US Army Corps of Engineers
Honolulu District

Appendix A-4: Environmental Resources

East Hagatna, Guam
CAP Section 14 Emergency Shoreline Protection

Draft Integrated Feasibility Report and Environmental Assessment

August 2025

DRAFT

Appendix A-4

TABLE OF CONTENTS

1 INTRODUCTION....4

2 LIST OF STATEMENT AGENCIES....4

3 ENVIRONMENTAL COMPLIANCE....4
- 3.1 National Environmental Policy Act (NEPA)....4
- 3.2 Clean Water Act (CWA) of 1972....5
- 3.3 Clean Air Act of 1972 (42 U.S.C. §7401 et seq.)....8
- 3.4 Rivers and Harbors Act of 1899, Section 10 (33 USC §403 *et seq*.)....8
- 3.5 Marine Protection, Research, and Sanctuaries Act (33 U.S.C. §1401 ET SEQ.)....8
- 3.6 Migratory Bird Treaty Act (16 U.S.C. §§703-712) and Migratory Bird Conservation Act (16 U.S.C. §§715-715D, 715E, 715F-715R)....8
- 3.7 Marine Mammal Protection Act (MMPA)....9
- 3.8 Anadromous Fish Conservation Act (16 U.S.C. §§757A-757G)....9
- 3.9 Fish and Wildlife Coordination Act (FWCA) of 1934....9
- 3.10 Endangered Species Act (ESA) of 1973....11
- 3.11 Magnuson-Stevens Fishery Conservation and Management Act (MSA)....12
- 3.12 Coastal Zone Management Act of 1972....14
- 3.13 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. §4601 ET SEQ.)....14
- 3.14 Farmland Protection Policy Act of 1981 (7 U.S.C. §4201 *et seq*.)....14
- 3.15 National Historic Preservation Act (NHPA) of 1966....15
- 3.16 Federal Water Project Recreation Act (16 U.S.C. §460(L)(12)-460(L)(21) *et seq*.)....15
- 3.17 Wild and Scenic River Act of 1968 (16 U.S.C. §1271 *et seq*.)....16
- 3.18 Estuary Protection Act of 1968 (16 U.S.C. §§1221-26)....16
- 3.19 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990 (16 U.S.C. §3501 *et seq*.)....16
- 3.20 E.O. 13571 Invasive Species....16
- 3.21 E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds....16
- 3.22 E.O. 13089 Coral Reef Protection....16
- 3.23 E.O. 13045 Protection of Children from Environmental Health Risks and Safety Risks....16
- 3.24 E.O. 11990 Protection of Wetlands....17
- 3.25 E.O. 11988 Flood Plain Management....17

Attachment 1. FWCA Consultation....18
- 1a. 2022 June 2 Technical Assistance Letter to USFWS....19

DRAFT

1b. 2022 June 2 Technical Assistance Letter to NMFS PIRO Habitat Conservation Division....22
1c. 2022 June 2 Technical Assistance Letter to Guam Division of Aquatic and Wildlife Resources....25
1d. 2022 June 28 USACE FWCA Planning Aid Letter Request to USFWS....28
1e. 20221 July 21 NMFS Technical Assistance Response....33
1f. 2022 July 27 USFWS Technical Assistance Response....36
1g. 2023 March 17 USFWS Technical Assistance Response....41
1h. 2023 July 13 NMFS and USFWS FWCA Planning Aid Letter....43

Attachment 2. ESA Consultation....65
2a. 2022 March 15 ESA species list from the USFWS Pacific Islands Fish and Wildlife Office....66
2b. 2022 April 12 ESA species list received from the NMFS PIRO....71
2c. 2022 June 2 Technical Assistance Request to NMFS....75
2d. 2023 September 13 ESA Biological Evaluation....77
2e. 2023 October 18 NMFS Concurrence Letter....116
2f. 2023 November 2 USFWS Response to ESA Consultation....128
2g. 2023 December 18 USACE withdrawal of USFWS ESA Consultation....132
2h. 2025 May Revised USFWS ESA Biological Assessment....133
2i. USFWS Concurrence**....172
2j. 2025 July Revised NMFS ESA Biological Assessment....173
2k. NMFS Concurrence....211

Attachment 3. MSA / EFH Consultation....215
3a. 2023 September 13 EFH Evaluation....216
3b. 2023 October 12 NMFS Response Letter....243
3c. 2023 October 23 USACE Response to NMFS Conservation Recommendations....254
3d. 2024 April 24 EFH Evaluation....257
3e. 2024 May 20 NMFS Response Letter....276
3f. 2024 May 29 USACE Response to NMFS Conservation Recommendations....282

Attachment 4. CWA Consultation....284
4a. 2022 July CWA Section 404(b)(1) evaluation....284
4b. 2025 May Revised CWA Section 404(b)(1) Checklist....295
4c. 2023 August 21 CWA Section 401 Water Quality Certification....301
4d. 2024 September 12 USACE Notification to Guam EPA of change to project....304

Attachment 5. CZMA Consultation....306
5a. 2022 June 2 Project Notification to Guam Coastal Management Program....306
5b. 2023 July 13 CZMA Federal Consistency Determination....309
5c. 2023 September 8 CZMA Federal Consistency Certification....324
5d. 2024 September 12 CZMA Federal Consistency Determination....339
5e. 2024 November 8 CZMA Federal Consistency Certification....354

Attachment 6. NHPA Consultation....359
6a. 2022 February 24 Notification of Project to Guam Preservation Trust, Guam DCA, and Guam SHPO....360
6b. 2022 June 2 Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO....364

DRAFT

6c. 2023 March 15 USACE Assessment of Effect submitted to GPT, GDCA, and SHPO 373
6d. 2023 March 16 GPT Response to USACE 385
6e. 2024 March 29 USACE Notification to GPT, GDCA, and SHPO 386
6f. 2024 April 17 SHPO Response 402

Attachment 7. MBTA Consultation 404

Attachment 8. Clean Air Act Analysis 412
Background 414
Direct Short Term Construction Emissions 418
Indirect 422
Other Emissions 424
Effects Determination 424
Literature Cited 426

Attachment 9. Environmental Commitments 427
1 EFH CRs (USACE and NMFS 2022a) 427
2 Additional EFH CRs from previous consultation (NMFS 2023a and 2024) 429
3 ESA BMPs from NMFS (USACE and NMFS 2022b) 429
4 ESA BMPs from USFWS 434
5 Migratory Bird Treaty Act BMPs (USFWS 2023b) 445
6 FWCA Recommendations and BMPs from NMFS for East Hagatna (NMFS 2023c) 445
7 CZMA BMPs from GBSP (2023 and 2024) 446
8 Noise and Vibration 450
9 Invasive Species (E.O. 13571 Invasive Species) 450
10 Cultural, Historic, and Archaeological Resources (SHPO 450
11 References 450

Attachment 10. Draft Finding of No Significant Impact 452

***to be inserted when received*

DRAFT

1 INTRODUCTION

This Appendix to the Integrated Feasibility Report and Environmental Assessment (IFR/EA) provides a more detailed administrative record of coordination on environmental compliance conducted to date as part of the East Hagatna - Continuing Authorities Program (CAP), Section 14 Emergency Stream Bank and Shoreline Protection (Project). It further discusses compliance specific to the Territory of Guam (Territory).

2 LIST OF STATEMENT AGENCIES

A list of the agencies, organizations, and persons to whom USACE will provide copies of the draft report for review is as follows:

- U.S. Fish and Wildlife Service (USFWS), Pacific Islands Fish and Wildlife Office (PIFWO)
- NOAA National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO)
- U.S. Environmental Protection Agency (USEPA)
- Guam Environmental Protection Agency (GEPA)
- Guam Coastal Management Program of the Bureau of Statistics and Plans (GCMP)
- Guam State Historic Preservation Office (GSHPO)
- Guam Preservation Trust (GPT)
- Guam Department of Chamorro Affairs (GDCA)

3 ENVIRONMENTAL COMPLIANCE

3.1 National Environmental Policy Act (NEPA)

NEPA (*42 USC § 4321 et seq*.) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their Proposed Actions and reasonable alternatives to those actions. NEPA also established the Council on Environmental Quality (CEQ). As part of the Executive Office of the President, CEQ coordinates federal environmental efforts and is responsible for advising the president on environmental policy matters. CEQ has also promulgated regulations implementing NEPA, which are binding on all federal agencies. These regulations address the procedural provisions of NEPA and the administration of the NEPA process, including preparation of EISs.

The NEPA is applicable to all “major” federal actions affecting the quality of the human environment. A major federal action is an action with effects that may be major, and which are potentially subject to federal control and responsibility. These actions may include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals.

NEPA documentation was prepared for a previous version of this study in 1992. In the 32 years since that study laws have changed and while information is incorporated where still applicable, this document is largely a separate assessment of impacts. The proposed activity is not covered by a USACE categorical exclusion (see ER 200-2-2). Based on knowledge of the area, discussions with the local sponsor, and the scope and scale of the proposed action, significant adverse environmental impacts are not

DRAFT

anticipated. An Environmental Assessment (EA) is expected to meet NEPA requirements. If evaluation of impacts indicates further documentation and an Environmental Impact Statement is necessary, federal interest under this authority will be evaluated. All necessary consultation, coordination, permits, and approvals will be conducted and documented in the EA to comply with all applicable federal laws and regulations. Such environmental requirements include but are not limited to the following: Section 307 of the Coastal Zone Management Act (CZMA), Sections 301, 401, 402, and 404 of the CWA, Section 106 of the National Historic Preservation Act (NHPA), Section 7 of ESA, the Fish & Wildlife Coordination Act (FWCA), and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). In further evaluating the proposed action, full consideration will be given to any and all reasonable and practicable design modifications and measures intended to avoid and/or minimize adverse impacts to the environment.

3.1.1 NEPA Coordination for the Proposed Project

An IFR/EA and FONSI have been drafted for this project and will be provided to all resource agencies and other stakeholders for review and comment during a 30-day public comment period. Communications with Statement Agencies (Section 2) will continue as part of the agency review of the Draft IFR/EA. Coordination on public outreach and information sharing continues with the non-federal sponsor, the DPA. Compliance with this Act will be complete at the time of the FONSI signing. The FONSI is located in Attachment 9.

3.2 Clean Water Act (CWA) of 1972

CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. The CWA defines waters of the U.S. to include all interstate waters, lakes, rivers, streams, territorial seas, tributaries to navigable waters, interstate wetlands, wetlands that could affect interstate or foreign commerce, and wetlands adjacent to other waters of the U.S (WOTUS). The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, without a permit.

- Section 401 of the CWA (33 U.S.C. §1341) ensures that discharge into WOTUS does not violate state, territorial, or tribal water quality standards. States, territories, and authorized tribes where the discharge originates are generally responsible for issuing Water Quality Certifications (WQCs)

- Section 402 of the CWA (33 U.S.C. § 1342) requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed WOTUS, such as storm water from point or nonpoint sources, be regulated through the National Pollutant Discharge Elimination System (NPDES) permitting program. Section 402(a) provides that the permit-issuing authority may issue an NPDES permit that authorizes the discharge of any pollutant into navigable waters of the United States, upon the condition that such discharge meets all applicable requirements of the CWA and such other conditions as the permitting authority determines necessary to carry out the provisions of the CWA. As part of this program, general NPDES permits are required to regulate storm water discharges associated with deployment or construction activities that disturb one (1) or more acres of land. The Preferred Alternative 3: Precast Concrete Seawall impacts less than an acre of habitat (Table 13, Section 4, IFREA) and would not require an NPDES construction stormwater permit.

DRAFT

- Section 404 of the CWA (33 U.S.C. §1344) establishes a program to regulate the discharge of dredged and fill material into WOTUS, including wetlands. The program is administered by the US Army Corps of Engineers (USACE).

  Although the USACE does not process and issue permits for its own activities, it conducts an internal assessment to ensure that all requirements of Section 404 are met by applying all applicable substantive legal requirements, including application of the Section 404(b)(1) Guidelines, 33 CFR 336.1(a). Under the Section 404(b)(1) Guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge is prohibited. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into waters of the U.S. if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem (including wetlands) and if the alternative does not have other significant adverse environmental impacts (40 C.F.R. 230.10(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purpose (40 C.F.R. 230.10(a)(2)).

  The Section 404(b)(1) guidelines follow a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 C.F.R. 230.10(d)). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 C.F.R. 230.70-230.77). Beyond the requirement for demonstrating that no practicable alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require USACE to compile findings related to the environmental impacts of discharge of dredged or fill material. The USACE must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the discharge site. These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity (40 C.F.R. 230.6(b)). The Section 404(b)(1) analysis is in Attachment 6. Alternative 3: Precast Concrete Seawall is the Least Environmentally Damaging Practicable Alternative (LEDPA; see Table 14, Section 4, IFREA).

- Sections 305(b) and 303(d)) of the CWA, respectively, requires States, Territories, and authorized Tribes to assess waterbodies, as well as identify and make a list of those surface water bodies that are polluted. A review of all “existing and readily available” state or territorial surface water quality data must be reviewed and compared compare their water quality standards. Section 303(d) of the CWA authorizes the USEPA to list impaired waters and develop water pollution reduction plans, or Total Maximum Daily Loads (TMDLs), for those waterbodies that are classified as lower quality. The TMDL defines the upper threshold of a given pollutant that a waterbody can contain and still meet water quality standards.

DRAFT

3.2.1 Specific Territorial Regulations for CWA

CWA Section 401: In accordance with CWA Section 401, the Guam Environmental Protection (GEPA) Agency administers the Territory's 401 Water Quality Certification Program. The objective of the program is to ensure that any Federally permitted activity will not adversely impact the existing uses, designated uses, and applicable water quality criteria of the receiving Territorial waters. Issuance of a Water Quality Certification demonstrates compliance with Section 401 of the CWA.

CWA Section 402: In accordance with CWA Section 402, the US Environmental Protection (USEPA) administers the Territory's 402 Water Quality Certification and NPDES Program. The USEPA has not authorized the territory of Guam to issue its own NPDES permits; therefore, USEPA Region 9 is the permit-issuing agency for Guam. The objective of the program is to ensure that any Federally permitted activity will not adversely impact the existing uses, designated uses, and applicable water quality criteria of the receiving Territorial waters.

CWA Section 404: There are no territorial regulations specific to CWA Section 404 in Guam.

CWA Section 305(b) and Section 303(d): The Territory's water quality standards designate the waters of Hagatna Bay as M- 2, which requires preserving a balanced, indigenous population of marine organisms, especially shellfish and corals, and intended uses including water sports, aesthetic enjoyment, and mariculture. East Hagatna Bay water quality is reported as good for 2020 (USEPA 2023). Previous USACE studies identified 30 storm drain outfalls throughout the Bay which discharge solids, nitrate-nitrogen, and coliform bacteria exceeding water quality standards (USACE 1993). The Agana River, west of the study area, is impaired for aquatic life, fish and shellfish consumption, and swimming and boating due to bacteria and other microbes, low oxygen, and PCBs. A storm drain east of the study area is impaired for aquatic life, swimming and boating due to bacteria and other Microbes, low oxygen, murky water, nitrogen and/or phosphorus, and salts (USEPA 2023). TMDLs have not yet been developed for any of these impaired waters.

3.2.2 CWA Coordination for the Proposed Project

Regulations and policies that protect water quality and are being considered as part of the proposed Project include CWA Sections 401, 402, and 404.

CWA 401 and 402

The USEPA and GEPA were informed about the preferred plan during Cooperating Agency Workshops on 8 and 14 June 2022 (HST). GEPA confirmed by letter dated 21 August 2023 that USACE may request Section 401 Water Quality Certification prior to construction of the project when at least 75% design is available. USACE informed GEPA of the design change from 2100 linear foot revetment to 1630 foot precast concrete seawall on 12 September 2024.

With respect to the Section 401 Water Quality Certification, USACE would be responsible for compliance during construction while the Guam Department of Public Works (GDPW) would need to comply separately with Section 401 for O&M.

Coordination with the USEPA and GEPA will continue during the feasibility phase and through design phase for this project. If required, Section 401 and 402 Water Quality Certification and NPDES Permits will be requested from the USEPA and GEPA prior to construction of the

DRAFT

project. Currently the preferred alternative, Precast Concrete Seawall has a total construction site including staging area of less than an acre and a construction stormwater permit would not be required.

CWA 404

A Draft 404(b)(1) evaluation is included as Attachment 4 of this Appendix. The 404(b)(1) analysis demonstrates that both construction and OMRR&R comply with Section 404. So long as the non-federal sponsor (Guam Department of Public Works) conducts OMRR&R operations within the scope of activities characterized in the environmental assessment, it would comply with Section 404. The project will comply with this Act.

3.3 Clean Air Act of 1972 (42 U.S.C. §7401 et seq.)

Hagatna and Tamuning are not designated as nonattainment or maintenance areas for any criteria pollutant; therefore, U.S. Environmental Protection Agency's (USEPA) General Conformity Rule to implement Section 176(c) of the CAA [42 U.S.C. §7506(c)] does not apply. No air quality permits, nor a conformity determination are required for this project. The project will comply with the Act.

3.4 Rivers and Harbors Act of 1899, Section 10 (33 USC §403 *et seq.*)

The proposed action will be subjected to the public notice and other evaluations normally conducted for activities subject to the Act. The proposed work will not obstruct navigable waters of the U.S. The Project complies with the Act.

3.5 Marine Protection, Research, and Sanctuaries Act (33 U.S.C. §1401 ET SEQ.).

Ocean disposal is not a component of this Project; therefore, this Act is not applicable.

3.6 Migratory Bird Treaty Act (16 U.S.C. §§703-712) and Migratory Bird Conservation Act (16 U.S.C. §§715-715D, 715E, 715F-715R)

The Migratory Bird Treaty Act (*16 USC § 703-712*) was enacted to ensure protection of migratory bird resources that are shared among the U.S., Canada, Mexico, Japan, and Russia. The MBTA makes it unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product".

The responsibilities of federal agencies to protect migratory birds are set forth in EO 13186. USFWS is the lead agency for migratory birds. The USFWS issues permits for takes of migratory birds for activities such as scientific research, education, and depredation control, but does not issue permits for incidental take of migratory birds. The MBTA does not apply to non-native species introduced to the U.S. or its territories by mean of intentional or unintentional human assistance.

DRAFT

Currently none of the migratory bird species found on Guam nest in the project area, therefore vegetation clearing during nesting season does not need to be avoided. If that should change, USACE will include standard migratory bird protection measures as described in Attachment 7: Migratory Bird Consultation in the project plans and specifications and will require the Contractor to abide by those requirements. The Project complies with these Acts.

3.7 Marine Mammal Protection Act (MMPA)

All marine mammals are protected under MMPA (*16 USC § 1361 et seq*.), which prohibits takes of all marine mammals in the U.S. (including territorial seas) with few exceptions. Permits for scientific research on marine mammals and permits to enhance the survival or recovery of a species, issued under Section 104 of the MMPA are two such exceptions. For T&E marine mammals, any activities that could affect ESA-listed species must be consistent with the ESA as well.

3.7.1 MMPA Coordination for the Proposed Project

16 USC 1362 defines “take” as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” No take or harassment of marine mammals are anticipated through the proposed project. Hagatna Bay is not a known haul out, breeding, or foraging location for marine mammals and no interactions are anticipated. The project will comply with this Act.

3.8 Anadromous Fish Conservation Act (16 U.S.C. §§757A-757G)

This Project will have no effect on anadromous fish species. The Act does not apply.

3.9 Fish and Wildlife Coordination Act (FWCA) of 1934

The FWCA (16 USC 661 et seq.) requires federal agencies to coordinate with the USFWS and local state/territorial agencies when any stream or body of water is proposed to be impounded, diverted, or otherwise modified. The intent is to give fish and wildlife conservation equal consideration with other purposes of water resources development projects.

3.9.1 FWCA Coordination for the Proposed Project

Pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1934, as amended (16 U.S.C. §§ 661–667e), USACE consulted USFWS and NMFS on the effect of the recommended alternative (Alternative 2) on fish and wildlife resources as documented in Appendix 3, Attachment 1. A Planning Aid Letter was received from NMFS and USFWS on 14 July 2023. The project complies with the Act.

As documented in the Planning Aid Letter, the Services recommended the following measures to conserve fish and wildlife resources:

1. The length of the proposed revetment appears fairly long, so it may be best to consider a staged approach to the dredging and filling (D&F) operations. D&F in the intertidal habitat should be timed to avoid operations in areas that are submerged.
2. Limits on the placement and use of people and equipment in submerged areas are recommended, and direct interactions with vegetative habitats and corals should be avoided.

DRAFT

3. Low impact design (LID) principles should be considered in the revetment design and along the edge of the adjacent road, with a focus on storm water management, sediment impoundment and the control and filtering of urban runoff.
4. Fisher access to the seasonal rabbitfish fishery should be considered and should not be meaningfully inhibited by the project.
5. The area is designated as Essential Fish Habitat, so an EFH MSA consultation will be required. Full consideration should be given to the conservation recommendations that result from that consultation.
6. Appropriate precautions and work stoppages should be implemented if mobile ESA listed species approach or enter the work area. Specific ESA conditions and conservation recommendations may be obtained in consultation with our NMFS Protected Resources Division.
7. Monitoring of adjacent and regional beach profiles and the distribution and densities of regional seagrasses should be implemented to assess the short and long-term effects of the proposed project. Such data will be very useful in informing future Guam revetment proposals and predictions, which we foresee increasing in number and need. Pre- and post-construction measures should be made in the adjacent habitat and appropriate reference areas. Additional measures should be made 3 to 5 years following the project's completion to provide for long-term inference on revetment beach and submerged resources effects.

In addition, the Services recommended the following standard BMPs to be implemented when working in the aquatic environment:

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.
2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.
3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.
4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.
5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from

DRAFT

erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.
7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

USACE will adopt these recommendations, to the extent that the measure is applicable, commensurate and practical, as enforceable conditions i.e. specifications, of any construction contract. The Project complies with this Act.

3.10 Endangered Species Act (ESA) of 1973

Section 7 of the ESA requires each federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat for such species. Federal agencies are further required to consult with the appropriate federal agency, either the USFWS or NOAA-NMFS, for federal actions that "may affect" a listed species or adversely modify critical habitat. Federal agencies must use the best available scientific and commercial data when making an effect determination relating to the impact of their actions.

3.10.1 Specific Territorial Regulations for ESA

The USFWS PIFWO and the NMFS PIRO are the federal regulatory agencies that oversee consultations for compliance with the ESA in Guam. The NMFS and USFWS share jurisdiction for recovery and conservation of sea turtles listed under the ESA. NMFS leads the conservation and recovery of sea turtles in the marine environment and USFWS leads the conservation and recovery of sea turtles on nesting beaches (*NOAA 2015*). A Memorandum of Understanding outlines the specific roles of each agency.

The Guam Division of Aquatic and Wildlife Resources (DAWR) is the territorial agency responsible for managing and preserving the marine and wildlife resources in Guam. DAWR also distributes hunting regulations that control the taking of various wildlife species, including fish, coral, fruit bats and native birds. Hi Marian, thank you for the feedback! It does appear there is Guam legislation that protects corals (5 GCA Chapter 63) from take that originated to address fisherman impacts to coral it seems, but how it was written, it is not constrained to such: "Guam's natural resource legislation protecting coral reef resources is presented in two laws. The prevailing legal authority is the Guam Legislature or statutory law. These laws are relatively old and have not been revised in the past 20 years. For this reason, although it is specifically referenced, coral is considered a fish. When these laws were created, the only group likely to impact reefs were fisher men. Guam's statutory laws regulate the taking of coral and have penalties for fishing damage. Coral can be taken only under a permit issued by the Department of Agriculture. But no permits have been issued since 1982. The law has provisions for both personal and commercial take but limits such permits to five days and requires specific collecting locations be identified. This same title (5 GCA chapter 63) also regulates fishing net

DRAFT

mesh sizes used in coastal waters as well as illegal chemical and explosives. In addition, the legislature also delegated the authority and responsibility of management and oversight for all aquatic and wildlife resources to the Department of Agriculture. Recently, the Department of Agriculture's DAWR used its regulatory authority to amend and expand the existing fishing regulations." https://www.coris.noaa.gov/portals/pdfs/status_coralreef_guam.pdf.

From 5 GCA Chapter 65: Article 1 § 63113. Destruction of Coral: It shall be a felony to willfully destroy coral as defined in § 63101(d), and Article 6 § 63601. Taking of Live Coral Unlawful. It shall be unlawful to remove live coral from that area surrounding the Island of Guam extending from the shore of the island outward to the ten fathom contour, except in accordance with this Article.

Currently there is no federally designated critical habitat in the Action Area. Proposed critical habitat for corals occurs offshore of the Action Area. Proposed critical habitat for green sea turtles occurs on the beach.

3.10.2 ESA Coordination for the Proposed Project

USACE requested technical assistance from USFWS and NMFS on March 15, 2022, and received a list of species listed or proposed for listing under both NMFS and USFWS jurisdiction that may be present on or in the vicinity of the proposed project location, as well as confirmation that there is no designated or proposed federally designated critical habitat occurring within the immediate vicinity of the proposed study area (Attachment 2). USFWS provided an update to this list on

Pursuant to Section 7 of the Endangered Species Act, USACE evaluated the potential effects to T&E species that may be affected by implementation of the Recommended Plan. USACE determined the federal action may affect but is not likely to adversely affect corals, turtles, tee snails and the Mariana fruit bat. Detailed discussion on the USACE determination is included in the Biological Evaluation in Appendix 3 Attachment 2a. NMFS concurred with our determination that the proposed action is not likely to adversely affect Central West Pacific green turtles; proposed critical habit for Central West Pacific green turtles; endangered hawksbill turtles; *A. globiceps* corals; and proposed coral critical habit for *A. globiceps* by letter dated October 18, 2023 (Attachment 2b).

The USACE will continue to coordinate with the USFWS, NMFS, and the DAWR as part of the public review of this Draft IFR/EA document and throughout the feasibility phase. The project will comply with the Act.

