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3.9 WATER RESOURCES, WETLANDS, AND FLOODPLAINS

This section presents the potential effects of the Honoapiʻilani Highway Improvements Project (the Project) to water resources, which include wetlands, surface waters (including mapped streams and other waterbodies), groundwater, drainage areas, and surface flow.

3.9.1 Regulatory Context

Implementation of the Project would require coordination with federal, State, and County authorities for permits or approvals. TABLE 3.9-1 summarizes the water resource-specific permits and approvals. (See Chapter 1, Introduction, Purpose and Need, for Project-wide permits and approvals.)

TABLE 3.9-1. **Potential Permits and Approvals**

PERMIT/APPROVAL	ISSUING/APPROVING AGENCY
FEDERAL	
Department of Army Permit, Clean Water Act, Section 404	U.S. Army Corps of Engineers
Flood Map Change Request (if "no-rise" condition cannot be achieved)	Federal Emergency Management Agency (FEMA), County of Maui Emergency Management Agency
STATE OF HAWAIʻI	
Coastal Zone Management Act Consistency Determination (Section 3.12, Coastal Zone Management Act)	Department of Business, Economic Development and Tourism, Office of Planning and Sustainable Development, Coastal Zone Management Program
Clean Water Act, Section 401, Water Quality Certification	State of Hawaiʻi, Department of Health, Clean Water Branch
Clean Water Act, Section 402, National Pollutant Discharge Elimination System Permit	Department of Health (HDOH), Clean Water Branch
Stream Channel Alteration Permit	Department of Land and Natural Resources, Commission on Water Resource Management
COUNTY OF MAUI	
Maui County Ordinance 5421 Compliance[1]	Maui County Council
Map Change Request (if "no rise" condition cannot be achieved)	County of Maui Emergency Management Agency, FEMA

[1] County-issued permits (Special Management, subdivision) contingent on Ord. 5421 compliance. No specific approval associated with Ord. 5421.

3.9.1.1 Federal Regulations

Clean Water Act

The objective of the Clean Water Act (CWA), 33 U.S.C. § 1251 et. seq. (1972) is to restore and maintain the chemical, physical, and biological integrity of Waters of the U.S.[1] The CWA regulates point sources of water pollution (for example, discharges of municipal sewage, industrial wastewater, and construction-related fill) and nonpoint source pollution (for example, runoff from streets, agricultural fields, construction sites, and mining). TABLE 3.9-2 describes important CWA sections.

Waters of the U.S.

Waters of the U.S. is a threshold term in the CWA[2] and describes which bodies of water are subject to federal regulations (jurisdictional). At the federal level, the definition of this term has undergone consequential changes. In January 2023, the definition was revised, introducing the relatively permanent standard or significant nexus standard for Waters of the U.S. This rule became effective in March 2023 but was closely followed in May by the Supreme Court case *Sackett v. EPA (Sackett). Sackett* invalidated parts of the January 2023 rule, further reducing what would federally be considered jurisdictional Waters of the U.S. The *Sackett* decision was followed by an announcement by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) that a new "conforming" rule would be issued. This conforming rule was signed in August 2023,[3] was published in the *Federal Register*, and took effect in September 2023.[4] Title 40 Code of Federal Regulations (CFR) 120 and 33 CFR 328.3 list the USEPA and USACE concurring regulatory definitions of Waters of the U.S.[5,6] These definitions describe Waters of the U.S. specifically as relatively permanent, standing, or continuously flowing bodies of water (such as streams, oceans, rivers, and lakes). Under the revised definition, wetlands are considered Waters of the U.S. only when they have a continuous surface connection to waterbodies that are Waters of the U.S.

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1 U.S. Environmental Protection Agency. June 22, 2023. Summary of the Clean Water Act. EPA Laws and Regulation. https://www.epa.gov/laws-regulations/summary-clean-water-act. Accessed December 2023.

2 U.S. Environmental Protection Agency. September 12, 2023. Public Webinar: Updates on the Definition of "Waters of the United States." https://www.epa.gov/system/files/documents/2023-09/FINAL%20WOTUS%20Public%20Webinar%20Slides_9-12-23.pdf. Accessed December 2023.

3 U.S. Environmental Protection Agency. September 8, 2023. Revising the Definition of "Waters of the United States." Waters of the United States. https://www.epa.gov/wotus/revising-definition-waters-united-states. Accessed December 2023.

4 *Federal Register*. September 8, 2023. Revised Definition of "Waters of the United States"; Conforming. https://www.federalregister.gov/documents/2023/09/08/2023-18929/revised-definition-of-waters-of-the-united-states-conforming. Accessed December 2023.

5 40 CFR Part 120: Definition of Waters of the United States. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-120. Accessed December 2023.

6 33 CFR Part 328.3: Definitions. https://www.ecfr.gov/current/title-33/chapter-II/part-328/section-328.3. Accessed December 2023.

TABLE 3.9-2. **Clean Water Act Sections**

CATEGORY	DESCRIPTION
Sections 303 and 304 –Water Quality Standards and Classification[1,2]	• States are required to issue water quality standards, criteria, and guidelines under Sections 303 and 304 of the Clean Water Act (CWA). State compliance with Sections 303 and 304 are found in Hawaii Administrative Rules (HAR) Chapter 11-54 and 11-55. These chapters include requirements regarding water pollution control and water quality standards. Requirements include a general policy of water quality antidegradation; classification of state waters and their uses, which must be maintained; water quality standards, which must be met during construction and operation; and permitting requirements. • Standards set forth the maximum allowable levels of pollutants, which are used as the regulatory targets for permitting, compliance enforcement, and assessing the quality of the state's waters. These standards can be either narrative (for example, "absolute minimum of pollution…") or numeric (for example, "0.001 µg/L") and are found in HAR Chapter 11-54, Appendix E.
Sections 303(d) and 305(b) - Impaired Waters and Integrated Report[3,4]	• Section 303(d) requires states to identify waterbodies that are determined to be impaired. "Impaired" means the waterbodies exceed State water quality standards. These waterbodies are listed on the CWA 303(d) "impaired waters" list and are submitted to the U.S. Environmental Protection Agency (USEPA) every two years. States must develop total maximum daily loads (TMDLs) plans for waterbodies on the Section 303(d) list to reduce pollutant loads entering impaired waterbodies. A TMDL calculates the maximum amount of a single pollutant that a waterbody can receive and still meet water quality standards. • Additionally, Section 305(b) requires the State to produce a report on the water quality of all navigable waters in the state, the extent to which they support aquatic life, sources and causes of impairments, and actions needed to restore and maintain water quality standards. The 305(b) report is submitted to the USEPA every two years. • The 303(d) list and 305(b) report are combined into the State of Hawaii Water Quality Monitoring and Assessment Report, also known as the Integrated Report. This report provides a comprehensive picture of the status and trends of water quality in the state. In Hawaii, the Integrated Report is developed by the State of Hawai‘i, Department of Health (HDOH), Clean Water Branch.
Section 401- Water Quality Certification of Compliance[5]	Under Section 401, any applicant for a federal permit or license for an activity that may result in a discharge to navigable waters must provide to the federal agency issuing a permit a certificate (either from the state where the discharge would occur or from an interstate water pollution control agency) that the discharge would comply with CWA, Sections 301, 302, 303, 306, and 307. The HDOH Clean Water Branch issues this certificate and is most frequently required in tandem with a Section 404 permit request. To address permanent and temporary discharges associated with individual projects, the HDOH Clean Water Branch may issue a set of requirements that outline water quality protection measures that must be taken.
Section 402 – National Pollutant Discharge Elimination System (NPDES)[6,7]	• Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of pollutants into Waters of the U.S. NPDES permits are issued by the HDOH Clean Water Branch and include conditions to ensure compliance with water quality standards and other requirements of the CWA. As part of NPDES permit compliance, Storm Water Pollution Prevention Plans are often required and implemented by general contractors to mitigate the potential for sedimentation impacts downstream and to near-shore waters and marine ecosystems. • Additionally, NPDES permits are required for stormwater discharges associated with various activities, including construction and municipal separate stormwater systems. Stormwater runoff can carry pollutants such as sediment, nutrients, metals, bacteria, and chemicals into waterways, affecting water quality. To address these threats, the NPDES permits must include best management practices and other measures to reduce or prevent stormwater pollution.

CATEGORY	DESCRIPTION
Section 404 – Discharge of Dredged or Fill Material	• Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into Waters of the U.S., including wetlands. Under Section 404 of the CWA, dredged and fill material may not be discharged into jurisdictional waters (including wetlands) without a permit. U.S. Army Corps of Engineers issues Section 404 permits with oversight by the USEPA. • U.S. Army Corps of Engineers decision-making under Section 404 of the CWA would also have to comply with the USEPA 404(b)(1) Guidelines to determine whether a proposed project (preferred alternative) represents the Least Environmentally Damaging Practicable Alternative.

1 State of Hawaii, Department of Health. (2023). HAR 11-54. DOH Clean Water Branch. https://health.hawaii.gov/cwb/hawaii-administrative-rules-har/har-11-54/. Accessed December 2023.

2 State of Hawaii, Department of Health. (2023). HAR 11-55. DOH Clean Water Branch. https://health.hawaii.gov/cwb/hawaii-administrative-rules-har/har-11-55/. Accessed December 2023.

3 State of Hawaii, Department of Health. (2023). Integrated Report and Total Maximum Daily Loads. HDOH Clean Water Branch. https://health.hawaii.gov/cwb/clean-water-branch-home-page/integrated-report-and-total-maximum-daily-loads/. Accessed December 2023.

