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3.10 FLORA AND FAUNA, ENDANGERED SPECIES

This section includes an assessment of potential effects to flora and fauna, as well as identifies and documents biological issues of concern, including the presence of any taxa State or federally listed as threatened or endangered, candidate species for listing, or sensitive habitats, including designated critical habitat. This assessment describes the potential effects of implementing the Honoapiʻilani Highway Improvements Project (the Project) on flora and fauna and conservation measures for avoidance and minimization of possible effects that may be considered for inclusion into the planning and design phase for sensitive species and habitats present in the project area. The potential synergistic and additive effects of climate change on flora and fauna are also described. A more detailed description of the flora, fauna, and other biological communities within the project area can be found in Appendix 3.10.1, which provides additional information to support this evaluation.

The Federal Highway Administration (FHWA) and the Hawaiʻi Department of Transportation (HDOT) are committed to conserving and maintaining the state's natural resources. This includes proactive planning to reduce adverse effects to all biological communities—especially sensitive, rare, threatened, and endangered species—and critical habitat.

Following publication of the Draft Environmental Impact Statement (EIS), the public was afforded an opportunity to review and comment on the effects of the Project with respect to flora and fauna as well as endangered species. As part of this Final EIS, the analysis contained within this section was revised to reflect those comments, or other information gathered after the publication of the Draft EIS.

3.10.1 Regulatory Context

Various regulatory frameworks exist at the federal, State, and local levels to address flora, fauna, and endangered species and mitigate the Project's potential effects to these resources. **TABLE 3.10-1** describes the rules and regulations at these various levels.



TABLE 3.10-1. **Flora, Fauna, Endangered Species Regulatory Context**

LEVEL	RULES AND REGULATIONS	DESCRIPTION
FEDERAL	Endangered Species Act of 1973 (ESA) (16 U.S.C. § 1531-1544)¹	The purpose of the ESA is to provide a program for the conservation of endangered and threatened species and their ecosystems. It is the policy of Congress that federal agencies utilize their authorities to further the purposes of the ESA. Section 9 of the ESA prohibits the taking of endangered and threatened species. Section 7 of the ESA requires federal agencies to insure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), that any federal agency action is not likely to jeopardize the continued existence of any proposed or listed species or destroy or adversely modify proposed or designated critical habitat. Procedures implementing Section 7 are codified in regulation (50 CFR § 402). If an agency determines an action “may affect” a listed species or critical habitat, then Section 7 consultation is required and can result in one of two effect determinations: “may affect, not likely to adversely affect,” or “may affect, likely to adversely affect.” The following descriptions are provided in the 1998 USFWS and NOAA NMFS <i>Endangered Species Consultation Handbook</i> . ¹ A “no effect” determination is made by the action agency when it determines its proposed action will not affect listed species or critical habitat. The term “may affect, not likely to adversely affect” is used when effects on listed species are expected to be discountable, insignificant, or wholly beneficial. “May affect, likely to adversely affect” is chosen if any adverse effect to listed species may occur as a result of the proposed action.
	Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703-712)	The MBTA ² was implemented for the protection of birds migrating between the United States and Canada. Subsequent amendments implemented treaties between the United States and Mexico, the United States and Japan, and the United States and the former Soviet Union. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed therein. The statute applies equally to both live and dead birds, and grants full protection to any bird parts, including feathers, eggs, and nests. The USFWS implements the MBTA.
	Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668d)	The Bald and Golden Eagle Protection Act (BGEPA) of 1940 ³ prohibits anyone without a permit issued by the Secretary of the Interior, acting through the USFWS, from “taking” bald or golden eagles, including their parts, nests, or eggs. BGEPA defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.” While both species are uncommon in Hawaiʻi, vagrant Golden Eagles have been observed in Hawaiʻi.
	Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 <i>et. seq.</i>)	The Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. § 1855(b)) ⁴ establishes provisions relative to Essential Fish Habitat to identify and protect important habitats for federally managed marine and anadromous fish species. Federal agencies must consider project effects to those waters and substrate needed for fish spawning, breeding or maturing such as coral reefs.
	Executive Order 13112, Invasive Species	In accordance with Executive Order 13112, Invasive Species ⁵ , federal agencies must prevent, to the extent practicable and permitted by law, the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health effects that invasive species cause.

¹ USFWS. (March 1998). Endangered Species Consultation Handbook. <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>. Accessed February 2024.



LEVEL	RULES AND REGULATIONS	DESCRIPTION
STATE	Hawaiʻi Revised Statutes (HRS) - Chapter 195D	<p>HRS Chapter 195D⁶ is the State endangered-species law that complements the federal ESA. HRS 195D consists of a consultation process that addresses potential harm to threatened and endangered species in Hawaiʻi during project development. This is done by issuing an Incidental Take License and overseeing the development and implementation of Habitat Conservation Plans. The goal of these measures is to minimize and mitigate the negative effects of such projects.</p> <p>The State of Hawaiʻi Department of Land and Natural Resources Division of Forestry and Wildlife and Division of Aquatic Resources conducts project consultations under HRS Chapter 195D to provide guidance and protections for endangered and threatened species in Hawaiʻi. HRS Chapter 195D defines the necessity to protect and enhance the survival prospects of endangered and threatened species in Hawaiʻi. As described in HRS Chapter 195D-4(g), the Board of Land and Natural Resources may issue a temporary license to allow a take otherwise prohibited, so long as the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.</p>
	Hawaiʻi Revised Statutes – Chapter 58 (Act 105 – The Exceptional Tree Act)	<p>In 1975, the Hawaiʻi State Legislature found that rapid development had led to the destruction of many of the state’s exceptional trees and therefore passed Hawaii Revised Statutes Chapter 58 (Act 105, Session Laws of Hawaii 1975) - The Exceptional Tree Act. The Act recognizes that trees are valuable for their beauty and crucial ecological functions. An exceptional tree is designated by a county arborist advisory committee and is a “tree or stand or grove of trees with historic or cultural value, or that by reason of age, rarity, location, size, aesthetic quality or endemic status is worthy of preservation.” In Maui County, the Maui County Arborist Committee reviews all actions deemed by the County Council to endanger exceptional trees. The Maui County Arborist Committee rules of practice and procedures are codified in Title MC-10, Subtitle 3, Chapter 3⁷.</p> <p>Pruning, removal, and anything that would change the surroundings of the tree to its detriment requires a permit from the Director of Parks and Recreation, with review by the Maui County Arborist Committee. If an Exceptional Tree is approved for removal, the Arborist Committee may recommend to the Director of Parks and Recreation that the owner plant an appropriate replacement(s) or relocate the Exceptional Tree. If replacement or relocation is not possible, the Committee should identify another tree of the kind for Exceptional Tree classification⁸.</p>

¹ https://www.fws.gov/sites/default/files/documents/endangered-species-act-accessible_7.pdf. Accessed July 2023.

² <https://www.govinfo.gov/content/pkg/USCODE-2020-title16/pdf/USCODE-2020-title16-chap7-subchapII-sec703.pdf>. Accessed July 2023.

³ <https://www.govinfo.gov/content/pkg/USCODE-2010-title16/pdf/USCODE-2010-title16-chap5A-subchapII.pdf>. Accessed July 2023.

⁴ <https://media.fisheries.noaa.gov/dam-migration/msa-amended-2007.pdf>. Accessed July 2023.

⁵ <https://www.govinfo.gov/content/pkg/FR-1999-02-08/pdf/99-3184.pdf>. Accessed July 2023.

⁶ https://www.capitol.hawaii.gov/hrscurrent/vol03_ch0121-0200d/hrs0195d/hrs_0195d-.htm. Accessed July 2023.

⁷ <https://www.mauicounty.gov/DocumentCenter/View/8701/Practices--Procedures-Arborist-Committee?bidId=>. Accessed July 2023.

⁸ <https://www.mauicounty.gov/DocumentCenter/View/11115/MAUI-COUNTY-PLANTING-PLAN-WHOLE-3rd-Revision?bidId=>. Accessed December 2023.



3.10.2 Methodology

Biological reviews consider the scientific findings of a field survey to evaluate a project’s potential effects on protected flora and fauna. These evaluations inform conclusions on whether a project would have an effect, positive or negative, and the anticipated degree of effect. Typically, such as in the case of Endangered Species Act (ESA) Section 7 consultation, conclusions on project effects to protected flora and fauna can be grouped in some variation of either no effect, potential effect, or anticipated effect. If an effect is considered potential or anticipated, adoption of appropriate avoidance and minimization measures can often render such an effect negligible.

Prior to conducting field surveys, possible flora and fauna in the project area were identified from data available at various sources, listed in **TABLE 3.10-2**.

TABLE 3.10-2. **Flora and Fauna Sources by Agency**

AGENCY	SOURCE
U.S. Fish and Wildlife Service	National Wetlands Inventory maps
	Information for Planning and Consultation System list of federally endangered, threatened, proposed, and candidate species, plus critical habitat, which may occur within the boundary of a proposed project and that may be affected by project-related actions
National Oceanic and Atmospheric Administration	Endangered Species Act Section 7 Mapper
	National Marine Fisheries Service Essential Fish Habitat Mapper

A field survey of the Biological Study Area was conducted on the following dates in 2023: January 2, 3, 4, 5, 6, and 7; March 21, 22, 23, 24, and 25; April 28; May 1, 9, 14, 16, and 22; and July 13 and 18. Two botanists and one wildlife biologist (hereafter referred to as “biologists”) conducted the survey together. Additional surveys were conducted in March 2025 between the Draft and Final EIS to expand survey coverage based on design refinements to the Preferred Alternative. The biologists walked the accessible areas of the Biological Study Area and documented the vegetation communities, plants, birds, and mammals using visual and auditory detection, as well as secondary indicators (for example, nests/tracks). Observations made during site reconnaissance conducted between January and July 2023 were used to confirm and characterize the presence of flora and fauna in the project area. Additionally, biologists observed an individual of a listed bird species in the field on March 23, 2023, when conducting wetland delineation. Appendix 3.10 includes the full biological resources report.

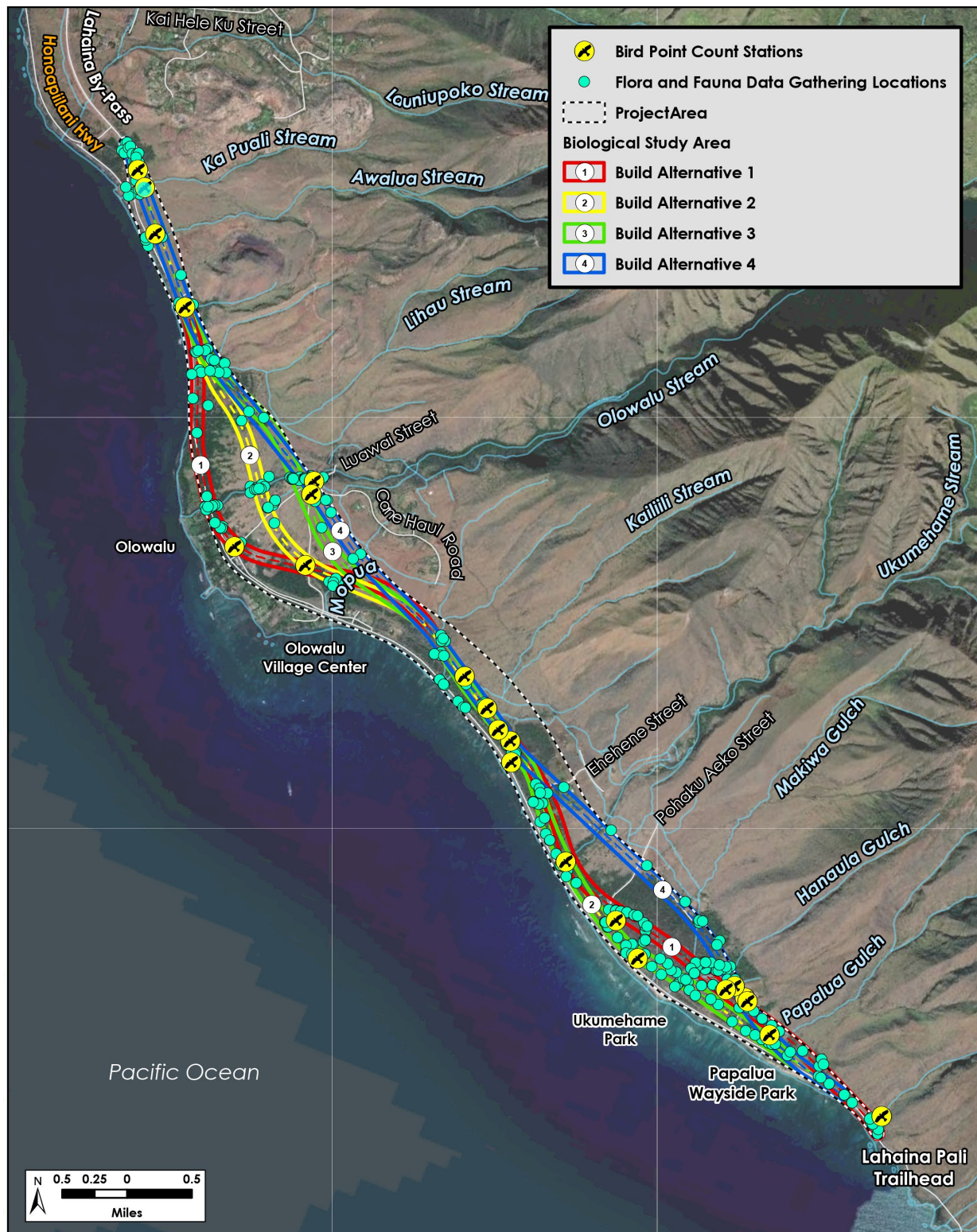
The Biological Study Area for the flora and fauna studies consisted of a 150-foot swath centered around each Build Alternative (**FIGURE 3.10-1**). This distance was determined to account for variability along the 140-foot right-of-way and is therefore slightly larger than the established project area depicted in the four Build Alternative alignments.

In addition, other species of concern in the vicinity of the Biological Study Area were identified during informal pre-consultation meetings with USFWS staff (Appendix 3.10). Biologists also conducted a project site visit with USFWS staff on March 22, 2023, to help familiarize USFWS staff with the scope



of this highway realignment project and document any concerns that they might identify regarding species and habitats.

FIGURE 3.10-1. **Biological Study Area and Data Gathering Points**





3.10.3 Affected Environment

In general, the vegetation in the project area consists mainly of coastal dry communities typical of Hawaiʻi's leeward sides.² These areas receive limited rainfall, resulting in open to semi-open shrublands or woodlands. Human activities have drastically altered the vegetation, with alien species now dominating. The project area comprises 15 identified habitat or vegetation types, detailed from north to south where proposed Build Alternatives merge with the existing alignment near the Pali (FIGURE 3.10-2).

Appendix 3.10 contains a comprehensive list of bird, mammal, and plant species observed in the project area with qualitative estimates of their relative abundance. Floral relative abundance is based on proportion of observations within the Biological Study Area. Avian (bird) relative abundance is based on the proportion of point count stations where species were observed. The USFWS Information for Planning and Consultation (IPaC) list was also used to identify flora and fauna species potentially present in the project area.