3.11 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

MSA (*16 USC § 1801 et seq.*) is the primary law governing fisheries management in U.S. federal waters. MSA is intended to foster long-term biological and economic sustainability of U.S. marine fisheries through the prevention of overfishing, the rebuilding of overfished stocks, and increasing long-term economic and social benefits to ensure a safe and sustainable supply of seafood. MSA extended U.S. jurisdiction from 12 nautical miles to 200 nautical miles and established eight regional fisheries management councils to develop Fishery Management Plans, which must comply with conservation and management standards to promote sustainable fisheries management. The Fishery Management Plans also define Essential Fish Habitat (EFH), which is the aquatic habitat where fish spawn, breed, feed, and grow through various life stages; this habitat includes marine waters, wetlands, coral reefs, seagrasses, and

DRAFT

rivers. The Fishery Management Plans further define Habitat Areas of Particular Concern (HAPC), which are high-priority areas that are rare, particularly sensitive, or critical to overall ecosystem functions.

The Western Pacific Regional Fishery Management Council (WPRFMC) is one of eight regional fishery management councils established by Congress in 1976. Under the MSA, it has authority over fisheries seaward of state/territorial waters of Hawaii and the US Pacific Islands and creates and amends management plans for fisheries seaward of state/territorial waters in the US Pacific Islands. Both the Guam Bottomfish and Pelagic Fishery Ecosystem Plans were approved in 2009 and codified in 2010 (WPRFMC 2009). These Fishery Ecosystem Plans outline ecosystem approaches to management of fisheries and are amended as necessary.

3.11.1 Specific Territorial Regulations for MSA

The U.S. has exclusive fishery management authority over all fishery resources within the U.S. Exclusive Economic Zone, which extends from the seaward boundary of Guam to 200 nautical miles from the baseline from which the breadth of the territorial sea is measured. Management plans to protect trophic structure and biodiversity and increase key coral reef fish species are priorities within and outside of existing protected areas (*WPRFMC 2009*).

The NMFS PIRO is the federal regulatory agency responsible for implementing the MSA, including the EFH provision (Section 305(b)(2) as described by 50 CFR 600.920). The marine water column from the surface to a depth of 1,000 m from shoreline to the outer boundary of the Exclusive Economic Zone (5,150 kilometers/200 nautical miles/230 miles), and the seafloor from the shoreline out to a depth of 400 m around Guam were designated as EFH. As such, all surrounding waters and submerged lands around Guam are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's Guam Bottomfish and Pacific Pelagic Fishery Ecosystem Plans. The management unit species and life stages found in these waters include eggs, larvae, juveniles, and adults of Bottom-fish and Pelagic MUS. Specific types of habitat considered as EFH include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

3.11.2 MSA Coordination for the Proposed Project

USACE initiated consultation with NMFS during the 8 and 14 June 2022 cooperating agency workshops. USACE initiated abbreviated consultation on September 11, 2023, for the prior plan, a 2,100 linear foot revetment. Following internal USACE project reviews and discussions with the Government of Guam, USACE modified the design to a 1,630 linear foot precast concrete seawall. USACE reinitiated abbreviated consultation for the revised plan on April 24, 2024. NMFS responded with a Conservation Recommendation (CR) on May 20, 2024, to "We initiated abbreviated consultation with your office on September 11, 2023, for the prior plan, a 2,100 linear foot revetment. Following internal USACE project reviews and discussions with the Government of Guam, we have modified our design to a 1,630 linear foot precast concrete seawall. Accordingly, we would like to reinitiate abbreviated consultation for the revised tentatively selected plan." USACE responded on May 29, 2024, accepting the Conservation recommendation. EFH consultation including the EFH assessment can be found in Attachment 3 of this Appendix. The Project complies with the Act.

DRAFT

3.12 Coastal Zone Management Act of 1972

Congress enacted the Coastal Zone Management Act (CZMA) (*16 USC § 1451 et seq*.) to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses (such as state and federal offshore oil and gas development). Coastal states with an approved Coastal Zone Management Plan, which defines permissible land and water use within a state or territory's coastal zone, can review federal actions (such as deployment/construction and operation of a proposed project action) for federal consistency. Federal consistency is the requirement that a proposed action likely to affect any land/water use or natural resources of the coastal zone be consistent with the enforceable policies of a state or territory's program. The CZMA requires NOAA to conduct periodic evaluations of the performance of states and territories with federally approved coastal management programs.

3.12.1 Specific Territorial Regulations for CZMA

In Guam, federal consistency determinations under the Coastal Zone Management Act (CZMA) are administered by the Guam Bureau of Statistics and Plans (GBSP) through the Guam Coastal Management Program (GCMP).

The GCMP was approved in 1979 and is the federally approved coastal management program for the Territory of Guam. The GCMP has extensive responsibilities under the CZMA, which provides the primary authority for program and has been developed under a unique approach that incorporates both western and traditional systems of management.

3.12.2 CZMA Coordination for the Proposed Project

A Federal Consistency Determination (FCD) evaluation is included as Attachment 5 in this Appendix. Pursuant to the CZMA, an FCD was drafted and submitted to Guam BSP on 12 September 2024 for review and concurrence. USACE determined that the Recommended Plan is consistent with the state's Coastal Zone Management Program and anticipates receiving concurrence. Guam BSP concurred with USACE findings conditional upon inclusion of recommended BMPs in the final project on 8 November 2024. The project will comply with this Act.

3.13 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. §4601 ET SEQ.).

The purpose of Public Law 91-646 is to ensure that owners of real property to be acquired for Federal and federally assisted projects are treated fairly and consistently and that persons displaced as a direct result of such acquisition will not suffer disproportionate injuries because of projects designed for the benefit of the public as a whole. This Project does not involve real property acquisition and/or displacement of property owners or tenants. Therefore, this Act is not applicable.

3.14 Farmland Protection Policy Act of 1981 (7 U.S.C. §4201 *et seq*.)

No prime or unique farmland will be affected by implementation of this project. This Act is not applicable.

DRAFT

3.15 National Historic Preservation Act (NHPA) of 1966

The goal of the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC § 306101 et seq.), is to empower federal agencies to act as responsible stewards of cultural resources when agency actions affect historic properties. The NHPA established the Advisory Council on Historic Preservation, an independent federal agency that promotes the preservation, enhancement, and productive use of our nation's historic resources, and advises the President and Congress on national historic preservation policy. The NHPA also authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture.

Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places. In carrying out their responsibilities under Section 106, the NHPA requires that federal agencies consult with federally recognized tribes and Native Hawaiian Organizations that attach traditional religious and cultural significance to eligible or listed historic properties that could potentially be affected by the agency's actions. The intent of the consultation is to identify historic properties potentially affected by the undertaking and to seek ways to avoid, minimize, or mitigate any adverse effects on those properties.

The NHPA details a four-step process for Section 106 consultation that requires each federal agency to: 1) initiate a review process to evaluate the potential of a proposed federal undertaking to cause an effect; 2) identify historic properties with the federal undertaking's Area of Potential Effect (APE); 3) assess whether the undertaking will have an adverse effect on historic properties that are within the APE, and 4) if avoidance or minimization of an adverse effect is not possible, work with consulting parties to identify mitigation that will resolve the adverse effect.

3.15.1 NHPA Coordination for the Proposed Project

Pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. § 306108), as amended, USACE notified the Guam State Historic Preservation Officer (SHPO), the Guam Preservation Trust, and the Guam Department of Chamorro Affairs of this undertaking on February 25, 2022. In consultation with these consulting parties, USACE has determined the proposed undertaking's Area of Potential Effect (APE), reviewed existing information on cultural resources and historic properties within and in the general vicinity of the APE, and found that a phased identification and evaluation of potential historic properties within the APE is warranted. On March 15, 2023, in accordance with 36 CFR § 800.4(b)(2), USACE found that the recommended plan (Alternative 2) has the potential to result in an adverse effect on historic properties. USACE proposed to develop a Memorandum of Agreement (MOA) in accordance with 36 CFR § 800.6 to identify actions to resolve this adverse effect. The SHPO concurred with this determination and agreed to the development of an MOA on May 15, 2023. The project will comply with this Act.

3.16 Federal Water Project Recreation Act (16 U.S.C. §460(L)(12)-460(L)(21) *et seq.*)

The principles of the Federal Water Project Recreation Act (16 U.S.C. §460l-12 et. seq.) require USACE to give full consideration to any opportunity for the Project to add or improve outdoor

DRAFT

recreation and/or fish and wildlife enhancement. The Preferred Alternative does not have any anticipated long-term impacts to recreation; therefore, the project complies with this Act.

3.17 Wild and Scenic River Act of 1968 (16 U.S.C. §1271 *et seq*.)

There are no streams with special designations and no designated wild and scenic rivers in Guam (*National Wild and Scenic Rivers System 2015*). This Act is not applicable.

3.18 Estuary Protection Act of 1968 (16 U.S.C. §§1221-26)

No designated Estuary of National Significance exists within American Samoa, CNMI, Guam, or Hawaii. This Act is not applicable to POH.

3.19 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990 (16 U.S.C. §3501 *et seq*.)

There are no designated coastal barrier resource system units that will be affected by this project. These Acts are not applicable.

3.20 E.O. 13571 Invasive Species

The Project's plans and specifications will include conditions to avoid the introduction and/or promotion of non-native species to the region. USACE will require the Contractor to abide by those requirements. The Project complies with the Order.

3.21 E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds

This E.O. requires, among other things, a Memorandum of Understanding (MOU) between the USACE and USFWS concerning migratory birds. Neither the Department of Defense MOU nor the USACE Draft MOU clearly address migratory birds on lands not owned or controlled by USACE. For many USACE civil works projects, the real estate interests are provided by the non-Federal sponsor. Control and ownership of the Project lands remain with a non-Federal interest. Measures to avoid disturbing migratory birds are described in Section 6.9 of this EA and are incorporated by reference. The USACE will include standard migratory bird protection requirements in the Project plans and specifications and will require the contractor to abide by those requirements. The project complies with the Order.

3.22 E.O. 13089 Coral Reef Protection

No corals or hardbottom habitats exist within the Study area. This E.O. is not applicable to the project.

3.23 E.O. 13045 Protection of Children from Environmental Health Risks and Safety Risks

On April 21, 1997, the President of the U.S. issued E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks. The E.O. mandates that each Federal agency make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks

DRAFT

or safety risks. The proposed action does not affect children disproportionately from other members of the population and would not increase any environmental health or safety risks to children. The Project complies with the Order.

3.24 E.O. 11990 Protection of Wetlands

The purpose of EO 11990 is to “minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.” To meet these objectives, federal agencies are required, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The EO applies to the following:

- Acquisition, management, and disposition of federal lands and facilities construction and improvement projects that are undertaken, financed, or assisted by federal agencies
- Federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulation, and licensing activities.

The procedures require the determination of whether the proposed project would be in, or would affect, wetlands. If so, a wetlands assessment must be prepared that describes the alternatives considered. The procedures include a requirement for public review of assessments.
There are no wetlands within the proposed Study Area and no wetlands would be affected by and project activities. This EO is not applicable.

3.25 E.O. 11988 Flood Plain Management

EO 11988 (Floodplain Management; May 24, 1977) requires a Federal agency, when taking an action, to avoid short- and long-term adverse effects associated with the occupancy and the modification of a floodplain. EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In addition, the agency must minimize potential harm to or in the floodplain and explain why the action is proposed. Additional floodplain management guidelines for Executive Order 11988 were provided in 1978 by the Water Resources Council.

To comply with E.O. 11988, the policy of USACE is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with the use of the floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. Based on the analysis in the IFR/EA, USACE concludes that the Recommended Plan will not result in harm to people, property, and floodplain values, in fact would protect the floodplain, will not induce development in the floodplain, and the Project is in the public interest. The project complies with the Order.

DRAFT

Attachment 1. FWCA Consultation

1a. 2 June 2022 Technical Assistance Letter to USFWS PIFWO
1b. 2 June 2022 Technical Assistance Letter to NMFS PIRO HCD
1c. 2 June 2022 Technical Assistance Letter to Guam DAWR
1d. 28 June 2022 USACE FWCA Planning Aid Letter Request to USFWS
1e. 21 July 2022 NMFS Technical Assistance Response
1f. 27 July 2022 USFWS Technical Assistance Response
1g. 17 March 2023 USFWS Technical Assistance Response
1h. 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

DRAFT

1a. 2022 June 2 Technical Assistance Letter to USFWS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil Works Branch
Programs and Project Management Division

Gregory Koob
Deputy Field Supervisor for Programmatic Operations
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Blvd Rm 3-122
Honolulu, HI 96850

Dear Mr. Koob:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1934 (16 U.S.C. §661 et seq.), as amended and the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended, USACE invites the U.S. Fish and Wildlife Service (USFWS) to participate in this study and requests any available information regarding fish and wildlife resources occurring within the study area. For the purposes of this request, the

1a (cont.). Technical Assistance Letter to USFWS

study area comprises the area within which USACE is considering direct and indirect impacts to protected resources. As more information is gathered, the impact areas relative to each protected resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating and participating agencies' workshop scheduled for June 8, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

A copy of this letter and its enclosures will be sent to the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, the U.S. Environmental Protection Agency, National Marine Fisheries Service (NMFS) Habitat Conservation Division, and NMFS Protected Resources Division pursuant to the FWCA, the Endangered Species Act and the National Environmental Policy Act (NEPA). This letter of request for information from your agency constitutes the USACE scoping request pursuant to NEPA. To reduce redundancy, a separate NEPA scoping letter will not be sent to your office. Any additional comments provided pursuant to NEPA will be fully considered and incorporated into the administrative record.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

1a (cont.). Technical Assistance Letter to USFWS

Enclosure 1

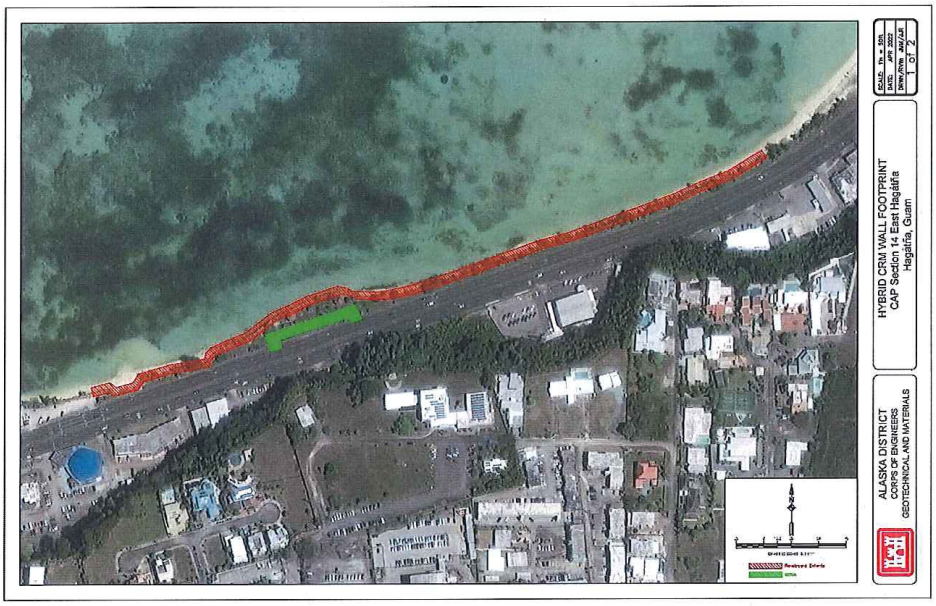


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

1b. 2022 June 2 Technical Assistance Letter to NMFS PIRO Habitat Conservation Division

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Gerald Davis
Assistant Regional Administrator
Habitat Conservation Division
Pacific Islands Regional Office
National Marine Fisheries Service
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Dear Mr. Davis:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661 et seq.) of 1934, as amended, USACE invites the National Marine Fisheries Service (NMFS) to participate in this study and requests any available information regarding fish and wildlife resources occurring within the study area. Additionally, pursuant to the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855), USACE requests location-specific information on the status and any concerns for the conservation of federally managed fisheries and designated EFH within the study area. For the purposes of this request, the study area comprises the area within which USACE is considering direct and

1b (cont.). 2 June 2022 Technical Assistance Letter to NMFS PIRO HCD

indirect impacts to protected resources. As more information is gathered, the impact areas relative to each protected resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating agency and participating agency workshop scheduled for June 8, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

A copy of this letter and its enclosures will be sent to the U.S. Fish and Wildlife Service, the Guam Division of Aquatic and Wildlife Resources, the U.S. Environmental Protection Agency, and National Marine Fisheries Service Protected Resources Division pursuant to the FWCA, the Endangered Species Act and the NEPA. This letter of request for information from your agency constitutes the Corps' scoping request pursuant to NEPA. To reduce redundancy, a separate NEPA scoping letter will not be sent to your office. Any additional comments provided pursuant to NEPA will be fully considered and incorporated into the administrative record.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

1b (cont.). 2 June 2022 Technical Assistance Letter to NMFS PIRO HCD

Enclosure 1

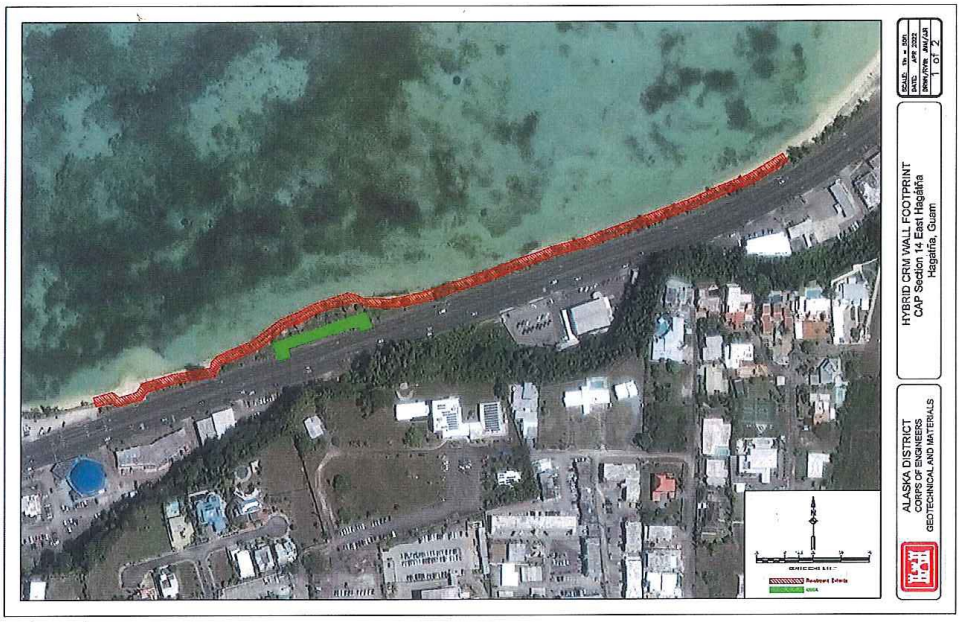


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

1c. 2022 June 2 Technical Assistance Letter to Guam Division of Aquatic and Wildlife Resources

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Chelsa Muña-Brecht
Director
Division of Aquatic and Wildlife Resources
Government of Guam, Department of Agriculture
163 Dairy Road
Mangilao, Guam 96913

Dear Director Muña-Brecht:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1934 (16 U.S.C. 661 et seq.), as amended, USACE invites the Guam Division of Aquatic and Wildlife Resources (DAWR) to participate in this study and requests any available information regarding fish and wildlife resources occurring within the study area. DAWR may have both expertise relevant to the study and to identifying environmental effects that could result from a recommended project, and jurisdiction by law. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to protected resources. As more information is gathered, the impact areas relative to each protected resource will be further refined.

1c (cont.). 2 June 2022 Technical Assistance Letter to GDAWR

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating agency and participating agency workshop scheduled for June 9, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

A copy of this letter and its enclosures will be sent to the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and National Marine Fisheries Service pursuant to the FWCA and the ESA. This letter of request for information from your agency constitutes the Corps' scoping request pursuant to NEPA. To reduce redundancy, a separate NEPA scoping letter will not be sent to your office. Any additional comments provided pursuant to NEPA will be fully considered and incorporated into the administrative record.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

1c (cont.). 2 June 2022 Technical Assistance Letter to GDAWR

Enclosure 1

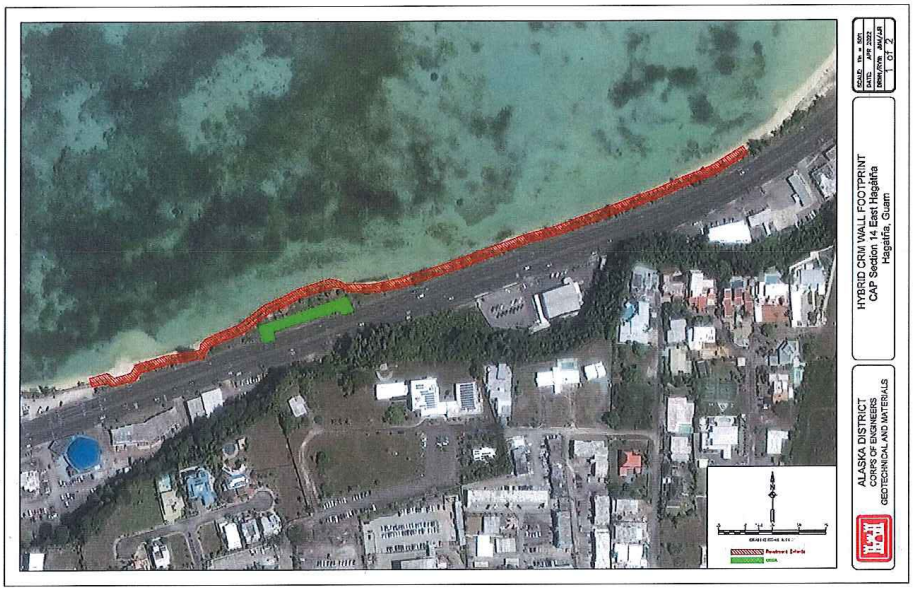


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

1d. 2022 June 28 USACE FWCA Planning Aid Letter Request to USFWS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

JUN 28 2022

Civil Works Branch
Programs and Project Management Division

Dr. Dan A. Polhemus
Acting Supervisor, Ecological Services Field Office
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Blvd Rm 3-122
Honolulu, HI 96850

Dear Dr. Polhemus:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. In general, Section 14 of the 1946 Flood Control Act, as amended, provides authority for USACE to plan and construct emergency streambank and shoreline protection projects to protect vital public infrastructure. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321) and other environmental laws and regulations.

As described in the June 14, 2022, Resource Agency Workshop, the preferred alternative is the rock revetment (described in Figure 1 of the enclosure). Construction of the rock revetment involves demolition and removal of the existing wall and installation of a rock revetment along the coast (described in Figure 2 of the enclosure). The footprint provided for the revetment in Figure 2 shows the maximum extent that could be needed for construction. Construction activities include grubbing and demolition, excavating the toe trench, compacting fill, lining of the substrate with geotextile fabric, installing stone and armor rock underlayer, backfilling the toe with excavated sand, revegetation, and installing and removing all best management practices. The expected design life of this system (assuming proper installation and routine maintenance) is on the order of 50 years.

During initial background investigations into fish and wildlife resources present within and proximal to the study area, our team identified substantial available surveys, reports and information. To support your efforts, please reference the following resources concerning the study area:

1d (cont). 28 June 2022 USACE FWCA Planning Aid Letter Request to USFWS

Individuals and organizations with data include:

- Dr. Dave Burdick, burdickd@triton.uog.edu, University of Guam, has coral survey data that includes Hagatna Bay surveys in 2022.
- Laura Duenas, Laura.Duenas@doag.guam.gov, has bird survey data that includes Migratory bird surveys and Micronesian starling surveys.
- Jesse Cruz, Jesse.Cruz@epa.guam.gov, Guam EPA, has water quality and related data, http://epa.guam.gov/
- Eyes of the Reef Marianas, https://eormarianas.org/, collects citizen scientist observations of coral presence and condition. It is partly funded by the Guam Bureau of Statistics and Plans http://bsp.guam.gov/coral-reef-initiatives/.
- Guam Subsistence Fishing https://www.facebook.com/Guam-Subsistence-Fishing-104979002102811/ collects fisher's catch data to monitor reef ecology.
- Guam Reef Restoration and Intervention Partnership (GRRIP) maintains a Facebook page of reef observations https://www.facebook.com/groups/619639241822965/# =_
- USFS Guam has forest inventory data for 2002 and 2013 https://www.fs.usda.gov/pnw/tools/pnw-fia-pacific-islands-database

Recent publications on resources of Hagatna Bay include:

- Raymundo, L.J., M.D. Andersen, C. Moreland-Ochoa, A. Castro, C. Lock, N. Burns, F. Taijeron, D. Combosch, & D. Burdick. 2022. Conservation & Active Restoration of Guam's Staghorn Acropora Corals. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechRep168_Raymundo_2022.pdf. Includes a 2022 assessment of the Hagatna Bay coral population on p. 36.
- Fabian, V.P. & A.G. Fujimura. 2020. Survey of Guam Benthic Habitats and Coral Health. 39 pages. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechReport166_Fabian_Fujimura2020.pdf
- Kerr, A. M., A.K. Miller, C. Brunson, & A.M. Gawel. 2017. Commercially Valuable Sea Cucumbers of Guam. 55 pages. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechRep162_Kerr_etal_2017.pdf

Based on the substantial amount of available information, and the relatively minor in-water work area, we request that you provide us with a Planning Aid Letter in accordance with the Fish and Wildlife Coordination Act (FWCA) of 1934, as amended, for the evaluation of the preferred alternative. If you determine that an investigation and report under Section 2b of the FWCA is required, we request a scope of work and cost estimate.

A copy of this letter and its enclosures has been furnished to Stuart Goldberg, Acting EFH Coordinator, Pacific Islands Regional Office; Jeffrey S. Quitugua, Guam Division of Aquatic and Wildlife Resources; and Robin Truitt, U. S. Environmental Protection Agency, Pacific Islands Contact Office.