4 USEPA. (2000). National Water Quality Inventory Report. Office of Water. https://archive.epa.gov/water/archive/web/pdf/2003_02_28_305b_2000report_toc.pdf. Accessed December 2023.

5 USEPA. (Dec. 27, 2022). CWA Section 401: State Certification of Water Quality. CWA Section 401 Certification. https://www.epa.gov/cwa-401/clean-water-act-section-401-state-certification-water-quality. Accessed November 2023.

6 USEPA. (Nov. 1, 2023). CWA, Section 402: National Pollution Discharge Elimination System. Section 404 of the CWA. https://www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system#top. Accessed December 2023.

7 USEPA. (August 14, 2008). Clean Water Act Overview: Spotlight on Stormwater (CWA Section 402) https://archive.epa.gov/region9/water/archive/web/pdf/cwaoverview.pdf. Accessed December 2023.

Rivers and Harbors Act of 1899

The Rivers and Harbors Act of 1899[7] protects navigation and navigable channels and regulates any structures—such as pilings, piers, or bridge abutments up to the mean high-water line—placed in, under, or over navigable waters. Within the project area, no streams are considered navigable waters by the U.S. Coast Guard or the USACE consistent with Sections 9 and 10 of the Rivers and Harbors Act of 1899.

Federal Executive Orders

TABLE 3.9-3 describes the federal Executive Orders (EOs) with relevant authority over water resources.

TABLE 3.9-3. **Federal Executive Orders on Water Resources**

CATEGORY	DESCRIPTION
Federal Executive Order 11988, Floodplain Management[1]	This Executive Order (EO) requires federal agencies to avoid, to the greatest extent possible, the long- and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. U.S. Department of Transportation (USDOT) Order 5650.2, Floodplain Management and Protection, contains policies and procedures for implementing EO 11988. For actions with a significant encroachment in the floodplain, USDOT Order 5650.2 requires the Federal Highway Administration (FHWA) to find that a proposed action is the only practicable alternative and that an evaluation was conducted to identify whether other alternatives are available to avoid or reduce adverse impacts on the floodplain. Chapter 23, Code of Federal Regulations (CFR) Section 650, Subpart A Location and Hydraulic Design of Encroachments in Flood Plains, describes policies and procedures for the location and hydraulic design of highway encroachments on floodplains.
Federal Executive Order 11990, Protection of Wetlands[2]	In accordance with EO 11990, Protection of Wetlands, and USDOT Order 5660.1a[3], Preservation of the Nation's Wetlands, federal agencies must avoid undertaking or assisting new construction in jurisdictional wetlands unless there is no practical alternative to such construction and the proposed action includes all practicable measures to minimize harm to the wetland. For this action, the FHWA issues a "Finding" regarding the compliance of the action with EO 11990. Also, the FHWA regulations at 23 CFR 777 require federal-aid projects to mitigate wetland impacts (goal of net gain on a program-wide basis) (23 CFR 777.11(g)).

1 USEPA. (Feb. 17, 2023). Floodplain Management (EO 11988). https://www.epa.gov/cwa-404/floodplain-management-executive-order-11988. Accessed July 2023.

2 USEPA. (Feb. 17, 2023). Protection of Wetlands (EO 11990). https://www.epa.gov/cwa-404/protection-wetlands-executive-order-11990. Accessed July 2023.

3 USDOT Order 5660.1a is applicable only to federal-aid transportation projects.

3.9.1.2 Hawaii State Regulations

Hawaii State water regulations are governed by various statutes and rules and overseen by several agencies. The Hawai'i Revised Statutes (HRS) and the Hawai'i Administrative Rules contain State statutes and rules concerning water quality. The public agencies involved are the State of Hawai'i, Department of Health (HDOH), the State Department of Land and Natural Resources, the Hawaii Department of Agriculture, and the four Hawaiian counties. TABLE 3.9-4 describes the main statutes,

7 Rivers and Harbors Appropriation Act of 1899, 33 U.S.C. § 403 (1899). https://www.govinfo.gov/content/pkg/COMPS-5399/pdf/COMPS-5399.pdf. Accessed July 2023.

rules, plans, and programs related to water resources in Hawai'i. TABLE 3.9-5 summarizes the State agencies involved in water quality requirements.

TABLE 3.9-4. **Hawai'i State Water Resources Regulations**

STATUTES AND RULES	PLANS AND PROGRAMS	DESCRIPTION
Hawai'i Revised Statutes (HRS) Chapter 174C	Hawai'i State Water Code - Hawai'i Water Plan	• The Hawai'i State Water Code, codified in HRS Chapter 174C, establishes the Hawai'i Water Plan. • The Hawai'i Water Plan is an integrated program for protecting, conserving, and managing the waters of Hawai'i. It serves as a long-range guide for water resource management and establishes provisions for each county in Hawai'i.[1] It consists of plans prepared and implemented by the State of Hawai'i, Department of Health (HDOH), Department of Land and Natural Resources, and Hawaii Department of Agriculture and the four counties of Hawai'i.[2]
Hawai'i Administrative Rules (HAR) Chapter 11-54	Water Quality Standards Clean Water Act Sections 305(b) and 303(d)	• HAR Chapter 11-54 establishes State water quality standards and pollutant limits, classifies State waterbodies, and outlines prohibition of unauthorized discharge to all waters regardless of source.[3] • The chapter, administered by the HDOH Clean Water Branch, includes water quality monitoring and assessment, engineering and permitting, water quality violation enforcement, and polluted runoff control management.
HAR Chapter 11-55	Water Pollution Control Clean Water Act Sections 305(b) and 303(d)	• HAR Chapter 11-55 establishes State policy and implementation of Hawai'i's water pollution control through National Pollutant Discharge Elimination System (NPDES) permitting.[4] • This chapter, administered by the HDOH Clean Water Branch, includes policy to prevent, abate, and control water pollution from point and nonpoint sources. It includes permitting and permit compliance, identification of impaired waters, and development of total maximum daily loads.
HRS Chapter 342D and HRS Chapter 342E	Water pollution Nonpoint Source Pollution Management and Control	HRS Chapters 342D and 342E address point and nonpoint source pollution in Hawai'i. Under these chapters, pollutant discharges or allowance of pollutants to State waters are strictly prohibited unless compliant with chapter rules or the HDOH Clean Water Branch issues a NPDES permit.

1 https://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/. Accessed July 2023.

2 Hawaii State Water Code, Haw. Rev. Stat. § 174C (1987). https://files.hawaii.gov/dlnr/cwrm/regulations/Code174C.pdf. Accessed July 2023.

3 USEPA. (Oct. 25, 2023). Water Quality Standards Regulations: Hawaii. https://www.epa.gov/wqs-tech/water-quality-standards-regulations-hawaii. Accessed December 2023.

4 USEPA. (Oct. 25, 2023). Water Quality Standards Regulations: Hawaii. https://www.epa.gov/wqs-tech/water-quality-standards-regulations-hawaii. Accessed December 2023.

TABLE 3.9-5. **Hawaiʻi State Water Agency and County Involvement – Water Quality**

AGENCY	AUTHORITY/INVOLVEMENT[1,2]	PLANS & PROGRAMS
State of Hawaiʻi, Department of Health	State of Hawaiʻi, Department of Health is the lead agency responsible for protecting the State's surface and groundwater quality. It establishes the State's water quality standards and administers the State's water quality assessment, management, permitting, and enforcement programs through the Environmental Management Division, which consists of the Clean Water Branch, the Safe Drinking Water Branch, and the Wastewater Branch.	• Water Quality Plan • 401 Certification • 402 Permitting • 303(d) List • 305(b) Report
State of Hawaiʻi Department of Land and Natural Resources	The State Department of Land and Natural Resources is the agency responsible for the development, conservation, and use of water resources in the State. It provides the overall legal and policy framework that guides the water resource planning and management through the Water Resource Protection Plan and the State Water Projects Plan.	• Water Resource Protection Plan • State Water Projects Plan
State of Hawaiʻi Department of Agriculture	The State Department of Agriculture is the agency responsible for the agricultural water needs and development in the State. It provides guidance for agricultural water use and development through the Agricultural Water Use and Development Plan.	Agricultural Water Use and Development Plan
Four Hawaiʻi Counties	Each county is responsible for the broad allocation of water use within its borders. They integrate the information from the State plans into the County Water Use and Development Plans.	County Water Use and Development Plans

1 State of Hawaiʻi, Department of Health. (2023). Water Quality Standards. https://health.hawaii.gov/cwb/clean-water-branch-home-page/water-quality-standards/. Accessed December 2023.

2 State of Hawaiʻi, Department of Health. (March 29, 2019). Water Quality. https://health.hawaii.gov/water/. Accessed December 2023.

Hawaiʻi Water Plan

Established by Hawaiʻi Revised Statutes 174(C), the Hawaiʻi Water Plan[8] is a comprehensive program that addresses the problems of water supply and conservation in Hawaiʻi. The plan consists of five constituent parts:

- Water Resource Protection Plan prepared by the Commission on Water Resource Management
- Water Quality Plan prepared by the DOH
- State Water Projects Plan prepared by the Commission
- Agricultural Water Use and Development Plan prepared by the Hawaii Department of Agriculture
- Water Use and Development Plans prepared separately by each county

The Water Resource Protection Plan and the Water Quality Plan provide the overall legal and policy framework that guide the development, conservation, and use of water resources. The State Water Projects Plan and Agricultural Water Use and Development Plan provide information on State and agricultural water needs and development plans. All this information is then integrated into the County

8 Department of Land and Natural Resources, Commission on Water Resource Management. (2023). Hawaii Water Plan. https://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/. Accessed December 2023.