3.10.3.1 Flora

No rare native Hawaiian plant species or taxa that are State or federally listed as threatened, endangered, or taxa that are candidates for listing were observed in the Biological Study Area. Appendix 3.10 provides a list of the plant species observed and their relative abundance in the project area. A total of 56 plant taxa were found, of which 8 (approximately 14%) are native (indigenous) and 48 (approximately 86%) are either Polynesian introduced or alien species.³ Native species include 'ilima (*Sida fallax*), 'iliahialo'e (*Santalum ellipticum*), 'a'ali'i (*Dodonaea viscosa*), hoary abutilon (*Abutilon incanum*), akulikuli (*Sesuvium portulacastrum*), milo (*Thespesia populnea*), and naupaka (*Scaevola taccada*). Removal of any of these seven plant species is not expected to have an adverse effect on species' populations (locally or regionally) as distribution of these native species on Maui are widespread.⁴ Detailed below are the distribution and composition of vegetation communities within the Biological Study Area, starting from the northern Lahaina side to the southern end where all the proposed Build Alternatives merge with the existing alignment near the Pali. Appendix 3.10 includes detailed descriptions of the Biological Study Area vegetation.

The Maui County Arborist Committee has designated the monkeypod trees (*Samanea saman*) forming a tree tunnel in the right-of-way of the existing Honoapiʻilani Highway as "Exceptional Trees."⁵ These trees are not federally listed.

² Gagne, W. C., and L. W. Cuddihy. 1999. Vegetation. Pages 45–114 In W. L. Wagner, D. R. Herbst, and S. H. Sohmer, Manual of the Flowering Plants of Hawaiʻi. Revised edition. Bishop Museum Special Publication, University of Hawaiʻi Press, Honolulu.

³ Imada, C. T. 2019. Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. <<http://hbs.bishopmuseum.org/publications/pdf/tr69.pdf>>. Accessed August 25, 2023.

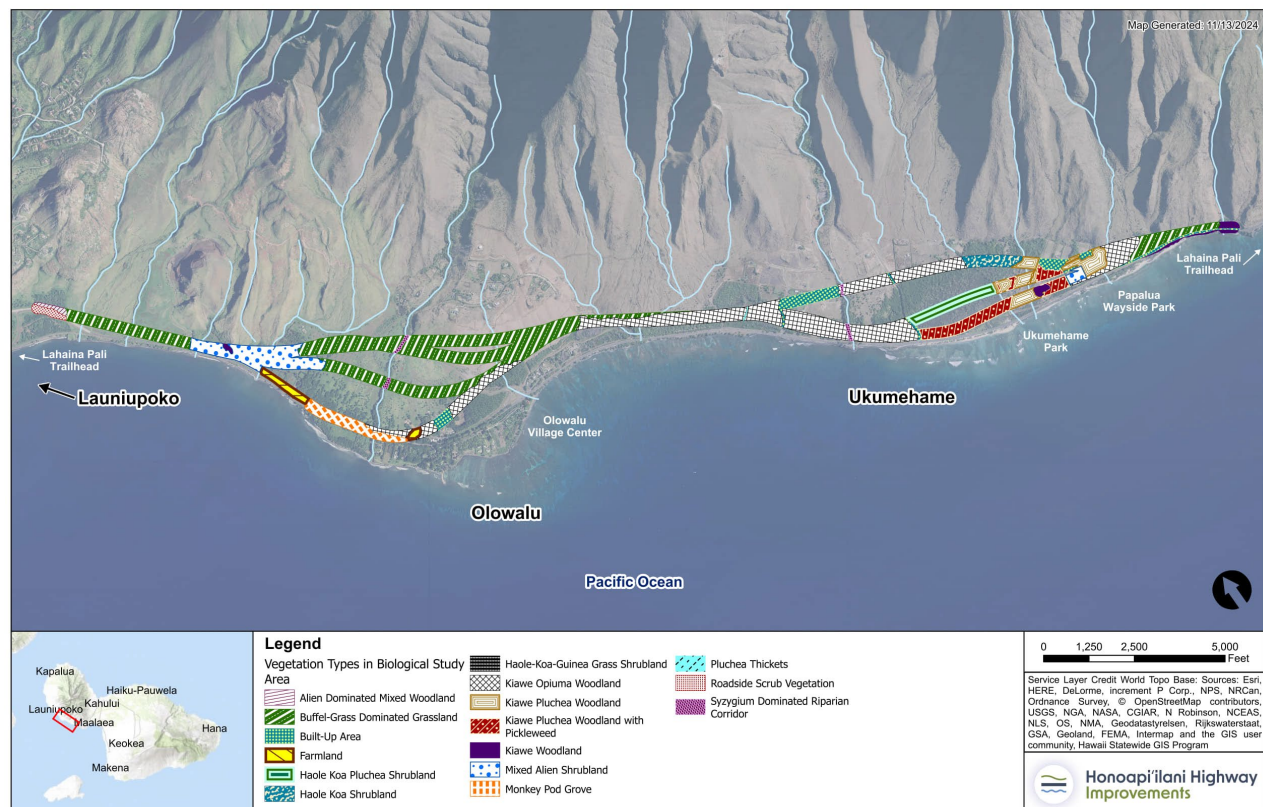
⁴ Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the Flowering Plants of Hawaiʻi. Two volumes. Revised edition. University of Hawaiʻi Press and Bishop Museum Press, Honolulu.

⁵ Maui County. (June 9, 2021). Exceptional Trees of Maui County. Maui County Arborist Committee. Meeting Agenda. <https://www.mauicounty.gov/ArchiveCenter/ViewFile/Item/28269>. Accessed October 2023.



The vegetation throughout the Biological Study Area has been heavily modified by prehistoric and modern human activities, climate change, and wildfires, and is now largely dominated by alien species. Projections by the Pacific Islands Climate Adaptation Science Center show that climate change could result in a range contraction of 60% of Hawaiʻi's native plant species by the end of the century.⁶ Climate change works synergistically to allow invasive species to establish and further disrupt ecosystems while reducing suitable habitat for native species. Additionally, wildfires, changing climatic conditions, and land use changes alter vegetation patterns, which affects native species and increases disturbed habitat for alien species.

FIGURE 3.10-2. Habitat/Vegetation Types – Honoapiʻilani Highway



3.10.3.2 Fauna

The reconnaissance survey documenting the wildlife observed in the Biological Study Area identified a variety of avian (bird) and mammal species. No terrestrial reptiles, amphibians, or invertebrates were recorded in the survey. As the Project is entirely terrestrial, no observations of marine species were made. Within the scope of the biological survey, no in-water surveys were conducted because no in-water work is anticipated for the Project. Consultation on the following marine species, Hawaiian monk seal (*Neomonachus schauinslandi*), hawksbill sea turtle or honuʻea (*Eretmochelys imbricata*), and

⁶ Camp, R.J., Berkowitz, S.P., Brinck, K.W., Jacobi, J.D., Loh, R., Price, J., and Fortini, L.B., 2018, Potential impacts of projected climate change on vegetation-management strategies in Hawaiʻi Volcanoes National Park: U.S. Geological Survey Scientific Investigations Report 2018-5012, 151 p., 3 appendixes, <https://doi.org/10.3133/sir20185012>. Accessed September 2023.



Central North Pacific green sea turtle or honu (*Chelonia mydas*), was conducted with the NMFS and is discussed in Section 3.10.5.

There were observations of several ESA listed species within the project area. A summary of the fauna observed or known to exist in the project area is included below. Appendix 3.10 includes a more detailed description of these species and their habitats.

Corals are especially sensitive to stressors such as marine pH levels, temperature, and pollution, which are altered by climate change through various synergistic and additive effects. Increasing ocean acidity reduces the ability of coral to build their skeletons, and warming ocean temperatures disrupt symbiotic relationships with algae that live in their tissues. Pollution-laden runoff resulting from more intense storm and wildfire events enter marine ecosystems, further stressing coral reefs. This disruption leads to coral bleaching (named for the white color the coral turn) and increased mortality.⁷ Coral bleaching reduces the resiliency of coastal communities to storm surges, high-wave events, coastal erosion, flooding, and sea level rise, as well as the ability of reefs to serve as natural infrastructure responsible for wave dissipation that protects shorelines, such as those in West Maui. Loss of reef-building corals due to climate change has reduced reef height and complexity, resulting in reduced wave energy dissipation in deeper waters.⁸

Birds

Avian point counts were conducted, identifying 301 individuals representing 17 species. These point counts were conducted using 10-minute point counts at 21 different locations within the Biological Study Area. Most of the data was collected between 6:00 a.m. and 11:00 a.m. These 21 locations were strategically chosen to represent various habitats within the Biological Study Area. Point counts were taken in January, March, April, May, and July, all months in nesting seasons for listed bird species. **TABLE 3.10-3** includes the full list with common and scientific names of the individual species, the legal regulatory status, the average number of individuals detected per count station, and how many count stations were occupied. The last two metrics were used to provide a qualitative relative abundance of observed bird species.

Of these 17 species, 14 are nonnative and three are native. Of the three native species, two are State or federally listed as threatened or endangered: Hawaiian goose or nēnē (*Branta sandvicensis*) and Hawaiian stilt or aeʻo (*Himantopus mexicanus knudseni*). These species were observed during and outside of the point count stations.

During the study, nēnē and aeʻo were observed both within and outside the point count stations. On January 3, 2023, four nēnē were spotted loafing, a scientific term for when a bird is displaying relaxed behaviors, at Ukumehame Firing Range near a newly formed muddy pond due to heavy rains. Two of the four nēnē were banded individuals. Three aeʻo were also seen feeding and loafing next to the nēnē.

⁷ Marra, J., Kruk, M. (2017). State of Environmental Conditions in Hawaii and the U.S. Affiliated Pacific Islands under a Changing Climate: 2017. https://coralreefwatch.noaa.gov/satellite/publications/state_of_the_environment_2017_hawaii-usapi_noaa-nesdis-ncei_oct2017.pdf. Accessed September 2023.

⁸ Toth, L.T., Storlazzi, C.D., Kuffner, I.B. et al. The potential for coral reef restoration to mitigate coastal flooding as sea levels rise. Nat Commun 14, 2313 (2023). <https://doi.org/10.1038/s41467-023-37858-2>.



Nēnē and aeʻo were also observed in the same location on January 4. Later, on March 22 and April 28, 2023, two additional nēnē were observed loafing near the classroom building at Ukumehame Firing Range.

Additionally, one nēnē was observed in the open grassy area at the intersection of Pōhaku ʻAeko Street and Paekiʻi Place in the Ukumehame Subdivision, and it was banded. Although no nēnē were seen in the Olowalu area, they are known to frequent grasslands near the water reservoir outside the project area. A second sighting of an aeʻo occurred on March 23, 2023, when conducting wetland delineation at a ditch in Ukumehame, with one individual feeding in the ponded ditch.

Hawaiian coots (*Fulica alai*) were not observed during the field studies. The closest records of Hawaiian coots to the project area are to the north in the vicinity of Lahaina (approximately 6.5 miles to the northern terminus and to the south in the vicinity of Maalaea (approximately 9.4 miles to the southern terminus) (ebird 2024). Nonetheless, some potential habitat in the form of agricultural reservoirs (in Olowalu Reservoir) and taro fields and ditches (in the Ukumehame area) does exist within the project area and it is possible that the Hawaiian coots could visit the project area. However, this potential habitat does not appear to provide quality nesting habitat and it is most likely that an on-site Hawaiian coot would be utilizing the wetlands as merely a temporary foraging area, if water depths are suitable (Appendix 3.10-1).



TABLE 3.10-3. Avian Species Observed in the Project Area

COMMON NAME	SCIENTIFIC NAME	STATUS*	QUALITATIVE RELATIVE ABUNDANCE**
Common myna	<i>Acridotheres tristis</i>	X	Common
Hawaiian goose (nēnē)	<i>Branta sandvicensis</i>	ES, I, M	Rare
Cattle egret	<i>Bubulcus ibis</i>	X, IW, M	Rare
Northern cardinal	<i>Cardinalis cardinalis</i>	X, M	Common
House finch	<i>Carpodacus mexicanus</i>	X, M	Common
Common waxbill	<i>Estrilda astrild</i>	X	Common
Grey francolin	<i>Francolinus pondicerianus</i>	X	Uncommon
Red junglefowl	<i>Gallus gallus</i>	X	Rare
Zebra dove	<i>Geopelia striata</i>	X	Common
Hawaiian stilt (ae'o)	<i>Himantopus mexicanus knudseni</i>	ES, I, M	Rare
Northern mockingbird	<i>Mimus polyglottos</i>	X, M	Rare
Black-crowned night heron	<i>Nycticorax nycticorax hoactli</i>	I, M	Rare
Red-crested cardinal	<i>Paroaria coronata</i>	X, M	Uncommon
House sparrow	<i>Passer domesticus</i>	X	Rare
Spotted dove	<i>Streptopelia chinensis</i>	X, IW	Rare
Mourning dove	<i>Zenaida macroura</i>	X, M	Rare
Warbling white-eye	<i>Zosterops japonicus</i>	X, IW	Abundant

* Status:

ES = State or federally listed as Threatened or Endangered

I = indigenous (native to the Hawaiian Islands and elsewhere)

IW = State (HAR 12-124, Exhibit 5) or Federal (18 U.S.C. § 42) injurious wildlife species

X = introduced or alien (nonnative species)

M = Listed as a Migratory Bird Treaty Act Protected Species (10.13 List)

** Abundance indices based on the proportion of point count stations where species were observed, as follows:

Abundant = ≥ 0.75 ; Common = 0.50 to 0.74; Uncommon = 0.25 to 0.49; Rare = ≤ 0.24

One indigenous species, the Black-crowned night heron (*Nycticorax nycticorax*), was observed at Ukumehame Stream, perched on a branch above the flowing water. The typical habitat for this species is streams, lowland ponds and estuaries, so it has the potential to occur in other areas along Honoapiʻilani where stream flow and ponding is present.

No native or indigenous birds were observed exhibiting nesting behavior and no nests were documented during the point counts. The most common bird species throughout various habitat types in the project area was the warbling white-eye (*Zosterops japonicus*), an introduced species, frequently found in kiawe opiuma woodland and grassland habitats. They often move in small groups between trees and are considered harmful to agriculture, aquaculture, or indigenous wildlife and plants.

Mammals

Four feral mammal species or signs indicating their presence were observed during the biological survey. Most common were signs of Axis deer (*Axis axis*), which are an invasive ungulate species in Hawaiʻi. Deer tracks and droppings were abundant in the wetland area at Ukumehame Firing Range, and deer bones were also found throughout the project area. Wallows of feral pig, scat, and evidence



of rooting were seen but no pigs were seen. One mongoose (*Herpestes javanicus*) was observed along the roadway. Several presumably feral cats (*Felis catus*) were observed in the dry grass areas.

Although the Hawaiian hoary bat was not surveyed for during this reconnaissance-level survey, no Hawaiian hoary bats were incidentally observed during this field study. There are records for this species on Maui, and their potential presence is assumed within the project area.⁹ No terrestrial critical habitat has been designated for the Hawaiian hoary bat. Section 3.10.9 includes avoidance and minimization measures for Hawaiian hoary bats.

