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# **Assessment of impacts to Essential Fish Habitat Kūhiō Highway Short-Term Improvements Project Wailua, Kauaʻi**

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## **Introduction**

The State of Hawaiʻi, Department of Transportation (DOT), Highways Division is proposing improvements to Kūhiō Highway along an approximately 1-km (0.65-mi) section of highway (herein the “Project”) in the Kawaihau District on the Island of Kauaʻi (Fig. 1). AECOS, Inc. was contracted by Wilson Okamoto Corporation<sup>1</sup> to assess the impacts of the Project on Essential Fish Habitat (EFH)<sup>2</sup>. This report details EFH near the Project site, anticipated impacts of the Project to nearshore waters and fish habitats, and provides a list of fishes recently identified near the Project area.

## **Project Description**

Kūhiō Highway is planned to be widened on the southbound side from three to four lanes between the intersections of the Temporary Kapaʻa Bypass Road and Kuamoʻo Road. Other accessory improvements would be implemented with this highway widening. The existing right-turn storage lane along Kuamoʻo Road would also be extended 200 m (650 ft) from its intersection with Kūhiō

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<sup>1</sup> Report prepared for environmental entitlements and to become part of the public record for the Project.

<sup>2</sup> Magnuson-Stevens Fishery Conservation and Management Act. Public Law 94-265, as amended through October 11, 1996.

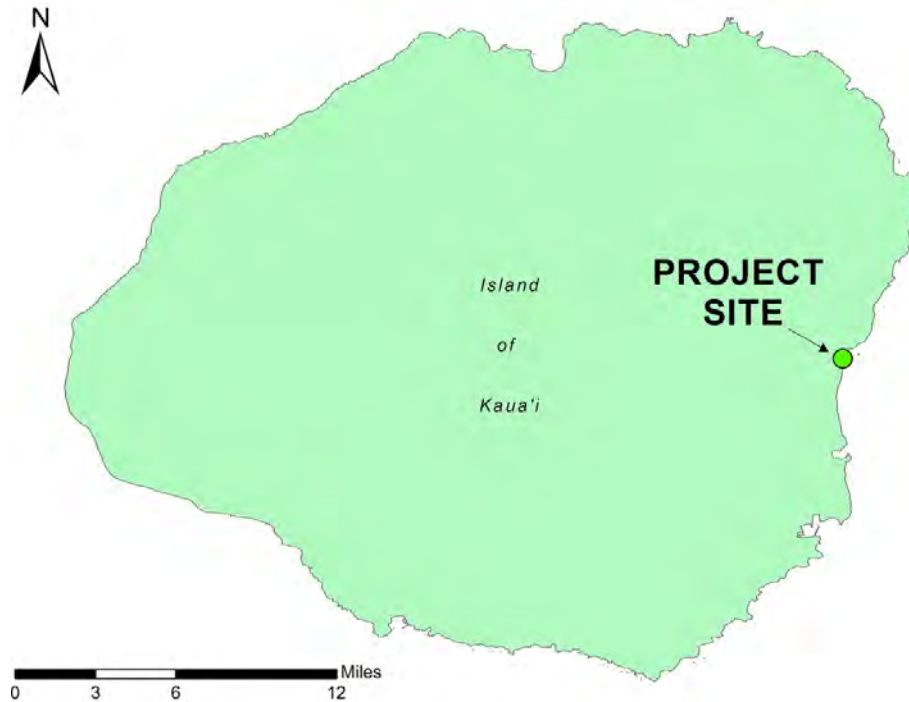


Figure 1. Location of the Project on the Island of Kaua'i.

Highway. This highway project (Federal Aid Project No. 56A-01-06) is collectively referred to as the "Kūhiō Highway Short-Term Improvements; Kuamo'o Road to Temporary Bypass Road Project."

The Project does not propose any in-water work, but includes tunneling under the Wailua River (estuarine reach), and work near the Coco Palms Lagoon, Kaloko Marsh, and Waipouli Canal. Marine waters with the potential to be effected include Wailua Bay. These five water bodies may receive runoff originating from the Project area during construction and may be influenced by any operational impacts from the Project roadway improvements.