1d (cont). 28 June 2022 USACE FWCA Planning Aid Letter Request to USFWS

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

1d (cont). 28 June 2022 USACE FWCA Planning Aid Letter Request to USFWS

Enclosure 1

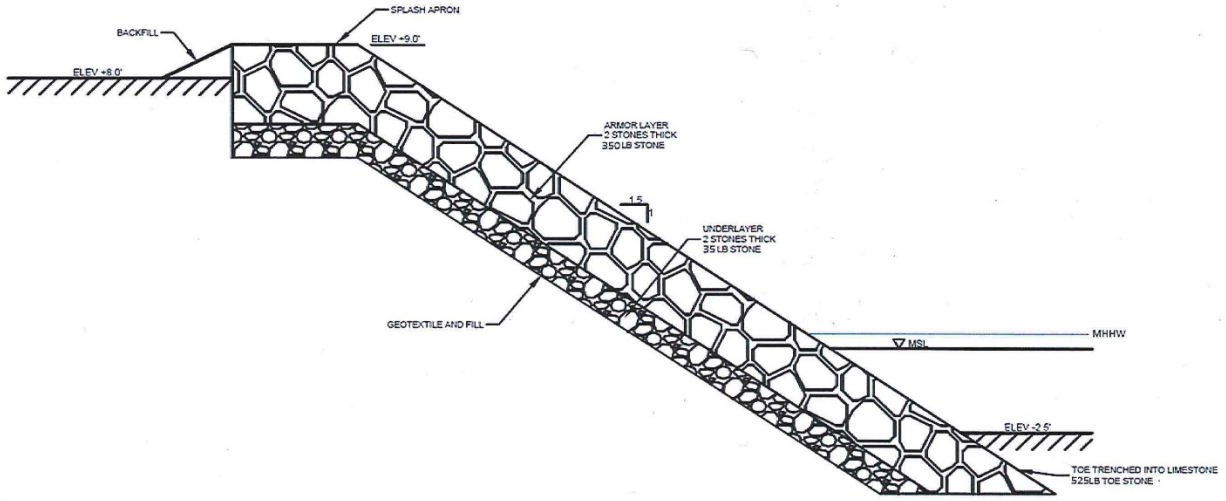


Figure 1: Rock revetment cross section, showing where Mean Sea Level (MSL) and Mean Higher High Water (MHHW) will potentially intersect with the structure. Figure by Catie Dillon, May 31, 2022.

The crest of the rock revetment is planned to be centered over the location of the existing vertical seawall, with the toe 17 ft out. A small trench will be excavated into the underlying limestone at -2.5 MSL to seat the toe of the revetment. The revetment extends up to +9ft. MSL at the crest elevation, approximately 1 foot above the current highest point of the existing seawall.

1d (cont). 28 June 2022 USACE FWCA Planning Aid Letter Request to USFWS



Figure 2: Proposed Project Area: The proposed active construction and staging (labelled COSA) areas are indicated in black. The red line indicates mean lower low water (MLLW), the green line indicates mean sea level (MSL), and the blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, May 31, 2022.

The proposed active construction and staging area is 1.45 acres. The project area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. Rock Revetment Footprint. The footprint of the revetment shown is about 40-50 ft. wide to accommodate any potentially needed area for construction. The revetment itself is currently designed to be only 17 ft. wide with a finished footprint of 0.82 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline. Excavation, grading, structure demolition, tree, and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to.

The present assumption is the revetment could be constructed from the land during low tide without in-water construction. However, the construction means and method will be further defined by the construction contractor prior to construction.

1e. 20221 July 21 NMFS Technical Assistance Response

From: Jonathan Brown - NOAA Federal
To: Dean, Marian E CIV USARMY CEPOH (USA)
Cc: efhesaconsult@noaa.gov; Gerry Davis - NOAA Federal; Malia Chow - NOAA Federal; Stuart Goldberg - NOAA Federal
Subject: [Non-DoD Source] NMFS Technical Assistance: East Hagatna Emergency Shoreline Protection Project in Guam
Date: Thursday, July 21, 2022 6:32:31 PM

Håfa Adai, Marian:

On June 2, 2022, the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO), Habitat Conservation Division (HCD), received the U.S. Army Corps of Engineers, Honolulu District, Civil Works Branch (USACE) request letter for comments and technical assistance for the East Hagatna Emergency Shoreline Protection Project, located in Hagatna, on the island of Guam. The June 2, 2022 letter also requests NMFS to participate in the early scoping activities of the project. The USACE proposes to study and construct an emergency shoreline protection project to protect the vital public infrastructure of South Marine Corps Drive adjacent to Trinchera Beach within Agana Bay, Guam. This proposed action is being conducted in partnership with the Government of Guam and the USACE is inquiring whether or not other Federal agencies, including NMFS PIRO HCD, would like to provide information to inform the scoping study. Staff from the HCD attended the June 9, 2022 interagency workshop, as well as a June 14, 2022 follow-up conference call.

Below we provide technical assistance intended to help you integrate EFH considerations as you start the scoping process for this study. This technical assistance does not fulfill any federal responsibilities, and does not constitute an EFH consultation. In addition to being the federal regulatory agency responsible for implementing the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including the EFH provisions described by Federal regulations (50 CFR 600.920), PIRO oversees consultations for compliance with the Endangered Species Act and other statutory mandates. Compliance with the EFH provisions of the MSA can also be achieved through pursuance to the Fish and Wildlife Coordination Act (FWCA, 16 U.S.C. 661-666c; see below). For all questions related to consultations with us in the future, please contact us through the email address EFHESAconsult@noaa.gov.

Essential Fish Habitat
The marine water column from the surface to a depth of 1,000 m from shoreline to the outer boundary of the Exclusive Economic Zone (200 nautical miles), and the seafloor from the shoreline out to a depth of 400 m around each of the Mariana Islands, have been designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands around Guam, including the Agana Bay, are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's, Pelagic and Mariana Archipelago Fishery Ecosystem Plans (hereafter, Mariana FEP). The MUS and life stages found specifically within the Saipan lagoon include eggs, larvae, juveniles, and adults for Bottomfish and Pelagic MUS. Specific types of habitat considered as EFH within, or adjacent to, the proposed project area include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Fish and Wildlife Coordination Act
The Fish and Wildlife Coordination Act mandates that wildlife, including fish, receive equal consideration and be coordinated with other aspects of water resource development. This is accomplished through consultation with NMFS, the U.S. Fish and Wildlife Service (USFWS),

1e. (cont.). 21 July 2022 NMFS Technical Assistance Response

and appropriate state agencies whenever any body of water is proposed to be modified in any way and a Federal permit or license is required. These agencies determine the possible harm to fish and wildlife resources, the measures needed to both prevent the damage to and loss of these resources, and the measures needed to develop and improve the resources, in connection with water resource development. NMFS, the USFWS, and state agencies submit comments to Federal licensing and permitting agencies on the potential harm to living marine resources caused by the proposed water development project, and recommendations to prevent harm In all, the FWCA compliance process includes the following four steps: consultation (notice of initiation); reporting (e.g., field surveys and summary reports) and recommendations to protect, mitigate, and restore natural resources; Action agency consideration of recommendations, and Action agency implementation of recommendations.

General Guidance

Shoreline protection strategies involving broad-scale hardening of coastlines through the use of seawalls, construction of revetments, or the installation of groins, typically impart adverse effects to EFH resulting in the need for avoidance, minimization and offset measures. The alteration of natural, stable shorelines should be avoided as much as is practicable. Where practicable, bioengineering approaches should be used to protect altered shorelines. NMFS recommends alternatives to hard engineering strategies through the use of soft engineering strategies (e.g., vegetation alternatives), a combination of hard and soft engineering strategies (i.e., nature-based solutions including living shorelines). Further, the repair of existing structures to the extent practicable, typically decreases the impacts of adverse effects to EFH and often results in greater environmental benefits. Please consider this when prioritizing projects from this study.

Habitat Resource Assessments and Modelling

The USACE has proposed several sources of marine assessments for the study area, but none are within the proposed project area (i.e., along Trinchera Beach within Agana Bay). NMFS first recommends qualitative assessments to determine the presence or absence of habitat forming EFH, including corals and seagrass, at and immediately adjacent to the proposed project footprint. If qualitative surveys reveal the presence of corals and/or seagrass, we recommend conducting quantitative marine assessments and modeling activities for any specific projects that emerge from the study. In addition to detailed surveys of hard-bottom habitat, corals, and seagrass, we recommend the USACE develop predictive modelling analyses for water transport, sedimentation, and changes in coastal processes in order for NMFS to adequately assess the resource condition baseline associated with any specific project activities. Climate change and sea level rise should be included in modelling analyses where applicable.

NMFS recommends that the USACE conduct modelling to predict how proposed projects will influence sediment transport, water motion, and other coastal processes before finalizing priorities from the study. Sediment transport and water current modelling would improve the accuracy of where potential survey transects are laid. Specifically, if there is high probability that sediment deposition will occur over sensitive and hard-to-replace hard-bottom habitat, corals, and seagrass, these should be priority survey areas. Completing these modelling efforts prior to finalizing the study would help reduce uncertainty and better inform potential EFH offset determinations.

NMFS also recommends that hard-bottom EFH, coral, and seagrass communities are sufficiently sampled during quantitative benthic marine surveys. Prioritize surveys at areas

1e. (cont.). 21 July 2022 NMFS Technical Assistance Response

where models predict deposition, and principle benthic organisms are present to reduce uncertainty and inform potential EFH minimization strategies and offset determinations. We are happy to continue coordinating during this process.

Water Quality Monitoring
Robust water quality monitoring (e.g., turbidity, sedimentation rates) may be needed to assess conditions before (i.e., baseline), during, and after certain project activities. These activities should be informed by the sediment modeling. Special attention may be needed to collect turbidity and sedimentation rate information at areas where there are habitat forming EFH resources, including corals and seagrass. For other criteria needed for projects that emerge from this study, NMFS would defer to the Guam 401 Water Quality Certification (WQC) authority. Completing the water quality monitoring planning effort and including it as part of project prioritization would help reduce uncertainty and better inform EFH conservation recommendations and any potential offset determinations.

Climate Change and Sea Level Rise
Predicted changes in precipitation patterns, ocean conditions and other factors associated with climate change should be integrated into each phase of the study and prioritization process. A description of how these are integrated into engineering and design plans is recommended.

Cumulative Effects
NMFS recommends that the USACE develop a cumulative effects analysis for potential adverse effects to EFH over time from any projects resulting from these scoping exercises. This includes the USACE-proposed flood damage reduction study for the Agana River within the Hagatna watershed (Agana River Flood Risk Management General Reevaluation Study). For example, sediment deposition may be enhanced by the flood control project, which intends to enhance discharge rates of water and sediment into the bay. If the seawall project is nearby, the impacts to water motion and sediment resuspension from its lifetime may result in additional unforeseen adverse effects to EFH, including corals, from smothering and burial leading to degradation in state and mortality.

NMFS appreciates the opportunity to provide technical assistance during the scoping phase of the current study. We are committed to providing continued cooperation and subject matter technical expertise that result in beneficial outcomes for NOAA trust resources and sufficiently comply with relevant mandates, while achieving the project goals effectively and expeditiously. Please contact Jonathan Brown at jonathan.brown@noaa.gov with any comments, questions, or to request further technical assistance.

Jonathan
--
Jonathan Brown
Guam Coral Reef Fisheries Liaison, Pacific Islands Regional Office
NOAA Fisheries | U.S. Department of Commerce
www.fisheries.noaa.gov

1f. 2022 July 27 USFWS Technical Assistance Response

United States Department of the Interior

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

In Reply Refer To:
Project Code 2022-0066853

July 27, 2022

Marian Dean
Environmental Planner
Civil & Public Works Branch
U.S. Army Corps of Engineers
Honolulu District
230 Otake St.
Ft. Shafter, HI 96858-5440

Subject: Response to request for Fish and Wildlife Coordination Act Planning Aid Letter for East Hagatna, Guam

The U.S. Fish and Wildlife Service (Service) is in receipt of your June 30, 2022, request for a Fish and Wildlife Coordination Act (FWCA) Planning Aid Letter for the East Hagatna Section 14 Emergency Shoreline Protection Project. The proposed project is sponsored by the U.S. Army Corps of Engineers (USACE) and the Government of Guam).

The FWCA provides the basic authority for the Secretary of the Interior, through the Service, to assist and cooperate with Federal, state, and public or private agencies and organizations in the conservation and rehabilitation of wildlife. Whenever the waters or channel of a body of water are modified by a federal agency, or by any other entity where a federal permit is required, adequate and equal consideration must be made for the conservation, maintenance, and management of trust wildlife resources and habitat. The National Oceanic and Atmospheric Administration's (NOAA), National Marine Fisheries Service (NMFS) provides similar assistance and cooperation for wildlife species under the management responsibilities of the Department of Commerce. Consultation under the FWCA is to be conducted with the Service, NMFS as appropriate, and the agency administering the wildlife resources of the State in which the project is located. In this case, the primary state wildlife resource agency is the Guam Division of Aquatic and Wildlife Resources DAWR). The resource agencies have the responsibility of ensuring that concerns and recommendations of the other resource agencies are considered fully in FWCA reviews. The FWCA compliance process has four general steps: consultation or request for technical assistance; reporting (a Planning Aid Letter or field surveys and summary reports) and recommendations to protect, mitigate, and avoid natural resources;

action agency consideration of recommendations; and action agency implementation of recommendations.

Purpose and Need

The purpose of the project is to plan and construct emergency shoreline protection along a section of Hagatna Bay, Guam. The construction is currently proposed for a 2,100 linear foot section along South Marine Corps Drive. Demolition and excavation may occur to remove the existing seawall structure and then install a new rock revetment along that same section. The stabilization structure is intended to slow erosion along the shoreline and to protect transportation infrastructure. In addition to the immediate project footprint, vegetation removal is expected along the adjacent shoreline to accommodate the activity, and there will be staging areas and an upland buffer area. The expected design life with routine maintenance is 50 years.

General comments and recommendations

Preliminary information from the USACE has identified that the project is still in the feasibility stage and that alternatives and construction designs are still being developed. The Service would like to provide some comments and recommendations intended to assist the USACE integrate FWCA considerations into the project development and implementation. This technical assistance does not fulfill any federal responsibilities and does not constitute an FWCA consultation. In addition, a draft National Environmental Policy Act (NEPA) document is not available for review currently.

Enclosure 1 in the USACE letter provided a rock revetment cross section as an example of a design that is preferred for the project. The footprint for the proposed action will differ based on the alternative proposed. A complete alternatives analysis cannot be performed without the range of proposed alternatives. In addition to the rock revetment, such alternatives might also include excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas. In projects where a preferred alternative has not been identified, the alternative with the maximum footprint and associated disturbance will be chosen for evaluation by the Service via the FWCA.

The USACE provided a list of publications related to Hagatna Bay for reference but did not identify if any of those occur within the proposed project footprint. The request letter stated that there is a "substantial amount of available information," but if the information is general and not specific to the direct project footprint and a buffer zone, it may not be relevant to an impact assessment for this project. The available information indicates that there could be valuable resources in Hagatna Bay in the vicinity of the project footprint, possibly including ESA species. Time is also relevant to the data conversation. In most cases, the data should be recent, with observations (or instrument data collection) and analysis completed within the last 5 years. Depending on the outcome of the natural resource evaluation, the resource agencies may recommend compensatory mitigation to the action agency.

The June 14, 2022, USACE presentation "East Hagåtña, Section 14 Emergency Shoreline Protection Feasibility Study" mentioned that there are known Endangered Species Act (ESA) listed corals in the area. There is no clarification on what species those are, where they occur in relation to the footprint, and when the observations were made. That type of information should be included in the NEPA document development. The USACE may be referencing a University of Guam study that was conducted near the project footprint in 1993. A study that is almost 30 years old would not be considered a recent observation, if there were ESA corals found at that time. If there is no recent information available for the project footprint, the resource agencies would require a field study to determine what resources and benthic habitats are present.

At this time, the Service is providing preliminary comments, listed below, for the development of the Draft Environmental Impact Statement/Environmental Assessment (DEIS or DEA). The Service appreciates being included in early planning for this project as it may make the coordination for the future consultations more efficient, because the resource agencies will have had a chance to contribute and address any concerns before the project reaches the Department of Army permitting stage.

Alternatives

Shoreline protection strategies involving broad-scale hardening of coastlines through the use of seawalls, construction of revetments, or the installation of groins often create adverse effects to proximal marine resources, necessitating measures for avoidance, minimization or mitigation. The alteration of natural, stable shorelines should be avoided as much as is practicable. Where practicable, bioengineering approaches should be used to protect altered shorelines. The Service recommends alternatives to hard engineering strategies through the use of soft engineering strategies (e.g., vegetation alternatives), or a combination of hard and soft engineering strategies (i.e., nature-based solutions including living shorelines). Further, the repair of existing structures, to the extent practicable, typically decreases resource impacts and often results in greater environmental benefits.

Habitat Resource Assessments and Modelling

The USACE has proposed several sources of marine assessments for the study area, but none are within the proposed project area (i.e., along Trinchera Beach within Agana Bay). The Service recommends qualitative assessments to determine the presence or absence of coral reefs and seagrass within and adjacent to the proposed project footprint. If qualitative surveys reveal the presence of corals, seagrass, or other trust resources, we recommend conducting quantitative marine assessments and modeling activities for any specific projects that emerge from the study. In addition to detailed surveys of hard-bottom habitat, corals, and seagrass, we recommend the USACE develop predictive modelling analyses for water transport, sedimentation, and changes in coastal processes in order for the Service to adequately assess the resource condition baseline associated with any specific project activities, and likely changes to such. Climate change and sea level rise should be included in modelling analyses where applicable.

The Service further recommends that the USACE conduct modelling to predict how proposed projects will influence sediment transport, water motion, and other coastal processes before finalizing priorities from the study. Sediment transport and water current modelling would help inform the most appropriate locations for survey transects. If there is high probability that sediment deposition will impact sensitive priority species such as corals and seagrass, then these areas should be prioritized for survey. Completing such modelling prior to finalizing the study will help reduce uncertainty and provide better clarity as to any potential need for mitigation due to unavoidable resource loss.

Water Quality Monitoring

Water quality monitoring regarding turbidity and sedimentation should be undertaken to assess conditions before during, and after project activities involving in-water work. Turbidity and sedimentation rate information should be gathered in those areas where corals and seagrass are shown to occur. The Corps should also work through the Guam 401 Water Quality Certification (WQC) authority regarding other criteria that may apply. Completing the water quality monitoring planning effort and including it as part of project prioritization will reduce uncertainty and again better inform discussions regarding avoidance, minimization, or mitigation.

Climate Change and Sea Level Rise

Predicted changes in sea level, meteorological conditions, and ocean heat content and chemistry other factors associated with climate change over the projected 50-year life of the project should be integrated into each phase of the study and prioritization process. A description of how these are integrated into engineering and design plans is recommended to assess project durability and potential longer term resource impacts.

Cumulative Effects

During the development of the NEPA document the project sponsor should document if there are additional shoreline stabilization, beach nourishment, and/or hardening projects that are currently proposed or recently completed for Hagatna Bay. This includes the USACE-proposed flood damage reduction study for the Agana River within the Hagatna watershed (Agana River Flood Risk Management General Reevaluation Study) which was recently evaluated by the Service in 2021. Sediment deposition may be increased by such a flood control project, which is intended to convey stream spate discharges more directly into the bay. If the seawall project is nearby, the impacts to water motion and sediment resuspension during its lifetime may result in additional unforeseen adverse effects to trust resources such as corals. Cumulative impacts must be considered in an impact assessment and in a FWCA evaluation. The sum of the individual projects may have greater impacts to the overall ecosystem and coastal processes and should be evaluated as such by the resource agencies.

The Service appreciates the opportunity to provide technical assistance during the scoping phase

1f. (cont.). 27 July 2022 USFWS Technical Assistance Response

of the current study. We are committed to providing continued cooperation and subject matter technical expertise that result in beneficial outcomes for trust resources while achieving the project goals in a reasonable and timely fashion. Please contact Nadiera McCarthy (nadiera_mccarthy@fws.gov) with any comments or questions, or to request further technical assistance in this matter.

Sincerely,

Digitally signed by GREGORY KOOB
Date: 2022.07.27 12:46:55 -10'00'

Gregory A. Koob
Assistant Field Supervisor for Programmatic Ops

1g. 2023 March 17 USFWS Technical Assistance Response

United States Department of the Interior

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

In Reply Refer to:
FWS/R1/Project Code 2022-0066853

March 17, 2023

Marian Dean
Environmental Planner
Civil & Public Works Branch
U.S. Army Corps of Engineers
Honolulu District
230 Otake St.
Ft. Shafter, HI 96850-5440

Subject: Response to additional request for Fish and Wildlife Coordination Act Planning Aid Letter for East Hagatna, Guam

The U.S. Fish and Wildlife Service (Service) received a request for a Fish and Wildlife Coordination Act (FWCA) Planning Aid Letter for the East Hagatna Section 14 Emergency Shoreline Protection Project on June 30, 2022. The proposed project is sponsored by the U.S. Army Corps of Engineers (USACE) and the Government of Guam. The Service responded to that request with a letter dated July 27, 2022, that provided preliminary comments for the development of the Draft Environmental Impact Statement/Environmental Assessment (DEIS or DEA).

At that time, the purpose of the project was to construct emergency shoreline protection along a section of Hagatna Bay, Guam. The status of the project was then removed from the "emergency" category and conversations about a feasibility stage continued with the Federal natural resource agencies, including the National Oceanic and Atmospheric Administration's National Marine Fisheries Service Pacific Islands Regional Office (NMFS/PIRO). Through additional project coordination meetings with the USACE, the Service and NMFS/PIRO offered to collect information on natural resources and marine habitat in the project area and adjacent waters in the Bay if it was feasible, as there were no funds provided. NMFS/PIRO was able to document resources in those areas in November 2022, but a summary report has not been shared yet with the Service at the time of the writing of this letter. The Service has also not seen a draft for a DEIS or DEA that would provide updated project details. Without the additional

1g. (cont.). 17 March 2023 USFWS Technical Assistance Response

information from either of those, our agency cannot properly evaluate the potential impacts of the proposed action to trust resources.

The Service is still committed to providing continued cooperation and subject matter technical expertise that result in beneficial outcomes for trust resources while achieving the project goals in a reasonable and timely fashion. Please contact Nadiera Sukhraj (Nadiera_McCarthy@fws.gov) with any comments or questions.

Sincerely,

DREW CRANE

Digitally signed by DREW CRANE
Date: 2023.03.17 12:46:06 -08'00'

Drew Crane
Acting Deputy Field Supervisor

1h. 2023 July 13 NMFS and USFWS FWCA Planning Aid Letter

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax: (808) 725-5215

July 13, 2023

Ryan Pevey
Lieutenant Colonel
Commander and District Engineer
U.S. Army Corps of Engineers,
Honolulu District Fort Shafter,
Hawai'i 96858-5440

NMFS Planning Aid Letter for the East Hagatna Emergency Shoreline Protection Project

Lieutenant Colonel,

The National Marine Fisheries Service Pacific Islands Regional Office (NMFS) has prepared this Planning Aid Letter (PAL) to assist with the development of the East Hagatna Emergency Shoreline Protection Project in Agana Bay on the island of Guam. This PAL is provided in accordance with the Fish and Wildlife Coordination Act of 1958, as amended (FWCA; 48 Stat. 401; 16 U.S.C 661 *et seq.)*, but it does not constitute a report from the Secretary of Commerce under section 2(b) of the FWCA. Additionally, this PAL does not constitute a biological opinion under the Endangered Species Act (ESA; 87 Stat. 884; 16 U.S.C. 1531 *et seq.*), and it does not provide final conservation recommendations related to Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act (EFH MSA; 90 Stat. 331; 16 U.S.C. 1801 *et seq.*). The purpose of this PAL is to highlight to the U.S. Army Corps of Engineers (Corps) the natural marine resources that we believe may be exposed and affected by the proposed project, mitigation measures that may be implemented to avoid resource exposure and adverse effect, and to indicate our support to the Corps in their proceeding to the pre-construction engineering and design phase of the tentatively selected revetment plan.

The Corps is tentatively proposing to replace a preexisting but failing vertical seawall with a sloped revetment along a 0.64 kilometer portion of shoreline in Hagatna, Guam. This effort appears readily needed to protect the adjacent 7 lane road (South Marine Corps Drive) from shoreline erosion. A preliminary field reconnaissance survey adjacent to the existing seawall identified the surface substrate within the tentative project footprint to be mainly intertidal sand with pockets of exposed rubble and cobble. Sand was also a spatially dominant surface feature in the neighboring submerged region (out to approximately 50 meters distant). Biological resources in the submerged area included scattered patches of seagrass and algae in various aggregate densities, with a limited number of scattered corals (12 individuals that ranged in size from 2.5 to 300 centimeters greatest length). The seagrass, algae and coral resources were observed to be utilized by at least one octopus and 18 species of mainly juvenile-stage fishes,

indicating habitat and food-web resource value (NMFS, 2023). Guam-based management unit (MSA MUS) and ESA listed species were not observed, but regional use may occur by the various species and life-stages. In terms of fishing, Agana Bay is known to experience seasonal runs of rabbitfish fry (*Siganus argenteus* and *Siganus spinus*), which are heavily fished and culturally valued (Kyota, 2015). ESA critical habitat may eventually be designated in the Hagatna region for listed corals and or sea turtles.

Coastal hardening has the potential to interfere with natural shoreline dynamics in a manner that may affect adjacent beaches and submerged habitats and resources. As such, the National Marine Fisheries Service typically does not encourage shoreline hardening, particularly in sheltered coastal areas (NOAA, 2015). However, in this case, Hagatna is exposed, it is already "hardened" with an existing but failing vertical seawall, the eroding shoreline is directly adjacent to an extended 7 lane coastal road with no realistic options for rerouting or setback, and the long-term risks to the neighboring submerged habitats and resources appear limited (NMFS, 2023). Given the information that is available, we presently foresee a qualitatively similar state and baseline trajectory for the neighboring submerged habitat and resources with and without the proposed revetment. However, this prediction is based on an assumption that appropriate best management practices will be fully utilized to avoid and minimize the potential for impacts as the project is implemented.

A list of recommended standard best management practices has been developed by the United States Fish and Wildlife Service (USFWS) and is provided with this PAL (separate enclosure). The NMFS fully supports the use of these BMPs and provides the following additional project specific recommendations:

1. The length of the proposed revetment appears fairly long, so it may be best to consider a staged approach to the dredging and filling (D&F) operations. D&F in the intertidal habitat should be timed to avoid operations in areas that are submerged.

2. Limits on the placement and use of people and equipment in submerged areas are recommended, and direct interactions with vegetative habitats and corals should be avoided.

3. Low impact design (LID) principles should be considered in the revetment design and along the edge of the adjacent road, with a focus on storm water management, sediment impoundment and the control and filtering of urban runoff.

4. Fisher access to the seasonal rabbitfish fishery should be considered and should not be meaningfully inhibited by the project.

5. The area is designated as Essential Fish Habitat, so an EFH MSA consultation will be required. Full consideration should be given to the conservation recommendations that result from that consultation.

