore, the Project would not contribute to the cumulative impact created by other projects in the region.

Demand on recreational facilities will likely increase due to future development and the growth of visitors to the islands. The Project, however, would not affect demand for recreational facilities.

Socioeconomics in the surrounding towns of Mā'alaea and Olowalu have, and will continue, to change due to past, present, and future actions. The Project would not result in demographic changes or increased population.

Terrestrial and marine biological resources, including vegetation, birds, bats, coral reef resources, fish, sea turtles and marine mammals, are continuously being negatively impacted by anthropogenic and natural activities throughout the Hawaiian Islands. The growth and development in the West Maui region, and the in-water marine activities in the nearshore and offshore combined contribute to impacts to sensitive biological resources through such factors as decreases in quality of habitat, increases in noise, and direct injury. However, impacts from any given project are not easily measurable, and many impacts are likely minor. Similarly, the Project may contribute to the cumulative impacts to biological resources in the area; however, the contribution is anticipated to be less than significant.

11.0 References

Banko, P.C. 1988. Breeding biology and conservation of the Nēnē, Hawaiian goose (Nesochen sandvicensis). Ph.D. dissertation, University of Washington, Seattle.

Banko, P.C., J.M. Black, and W.E. Banko. 1999. Hawaiian Goose (Nēnē) (Branta sandvicensis). In The Birds of North America, No. 434, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Birds of North America, Inc.

Bonaccorso, F.J., C.M. Todd, A.C. Miles, and P.M. Gorresen. 2015. Foraging Range Movements of the Endangered Hawaiian Hoary Bat, Lasiurus cinereus semotus. Journal of Mammalogy 96(1):64-71.

Businger, S. 1998. Hurricanes in Hawai`i. University of Hawai`i, Department of Meteorology. September 1988. Available online at: http://www.soest.hawaii.edu/met/Faculty/businger/poster/hurricane/. Accessed September 2022.

Chris Hart & Partners, Inc. 2006. Maui County General Plan 2030 Scenic Resources Inventory and Scenic Corridor Report. Available online at: Scenic-and-Historic-Resources-MethodologyReport (mauicounty.gov). Accessed December 2022.

Chris Hart & Partners, Inc. 2007. Maui County General Plan 2030 Telecommunications Assessment. Available online at: https://www.mauicounty.gov/DocumentCenter/View/10498/TelecommunicationsAssessment?bidId=. Accessed December 2022.

Cooper, B. A., and R. H. Day. 2004. Results of endangered bird and bat surveys at the proposed Kaheawa Pastures Wind Energy Facility, Maui Island, Hawai'i, fall 2004. Unpublished report prepared for Kahaewa Windpower LLC, Makawao, HI, and UPC Wind Management LLC, Newton, MA, by ABR, Inc., Forest Grove, OR and Fairbanks, AK. 16 pp.

County of Maui Planning Department. 2022. West Maui Community Plan. Available online at: https://www.mauicounty.gov/DocumentCenter/View/131915/West-Maui-CommunityPlan-January-2022. Accessed December 2022.

County of Maui Planning Department. 2012. Maui Island Plan, Island of Maui, General Plan 2030. Available online at: https://www.mauicounty.gov/1503/Maui-Island-Plan. Accessed December 2022.

County of Maui Planning Department. 1998. Kihei-Makena Community Plan. Available online at: https://www.mauicounty.gov/DocumentCenter/View/1712/Kihei-Makena-CommunityPlan-1998?bidId=. Accessed December 2022.

Day, R. H., and B. A. Cooper. 1999. Results of endangered bird and bat surveys at the proposed Kaheawa Pastures Windfarm on Maui Island, Hawai'i, summer 1999. Unpublished report prepared for Zond Pacific, Wailuku, HI, by ABR, Inc., Fairbanks, AK, and Forest Grove, OR. 26 pp.

DBEDT (State of Hawai'i, Department of Business, Economic Development, and Tourism). 2022. Outlook for the Economy. 4th Quarter 2022 Report. Available online at: https://dbedt.hawaii.gov/economic/qser/outlookeconomy/#:~:text'Hawaii's%20consumer%20inflation%20rate%2C%20as,and%202.1%2 0percent%20in%202025. Accessed December 2022.

DLNR (State of Hawai'i, Department of Land and Natural Resources). 2016. Hawai'i Forest Action Plan 2016. Department of Land and Natural Resources, Division of Forestry and Wildlife. Honolulu, Hawai'i. December 31, 2016.

DOFAW (State of Hawaii, Department of Land and Natural Resources: Division of Forestry and Wildlife). n.d. Approved HCPs and Annual Reports. Department of Land and Natural Resources, Division of Forestry and Wildlife: Wildlife Program. https://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/. Accessed January 2023.

DOFAW. 2015. Endangered Species Recovery Committee Hawaiian Hoary Bat Guidance Document.

FEMA (Federal Emergency Management Agency). 2020. Earthquake Hazard Maps. Available online at: https://www.fema.gov/emergency-managers/risk-management/earthquake/hazardmaps. Accessed December 2022.