There is possible presence of endangered Hawaiian monk seal in offshore environments, and some have been known to haul out on beaches in West Maui. The entire Maui coastline is NMFS-designated critical habitat for the Hawaiian monk seal, and the project area overlaps with this critical habitat. However, according to consultation with the NMFS, given the implementation of best management practices (BMPs), exposure of Hawaiian monk seal and its critical habitat to effects of project activities is not anticipated. Section 3.10.5 includes consultation with the NMFS and Section 3.10.9 includes BMPs and general project design guidelines for avoiding any potential effects to these species.

Reptiles

Hawaiʻi does not have native amphibians and terrestrial reptiles. However, several marine turtles have coastal habitat in West Maui. These species are the honu'ea and honu. No honu'ea or honu were observed in the project area during reconnaissance-level surveys, but proposed critical habitat does exist in the project area for honu and it is possible that these species may visit the nearshore reefs along the coast. While exposure of effects to honu (and its critical habitat) and honu'ea could occur, according to consultation with the NMFS, given the implementation of BMPs, exposure is not anticipated. Section 3.10.5 includes consultation with the NMFS and Section 3.10.9 includes BMPs and general project design guidelines for avoiding any potential effects to these species.

Honu and honu'ea face salient threats from climate change-induced sea level rise. Given projected sea level rise estimates, the likelihood of increase in storm surge intensity, and other factors associated with climate change, beach erosion is likely to increase. Erosion can result in sedimentation in nearshore habitats, reducing habitat suitability for sea turtles.

Fish

The Atlas of Hawaiian Watersheds & Their Aquatic Resource (Hawaii Division of Aquatic Resources 2008) indicates the following species in association with Ukumehame and Olowalu Streams (TABLE 3.10-4).

⁹ Tomich, P. Q. 1986. Mammals in Hawaii. Second edition. Bishop Museum Special Publication 76. Bishop Museum Press, Honolulu, Hawaii.



TABLE 3.10-4. **Fish Species of the Ukumehame and Olowalu Streams**

STREAM	SCIENTIFIC NAME	COMMON NAME
Ukumehame Stream	<i>Awaous guamensis</i>	‘O’opu nākea
	<i>Eleotris sandwicensis</i>	‘O’opu akupa
	<i>Lentipes concolor</i>	Hawaiian ‘o’opu
	<i>Kuhlia spp.</i>	Āholehole
	<i>Sicyopterus stimpsoni</i>	‘O’opu nopili
	<i>Estrilda astrild</i>	‘O’opu nākea
Olowalu Stream	<i>Eleotris sandwicensis</i>	‘O’opu akupa
	<i>Lentipes concolor</i>	Hawaiian ‘o’opu
	<i>Sicyopterus stimpsoni</i>	‘O’opu nopili

Within the scope of the biological survey, no directed effort to characterize the fish community composition was conducted because no in-water work is planned in the project area. Although the biologists were watchful for the presence of fish in streams, none were documented. However, it is likely the streams have fish. As there is no in-water work planned for the Project and perennial streams ~~will would~~ be bridged outside the Ordinary High-Water Mark, the Project ~~will would~~ not affect fishes.

Crustaceans

Mountain shrimp, or ‘Ōpaekala’ole (*Atyoida bisulcate*), is a small spineless shrimp, approximately 2 inches long, found on Maui. They feed by filtering small particles from fast-flowing streams and scavenging in slower-flowing areas. Reproduction occurs year-round, and larvae are washed downstream into the ocean, growing to about 5 millimeters in size before returning to streams during the rainy season. They are skilled climbers and are typically found in high numbers in good-quality streams.

Habitat degradation and pollution from development, agriculture, stream channelization, and diversions pose salient threats to this species. In the project area, no specific survey for *Atyoida bisulcate* was conducted, and no incidental sightings were reported during the study. As there is no in-water work planned, the Project ~~will would~~ not affect mountain shrimp.

Insects

The Hymenoptera order includes various species like ants, bees, and wasps, but Hawaiʻi’s native Hymenoptera fauna mainly consists of nonsocial bees and wasps, particularly the *Hylaeus* (Colletidae) or yellow-faced bees. These bees are vital pollinators for native plants but face threats from nonnative bees (*Ceratina* spp.), competition with European honeybees (*Apis mellifera*), and invasive ants. No survey for *Hylaeus* was conducted in the project area, although biologists were watchful for any indications of their presence. None were documented.

The Orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*) is adaptable and found near standing pools or slow-moving streams. This species was not listed by the USFWS IPaC as potentially occurring in the project area, and the USFWS does not note critical habitat present for the species in the project area. There was a prior occurrence of Orangeblack Hawaiian damselfly recorded mauka of



the Ukumehame firing range, beyond the project footprint, as noted by the USFWS in May 2023, prompting its inclusion in this discussion of fauna and in Appendix 3.10-1. However, because they were not listed as potentially occurring in the project area, no specific survey for *Megalagrion xanthomelas* was conducted, and none were documented.

Eggs and larvae of the endangered Blackburn's sphinx moth (BSM) can occur between August and May—primarily on two specific host plants of the genus *Nothocestrum*. These host plants, (*N. latifolium* and *N. brevifolium*), were not found in the Biological Study Area. BSM larvae can also feed on tree tobacco (*Nicotiana glauca*) and other plants including the indigenous pōpolo. On March 25, 2023, three individual (potential host) plants of tree tobacco about 5-6 feet tall were observed in the Mixed Alien Shrubland in the vicinity of the Olowalu Recycling and Refuse Center in the project area, but no BSM eggs or larvae and no signs of feeding damage indicative of the presence of the BSM moth were found (Appendix 3.10-1).

Project activities are unlikely to have an adverse effect on BSM adults or larvae. However, ongoing threats to the species include habitat loss, invasive species, human development, and wildfire. BSM populations can also be affected by natural variations in rainfall, reducing food availability.

Tree tobacco, a potential host plant for BSM, could recruit in the project area. Recommended conservation measures to avoid and minimize effects to BSM have been provided by the USFWS and will ~~would~~ be incorporated into the Project's construction and operations and maintenance phases. These measures include the removal of tree tobacco higher than 3 feet and regular monitoring for new tree growth (Appendix 3.10).

3.10.4 Threatened or Endangered Species and Significant Ecological Communities

TABLE 3.10-5 includes federal (USFWS) definitions to describe the status designations of the species in this section.¹⁰

¹⁰ Endangered Species Act of 1973. 16 USC §1532. Definitions.

<https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter35&edition=prelim>. Accessed October 2023.



TABLE 3.10-5. **U.S. Fish and Wildlife Service Species Designations**

DESIGNATION	DEFINITION
Endangered	Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.
Threatened	Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA includes additional protections against the take (see definition above) of a species listed as threatened.
Critical Habitat	The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the ESA, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species.
Proposed	Any species of fish, wildlife, or plant that is proposed in the <i>Federal Register</i> to be listed under Section 4 of the ESA. Any specific area that is proposed in the <i>Federal Register</i> to be designated as critical habitat under Section 4 of the ESA



3.10.4.1 Flora

The USFWS IPaC List of Threatened and Endangered Species identified nine endangered plant (flora) species that may occur in the project area and may have the potential to be affected by the Project (TABLE 3.10-6). None of these species were observed during the field survey and there is no overlap of designated critical habitat for any listed plant species. Based on the findings of the biological resource report, it is highly unlikely that the Biological Study Area contains the nine ESA-protected endangered plant taxa. Appendix 3.10 lists detailed descriptions of these species and their habitats.

3.10.4.2 Fauna

The USFWS IPaC List of Threatened and Endangered Species identified ~~11~~ 12 endangered animal (fauna) species that are either known or expected to be in the project area (TABLE 3.10-7). Other than the nēnē and aeʻo, none of the other nine endangered animals were observed in the project area during the biological resources study. NOAA-NMFS identified one additional marine species, the Hawaiian monk seal.

Critical habitat has been designated by for Hawaiian monk seal, and BSM, and has been proposed for honu (Table 3.10-7). There is no overlap with BSM critical habitat. The project area does overlap with the proposed critical habitat for honu and designated critical habitat for Hawaiian monk seal. However, according to the NMFS, based on the implementation of BMPs, the likelihood of critical habitat of Hawaiian monk seal and honu exposure to project activities is not anticipated, as is exposure of honuʻea to project activities. Appendix 3.10 lists detailed descriptions of these species and their habitats. Section 3.10.5 includes consultation with the NMFS and Section 3.10.9 includes BMPs and general project design guidelines for avoiding any potential effects to these species.



TABLE 3.10-6. Listed Flora Species List

SPECIES	LISTING	CRITICAL HABITAT (Y/N)
ʻEnaʻena (<i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i>)	Federally endangered	N
ʻĀwiwi (<i>Schenkia sebaeoides</i>)	Federally endangered	N
Carter's Panicgrass (<i>Panicum fauriei</i> var. <i>carteri</i>)	Federally endangered	Y, but not overlapping with project area
Dwarf Naupaka (<i>Scaevola coriacea</i>)	Federally endangered	N
ʻIhi (<i>Portulaca villosa</i>)	Federally endangered	N
Koʻoluaʻula (<i>Abutilon menziesii</i>)	Federally endangered	N
ʻŌhai (<i>Sesbania tomentosa</i>)	Federally endangered	Y, but not overlapping with project area
Round-leaved Chaff-flower (<i>Achyranthes splendens</i> var. <i>rotundata</i>)	Federally endangered	Y, but not overlapping with project area
<i>Vigna o-wahuensis</i> (no common name)	Federally endangered	Y, but not overlapping with project area

TABLE 3.10-7. Listed Fauna Species List

SPECIES	LISTING	CRITICAL HABITAT (Y/N)
Hawaiian Hoary Bat (ōpeʻapeʻa) (<i>Lasiurus cinereus semotus</i>)	Federally and State endangered	N
Hawaiian Goose (nēnē) (<i>Branta sandvicensis</i>)	Federally threatened, State endangered	N
Hawaiian Stilt (aeʻo) (<i>Himantopus mexicanus knudseni</i>)	Federally and State endangered	N
Hawaiian Coot (<i>Fulica alai</i>)	Federally and State endangered	N
Hawaiian Duck (<i>Anas wyvilliana</i>)	Federally and State endangered	N
Hawaiian Petrel (<i>Pterodroma sandwichensis</i>)	Federally and State endangered	N
Newell's Townsend's shearwater (<i>Puffinus auricularis newelli</i>),	Federally and State threatened	N
Short-tailed Albatross (<i>Phoebastria albatrus</i>),	Federally and State endangered	N
Band-rumped Storm-petrel (<i>Hydrobates castro</i>)	Federally and State endangered	N
Green Sea Turtles (honu) (<i>Chelonia mydas</i>)	Federally and State threatened	Y, proposed
Hawksbill Sea Turtle (honuʻea) (<i>Eretmochelys imbricata</i>)	Federally and State endangered	N
Hawaiian Monk Seal (<i>Neomonachus schauinslandi</i>)	Federally and State endangered	Y, designated
Blackburn's Sphinx Moth (<i>Manduca blackburni</i>)	Federally and State endangered	Y, designated but not overlapping with project area



Essential Fish Habitat

Essential Fish Habitat (EFH) is broadly defined by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Sustainable Fisheries Act to include “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.”¹¹

The marine area extending from the shoreline to a depth of 3,280.8 feet (1,000 meters) and from the shoreline to 2,296.6 feet (700 meters) around each Hawaiian Island is designated as EFH. This includes the waters around Maui, which support various life stages of managed species under the Western Pacific Fishery Management Council’s plans. These life stages encompass eggs, larvae, juveniles, and adults of bottomfish, crustacean, and pelagic species. EFH types comprise coral reefs, patch reefs, hard and artificial substrates, seagrass beds, soft substrate, lagoons, estuaries, surge zones, deep-slope terraces, and pelagic/open ocean. However, these specific EFH are too geographically distant to experience potential effects from the Project.

Olowalu reef, spanning from Ukumehame to Launiupoko, is an important feature directly offshore of planned activities. Covering approximately 1,000 acres, the reef hosts some of the healthiest and oldest corals in the main Hawaiian Islands, including large coral (*Porites* spp.) colonies in shallow waters. These corals are integral for shoreline protection from a variety of natural and coastal hazards (Section 3.11, Geology, Soils, and Natural Hazards). Olowalu reef holds cultural and ecological importance, having been designated as the first Hawaiian Hope Spot by Mission Blue, a nonprofit organization focused on conserving high-quality marine areas. This region has a history of water quality issues marked by high turbidity due to runoff, particularly off Olowalu and Ukumehame, where turbidity levels have often exceeded HDOH standards, as shown by Hui O Ka Wai Ola’s nearshore water sampling. There are no known ESA-listed coral species found in the Hawaiian Archipelago.

The 2009 Hawaiʻi Fishery Ecosystem Plan describes the physical limits of EFH for each Management Unit Species and possible sources of adverse effects to the EFH from non-fishing activities. These possible sources identified in the Fishery Ecosystem Plan with possible relevance to the Project include coastal construction and nutrient loading. TABLE 3.10-7 provides EFH conservation recommendations.

3.10.5 Agency Consultation

3.10.5.1 NOAA NMFS Consultation

On November 30, 2022, the FHWA invited the NOAA NMFS to become a Participating and Cooperating Agency for the Project. HDOT and the FHWA were seeking input on the Project and information related to any environmental, social, or economic concerns about resources within the project footprint. NMFS replied in a letter agreeing to be a Cooperating Agency on December 27, 2022. Appendix 3.10 includes the correspondence.

¹¹ Magnuson-Stevens Fishery Conservation and Management Act As Amended through January 12, 2007. 16 USC § 1802. <https://media.fisheries.noaa.gov/dam-migration/msa-amended-2007.pdf>. Accessed October 2022.



Essential Fish Habitat

After reviewing the proposed actions, the NMFS decided to provide a list of Conservation Recommendations for potential construction over streams. These recommendations follow 50 CFR § 600.920 and would help to avoid and minimize potential adverse effects to EFH resulting from the Project and in consideration of poor weather and potential erosion associated with the proposed actions. **TABLE 3.10-16** provides these recommendations and corresponding actions.

Additional BMPs were proposed by the FHWA in a June 30, 2023, letter. These BMPs are consistent with those provided by the USFWS as the recommended standard BMPs for aquatic environments in **TABLE 3.10-15**.

On October 10, 2023, the NMFS concurred that adhering to its Conservation Recommendations and implementing the BMPs and minimization measures proposed in the June 2023 letter would result in no more than minimal adverse effects to EFH (Appendix 3.10).

Endangered Species Act – Section 7

On June 30, 2023, the FHWA requested concurrence from NOAA that *the Project may affect but is not likely to adversely affect* federally protected species or their designated critical habitat under NOAA jurisdiction. NOAA responded with a series of comments and questions. These comments included limiting the species considered to only those reasonably certain to occur in the project area that may be affected by the proposed activities: Central North Pacific green sea turtles, Hawksbill sea turtles, Hawaiian monk seals, and monk seal critical habitat.

Having gathered the requisite information, the NOAA officially accepted the determination concurrence request on October 10, 2023, with a 60-day response timeline.

On November 27, 2023, NOAA concurred that with the implementation of the avoidance and minimization measures described in Appendix 3.10, the Project may affect but is not likely to adversely affect the following listed species and designated critical habitats: Hawaiian monk seals; Central North Pacific green sea turtles; Hawksbill sea turtles; and designated critical habitat for Hawaiian monk seals with a list of additional BMPs provided (**TABLE 3.10-19**) (Appendix 3.10).