## Essential Fish Habitat

The 1996 Sustainable Fishery Act amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and subsequent EFH Regulatory Guidelines (NOAA, 2002) describe provisions to identify and protect habitats of federally-managed marine and anadromous fish species. Under the various provisions, federal agencies that fund, permit, or undertake activities

that may adversely affect EFH are required to consult with the National Marine Fisheries Service (NMFS).

Congress defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH is further defined by the existing regulations (MSFCMA, 1996; NOAA, 2002). “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” is defined as required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ life cycle.

EFH provisions in MSFCMA designate that species harvested in sufficient quantities to require fisheries management be subdivided into similar Management Unit Species (MUS). Four MUS are currently managed in Hawaiian waters: bottomfish, precious corals, crustaceans, and coral reef ecosystem. In the waters surrounding the Hawaiian Islands, EFH for coral reef ecosystem MUS as defined by the Final Coral Reef Ecosystem Fishery Management Plan (WPRFMC, 2001) and subsequent Fishery Ecosystem Plan for the Hawaiian Archipelago (WPRFMC, 2005) “includes all waters and habitat at depths from the sea surface to 50 fathoms extending from the shoreline (including state and territorial land and waters) to the outer boundary of the Exclusive Economic Zone (EEZ).”

## Aquatic Environment at Project Site

The Project has potential to indirectly impact on aquatic environments found in the Wailua River, Coco Palms Lagoon, Waipouli Canal, and Wailua Bay. The estuarine reach of the Wailua River is a wide slow, brackish-water flow with mangrove (*Rhizophora mangle*) thickets lining much of the banks. The river empties into Wailua Bay just seaward of Kūhiō Highway. The Coco Palms Lagoon is a boulder-lined, enclosed lagoon whose brackish waters do not regularly flow into the Wailua River despite the presence of a small channel connecting the two water bodies. The Waipouli Canal is connected to the man-made channels of the Waiākea watershed and flows north towards its coastal outlet in Kapa‘a about 1.3 mi north of the Wailua Bay.

The benthic substratum of the nearshore marine waters of Wailua Bay, fronting the Project (Fig. 2) consists of a large sand channel extending offshore from the

mouth of the Wailua River with limestone pavement to the north and south of the channel. A patch of fine sediment (“mud”) exists in the immediate vicinity of the river mouth. Benthic coverage of the limestone pavement is mostly turf algae nearshore and macroalgae further offshore (Fig. 3). Though coral colonies are certainly present in nearshore waters, a well-defined coral reef is not.