Water Use and Development Plans, which set forth the broad allocation of land to water use within each county.

Memorandum of Understanding NEPA and CWA Section 404

In 1994, a Memorandum of Understanding (MOU) was drafted to improve interagency coordination and integrate the NEPA and CWA Section 404 procedures in the State of Hawai'i. This MOU, the *NEPA and CWA Section 404 Integration Process for Surface Transportation Projects in the State of Hawai'i*, is intended to coordinate the NEPA process with the permit process for individual permits issued under Section 404 of the CWA. The MOU states that the Hawai'i Department of Transportation (HDOT) will invite those agencies involved in a Section 404 individual permit to actively participate in the project development process prior to permitting. Section 404 agencies include the USACE, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the USEPA.

The required Section 404 permitting type for the Project is still in coordination with the USACE. NEPA-404 partner agencies have continued to be informed and invited to provide comment at critical steps and decisions throughout project development to remain in adherence to the MOU, should an individual Section 404 permit be necessary.

The Project is and will continue to comply with several other components of the MOU through the publication of the Final EIS/Record of Decision and into permitting and construction, such as the USACE verification of jurisdictional determination, preparation of a biological assessment for identified threatened and endangered species, development of Section 404 resource/endangered species mitigation options, and initiation of consultation with the HDOH on Section 401 certification prior to Final EIS/ROD publication.

3.9.1.3 Maui County Regulations

Maui County adopted Ordinance 5421 effective October 4, 2022, to conserve and protect sensitive ecosystems and the natural environment, to mitigate climate change, and to work toward building environmental resilience by establishing a policy for wetlands restoration and protection in Titles 2, 18, and 19 of the Maui County Code.[9] Compliance with Ordinance 5421 may affect the approval of other Maui County permits, such as Special Management Area permits and property subdivision permits. As of the writing of this document, the Maui County Planning Department has not yet determined compliance measures.

Maui County also issues flood development permits, which regulate construction in areas subject to flood hazards. Through these permits, Maui County qualifies for participation in the National Flood Insurance Program.[10]

[9] https://www.mauicounty.gov/DocumentCenter/View/137562/Ord-5421. Accessed July 2023.

[10] Maui County (n.d.). ZAED Flood Development Application. https://mapps.mauicounty.gov/251/ZAED-Flood-Development-Application#:~:text=How%20to%20Apply,the%20State%20of%20Hawai'i. Accessed December 2023.

3.9.2 Methodology

The methods used to assess potential effects of the Project on water resources, described here and in Appendix 3.9, follow established guidance to support USACE determinations under the current regulatory regime. Coordination with the USACE has suggested the potential jurisdictional status of water resources in the project area; however, the Draft EIS assessment of potential effects will consider all water resources and aquatic features delineated as part of the Project regardless of jurisdictional status. Any reference to the jurisdictional status of specific features (including acreages) in both this Draft EIS and Appendix 3.9, should be considered preliminary.

Wetlands and other waters were delineated, which involved surveying 902 acres, including a 300-foot swath centered around each of the four Build Alternatives and an additional 37 acres outside of these alternatives between January and September 2023. The technical determination was performed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). In addition, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Region (Version 2.0)* (Regional Supplement) was followed to document site conditions relative to hydrophytic vegetation, hydric soils, and wetland hydrology (USACE 2012).[11] Wetlands and other waters depicted in this Draft EIS are the extent of delineations performed for the Project. Wetlands and other waters beyond the boundaries of these delineations may exist. Boundaries of select features may be adjusted as a part of ongoing delineation review in Ukumehame.

Water resource and aquatic feature investigations were performed per *Regulatory Guidance Letter No. 05-05* (USACE 2005) guidance and the *National Ordinary High-Water Mark (OHWM) Field Delineation Manual for Rivers and Streams: Interim Version* (David et al. 2022) to delineate Waters of the U.S.

Under the CWA, aquatic resources are described as wetlands or other waters. Wetlands are defined in 40 CFR 120 and 33 CFR 328.3 and generally include swamps, marshes, bogs, and similar areas. "Other waters" are identified by the (seasonal or perennial)[12] presence of standing or running water and generally lack hydrophytic vegetation. They include lakes, streams, slough channels, seasonal ponds, tributary water, non-wetland linear drainages, and salt ponds.

On May 2, 2024, in response to an inquiry from the USACE, members of the project team visited the project site to investigate potential surface connection of the initially proposed jurisdictional and the potentially non-jurisdictional wetlands to the ocean. This field visit revealed that many of the delineated aquatic features in Ukumehame had no functional continuous surface connection to the Pacific Ocean due to blocked and buried culverts. However, subsequent guidance from the USACE has suggested that the physical presence of a connecting feature is enough to constitute a continuous surface connection regardless of functionality, under the conforming rule. Therefore, all wetlands and other waters (including ditches and gulches) in Ukumehame are assumed to be preliminary jurisdictional features. Appendix 3.9 includes the findings of this field investigation, and Sections 3.9.3

11 https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/. Accessed July 2023.

12 "Seasonal" and "Perennial" are categories of relatively permanent waters per regulatory definition of Waters of the U.S.

and 3.9.5 include discussions of the preliminary jurisdictional status of wetlands and other waters within the project area.

3.9.3 Affected Environment

The project area crosses the Launiupoko, Ukumehame, and Olowalu watersheds. None have received grant funds from USEPA Section 319, a federal grant program that provides money to states for developing and implementing nonpoint source pollution management programs.[13] Appendix 3.9 identifies the extent of all aquatic resources within the project limits regardless of jurisdictional status. There are 11 wetlands and 21 other waters delineated in the project area, all of which are assumed to be jurisdictional features except for two ditches in Olowalu. The 21 other waters include 12 ditches, two gulches, and seven streams.

3.9.3.1 Wetlands

In addition to the parameters for wetlands to be considered Waters of the U.S. in 40 CFR 120 and 33 CFR 328.3, the term "wetland" means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."[14] This definition outlines the three-part test to identify wetlands: presence of hydrophytic (water-loving) vegetation, hydrology (presence of water), and hydric soils (soils formed during saturation/inundation).

Wetlands are vital as habitats, ecosystems, and areas to settle and retain land-based sediments and remove pollutants, nitrates, and bacteria. In Hawai'i, human activities have led to the loss of large portions of wetlands, with areas being filled and drained for agriculture, residential developments, hotels, and golf courses. The wetlands that remain are often degraded due to changes in water flow, invasive species, human encroachment, and pollutants.[15] Wetlands at Pāpalaua and Ukumehame provide both floodwater and sediment retention and have historically been a part of the Ukumehame watershed hydrologic system.

All wetlands are situated in a floodplain that undergoes seasonal flooding during the winter/rainy season. Delineations identified 11 wetlands, all found in the Ukumehame area around the Ukumehame Firing Range (FIGURE 3.9-1 W1 to W11) and totaling approximately 21.27 acres. Wetlands W1-W6 and W11 form a complex with likely connections to each other and the interconnected ditch system associated with the Hana'ula Gulch via surface hydrology. Wetlands W7-W10 form another distinct complex of likely interconnected wetlands separate from the other complex via a built up firebreak road running diagonally across the landscape.