6. Appropriate precautions and work stoppages should be implemented if mobile ESA listed species approach or enter the work area. Specific ESA conditions and conservation

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

recommendations may be obtained in consultation with our NMFS Protected Resources Division.

7. Monitoring of adjacent and regional beach profiles and the distribution and densities of regional seagrasses should be implemented to assess the short and long-term effects of the proposed project. Such data will be very useful in informing future Guam revetment proposals and predictions, which we foresee increasing in number and need. Pre- and post-construction measures should be made in the adjacent habitat and appropriate reference areas. Additional measures should be made 3 to 5 years following the project's completion to provide for long-term inference on revetment beach and submerged resources effects.

We look forward to further participating and assisting, as needed, with this project and consider the FWCA consultation requirements, up to this point, to have been satisfied. We do highlight the eventual need for separate EFH MSA and ESA consultations, as warranted, which may be initiated at the email address EFHESAconsult@noaa.gov. We encourage the early onset of these consultations. This PAL has been shared with the USFWS and is sent with their support; a copy of their recent response to a Corps request for a PAL is provided (separate enclosure). Please reach out to me (Gerry.Davis@noaa.gov; 808-725-5080) or Dr. Steven Kolinski (Steve.Kolinski@noaa.gov; 808-725-5081) if you have any questions or would like to discuss.

Sincerely,

Gerry Davis
Assistant Regional Administrator
NMFS Pacific Islands Regional Office
Habitat Conservation Division

Cc: Sarah Malloy, Acting Regional Administrator, NMFS PIRO
Michelle Mansker, Acting Deputy Regional Administrator, NMFS PIRO

3

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

References

Kyota, C. 2015. University of Guam-4H rabbit fish (manahak) project 2014-2015. Western Pacific Regional Fishery Management Council report, Contract No. 13-SFFII-01, 19 p.

National Marine Fisheries Service (NMFS). 2023. A preliminary survey of marine species and habitats in the vicinity of a proposed shoreline revetment in East Hagatna, Guam. Final report prepared for the United States Army Corps of Engineers Honolulu District, 12 p.

National Oceanographic and Atmospheric Administration (NOAA). 2015. Guidance for considering the use of living shorelines, 35 p.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

U.S. Fish and Wildlife Service
Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

United States Department of the Interior

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

In Reply Refer to:
FWS/R1/Project Code 2022-0066853

July 7, 2023

Ms. Marian Dean
Environmental Planner
Civil & Public Works Branch
U.S. Army Corps of Engineers
Honolulu District
230 Otake St.
Ft. Shafter, Hawaii 96850-5440

Subject: Response to additional request for Fish and Wildlife Coordination Act Planning Aid Letter for East Hagatna, Guam, and comments on shoreline site visit

Dear Ms. Dean:

The U.S. Fish and Wildlife Service (Service) received the original June 30, 2022, request for a Fish and Wildlife Coordination Act (FWCA) Planning Aid Letter for the East Hagatna Section 14 Emergency Shoreline Protection Project. The proposed project is sponsored by the U.S. Army Corps of Engineers (USACE) and the Government of Guam with a purpose of reducing or dissipating wave energy along the shoreline to preserve terrestrial infrastructure needed for transportation. The Service responded to that request with a letter dated July 27, 2022, that provided preliminary comments for the development of the Draft Environmental Impact Statement/Environmental Assessment (DEIS or DEA).

At that time, the purpose of the project was to construct emergency shoreline protection along a section of Hagatna Bay, Guam. The status of the project was then removed from the "emergency" category and conversations about a feasibility stage continued with the Federal natural resource agencies, including the National Oceanic and Atmospheric Administration's National Marine Fisheries Service Pacific Islands Regional Office (NMFS/PIRO). Through additional project coordination meetings with the USACE, the Service and NMFS/PIRO offered to collect information on natural resources and marine habitat in the project area and adjacent waters in the Bay if it was feasible, as there were no funds provided. There was no formal agreement for a FWCA evaluation of resources and alternatives. NMFS/PIRO was able to

qualitatively document resources and habitats in those areas in November 2022, and a summary report was sent to USFWS on June 22, 2023 (*A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam*).

The Draft Integrated Feasibility Report and National Environmental Policy Act Document for the East Hagatna Shoreline Protection (USACE, May 2023) identified Alterative 2: Revetment as the preferred alternative. The design meets the USACE climate change and sea level rise engineering requirements, and aligns with the funding available for the project, approximately $9 million. Alternative 2 involves the removal and replacement of 2,100 feet (ft)/640 meters (m) of existing seawall along South Marine Corps Drive with either a rock or tribar revetment. This alternative has the largest footprint of the alternatives included in the final array.

Service comments on NMFS/PIRO natural resource observations

The shoreline snorkel from November 2022 was divided into the three areas: 1) Intertidal Habitat Adjacent to the Seawall, 2) Submerged Habitat 82ft/25m distance from the seawall, and 3) Submerged Habitat 164ft/50m distance from the seawall. There were no ESA-listed corals observed in those three areas. The Intertidal Habitat Adjacent to the Seawall was the snorkel track that was within the footprint of proposed project. The observer reported the dominant substrate type as sand with a lack of live coral, invertebrates, seagrasses, and fishes. The next band that may be influenced by the change in seawall design was located 82ft/25m from the existing seawall. The dominant substrate type was sand again, but this time with patches of macroalgae and seagrass.

Summary

From the observations included in the NMFS/PIRO report, it does not appear that a larger quantitative FWCA study is needed to evaluate impacts to resources related to the current Alternative 2. If the project description changes, or a new Preferred Alternative is designated, the Service reserves the right to revisit this determination. The observed species list was short (Table 1 in report), with all those observations occurring along the tracks outside of the proposed project footprint. There were also no observations of ESA-listed species during the three days that the snorkel activity occurred. The proposed seawall design will extend over sand, not substrate with other natural resources present.

In addition, unless the project description changes, or new information reveals that the action may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to section 7 of the ESA is necessary.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

The Service appreciates the opportunity to comment on the East Hagatna Section 14 Emergency Shoreline Protection Project. If there are questions regarding these comments, please contact biologist Nadiera Sukhraj (Nadiera_McCarthy@fws.gov) with any comments or questions.

Sincerely,

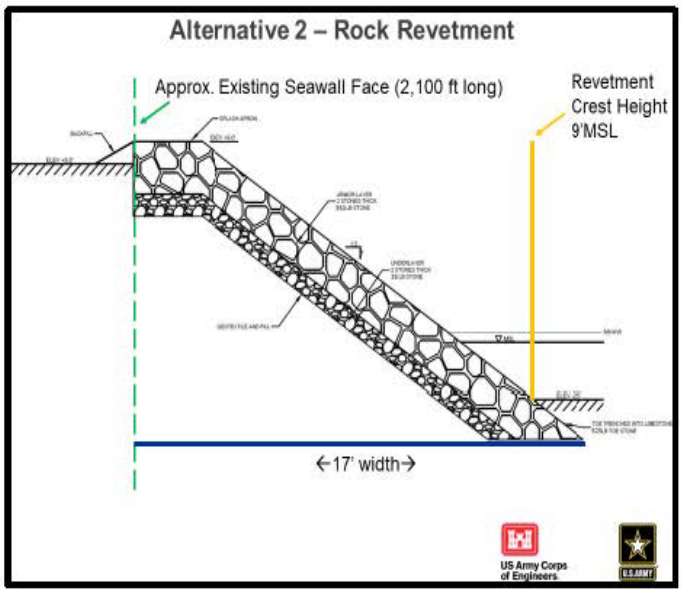
AARON NADIG

Digitally signed by AARON NADIG
Date: 2023.07.07 15:07:31 -10'00'

Deputy Field Supervisor
Programmatic Operations

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam



National Marine Fisheries Service
Pacific Islands Regional Office
1875 Wasp Blvd., Bldg. 176
Honolulu, HI. 96818

22 June 2023

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

Abstract: A 2100 linear foot (640 meter [m]) vertical seawall that protects a portion of the coastal road in Hagatna, Guam is being considered for replacement with a rock revetment. The revetment will cover some existing intertidal substrate and has the potential to effect submerged habitats and resources in the area. A preliminary survey was conducted along the seawall and at 25 and 50 m distance from the exposed shoreline to assess the habitats and resources that may be at risk from the replacement activities. The intertidal and submerged substrates were observed to be spatially dominated by sand with scattered patches of seagrass and algae noted in the 25 and 50 m distant areas. Coral colonization was scattered and limited, with 12 individual colonies recorded in the 50 m distant area. Species that are listed as management units (Magnuson-Stevens Fishery Conservation and Management Act, MSA 16 U.S Code § 1801 et seq.) or as threatened or endangered (United States Endangered Species Act, ESA 16 U.S Code § 1531 et seq.) were not observed. The nearshore region in east Hagatna is designated as level 1 essential fish habitat (i.e. based simply on the "geographic range of a species [or life stage]"; 50 CFR Part 600 Subpart J; WPRFMC, 2009); it is not expected to be designated as critical habitat for corals.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

Introduction

On June 2, 2022, the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO), Habitat Conservation Division (HCD) received a request from the US Army Corps of Engineers, Honolulu District, Civil Works Branch (USACE) to participate in the planning of the East Hagatna Shoreline Emergency Shoreline Protection Project located in Hagatna (also known as Agana) on the island of Guam (Figure 1). The USACE is proposing to study and provide emergency shoreline protection in the area due to an existing seawall failing to protect vital public infrastructure, namely South Marine Corps Drive.



Figure 1. The island of Guam with the location of the East Hagatna Shoreline Emergency Shoreline Protection Project highlighted.

The USACE is considering 8 replacement and repair alternatives, including:

- Alternative 1: No Action
- Alternative 2: Revetment
- Alternative 3: Precast Concrete Seawall
- Alternative 4: Concrete Rubble Masonry (CRM) Wall
- Alternative 5: Secant Pile Wall
- Alternative 6: Permeation Grouting
- Alternative 7: Beach Fill with Re-nourishment
- Alternative 8: Infrastructure Retreat

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

with "Alternative 2: Revetment" as preferred, since it is the only alternative to meet the climate change and sea level rise engineering requirements within the cost limitations ($9M USD). The footprint of the revetment is about 40-50 feet wide (ft.; 12 - 15 meters [m]) and the project will involve tree and foliage removal, staging, structure demolition, excavation, grading, construction and preparation of upland buffer areas. The revetment will replace 2,100 linear ft. of existing seawall (640 m) and may extend up to 20 ft. (6 m) from the existing seawall seaward, 30 ft. (9 m) upland and five ft. deep (1.5 m) into the limestone base (Figure 2). The action is being considered in partnership with the Government of Guam.

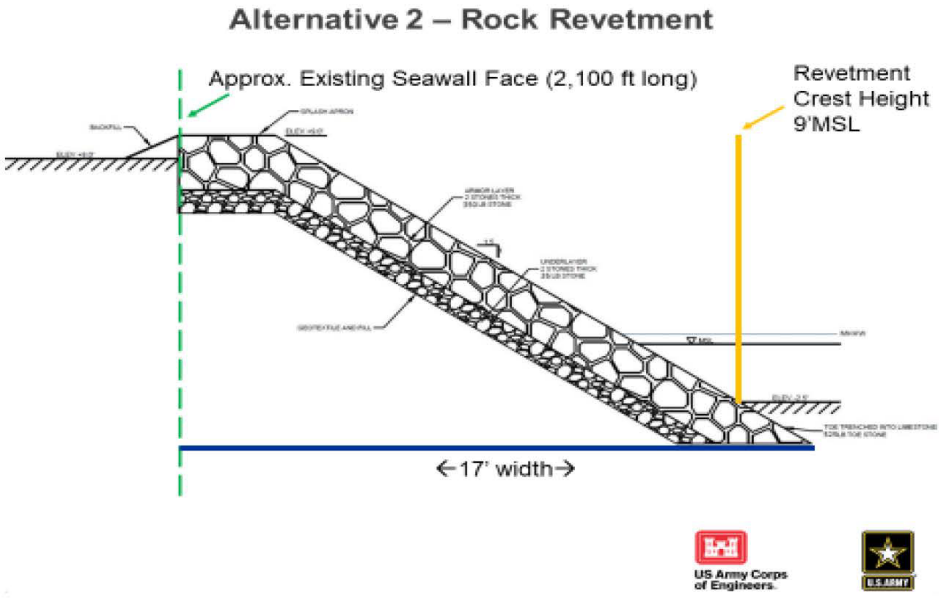


Figure 2. Preferred alternative of a rock revetment that may extend up to 20 ft. (6 m) seaward from the existing seawall into the water for the East Hagatna Shoreline Emergency Shoreline Protection Project on the island of Guam.

Pursuant to the Fish and Wildlife Coordination Act (16 U.S. Code § 661-666c; FWCA), the USACE requested NMFS to conduct a reconnaissance survey of the marine area adjacent to the proposed site to preliminarily inform on the fish and wildlife resources that may be exposed to project related effects. This included information on the status and potential concerns related to the conservation of federally managed fisheries and essential fish habitat (particularly that deemed necessary to the sustainability of such fisheries) under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S Code § 1801 et seq.; MSA) and observations related to species listed as threatened or endangered under the U.S. Endangered Species Act (16 U.S Code § 1531 et seq.; ESA) and any overlay of designated critical habitat. The findings of the reconnaissance survey and preliminary NMFS concerns for consultation consideration are provided herein.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

Methods

The reconnaissance survey was conducted on 1, 2 and 7 November 2022 along the length of the existing seawall (633 m; 2,077 ft.) and seaward roughly 56 m (184 ft.), which represents an area of approximately 3.5 hectares (8.8 acres). Snorkeling was conducted at high tide 25 m (82 ft.) and 50 m (164 ft.) from the shoreline adjacent to the existing seawall, and a shoreline walk occurred at low tide along the entirety of the existing seawall. At 25 m (82 ft.) distant, a transect line was consecutively laid and the resources were surveyed 12 m (39 ft.) to either side. At 50 m (164 ft.) distant, the resources were surveyed without the use of a transect line by a roving snorkeler. The survey endpoints (west end 13.47848°N, 144.76285°E; east end 13.48033°N, 144.76845°E) were marked with orange cones on the shoreline for reference. A Garmin GPSMAP 78SC was used to track the surveyor's location (Figure 3). The notable habitat types and species encountered were photographed and recorded in writing.

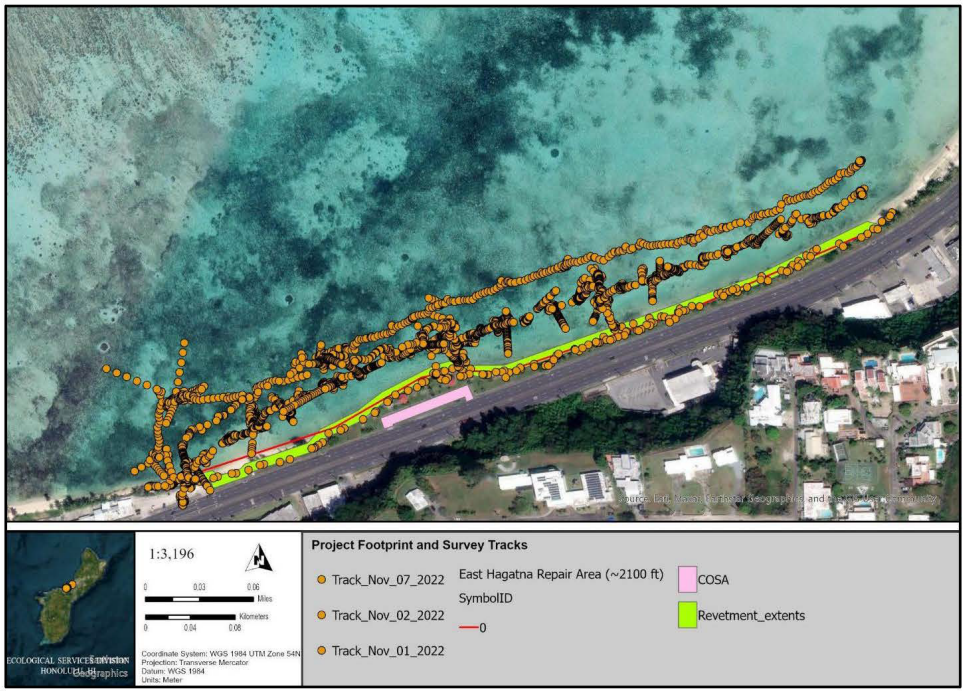


Figure 3. Survey tracks (orange circles) relative to a proposed East Hagatna shoreline revetment (green line) on the island of Guam. The three tracks represent a shoreline walk and two snorkel routes 25 and 50 m (82 and 164 ft.) distant from the exposed intertidal shoreline. A proposed equipment staging area (COSA) is denoted in pink.

Results

Intertidal Habitat Directly Adjacent to the Seawall

An undercutting of the existing seawall and other direct shoreline erosion was very evident within the proposed project area (Figure 4). The intertidal substrate was predominantly sand (roughly 70 % of the combined area) with pockets of aggregated rubble and cobble present. The intertidal region, at the tides evaluated, extended approximately 6 m (20 ft.) distant from the existing seawall/shoreline in most places, so the primary marine area for the proposed revetment appears intertidal. Live corals, other macroinvertebrates, seagrasses and fishes were not observed in this aerially exposed region. Bird utilization was not evaluated.



Figure 4. Images of the existing seawall/shoreline from west (A) to east (F) at Hagatna, Guam. The neighboring intertidal substrate consisted primarily of accumulated calcareous sand (A, C, E) with noted regions of aggregated rubble (B) and cobble sized coral skeletons (D and F).

Submerged Habitat 25 m distant

This area averaged approximately 1 m (3 ft.) in depth and was primarily covered by sand (approximately 50 % in total) with limited hard bottom evident. Sparse and moderately dense areas of macroalgae and seagrasses were observed as scattered patches and appeared as the primary habitat for a variety of observed fishes (Figure 5). Corals were not observed in the transected area; 3 seagrass, 9-plus macroalgae and 13 fish species (mainly juveniles) were recorded (Table 1, Appendix). The seagrass and macroalgae distributions appeared more prominent along the western end of the surveyed track. Species listed under the Endangered Species Act (ESA) and Magnuson-Stevens Fishery Management and Conservation Act (MSA) management unit species were not observed. This nearshore region does not appear as a likely candidate for critical habitat designation for ESA listed corals (Smith, L., NMFS, pers. comm.).

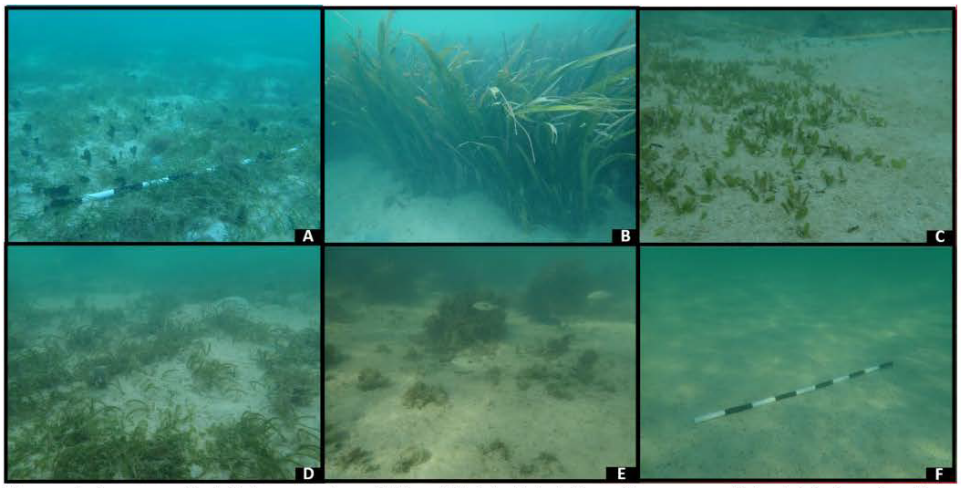


Figure 5. Images of habitat encountered 25 m (82 ft.) distant from the exposed intertidal shoreline from west (A) to east (F) along the existing seawall in Hagatna Guam. The substrate cover was primarily calcareous sand (F) with patch areas of macroalgae (seagrass mix with *Avrainvillea spp.* [A]; mixed *Sargassum vulgare* and *Padina spp.* [E]) and seagrasses (*Enhalus acoroides* [B], *Halophila gaudichaudii* [C] and *Halodule uninervis* [D]) observed.

Submerged Habitat 50 m distant

This area also averaged approximately 1 m (3 ft.) in depth and was primarily covered with sand, but qualitatively it appeared that less aggregates of seagrass and macroalgae were encountered than observed 25 m closer to shore. Twelve scattered colonies of 3 coral species were observed, including a single *Porites australiensis* (approximately 300 centimeters [cm] greatest length), a *Porites cylindrica* (approximately 60 cm greatest length) and 10 *Pocillopora damicornis* colonies (ranging from 2.5 to 10 cm in greatest length). Two seagrass, one macroalgae, 11 fish and an octopus species were also observed (Table 1, Appendix). The benthic distributions appeared more prominent along the western end of the surveyed track. ESA listed and MSA management unit species were not observed. This specific area does not appear as a likely candidate for critical habitat designation for ESA listed corals (Smith, L., NMFS, pers. comm.).

Discussion

The existing vertical seawall in the proposed project area appears to be insufficient for protecting against erosion related risk to the durability and safety of the neighboring coastal road. Replacement with a rock revetment is being proposed as a long term solution that will meet USACE cost and climate related engineering requirements. The structure may extend up to 6 m (20 ft.) into mainly sand covered intertidal habitat with digging, demolition and land-based staging expected. The exact revetment length has not been determined but it appears that the entirety of the existing seawall will be replaced (640 m; 2100 ft.) and that additional work will be limited by a $9M project cap.

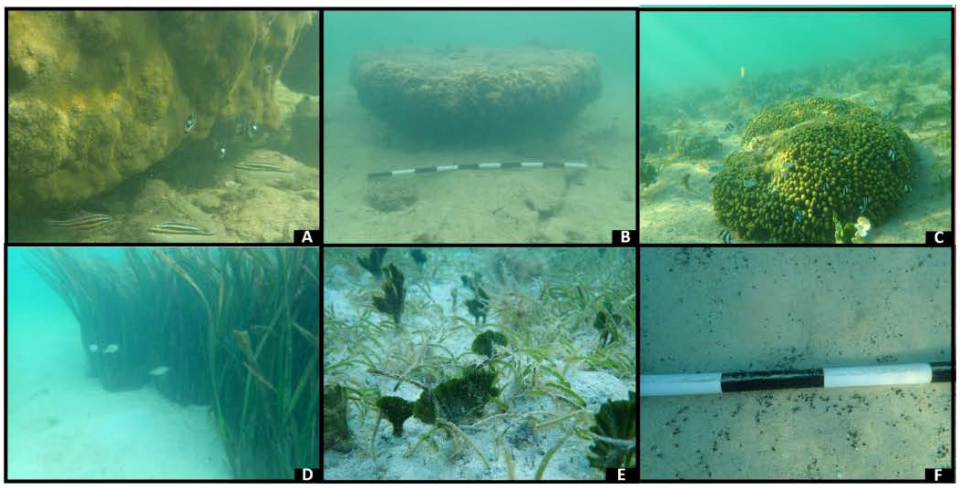


Figure 5. Images of habitat encountered 50 m (164 ft.) from the exposed intertidal shoreline along the existing Hagatna Guam seawall from west (A) to east (F). The benthic habitats consisted of individual corals (*Porites australiensis* [A, B] and *Porites cylindrica* [C] shown), seagrasses (*Enhalus acoroides* [D] and *Halodule uninervis* [E]) and macroalgae (*Avrainvillae spp.* [E]). The area was spatially dominated by calcareous sand (F).

The proposed rock revetment may be expected to enhance wave energy absorption (Allsop and Hettiarachchi, 1988; Griggs and Fulton-Bennett, 1988) and the impounding of shoreline sediment when compared to the existing vertical seawall structure in the immediate area. Scouring at the toe may still occur (Nielsen, 2023; Salauddin and Pearson, 2019; Sutherland et al., 2006); however, such may be partially attenuated by porosity in the riprap structure (USACE, 2006). Intertidal beach-type habitat will be lost with the area hardened and elevated, but the long-term risk to the presence of submerged aquatic vegetation (i.e. seagrasses and algae), scattered corals and biodiversity in the adjacent seaward region appears limited (Gittman et al., 2016; Nielsen et al., 2000; but see also Patrick et al., 2014). Agana Bay is prized for its seasonal runs of rabbitfish fry (*Siganus argenteus* and *Siganus spinus*), which are heavily fished and culturally valued (Kyota, 2015). The revetment may affect access to these fish runs in the immediate area, but recruitment of these species is likely to continue and to be dependent on other factors (Wolanski et al., 2021). It is possible that neighboring reef fishes may utilize tidally inundated portions of the revetment structure, if conducive, for temporary feeding and shelter (Ng et al. 2021). Additionally, the recruitment and use by benthic species may be enhanced as sea-levels rise (Kikuzawa et al., 2020). In general, shoreline hardening tends to be disruptive to adjacent beach and natural shoreline dynamics (Fletcher et al., 1997; Coyle and Dethier, 2010), and such is often an inequitable surrogate for the natural habitat it effects and that is lost (Schoonees et al., 2019). Hardening is typically not encouraged by the National Marine Fisheries Service, particularly in sheltered coastal areas (NOAA, 2015). However, in this case, Hagatna is exposed, it possesses an existing but failing seawall, the eroding shoreline is directly adjacent to an extended 7 lane coastal road with no realistic options for rerouting or setback, and the long-term risks to the neighboring submerged habitats and resources appear limited.

Adverse effects to the submerged marine habitats and associated species may be expected if project mitigation practices are not put in place. The release of oils or fuel-based products from project related equipment may be detrimental to exposed seagrasses, corals and fishes (Lewis and Deveroux, 2009; Turner and Renegar, 2017; Johansen et al., 2017; Baum et al., 2016). Excessive construction related sedimentation may also be detrimental (Tuttle and Donahue, 2022; Zabarte-Maeztu et al., 2021; Erftemeijer and Lewis, 2006; Wenger et al., 2015). In-water use of equipment and or personnel may lead to direct physical impacts to nearby seagrasses and corals (Hawkins and Roberts, 1993; Rogers and Cox, 2003; Eckrich and Holmquist, 2000). An activity related introduction or transfer of invasive species may occur (BOR, 2021). Additionally, a mechanism for limiting storm runoff of sediments and any contaminants from the nearby road and other impervious surfaces may be considered. These types of impacts should be fairly easy to avoid/mitigate when implementing the project and may be further explored through agency and mandate specific consultations related to essential fish habitat (level 1 designation beginning at the shoreline in Hagatna, Guam; WPRFMC, 2009; 50 CFR Part 600 Subpart J; MSA 16 U.S Code § 1801 et seq.), the Fish and Wildlife Coordination Act (16 U.S. Code § 661-666c) and the Endangered Species Act (16 U.S Code § 1531 et seq.).