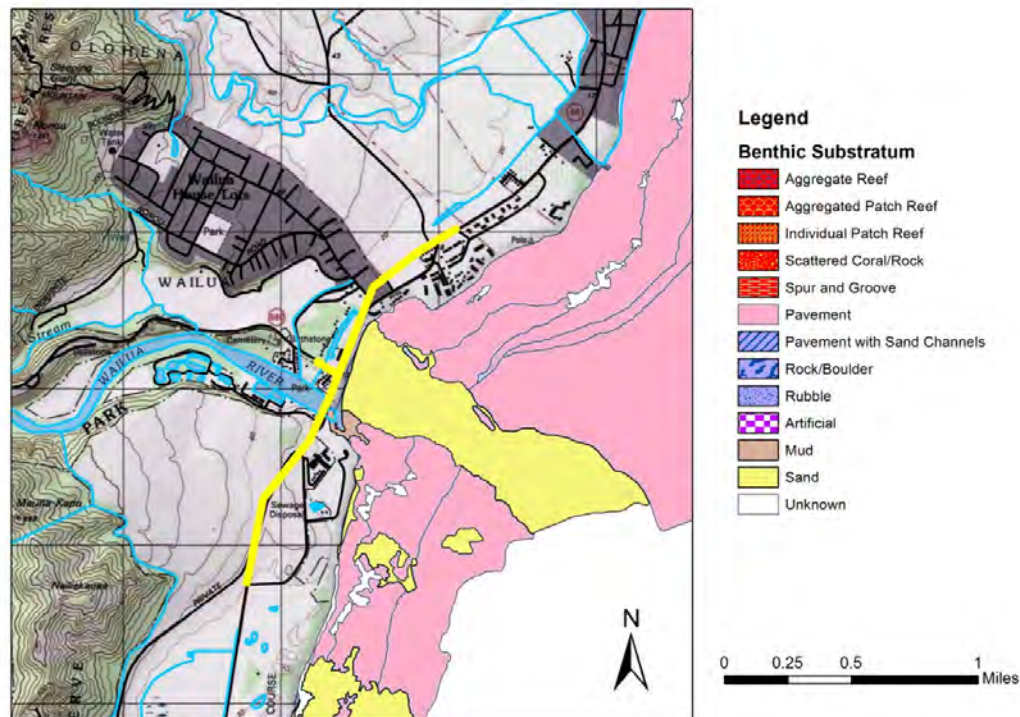


Figure 2. Benthic substratum in the Project vicinity (NOAA, 2007).

Note--yellow lines indicate the location of the Project.

A listing of 122 species of algae, invertebrates, and fish identified from surveys near the Project area is presented in Appendix A. The listing is comprised of biota identified from surveys in Coco Palms Lagoon, Coco Palms Drainage Canal, and Waipouli Canal (AECOS, 2007), Wailua River estuary (AECOS, 2007; Parham et al, 2008), nearshore marine water north of the Project area (AECOS, 2010), and in the coastal estuaries of the Kawaihoa watershed (AECOS, 2013) to the south of the Project area (Fig. 4). The list comprises freshwater, brackish, and marine species inhabiting marine and estuarine waters near the Project area.

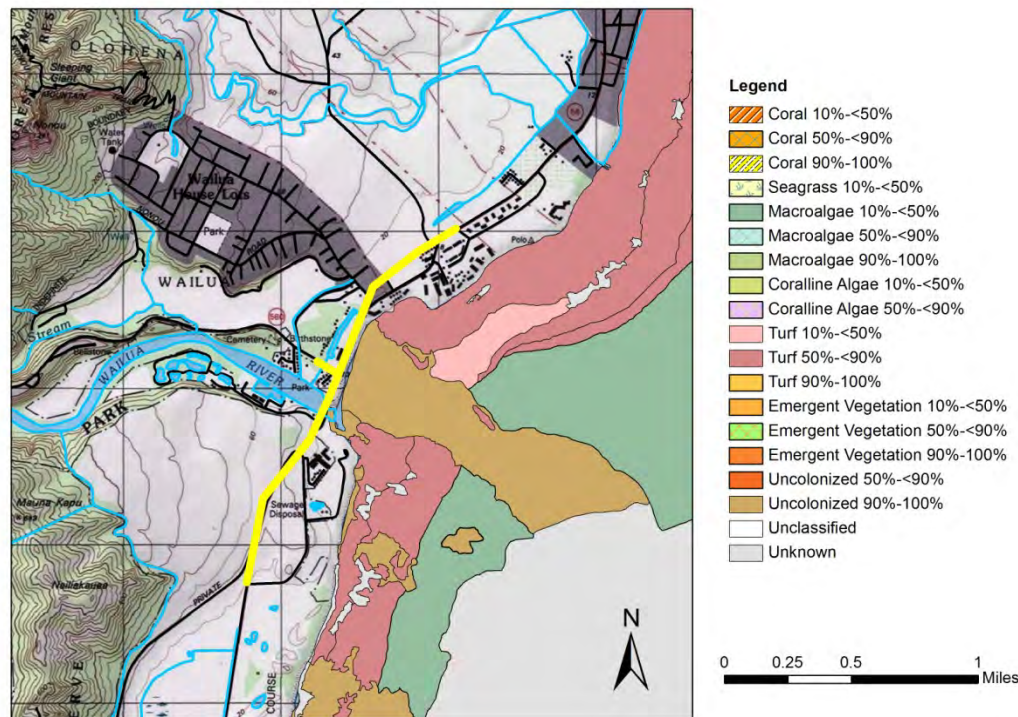


Figure 3. Benthic coverage of substratum in the Project vicinity (NOAA, 2007).  
Note--yellow lines indicate the location of the Project.