FEMA. 2021. Flood Maps. Available online at: https://msc.fema.gov/portal. Accessed December 2022.

Foote, D., E. Hill, S. Nakamura, and F. Stephens. 1972. oil survey, islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lanai, State of Hawai'i. U.S. Department of Agriculture, Soil Conservation Services, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, DC.

Giambelluca, T. W. and T. A Schroeder. 1998. "Climate," in Juvik, S. P., J. O. Juvik, and T. R. Paradise, (eds.) Atlas of Hawai'i. University of Hawai'i Press.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte, 2013: Online Rainfall Atlas of Hawai'i. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1. Available online at http://rainfall.geography.hawaii.edu/interactivemap.html. Accessed September 2022.

Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. 2014. Evapotranspiration of Hawai'i. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawai'i. Available online at http://climate.geography.hawaii.edu/. Accessed December 2022.

Gorressen, M.P., F.J. Bonaccorso, C.A. Pinzari, C.M. Todd, K. Montoya-Aiona, and K. Brinck. 2013. A five-year study of Hawaiian hoary bat (Lasiurus cinereus semotus) occupancy on the island of Hawai'i. Technical report HCSU-041. University of Hawai'i at Hilo. Hilo, HI.

HDOH. 2021. State of Hawa'i Annual Summary 2020 Air Quality Data. December 2021.

HDOT (Department of Transportation). 2022. HDOT Highways Program Status. Available online at: https://histategis.maps.arcgis.com/apps/MapSeries/index.html?appid=39e4d804242740a89d3fd0bc76d8d7de. Accessed December 2022.

Hobdy, R. W. 2004a. Botanical resources survey for the Kaheawa Pastures Wind Energy Project access road – primary route. Prepared for Kaheawa Wind Power, LLC.

Hobdy, R. W. 2004b. Botanical resources survey for the Kaheawa Pastures Wind Energy Project access road – alternate route. Prepared for Kaheawa Wind Power, LLC.

Jacobi, J. D., J.P. Price, L. B. Fortini, S. M. Gon III, & P. Berkowitz. 2017. Hawai'i Land Cover and Habitat Status [Data set]. U.S. Geological Survey. Available online at: https://doi.org/10.5066/F7DB80B9. Accessed December 2022.

KWP (Kaheawa Wind Power, LLC). 2004. Kaheawa Pastures Wind Energy Generation Facility, Final Environmental Assessment, TMK Nos. 4-8-001:001 and 3-6-001:014, Ukumehame, Maui, Hawaii.

KWP. 2006. Kaheawa Pastures Wind Energy Generation Facility, Habitat Conservation Plan, TMK nos. 4-8-001:001 and 3-6-001:014, Ukumehama, Maui, Hawai'i. January 2006.

KWP. 2022. Kaheawa Wind Power Habitat Conservation Plan, FY 2022 Annual Report. Prepared for Kaheawa Wind Power, LLC. Prepared by Tetra Tech, Inc. October 2022.

Malama Environmental, LLC. 2007. Phase 1 Environmental Site Assessment. Preliminary Summary for the Property Located at the Kaheawa Wind Farm, West Maui Mountains, Maui, HI. TMK(2)4-8-01:001 (portion), MEV Project No. 0708-0066

Medeiros, A. C. 1996. A botanical survey of six proposed wind testing sites on leeward West Maui. Submitted April 29, 1996. Prepared for Zond Pacific, Inc.

Medeiros, A. C. 1998. Botanical survey of proposed road construction corridor, SE West Maui. Prepared for Keith Avery, Zond Energy Systems, Inc., Enron Wind Corp. November 22, 1998.

Nishibayashi, E. 1997. Report #1, Downed wildlife survey at six leeward West Maui wind monitoring towers. Submitted to Zond Pacific, Inc. March 3, 1997.

Nishibayashi, E. 1998. Report #3, Native bird activity at proposed access road. Submitted to Zond Pacific, Inc. November 21, 1998.

NOAA (National Oceanic and Atmospheric Administration). 2015. Tsunami Hazard Map. Available online at: https://tsunami.coast.noaa.gov/#/. Accessed September 2022.

NOAA. 2022. Central Pacific Hurricane Season. National Hurricane Center Tropical Cyclone Reports. Available online at: https://www.nhc.noaa.gov/data/tcr/index.php?season=2022&basin=cpac. Accessed September 2022.

NRCS (National Resource Conservation Service). 2019. Web Soil Survey. United States Department of Agriculture. Available online at: http://websoilsurvey.sc.egov.usda.gov/. Accessed September 2022.

Roy, S. B., S. W. Pacala, and R. L. Walco. 2004. Can Large Wind Farms Affect Local Meteorology? Journal of Geophysical Research Volume 109:D19101.

Office of Planning. 2020. Water quality classification. Available online at: https://geoportal.hawaii.gov/datasets/HiStateGIS::water-quality-classification-1/about. Accessed September 2022.

Planning Solutions Inc. 2010. Final Environmental Impact Statement. Kaheawa Wind Power II Wind Energy Generation Facility, Ukumehame, Maui, Hawai'i.