Acknowledgements

The fieldwork was conducted by Jonathan Brown (NMFS PIRO HCD). Dr. Nadiera Sukhraj (United States Fish and Wildlife Service) provided the map of the tracking data (Figure 3). Dr. Steven Kolinski (NMFS PIRO HCD) assisted Jonathan with the organizing and consideration of the field data and with the development of this report.

References

Allsop, N. W. H. and S. S. L. Hettiarachchi. 1988. Reflections from coastal structures. Pages 782-794, *in* B. L. Edge (ed.), Coastal Engineering 1988 Proceedings, 21st International Conference on Coastal Engineering, Costa del Sol-Malaga, Spain, 2997 p.

Baum, G, P. Kegler, B. M. Scholz-Böttcher, Y. R. Alfiansah, M. Abrar and A. Kunzmann. 2016. Metabolic performance of the coral reef fish Siganus guttatus exposed to combinations of water borne diesel, an anionic surfactant and elevated temperature in Indonesia. Marine Pollution Bulletin 110: 735-746.

Bureau of Reclamation (BOR). 2021. Inspection and cleaning manual for equipment and vehicles to prevent the spread of invasive species. Policy and Programs, Environmental Compliance Division, U. S. Department of the Interior, 51 p.

Coyle, J. M. and M. N. Dethier. 2010. Appendix C: review of shoreline armoring literature. Pages 245-266 *in* Shipman, H., M. N. Dethier, G. Gelfenbaum, K. L. Fresh, and R. S. Dinicola (eds.), Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010–5254, 262 p.

Eckrich, C. E. and J. G. Holmquist. 2000. Trampling in a seagrass assemblage: direct effects, response of associated fauna, and the role of substrate characteristics. Marine Ecology Progress Series 201: 199-209.

Erftemeijer, P. L. A. and R. Lewis III. 2006. Environmental impacts of dredging on seagrass: a review. Marine Pollution Bulletin 52: 1553-1572.

Fletcher, C. H., R. A. Mullane and B. M. Richmond. 1997. Beach loss along armored shorelines on Oahu, Hawaiian Islands. Journal of Coastal Research 13: 209-215.

Gittman, R. K., S. B. Scyphers, C. S. Smith, I. P. Neylan and J. H. Grabowski. 2016. Ecological consequences of shoreline hardening: a meta-analysis. Bioscience 66: 763-773.

Griggs, G. B. and K. Fulton-Bennett. 1988. Riprap revetments and seawalls and their effectiveness along the central California coast. Shore and Beach 56: 3-11.

Hawkins, J. P. and C. M. Roberts. 1993. Effects of recreational scuba diving on coral reefs: trampling on reef-flat communities. Journal of Applied Ecology 30: 25-30.

Johansen. J. L., B. J. M. Allan, J. L. Rummer and A. J. Esbaugh. 2017. Oil exposure disrupts early life-history stages of coral reef fishes via behavioural impairments. Nature Ecology and Evolution DOI: 10.1038/s41559-017-0232-5.

Kikuzawa, Y. P., C. S. L. Ng, T. C. Toh, S. Q. Sam, Y-L. Lee, P. L. Loo, Y. Z. Chua, K. S. Tan and L. M. Chou. 2020. Diversity of subtidal benthic and hard coral communities on sloping and vertical seawalls in Singapore. Marine Biodiversity 50: 95, https://doi.org/10.1007/s12526-020-01118-z

Kyota, C. 2015. University of Guam-4H rabbit fish (manahak) project 2014-2015. Western Pacific Regional Fishery Management Council report, Contract No. 13-SFFII-01, 19 p.

Lewis, M. A. and R. Deveroux. 2009. Non-nutrient anthropogenic chemicals in seagrass ecosystems: fate and effects. Environmental Toxicology and Chemistry 28: 644-661.

National Oceanographic and Atmospheric Administration (NOAA). 2015. Guidance for considering the use of living shorelines, 35 p.

Ng, D., D. Taira, E. C. Heery and P. A. Todd. 2021. Antagonistic effects of seawalls and urban sedimentation on epilithic algal matrix (EAM)-feeding fishes. Marine Pollution Bulletin 173, Part B, https://doi.org/10.1016/j.marpolbul.2021.113098

Nielsen, A. F. 2023. Design scour levels for dune revetments and seawalls. Journal of Waterway, Port, Coastal, and Ocean Engineering Volume 149, Issue 3, https://doi.org/10.1061/JWPED5.WWENG-1963.

Nielsen, S., B. Eggers and S. Collins. 2000. The influence of seawalls and revetments on the presence of seagrass in the Indian River Lagoon, a preliminary study. Biological Sciences 63: 48-61.

Patrick, C. J., D. E. Weller, Z. Li and M. Ryder. 2014. Effects of shoerline alteration and other stressors on submerged aquatic vegetation in subestuaries of Chesapeake Bay and the Mid-Atlantic coastal bays. Estuaries and Coasts 37: 1516-1531.

Rogers, K. S. and E. F. Cox. 2003. The effects of trampling on Hawaiian corals along a gradient of human use. Biological Conservation 112: 383-389.

Salauddin, M. and J. M. Pearson. 2019. Experimental study on toe scouring at sloping walls with gravel foreshores. Journal of Marine Science and Engineering 7: 198, https://doi.org/10.3390/jmse7070198.

Schoonees, T., A. G. Mancheño, B. Scheres, T. J. Bouma, R. Silva, T. Schlurmann and H. Schüttrumpf. 2019. Hard structures for coastal protection, towards greener designs. Estuaries and Coasts 42: 1709–1729

Sutherland, J., C. Obhrai, R. J. S. Whitehouse and A. M. C. Pearce. 2006. Laboratory tests of scour at a seawall. *In* Proceedings Third International Conference on Scour and Erosion, Amsterdam, The Netherlands, 258 p.

Turner, N. R. and D. A. Renegar. 2017. Petroleum hydrocarbon toxicity to corals: a review. Marine Pollution Bulletin 119: 1-16.

Tuttle, L. J and M. J. Donahue. 2022. Effects of sediment exposure on corals: a systematic review of experimental studies. Environmental Evidence (2022) 11:4 https://doi.org/10.1186/s13750-022-00256-0.

United States Army Corps of Engineers (USACE). 2006. Coastal engineering manual. Vol. 6. Washington, DC: USACE. Coastal Engineering Research Centre, Waterways Experiment Station, US Army Corps of Engineers, EM 1110-2-1100.

Wenger, A. S., K. E. Fabricius, G. P. Jones and J. E. Brodie. 2015. Effects of sedimentation, eutrophication and chemical pollution on coral reef fishes. Pages 145 – 153, *in:* C. Mora (ed.), Ecology of Fishes on Coral Reefs. Cambridge University Press, doi:10.1017/CBO9781316105412.

Western Pacific Regional Fishery Management Council (WPRFMC). 2009. Fishery ecosystem plan for the Mariana Archipelago, 231 p.

Wolanski, E., R. H. Richmond and Y. Golbuu. 2021. Oceanographic chaos and its role in larval self-recruitment and connectivity among fish populations in Micronesia. Estuarine, Coastal and Shelf Science 259: 107461.

Zabarte-Maeztu, I, F. E. Matheson, M. Manley-Harris, R. J. Davies-Colley and I. Hawes. 2021. Fine sediment effect on seagrasses: a global review, quantitative synthesis and multi-stressor model. Marine Environmental Research 171: 105480.

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

APPENDIX

11

1h. (cont.). 13 July 2023 NMFS and USFWS FWCA Planning Aid Letter

Table 1. Species observed 25 and 50 meters (82 and 164 ft.) from the exposed intertidal shoreline along the existing seawall in the proposed project area at Hagatna, Guam.

Genus species	Survey Location		Genus species	Survey Location	
	25 m	50 m		25 m	50 m
Seagrasses			**Fishes**		
Enhalus acoroides	X	X	*Canthigaster bennetti*	X	X
Halophila gaudichaudii	X		*Caranx spp.*	X	
Halodule uninervis	X	X	*Chaenopsidae spp.*	X	X
Macroalgae			*Chlorurus sordidus*		X
Acanthropora spicifera	X		*Chromis viridis*	X	X
Avrainvillae spp.	X	X	*Corythoichthys intestinalis*	X	
Caulerpa filicoides	X		*Dascyllus aruanus*	X	X
Caulerpa macrophysa	X		*Echidna nebulosa*	X	
Caulerpa sertularioides	X		*Gerres oyena*	X	
Dictyota spp.	X		*Labroides dimidiatus*		X
Halimeda opuntia	X		*Lethrinus harak*	X	
Padina spp.	X		*Mulloidichthys flavolineatus*	X	X
Sargassum vulgare	X		*Myripristis adusta*		X
Corals			*Myripristis kuntee*		X
Porites australiensis		X	*Rhinecanthus aculeatus*	X	
Porites cylindrica		X	*Sargocentron spiniferum*		X
Pocillopora damnicornis		X	*Scolopsis lineata*	X	X
Invertebrates			*Siganus spinus*	X	
Pinna spp.	X				
Octopus spp.		X			

12

Attachment 2. ESA Consultation

2a. ESA species list from the USFWS PIFWO
2b. ESA species list received from the NMFS PIRO
2c. Technical Assistance Request to NMFS
**Technical Assistance Request to USFWS is Attachment 1a.*
2d. 13 September 2023 ESA Biological Evaluation
2e. 18 October 2023 NMFS Concurrence Letter
2f. 2 November 2023 USFWS Non-Concurrence Letter
2g. 18 December 2023 USACE withdrawal of USFWS ESA Consultation
2h. September 2024 revised ESA Biological Evaluation
2i. NMFS Concurrence**
2j. USFWS Concurrence**

DRAFT

2a. 2022 March 15 ESA species list from the USFWS Pacific Islands Fish and Wildlife Office

From: Flores, Jacqueline B
To: Floyd, Christopher B CIV USARMY CEPOA (USA); Paahana, Jessie A CIV USARMY CEPOH (USA); Dean, Marian POH
Cc: Polhemus, Dan
Subject: [Non-DoD Source] Re: [EXTERNAL] RE: Guam East Hagatna - ESA species request letter to USFWS
Date: Tuesday, March 15, 2022 9:57:22 PM

Hafa Adai Chris,
What is highlighted below would be the species that we would recommend on a species list. There are no known turtle nesting sites at that area, but they may be foraging in that area. We have had documented sightings of fruit bat along that area as well.

Thanks
Jackie

From: Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
Sent: Wednesday, March 16, 2022 7:13 AM
To: Flores, Jacqueline B <jacqueline_flores@fws.gov>; Paahana, Jessie A CIV USARMY CEPOH (USA) <Jessie.K.Paahana@usace.army.mil>; Dean, Marian POH <Marian.Dean@usace.army.mil>
Cc: PIFWO_Admin, FW1 <pifwo_admin@fws.gov>; Polhemus, Dan <dan_polhemus@fws.gov>
Subject: RE: [EXTERNAL] RE: Guam East Hagatna - ESA species request letter to USFWS

Hi Jackie –
Below is the content of the letter I prepared for Honolulu District; USFWS PIFWO should be receiving an official signed copy from Honolulu District soon.
It may have been more appropriate for the USACE handle this sort of initial correspondence with USFWS via email. Please let us know if your office has a preference.

Thanks,
Chris Floyd

==========

The purpose of this letter is to request an official list of endangered and threatened species that may be present at a proposed U.S. Army Corps of Engineers (USACE) project site, and to initiate informal consultation, under Section 7 of the Endangered Species Act (ESA).

The USACE Honolulu District is studying alternatives to provide emergency shoreline protection from coastal erosion at East Hagatna, U.S. Territory of Guam (Figure 1). The study area includes approximately 1,200 feet of low-lying shoreline closely paralleling a stretch of South Marine Corps Drive, an important island throughfare. An existing seawall in the study area is showing signs of being damaged and undercut by wave action (Figure 2).

Terrestrial wildlife habitat in the project area is limited to a strip of urban park, varying from 10 to 60 feet wide, between the seawall and the roadway. On the ocean side of the seawall is a narrow, discontinuous sandy beach (Figure 2). The park strip vegetation consists of a closely cropped lawn planted with indigenous trees such as coconut palm and ironwood, as well as introduced ornamentals such as plumeria. Clumps of indigenous beach morning glory grow along the base of the seawall.

2a. (con't). ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office.



Figure 1. Location of USACE study area in East Hagatna, Guam.



Figure 2. Views of the Hagatna Bay seawall, and the adjacent park strip and beach (9 January 2022).

A project area-based search on the U.S. Fish and Wildlife Service (USFWS) IPaC website suggests that the following ESA-listed species may be potentially affected by construction activities in the study area:

- Mariana fruit bat (*Pteropus mariannus mariannus*)
- Green sea turtle (*Chelonia mydas*)
- Slevin's skink (*Emoia slevini*)
- Fragile tree snail (*Samoana fragilis*)

2a. (con't). ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office.

Guam tree snail (*Partula radiolata*)
- Humped tree snail (*Partula gibba*)
- Mariana eight-spot butterfly (*Hypolimnas octocula marianensis*)
- Mariana wandering butterfly (*Vagrans egistina*)
- *Solanum guamense* (flowering plant)
- *Maesa walkeri* (flowering plant)
- *Tabernaemontana rotensis* (flowering plant)
- *Tinospora homosepala* (flowering plant)

Most of these species are threatened or endangered because of the loss of unique forest habitats endemic to Guam and the Northern Mariana Islands; it seems very unlikely that they would be present in the sparse, urbanized habitat available within and near the project study area. Green sea turtles are present in Hagatna Bay, but the USACE has not found information that they nest on Hagatna Bay beaches.

We look forward to assistance from the USFWS in confirming or refining this list of species. USACE points-of-contacts for this project are environmental coordinator Chris Floyd (Christopher.B.Floyd@usace.army.mil, 907-753-2700) and project manager Troy Phan (Troy.T.Phan@usace.army.mil, 808-835-4434)

From: Flores, Jacqueline B <jacqueline_flores@fws.gov>
Sent: Tuesday, March 15, 2022 12:47 PM
To: Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>; Paahana, Jessie A CIV USARMY CEPOH (USA) <Jessie.K.Paahana@usace.army.mil>; Dean, Marian POH <Marian.Dean@usace.army.mil>
Cc: PIFWO_Admin, FW1 <pifwo_admin@fws.gov>; Polhemus, Dan <dan_polhemus@fws.gov>
Subject: [Non-DoD Source] Re: [EXTERNAL] RE: Guam East Hagatna - ESA species request letter to USFWS

Hafa Adai Christopher,
Thank you for your response. If you could forward me the species list and the consultation letter, it would greatly be appreciated. I did not receive any attachments.

Thanks again
Jackie

From: Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
Sent: Wednesday, March 16, 2022 4:01 AM
To: Flores, Jacqueline B <jacqueline_flores@fws.gov>; Paahana, Jessie A CIV USARMY CEPOH (USA) <Jessie.K.Paahana@usace.army.mil>; Dean, Marian POH <Marian.Dean@usace.army.mil>
Cc: PIFWO_Admin, FW1 <pifwo_admin@fws.gov>; Polhemus, Dan <dan_polhemus@fws.gov>
Subject: [EXTERNAL] RE: Guam East Hagatna - ESA species request letter to USFWS

This email has been received from outside of DOI - Use caution before clicking on links,

2a. (con't). ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office.

opening attachments, or responding.

Hi Jackie,

The USACE generated a provisional ESA species list for the East Hagatna project area from the USFWS iPac website; we are asking USFWS to either confirm or help us modify that species list.
Given the highly modified urban habitat in the project area, the USACE is leaning towards making a determination of "no effect" for these species, as none would likely be present in this setting.
However, we request to initiate ESA informal consultation with USFWS, and welcome any input and local knowledge that USFWS could provide.
(This was explained in a letter that USFWS may or may not have received yet…)

Thanks much,
Chris Floyd, Biologist
Environmental Resources Section
Civil Works Project Management Branch
Alaska District (assisting Honolulu District)
US Army Corps of Engineers
Cell: 907-744-0788

From: Flores, Jacqueline B <jacqueline_flores@fws.gov>
Sent: Monday, March 14, 2022 5:39 PM
To: Paahana, Jessie A CIV USARMY CEPOH (USA) <Jessie.K.Paahana@usace.army.mil>; Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
Cc: PIFWO_Admin, FW1 <pifwo_admin@fws.gov>; Polhemus, Dan <dan_polhemus@fws.gov>
Subject: [Non-DoD Source] Guam East Hagatna - ESA species request letter to USFWS

Hafa Adai,

I am emailing you to clarify what the Corps is specifically asking from the Service for the East Hagatna project. It looks like a species list was already provided. Clarification is greatly appreciated.

Thanks
Jackie

Jacqueline Flores

Island Team Manager - Mariana Islands

2a. (con't). ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office.

U.S. Fish and Wildlife Service – Ecological Services

Pacific Islands Fish and Wildlife Office

108 Hernan Cortez Avenue, Sirena Building Suite 131

Hagatna, Guam 96910

ph: (671) 989-6744/43

cell: (671) 787-6094

fax: (671) 989-6748

web page: http://www.fws.gov/pacificislands/

2b. 2022 April 12 ESA species list received from the NMFS PIRO

From: Floyd, Christopher B CIV USARMY CEPOA (USA)
To: Ashley Schrader - NOAA Affiliate
Cc: Dean, Marian POH; Paahana, Jessie A CIV USARMY CEPOH (USA)
Subject: RE Re: re re Request for Species List for Proposed USACE Project Site in Hagatna Bay, Guam
Date: Tuesday, April 12, 2022 12:26:17 PM

Thanks, Ashley

From: Ashley Schrader - NOAA Affiliate <ashley.schrader@noaa.gov>
Sent: Tuesday, April 12, 2022 9:40 AM
To: Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
Subject: Re: [URL Verdict: Neutral][Non-DoD Source] Re: re re Request for Species List for Proposed USACE Project Site in Hagatna Bay, Guam

Hi Chris,

Given the location of the activity, the maximum water depth, and that there will be no vessel use, we recommend the following species to be included in your biological evaluation:

- Central West Pacific Green Turtle (*Chelonia mydas*)
- Hawksbill Turtle (*Eretmochelys imbricata*)
- Coral (*Acropora globiceps*)

Scalloped hammerhead sharks and giant manta ray are typically not included for activities occurring in ~3 feet of water and recent surveys (yet to be published at this time) indicate that the coral species, *A. retusa* and *S. aculeata* are not likely to be in your proposed project area. Should the proposed activities include a vessel after all, I recommend reaching out to us again to reconfirm the species list.

Please let me know if you have any questions and thank you for requesting guidance from us.

Ashley

On Tue, Apr 12, 2022 at 9:20 AM Ashley Schrader - NOAA Affiliate <ashley.schrader@noaa.gov> wrote:

> Hi Chris,
>
> Okay great, thank you for confirming. I'll finish putting the species list together and get it to you as soon as possible.
>
> Have a great day,
>
> Ashley
>
> On Tue, Apr 12, 2022 at 6:43 AM Floyd, Christopher B CIV USARMY CEPOA (USA)

2b. (con't). ESA species list received from the NMFS PIRO.

<Christopher.B.Floyd@usace.army.mil> wrote:

> Hi Ashley –
> The project design and construction details are still being studied, but the project is leaning towards a narrow-footprint replacement seawall that could be constructed entirely from shore. I'm going to say, no, there will be no vessel used for the project.
>
> Chris Floyd
>
> ---
>
> **From:** Ashley Schrader - NOAA Affiliate <ashley.schrader@noaa.gov>
> **Sent:** Monday, April 11, 2022 12:59 PM
> **To:** Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
> **Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: re re Request for Species List for Proposed USACE Project Site in Hagatna Bay, Guam
>
> Hi Chris,
>
> I apologize for not circling back on this sooner. Were you able to confirm whether a vessel is going to be used as part of project activities?
>
> Thank you,
>
> Ashley
>
> On Wed, Mar 16, 2022 at 4:37 PM Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil> wrote:
>
> > Hi Ashley –
> > We have a USACE internal project meeting tomorrow; I'll see what answers we can shake loose.
> >
> > Chris Floyd
> >
> > ---
> >
> > **From:** Ashley Schrader - NOAA Affiliate <ashley.schrader@noaa.gov>
> > **Sent:** Wednesday, March 16, 2022 3:29 PM
> > **To:** Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>
> > **Cc:** Dean, Marian POH <Marian.Dean@usace.army.mil>; Phan, Troy T CIV USARMY CEPOH (USA) <Troy.T.Phan@usace.army.mil>
> > **Subject:** Re: [URL Verdict: Neutral][Non-DoD Source] Request for Species List for Proposed USACE Project Site in Hagatna Bay, Guam
> >
> > Hi Chris,
> >
> > Thanks for providing that additional information. If the maximum depth is approximately 3 ft., that is helpful to know as some larger species aren't typically included in consultations involving very shallow water. As for the construction equipment, I think that question might

2b. (con't). ESA species list received from the NMFS PIRO.

now be moot, given that shallow maximum depth.

At this point, the size of the vessel is not as important as the presence/absence of vessel use. Knowing whether a vessel would be involved, and particularly what its transit path might look like, is helpful for determining whether any offshore species should be considered for consultation.

Do you know when the presence/absence of vessel use may be determined?

Thank you,

Ashley

On Wed, Mar 16, 2022 at 4:18 PM Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil> wrote:

> Hi Ashley –
> The USACE is just now designing several possible construction alternatives, and we do not have answers to your questions at this point.
>
> As a purely practical matter, the waters offshore of the Hagatna Bay seawall are very shallow (marked "Submerged reef, Depths 1 to 3 ft" on NOAA chart 81048); I doubt a work vessel of any size could approach the project site. At most, a skiff or other very small craft carrying survey instruments might be involved.
>
> Thanks,
> Chris Floyd, Biologist
> Environmental Resources Section
> Civil Works Project Management Branch
> Alaska District (assisting Honolulu District)
> US Army Corps of Engineers
> Cell: 907-744-0788
>
> ---
>
> **From:** Ashley Schrader - NOAA Affiliate <ashley.schrader@noaa.gov>
> **Sent:** Wednesday, March 16, 2022 2:26 PM
> **To:** Floyd, Christopher B CIV USARMY CEPOA (USA) <Christopher.B.Floyd@usace.army.mil>; Dean, Marian POH <Marian.Dean@usace.army.mil>; Phan, Troy T CIV USARMY CEPOH (USA) <Troy.T.Phan@usace.army.mil>
> **Subject:** [URL Verdict: Neutral][Non-DoD Source] Request for Species List for Proposed USACE Project Site in Hagatna Bay, Guam
>
> Hello Christopher, Marian, and Troy,
>
> I'm Ashley Schrader, I am coordinating the response to your request for a species list. The information you provided, including the potential species that may be affected by

2b. (con't). ESA species list received from the NMFS PIRO.

construction activities, in your request has been informative. To better direct my efforts, could you please provide responses to the following,

1. Will a vessel be used at any time during the proposed action? If so, where will the vessel hail from?
2. Where will any construction operate from (e.g., primarily or exclusively from land, from a vessel, in the water next to the wall, a combination)?
3. What are the minimum and maximum depths in the proposed project area (to the best of your knowledge)?

In the meantime, please feel free to reach out to me with any questions you may have.