The biota of the Coco Palms Lagoon and Waipouli Canal comprises mostly naturalized species dominated by tilapia and poeciliid fishes. The estuarine reach of the Wailua River is home to a mix of native and naturalized species including marine fishes that regularly enter the estuary. Wailua Bay is home to a broad assemblage of marine species, most of which are common in nearshore water of all the Hawaiian Islands.

## Assessment of Impacts

### Direct Construction Impacts

The Project does not propose to add or modify any in-water structures or habitat and proposes no in-water work. The Project will not have any direct impacts on EFH.





Figure 4. Field survey locations for list of species anticipated in Project vicinity.

## Indirect Construction Impacts

The only potential for indirect impacts to EFH exists in pollutants carried in runoff from the Project site. Pollutants commonly present in roadway surface runoff include: sediment, heavy metals, bacteria, nutrients, oil, and grease (USEPA, 1995).

A detailed topographical survey and analysis of drainage patterns by Wilson Okamoto Corp. indicates eight distinct flow regimes for runoff in the Project area (Fig. 5). Four drainage areas with discharge rates (2 year, 1 hour storm event calculations) ranging from 0.7 to 3.4 cubic feet per second (cfs) drain towards Wailua Bay. Natural evaporation and percolation in sand will likely diminish and filter runoff heading into Wailua Bay, as the flow must cross the 8 to 33 m (25 to 100 ft) wide beach. Two drainages totaling only 2.8 cfs enter the Wailua River. The Coco Palms Lagoon receive 1.4 cfs, while Kaloko Marsh receives 4.4 cfs; and Waipouli Canal collects up to 1.0 cfs under the calculated scenario.