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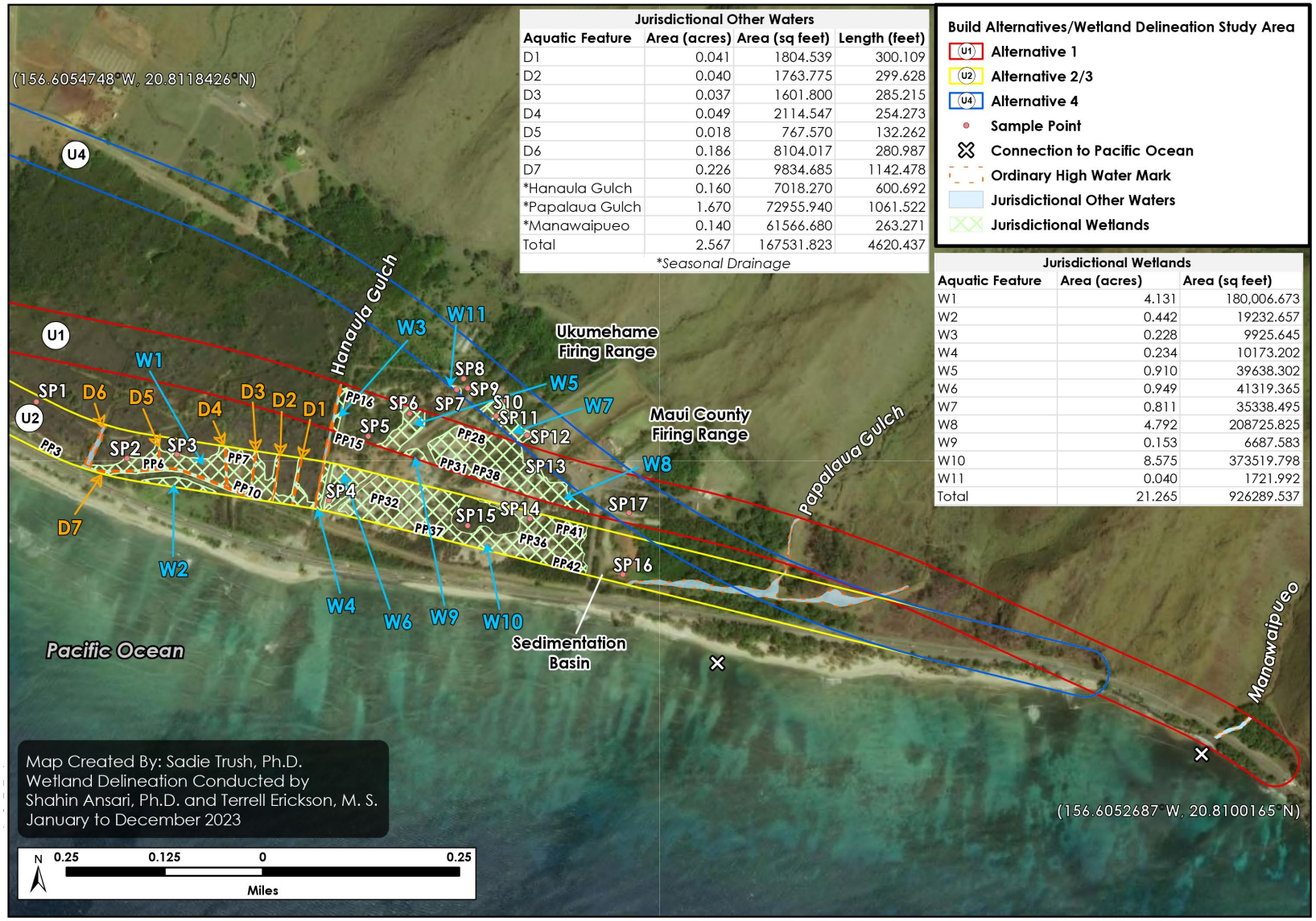
13 University of Hawaii at Manoa. (n.d.). Maui Watersheds. Hawaii Water Quality Extension Program. https://www.ctahr.hawaii.edu/wq/nps319/maui/mauiwatersheds.htm. Accessed December 2023.

14 33 CFR Part 328.3: Definitions. https://www.ecfr.gov/current/title-33/chapter-II/part-328/section-328.3. Accessed December 2023.

15 USFWS. 2011. Recovery Plan for Hawaiian Waterbirds. Second revision. USFWS, Portland, Oregon. Accessed November 2023.

FIGURE 3.9-1. **Preliminary Waters of the U.S. Delineation – Ukumehame Area[1]**



Jurisdictional Other Waters

Aquatic Feature	Area (acres)	Area (sq feet)	Length (feet)
D1	0.041	1804.539	300.109
D2	0.040	1763.775	299.628
D3	0.037	1601.800	285.215
D4	0.049	2114.547	254.273
D5	0.018	767.570	132.262
D6	0.186	8104.017	280.987
D7	0.226	9834.685	1142.478
*Hanaula Gulch	0.160	7018.270	600.692
*Papalaua Gulch	1.670	72955.940	1061.522
*Manawaipueo	0.140	61566.680	263.271
Total	2.567	167531.823	4620.437

*Seasonal Drainage

Build Alternatives/Wetland Delineation Study Area

- Alternative 1
- Alternative 2/3
- Alternative 4
- Sample Point
- Connection to Pacific Ocean
- Ordinary High Water Mark
- Jurisdictional Other Waters
- Jurisdictional Wetlands

Jurisdictional Wetlands

Aquatic Feature	Area (acres)	Area (sq feet)
W1	4.131	180,006.673
W2	0.442	19232.657
W3	0.228	9925.645
W4	0.234	10173.202
W5	0.910	39638.302
W6	0.949	41319.365
W7	0.811	35338.495
W8	4.792	208725.825
W9	0.153	6687.583
W10	8.575	373519.798
W11	0.040	1721.992
Total	21.265	926289.537

[1]Jurisdictional status of features shown is assumed preliminary. Boundaries of Pāpalaua Gulch may be adjusted as part of ongoing delineation review.

3.9.3.2 Surface Waters

Surface waters are generally defined as "other waters" of the U.S. in 40 CFR 120 and 33 CFR 328.3. Within the project area, nine named surface waters and 12 unnamed ditches were identified (FIGURE 3.9-2 and FIGURE 3.9-3). Of the named surface waters, the Olowalu Stream and Ukumehame Stream are the only perennial streams, meaning that water flows continuously throughout the year except during droughts (TABLE 3.9-6).[16]

The Olowalu Stream is the main drainage of the western portion of the project area, channeling water from the mauka regions of the West Maui watershed through the Olowalu Valley to the Pacific Ocean.[17]

The Ukumehame Stream is the main drainage of the eastern portion of the project area, channeling water from the Ukumehame watershed through the Ukumehame Gulch to the Pacific Ocean.[18]

The Hana'ula Gulch supports the hydrology of the ditch system (D1-D7) and the associated wetland complex described above in Section 3.9.3.1. Delineations identified 21 other waters, totaling approximately 4.96 acres, the majority of which is found in the Ukumehame area.

TABLE 3.9-6. **Named Surface Waters in Project Area**

NAME	PROJECT SECTION	TYPE
Hana'ula Gulch	Ukumehame	Seasonal Drainage
Pāpalaua Gulch	Ukumehame	Seasonal Drainage
Manawaipueo Stream	Ukumehame	Seasonal Drainage
Ukumehame Stream	Ukumehame	Perennial
Kapū'ali Stream	Olowalu	Seasonal Drainage
Awalua Stream	Olowalu	Seasonal Drainage
Līhau Stream	Olowalu	Seasonal Drainage
Olowalu Stream	Olowalu	Perennial
Mōpua Stream	Olowalu	Seasonal Drainage

Water Quality

All State waters are required to meet Hawai'i Administrative Rules 11-54 Water Quality Standards. The 2022 Integrated Report identifies only the Ukumehame Stream as impaired. The Ukumehame Stream

16 USEPA. (Feb. 17, 2023). Streams under CWA Section 404. https://www.epa.gov/cwa-404/streams-under-cwa-section-404. Accessed December 2023.

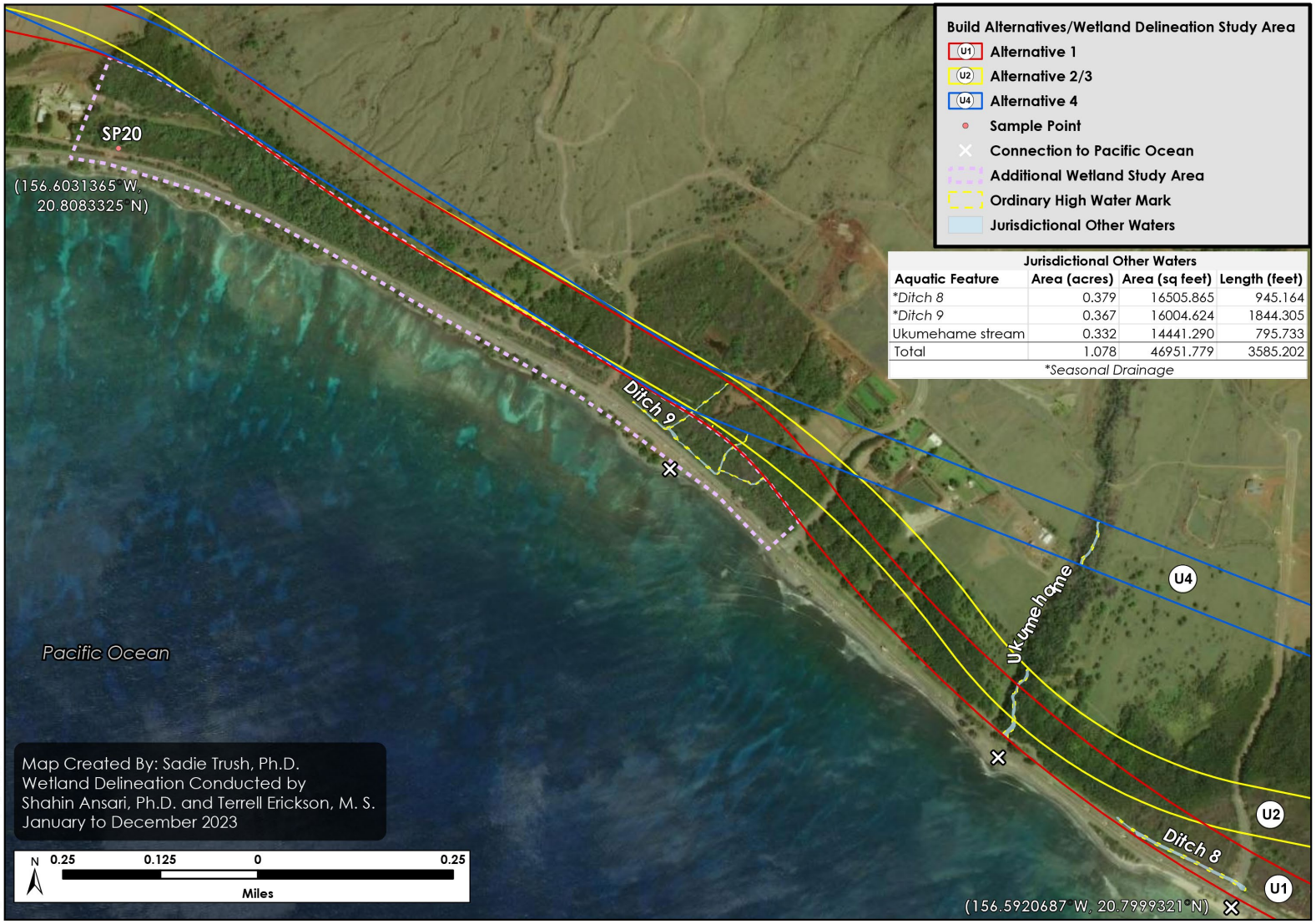
17 State of Hawai'i, Department of Land and Natural Resources, Commission on Water Resource Management (March 2018). Instream Flow Standard Assessment Report, Island of Maui, Hydrologic Unit 6005 Olowalu. https://files.hawaii.gov/dlnr/cwrm/ifsar/PR201802-6005-Olowalu.pdf. Accessed October 2024.