Thank you,

Ashley

--

Ashley Schrader
Endangered Species Biologist, Contractor with Lynker in support of
NOAA Fisheries Southeast Regional Office | U.S. Department of Commerce
(815) 326-5441
www.fisheries.noaa.gov

--

Ashley Schrader
Endangered Species Biologist, Contractor with Lynker in support of
NOAA Fisheries Southeast Regional Office | U.S. Department of Commerce
(815) 326-5441
www.fisheries.noaa.gov

--

Ashley Schrader
Endangered Species Biologist, Contractor with Lynker in support of
NOAA Fisheries Pacific Islands Regional Office | U.S. Department of Commerce
(815) 326-5441
www.fisheries.noaa.gov

--

Ashley Schrader
Endangered Species Biologist, Contractor with Lynker in support of
NOAA Fisheries Pacific Islands Regional Office | U.S. Department of Commerce
(815) 326-5441
www.fisheries.noaa.gov

2c. 2022 June 2 Technical Assistance Request to NMFS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Ron Dean
Intergovernmental Consultation and Conservation Branch Chief
Protected Resources Division
Pacific Islands Regional Office
National Marine Fisheries Service
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Dear Mr. Dean:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), USACE requests technical assistance from the National Marine Fisheries Service (NMFS) and identification of designated or proposed critical habitat occurring within the study area. NMFS may have both expertise relevant to the study and to identifying environmental effects that could result from a recommended project, and jurisdiction by law. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to protected resources and coincides with the ESA action area based on the level of detail available to this study at this time. As more information is gathered, the impact areas relative to each protected resource, including the ESA action area, will be further refined. Although the

2c (cont.). Technical Assistance Request to NMFS

need for comprehensive biological field surveys is not anticipated and impacts to federally listed species are not anticipated as a result of the study or any recommended project that could result from the study, compliance with the ESA will be ensured and completed during the feasibility phase.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating agency and participating agency workshop scheduled for June 8, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

A copy of this letter and its enclosures will be sent to the U.S. Fish and Wildlife Service, the Guam Division of Aquatic and Wildlife Resources, the U.S. Environmental Protection Agency and National Marine Fisheries Service Habitat Conservation Division pursuant to the ESA, the Fish and Wildlife Coordination Act, the NEPA and the Magnuson-Stevens Fishery Conservation and Management Act. This letter of request for information from your agency constitutes USACE's scoping request pursuant to NEPA. To reduce redundancy, a separate NEPA scoping letter will not be sent to your office. Any additional comments provided pursuant to NEPA will be fully considered and incorporated into the administrative record.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

2d. 2023 September 13 ESA Biological Evaluation

ENDANGERED SPECIES ACT BIOLOGICAL EVALUATION

CAP Section 14 Emergency Shoreline Protection Project

East Hagatna, Guam

Action Agency:	Honolulu District, U.S. Army Corps of Engineers
Federal Action:	Construction of shoreline protection at East Hagatna, Guam
Consulting Agencies:	National Marine Fisheries Service Pacific Islands Regional Office Protected Resources Division United States Fish and Wildlife Service Pacific Islands Fish and Wildlife Office

Honolulu District
U.S. Army Corps of Engineers

2d.(cont.) Draft ESA Biological Evaluation

EAST HAGATNA EMERGENCY SHORELINE PROTECTION FEASIBILITY STUDY

CONTENTS

1. BACKGROUND 3
1.1 PROJECT PURPOSE AND NEED 4
2. DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA 7
2.1 DESCRIPTION OF THE PROPOSED ACTION 7
2.1.1 Alternative Analysis 8
2.2 BEST MANAGEMENT PRACTICES 9
2.2.1 ESA General BMPs 9
2.2.2 BMPs for waste and discharge 10
2.2.3 BMPs for Activities that may result in Direct Physical Impact 11
2.2.4 BMPs for activities that may result in Exposure to Elevated Noise Levels 11
2.2.5 Reporting for Stranded, Injured, Sick or Dead Marine Mammal or Turtle 12
2.2.5 Habitat Restoration 12
2.3 DESCRIPTION OF THE STUDY AREA AND PROPOSED ACTION AREA 13
3. LISTED SPECIES & CRITICAL HABITAT IN THE ACTION AREA 16
3.1 CENTRAL WEST PACIFIC GREEN SEA TURTLE (*CHELONIA MYDAS*) 17
3.1.2 Listing Status 17
3.1.3 Critical Habitat 18
3.1.4 Distribution and Habitat 18
3.1.5 Potential for Occurrence in Project Area 19
3.2 HAWKSBILL SEA TURTLE 19
3.2.1 Listing Status 20
3.2.2 Critical Habitat 20
3.2.3 Distribution and Habitat 20
3.2.4 Potential for Occurrence in Project Area 22
3.3 CORAL (*ACROPORA GLOBICEPS*) 22
3.3.1 Listing Status 22
3.3.2 Critical Habitat 22
3.3.3 Distribution and Habitat 23
3.3.4 Potential for Occurrence in Project Area 24
3.4 MARIANA FRUIT BAT (*PTEROPUS MARIANNUS MARIANNUS*) 24
3.4.1 Listing Status 24
3.4.2 Critical Habitat 24
3.4.3 Distribution and Habitat 24
3.4.4 Potential for Occurrence in Project Area 25
4.0 POTENTIAL IMPACTS 25
4.1 DIRECT IMPACTS 25
4.1.1 Mariana Fruit Bat 25
4.2.2 Sea Turtles 26
4.2.3 Coral 28
4.3 INDIRECT AND LONG-TERM PHYSICAL IMPACTS 29
4.3.1 Sediment Erosion/Accretion 29
4.3.2 Discharge of pollutants 29

5.0 EFFECTS OF THE ACTION 30
6.0 CUMULATIVE EFFECTS 32
7.0 CONCLUSIONS 33
8.0 LITERATURE CITED 33

2d.(cont.) Draft ESA Biological Evaluation

1. Background

The Emergency Shoreline Protection Project at East Hagatna is being developed as a cost-shared effort between the Honolulu District, U.S. Army Corps of Engineers (USACE) and the Government of Guam, represented by the Guam Department of Public Works (DPW). This emergency shoreline protection feasibility study is authorized under Section 14 of the Flood Control Act of 1946 (Public Law 79-525), as amended. The project will provide emergency shoreline protection from coastal erosion to South Marine Corps Drive and public utilities in the area. The project area includes the west central coast of Guam in Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and Trinchera Beach Park.

Note that while the project will take place on Guam, due to the location of USACE staff in Alaska and Hawaii, dates throughout this document, the Integrated Feasibility Report and NEPA Document, and appendices, are given for Hawaii standard time, not Guam time.

Approximately 2,100 feet (ft) of South Marine Corps Drive is at imminent risk of failure due to storm surge and wave attack. An existing seawall constructed between the shoreline and the main thoroughfare in the study area is threatened by shoreline erosion and is experiencing severe undercutting, leaving South Marine Corps Drive vulnerable to increased future damage. The proposed project consists of replacing approximately 2,100 linear ft of existing, compromised seawall with a rock revetment. The top crest elevation needed for the design to meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC under the intermediate scenario is 9ft above Mean Sea Level (MSL), approximately 1 ft higher than the existing seawall. The revetment will be approximately 17 ft wide, constructed parallel to the shoreline and extending seaward.

To that end, USACE has prepared a Draft Integrated Feasibility Report and NEPA Document (IFR/NEPA) for the East Hagatna, Guam - Continuing Authorities Program (CAP), Section 14 Emergency Shoreline Protection project (Proposed Action/Federal Action) pursuant to Engineering Regulation 1105-2-100 and the National Environmental Policy Act (NEPA). The IFR/NEPA identifies, evaluates, and discloses all impacts that would result from the implementation of either of several potential alternatives, including the “No Action” alternative (i.e., Future Without Project Condition, modelled under 50 years of different climate change projections), designed to provide emergency shoreline protection within the study area.

The purpose of this Biological Evaluation (BE) is to address the effects of the Proposed Project on species listed or proposed for listing as endangered or threatened and their designated critical habitat pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended.

Early coordination and pre-consultation with National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Guam Division of Aquatic and Wildlife

Resources (GDAWR) on threatened and endangered species was conducted during a series of email conversations on 16 March 2022 (HST) and 12 April 2022 (HST). Coordination workshops were held with Guam Coastal Management Program and the NMFS Pacific Islands Regional Office (PIRO), Intergovernmental Coordination and Conservation Branch of the Protected Resources Division (PRD) on 8 June 2022 (HST) and with NMFS, USFWS, United States Environmental Protection Agency (USEPA); and GDAWR on 14 June 2022 (HST).

1.1 Project Purpose and Need

The purpose of the Proposed Project is to replace the existing, compromised seawall with a rock revetment along approximately 2,100 linear ft of shoreline along South Marine Corps Drive in East Hagatna, Guam.

Guam is in an area of the Pacific Ocean that has a high risk for tropical storms and typhoons, and the low-lying coastline of East Hagatna is subject to frequent storm wave attack. Large storm events and associated high waves and storm surge has caused significant erosion, undermining the existing seawall. The existing seawall is not anchored into the limestone foundation and instead, sits atop the ground surface, leaving it vulnerable to wave attack. Continual undermining of the seawall has put South Marine Corps Drive and public utilities in the immediate vicinity of the study area at imminent risk of damage. In some places, less than 20 ft of shoreline separates the road from the beach. Future sea level rise will continue to exacerbate this condition and accelerate the rate of erosion and damage.

South Marine Corps Drive is a major arterial roadway that extends approximately 22 miles from Andersen Air Force Base in Yigo on the northeastern corner of the island down to Naval Base Guam in Santa Rita in the central western area of the island. Both military bases play a vital role in regional and national security. Closure of South Marine Corps Drive or significant traffic delays would result in impacts to the U.S. Military's ability to prepare for and respond to a crisis in the region.

Additionally, South Marine Corps Drive connects numerous island villages on the west side of the island including the capital city of Hagatna. Guam Department of Public Works traffic counts indicate an average of 51,000 vehicles pass through the section of road at risk daily. Damage to the road and public utilities beneath it would delay the southern villages' access to essential services such as hospitals and emergency responders, thereby resulting in health and safety risks, as well as a significant disruption to Guam's economy.

The most critical problem in the study area is the imminent failure of an existing seawall that would leave South Marine Corps Drive subject to heavy damage from storm surge and wave attack. Figures 1 to 3, captured by USACE Project Delivery Team (PDT) members on a site visit in January 2022, show the existing condition of the wall along Trinchera Beach and Veteran's Sunset Beach Park in the study area. The greatest damage to the existing seawall is along Veteran's Sunset Beach Park, where some sections of wall are undercut by up to 2 ft of seawater. This undercutting is already

causing the seawall to crack and undermine the structural integrity of the seawall. Figure 3 shows the rocks and concrete skirt eroding out of the seawall on the eastern edge of Veteran's Sunset Beach Park. The western access staircase is in danger of collapsing into the ocean. Erosion has also dislodged some of the larger rocks from the seawall, especially on the eastern end of Veteran's Sunset Beach Park (USACE 2022a).



Figure 1: Existing seawall on eastern edge of Veteran's Sunset Beach Park, facing southwest (USACE 2022a). The beach has eroded below the rocks and concrete skirt, causing the seawall to crack, and undermining its structural integrity.



Figure 2: Existing seawall at Trinchera Beach Park, facing northeast (USACE 2022a)

2d.(cont.) Draft ESA Biological Evaluation



Figure 3: Close up view facing south of the undercut Hagatna Bay seawall (USACE 2022a)

If the existing seawall fails, South Marine Corps Drive and associated public utilities will be subject to more frequent and severe storm damage as the shoreline in the study area continues to erode. This will be exacerbated by long-term sea level rise. Heavy damage to the South Marine Corps Drive may necessitate road closure or relocation. This would result in economic loss and the potential for decreased public and emergency service provision for people who depend on the road. Without federal intervention, it is assumed that the Government of Guam will bear the full burden of protecting South Marine Corps Drive. They will be fiscally impacted by this responsibility and will likely need to repair or replace failing sections of wall in a piecemeal approach.

USACE has developed potential alternative plans for shoreline stabilization over a 50-year period of analysis (2026-2076) by identifying coastal hazards and potential structural shoreline stabilization management measures within the study area affected by coastal erosion and future changes to sea level.

USACE and the Guam DPW evaluated the results of the feasibility study and recommend Alternative 2: Rock Revetment: replacing approximately 2,100 linear ft of existing, compromised seawall with a 17 ft wide rock revetment. The revetment crest elevation of 9 ft above mean sea level (MSL) meets the USACE 50-year design requirement for sea level change (SLC) and is adaptable to 100-year SLC under the intermediate scenario at 9 ft above MSL. This alternative is considered most practicable with respect to real estate considerations, costs, and logistics as the Tentatively Selected Plan (TSP) and has been tentatively identified as the Least Environmentally Damaging Practicable Alternative and is carried forward for analysis to either confirm the TSP as the recommended plan or select a different alternative. While maximizing net benefits, it has anticipated positive impacts on nearshore water quality (e.g., by

minimizing future coastal erosion) and is supported by the Guam Government. The Guam Government supports Alternative 2 as the TSP.

The proposed Action and Action Area for this project will include an area of permanent impact required for placement of the rock revetment and an area of temporary impact for access, construction, and staging areas (COSA). These are described in detail in Section 2. Section 3 describes the listed species and habitats that could be potentially affected by the proposed Project activities, as well as an analysis of effects of the proposed Action on these species and habitats. Section 4 provides a description of the environmental baseline conditions. Section 5 provides a summary of overall effects of the proposed Action and Section 6 includes a discussion of potential cumulative effects. Section 2.2 summarizes the measures and best management practices (BMPs) that would be used to avoid and minimize impacts to the natural resources. Preparation and implementation of these BMPs would reduce the potential construction-related water quality impacts to a less-than-significant level. With implementation of these best management practices, the extent of impacts from the proposed Action are expected to be less than significant.

2. Description of the Proposed Action and Action Area

2.1 Description of the Proposed Action

This Proposed Action is the construction of a 2100 ft long by 17 ft wide (approximately 35,700 ft^2 or 0.82 acres) rock revetment (Figure 4) along the coast at East Hagatna.

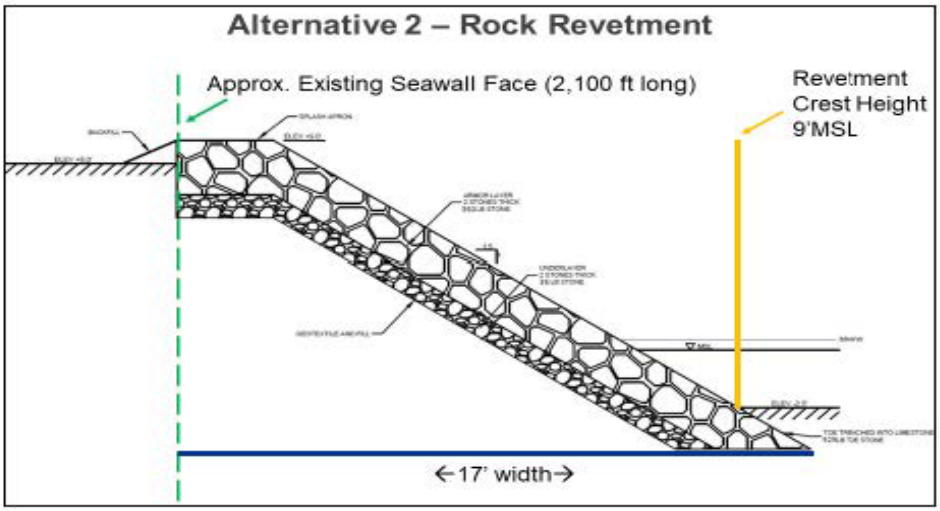


Figure 4: Alternative 2 - Rock Revetment

The base of the revetment would extend 17 feet toward the ocean from the crest of the existing seawall. The toe of the revetment would be anchored in the limestone. The revetment installation would begin with construction at the toe (-2.5 ft. MSL) and up to the crest elevation (+9ft. MSL), just 1 foot above the current highest point of 8 feet (Figure 4). The present assumption is the revetment could be constructed from the land during low tide without in-water construction. To seat the toe a small trench will need to be dug into the underlying limestone. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.

Revetments are a type of "hard" sloping coastal engineering structure that runs parallel to the shoreline to protect landward areas and infrastructure from waves, tides, currents, and storm surge (water build up above the average tide level). They can be used in areas exposed to both high and low wave energy.

The major components of the proposed revetment are the rock armor layer, filter, and toe (Figure 4). The rock armor layer is an erosion resistant material that dissipates the energy of storm waves, prevents further recession of the backshore, and provides basic protection against wave action. The filter layer supports the rock, provides for the passage of water through the structure, and prevents the underlying soil from being washed through the armor. The buried toe prevents displacement of the seaward edge of the revetment. Revetments can be constructed as carefully designed engineered structures protecting long lengths of shoreline with some permeability allowing for increased wave dissipation in the interstices of the revetment in comparison to non-permeable structures such as concrete seawalls that reflect and can accelerate wave energy radially.

2.1.1 Alternative Analysis

Relocation of the road was considered but

Soft engineering strategies (i.e., natural, and nature-based measures) such as vegetation barriers and use of beach fill were considered as potential solutions early in the planning phase of this project. However, these solutions would not be effective in reducing the effects of coastal storm damages in the proposed Action Area. Due to the high wave energy environment in the Action Area, vegetation alone

Revetments are generally considered to cause less damage to the environment than other types of structures, like vertical seawalls, because they are less prone to wave flanking and limit interference with natural sediment processes, thereby maintaining coastal stability while still allowing some natural coastal processes to occur. Natural shoreline erosion supplies adjacent stretches of coastline with sediment, through longshore sediment transport. Burial of the toe of the revetment maintains an area of shoreline sediment to participate in natural sediment transport processes.

Sloping revetments are more effective at dissipating wave energy and less subject to significant loadings because of wave impact. Smooth, vertical seawalls are the least

effective at dissipating wave energy; instead, the structures reflect wave energy seawards. Reflection creates turbulence, capable of suspending sediments (Bush et al. 2004), thus making them more susceptible to erosion. The problems of wave reflection and scour can be reduced to some degree by incorporating slopes and irregular surfaces such as tribar into the structure design. Slopes encourage wave breaking and therefore energy dissipation while irregular surfaces scatter the direction of wave reflection (French 2001). Pilarczyk (1990) recommends the use of maximum seawall slopes of 1:3 to minimize scour due to wave reflection. The proposed slope of the tribar revetment is 1:1.5. Scour at the foot of a sloped revetment is less of concern than at the base of a vertical seawall.

Revetments are less susceptible to erosive forces that occur in front of the structure. Seawalls, while effective at preventing erosion of the land area behind the wall, often do not stop erosion in front of the structure which affects localized sediment availability (French 2001). As a result, seawall maintenance costs can be high (Pilarczyk 1990).

The revetment is comprised of compacted fill as the foundation and base grade, a geotextile filter fabric, a double layer of underlayer stone, a double layer of armor stone, and anchoring by an oversized toe stone. At the specified 1.5H/1V slope, the revetment is expected to be 17 feet wide, extending towards the ocean, with a crest elevation of +9 ft MSL. Depending on the cost and local availability of material, this revetment could be capped with either a two-stone layer of 200 lb. armor stones or pre-cast concrete armor units. This design will meet USACE coastal engineering criteria for expected design life and adaptability to RSLC. The expected design life of this system, assuming proper installation and routine maintenance, is on the order of 50 years.

2.2 Best Management Practices

The USACE considers Best Management Practices (BMPs) to be an integral component of the federal action. All BMPs would become specifications of any construction contract and are legally binding on the selected construction contractor. The following BMPs are intended to avoid and/or minimize impacts to ESA-listed species and habitat:

2.2.1 ESA General BMPs

- To minimize impacts to endangered species, the permittee shall avoid in-water work during mass-coral spawning times or peak coral spawning seasons June 1 to September 30 or land based work during Mariana fruit bat foraging during breadfruit season (February to October) if practicable.
- Constant vigilance shall be kept for the presence of ESA-listed sea turtles during all aspects of the proposed action.
- A responsible party (i.e., site manager/project supervisor) shall designate an appropriate number of competent trained observers to survey the areas adjacent to the authorized work area (i.e., proposed action) for ESA-listed marine species.

The competent observer will not be simultaneously engaged in any other activity (e.g., captaining, operating equipment, etc.) while surveying for listed species.

- Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour.
- All work shall be postponed or halted when ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work, and will only begin/resume after the animals have voluntarily departed the area.
- If ESA-listed marine species are noticed within 50 meters (54.7 yards, 164 feet) after work has already begun, that work may continue only if, in the best judgement of a biologist, the activity will not adversely affect (i.e., disturb or harm) the animal(s). For example: divers performing underwater work (excluding the use of toxic chemicals) such as surveys would likely be permissible, whereas operation of heavy equipment is not.
- Project-related personnel shall NOT conduct activities resulting in a take of an ESA-listed species, a species proposed for listing, or listed or proposed critical habitat. “Take” as defined under the ESA means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct”. Activities that would qualify as take include attempting to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.
- Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area must be identified on project figures. Project staff must be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.
- Project construction must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
- If an ESA-listed species is adversely affected because of the project, all work must stop until coordination with USACE and NMFS has been completed.

2.2.2 BMPs for waste and discharge

- A stormwater management plan, commensurate to the size of the project, must be prepared and carried out for any project that will produce any new impervious surface or a land cover conversion that will slow the entry of water into the soil to ensure that effects to water quality and hydrology are minimized.
- An erosion control plan for the project site and adjacent areas must be prepared and carried out. Erosion controls must be properly installed before any alteration of the project area may take place.

- A pollution control plan for the project site and adjacent areas must be prepared and implemented. At a minimum, this plan shall include:
- Proper installation and maintenance of equipment diapers, or drip pans.
- A contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials.
- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
- All project-related materials and equipment placed in the water will be free of pollutants.
- Daily pre-work inspections of heavy equipment and vessels for cleanliness and leaks, with all heavy equipment operations and vessel use postponed or halted until leaks are repaired and equipment is cleaned.
- Fueling of land-based vehicles and equipment shall take place at least 50 feet (15 meters) away from the water, preferably over an impervious surface.
- All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
- Debris and other wastes will be prevented from entering or remaining in the marine environment during the project.
- Temporary access roads and drilling pads must avoid steep slopes, where grade, soil types, or other features suggest a likelihood of excessive erosion or failure; existing access routes must be utilized or improved whenever possible, in lieu of construction of new access routes.
- Temporary fills must be removed in their entirety. All areas impacted by construction must be returned to pre-construction elevations. The affected areas must be stabilized and revegetated with native species as appropriate.
- All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.

2.2.3 BMPs for Activities that may result in Direct Physical Impact

- Before any equipment, anchor(s), or material enters the water or begins operating on the beach, a responsible party, i.e., permittee/site manager/project supervisor, shall verify that no ESA-listed marine animals are in the area where the equipment, anchor(s), or materials are expected to contact the substrate.

2.2.4 BMPs for activities that may result in Exposure to Elevated Noise Levels

- In-water excavation and movement of large armor stones shall not be undertaken if any ESA-listed marine animals are within 50 meters (54.7 yards, 164 feet) of the authorized work, and those operations will immediately shut-down if an ESA-listed marine animal enters within 50 meters (54.7 yards, 164 feet) of the authorized work.

2.2.5 Reporting for Stranded, Injured, Sick or Dead Marine Mammal or Turtle

- If observers become aware of any injured, sick, or dead marine mammal or turtle (whether it may be related to the proposed action), they will immediately call the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources (DAWR) at (671) 735-0281 or (671) 735-0294 during regular business hours. Outside of regular business hours, they will contact the NOAA Office of Law Enforcement, Agana, GU, at (671) 472-7200 and/or the DAWR Conservation Office Hotline at (671) 688-DAWR (671-688-3297). The observer will be prepared to provide information to the hotline operator about the animal's condition, location, and other information specific to the situation to help the operator determine the most appropriate response.
- The observers will submit photos and data as soon as possible regarding stranded, injured, sick, or dead marine animals that DAWR may use to inform DAWR-directed field responses and/or further analysis to determine whether a taking resulted. Photos and data submitted to DAWR regarding stranded, injured, sick, or dead marine animals will include date, time, location, species, and number of animals, as well as a description of the animal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine animals. The observers will email this documentation to: respectwildlife@noaa.gov, with the subject line indicated as: "Hagatna Bay, Guam, Stranded Animal Report"
- If DAWR determines that implementation of the federal action resulted in the taking, re-initiation of ESA consultation is warranted. USACE will collect the following information and include it in the re-initiation request:
    - Number of individuals and species of listed animals affected.
    - The date, time, and location of each event (provide geographic coordinates).
    - Description of the event.
    - The time the animal(s) was first observed or entered the shutdown zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal.
    - Mitigation measures implemented prior to and after the take; and
    - If a vessel struck a marine mammal, the contact information for the observer on duty, or the contact information for the individual piloting the vessel if there was no observer on duty.
    - Photographs or video footage of the animal(s) (if available).

2.2.5 Habitat Restoration

- As required by Guam Law (5 GCA Government Operations Guam Code Annotated CH. 63 Fish, Game, Forestry & Conservation § 63302) all tree felling or limbing will be conducted under the supervision of a licensed arborist or forester.

12

- All removed trees will be replaced with appropriate species for the particular location. Large trees, greater than 2-inch diameter at breast height, will be used as much as possible based on nursery availability. All areas impacted by construction must be stabilized and revegetated with native species as appropriate. Clearing will be confined to the minimal area necessary to facilitate construction activities, while all bare areas will be reseeded and maintained until grass/vegetative cover is established. All areas will be cleaned of any trash and debris and returned, as close as possible, to the condition prior to initiation of project activities.

2.3 Description of the Study Area and Proposed Action Area

Guam is located in the North Pacific Ocean between the Commonwealth of the Northern Mariana Islands (to the north) and the Federated States of Micronesia (to the south), as shown in the inset map of Figure 5.



Figure 5: Guam location map with study area

13

2d.(cont.) Draft ESA Biological Evaluation

The East Hagatna Emergency Shoreline Protection study area encompasses a 2,100 ft long stretch of Trinchera Beach along Hagatna Bay, which runs parallel to South Marine Corps Drive (also referred to as Highway 1), a main transportation corridor of the island. In some places, less than 20 ft of shoreline separates the road from the beach. The project extent is bounded on the western end by a strip mall parking lot that has an access ramp through the seawall down to the beach, and centers on the Veteran's Sunset Beach Park. Upland of the eastern extent of the project area is the Antonio B. Won Pat International Airport.

The study area includes 2,100 linear ft of existing seawall situated parallel to and between the Hagatna Bay shoreline and South Marine Corps Drive (Figure 5). The project footprint may extend as far as 20 ft seaward from the existing seawall, 30 ft inland of the existing seawall, and 5 ft down into the limestone subgrade. The existing seawall height ranges from approximately 7.5 to 8.9 ft above MSL and is composed of large volcanic rocks cemented together, likely built after a 1993 USACE feasibility study for the project area. The study area encompasses the ESA Action Area within which USACE is evaluating the effects of the proposed action on ESA listed species and designated critical habitat.

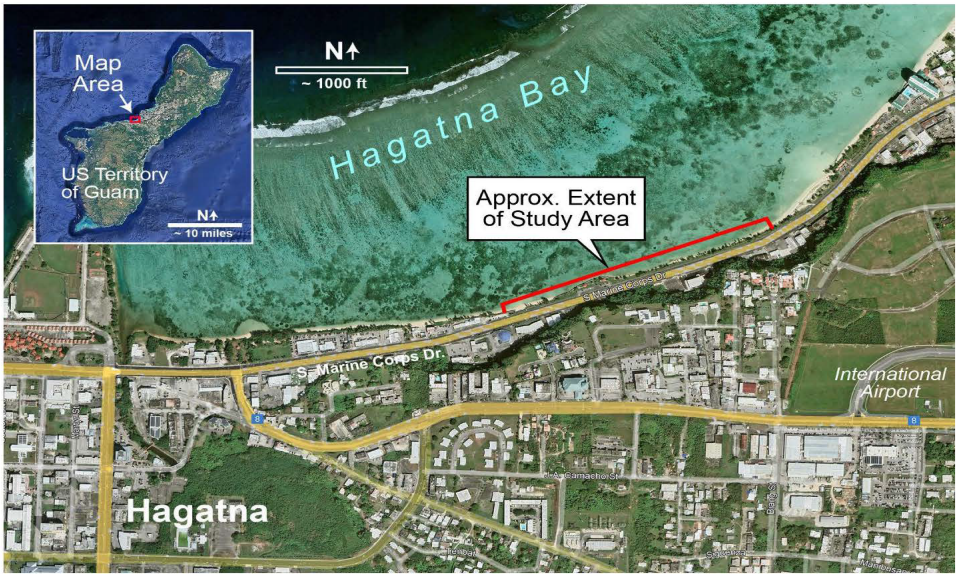


Figure 6: Approximate extent of the project area along Hagatna Bay.

Hagatna Bay is surrounded by dense residential, commercial, and military development. The low-lying shoreline is bounded to the south by a high cliff inland of South Marine Corps Drive. A strip of small commercial establishments is located between South Marine Corps Drive and the cliff (USACE 1993).