3.10.5.2 USFWS Consultation

On November 13, 2023, the FHWA submitted a Biological Survey Report to USFWS with an informal consultation request pursuant to Section 7 of the ESA. USFWS responded in February 2024 that additional information was required to support an analysis of effects. The FHWA prepared and submitted a supplemental analysis to USFWS in October 2024. Following review of the supplemental analysis, the USFWS recommended consultation be elevated to formal specific to Hawaiian stilt and Hawaiian goose or nēnē. On May 16, 2025, formal consultation was initiated between the USFWS and the FHWA. Throughout June and July 2025, the USFWS and FHWA conducted several rounds of information sharing. This information sharing culminated in the USFWS finalizing and sharing the Biological Opinion on July 16, 2025. Appendix 3.10 includes correspondence.



Endangered Species Act – Section 7

The Project has received technical assistance from the USFWS PIFWO regarding ESA Section 7 compliance for the following federally listed species:

- Hawaiian hoary bat or ‘ōpe‘ape‘a (*Lasiurus cinereus semotus*)
- Four (4) Hawaiian waterbird taxa -
 - Hawaiian stilt or ae‘o (*Himantopus mexicanus knudseni*)
 - Hawaiian coot or ‘alae ke‘oke‘o (*Fulica alai*)
 - Hawaiian duck or koloa maoli (*Anas wyvilliana*)
 - threatened Hawaiian goose or nēnē (*Branta sandvicensis*);
- Four (4) Hawaiian seabirds -
 - Hawaiian petrel or ‘ua‘u (*Pterodroma sandwichensis*)
 - Band-rumped-storm-petrel or ‘akē‘akē (*Hydrobates castro*)
 - Short-tailed albatross (*Phoebastria albatrus*)
 - threatened Newell’s shearwater or ‘a‘o (*Puffinus newelli*);
- Two (2) reptiles—
 - Green sea turtle or honu (*Chelonia mydas*)
 - Hawksbill sea turtle or honu ‘ea (*Eretmochelys imbricata*)
- Two (2) insects—
 - BSM (*Manduca blackburni*)
 - Assimulans yellow-faced bee (*Hylaeus assimulans*)

~~Hawaiian hoary bat (*Lasiurus cinereus semotus*); four Hawaiian waterbird taxa—Hawaiian stilt or ae‘o (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*), and the threatened Hawaiian goose or nēnē (*Branta sandvicensis*); four Hawaiian seabirds—Hawaiian petrel (*Pterodroma sandwichensis*), Band-rumped storm-petrel (*Hydrobates castro*), Short-tailed albatross (*Phoebastria albatrus*), and the threatened Newell’s shearwater (*Puffinus newelli*); one reptile—the green sea turtle or honu (*Chelonia mydas*), and one insect—BSM (*Manduca blackburni*).~~

The Project is not anticipating effects to individuals or critical habitat of any threatened or endangered species, apart from potential minor effects to Hawaiian hoary bat, ae‘o, Hawaiian coot, nēnē, and BSM, owing to construction activities near species observations and potentially suitable habitat. Coordination with the USFWS PIFWO ~~will supported the analyze analysis~~ and defined the likelihood of these potential effects ~~the results of which may elevate the consequence of potential effects~~ and ~~will provided~~ measures to avoid and minimize any potential effects to individuals or critical habitat (see Biological Opinion in Appendix 3.10). ~~The results of this coordination and ESA compliance will be reported in the Final EIS.~~

3.10.5.3 Division of Forestry and Wildlife Scoping Letter

In December 2022, the State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife (DOFAW) was invited to become a Participating Agency to identify any issues of concern regarding the Project’s potential environmental or socioeconomic effects that could substantially delay or prevent an agency from granting a permit or other approval that is needed for the Project. DOFAW accepted this invitation and provided a series of recommendations which will be incorporated into the Project to the greatest extent practicable (Appendix 3.10).



Additional recommendations are species-specific for the Hawaiian hoary bat, BSM, Hawaiian monk seal, noted seabirds, honu, nēnē, invasive species, and a variety of listed plants, which are consistent with measures to avoid and minimize adverse effects to ESA-listed species discussed in Section 3.10.9. Not included above is a recommendation by DOFAW to consider effects to the federal- and state-endangered Assimulans yellow-faced bee (*Hylaeus assimulans*). While the yellow-faced bee was not identified by the USFWS IPaC list for ESA consultation, biologists kept alert for any indications of their presence—but none were documented during the study. Based on the implementation of avoidance and minimization measures and BMPs, concurrence was provided by DOFAW on April 17, 2024, that these actions would sufficiently aid in the protection of yellow-faced bee populations, and that take is not expected of this species (Appendix 3.10). Section 3.10.9 includes additional avoidance and minimization provided by the USFWS. This species is described below.

Assimulans Yellow-faced Bee (*Hylaeus assimulans*)

The federal- and state-endangered Assimulans yellow-faced bee has been documented at several locations in West Maui according to DOFAW. These small, solitary invertebrates are pollinators, which contribute to the reproductive success of Hawaiʻi's native plants such as naupaka (*Scaevola sericea*), 'ilima (*Sida Fallax*), 'akoko (*Chamaesyce spp.*), and naio (*Myoporum sandwicense*). Protecting this vegetation not only preserves the yellow-faced bee habitat but also helps to slow the progression of shoreline erosion. The biological study did not find any concerns for plants found in the Biological Study Area, including 'ilima, noting that removal of ilima is not expected to have an adverse effect on its population locally or regionally, as it is widely distributed. Additionally, the Project would follow County of Maui Planting Guidelines, which prioritizes use of native species such as 'ilima, naupaka, and naio.

3.10.6 Environmental Consequences

3.10.6.1 No Build Alternative

Implementation of the No Build Alternative would result in a continuation of existing roadway conditions as well as routine maintenance activities. The No Build Alternative would not result in any activities or adverse effects to terrestrial plant or wildlife species that differ from existing conditions.

The No Build Alternative would allow erosion to continue and be a source of sediment affecting the offshore environment, including the coral reef, unless measures are taken to prevent the loss of the shoreline.

3.10.6.2 Build Alternatives

While there are minor distinctions between Build Alternatives and possible effects as discussed below, given the adoption of the avoidance and minimization, conservation measures, and BMPs proposed in Section 3.10.9—regardless of which Build Alternative in either Olowalu or Ukumehame is selected as the Preferred Alternative—effects to any listed species or critical habitats would be minor and are generally not anticipated across all Build Alternatives.



Common to All Build Alternatives in Both Olowalu and Ukumehame

Flora

Activities such as the use of construction equipment and vehicles and increased human traffic can cause ground disturbance, erosion, and/or soil compaction that decrease absorption of water and nutrients and damage plant root systems and may result in reduced growth and/or mortality of listed plants.

Despite these possible effects, there are no botanical concerns in the project area. It is unlikely that the Project would result in an adverse effect on any plant species that is State or federally listed as threatened or endangered, a candidate species for listing, a rare native plant species, or a native plant species of concern. The project area encompasses a highly disturbed area, and all but seven plant species found in the project area are nonnative. Removal of any of these seven plant species is not expected to have an adverse effect on species' populations locally or regionally, as these native species are known to have a widespread distribution on Maui as well as in the state.¹²

Based on the findings of the biological resource report, it is highly unlikely that the project area contains the nine endangered plant taxa identified in the IPaC resource list, and therefore no avoidance and minimization measures are proposed at this time.

Fauna

TABLE 3.10-8 provides a summary of potential effects to fauna within the project area and accounts for measures listed in Section 3.10.9.

Climate change poses a threat to Maui fauna. Temperature and precipitation variability alters conditions for many species on the island, which limits their suitable habitat. Shifts in species ranges, shrinking body size, changes in predator-prey relationship, new spawning and seasonal patterns, and modification in the population and age structure of fauna species can all be linked to a changing climate.¹³

The July 16, 2025 USFWS Biological Opinion determined that, based on USFWS review, the Project may affect but is not likely to adversely affect any listed terrestrial or marine fauna species, with exception of Hawaiian stilt and Hawaiian goose. The USFWS determined that adverse effects to Hawaiian stilt and Hawaiian goose are likely in the form of harm due to injury or mortality from accidental crushing by a vehicle or heavy equipment, disturbance of nests or broods, attractive nuisance, and/or emaciation or starvation. However, these effects are not likely to appreciably reduce the likelihood of both the survival and recovery of either species in the wild, and that the Project is not likely to jeopardize the continued existence of either species(see Biological Opinion in Appendix 3.10). Conservation measures in Section 3.10.9 include those provided by the USFWS to avoid and minimize adverse effects to the greatest extent practicable.

¹² Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the Flowering Plants of Hawaii. Two volumes. Revised edition. University of Hawaii Press and Bishop Museum Press, Honolulu.

¹³ Scheffers, B.R., et al. (2016) The broad footprint of climate change from genes to biomes to people. Science, Nov., DOI: 10.1126/science.aaf7671.



The Incidental Take Statement of the Biological Opinion includes the following anticipated take:

- Hawaiian Goose
 - Eight (8) adults and twelve (12) nests or twenty-four (24) eggs or goslings may be taken during all phases of the duration (2026 through 2031) of the Project.
- Hawaiian Stilt
 - Two (2) adults and seventeen (17) nests or sixty-eight (68) eggs or chicks may be taken during all phases of the duration (2026 through 2031) of the Project.

Terrestrial Fauna

TABLE 3.10-9 summarizes potential effects to terrestrial fauna.

Despite these potential effects, given the adoption of the avoidance and minimization measures listed below, effects to any listed terrestrial fauna species or critical habitats would be minor and would often not be anticipated.

Marine Fauna

TABLE 3.10-10 summarizes potential effects to marine fauna.

Despite these potential effects, it is highly unlikely that project actions would affect nearshore and offshore marine environments, including Hawaiian monk seal and its designated critical habitat, sea turtles, and coral reef. Potential effects to nearshore and offshore marine environments would be further avoided and minimized through measures listed in Section 3.10.9.

Invasive Species

A possible effect of implementing the Project is the introduction and spread of invasive species during the construction phase. Several invasive species occur on Maui but are restricted in distribution and are targeted for containment or eradication (for example, fountain grass [*Cenchrus setaceus*], little fire ants [*Wasmannia auropunctata*], and coqui frogs [*Eleutherodactylus coqui*]) as well as invasive species that are not yet present on Maui (for example, Coconut rhinoceros beetle [*Oryctes rhinoceros*] on Oʻahu) but that could be introduced or inadvertently spread to or from the project area. Additionally, several weed tree tobacco plants were observed during surveys, which could serve as BSM host plants. Section 3.10.9 presents avoidance and minimization measures for addressing invasive species, including tree tobacco.



TABLE 3.10-8. Summary of Potential Effects to Fauna

FAUNA	COMMON NAME (SCIENTIFIC NAME)	STATUS	OBSERVED IN PROJECT AREA	POTENTIAL EFFECTS
Mammals	Hawaiian hoary bat (<i>Lasiurus cinereus semotus</i>)	Endangered	Assumed present	Effects to individuals would be minor, and effects to its critical habitat are not anticipated.
	Hawaiian monk seal (<i>Neomonachus schauinslandi</i>)	Endangered	Assumed present in region but not project area	Effects to individuals and critical habitat are not anticipated.
Birds	Hawaiian stilt or ae'o (<i>Himantopus mexicanus knudseni</i>)	Endangered	Yes	Effects to individuals and habitat would be minor.
	Hawaiian coot (<i>Fulica alai</i>)	Endangered	No	Effects to individuals and habitat would be minor.
	Hawaiian duck (<i>Anas wyvilliana</i>)	Endangered	No	Effects to individuals and habitat are not anticipated.
	Hawaiian goose or nēnē (<i>Branta sandvicensis</i>)	Threatened	Yes	Effects to individuals and habitat would be minor.
	Hawaiian petrel (<i>Pterodroma sandwichensis</i>)	Endangered	No	Effects to Hawaiian seabirds and their habitat are not anticipated.
	Band-rumped-storm-petrel (<i>Hydrobates castro</i>)	Endangered	No	
	Newell's shearwater (<i>Puffinus newelli</i>)	Threatened	No	
	Short-tailed albatross (<i>Phoebastria albatrus</i>)	Endangered	No	
Reptiles	Green sea turtle or honu (<i>Chelonia mydas</i>)	Threatened	No	Effects to individuals and habitat are not anticipated.
	Hawksbill sea turtles or honu'ea (<i>Eretmochelys imbricata</i>)	Endangered	No	Effects to individuals and habitat are not anticipated.
Insects	Blackburn's sphinx moth (<i>Manduca blackburni</i>)	Endangered	Assumed present	Effects to individuals and habitat would be minor.
	Assimulans Yellow-faced Bee (<i>Hylaeus assimulans</i>)	Endangered	No	Effects to individuals and habitat are not anticipated.

TABLE 3.10-9. **Potential Terrestrial Fauna Effects**

CATEGORY	DESCRIPTION
Disturbance from Human Activity	Disturbances may include visual disturbances from land-based equipment operations (for example, excavator, bulldozer) and the presence of construction workers, as well as potential habitat loss from construction activities such as clearing and grubbing. This presence of workers and equipment could potentially result in vehicle collisions with terrestrial fauna. Additionally, noise from construction activities could cause species to avoid the area, though this may be beneficial as it would discourage bird species from nesting or other terrestrial fauna from moving through the project area. Adherence to BMPs and measures listed in Section 3.10.9 would avoid and minimize disturbance from human activity.
Invasive Species	Invasive species can be introduced intentionally or unintentionally via transportation vehicles/vessels, equipment, clothing and worker gear, and construction materials originating off-site. Their populations can increase dramatically and eventually outcompete and dominate native species, which increase ecological issues to species and ecosystem functions and services. Invasive species can reduce species diversity, alter trophic structures, and degrade physical habitats. However, the negative impacts vary greatly and depend on the specific species involved. Adherence to invasive species BMPs and guidelines in Section 3.10.9 would avoid adverse effects.
Light Pollution	Artificial lighting can negatively affect seabirds flying through the area at night by disorienting them. This disorientation can lead to collisions with human-made structures or cause the birds to become grounded. Once grounded, seabirds may have higher mortality due to collisions with vehicles, starvation, and predation. Adoption of BMPs in Section 3.10.9 would avoid adverse effects from light pollution during construction.
Extreme Weather Events	Extreme weather events, such as tropical storms and hurricanes, may potentially cause stormwater runoff and erosion, as well as habitat degradation should equipment or materials be blown/swept off-site. Additionally, wildfires (though often started due to human activity) can seriously degrade habitat and further contribute to spread of invasive species, erosion, and stormwater runoff.