18 State of Hawai'i, Department of Land and Natural Resources, Commission on Water Resource Management (March 2018). Instream Flow Standard Assessment Report, Island of Maui, Hydrologic Unit 6004 Ukumehame. https://files.hawaii.gov/dlnr/cwrm/ifsar/PR201801-6004-Ukumehame.pdf. Accessed October 2024.

is impaired due to nitrates and nitrogen dioxide and is listed as low total maximum daily load priority.[19] Water quality monitoring would be performed in accordance with the 401 Water Quality Certification that would be sought from the HDOH Clean Water Branch.

[19] State of Hawai‘i, Department of Health, Clean Water Branch. (April 6, 2022). 2022 State of Hawaii Water Quality Monitoring and Assessment Report. https://attains.epa.gov/attains-public/api/documents/cycles/11424/206016. Accessed December 2023.

FIGURE 3.9-2. **Preliminary Other Waters of the U.S. Delineation – Common Alignment and Ukumehame Area**[1]



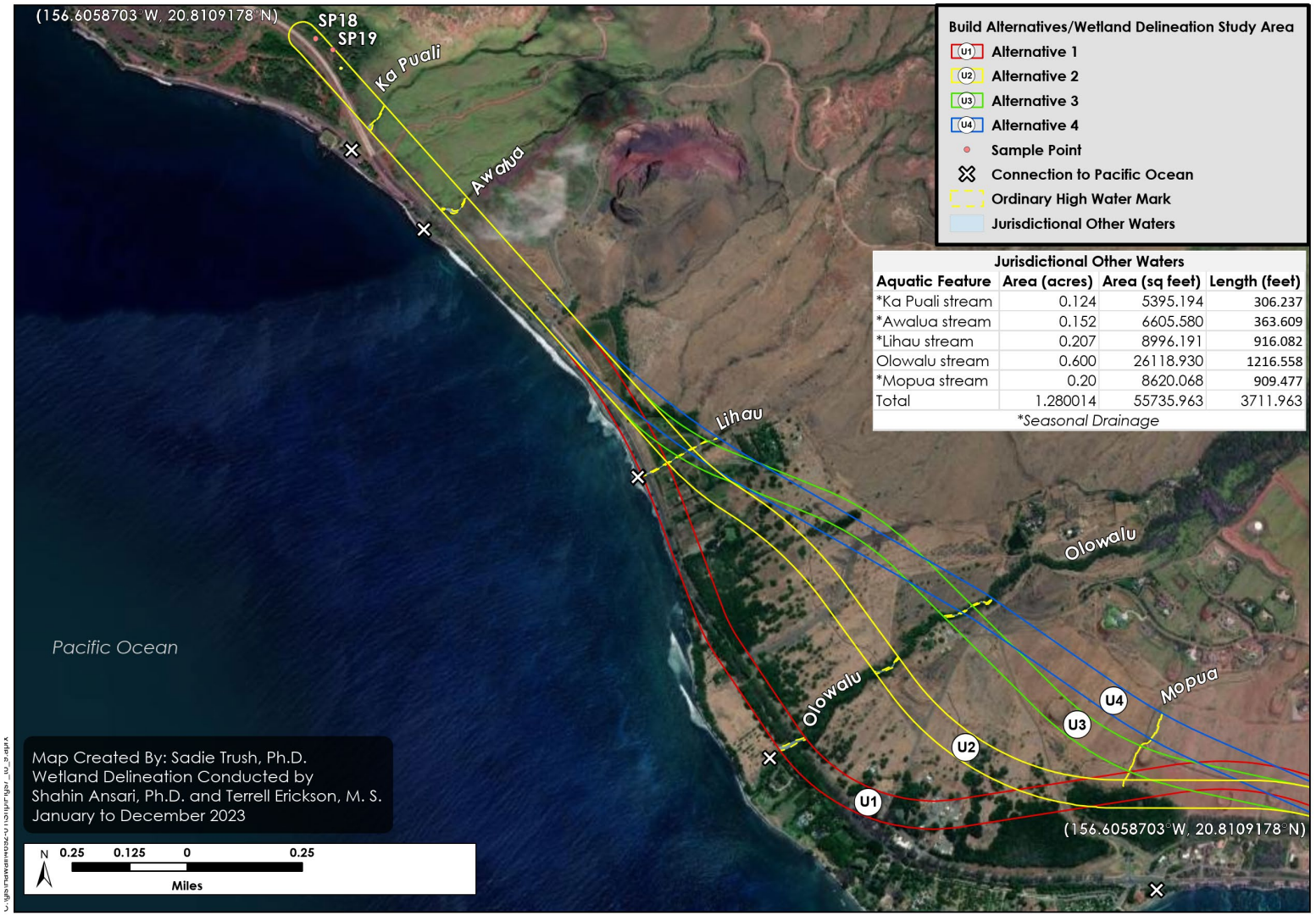
Jurisdictional Other Waters

Aquatic Feature	Area (acres)	Area (sq feet)	Length (feet)
Ditch 8	0.379	16505.865	945.164
Ditch 9	0.367	16004.624	1844.305
Ukumehame stream	0.332	14441.290	795.733
Total	1.078	46951.779	3585.202

*Seasonal Drainage

[1]Jurisdictional status of features shown is assumed preliminary.

FIGURE 3.9-3. **Preliminary Jurisdictional Other Waters of the U.S. Delineation – Olowalu[1]**



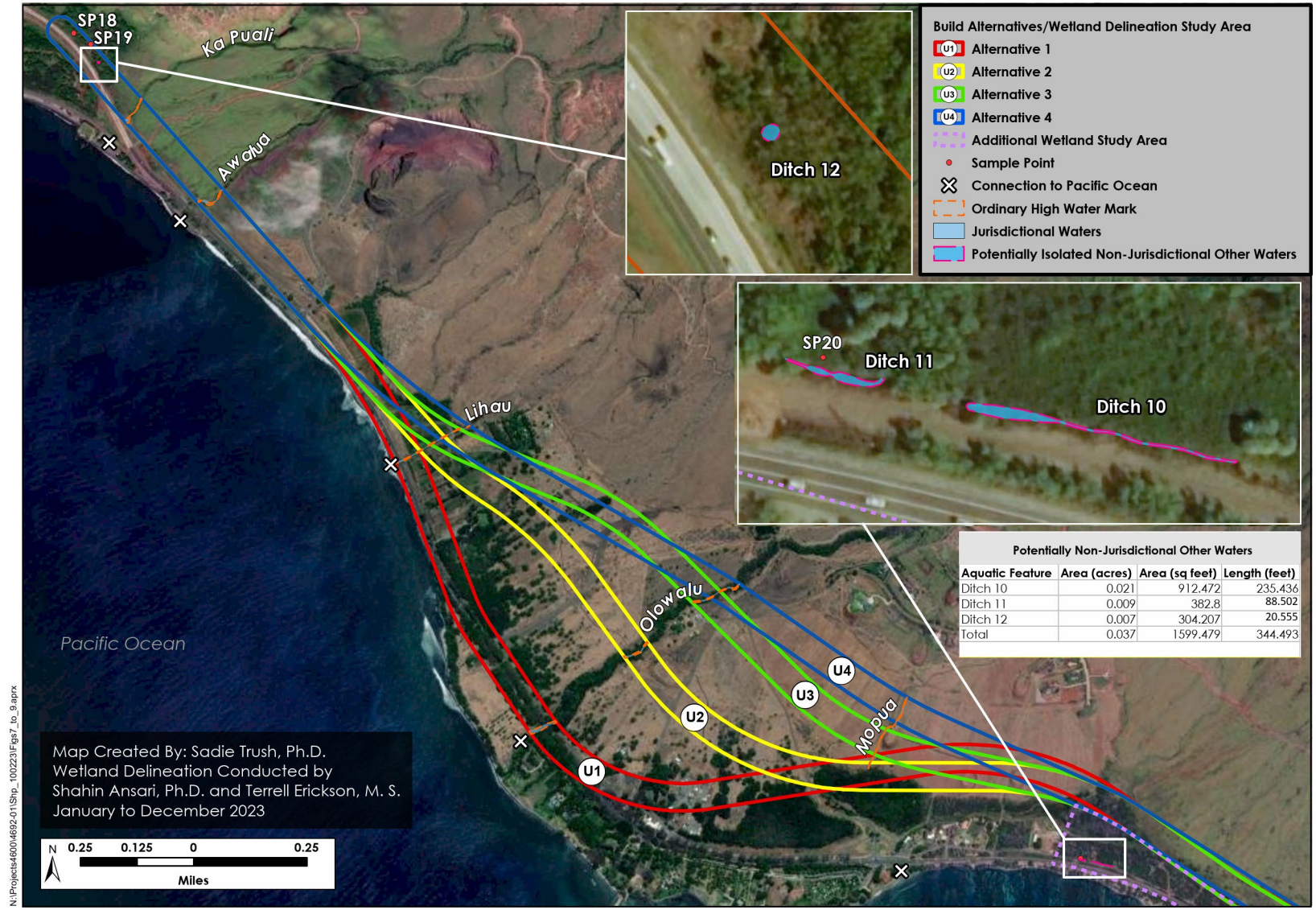
Jurisdictional Other Waters

Aquatic Feature	Area (acres)	Area (sq feet)	Length (feet)
*Ka Puali stream	0.124	5395.194	306.237
*Awalua stream	0.152	6605.580	363.609
*Lihau stream	0.207	8996.191	916.082
Olowalu stream	0.600	26118.930	1216.558
*Mopua stream	0.20	8620.068	909.477
Total	1.280014	55735.963	3711.963

*Seasonal Drainage

[1]Jurisdictional status of features shown is assumed preliminary.