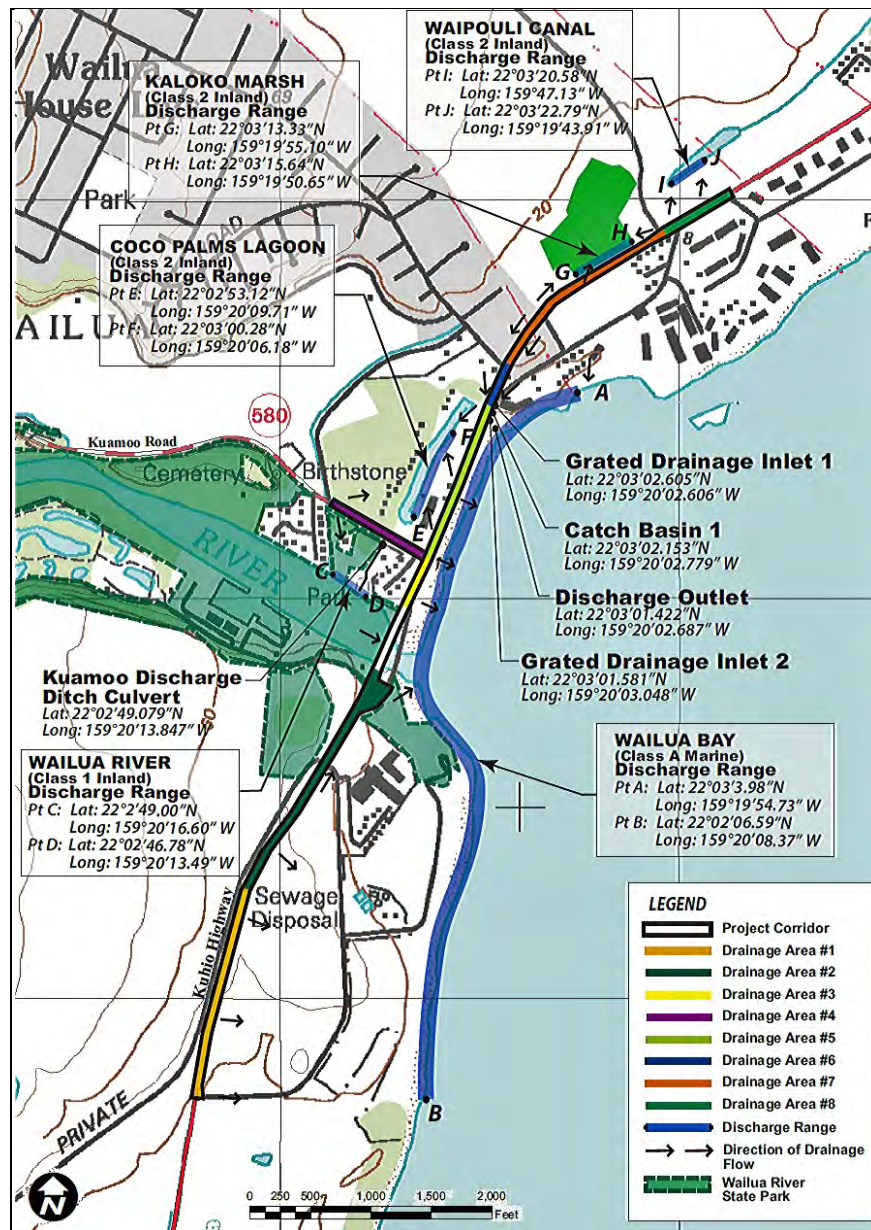


Figure 5. Location of the Project drainage discharge locations into state waters (Source: Wilson Okamoto Corp.).

The low anticipated runoff rates at the Project site indicate that standard dust, erosion, and sediment control methods will be adequate to prevent excessive pollutant loads entering state waters during construction. Silt fencing will be

implemented in all drainages entering Wailua Bay, Kaloko Marsh, Coco Palms Resort, and Waipouli Canal. Runoff entering Wailua River will be controlled by a combination of silt fencing and aggregate filter pouches. Silt curtains will be utilized in the Coco Palms drainage canal (north of side of Kuamo'o Rd.) and in the Kaloko Marsh work area. To prevent the spread of pollutants from work areas, designated ingress/egress corridors and plastic lined vehicle wash down stations will be established in each work area. The material and equipment storage areas will be confined by a plastic-lined earthen containment berm. Additionally, project-specific material waste, hazardous waste, and spill prevention plans have been designed and will be implemented during the Project. Indirect impacts on EFH from construction are not expected if described BMPs are implemented and adhered to.

## Operational Impacts

Long term changes in the Project area follow from the widening of the highway and extension of the existing right turn lane on south-bound Kūhiō Highway at Kuamo'o Road. The creation of additional impervious surfaces will increase slightly runoff in the Project area. The bulk of this additional paved area—the new right turn lane—will drain to the Coco Palms Lagoon as a result of crowning of the roadway. As such, the lagoon will continue to serve as a sink for sediments, nutrients, and other pollutants off the highway. As the lagoon does not typically connect across the land to the Wailua River or Wailua Bay, these pollutants will likely not reach coastal waters or EFH.

The highway widening will increase the pavement area and inevitably increase surface runoff. However, based on a 2-year, 1-hour storm event, the total discharge from the highway is estimated to increase from 44.02 cfs to 47.33 cfs; that is, the additional pavement from this project would generate an additional 3.31 cfs (7%) of surface runoff. Drainage patterns would be unchanged. Therefore, the project is not anticipated to have any long-term adverse impact on EFH.

## Conclusions

The proposed Kūhiō Highway Short-Term Improvements; Kuamo'o Road to Temporary Bypass Road Project is not expected to have short- or long-term, direct or indirect impacts to the physical, chemical, or biological properties of state waters at the Project site. No effect to soft or hard bottom substrata or attached biological communities is anticipated. Coral reef ecosystems, crustacean fisheries, and associated EFH will not be adversely impacted by the Project.



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