TABLE 3.10-10. **Potential Marine Fauna Effects**

CATEGORY	DESCRIPTION
Disturbance from Human Activities	Disturbances may include visual disturbances from land-based equipment operations (for example, excavator, bulldozer) and the presence of construction workers. While these potential effects could disturb marine fauna, the most common reaction to this type of interaction is low-energy behavioral avoidance, resulting in a temporary disruption of feeding and resting activities. Disturbances from human activities would, therefore, not harm marine fauna.
Increased turbidity	While no in-water work will occur, potential effects of construction activities and machinery include increased turbidity in surface water bodies and potentially the ocean, if turbidity were to travel downstream to the coast. This increase in turbidity would be localized and temporary and listed marine species (sea turtles and seals) breathe air so increased turbidity would not affect respiration. Additionally, marine species, including fish, are highly motile (capable of movement) and would quickly avoid or leave turbid areas, thus reducing risk of exposure. Combined with BMPs, marine fauna exposure to appreciably increased turbidity is extremely unlikely.
Exposure to Waste and Discharge	Construction debris and accidental spills from construction equipment could enter the water, but with the adopted plans and contingencies, discharges and spills are extremely unlikely. If they do occur, they would be infrequent, small, and quickly cleaned.
Exposure to Elevated Noise	In-air noise would be produced by land-based construction activities and operation of equipment. Marine fauna would face temporary displacement or avoidance of loud areas as a result of noise pollution. However, as the Project is entirely terrestrial, a buffer distance from the beach would attenuate sound waves moving from the air to the water column. Additionally, streams in the project area are shallow with numerous rocky riffles. These obstacles also serve to block sound waves from reaching marine environments. Therefore, marine fauna exposure to elevated noise from construction activities is extremely unlikely.
Sedimentation and Erosion	Construction activities could result in increased sedimentation from runoff and erosion, affecting water quality for marine species. However, a Storm Water Pollution Prevention Plan and permanent BMPs would be implemented to impound sediment, control erosion, and prevent debris from entering water bodies.
Invasive Species	Invasive marine species can be introduced intentionally or unintentionally from shipping vessels, ballast waters, or on equipment originating off-site. However, measures to prevent the spread of invasive species would avoid adverse effects from invasive marine species.



Olowalu

Common to All Build Alternatives - Olowalu

It is unlikely that the Project would result in an adverse effect to any plant species that is State or federally listed as threatened or endangered, a candidate species for listing, a rare native plant species, or a native plant species of concern.

There were no listed species or terrestrial critical habitat observed within Olowalu. This includes all Critical habitat exists for the Hawaiian monk seal along the entirety of the West Maui coast. However, with implementation of BMPs and measures in Section 3.10.9, effects are not anticipated to its critical habitat nor any fauna on the USFWS IPaC species list.

Build Alternative 1

In Olowalu, monkeypod trees—recognized as Exceptional Trees by the Maui County Arborist Committee—are along the existing Honoapiʻilani Highway. Build Alternative 1 would likely necessitate the removal of some of these trees, but the other Build Alternatives would avoid the monkeypod trees in Olowalu.

Ukumehame

Common to All Build Alternatives

No botanical concerns were found in Ukumehame. It is unlikely that the Project would result in an adverse effect to any plant species that is State or federally listed as threatened or endangered, a candidate species for listing, a rare native plant species, or a native plant species of concern.

Two State and federally endangered waterbird species, aeʻo and nēnē, were seen multiple times near the classroom building in the Ukumehame Firing Range area during field surveys. Nēnē have been observed with goslings at Ukumehame Firing Range. Neither species exhibited nesting behavior and no nests were found; however, nesting cannot be ruled out. Measures and BMPs are discussed below to avoid and minimize potential adverse effects to these species.



3.10.7 Construction Effects

TABLE 3.10-11 lists the potential construction effects on both flora and fauna. These effects would be unlikely and discountable because avoidance and minimization measures, and BMPs described in Section 3.10.9, will ~~would~~ be in place. Cumulative effects to listed bird species are discussed in Section 3.20, Cumulative Effects.

TABLE 3.10-11. **Potential Construction Effects on Flora and Fauna**

	POTENTIAL CONSTRUCTION EFFECTS
Flora	<ul style="list-style-type: none">• Removal of vegetation within project area for each Build Alternative• Native plant species removal, but not expected to result in an adverse effect to any local or regional populations due to widespread distribution on Maui Island and in the state• Introduction and spread of invasive species during construction
Fauna	<ul style="list-style-type: none">• Land clearing, roadbed excavation, and infrastructure installation can lead to habitat loss or modification.• Terrestrial animals may face displacement, reduced foraging areas, or habitat loss.• Noise and disturbance during construction can deter wildlife from nesting or foraging in or near the project area.• Noise and lighting presence may also affect species in adjacent habitats or during overflight.• Light pollution may cause confusion and behavioral effects in sea birds and sea turtles.• Vehicle interactions during construction.

3.10.8 Indirect Effects

Indirect effects can occur from the accidental introduction of sediments, contaminants, or construction-related debris into marine environments. However, these effects will ~~would~~ be unlikely because conservation measures, such as those described in Section 3.10.9, will ~~would~~ be in place to minimize the potential for siltation, spills, and contamination. Most notably, this will include low-impact stormwater management BMPs that minimize Project's potential to add pollutants to the larger watershed and adjacent marine environment.

A beneficial indirect effect relates to the ability of Build Alternatives to serve as a firebreak, detailed in Section 3.11, Geology, Soils, and Natural Hazards. Minimizing the intensity of wildfires will ~~would~~ reduce the potential introduction of invasive species to disturbed soils. This will ~~would~~ allow for greater abundance of native vegetation and the subsequent fauna who relies on it for food and shelter.

3.10.9 Avoidance and Minimization Measures

BMPs to manage stormwater will ~~would~~ be integrated into the National Pollutant Discharge Elimination System permit, the Storm Water Pollution Prevention Plan, and the Section 401 Water Quality Certification to protect the marine environment. For the Preferred Alternative, as discussed in Chapter 5, Selected Alternative of the Final EIS, the comprehensive determination of environmental



commitments is provided in Section 5.5 (including final commitments as established by the Biological Opinion).

TABLE 3.10-12 lists additional avoidance and minimization measures to protect threatened or endangered species and native flora and includes a summary by source and topic. Given the adoption of the avoidance and minimization measures listed below, the effects to any listed species or critical habitats are anticipated to be minor and will ~~would~~ often not be anticipated across all Build Alternative alignments.

TABLE 3.10-12. **Avoidance and Minimization Measures**

SOURCE	TITLE	TOPIC
U.S. Fish & Wildlife Service	General Project Design Guidelines (Appendix 3.10)	Endangered Species Act listed species potentially occurring in the project area
<u>U.S. Fish & Wildlife Service</u>	<u>2025 Final Biological Opinion (Appendix 3)</u>	<u>Nēnē and Aeʻo</u>
U.S. Fish & Wildlife Service	Recommended Standard Best Management Practices for Aquatic Environments ¹	Aquatic habitats
Hawaiʻi Dept. of Transportation	Construction Best Management Practices Field Manual ²	Water quality, aquatic habitats
Hawaiʻi Dept. of Transportation	Storm Water Post-Construction Best Management Practices Manual ³	Water quality, aquatic habitats
U.S. Environmental Protection Agency	National Pollution Discharge Elimination System – Stormwater Pollution Prevention Plan	Water quality, aquatic habitats
National Oceanic and Atmospheric Administration – National Marine Fisheries Service	Conservation Recommendations and Project BMPs (Appendix 3.10)	Aquatic environments, essential fish habitat
Coordination Group on Alien Pest Species	BMPs for Invasive Species Prevention ⁴	Invasive species
Pacific Islands Fish and Wildlife Office	Invasive Species Protocol (Appendix 3.10)	Invasive species
Biological Survey Report Supplement	Project-Specific Avoidance and Minimization Measures (Appendix 3.10)	All flora and fauna
HT Harvey & Associates	General Invasive Species BMPs (Appendix 3.10)	Invasive species
HT Harvey & Associates	Biological Resources Discussion and Recommendations (Appendix 3.10)	All flora and fauna

¹ USFWS. (April 2022). Recommended BMPs for Aquatic Environments. <https://www.fws.gov/media/best-management-practices-work-or-around-aquatic-environments-bmps>. Accessed September 2023.

² HDOT. (January 2008). Construction BMPs Field Manual. https://www.stormwaterhawaii.com/wp-content/uploads/2020/11/app_e6.pdf. Accessed October 2023.

³ HDOT. (February 2022). Storm Water Post-Construction BMPs Manual. https://www.stormwaterhawaii.com/wp-content/uploads/2022/07/PC-BMP-Manual_220718-FULL.pdf. Accessed October 2023.

⁴ CGAPS. (2023). BMPs For Invasive Species Prevention. <https://dlnr.hawaii.gov/hisc/files/2023/09/BMPs-for-Invasive-Species-Prevention-091223.pdf>. Accessed October 2023.



3.10.9.1 Flora

No threatened, endangered, or rare plants were observed in the project area. The project area is highly disturbed with a history of vegetation disturbance and landscape level modification. The project area has an approximately 86% cover of alien or Polynesian introduced plants species and contains other direct threats to the nine endangered plants described above, such as feral ungulates, rodents, nonnative snails and slugs, fire, and is regularly subject to drought. Based on these findings, it is highly unlikely that the project area contains the nine endangered plant taxa identified in the IPaC resource list; therefore, no mitigation measures are proposed at this time for these species.

Monkeypod Trees

In Olowalu, Build Alternative 1 would likely necessitate the removal of some of the monkeypod trees, recognized as Exceptional Trees by the Maui County Arborist Committee. Removal would require a permit from the Director of Parks and Recreation, with review by the Maui County Arborist Committee (Hawaiʻi Revised Statutes Chapter 58 1-5) that shows the tree is dead, diseased, irretrievably damaged, or is a hazard to public safety or welfare. If an Exceptional Tree is approved for removal, the Arborist Committee may recommend to the Director of Parks and Recreation that the owner plant an appropriate replacement(s) or relocate the Exceptional Tree. If replacement or relocation is not possible, the committee should identify another tree of the kind for Exceptional Tree classification.¹⁴

In January 2023, approval was granted to remove five monkeypod trees and prune one along the existing Honoapiʻilani Highway in the vicinity of the Maui Tropical Plantation due to fire damage.¹⁵

3.10.9.2 Fauna

TABLE 3.10-13 lists general project avoidance and minimization measures by topic. TABLE 3.10-14 lists species-specific avoidance and minimization measures for fauna.

Invasive Species

All activities, including site surveys, risk introducing nonnative species into project areas. Specific attention will ~~would~~ be made to ensure that all equipment, personnel, and supplies are properly checked and are free of contamination (weed seeds, organic matter, or other contaminants) before entering the project area. Quarantines and or management activities occurring on specific priority invasive species proximal to the project area will ~~would~~ be considered and adequately addressed. Protecting native vegetation not only preserves habitat for protected species but also helps to slow the progression of shoreline erosion. TABLE 3.10-15 lists general invasive species BMPs.

The contractor will ~~would~~ address quarantines and or management activities occurring on specific priority invasive species proximal to project areas before physical construction occurs in accordance with HDOT Standard Specifications Section 621 – Invasive Species Management (2021).

¹⁴ County of Maui. (Mark 9, 2016). Maui County Planting Plan – Third Edition. <https://www.mauicounty.gov/DocumentCenter/View/11115/MAUI-COUNTY-PLANTING-PLAN-WHOLE-3rd-Revision?bidId=>. Accessed December 2023.

¹⁵ County of Maui Department of Parks and Recreation. (January 20, 2023). Permit to Remove Monkey Pod Trees Along Honoapiʻilani Highway. <https://www.mauicounty.gov/DocumentCenter/View/139063/Removal-of-Exceptional-Trees-Honoapiilani-Hwy-Imua-Landscaping-012023>. Accessed December 2023.



The Coordination Group on Alien Pest Species in Hawaiʻi has outlined BMPs for specific high-risk species, and the Pacific Islands Fish and Wildlife Office has recently updated their invasive species biosecurity protocols. These will be implemented and are included in Appendix 3.10.

Additional Best Management Practices

BMPs will ~~would~~ be implemented during construction to minimize the potential for effects to water quality. The Project will ~~would~~ obtain a Notice of General Permit Coverage from the National Pollution Elimination Discharge System accompanied by a Storm Water Pollution Prevention Plan. BMPs will ~~would~~ be implemented in accordance with the documented approach detailed in the *Construction Best Management Practices Field Manual* by the State of Hawaiʻi Department of Transportation (2008).



TABLE 3.10-13. General Project Avoidance and Minimization Measures

TOPIC	AVOIDANCE AND MINIMIZATION MEASURES
Construction Activities	Contractor will ^{should} prioritize previously disturbed and bare areas for use as staging and lay-down yards, disposal and borrow sites, and concrete batch plants.
	Contractor design of bridge, culvert, and viaduct structures will avoid fill to wetland habitats. Bridge, culvert, and viaduct structures to avoid fill to wetland habitats.
	Contractor will ^{would} , in coordination with and approved by HDOT, avoid placing staging areas in or directly adjacent to delineated wetland habitat and streambanks to avoid and minimize adverse effects to habitat that may support listed waterbirds and nēnē.
	Drilled shaft foundations will be used by the Contractor for pier bents, as appropriate, to minimize potential construction-related noise and vibrations. Drilled shaft foundations would be used in areas sensitive to vibration and noise and would be an efficient technique at selected pier bents.
	Neither HDOT nor the Contractor ^{will} would not use barbed wire fencing.
	Contractor shall maintain and require a copy of the approved Biological Assessment and the approved Biological Opinion in the on-site construction office. Contractor would maintain and require a copy of Section 7 regulations and requirements in the on-site office.
	Contractor will incorporate permanent highly visible signs placed along the new Honoapiʻilani Highway through Ukumehame during construction and operation of the new roadway. These signs will alert workers and drivers to the presence of listed birds known to be in the area to reduce the chance of vehicle collisions. The contractor will incorporate permanent highly visible signs placed along the road through the Ukumehame area alerting workers and drivers of the presence of listed birds known to be in the area to reduce the chance of vehicle collisions.
	Contractor will also secure all temporary structures to avoid them blowing over during heavy winds and hitting listed bird species.
	Speed limits of 15 miles per hour (mph) on active construction roadways within the project site will be posted by HDOT through the Olowalu area and 10 mph within the Ukumehame area. These speed limits are applicable to all construction access roads within the Project Area and do not apply to the existing Honoapiʻilani Highway alignment. All construction personnel including contractors, cultural monitors, and subcontractors shall adhere to the posted speed limits at all times. Reduced speed limits signs of 15 mph through the Olowalu area and 10 mph in the Ukumehame area will be posted at the project site during construction. Dedicated personnel will enforce speed limits.
	All permanent lighting by the Contractor ^{will} would be required to adhere to the 2022 Maui Dark Skies Ordinance 5434. ¹⁶

Contractor will utilize DLNR seabird-friendly light styles for all permanent lighting design.¹⁷

No portable jobsite radios or other music equipment shall be used within the construction footprint at anytime and enforced by the Contractor.

¹⁶ Maui County. (2022). Ordinance No. 5434. [https://mcclibraryfunctions.azurewebsites.us/api/ordinanceDownload/16289/1187880/pdf#:~:text=5434-.BILL%20NO.21%2C%20CD2%2C%20FD2%20\(2022\).amphibians%2C%20mammals%2C%20and%20invertebrates](https://mcclibraryfunctions.azurewebsites.us/api/ordinanceDownload/16289/1187880/pdf#:~:text=5434-.BILL%20NO.21%2C%20CD2%2C%20FD2%20(2022).amphibians%2C%20mammals%2C%20and%20invertebrates). Accessed November 2024.