FIGURE 3.9-4. **Preliminary Non-jurisdictional Other Waters of the U.S. Delineation – Olowalu[1]**



[1]Jurisdictional status of features shown is assumed preliminary.

In addition to the HDOH Clean Water Branch, Hui O Ka Wai Ola (Hui), a West Maui community-based water quality monitoring initiative, routinely samples waters and documents the results in a publicly available database. High turbidity, a measure of water quality and presence of sediment, and elevated nutrients—in particular, nitrates and nitrites—are the most problematic of the water quality parameters tested in West Maui. Data from Hui show that all the coastal areas in the Olowalu-Ukumehame region are impaired and have turbidity levels above the State coastal turbidity standard. The two main sources are stormwater runoff and coastal erosion.[20] Section 3.9.8 and Section 3.13, Climate Change and Sea Level Rise, include measures to avoid, minimize, and otherwise mitigate effects from erosion. Section 3.9.8 also discusses stormwater runoff.

HDOT constructed the Pāpalaua sedimentation basin in 1971. The basin manages water volume and captures sediment heavy flows moving to the ocean from inland sources. It was constructed on the northern side of and parallel to the existing Honoapi‘ilani Highway, next to the Ukumehame Firing Range. The boundary of the sedimentation basin will be finalized as part of ongoing delineation review with USACE.

In addition, HDOT has been coordinating and providing funding for work by The Nature Conservancy in the project area. The Nature Conservancy is currently working in the Ukumehame and Olowalu areas on three projects:

- Reducing sedimentation to the 939-acre coral reef
- Conducting reef and sediment studies
- Planning with HDOT, other partners, and the community to implement nature-based solutions for preservation and restoration of the coral reef, shorelines, wetlands, recreational spaces, and infrastructure for people and nature

Comments have been provided by The Nature Conservancy, in coordination with HDOT, and have been incorporated as best as practicable into the Project. These comments call for ensuring shoreline and wetland restoration to reduce sedimentation and pollutants while creating recreational spaces and native habitat, and prioritizing green infrastructure for stormwater management, including ecologically sensitive stream crossings at the Ukumehame and Olowalu streams.

3.9.3.3 Groundwater

Groundwater in the project area is in the Lāhainā Aquifer, a freshwater aquifer that provides water for West Maui from Ukumehame to Honokōhau.[21] Rain and fog account for the majority of groundwater

[20] USACE. (May 2023). West Maui Watershed Study. Final Watershed Management Plan. https://www.poh.usace.army.mil/Portals/10/docs/Civil%20Works/West%20Maui%20Watershed%202021/2023%20West%20Maui%20WMP-Final%20Report.pdf?ver=LpXdfFUZIvArD2tJWw9tyQ%3d%3d. Accessed December 2023.

[21] State Department of Land and Natural Resources. (June 15, 2022). Entire Lahaina Aquifer Sector Area Designated as Surface & Ground Water Management Area. https://dlnr.hawaii.gov/blog/2022/06/15/nr22-085/. Accessed December 2023.

recharge. Rainwater seeps through the highly permeable basalt of the volcanic West Maui mountains and is stored in aquifers floating on the underlying saltwater.[22]

The Lahaina Aquifer consists of two subunits: the Olowalu and Ukumehame Aquifers, located beneath the project area. As of December 2021, each aquifer has a sustainable yield of about 2 million gallons per day. Current withdrawals are below this limit, with Olowalu wells pumping about 8% of their sustainable yield daily, while Ukumehame wells are pumping approximately 57% of their sustainable yield daily.[23]

In June 2022, the Commission on Water Resource Management designated the Lāhainā Aquifer Sector Area as both a Surface and Ground Water Management Area. This designation requires users of surface and ground water sources to obtain permits to withdraw and use the water.[24] It is not anticipated that the Project would use these resources, nor require a permit.

This Project includes geotechnical investigation to support conceptual designs that includes 12 boring locations in the project area. Depth to groundwater will be recorded at each location if encountered.

3.9.3.4 Floodplains

Portions of the existing Honoapi'ilani Highway are in flood-prone areas, as defined by the Federal Emergency Management Agency (FEMA). FEMA defines a floodplain as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a 1% or greater chance of flooding in any given year."[25] These areas are shown as flood zones on FEMA Flood Insurance Rate Maps. TABLE 3.9-7 describes how FEMA defines the Flood Zone Designations within the project area.

TABLE 3.9-7. **Project Area Flood Zone Designations**

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Average flood depths derived from detailed analyses are shown within these zones.
VE	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves.

22 Maui County Planning Department. (n.d.). West Maui Region (Lahaina Aquifer Sector). https://waterresources.mauicounty.gov/DocumentCenter/View/250/West-Maui-Region-Description-PDF. Accessed December 2023.

23 State of Hawaii Commission on Water Resource Management. (June 8, 2022). Surface and Ground Water Management Area Designation Findings of Fact Report. https://files.hawaii.gov/dlnr/cwrm/gwma/lahaina/20220608_Lahaina_FinalFOF.pdf. Accessed October 2024.

24 Department of Land and Natural Resources, Commission on Water Resource Management. (2023). Water management Area Designation: Lahaina Aquifer Sector Area. https://dlnr.hawaii.gov/cwrm/groundwater/gwma/lahaina/. Accessed December 2023.

25 28 CFR Part 63 (2023). https://www.ecfr.gov/current/title-28/chapter-I/part-63. Accessed December 2023.

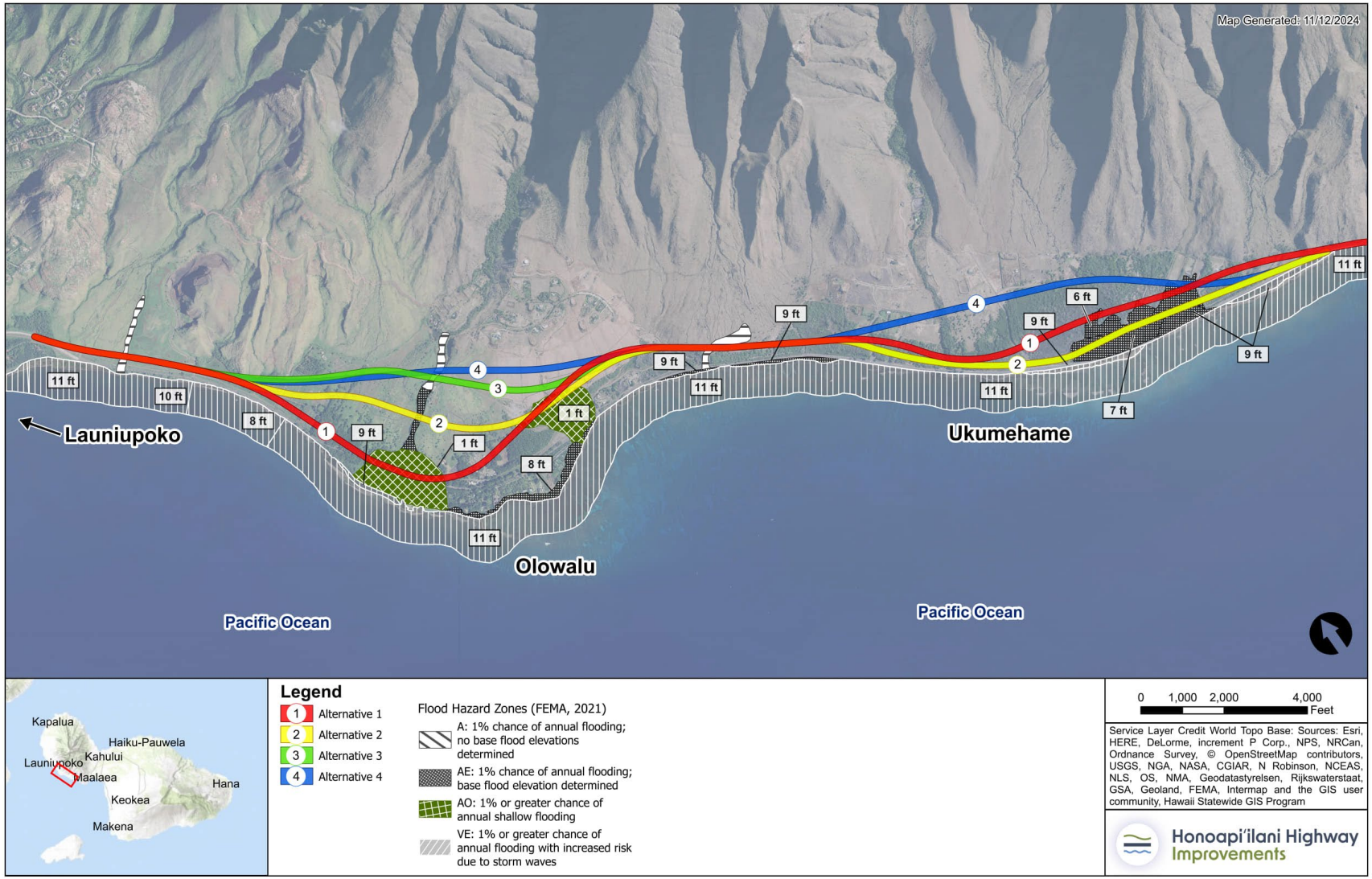
FIGURE 3.9-5 shows FEMA Flood Insurance Rate Map flood zones with base flood elevations (BFE), determined only for zones AE, AO, and VE. BFE is the height above sea level that floodwaters are expected to reach during a flood that has a 1% chance of occurring in a given year (100-year flood).[26] As sea level rises, these flooding areas are likely to be modified. Section 3.9.8 includes measures to avoid, minimize, and mitigate potential effects.