2d.(cont.) Draft ESA Biological Evaluation

The ESA Action Area is 30 feet inland from the existing seawall to 20 feet seaward of the existing seawall, as depicted in Figure 7 and includes on staging area on an existing parking lot. The habitat within the Action Area is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock, supporting no obvious aquatic communities. NMFS surveys in November 2022 confirmed previous observations (USFWS 1992, NOAA 2005) that the intertidal region within 20 ft of the wall is predominantly sand and does not contain live coral, other macroinvertebrates, seagrasses or fish. Sparse seagrass, macroalgae and fish occur beyond 20 ft. from the existing seawall where the depth reaches 1 ft. The depth is shallow, approximately 1 foot, for several hundred ft from the existing seawall (NMFS 2023).



Figure 7: Proposed Project Action Area: The proposed active construction and staging area are indicated in black. The project area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. Rock Revetment Footprint. Redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, May 31, 2022.

Because work will occur in the water, it has the potential to impact the following ESA-listed species that occur in the area: Central West Pacific Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*), the coral *Acropora globiceps,* and their habitat. The endangered Mariana Fruit Bat *(Pteropus mariannus mariannus)* has been observed passing through the upland area where work will also occur.

15

Table 1: Proposed Action Area Dimensions

Impact	Area	Height	Width	Length	Surface Area
Permanent	Beach/Intertidal Construction Area	10 ft	17 ft	2100 ft	0.82 ac
Temporary	Intertidal Toe Trenching	-2.5 ft	3 ft	2100 ft	0.14 ac
Temporary	Upland Backfill and Staging Area	10 ft	30 -50 ft	2100 ft	1.45 ac

3. Listed species & Critical habitat in the action area

The Study Area includes 30-50 ft of sparse, urbanized habitat of Veteran's Sunset Beach Park and Trinchera Beach Park on the upland side of the existing seawall, the existing seawall, and 20 ft of sandy intertidal zone in front of the existing seawall. Park vegetation is an actively maintained lawn planted with indigenous coconut palm (*Cocos nucifera*) and ironwood (*Casuaria equisetifolia*) trees and the introduced ornamentals plumeria (*Plumeria* sp.) and fish poison tree (*Barringtonia asiatica*).

There are varying amounts of sandy beach present between the existing seawall and the ocean. In some locations toward the eastern end of the project extent, there is approximately 15 feet of beach (PDT 2022). In other areas, such as Veteran's Sunset Beach Park, there is no beach at all. The 1993 Environmental Assessment (USACE 1993) describes Trinchera Beach as extending along approximately 3,400 feet of the East Hagatna shoreline. The beach material is fine calcareous sand with extensive coral, gravel, and rubble. Portions of the shoreline are covered almost exclusively with gravel, rocks, rubble, and small limestone boulders. Small sand and alluvial deltas had formed in the vicinities of storm drains and the inner reef flat has a covering of fine sand and silt (USACE 1993, PDT 2022, NMFS 2023).

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), USACE requested technical assistance from USFWS and NMFS. The initial list of threatened and endangered species for Hagatna Bay and its shoreline included Central West Pacific Green Turtle (*Chelonia mydas*), Hawksbill sea turtle (*Eretmochelys imbricata*), Indo-West Pacific scalloped hammerhead shark (*Sphyrna lewini*), giant manta ray (*Manta birostris*), proposed coral critical habitat and the corals *Acropora globiceps, A. retusa*, and *Seriatopora aculeata*, and Mariana fruit bat (*Pteropus mariannus mariannus*). On 12 April 2022 NMFS Contractor Ashley Schrader concluded that based on the location of the activity, a mean water depth of less than 3 feet in the project area and that there would be no vessel use, scalloped hammerhead sharks and giant manta ray need not be included in the biological evaluation. Ms. Schrader also reported that recent yet to be published surveys indicate that the coral species *A. retusa*

and *S. aculeata* are not likely to be in the proposed project area. Therefore this USACE biological evaluation will consider effects of the project on the following federally listed species which are potentially affected by project activities along South Marine Corps Drive and are considered in detail in this BE:

Table 2: ESA Listed Species potentially present on or in the vicinity of the study area. Noe were observed during the NMFS surveys in 2022.

Common Name	Scientific Name	Status	Critical Habitat	Jurisdiction	Observed in Action Area
Sea Turtles					
Green sea turtle, Central South Pacific Distinct Population Segment (DPS)	*Chelonia mydas*	Endangered	No	NMFS in ocean. USFWS on land	No
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	No	NMFS in ocean. USFWS on land	No
Terrestrial Species+					
Mariana Fruit Bat	*Pteropus mariannus mariannus*	Endangered	No	USFWS	No
Coral Species					
small-polyp stony coral	*Acropora globiceps***	Threatened	Pending	NMFS	No

No threatened or endangered species were seen during the NMFS 2022 surveys at or near the proposed project site although sea turtles are known to use the waters immediately offshore.

3.1 Central West Pacific Green Sea Turtle (*Chelonia mydas*)

The green sea turtle is the largest hard-shelled sea turtle. They are unique among sea turtles in that they are herbivores, eating mostly seagrasses and algae. This diet is what gives their fat a greenish color (not their shells), which is the source of their name. Green sea turtles are found throughout the world. They nest in over 80 countries and live in the coastal areas of more than 140 countries. Historically, green turtles were exploited for their fat, meat and eggs, causing global population declines (NMFS & USFWS 1998a).

3.1.2 Listing Status

NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach. The green sea turtle was listed as threatened on July 28, 1978 (43 FR 32800), except for breeding populations found in Florida and the Pacific coast of Mexico, which were listed as endangered. On March 23, 2015 the services (NMFS and USFWS) released a proposed rule concluding that the green sea turtle population is comprised of 11 DPSs that qualify as "species" for listing under the ESA, and identified eight DPSs as threatened and three as endangered (80 FR 15271), including the

Central West Pacific DPS which includes Guam. The final rule was published on April 06, 2016 (81 FR 20057). For the purposes of this analysis, the Central West Pacific DPS of green sea turtle was evaluated for effects resulting from project implementation.

3.1.3 Critical Habitat

There is no designated critical habitat for green sea turtles on or nearby Guam. Critical habitat for the North Atlantic distinct population segment of the green sea turtle in September 1998, which includes the waters of Culebra Island, Puerto Rico, and its outlying keys, is the only designation at this time.

3.1.4 Distribution and Habitat

Green sea turtles are globally distributed, typically along continental coasts and islands in tropical and subtropical waters between 30° N and 30° S. They are highly migratory and use a wide range of broadly separated habitats throughout their lives. Post-hatchling and juvenile green sea turtles are believed to drift along major current systems for several years, where they are assumed to forage at, or near, the surface where currents converge. As pelagic juveniles, their diet appears to be primarily carnivorous, and includes invertebrates and fish eggs. Upon reaching a carapace length of about 35 cm, juveniles recruit to nearshore habitats. Neritic juveniles, subadults and adult green turtles appear to have a primarily herbivorous diet, consisting largely of marine algae and seagrasses. Every few years after reaching sexual maturity, green sea turtles make breeding migrations that may span thousands of km between resident foraging grounds and their natal nesting areas.

Green turtles are found worldwide primarily in subtropical and temperate regions of the Atlantic, Pacific, and Indian Oceans, and in the Mediterranean Sea. In the eastern North Pacific, green turtles have been sighted as far north as southern Alaska, but most commonly occur from southern California to northwestern Mexico. Elsewhere in the U.S. Pacific, green turtles occur in Guam, the Commonwealth of the Northern Mariana Islands, Hawaii, and American Samoa. Detailed information about the biology, habitat, and conservation status of this species is described in the U.S. green turtle recovery plan (NMFS and USFWS 1998a), the 5-year green sea turtle status review (NMFS and USFWS 2007a), and the green sea turtle status review (NMFS and USFWS 2015). Globally, most of the important green sea turtle nesting populations declined substantially during the 20th century. Harvest of green sea turtles for their meat, shells, and eggs has been a major factor in past declines of green turtles, and continues to be a major threat globally (Humber et al. 2014). Although threats and impacts persist, conservation efforts over the past 25 years or more appear to have had some positive results, especially in Hawaii (Seminoff et al. 2015).

In the Central West Pacific DPS, green sea turtle nesting occurs at low levels throughout the geographic distribution of the population, with isolated locations having high nesting activity. Historical baseline nesting information in general is not widely available in this region, but exploitation and trade of green sea turtles throughout the region is well-known (Groombridge and Luxmoore, 1989).

Green turtles occupy three habitat types: high-energy oceanic beaches, convergence zones in the pelagic habitat, and benthic feeding grounds in relatively shallow, protected waters.

After leaving the nesting beach, young sea turtles are believed to occupy open ocean pelagic habitat, perhaps associated with sargassum rafts. It is generally assumed that at this life stage they are omnivorous with a strong tendency toward carnivory. An ontogenetic shift from a pelagic life form to benthic foraging occurs after reaching a carapace size of 20-25 cm in the Western Atlantic or 35 cm carapace length in Hawaii and Australia. A change to a herbivorous diet also occurs during this time, primarily seagrasses and algae, although they also consume jellyfish, salps and sponges (Lutz and Musick 1997).

In contrast to their protected status, it appears that green sea turtle colonies are increasing and are nesting on beaches that had no recent nesting activities, such as Rancho Nuevo (Tamaulipas, Mexico) and along the mid-Atlantic coast of Florida. Patrolling nesting beaches in other areas of the world has also had a positive effect on nesting populations. It is believed by some that the green sea turtle is not faced with imminent extinction (Lutz and Musick 1997).

3.1.5 Potential for Occurrence in Project Area

On Guam, nesting habitat tends to be in areas isolated from human activity and nesting has not been observed in the proposed project/action area. Sea turtles may use the lagoon for foraging habitat. Although green sea turtles nest on Guam beaches, this normally occurs at relatively isolated locations far away from the Action Area (USFWS 1992). Within the Marianas, green turtles are reasonably common and present year-round in the waters, and approximately 22 green sea turtles nest in Guam (Seminoff et al. 2015).

Green sea turtle (*Chelonia mydas*) have previously been observed in the water and on the beach in Hagatna Bay, but they have not been observed to nest on Hagatna Bay beaches (Flores 2022). A NMFS sea turtle tagging project from 2014 through 2019 did not tag or observe any hawksbill or green sea turtles in Hagatna Bay (Gaos et al. 2021). No turtles were observed during the NMFS 2022 surveys (NMFS 2023).

Given the above, it is unlikely that the green sea turtle will enter the project area. The green sea turtle enter Hagatna Bay and they have previously been reported using the shoreline for foraging habitat. However, the turtles have not been recently documented to use nearshore habitat in the project area.

3.2 Hawksbill sea turtle

Hawksbill sea turtle have a similar appearance to other marine turtles but with a sharp, curving beak. Adult hawksbill sea turtles typically grow to 1 m (3 ft) in length, weighing around 80 kg (180 lb) on average. Adult hawksbill sea turtles are primarily found in tropical coral reefs. Little is known about the habitat preferences of young sea turtles;

they are assumed to be completely pelagic, remaining at sea until they mature (Houghton et al. 2003). Aside from sponges, their principle food source, hawksbills feed on algae, marine plants, cnidarians, comb jellies and other jellyfish, sea anemones, mollusks, fish, and crustaceans.

3.2.1 Listing Status

The hawksbill sea turtle was listed as endangered throughout their range on June 2, 1970 (35 FR 8490). NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach.

3.2.2 Critical Habitat

Population declines resulted in the hawksbill turtle being listed as endangered on 2 June 1970 (35 FR 8495). Hawksbill Sea Turtle critical habitat is only designated for areas of Puerto Rico (50 CFR § 17.95(a). There is no critical habitat designated for hawkbill sea turtles in the Pacific.

3.2.3 Distribution and Habitat

Although certain authors (Carr 1952) separate the species into two sub specific populations (Indo-Pacific and Atlantic subspecies), the USFWS is treating the recovery of this species as a single taxonomic entity.

Hawksbill turtles have a circum-tropical distribution, occurring from 300N to 300S latitude within the Atlantic, Pacific, and Indian oceans. Along the eastern Pacific Rim, hawksbills were apparently common to abundant as recently as 50 years ago in near shore waters from Mexico to Ecuador, particular the east coast of Baja California Sur in the vicinity of Concepcion Bay and Paz Bay, Mexico. Presently, the hawksbill is considered rare in most localities as there are no known nesting beaches remaining on the Pacific coast of Mexico (Clifton, et al 1982, as cited in USFWS 1998).

What appears to be a better situation occurs in the Central Pacific; nesting is widely distributed and in very low numbers. Foraging hawksbills are observed from virtually all the island groups in Oceania, from the Galapagos Islands in the eastern Pacific to the Republic of Palau in the Western Pacific. Hawksbills nest on the islands and mainland of southeast Asia, from China and Japan, throughout the Philippines, Malaysia, and Indonesia, to Papau New Guinea, the Solomon Islands and Australia (USFWS 1998).

As with other sea turtle species, after leaving the nest the turtle is pelagic. The ontogenetic change to benthic foraging occurs in the Caribbean at a carapace length between 20 to 25 cm (straight) and in Australia at a carapace length of 35 cm (curved).

Data indicates that Hawksbills forage most often over coral reef areas and rock outcroppings although they also feed in seagrass meadows in mangrove-fringed bays. Although generally accepted that hawksbill sea turtles are primarily spongivores, other

items consumed include: seagrasses, tunicates, bryozoans, coelenterates, molluscs and soft corals. Hawksbills are believed to undergo a period of omnivorous feeding in benthic habitats prior to adopting the specialized spongivory known from larger juveniles and adults (Lutz and Musick 1997).

Hawksbill turtles are circumtropical in distribution, generally occurring from 30 degrees North to 30 degrees South latitude within the Atlantic, Pacific, and Indian Oceans and associated bodies of water. Along the eastern Pacific rim, hawksbills were apparently common to abundant as recently as 50 years ago in nearshore waters from Mexico to Ecuador, particularly the east coast of Baja California Sur in the vicinity of Concepción Bay and Paz Bay, Mexico. Today, the hawksbill is rare to nonexistent in most localities; there are no known nesting beaches remaining on the Pacific coast of Mexico. Hawksbills may still represent a rare nesting species along Pacific Central America, but there has been no documented nesting in recent years (NMFS & USFWS, 1998b).

Hawksbill turtles use a variety of habitats during different stages of their life cycle, but largely inhabit nearshore foraging grounds, especially healthy coral reef habitats. In the Eastern Pacific, large hawksbill populations have been found in mangrove estuaries. Upon leaving their nesting beaches, most hawksbill hatchlings enter pelagic (open sea) habitat, where they take shelter in floating algal mats and drift lines of flotsam and jetsam for approximately 1 to 5 years.

Eventually, juveniles migrate to shallower coastal feeding grounds, including their preferred coral reef habitats, where they mature to adulthood and spend the remainder of their lives. The ledges and caves of coral reefs provide shelter for resting hawksbills during the day and at night. Hawksbills are also found around rock formations, high energy shoals (sand bars in shallow water), and estuaries that provide good habitat for sponge growth (NMFS & USFWS 1998b).

These turtles are distributed globally in tropical and subtropical waters between 30° N and 30° S. They are highly migratory, use different habitats at different stages of their life cycle, and are most commonly associated with healthy coral reefs. Post-hatchlings and oceanic stage juveniles are believed to occupy the pelagic environment for several years where they probably drift along major current systems and feed primarily at the surface. At about 35 cm carapace length, juveniles recruit to nearshore foraging areas where they begin feeding on benthic sponges, other invertebrates, and algae. Every few years, adult hawksbill sea turtles make breeding migrations that may span thousands of km between their foraging and nesting areas. Detailed information about the biology, habitat, and conservation status of this species is described in the recovery plan (NMFS and USFWS 1998b) and the 5-year status reviews (NMFS and USFWS 2007b; NMFS and USFWS 2013). Globally, hawksbill nesting populations declined substantially during the 20th century, and population declines appear to continue (NMFS and USFWS 2007b; NMFS and USFWS 2013).

In the Mariana Archipelago of Guam and the Commonwealth of the Northern Mariana Islands, less than 10 females nest annually, which likely represents a significant decrease from historic levels. The populations in Micronesia, Melanesia and Polynesia

(with exception of Hawaii) are exploited for shell, meat and eggs for local consumption, and are considered overall depleted and declining.

Hawksbills are uncommon, occurring in much lower numbers than green sea turtles, but foraging hawksbill sea turtles occur in the waters around the main Hawaiian Islands, Guam, and Tutuila in American Samoa (NMFS and USFWS 2013). Capture-mark-recapture studies of sea turtles in the Pacific islands under U.S. jurisdiction occur in the Commonwealth of the Northern Mariana Islands, Palmyra Atoll, and Hawaii which have also captured hawksbills opportunistically during capture activities; however, the duration of these in-water monitoring programs have not been sufficient for trend analysis.

3.2.4 Potential for Occurrence in Project Area

NMFS sea turtle tagging project from 2014 through 2019 did not tag or observe any hawksbill or green sea turtles in Hagatna Bay (Gaos et al. 2021). No turtles were observed during the NMFS 2022 surveys (NMFS 2023).

Given the above, it is unlikely that the Hawksbill sea turtle will enter the project area. Hawksbill sea turtles have not been reported in the Bay.

3.3 Coral (*Acropora globiceps*)

A. globiceps is a "stony" coral. Stony corals are sessile, colonial, marine invertebrates that secrete skeletons of calcium carbonate (aragonite). *A. globiceps* colonies occur in the intertidal zone, upper reef slopes, and reef flats in water shallower than 26 feet (8 meters) (DON 2015). *A. globiceps* coral have finger-like branches that are closely compacted. Their size and color vary by location. Colonies are brown or fluorescent green in American Samoa, yellow-brown in the Northern Marianas (at least on Tinian and Rota), and range from brown to yellow-brown and green-brown to light tan to gray-green in Guam (Fenner and Burdick 2016

3.3.1 Listing Status

In the Commonwealth of the Northern Mariana Islands (CNMI) and Guam *A. globiceps* was listed as threatened under ESA on October 10, 2014 (79 FR 53851), under the jurisdiction of NMFS. According to the Final Rule, *A. globiceps* occurs on upper reef slopes, reef flats, and adjacent habitats in depths ranging from 0 to 8 m.

3.3.2 Critical Habitat

There is no designated critical habitat for the coral species. However, NMFS proposed designated critical habitat on November 27, 2020; critical habitat would include Hagatna Bay. NMFS proposed to designate critical habitat for seven threatened corals in U.S. waters in the Indo-Pacific (1/26/21; 85 FR 76262), including waters in Guam. The public comment period for the proposed critical habitat closed on May 26, 2021, and is awaiting finalization. Major threats to habitat include ocean warming, ocean

acidification, trophic effects of reef fishing, nutrient enrichment, contaminants, and sedimentation. The proposed coral critical habitat consists of substrate and water column habitat characteristics essential for the reproduction, recruitment, growth, and maturation of the listed corals. Sites that support the normal function of all life stages of the corals are natural, consolidated hard substrate or dead coral skeleton free of algae and sediment at the appropriate scale at the point of larval settlement or fragment reattachment, and the associated water column.

Several attributes of these sites determine the quality of the area and influence the value of the associated feature to the conservation of the species:

1. Substrate with presence of crevices and holes that provide cryptic habitat, the presence of microbial biofilms, or presence of crustose coralline algae;

2. Reefscape (all the visible features of an area of reef) with no more than a thin veneer of sediment and low occupancy by fleshy and turf macroalgae;

3. Marine water with levels of temperature, aragonite saturation, nutrients, and water clarity that have been observed to support any demographic function; and

4. Marine water with levels of anthropogenically-introduced (from humans) chemical contaminants that do not preclude or inhibit any demographic function.

While *A. globiceps* Proposed Coral Critical Habitat includes the entirety of Hagatna Bay at a depth of 0 – 131 ft (0 – 40 m), it does not include managed areas (e.g., harbors, navigation channels, anchorages, etc.) or artificial substrates (e.g., aids-to-navigation, seawalls, wharves, boat ramps, fishpond walls, pipes, submarine cables, wrecks, mooring balls, docks, aquaculture cages, etc.) (NMFS 2019).

3.3.3 Distribution and Habitat

A. globiceps morphology was described as digitate and usually small and it is distributed from the oceanic west Pacific to the central Pacific as far east as the Pitcairn Islands. The species occurs on upper reef slopes, reef flats, and adjacent habitats in depths ranging from 0 to 8 m. *A. globiceps* is a hermaphroditic spawner with lecithotrophic (yolk-sac) larvae. *A. globiceps'* vulnerabilities to threats as follows: High vulnerability to ocean warming, moderate vulnerabilities to disease, ocean acidification, trophic effects of fishing, nutrients, and predation, and low vulnerabilities to sedimentation, sea-level rise, and collection and trade.

A. globiceps is found in the oceanic central and western Pacific Ocean and central Indo-Pacific from the oceanic west Pacific to the central Pacific as far east as the Pitcairn Islands. Within the United States, it is known to occur in Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, and the Pacific Remote Island Areas. *A. globiceps* occurs on upper reef slopes, reef fats, and adjacent habitats in depths ranging from 0 to 8 meters.

3.3.4 Potential for Occurrence in Project Area

During surveys in 1992 USFWS recorded nine species of coral on the inner reef flat at the proposed project site (Table 4). *A. globiceps* was not one of them (USFWS 1992). Corals were virtually absent on the sandcovered inner reef flat within 200 m (656 ft) of the beach (USFWS 1992). The nearest documented observance of *A. globiceps* was in northern part of lagoon (Maynard et al. 2015; Horsley Whitten Group 2017) more than 4 miles from the project area. No *A. globiceps* were observed during the NMFS 2022 surveys (NMFS 2023).

3.4 Mariana fruit bat (*Pteropus mariannus mariannus*)

The Mariana fruit bat is a medium-sized fruit bat in the family Pteropididae that weighs 0.66 to 1.15 pounds (330 to 577 grams) and has a forearm length ranging from 5.3 to 6.1 in (13.4 to 15.6 cm); males are slightly larger than females. The underside (abdomen) is colored black to brown, with gray hair interspersed, creating a grizzled appearance. The shoulders (mantle) and sides of the neck are usually bright golden brown, but may be paler in some individuals. The head varies from brown to dark brown. The well-formed and rounded ears and large eyes give the face a canine appearance; members of the family Pteropodidae often are referred to as flying foxes (USFWS 2022).

3.4.1 Listing Status

Mariana Bat was listed as endangered on August 27, 1984 (49 FR 33881-33885). It is managed by USFWS.

3.4.2 Critical Habitat

Although critical habitat has been designated on Guam by the USFWS for Mariana Fruit Bat (*Pteropus mariannus mariannus*) (50 CFR § 17.95(a)), the project site (East Hagatna Bay Shoreline) is not included within any designated or proposed critical habitat areas.

3.4.3 Distribution and Habitat

In 2020 DAWR counted 82 bats on Guam (USFWS 2020). Recent surveys and population estimates (DAWR 2020; DFW 2017; DFW 2020; Mildenstein 2013) suggest the *P. m. mariannus* population is stable overall. However there is insufficient survey frequency and only Rota has sufficient population numbers to meet recovery criteria. Many of the islands have not been surveyed during the last five year period due to difficult access to the islands and a lack of funding. Although the species is stable overall, its range is contracting due to development, and if the subspecies is considered to be a new species the range will naturally change from that as well to only encompass the Mariana islands. In addition, all threats are not being sufficiently managed throughout all of the populations (Table 2). Thus *P. m. mariannus* still meets the definition of threatened.

3.4.4 Potential for Occurrence in Project Area

The primary constituent elements required by the Mariana fruit bat for the biological needs of foraging, sheltering, roosting, and rearing of young are found in areas supporting limestone, secondary, ravine, swamp, agricultural, and coastal forests composed of native or introduced plant species. Plant species used for foraging include *Artocarpus* sp. (breadfruit), *Carica papaya* (papaya), *Cycas circinalis* (fadang), *Ficus* spp. (fig), *Pandanus tectorius* (kafu), *Cocos nucifera* (coconut palm), and *Terminalia catappa* (talisai). Remote locations, often within 328 ft (100 m) of clifflines that are 260 to 590 ft (80 to 100 m) tall, with limited exposure to human disturbance; land that contains mature fig, *Mammea odorata* (chopak), *Casuarina equisetifolia* (gago), *Macaranga thompsonii* (pengua), *Guettarda speciosa* (panao), *Neisosperma oppositifolia* (fagot), and other tree species are used for roosting and breeding.

Guam DAWR has had documented sightings of Mariana fruit bat (*Pteropus mariannus mariannus*) passing through the parks in which the Action Area is located. During informal consultation via email, DAWR stated they have noticed unexplained movements with fruit bats in our island. Most likely a response to the increase development occurring in habitat used by fruit bats in the past (before development activities). For this specific site on East Hagatna, we have seen fruit bats on the breadfruit trees along the cliff wall, roosting and foraging during breadfruit season. If I recall correctly, that was between 2010 and 2013. There are still some bread fruit trees along the cliff side, therefore fruit bats may forage in the area during breadfruit season, April to October (Bevacqua and Miller 2020; Quitugua 2022).

4.0 Potential Impacts

Based on the known locations of sensitive species and habitat within the study area, the following impact analysis evaluates the potential for impact to ESA species and designated habitat from constructing the Rock Revetment within the ESA Action Area. Compared to other alternatives considered under the feasibility study, implementation of the tribar revetment was tentatively determined to be economically justified, environmentally sound and engineeringly feasible.

Potential vectors for impact per resource are discussed below. BMPs described at Section 2.2 are intended to avoid and/or minimize the following impacts.

4.1 Direct Impacts

4.1.1 Mariana Fruit Bat

The shoreline along East Hagatna Bay has been extensively altered by urban development, and the vegetation observed at the proposed project site during the January 2022 PDT visit reflected this. Construction of the rock revetment requires the removal of 2100 ft of the existing stonewall requiring excavation and subsequent backfill of 20 ft inland of the wall resulting in a temporarily disturbed area of 0.96 acres. It is estimated that 20 trees would be removed during construction and replaced after

construction with appropriate and desirable native species and all bare ground would be revegetated. None of the trees within the Action Area are species used for roosting or foraging by Mariana fruit bat. Impacts Mariana fruit bat would be temporary during construction. Construction of the alternatives would beneficially protect existing and restored terrestrial habitat between the wall and the road. Mariana fruit bat may pass through the Action Area on their way to roosting or foraging areas at night, outside of project working hours.