¹⁷ DLNR. (2016). Seabird-friendly light style guide. <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>



TOPIC	AVOIDANCE AND MINIMIZATION MEASURES
	<p><u>Night work by the Contractor is not be allowed during the sea turtle nesting/hatching period and seabird fledgling period (May 1 - December 15); to be enforced by the Contractor.</u></p> <p><u>In areas of known nēnē or aeʻo habitat (Ukumehame wetlands near Firing Range), the contractor will be responsible for predator trapping and will develop a predator control plan for approval by HDOT.</u></p> <p><u>On-site staff will practice good project-site hygiene to avoid litter and garbage from attracting rodents, feral cats, mongoose, and other wildlife</u></p> <p><u>Contractor will provide covered waste bins and ensure they are emptied weekly</u></p> <p><u>Contractor will ensure that all food waste is properly disposed of in covered waste bins</u></p> <p><u>When engaging in activities that have a high risk of starting a wildfire—like welding in/near tall grass, the Contractor will wet down the area before starting the task, continuously wet down the area as needed, have a fire extinguisher on hand, and in the event that vision is impaired, (i.e., welding goggles) have a spotter to watch for fire ignitions.</u></p> <p><u>Contractor will install permanent bird diversion poles along both sides of the viaduct. Poles will extend approximately 6 feet (1.8 meters) above the 54-inch (137 centimeters) rail and spaced approximately 12 feet (3.7 meters) apart, a maximum pole height of 9 feet above the 54-inch-tall rails will be applied, which corresponds to the typical height of a tractor trailer truck of 13.5 feet</u></p> <p><u>Speed limits of 15 mph on active construction roadways within the project site would be posted by HDOT through the Olowalu area and 10 mph within the Ukumehame area. These speed limits are applicable to all construction access roads within the project and do not apply to the existing Honoapiʻilani Highway alignment.</u></p>
Surveys and Monitoring ¹⁸	<p><u>Contractor will ensure that the State's qualified biologist will be on-call throughout the duration of construction to assist in monitoring, surveys, and in an advisory capacity. Additional biological surveys will be performed by trained biologists in areas of "permanent BMPs" that were not included in previous surveys as they are outside of the initially defined Biological Survey Area (Appendix 3.10). The objective is to determine if suitable habitat for listed species exists in these areas. Survey protocols will adhere to those described in Section 3.10.2 and Appendix 3.10.</u></p> <p><u>Prior to the initial clearing and grubbing phase of the Project, a qualified biologist would be on site to perform visual surveys for listed species and nests. Should individuals or nests be observed, then species specific buffers and protocol would apply. A trained biologist will be present on site each workday throughout the duration of construction to assist in monitoring, surveys, and in an advisory capacity.</u></p>

¹⁸ Final biological surveying and monitoring protocols will be reported in the Final EIS, as coordination with the USFWS is ongoing.



TOPIC	AVOIDANCE AND MINIMIZATION MEASURES
	<p><u>Contractor will ensure that prior to the start of any construction activities, a qualified biologist will produce a handout on listed species that occur within the Action Area and present a mandatory Environmental Awareness Program (developed by the state) to on-site personnel, including contractors, contractor's employees, supervisors, inspectors, and all subcontractors that educates Project personnel about the presence of endangered species on-site and associated avoidance and minimization measures. A list of attendees will be produced by the Contractor and the engineer to ensure comprehensive compliance. A hardhat sticker will be produced by the Contractor to display completion of State's Environmental Awareness Program. The contractor will assign dedicated personnel to perform daily visual monitoring and nest surveys prior to the start of and during construction work to check for listed species bird nests.</u></p> <p><u>The State's Environmental Awareness Program will contain, at minimum, information concerning the biology and distribution of Hawaiian geese, Hawaiian stilt, Hawaiian coot, and Least Terns including recognition of various behaviors, such as nesting, breeding, and molting; their occurrence in the area; measures to avoid impacts; and procedures to follow if encounters with these species occur.</u></p> <p><u>The State's Environmental Awareness Program will also have information on invasive species and predator species including BMPs to reduce the likelihood of predators being attracted to the construction footprint.</u></p> <p><u>HDOT will contact USFWS to review the awareness program prior to the Contractor administering to on-site personnel. The State's qualified on-call biologist will be present on-site once every three weeks, or as needed, to provide training to new on-site personnel. The daily monitoring protocol would include designated personnel to walk the project site every morning prior to the start of construction work to determine if any ESA-listed species nests are present at the work site and note if any listed individuals were present.</u></p> <p><u>Should work be halted for more than 72 hours, the on-call biologist shall be contacted by the contractor to survey the area prior to resumption of work. If listed birds are observed during daily monitoring, then music will be prohibited on the work site.</u></p> <p><u>Feeding any wildlife or feral cats shall be prohibited in all active work areas and enforced by contractor-dedicated personnel during daily monitoring. Cat feeding stations will be prohibited in the Action Area and enforced by dedicated personnel during daily monitoring.</u></p> <p><u>Following initial clearing and grubbing phases, if any ESA-listed species is observed the State's qualified on-call biologist will be contacted by the contractor to evaluate and advise on next steps in accordance with the Biological Opinion. Should nests be observed during daily surveys or if listed species are observed within the project area, then buffer zones will be established, with their distance and what work (if any) can be done around them determined on a species specific basis.</u></p>



TOPIC	AVOIDANCE AND MINIMIZATION MEASURES
	<p><u>If nēnē or ae'o (or other listed species) become injured in the Action Area, Contractor's on-site staff will contact the on-call biologist immediately who will arrange for the bird(s) (or other listed animal species) to be picked up by DOFAW and provide guidance on temporary handling prior to DOFAW pickup. Injuries to listed animals (e.g., nēnē or ae'o) resulting from project actions may require care from the Hawai'i Wildlife Center (HWC) on the island of Hawai'i. Should transport to and care at the HWC be necessary, HDOT will provide funds to facilitate necessary and appropriate actions</u></p> <ul style="list-style-type: none"> - <u>The on-call biologist will use USFWS's Standard Operating Procedure (SOP) for handling and transporting injured birds or other listed animal species.</u> - <u>The on-call biologist will complete USFWS's Avian Injury/Mortality Form (Appendix D of the BO) and submit it to the Service within 72 hours of the incident.</u>
<p><u>Reinitiation of ESA Section 7 Consultation</u></p>	<p><u>Any significant changes made during final design will be evaluated by the State's on-call biologist in coordination with the Contractor and HDOT for any impacts not previously considered in the Biological Assessment. HDOT will work with FHWA to coordinate with USFWS and reinitiate Section 7 Consultation if needed.</u></p> <p><u>If take is exceeded, reinitiation of consultation and review of reasonable and prudent measures is required by FHWA in coordination with HDOT. See Biological Opinion for Incidental Take Statement.</u></p>



TABLE 3.10-14. Fauna Avoidance and Minimization Measures

SPECIES	AVOIDANCE AND MINIMIZATION MEASURES
Hawaiian Hoary Bat	<ul style="list-style-type: none">To the greatest extent possible, large [> 15 foot tall (4.6m)] trees will <u>would</u> be preserved in place <u>by the Contractor</u>. <u>If the Contractor must remove large trees, must be removed</u>, they will <u>would</u> be cut down outside of the bat birthing and pup rearing season of June 1 to September 15.Neither HDOT nor the Contractor will use barbed wire for fencing. The Project would not use barbed wire for fencing.



Hawaiian Goose (nēnē)

- Crew On-site workers will ~~would~~ not approach, feed, or disturb Hawaiian geese, if observed in the project area; ~~to be enforced by the Contractor.~~
- Prior to the initial clearing and grubbing phase of the Project, the State's qualified biologist will be on-site to perform visual surveys for listed species and nests. Should individuals or nests be observed, then species specific buffers and protocol will apply. The State's on-call biologist shall be contacted by the contractor to repeat surveys within 72 hours of initial clearing and grubbing phase of the Project, and after any subsequent delay of work of 72 or more hours.‡
- Whether during initial surveys prior to initiating work, after a delay of 72 hours or more, or in the middle of construction, if nēnē are observed loafing or foraging within the project area during the breeding season (September through April), a 150-ft (45.7 m) buffer will be established by the Contractor and maintained around the bird(s) and no work will occur within the buffer zone until the birds leave on their own.
 - If not already on site, the State's on-call biologist familiar with nēnē nesting behavior will be contacted by the contractor to survey for nests in and around the buffer zone prior to the resumption of any work in the area.
- If a Hawaiian goose is observed loafing or foraging within the project site during the breeding season (September through April), then an on-call biologist familiar with Hawaiian goose nesting behavior would be contacted by the contractor to advise on next steps biologist familiar with Hawaiian goose nesting behavior would survey for nests in and around the project site prior to the resumption of any work. Repeat surveys would be performed after any subsequent delay of work of three or more days (during which the birds may attempt to nest).
- If a nest or active brood is discovered, the Contractor will immediately establish and maintain a 150-foot buffer around all active nests and/or broods until the chicks have fledged. No work would occur within this buffer If a nest or active brood is found the biological monitor would contact the USFWS, or would immediately inform the Project manager, either of which would do the following.
 - The State's on-call biologist will be contacted by the contractor, who will then contact the USFWS and DOFAW within 48 hours upon discovery for further guidance
 - Contact the USFWS within 48 hours upon discovery of the nest for further guidance.
 - Upon discovery of an active nest or nests, immediately establish and maintain a 150 foot buffer around all active nests and/or broods until the chicks have fledged. No work would occur within this buffer.
- The project site ~~will would~~ be adequately signposted ~~by HDOT~~ with high-visibility signs alerting crew to the presence of Hawaiian geese in Ukumehame.
 - HDOT will install temporary signs that will be orange during construction and then permanent operating signs in yellow following protocols for warning signs in the Manual on Uniform Traffic Control Devices
- To prevent nesting, ~~the State's dedicated on-site biological monitor~~ ~~call biologist~~ (not construction crew) may perform hazing or other deterrent measures as long as such actions conform to ~~said rule the nēnē 4(d) rule (84 FR 69918; December 19, 2019, 50 CFR 17.41). (USFWS, 2019).~~ Any hazing that occurs to nēnē must follow the 4(d) rule. The Contractor ~~will would~~ maintain and require a copy of the 4(d) regulations on-site.
- Work within 150 feet (45.7 meters) of a loafing or foraging Hawaiian goose can begin only after the birds have left on their own, ~~to be enforced by the Contractor.~~
- If nēnē or ae'o (or other listed species) become injured in the Action Area on-site staff will contact the on-call biologist immediately, who will arrange for the bird(s) (or other listed animal species) to be picked up by DOFAW and provide guidance



SPECIES	AVOIDANCE AND MINIMIZATION MEASURES
	<p>on temporary handling prior to DOFAW pickup. Injuries to listed animals (e.g., nēnē or aeʻo) resulting from project actions may require care from the Hawaiʻi Wildlife Center (HWC) on the island of Hawaiʻi. Should transport to and care at the HWC be necessary, HDOT would provide funds to facilitate necessary and appropriate actions. If nēnē or aeʻo become injured in the Action Area or periphery due project actions, on site staff will contact the on call biologist immediately who will arrange for the bird(s) to be picked up by DOFAW and provide guidance on temporary handling prior to DOFAW pickup. Injuries to nēnē or aeʻo resulting from project actions may require care from the Hawaiʻi Wildlife Center (HWC) on the island of Hawaiʻi. Should transport to and care at the HWC be necessary, HDOT would provide funds to facilitate necessary and appropriate actions For alignment activities near an observed Hawaiian goose, fencing around the work site would be used where practicable to maintain a distance buffer and reduce vehicle strikes. If observations occur within an identified buffer, the contractor will assign a dedicated monitor to alert construction vehicle drivers of their presence and reduce accidental vehicle strikes.</p>



Hawaiian Stilt (ae'o)

- Crew will not approach, feed, or disturb Hawaiian stilt, if observed in the project area, to be enforced by the contractor.
- Prior to the initial clearing and grubbing phase of the Project, a biological monitor familiar with the species' biology will perform visual surveys for Hawaiian waterbird nests where appropriate habitat occurs within the vicinity of the proposed project site (Ukumehame wetlands). Surveys will be repeated within 72 hours of initial clearing and grubbing phase of the Project and after any subsequent delay of work of 72 or more hours. If a nest or active brood is found at any time during the duration of the Project, the following measures will apply: ±
 - The State's on-call biologist will be contacted by the contractor, who will then contact the Service and DOFAW within 48 hours upon discovery for further guidance.
 - Contractor will immediately establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. No potentially disruptive activities or habitat alteration will be conducted within this buffer.
 - Contractor's biological monitor or State's on-call biologist that is familiar with the species' biology will be present on the project site during all construction or earth moving activities until the chicks fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- If a Hawaiian stilt or Hawaiian coot is observed exhibiting nesting behavior within the Action Area project site during the nesting season (mid-February to August), then the State's on-call biologist familiar with Hawaiian stilt nesting behavior will be contacted by the contractor to advise on next steps.
- If a nest or active brood is discovered, immediately establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. No work would occur within this buffer
 - The on call biologist would be contacted by the contractor, who would then contact the USFWS and DOFAW within 48 hours upon discovery for further guidance. A qualified biological monitor familiar with the species' identification and biology would conduct a pre-construction survey for Hawaiian stilt nests (and Hawaiian coot nests) where appropriate habitat occurs within the vicinity of the work site, within three days of the initiation of project work. These nest surveys would be repeated within three days of project initiation, and after any subsequent delay of work of three or more days following the initiation of project construction (during which the birds may attempt to nest).
 - If a nest or active brood is found, the biological monitor would contact the USFWS, or would immediately inform the Project manager, either of which would do the following:
 - Contact the Service within 48 hours upon discovery of the nest for further guidance.
 - Upon discovery of an active nest or nests, immediately establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. No potentially disruptive activities or habitat alteration would occur within this buffer.
 - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- If observed after work has begun, work in the vicinity of a loafing or foraging Hawaiian stilt and Hawaiian coot can begin only after the birds have left on their own and a 100-foot buffer maintained by the contractor until that time
- Reduced speed limit signs of 15 mph through the Olowalu area and 10 mph in the Ukumehame area would be posted at the project site during construction, as requested by USFWS in an email on February 29, 2024.