Floodplains and climate change are interconnected. Climate change influences the behavior and effect of flooding events on these low-lying areas, with far-reaching consequences. These include damage to infrastructure, loss of agricultural land, destruction of property, and increased risks to human lives. Additionally, the prolonged inundation of floodplains can lead to soil erosion and sediment deposition that alters the landscape and affects local biodiversity.

Furthermore, rising sea levels, which are a direct consequence of melting glaciers and ice caps, pose a serious threat to coastal floodplains. Higher sea levels increase the risk of tidal surges and saltwater intrusion, exacerbating flooding and affecting delicate ecosystems in these regions.

[26] FEMA. (March 5, 2020). Base Flood Elevation. https://www.fema.gov/node/404233. Accessed December 2023.

FIGURE 3.9-5. **FEMA Flood Insurance Rate Map Flood Zones with Base Flood Elevation**



3.9.4 Environmental Consequences

3.9.4.1 No Build Alternative

Sea level rise is expected to expand wetlands, create new areas of brackish wetlands, and raise the groundwater level. Salinity may increase in wells close to the shoreline. Flood zones would change and move farther inland.

3.9.4.2 Build Alternatives

Common to All Build Alternatives in Olowalu and Ukumehame

None of the Build Alternatives would cross over the VE Flood Hazard Zone (FIGURE 3.9-5). The Build Alternatives would have approximately the same number of stream crossings and would require six bridges and approximately seven or eight culverts. All the bridge structures would be built outside of the ordinary high-water mark, avoiding in-water work.

All Build Alternatives would increase the amount of impervious surface area, resulting in additional erosional forces and stormwater discharge reaching inland and near-shore waters and wetlands. Additional contaminants would further impair 303(d) list streams (Ukumehame) and Ukumehame-Olowalu coastal areas identified by Hui, though no total maximum daily loads have been established. Build Alternatives do, however, offer possibilities to act as firebreaks and utilize fire-resistant vegetation, limiting the amount of nutrients and sediment runoff to these waters (see Chapter 3.11, Geology, Soils, and Natural Hazards).

All Build Alternatives cross flood hazard zones and therefore have the potential to alter hydrology, potentially increasing flooding. There is potential risk of constructing the Build Alternatives in flood hazard zones with possibility of rise due to shallow flooding or wide AE floodplain. This will be further evaluated for the Preferred Alternative in the Final EIS. FEMA requires the design-build contractor to design for a no-rise scenario in the regulatory floodway or, if a no-rise is not attainable, the FEMA process to revise National Flood Insurance Program Maps and show changes to floodplains, regulatory floodways, or flood elevations would be followed (per Title 44, Parts 60, 65, and 72 of the CFR). While crossing streams can require channelization, alteration, and adverse effects to streambeds, no in-water work or stream channel alteration is anticipated. Should the final design of a bridge include effects to the stream channel, as defined by DLNR, a Stream Channel Alteration Permit may be required.

Common to All Build Alternatives in Olowalu

To some extent, all Build Alternatives would cross all other waters in Olowalu, except for Ditch 10 and Ditch 11: Ka Pūʻali Stream, Awalua Stream, Līhau Stream, Olowalu Stream, and Mōpua Stream (FIGURE 3.9-4). Additionally, all Build Alternatives would cross flood hazard zones on the Awalua Stream (Zone A) and the Olowalu Stream (multiple zones) and a third flood hazard zone on the Mōpua Stream at the southern end of Olowalu (Zone A) (FIGURE 3.9-5). There are no mapped wetlands in Olowalu.

Olowalu

Build Alternative 1

Build Alternative 1 crosses over the AO flood hazard zone at the mouth of the Olowalu Stream (1-foot BFE) and near the mouth of the Mōpua Stream (1-foot BFE). It crosses the most flood hazard areas of any Build Alternative in Olowalu. It is the closest to the Pacific Ocean connections of the Līhau and Olowalu Streams and is only slightly crossed by the Mōpua Stream. Build Alternative 1 crosses 0.72 acre of other waters.

Build Alternative 2

Build Alternative 2 crosses over the AE flood hazard zone along the Olowalu Stream and the AO flood hazard zone near the mouth of the Mōpua Stream (1-foot BFE). It crosses 0.53 acre of other waters and overlaps the least with the Mōpua Stream.

Build Alternative 3

Build Alternative 3 crosses over the A flood hazard zone along the Olowalu Stream and 0.54 acre of other waters.

Build Alternative 4

Build Alternative 4 crosses over the A flood hazard zone along the Olowalu Stream and 0.61 acre of other waters.

Common to All Build Alternatives in Ukumehame

To some extent, all Build Alternatives cross multiple wetlands and the following other waters in Ukumehame: Ditch 9, Ukumehame Stream, Pāpalaua Gulch, and Manawaipueo Stream (FIGURE 3.9-1). Additionally, all Build Alternatives cross over, to some extent, the AE Zone at the southeast end of the project area around Ukumehame Firing Range. This area has a BFE between 6 and 9 feet (FIGURE 3.9-5).

Ukumehame

Build Alternative 1

In Ukumehame, Build Alternative 1 crosses over the A flood hazard zone at the Pali connection, and the AE flood hazard zone just before the firing range area (6-foot BFE). The Hanaʻula Gulch crosses the alternative just before Ukumehame Firing Range. And four wetlands (W3, W5, W8, W9) are crossed, totaling 6.08 acres (FIGURE 3.9-1).

Build Alternative 2 and Build Alternative 3

In Ukumehame, Build Alternative 2 crosses over the A flood hazard zone at the Pali connection, and the AE flood hazard zone through the firing range area (6- to 9-foot BFE). These Build Alternatives cross the most flood hazard zone area in Ukumehame. Ditch 8, Hanaʻula Gulch and its seven associated ditches (D1-D7), cross these Build Alternatives prior to the Sedimentation Basin area, totaling 1.57 acres of other waters. Five wetlands (W1, W2, W4, W6, W10) are crossed, totaling 14.30 acres (FIGURE 3.9-1).

Build Alternative 4

In Ukumehame, Build Alternative 4 crosses over the A flood hazard zone at the Pali connection and a small portion of the AE flood hazard zone just north of the firing range. Two wetlands cross Build Alternative 4 in the firing range area (W11, W7), totaling 0.85 acre (FIGURE 3.9-1).

3.9.5 Agency Consultation

3.9.5.1 U.S. Army Corps of Engineers – Section 404

Upon review of the initial wetland delineation report, Appendix 3.9, the USACE requested further evidence clarifying surface connections of wetlands to the ocean under the CWA conforming rule of September 2023. The May 2, 2024, field visit was the result of this inquiry by the USACE and results are detailed in the Connectivity Memo (Appendix 3.9). Following review of the Connectivity Memo, the USACE has suggested that continuous surface connections to the ocean in Ukumehame still exist.

The Project is not anticipated to affect greater than 0.1 acre of Waters of the U.S. While acknowledging the potential footprint of all Build Alternatives in mapped wetlands and other waters, as noted above, all Build Alternatives cross over areas that were delineated as wetlands and other waters. Anticipated permanent effects would be permitted with a series of Nationwide Permits. Should permanent effects be determined to exceed 0.1 acre per USACE Honolulu District Regional Conditions to Nationwide Permits, an individual Section 404 permit would be required.[27] The final acreage of permanent effect would be determined by the designer of record during final design, after the EIS is complete.

The results of ongoing coordination with the USACE regarding the CWA permitting pathway and delineation review will be reported in the Final EIS. Appendix 3.9 includes correspondence.

3.9.6 Construction Effects

Roadway construction generates a series of potential effects on water resources (TABLE 3.9-8).

TABLE 3.9-8. **Potential Construction Effects on Water Resources**

ADVERSE EFFECT	EFFECTS ON WATER RESOURCES
Sediment/Turbidity	An abundance of sedimentation can harm underwater ecosystems. When sediment is suspended in water, it makes the water murkier and can hinder the growth of aquatic plants. Moreover, this suspended sediment can lead to a decrease in the levels of dissolved oxygen in the water, which can be lethal to aquatic life.
Nutrients	An overabundance of nutrients, especially nitrogen and phosphorous, can lead to rampant growth of algae, which can be harmful to some marine creatures. The proliferation and subsequent decay of algae can cause fluctuations in the levels of dissolved oxygen, which in some instances can result in the death of fish.