Price, J. P., J.D. Jacobi, S.M. Gon III, D. Matsuwaki, L. Mehrhoff, W. Wagner, M. Lucas, and B. Rowe. 2012. Mapping plant species ranges in the Hawaiian Islands—Developing a methodology and associated GIS layers. U.S. Geological Survey Open-File Report 2012–1192, 34 p., one appendix (species table), 1,158 maps. Available at: http://pubs.usgs.gov/of/2012/1192/.

Statewide GIS Program, Office of Planning (2020a). Land Study'Bureau's Detailed Agricultural land productivity ratings for Kaua'i, O'ahu, Maui, Moloka'i, Lanai and Hawai'i, 1965-1972. Available online at: https://geoportal.hawaii.gov/datasets/HiStateGIS::lsb/about. Accessed December 2022.

Statewide GIS Program, Office of Planning (2020b). Agricultural Lands of Importance to the State of Hawai'i for islands of Kaua'i, O'ahu, Maui, Moloka'i, Lanai & Hawai'i. State Department of Agriculture. Available online at: https://geoportal.hawaii.gov/datasets/HiStateGIS::important-agricultural-lands-ial/about. Accessed December 2022.

Stearns, H. T., and A. M. Gordon. 1942. General geology and ground-water resources of the island of Maui, Hawai'i. No. 7. Advertiser Publishing Co.

U.S. Census Bureau. 2020. 2020 Decennial Census. Accessed online at: https://www.census.gov/programs-surveys/decennial-census/about/rdo.html. Accessed December 2022

U.S. Census Bureau. 2021. American Community Survey 5-Year Estimates. Accessed online at: https://www.census.gov/programs-surveys/acs.html . Accessed December 2022.

USGS (U.S. Geological Survey). 1997. Hawai'i Seismic Zone Assignments, 1988 and 1997. Available online at: https://www.usgs.gov/observatories/hawaiian-volcano-observatory/damagingearthquakes-common-hazard-hawaii. Accessed December 2022.

USGS. 2017. Volcanic air pollution hazards in Hawai'i. U.S. Geological Survey Fact Sheet 2017-3017. Available online at: https://www.usgs.gov/publications/volcanic-air-pollution-hazardshawaii. Accessed September 2022.

USGS. 2019. Estimated groundwater recharge from a water-budget model incorporating selected climate projections, island of Maui, Hawai'i. Scientific Investigations Report 2019-5064. Accessible online at: https://pubs.er.usgs.gov/publication/sir20195064. Accessed September 2022.

USGS. 2022a. About earthquakes in Hawai'i. Available online at: https://www.usgs.gov/observatories/hawaiian-volcano-observatory/about-earthquakeshawaii. Accessed September 2022.

USGS. 2022b. National hydrography dataset. Available online at: https://www.usgs.gov/nationalhydrography. Accessed January 2023.

USFWS (U.S. Fish and Wildlife Service). 1998. Recovery Plan for the Hawaiian hoary bat (*Lasiurus cinereus semotus*). U.S. Fish and Wildlife Service, Portland, OR.

USFWS. 2003. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Blackburn's Sphinx Moth. Federal Register. 68(111): 34710-34766. Tuesday, June 10, 2003.

USFWS. 2005. Draft recovery plan for the Blackburn's Sphinx Moth (Manduca blackburni). Region 1 U.S. Fish and Wildlife Service. Portland, OR.

USFWS. 2016. Endangered and Threatened Wildlife and Plants; Designation and nondesignation of critical habitat on Moloka'i, Lāna'i, Maui, and Kaho'olawe for 135 species. Federal Register. 81(61): 17790-18110.

USFWS. 2021. 'Ōpe'ape'a or Hawaiian Hoary Bat (Lasiurus cinereus semotus) 5-Year Status Review. Pacific Islands Fish and Wildlife Office, Honolulu, Hawai'i.

USFWS. 2022a. Final Avoidance and Minimization Measures (AMMs) for ESA Listed Species. Revised April 2022. Available online at: https://www.fws.gov/sites/default/files/documents/Animal%20Avoidance%20and%20Minimization%20Measures-April%202022.pdf. Accessed September 2022.

USFWS. 2022b. Critical Habitat - Polygon Features – Final. Accessible online at: https://hub.arcgis.com/datasets/fws::critical-habitat-polygon-features-final-3/about. Accessed August 2022.

USFWS. 2022c. National Wetlands Inventory Dataset. Available at: https://www.fws.gov/node/264586. Accessed January 2023.

Vesta (Vesta Wind Systems A/S). 2021. Performance Specification V136-4.5 MW 50/60 Hz (Low HH). Document No.: 0067-7056.V02

Vuich Environmental Consultants. 2005. Environmental Site Assessment: Phase I Investigation. Kaheawa Pastures Proposed Windfarm, West Maui Mountains. Prepared for Kaheawa Wind Power LLC. Wailuku, HI.

WSB-Hawaii. 1999. Final Environmental Impact Statement, Kaheawa Pastures 20 MW Windfarm, Maui, Hawai'i. Prepared for Zond Pacific, Wailuku, Hawai'i.