SPECIES	AVOIDANCE AND MINIMIZATION MEASURES
	<ul style="list-style-type: none"> • If nēnē or aeʻo become injured in the Action Area or periphery due project actions, on-site staff will contact the on-call biologist immediately who will arrange for the bird(s) to be picked up by DOFAW and provide guidance on temporary handling prior to DOFAW pickup. Injuries to nēnē or aeʻo resulting from project actions may require care from the Hawaiʻi Wildlife Center (HWC) on the island of Hawaiʻi. Should transport to and care at the HWC be necessary, HDOT would provide funds to facilitate necessary and appropriate actions. If observed during daily visual surveys or after work has begun, work in the vicinity of a loafing or foraging Hawaiian stilt and Hawaiian coot can begin only after the birds have left on their own and a 100-foot buffer maintained until that time. • <u>Border slopes of the permanent BMPs will be designed by the Contractor to have a slope greater than 6:1 to deter aeʻo from nesting adjacent to the ponds. ‡</u>
Hawaiian Coot	The Project would adopt the same AMMs for the Hawaiian coot as listed above for the Hawaiian stilt.
Hawaiian Ducks	<ul style="list-style-type: none"> • To the greatest extent possible, <u>the contractor will</u> preserve suitable habitat such as wetlands, streams, and open water features in their natural condition. • <u>Through the State's Environmental Awareness Program, the on-call biologist will</u> inform project personnel and contractors about the potential presence of endangered species on-site. • <u>HDOT will</u> post and enforce speed limits in areas where waterbirds are known to be present. • <u>Contractor will</u> incorporate the USFWS BMPs for Work in Aquatic Environments into the project design. • <u>If a nest or active brood is discovered, the Contractor will immediately establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks have fledged. No work would occur within this buffer</u> • <u>The State's on-call biologist would be contacted by the Contractor, who would then contact the USFWS within 48 hours upon discovery for further guidance. If a nest or active brood is found:</u> <ul style="list-style-type: none"> — <u>Contact the USFWS within 48 hours for further guidance.</u> — <u>Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.</u> — <u>Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.</u>



SPECIES	AVOIDANCE AND MINIMIZATION MEASURES
Hawaiian Seabirds	<ul style="list-style-type: none"> • No night work is anticipated for this Project. However, should night work be required, then lighting should be configured to be “dark sky friendly,” in compliance with Hawaiʻi Revised Statute § 201-8.5, as well as the design-build contractor contacting the USFWS several months in advance of any nighttime work, particularly during seabird fallout season. These additional measures would be incorporated into the Project to avoid and minimize potential project effects to Hawaiian seabirds: • <u>Night work will not be allowed during the sea turtle nesting/hatching period and seabird fledgling period (May 1 - December 15), to be enforced by the Contractor.</u> • <u>Should night work be required (outside of seabird fledgling periods and sea turtle nesting/hatching periods), then lighting will be configured by the contractor to be “dark sky friendly,” in compliance with Hawaiʻi Revised Statute § 201-8.5. These additional measures will be incorporated into the Project by the Contractor if night work is required to avoid and minimize potential project effects to Hawaiian seabirds:</u> <p><u>The Contractor will</u> fully shield all outdoor lights so the bulb can only be seen from below.</p> <p><u>The Contractor will</u> install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.</p> <ul style="list-style-type: none"> — Avoid nighttime construction during the seabird fledging period (September 15 to December 15). - <u>To avoid collisions for seabirds, where fences extend above vegetation, the contractor will integrate three strands of polytape into the fence. For powerlines, guy-wires and other cables, the contractor will minimize exposure above vegetation height and vertical profile as best as practicable the tops of monopoles, cranes and crane wire/cables, and fencing that extends above vegetation will be flagged.</u>



Sea Turtles

- There would be no vehicle use on or modification of the beach/dune environment during the sea turtle nesting or hatching season (May to December), to be enforced by the Contractor. Notably, there was no such habitat observed in the project area.
- Contractor will not remove native dune vegetation. Prior to any dune vegetation removal, a botanist familiar with native species will ~~would~~ be consulted to identify native dune vegetation. Notably, there was no dune vegetation observed in the project area.
- Contractor will incorporate applicable best management practices regarding Work in Aquatic Environments into the project design.
- Contractor will ~~would~~ not stockpile project-related materials in the intertidal zone, reef flats, sandy beach and adjacent vegetated areas, or stream channels. Notably, there are no such resources observed in the project area.
- The Contractor will ~~would~~ remove any project-related debris, trash, or equipment from the beach or dune if not actively being used. Notably, there was no such habitat observed within the project area.
- When mechanical or construction activities are performed directly adjacent to or on top of the existing Honopiilani Highway, the Contractor will assign a competent observer who has undergone State's Environmental Awareness Program training to perform visual surveys for basking sea turtles.
- If a basking sea turtle is observed within the project area, the Contractor will not permit mechanical or construction activities ~~would not be permitted~~ within 164 ~~100~~ feet (50m) of the animal, and no such activities would be permitted in the area between the basking sea turtle and the ocean. Construction activities would not resume in such areas until the animal voluntarily leaves the area. ‡
- Night work will not be allowed by the Contractor during the sea turtle nesting/hatching period and seabird fledgling period (May 1 -December 15).
- Should night work be required (outside of sea turtle nesting/hatching periods and seabird fledgling periods), then lighting will be configured by the Contractor to be "dark sky friendly," in compliance with Hawai'i Revised Statute § 201-8.5. These additional measures will be incorporated into the Project by the Contractor to avoid and minimize potential project effects to sea turtles:
 - Contractor will minimize the use of lighting on or near beaches and shield all project-related lights so the light is not visible from any beach.
 - If lights cannot be fully shielded or if headlights must be used, the Contractor will fully enclose the light source with light filtering tape or filters.
 - Contractor will reduce the height of exterior lighting to below 3 feet (0.9 meters) and point downward or away from the beach.
 - Contractor will minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.
- Contractor will incorporate the following design measures into the construction or operation of buildings adjacent to the beach to reduce ambient outdoor lighting. Notably there will be no buildings constructed adjacent to the beach:
 - tinting or using automatic window shades for exterior windows that face the beach;
 - reducing the height of exterior lighting to below 3 feet and pointed downward or away from the beach; and
 - minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.



SPECIES	AVOIDANCE AND MINIMIZATION MEASURES
Blackburn's Sphinx Moth	<ul style="list-style-type: none"> • <u>The State's biologist familiar with BSM will</u> would survey for the species and its larval host plants during the wettest portion of the year (November to April or several weeks after a significant rain) and within four to six weeks prior to construction. Surveys <u>will</u> would include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage). • <u>If moths, eggs, larvae, or native 'aiea or tree tobacco over 3 feet tall, are found during the survey</u> aiea or tree tobacco over 3 feet (0.9m), or adult BSM moths are found during surveys, then <u>the State's on-call biologist will</u> the USFWS would be informed by the Contractor who would then inform USFWS within 48 hours for additional guidance. Sometimes the pupating larvae are less visible on mature plants and when uprooting the mature plant larvae could also dislodge and remain in the ground typically within 33 ft (10m) of the parent plant. In this scenario, the <u>Project-Contractor</u> would create a 33-ft (10m), disturbance-free buffer where no work activities at all would be performed around the woody host plant to prevent disturbance to any pupating larvae. The plant roots <u>will</u> would be removed <u>by the Contractor with guidance from the State's on-call biologist</u> 90 days following the initial survey to prevent resprouting. ± • If no BSM, aiea, or tree tobacco are found during survey, then the <u>project site staff-Contractor</u> would take measures to ensure that tree tobacco plants do not establish in the project site. If tree tobacco grows more than 3 feet (0.9m) tall, it may become a host plant for BSM larvae, which can occur in as few as six weeks. Therefore, to ensure that tree tobacco does not get established in the project site, <u>dedicated staff with prior completion of the State's Environmental Awareness Program training and visual aids of tree tobacco at various life stages</u> the on-site biologist would survey for tree tobacco every six weeks <u>before, during, and after construction and before ground disturbing construction activities</u> within a 33-foot (10m) buffer. If tree tobacco is found, the <u>dedicated staff will</u> on-site biologist would remove and dispose of the pulled tree tobacco <u>per guidance provided by the State's on-call biologist.</u> ±
Assimulans Yellow-faced Bee	<ul style="list-style-type: none"> • If yellow-faced bee nests are observed <u>by the State's on-call biologist</u> during pre-construction surveys, the State's <u>on-call biologist would contact</u> USFWS would be contacted for further guidance. • <u>If any ground disturbing activities will occur in or adjacent to known occupied habitat (on the beach or makai side of the highway), a buffer area around the habitat will be required and determined on a site-specific basis through consultation with the USFWS. The Contractor would inform HDOT who would consult USFWS for this site-specific buffer area</u> ± • No fires or wood collecting. <u>The contractor will not collect wood nor have any fires</u> • <u>The contractor will</u> restrict vehicles to existing and temporary construction roads and trails. • <u>Following completion of the State's Environmental Awareness Program training, the contractor will</u> post educational signs to inform people of the presence of sensitive species.

**Reasonable
and Prudent
Measures
(nēnē, aeʻo)**

The Project would implement the following Reasonable and Prudent Measures to minimize the potential for injury and mortality of nēnē and aeʻo during project activities, as listed in the Biological Opinion (See Appendix 3):

- The State's on-call biologist will be notified by telephone and email immediately by the contractor upon the discovery of an injured or dead nēnē or aeʻo in the Action Area.
- The State's on-call biologist will arrange for the bird(s) (or other listed animal species) to be picked up by DOFAW and provide guidance on temporary handling prior to DOFAW pickup.
- The State's on-call biologist will use the USFWS's SOP for handling and transporting injured birds or other listed animal species.
- The State's on-call biologist will provide PIFWO with a written notification using the Avian Injury/Mortality Form in Appendix D of the Biological Opinion, summarizing the event, within 3 calendar days and will contact and arrange for care from the Hawai'i Wildlife Center (HWC) or other permitted rehabilitation facility for any injured bird.
- Should transport to and care at the HWC or other permitted rehabilitation facility be necessary, HDOT will provide funds to facilitate necessary and appropriate actions. Care must be taken in handling any dead or injured specimens of proposed or listed species to preserve biological material in the best possible state.
- In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead or injured specimens does not imply enforcement proceedings pursuant to the Endangered Species Act.
- FHWA shall submit an annual report to be drafted by HDOT in coordination with the Contractor PIFWO within 45-calendar days after each year-end in which Project actions occur. This reporting requirement enables the Service to determine if take has been reached or exceeded and to ensure that the terms and conditions are appropriate and effective.
 - Annual reports will include all nēnē hazing activities, including the number of birds hazed during each hazing incident, the date and time, banding information (if available), and any other noteworthy behavioral observations and/or physical features and environmental conditions at the time.
 - Annual reports will also include all observations of nēnē, aeʻo, and/or other listed birds (and any other listed species) in the Action Area, including number of individuals and/or nests, life stage, banding information (if relevant), brood structure (if relevant), date and time, any noteworthy behavioral observations or physical features on the species, environmental conditions at the time, and a detailed description of any incident(s) that resulted in take in the form of harm (injury), mortality, and capture using the Injury/Mortality Form in Appendix D of the Biological Opinion.
 - Lastly, the annual reports should include all of the conservation measures implemented each year.
 - Upon the final year during which Project actions occur, a final report will be submitted to PIFWO within 45-days after the Project has been completed containing the annual report for the last year, followed by an analysis and summary of all the annual reports combined.
 - The depository designated to receive specimens that are found is the B.P. Bishop Museum, 1525 Bernice Street, Honolulu, Hawai'i, 96817 (telephone: 808/847-3511). If the B.P. Bishop Museum does not wish to accession the specimens, contact the Service's Division of Law Enforcement in Honolulu, Hawai'i (telephone: 808/861-8525; fax: 808/861-8515) for instructions on disposition.



TABLE 3.10-15. General Invasive Species Best Management Practices

SUBJECT	DESCRIPTION
<u>Cleaning & Treatment</u>	<p><u>Prior to entry into a project site, project materials, vehicles, machinery, and equipment will be pressure-washed by the Contractor thoroughly (preferably with hot water) in a designated cleaning area. Project materials, vehicles, machinery, and equipment should be visibly free of mud/dirt (excluding aggregate), seeds, plant debris, insects, spiders, frogs (including frog eggs), other vertebrate species (e.g., rodents, mongoose, feral cats, reptiles, etc.), and rubbish. Areas of particular concern include bumpers, grills, hood compartments, wheel wells, undercarriage, cabs, and truck beds. Truck beds with accumulated material are prime sites for hitchhiking invasive species. All construction equipment and vehicles should arrive at the work site for the first time in clean condition and free of the following: any soil; plants or plant parts, including seeds; insects, including eggs; and reptiles and amphibians, including their eggs. Similarly, all construction equipment and vehicles should be cleaned after use in the project area and before leaving the site. This would be particularly important for equipment movement between the project area and the other islands.</u></p> <p><u>The Contractor will ensure the interior and exterior of vehicles, machinery, and equipment be free of rubbish and food, which can attract pests (i.e., rodents and insects). The interiors of vehicles and the cabs of machinery should be vacuumed clean particularly for any plant material or seeds</u></p>
<u>Inspection</u>	<p><u>Following Contractor cleaning and/or treatment, project materials, vehicles, machinery, and equipment, will be visually inspected by its user, and be free of mud/dirt (excluding aggregate), debris, and invasive species prior to entry into a project site. For example, careful visual inspection of a vehicle's tires and undercarriage is recommended for any remaining mud that could contain invasive plant seeds. All materials imported to the project area, including gravel, soil, rock, and sand, should be certified weed free. Invasive species found on stockpiled materials should be removed either chemically or mechanically.</u></p> <p><u>All materials imported to the project area should be certified weed-free. The Contractor will ensure that any project materials, vehicles, machinery, or equipment found to contain invasive species (e.g., plant seeds, invertebrates, rodents, mongoose, cats, reptiles, etc.) must not enter the project site until those invasive species are properly removed/treated.</u></p>
<u>For all on-site personnel</u>	<p><u>Prior to entry into the project site, all on-site personnel will visually inspect and clean their clothes, boots or other footwear, backpack, radio harness, tools and other personal gear and equipment for insects, seeds, soil, plant parts, or other debris. Seeds found on clothing, footwear, backpacks, etc., will be placed in a secure bag or similar container and discarded in the trash rather than being dropped to ground at the project site or elsewhere.</u></p>
<u>Revegetation</u>	<p><u>Only weed-free seed mixtures will should be used for hydroseeding and hydromulching on the project area. The State's qualified botanist should inspect the seeded areas a minimum of 60 <u>calendar</u> days after the hydroseed/hydromulch is applied. Any species of plant other than those intended to be in the hydroseed/hydromulch will should be removed. In particular, plant species that are not known to occur on Maui and those that are actively being controlled on the island will should be removed.</u></p>