[27] USACE. Honolulu District. (Feb. 1, 2022). Honolulu District Regional Conditions to the 2021 Nationwide Permits. https://www.poh.usace.army.mil/Portals/10/40_1%20Final%202021%20PN%20NWP%20RC%20%20.pdf. Accessed October 2024.

ADVERSE EFFECT	EFFECTS ON WATER RESOURCES
General Construction	Machinery used in construction can strip away plant life and leave sediment on nearby roads. This can eventually lead to erosion and the transport of sediment into bodies of water. If not properly managed or routinely cleared, debris from the construction site can be carried off by wind or water runoff into waterways.
Stormwater	The removal of plant life and the expansion of nonabsorbent surfaces at construction sites can lead to a rise in the speed and quantity of stormwater runoff, which in turn can speed up erosion. The enlarged nonabsorbent area gathers more pollutants. The increased speed in canalized waterways intensifies erosion and sedimentation. The amalgamation of these elements can lead to the conveyance of more pollutants into bodies of water.
Metals	Metals that attach to particles suspended in water and decomposing organic material can remain in the environment for an extended duration. These metals have the potential to move from one aquatic organism to another, leading to the pollution of water resources.

3.9.7 Indirect Effects

The Project is not anticipated to induce growth or development that would have the potential to adversely affect water resources, wetlands, or floodplains; therefore, the Project is not anticipated to result in indirect effects on water resources, wetlands, and floodplains.

3.9.8 Mitigation

Adherence to the following BMPs, avoidance, and mitigation measures would ensure effects to water resources are minimized as best as practicable. Section 3.10, Flora and Fauna, Endangered Species, includes a series of BMPs and avoidance and minimization measures related to aquatic environments. To avoid redundancy, see Section 3.10.9, Mitigation, for a complete list.

According to U.S. Department of Transportation Order 5660.1A and Order 5650.2, 23 CFR 650, Subpart A, 23 CFR 777, EO 11990, and EO 11988, new construction in wetlands and floodplains is to be avoided unless there is no practicable alternative to the construction and the proposed action includes all practicable measures to mitigate and minimize harm. Because of the design requirements of a highway and the terrain within the project area, totally avoiding wetlands and floodplains may not be possible.

The Project would require and adhere to a Section 401 Water Quality Certification, Section 402 National Pollutant Discharge Elimination System General Permit with a Stormwater Pollution Prevention Plan, Section 404 Permit, and potentially a Stream Channel Alteration Permit (TABLE 3.9-1). Coordination with the USACE would be conducted for the Section 404 permit requirements associated with the stream crossings and any other unavoidable effects to Waters of the U.S. When work requires a Section 404 permit, a Section 401 certification is also required to regulate discharges into Waters of the U.S.

In lieu of having detailed drainage and roadway design completed (which is typically achieved during final design) and detailed geotechnical subsurface information to determine appropriate infiltration rates to design infiltration systems, a conceptual study was performed to evaluate the potential need

for non low-impact development based permanent BMPs. The results of this conceptual study estimate worst-case scenarios for right-of-way needs to treat pollution laden runoff. This conceptual study identified potential locations for permanent BMPs adjacent to the highway alignment that could be used to treat polluted highway runoff should the inclusion of low-impact development practices be found less feasible during final design.

A second conceptual study was performed, which focused on bridge and culvert riverine surface hydrology and hydraulics analyses at proposed stream crossings where the off-site drainage areas contributing to flow through these crossings is greater than 40 acres. These analyses provide estimates of concentrated stream flows at anticipated stream/culvert crossings, as well as determining preliminary sizing of structures at each stream/culvert crossing.

A third study was performed using a desktop review of available geotechnical information to develop an overview of potential subsurface conditions. This study facilitated conceptual foundation evaluations for culverts and bridge structures within the project alignments. Existing soil studies available through the U.S. Geological Survey were utilized to estimate design parameters that would be utilized for the design of structures, including load-bearing capacity and considerations for seismic design.

Impervious areas associated with highways are generally considered as pollution generating due to these surfaces being subject to high volumes of vehicle traffic. However, the Project is in a rural area that is not currently subject to Municipal Separate Storm Sewer System permit requirements. Nonetheless, HDOT has a comprehensive approach to the management of stormwater runoff associated with its highways as documented in HDOT's *Storm Water Post-Construction Best Management Practices Manual*, as amended in February 2022. This manual outlines HDOT's policy to prioritize the utilization of low-impact development practices to address polluted runoff from highway surfaces.

As a part of HDOT's comprehensive approach to stormwater management, permanent BMPs would be incorporated to lessen effects to water quality caused by stormwater discharged from roadway operations. Each Build Alternative would set aside about an acre (on average) at eight natural low points close to proposed alignments for stormwater management infrastructure to capture and detain roadway stormwater. These BMPs could include detention ponds to promote infiltration and treatment of discharge generated on-site using industry standard low-impact development practices, such as vegetated swales, vegetated buffers, and bioswales as appropriate (including use of the median, where applicable). Permanent BMPs would be designed to treat stormwater generated by the impervious area of the new roadway as it collects at natural low points along the roadway as defined by the final roadway profile. These set asides are conservatively sized for a maximum potential area of disturbance and the final locations and size of the infrastructure may vary depending on the treatment strategies as identified through final design as part of the design-build process, which is assumed to be fully within the right-of-way analyzed as part of this environmental review and through the Record of Decision.

The implementation of linear low-impact development elements along the highway corridor may reduce the required footprints of these conceptual permanent BMPs. Opportunities for low-impact development BMPs would be evaluated once the geotechnical information is gathered to validate and

refine the footprint of the conceptual permanent BMPs provided in this Draft EIS (Chapter 2, Alternatives, includes proposed locations). Final grading and vertical profiles would be identified during final design. The final selection of BMP devices would be done by the design-build contractor as they would be incorporated into the overall design of highway drainage systems.

Project construction would adhere to the *HDOT Standard Specifications for Road and Bridge Construction (Section 209) Temporary Water Pollution, Dust, and Erosion Control*. Construction BMPs that have been either preapproved or coordinated with regulatory agencies, which are included in *An Integrated Storm Water Management Approach and a Summary of Clear Water Diversion and Isolation Best Management Practices for Use in the State of Hawai'i*, would be utilized to minimize the potential for water quality impacts to the streams. Additionally, the HDOT *Construction Best Management Practices Field Manual* (October 2021) would be used for land-based BMPs. Stream crossings would be designed to preserve water flow and the biological processes of the fauna living in them. Hardening the stream crossings would be avoided, and bridge design would consider keeping the stream cool and oxygenated. HDOT's Design Criteria for Highway Drainage requires all bridges to be designed for 100-year storm events and all culverts to be designed for 50-year storm events (unless they involve FEMA flood zones, where they will be designed for 100-year storm events).

Site-specific construction stormwater BMPs would be implemented or installed at the staging and work areas to prevent water quality degradation associated with stormwater runoff. Construction stormwater BMPs would include maintaining equipment in good working order, storing equipment and materials away from the ocean or stream banks with strategic placement of absorbent material (such as fiber rolls) as a buffer between equipment and nearby waterbodies. Drip pans would also be maintained beneath construction equipment. The contractor would be required to prevent any debris from falling into the water. Storm drain inlet and catch basin protection devices would be installed in accordance with the Stormwater Pollution Prevention Plan as appropriate.

Water quality treatment solutions and adherence to State and County water quality regulations governing grading, excavation, and stockpiling would be developed in coordination with the contractor. Stockpiling, storage, and equipment staging would utilize appropriate BMPs to prevent potential surface runoff from entering streams. No stockpiling, storage, or heavy equipment would be located within streams. The effectiveness of sediment control devices is to be inspected regularly by the contractor. If a device proves inadequate, it would immediately be redesigned or replaced until it is effective.

The contractor may be required to obtain a floodplain development permit. Additionally, the contractor would maintain and require a copy of all permits, notifications, and compliance reporting requirements—as well as all records demonstrating compliance with every permit requirement—on the construction site or at a nearby field office.

3.9.9 Build Alternatives Comparative Assessment

The comparison tables below, TABLE 3.9-9 and TABLE 3.9-10, include the approximate acreage of delineated wetlands and other waters that would be crossed by each Build Alternative alignment

(conservatively measured as the total highway right-of-way coverage and not limited to pier and column disturbance with viaduct structure).

TABLE 3.9-9. **Build Alternatives Comparison - Olowalu**

BUILD ALTERNATIVE	WETLANDS (ACRES)	OTHER WATERS (ACRES)	TOTAL WATER RESOURCES(ACRES)
Build Alternative 1	0	0.72	0.72
Build Alternative 2	0	0.53	0.53
Build Alternative 3	0	0.54	0.54
Build Alternative 4	0	0.61	0.61

TABLE 3.9-10. **Build Alternatives Comparison - Ukumehame**

BUILD ALTERNATIVE	WETLANDS (ACRES)	OTHER WATERS (ACRES)	TOTAL WATER RESOURCES (ACRES)
Build Alternative 1	6.08	0.28	6.36
Build Alternatives 2 and 3	14.30	1.57	15.87
Build Alternative 4	0.85	1.11	1.96