SUBJECT	DESCRIPTION
	<p><u>The Project would use only native plants for revegetation or landscaping purposes. Species included in the Biological Survey Report would be prioritized. Revegetation and landscaping will include native plants found in the action area during biological surveys, native plants historically known from the area, as well as native and possibly nonnative plants not considered invasive species that are fire resistant and recommended by the Pacific Fire Exchange, Plant Pono website, and following County of Maui Planting Guidelines. These species include, but are not limited to 'iliahialo'e (<i>Santalum ellipticum</i>), 'a'ali'i (<i>Dodonaea viscosa</i>), hoary abutilon (<i>Abutilon incanum</i>), akulikuli (<i>Sesuvium portulacastrum</i>), milo (<i>Thespesia populnea</i>), 'ilima (<i>Sida fallax</i>), naupaka (<i>Scaevola taccada</i>), and uhaloa (<i>Waltheria indica</i>). An additional three species are included for consideration in revegetation: Pōhinahina (<i>Vitex rotundifolia</i>), 'Ūlei (<i>Osteomeles anthyllidifolia</i>), and 'Āweoweo (<i>Chenopodium oahuense</i>).‡</u></p> <p><u>If these plants do not meet revegetation or landscaping objectives, then other native plants may be substituted. Additional information on selecting appropriate plants for landscaping can be obtained from the Plant Pono website and following County of Maui Planting Guidelines. As best as practicable, disturbance to endemic plant species such as 'iliahialo'e will be avoided.</u></p> <p><u>If native plants do not meet landscaping objectives, plants with a low risk of becoming invasive may be substituted. Additional information on selecting appropriate plants for landscaping can be obtained from the Plant Pono website and following County of Maui Planting Guidelines.</u></p> <p><u>Vegetation and landscaping will follow all applicable guidelines set forth in the HDOT Highway Manual for Sustainable Landscape Maintenance including an annual comprehensive inspection (HDOT 2011)</u></p> <p><u>As best as practicable, disturbance to endemic plant species such as 'iliahialo'e will be avoided.</u></p> <p><u>Only plants grown on Maui will be used for landscaping purposes to the extent practicable. If locally grown plants are unavailable, then imported plants may be used, but they should be thoroughly inspected or quarantined if necessary to ensure that they are free from invasive pests, such as little fire ants, and invasive plant seeds and seedlings that could arrive inadvertently.</u></p>
Little Fire Ant	<p><u>Vehicles infested with little fire ants will be treated by the Contractor following recommendations by the Hawaii Ant Lab outlined in the 2024 PIFWO Biosecurity Protocols.</u></p> <p><u>The Contractor will adhere to little fire ant baiting recommendations for vehicles, materials, and storage areas as outlined in the 2024 PIFWO Biosecurity Protocols.</u></p> <p><u>If little fire ants are detected, the contractor will report it to 808-643-PEST</u></p>
Coconut Rhinoceros Beetle (CRB)	<p><u>Contractor will adhere to Hawaii Department of Agriculture Plant Quarantine Interim Rule 24-1 prohibiting the movement of CRB-host material from the island of O'ahu. Host material for the beetle specifically includes: 1) entire dead trees, 2) mulch, compost, trimmings, fruit and vegetative scraps, and 3) decaying stumps.</u></p> <p><u>If felling or trimming palms, the Contractor will contact CRB Response for a free inspection ((808) 679-5244 or email at info@crbhawaii.org).</u></p> <p><u>Contractor will keep green waste whole until it is ready to be treated and removed. Green waste will be chipped on site and transported on the same day to a secure and managed green waste disposal site/facility.</u></p> <p><u>Contractor will minimize accumulations of green waste by regularly treating mulch piles or depositing it in sealed green waste bins.</u></p>



SUBJECT	DESCRIPTION
	<u>If injured or dying coconut palm trees are observed or if CRB are detected, Contractor will contact the on-call biologist who would then contact CRB Response at (808) 679-5244 or email at info@crbhawaii.org or online at https://www.crbhawaii.org/report</u>

Source: H.T. Harvey & Associates (2023), Pacific Islands Fish and Wildlife Office (2024), DOFAW (2025)



USFWS Recommended Standard Best Management Practices for Aquatic Environments

Measures listed in TABLE 3.10-16 and Appendix 3.10 would be implemented, which include applicable measures from the USFWS list of recommended standard BMPs for aquatic environments.

NOAA NMFS Conservation Recommendations

The following conservation recommendations (TABLE 3.10-17), provided by NOAA NMFS on July 26, 2023, will ~~would~~ be implemented. Recommendations were ~~are~~ followed by responses on October 6, 2023 ~~provided~~ to NOAA NMFS which described measures or actions taken to address the July 26, 2023 conservation recommendations (Appendix 3.10). TABLE 3.10-17 includes a list of BMPs provided to NOAA NMFS on June 30, 2023, which will be incorporated into the overall design and construction methods to minimize and reduce potential effects to water quality. TABLE 3.10-17 includes a final list of BMPs provided by NOAA NMFS on November 27, 2023.

3.10.10 Build Alternatives Comparative Assessment

Build Alternative 1 in Olowalu may require the removal of multiple monkeypod trees. Additionally, Build Alternative alignment options closer to the ocean inherently carry a higher risk of affecting coastal ecosystems, attributed to factors like light pollution, sediment-laden runoff, and human-induced accidents. However, with strict adherence to BMPs, conservation measures, and avoidance and minimization measures from the USFWS, the U.S. Environmental Protection Agency, NOAA NMFS, HDOT, and State agency partners, it is anticipated that effects to any listed species or critical habitats will ~~would~~ be minor and will ~~would~~ often not be anticipated across all Build Alternative alignments.

TABLE 3.10-16. USFWS Recommended Standard Best Management Practices for Aquatic Environments

BMP	DESCRIPTION
1.	Construction staff will <u>would</u> be informed of the potential presence of threatened and endangered species, including being provided materials to assist in species identification and appropriate actions if a species enters the work area.
2.	Good housekeeping practices and erosion-control device(s) shall be employed at the job site to prevent debris and soil from leaving the site.
3.	Upon completion of the Project, all construction-related debris and sediment containment devices shall be removed and disposed of at an approved site.
4.	A litter-control plan shall be developed <u>by the Contractor prior to start of construction</u> and implemented to prevent attraction and introduction of nonnative species.
5.	Invasive species controls shall be maintained to ensure that all materials transported from off-site are free of such species.
6.	Project construction-related materials shall not be stockpiled in (or in proximity to) aquatic habitats and shall be protected from erosion (for example, with filter fabric) to prevent materials from being carried into waters by wind, rain, or high surf.
7.	Fueling of project-related vehicles and equipment <u>by the Contractor</u> shall take place away from the aquatic environment <u>and within a containment area, preferably over an impervious surface</u> . A contingency plan <u>will be prepared by the Contractor for HDOT approval prior to the start of construction</u> to control petroleum products accidentally spilled during the Project shall be developed. The plan shall be retained on-site <u>by the Contractor</u> with the person responsible for its compliance. Absorbent pads and containment booms shall be stored on-site <u>by the Contractor</u> to facilitate the clean-up of accidental petroleum releases.
8.	All deliberately exposed soil or under-layer materials used in the Project near water shall be protected from erosion and stabilized as soon as possible with geotextile, filter fabric, or native or noninvasive vegetation matting, hydroseeding, or something similar.



TABLE 3.10-17. NOAA NMFS Conservation Recommendations

RECOMMENDATION
Conservation Recommendation 1: If at all possible, avoid placing bridge footings, foundations, or other structural elements in streambeds. Seek engineering solutions that place bridge structural elements outside a streambed.
Conservation Recommendation 2: Although designs of the Build Alternatives <u>will</u> would consider potential future effects of inundation and sea level rise, also plan to accommodate increased water that could come from the land through riparian corridors and flooding pathways. Do not plan bridges or culverts that <u>will</u> would restrict the flow of water and could raise water flow rates and increase scour. Consider incorporating low impact design elements into plans that slow water flow, impound sediment, and filter runoff from impermeable surfaces.
Conservation Recommendation 3: Develop a plan for managing equipment, materials, and job site conditions in the event of approaching foul weather (tropical storms and hurricanes). Equipment and materials may need to be removed from the project site or adequately secured. Stormwater runoff and erosion may require heightened management during storm events.

TABLE 3.10-18. FHWA-Proposed BMPs to NOAA NMFS

TOPIC	BMP
Waste Management	Concrete wastes, solid wastes, and any sanitary/septic wastes <u>will</u> would be located away from and managed to assure no contamination to the ocean or critical habitats.
Vehicle and Equipment Management	All vehicles and equipment cleaning, maintenance, and refueling <u>done by the State or the Contractor will</u> would be located away from and managed to assure no contamination to the critical habitats. <u>Notably, there is no critical habitat in the project area.</u> Invasive species controls shall be maintained <u>by the Contractor</u> to ensure that all materials transported from off-site are free of such species.
Stormwater Management and Erosion Control	The project <u>will</u> would require an NPDES permit with a Storm Water Pollution Prevention Plan. The Contractor <u>will</u> would be required to install and maintain BMPs as part of the Project. Site-specific stormwater BMPs would be implemented and/or installed at the staging and work areas to prevent water quality degradation associated with stormwater runoff. Stormwater BMPs <u>will</u> would include maintaining equipment in good working order, storing equipment and materials away from the ocean or stream bank with strategic placement of absorbent material, such as fiber rolls, as a buffer between equipment and nearby waterbodies. Drip pans shall also be maintained beneath construction equipment. The Contractor <u>will</u> would be required to prevent any debris from falling into the water.
Water Pollution	The HDOT Standard Specifications for Road and Bridge Construction Section 209 Temporary Water Pollution, Dust, and Erosion Control <u>will</u> would be followed.
Construction	The Project <u>will</u> would require temporary construction laydown areas. Stockpiling, storage, and equipment staging <u>will</u> would utilize appropriate BMPs to prevent potential surface runoff from entering the stream. No stockpiling, storage, or heavy equipment <u>will</u> would be placed in the streams.

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TOPIC	BMP
For Physical Impacts to Benthic Communities	<ol style="list-style-type: none"> 1. Prevent trash and debris from entering the marine environment during the project. 2. For anticipated stream crossings, all temporary structures must be removed at the completion of in-water work. 3. For anticipated stream crossings, do not stockpile or stage materials in the marine environment unless absolutely necessary. Place material that is stored in the marine environment on unconsolidated sediments devoid of coral and seagrass.
For Increase in Sedimentation and/or Turbidity	<ol style="list-style-type: none"> 1. Install sediment, turbidity, and/or pneumatic curtains, and use real-time monitoring (automated or manual) to detect failure and implement stop-work processes if pre-determined project thresholds are reached (use standards from Clean Water Act 401 water quality certification). In areas of soft sediment, consider partial length turbidity curtains to reduce resuspension of sediment during high winds and currents. 2. Maintain baseline water flow, volume, and velocity of the waterbody. 3. Use natural or bio-engineered solutions when feasible. 4. Fully stabilize disturbed upland areas prior to removing silt fences and erosion prevention measures. 5. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction conditions and elevations. 6. Minimize disturbances to stream banks, and place abutments outside of the floodplain whenever possible. Seek to maintain baseline water flow volume and velocity within the system. 7. Design the structure to maintain or replicate natural stream channel and flow conditions to the greatest extent practicable. 8. Revegetate shoreline areas with appropriate native species and fully stabilize disturbed upland areas prior to removing silt fences and erosion prevention measures.
For Increase in Nutrients, Pollution, Contaminants, and Freshwater	<ol style="list-style-type: none"> 1. Conduct work during the dry season when possible; stop work during storms or heavy rains. 2. Prevent discharges into the water. 3. Inspect all equipment prior to beginning work each day to ensure the equipment is in good working condition, and there are no contaminant (for example, oil, fuel) leaks. Work must be stopped until leaks are repaired, and equipment is cleaned. Equipment should always be stored in appropriate staging area designed to be preventative in terms of containing unexpected spills when equipment is not in use or during fueling. 4. All fueling or repairs to equipment must be done in a location with the appropriate controls that prevent the introduction of contaminants to marine environment. 5. Fueling of project-related vehicles and equipment shall take place at least 50 feet, or the maximum distance possible, from the water and within a containment area, preferably over an impervious surface. 6. Use of treated wood that would be in contact with the water is not authorized. 7. Use materials that are nontoxic to aquatic organisms, such as untreated wood, concrete, or steel (avoid pressure treated lumber). 8. Prevent bentonite and other drilling fluids from contacting benthic organisms. 9. Prevent discharges of chemicals and other fluids dissimilar from seawater into the water column.



TABLE 3.10-19. Final NOAA NMFS Proposed BMPs

TOPIC	BMP
Observations and Monitoring	<p>Contractors will monitor for the presence of ESA-listed species during all aspects of the permitted action.</p> <ul style="list-style-type: none"> A responsible party (permittee, site manager, project supervisor) will designate a competent observer to search/monitor work sites and the areas adjacent to the authorized work area for ESA-listed species. Observers will survey the area before the start of work each day, including before resumption of work following any break of more than one-half hour.
Monitoring Plan	<p>The <u>State and FHWA action agency</u> will ensure that a monitoring plan <u>developed by the Contractor prior to start of construction</u>, identifies the methods, equipment, communication, and all necessary measures to adequately observe ESA-listed <u>marine</u> species in the affected areas and communicate with workers.</p> <ul style="list-style-type: none"> <u>Contractor</u> will ensure that <u>trained, competent</u> observers are exclusively looking for ESA-listed <u>marine</u> species at the work site <u>during active construction adjacent to marine habitat</u> and not assigned to other tasks. <u>Trained competent</u> observers shall report to <u>the Contractor</u> workers when motile ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work and halt work and shall only begin/resume after the animals have voluntarily departed the area. If <u>Hawaiian green sea turtle, Hawksbill sea turtle, or Hawaiian monk seal</u> listed species are noticed in the area after work has already begun, that work may continue only if, in the best judgment of <u>the Contractor's</u> project supervisor, there is no way for the activity to adversely affect the animal(s).
Human Interaction	<p><u>Contractor will ensure that</u> project-related personnel will not attempt to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.</p>
Inspections	<p><u>Contractor's</u> project manager or heavy equipment operators will perform daily pre-work equipment inspections for leaks. Detection of leaks will result in postponing or halting the use of heavy equipment until the leak is repaired and the equipment cleaned. The action agency will ensure that observers are exclusively looking for ESA-listed <u>marine</u> species at the work site and not assigned to other tasks.</p> <ul style="list-style-type: none"> <u>Contractor's</u> worksite will have sufficient materials to contain and clean possible spills. <u>Contractor's</u> equipment storage will occur in an appropriate staging area designed to prevent unexpected spills when equipment is not in use or during fueling. Drip pans will also be maintained beneath construction equipment. The contractor must keep the water free of debris.
Night Work	<p><u>Night work will not be allowed during the sea turtle nesting/hatching period and seabird fledgling period (May 1 -December 15). Avoid nighttime work during the nesting and hatching season, which extends from May through December.</u></p>

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TOPIC	BMP
Turbidity and Sedimentation Control	<p>Turbidity and sediment from project-related work will be minimized and contained to the immediate vicinity of the project through the appropriate use of effective sediment containment devices and the curtailment of work during adverse tidal and weather conditions.</p> <ul style="list-style-type: none"> • All silt fences, curtains, and other structures will be installed properly and maintained in a functioning manner for the life of the construction period and until the impact area is permanently stabilized, self-sustaining, and/or turbidity levels, elevated due to construction, return to ambient levels. • Use real-time monitoring (automated or manual) to detect failure and implement stop-work processes if predetermined project thresholds are reached (use standards from Clean Water Act 401water quality certification). • In areas of soft sediment, consider partial-length turbidity curtains to reduce the resuspension of sediment during high winds and currents.
Streambank Disturbance	Minimize disturbances to stream banks. Seek to maintain baseline water flow volume and velocity within the system.
Revegetation	Revegetate shoreline areas with appropriate native species and fully stabilize disturbed upland areas before removing silt fences and erosion prevention measures.
Material Handling	Project construction-related materials (fill, revetment rock, pipe) will not be stockpiled in or near aquatic habitats, to prevent materials from being carried into waters by wind, rain, or high surf.
Stream Crossings	For anticipated stream crossings, removal of all temporary structures will occur at the completion of in-water work.
Stream Crossing and Construction Materials	For anticipated stream crossings, do not stockpile or stage materials in the marine environment unless necessary.
Wood Material	The use of treated wood for in-water work is not authorized.
Discharge into Water	<p>Prevent discharges of chemicals and other fluids dissimilar from seawater into the water column.</p> <ul style="list-style-type: none"> • Concrete wastes, solid wastes, and any sanitary/septic wastes will <u>would</u> be located away from and managed to ensure no contamination of the ocean or <u>marine</u> critical habitats. • Site-specific stormwater BMPs will be implemented and/or installed at the road staging and work areas to prevent water quality degradation associated with stormwater runoff. • Project-related materials and equipment placed in the water will be free of pollutants.