In addition to the BMPs described at Section 2.2, the aforementioned potential effects to fruit bats that could result from implementation of the proposed action can be avoided and/or minimized using the following BMPs:

- Avoid construction work at night that requires artificial lighting of the ESA Action Area.

  o Rationale: Artificial lighting can disorient foraging bats at night. Minimizing or avoiding nighttime work entirely would minimize or avoid use of artificial lights that could disorient and potentially cause harm to foraging bats.

USACE anticipates that fruit bats in general would be roosting during the daytime and not in the ESA Action Area. The Proposed Action would not result in direct effects or loss of individual fruit bats, nor would project activities be expected to reduce habitat availability or degrade such habitat so that it becomes unsuitable at a magnitude or duration that could substantially affect the species population.

4.2.2 Sea Turtles

Construction of the rock revetment in the ESA Action Area would temporarily disturb the current beach, involving increased human presence and use of heavy machinery on the beach prior to and during construction, with minimal, limited, and temporary in-water work. Construction activities would likely involve the use of heavy machinery, operated from the land, for clearing of vegetated areas, excavation, and construction of the revetment. If construction must occur at night, artificial lighting may be required.

Potential vectors of impact include disturbance from human activity and equipment operation, exposure to elevated noise levels, exposure to elevated turbidity and sedimentation, exposure to wastes and discharges, disorientation caused by artificial lighting and loss of nesting habitat. Construction of the revetment has the potential to directly strike ESA-listed species should those animals be present when the equipment is operating within the ESA Action Area. Potential injuries and their severity will depend on the animal's proximity to the heavy machinery when struck, the angle of the strike, and the body part impacted, but may include cuts, bruises, broken bones, cracked or crushed carapaces, and amputations, any of which could result in the animal's death. However, sea turtles on land can be clearly seen and avoided and move relatively slowly and construction activities can either be halted or moved to avoid direct impact.

Increased presence of humans at the beach may impact sea turtles by causing a startle reaction and resulting stress should they encounter site preparation and construction

activities. The reaction could range from one extreme where an animal calmly approaches and investigates the activity, to an opposite reaction of panicked flight, where an animal injures itself in an attempt to flee. However, sea turtles typically avoid human activity. Thus, the most likely effect of this interaction will be moderate level stress with a moderate to high energy avoidance behavior leading to the animal rapidly leaving project areas without injury.

Construction activities using heavy equipment within the ESA Action Area such as setting of stones and excavating the beach toe will elevate ambient noise levels and may cause sea turtles to avoid the area during construction. USACE does not anticipate noise levels that would cause death or damage hearing because no pile driving is anticipated and because noise rapidly dissipates from uplands into marine waters. Construction activities that emit extreme noise levels on land would be halted when a sea turtle is within 50 yards of the activity.

Sea turtles breathe air and should not be impacted by turbidity generated by minimal construction within the intertidal zone. In addition, the intertidal zone is comprised of coarse grain sediments such as sand and cobble and is expected to settle immediately upon disturbance causing no lasting elevated turbidity or sedimentation beyond the ESA Action Area.

Construction activities along the beach may involve use of plastic trash or other small ingestible trash that, if inadvertently consumed can cause digestive blockage or suffocation, or if large enough, along with discarded sections of ropes and lines, may entangle marine life. Equipment spills and discharges likely consist of hydrocarbon-based chemicals such fuel oils, gasoline, lubricants, hydraulic fluids, and other toxicants, which could expose protected species to toxic chemicals. Depending on the chemicals and their concentration, exposure could result in a range of effects, from avoidance of an area to death. Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the marine environment.

Construction of the revetment will cause the conversion of an estimated 0.82 acres of beach sand to rock revetment within the ESA Action Area. The revetment is designed to prevent imminent loss of remaining beach and prevent erosion of terrigenous sediments into the ocean which would benefit sea turtles. Direct impacts from beach loss are not anticipated because turtles do not nest or bask in the Action Area.

In addition to the BMPs described at Section 2.2, the aforementioned potential effects to sea turtles that could result from implementation of the proposed action can be avoided and/or minimized using the following BMPs:

- Conduct daily pedestrian surveys for turtles in the ESA Action Area prior to beginning on-site work. These surveys should be conducted by a biologist or trained individual. If a turtle is observed, work will cease and USACE will consult USFWS to determine appropriate response.

- Rationale: Conducting daily surveys will avoid any potential for direct impact to turtle nests within the ESA Action Area during construction.

- Project footprints must be limited to the minimum area necessary to complete the project.

  - Rationale: During the pre-construction, engineering and design phase, USACE, or its contractor will consider opportunities to reduce the overall dimensions of the revetment (especially longitudinally, parallel to the shoreline) as well as look for opportunities to site the shoreline stabilization structure ABOVE or as close to the current line of littoral vegetation as possible, avoiding placement below the high tide mark Reducing the overall project footprint will minimize impacts to natural resources within the ESA Action Area, in general, and especially minimize impacts to documented nesting beach locations along the west end of the airport runway within the study area. Vegetation lines typically delineate the general height reached by the normal high tide. Siting the revetment as high above the intertidal zone will minimize and potentially eliminate the need for in-water construction activities, and reduce the conversion of beach sand to revetment. Siting the revetment as landward as can be achieved would also maximize opportunity to conduct construction work from the landward (north) side of the ESA Action Area,as well as minimize potential to exacerbate loss of beach area suitable for turtle nesting.

USACE anticipates that sea turtles, in general would avoid the ESA Action Area during the daytime in response to increased human presence and elevated noise levels during construction. Should sea turtles approach the work area, their speed is considerably reduced on land and visibility by on-site personnel is uninhibited on land allowing for construction activities to either halt immediately or adjust to avoid direct impacts to sea turtles. The Proposed Action would not result in direct effects or loss of individual green or hawksbill turtles, nor would project activities be expected to reduce habitat availability or degrade such habitat so that it becomes unsuitable at a magnitude or duration that could substantially affect the species population; however, short-term disturbance of beach areas at which the two species have been previously observed to nest could result from the proposed action.

4.2.3 Coral

Physical damage on coral reefs is often associated with the breakage or dislodging of coral colonies but can also manifest itself less severely (e.g., tissue abrasion). Physical damage that reduces coral cover reduces ecological productivity, protection for other reef species and increases opportunity for colonization by invasive algae and increases vulnerability to further physical damage. Fast growing scleractinian “stony” corals, such as branching Acropora spp. are particularly vulnerable to physical damage because their carbonate skeletons are less dense and relatively brittle compared to slow growing massive corals. However, this characteristic is actually beneficial to corals. Fragmentation is an extremely important mode of distribution and reproduction for many reef building corals, often allowing them to become locally dominant (Highsmith 1982).

Direct physical impacts to coral from the Proposed Action would be avoided through implementation of the following BMPs:

- No corals or coralline algae colonies will be directly handled or intentionally fragmented.

- All efforts will be made to maximize the amount of construction work conducted from the landward (north) side of the project site (closest to the runway). Construction activities on beach, splash/spray, and intertidal zones would be minimized to the maximum extent possible. The construction footprint would occur predominantly on the beach and extend temporarily and minimally, during construction only, into the intertidal zone.

- In-water construction activities would not be required to construct the shoreline stabilization measure, so physical impacts to coral or other marine organisms from these sources would not occur through these types of activities.

Based on a recent survey by USFWS of the ESA Action Area, the ESA Action Area is absent of ESA-listed coral species. Accordingly, the project would have no direct impact to ESA-listed corals within the ESA Action Area.

4.3 Indirect and long-term physical impacts

4.3.1 Sediment Erosion/Accretion

The rock revetment would be constructed along and maintain the contours of the existing beach profile. Thus, USACE does not anticipate substantial or permanent exacerbation of erosion of soils or loss of topsoil in the long term. The toe of the revetment would be buried with native sediments consistent with the pre-construction conditions.

4.3.2 Discharge of pollutants

Construction activities along the shoreline involving the use of heavy machinery has the potential for inadvertent spills and discharges that may consist of hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could spread into the marine environment and expose protected species to toxic chemicals. Oil globules can adhere to coral tissue and soluble oil components can be absorbed from the water column by coral polyps (Van Dam 2011). Effects on coral colonies include mortality, tissue death, reduced growth, impaired reproduction, bleaching, reduced photosynthetic rates, and decreased cellular lipid content which is correlated with coral fitness. Spills occurring near or at peak reproductive season (e.g., summer spawning months for most jurisdictions in the Western Pacific Region) could adversely affect an entire year of reproductive effort because coral gametes and eggs are buoyant, potentially bringing them into direct contact with floating oil. Chemical spills into the ocean can also indirectly impact sea turtles by affecting mobility and respiration and by degrading the turtles' food source.

Site preparation and excavation of the revetment footprint could result in indirect impacts to protected resources through the inadvertent exposure or discharge of excavated native subsurface soil and sediments into tidally influenced areas. Release of terrigenous sediments such as silt, clay and organic matter can elevate turbidity levels within and beyond the ESA Action Area through ocean circulation. These fine grain sediments are more easily suspended and take longer to settle out than coarse grain sand and cobble which settles almost immediately. The impact of sedimentation or settling of sediments on coral reefs, depends upon the thickness of the sediment layer and duration of coverage resulting in reduced photosynthesis and diverting energy away from lifecycle activities to sloughing and mucous production and on the extreme end, bleaching and death. Death of native biota can be followed by opportunistic proliferation of invasive species disrupting the balanced ecosystem. Elevated turbidity for extended periods of time reduces solar irradiation affecting photosynthetic organisms and can reduce visibility in the water column for visual foragers and increase vulnerability of prey.

In addition to the BMPs listed at Section 2.2, implementation of the following BMPs could avoid and/or minimize the aforementioned indirect impacts:

- Project operations must be planned to accommodate weather and ocean forecasts. Operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
    - Rationale: Adverse weather and wave conditions facilitate conveyance of land-based pollutants with the marine environment, increasing potential for inadvertent spills or damage to sediment-erosion control measures. These measures would minimize the potential for indirect impacts associated with pollutant releases into the ocean.
- The Contractor must designate on-site personnel responsible for ensuring no inadvertent discharges of debris, petroleum, or other harmful materials into the water.
    - Rationale: This BMP emphasizes on-site responsibility to avoid inadvertent discharges of pollutants to the ocean to avoid indirect impacts to protected resources.

Through best management practices, hydrocarbons would not affect any listed species during construction. No dive boats or other seacraft will be used, so no hydrocarbon spills occurring from these sources would occur. No refuse or matter of any kind (including trash, garbage, oil, and other liquid pollutants) would be discharged because of project activities.

5.0 Effects of the Action

Effects on ESA-listed species were considered adverse if implementation of the proposed Project would result in any of the following (Table 4):

- Substantial loss of a T&E species.
- Reduction of habitat availability or degradation of habitat suitability of a magnitude and/or duration that could substantially affect a T&E species population.
- Substantially interfere with the movement of any migratory T&E species.
- Introduction of or contribution to the substantial spread of an invasive species, pests or diseases that would threaten a T&E species.
- Any effect that was not considered discountable (extremely unlikely to occur), insignificant (size of the impact should never cause take), or beneficial (contemporaneous positive effects without any adverse effects)

In consideration of the potential impacts described in Section 4.0, USACE has considered whether or not such impacts may affect and are likely or not likely to adversely affect ESA-listed species i.e., effects that are not discountable, insignificant or wholly beneficial. Additionally, USACE considered whether or not the proposed action would result in the destruction or adverse modification of critical habitat i.e., alterations that adversely modify any of those physical or biological features that were the basis for determining the habitat to be critical.

When considering the effect, the proposed action would have on the Mariana fruit bat, USACE understands that the ESA Action Area is absent of habitat suitable for and preferred by this species however, bats have previously been observed passing through at dusk and dawn on their way to foraging and roosting areas. USACE does not anticipate this species to coincide in the ESA Action Area with the proposed action or otherwise be affected by the proposed action. **Accordingly, USACE has determined that the proposed action may affect but is not likely to adversely affect Mariana fruit bat.**

When considering the effect the proposed action would have on the coral *Acropora globiceps*, USACE understands that the ESA Action Area is absent of any listed species and that the nearest ESA-listed species occurs approximately 100m offshore of the ESA Action Area therefore, USACE does not anticipate this species to be directly affected by the proposed action. However, although in-water work is not anticipated, the ESA Action Area minimally includes the intertidal area fronting the shoreline and provides a means of conveying project generated turbidity, wastes and discharges to the marine environment. Indirect impacts to water quality may affect listed corals near the ESA Action Area, specifically, *Acropora globiceps*, however, USACE anticipates that due to the work being sited predominately, if not entirely on land and through implementation of BMPs listed at Section 2.2, such adverse impacts are expected to be both insignificant and discountable. **Accordingly, USACE has determined that the proposed action may affect, but is not likely to adversely affect *Acropora globiceps*.**

When considering the effect, the proposed action would have on the Hawksbill sea turtle and Green sea turtle, USACE evaluated both direct and indirect impacts to sea turtles both in water and on land. In-water construction activities would be limited to the intertidal zone for site preparation purposes, if determined necessary at all, with no impediment to visual monitoring to ensure avoidance of direct impacts to sea turtles in water. Construction activities on the beach will have no impediment to visual monitoring coupled with observing the late-April through early August no-construction period and daily surveys to ensure no direct impacts to sea turtles on land. Direct impacts to sea turtles in the water and on land are expected to be discountable. The indirect impacts of beach erosion and potential for loss of suitable nesting habitat is minimal as the revetment will be constructed higher up on the beach profile and is surrounded by suitable habitat known for nesting will be insignificant. The indirect impacts to sea turtles from impaired water quality and exposure to construction debris and wastes, through implementation of BMPs will be insignificant. **Accordingly, USACE has determined that the proposed action may affect but is not likely to adversely affect ESA-listed sea turtles.**

Table 3: Summary of Effects on ESA-Listed Species potentially present on or in the vicinity of the ESA Action Area.

Common Name	Scientific Name	Status	Effect
Sea Turtles			
Green sea turtle	*Chelonia mydas*	Endangered	NLAA
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	NLAA
Terrestrial Species			
Mariana Fruit Bat	*Pteropus mariannus mariannus*	Endangered	NLAA
Coral Species			
small-polyp stony coral	*Acropora globiceps*	Threatened	NLAA
Key: NE = No Effect, NLAA = Not likely to adversely affect.			

There is no designated critical habitat for any ESA-listed species in Guam. **Accordingly, USACE has determined that the proposed action would cause no destruction or adverse modification of critical habitat.**

6.0 Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR Section 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The potential for cumulative impacts to the environment from the proposed action was evaluated by reviewing other projects and activities in the vicinity of the East Hagatna seawall that could directly or secondarily affect the same environmental resources as the proposed action. The analysis generally includes actions that were recently completed, are currently underway, or are programmed to occur in the foreseeable

future, and are directly related to coastal shoreline protection, are located within or proximate to the proposed measure sites and/or would directly or secondarily affect resources in Hagatna Bay. Based on a review of the related actions, this analysis incorporates the following past projects and activities:

- Agana Small Boat Harbor O&M breakwater repair and dredging
- Hagatna (Agana) River Flood Risk Management Project. This project was terminated in 2022.

The effects of these actions were considered in combination with the degree and timing of the potential adverse and beneficial effects of the proposed alternatives to determine the types and significance of potential cumulative effects on ESA listed species. For this analysis, implementation of the project is considered cumulatively significant if, in concert with other past, present, or reasonably foreseeable future actions, it would exacerbate the declining status of an identified resource (a resource that is already adversely affected) or create a condition in which an effect is initially minor but is part of an irreversible declining trend.

7.0 Conclusions

In conclusion, USACE has determined the following for the Proposed Action:

- The proposed Project may affect, but is not likely to adversely affect, ESA-listed sea turtle species, coral species, and bats. In general, direct impacts to listed coral species would not occur or are highly unlikely.

8.0 Literature Cited

Amesbury, S. S. 1978. Studies on the Biology of the Reef Fishes of Guam. Part I: Distribution of Fishes on the Reef Flats of Guam. Part II: Distribution of Eggs and Larvae of Fishes at Selected Sites on Guam. University of Guam Marine Laboratory Technical Report. 52:1-58.

Bevacqua, Robert F., and Ross H. Miller. 2020. Agroforestry on Guam: Breadfruit Cultivation. Western Pacific Tropical Research Center December 2020. https://www.uog.edu/_resources/files/wptrc/Bread_Fruit_Final.pdf

Blumenstock, D. I. 1959. Climate. In Military Geology of Guam, Mariana Islands. Intelligence Division, Office of the Engineer, Headquarters, U. S. Army Forces Pacific. 282 pp.

Department of the Navy. 2021. 2020 U.S. Navy Annual Marine Species Monitoring Report for the Pacific: A Multi-Range-Complex Monitoring Report for Hawaii-Southern California Training and Testing (HSTT), Mariana Islands Training and Testing (MITT), Northwest Training and Testing (NWTT), and the Gulf of Alaska Temporary Maritime Activities Area (GOA TMAA). Prepared by the Department of the Navy. Prepared for and submitted to National Marine Fisheries Service, Silver Spring, Maryland. April 2021

Emery, K. O. 1962. Marine Geology of Guam. Geological Survey Professional Paper. 403B:I-76.

Fabian, V.P. & A.G. Fujimura. 2020. Survey of Guam Benthic Habitats and Coral Health. 39 pages https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechReport166_Fabian_Fujimura2020.pdf

Flores, Jacqueline, Island Team Manager - Mariana Islands, U.S. Fish and Wildlife Service – Ecological Services, Pacific Islands Fish and Wildlife Office; personal communication via email March 16, 2022.

Gaos, A.R.; S. L. Martin; T.T. Jones. 2020. SEA TURTLE TAGGING IN THE MARIANA ISLANDS TRAINING AND TESTING (MITT) STUDY AREA PROGRAMMATIC REPORT. NOAA, NMFS, PIRO, Honolulu, Hi.

Gourley, John ; Tosatto, Michael D. ; Kingma, Eric ;. 2014 . Environmental assessment proposed construction of an American Disabilities Act compliant fishing platform at Paseo de Susana park. Environmental assessment proposed construction of an American Disabilities Act compliant fishing platform at Paseo de Susana park (noaa.gov)

Government of Guam. 2017. Guam Erosion and Sediment Control Guide. http://epa.guam.gov/wp-content/uploads/2019/04/ESC_fieldguide_Guam2017.pdf based on the regulations at http://www.guamcourts.org/CompilerofLaws/GAR/22GAR/22GAR002-10.pdf

Grecni, Z. ,W. Miles, R. King, A. Frazier, and V. Keener. 2020. CLIMATE CHANGE IN GUAM: INDICATORS AND CONSIDERATIONS FOR KEY SECTOR. Pacific Islands Regional Climate Assessment (PIRCA). East-West Center, Honolulu, HI. November 9, 2020. https://www.eastwestcenter.org/publications/climate-change-in-guam-indicators-and-considerations-key-sectors

Guam Coastal Management Program. 2011. PROCEDURES GUIDE FOR ACHIEVING FEDERAL CONSISTENCY WITH THE GUAM COASTAL MANAGEMENT PROGRAM https://bsp.guam.gov/wp-bsp-content/uploads/2021/02/Federal-Consistency-Guidebook.pdf

GUAM DIVISION OF AQUATIC AND WILDLIFE RESOURCES. 2019. GUAM WILDLIFE ACTION PLAN (GWAP). Revised JANUARY 10, 2019. Department of Agriculture, Government of Guam, Mangilao, Guam 96913. https://doag.guam.gov/wp-doag-content/uploads/2021/11/GU-DOAG-DAWR-2016-GWAP-2019-07-17.pdf

Guam Environmental Protection Agency (GEPA). 1978. Environmental Setting. In. Guam Water Quality Management Plan, 208. Environmental Protection Agency, Government of Guam. 2:1-9.

Hensley, R. A., and T. S. Sherwood. 1993. An Overview of Guam's Inshore Fisheries. Marine Fisheries Review 55(2):129-138.

https://doag.guam.gov/wp-doag-content/uploads/2019/06/DAWRcolorbk-copy.pdf

Jenkins, J. M. 1980. Seasonality and Relative Abundance of Guam Shorebirds. Micronesica. 17(1):181-183.

Jenkins, J.M. 1983. The Native Forest Birds of Guam. Ornithological Monographs 31.

Kerr, A. M. A. K. Miller, C. Brunson, and A. M. Gawel. 2017. Commercially Valuable Sea Cucumbers of Guam Results of a Stock Assessment. A Report Prepared for the Director, Department of Agriculture and Wildlife Resources, Territory of Guam, USA. University of Guam Marine Laboratory. Technical Report 162. May

Lazaro, M.; O. Kuegler, S. Stanton, A. Lehman, J. Mafnas, M. Yatskov. 2020. Guam's forest resources: Forest Inventory and Analysis, 2013. Resource Bulletin PNW-RB-270. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 43 p. https://www.fs.usda.gov/treesearch/pubs/59433

Maben, A. F. 1980. Survey and Inventory of Shorebirds on Cuam. FY 1980 Aquatic and Wildlife Resources Annual Report, Department of Agriculture, Guam. p. 189-198.

National Oceanic and Atmospheric Administration (NOAA). 2005. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, Guam and the Northern Mariana Islands Atlas. August 2005. https://www.fisheries.noaa.gov/inport/item/46673 Map ES12.

NOAA. 2009. Coral Reef Habitat Assessment for U.S. Marine Protected Areas: U.S. Territory of Guam. February 2009. https://www.coris.noaa.gov/activities/habitat_assessment/guam.pdf

NOAA. 2022a. Datums for 1630000, Apra Harbor, Guam. Tide Predictions - NOAA Tides & Currents.

NOAA. 2022b. Online ESA mapper. https://www.fisheries.noaa.gov/resource/tool-app/environmental-consultation-organizer-eco

NOAA. 2022c. The ESA list for the Mariana Islands at: https://www.fisheries.noaa.gov/pacific-islands/endangered-species-conservation/marine-protected-species-mariana-islands

NMFS-PIRO. 2019. Endangered Species Act Critical Habitat Information Report: Basis and Impact Considerations of Critical Habitat Designations for Threatened Indo-Pacific Corals *Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Seriatopora aculeata*. October 2019. Honolulu, HI.

NMFS. 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. NOAA Technical

Memorandum NMFS-OPR-59. 167 p. https://media.fisheries.noaa.gov/dam-migration/tech_memo_acoustic_guidance_%2820%29_%28pdf%29_508.pdf

NMFS. 2023. A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam.

Quitugua, Jeffrey S. 2022. Jeffrey.Quitugua@doag.guam.gov, Technical Guidance Section, Guam Department of Agriculture, Division of Aquatic and Wildlife Resources personal communication via email March 16, 2022

Project Development Team (PDT). 2022. Trip Report.

Randall, R. H. 1978. Corals. In Randall, R. H. (ed.). 1978. Guam's Reefs and Beaches. Part II: ·Transect Studies. University of Guam Marine Laboratory Technical Report. 48:28-76.

Randall, R. H. and J. Holloman. 1974. Coastal Survey of Guam. University of Guam Marine Laboratory Technical Report. 14:1-404.

Randall, R. H. and L. G. Eldredge. 1976. Atlas of the Reefs and Beaches of Guam. Coastal Zone Management Section, Bureau of Planning, Government of Guam. 191 pp.

Raymundo, L.J., M.D. Andersen, C. Moreland-Ocho, A. Castro, C. Lock, N. Burns, F. Taijeron, D. Combosch, & D. Burdick. 2022. Conservation and Active Restoration of Guam's Staghorn Acropora Corals. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechRep168_Raymundo_2022.pdf.

Reyes, E. 2022. Personal Communication. Resource Agency Workshop 8 June 2022 Webex.

Hensley, R. A., and T. S. Sherwood. 1993. An Overview of Guam's Inshore Fisheries. https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/MFR/mfr552/mfr55215.pdf#:~:text=In%20the%20past%2C%20subsistence%20fishing%20provided%20Guam%27s%20residents,accepted%20spelling%20of%20the%20indigenous%20people%20of%20Guam.

Schrader, A. Endangered Species Biologist, Contractor with Lynker in support of NOAA Fisheries Southeast Regional Office, U.S. Department of Commerce; Personal communication April 12, 2022.

Stinson, D. W.; G. J. Wiles; and J. D. Reichel. 1997. Occurrence of Migrant Shorebirds in the Mariana Islands (Incidencia de Aves Costeras Migratorias en Las Islas Marianas). Journal of Field Ornithology, Vol. 68, No. 1 (Winter, 1997), pp. 42-55. https://www.jstor.org/stable/4514191?seq=1

Taborosi, D. 2013. Environments of Guam. Produced by Island Research & Education Initiative and Water and Environmental Research Institute of the Western Pacific. Published by Bess Press, Honolulu, Hawaii.

Tracey, J. I., Jr., S. 0. Schlanger, J. T. Stark, D. B. Doan, and H. G. May. 1964. General Geology of Guam. Geological Survey Professional P.aper. 403A:I-104.

U.S. Fish and Wildlife Service (USFWS). 1981. U.S. Fish and Wildlife Service Mitigation Policy. Federal Register. 46(15):7644-7663.

USFWS. 1992. Draft Fish and Wildlife Coordination Act Report. U.S. Department of the Interior, Fish and Wildlife Service, Pacific Islands Office.

USFWS. 2022. Information for Planning and Consultation (IPaC) website, https://ecos.fws.gov/ipac/. Accessed January 2022.

USFWS. 2020. Mariana fruit bat, Fanihi (*Pteropus mariannus mariannus*) 5 year review. https://ecos.fws.gov/docs/tess/species_nonpublish/3210.pdf

United States Navy. 2015. Guam and CNMI Military Relocation (2012 Roadmap Adjustments) SEIS Final July 2015. https://www.guambuildupeis.us/

United States Army Corps of Engineers (USACE). 1979. Guam Comprehensive Study - Stage 1 Report, U.S. Army Corps of Engineers, Honolulu Engineer District, August 1979.

USACE. 1981. Shoreline Investigations, Agana, Guam, U.S. Army Corps of Engineers, Honolulu Engineer District, September 1981. This report described existing shoreline features, structures, and conditions and showed the boundaries of storm surge and storm wave flooding at Agana Bay.

USACE. 1983. Flood Insurance Study, Territory of Guam, U.S. Army Corps of Engineers, Pacific Ocean Division, September 1983.

USACE. 1984. Guam Comprehensive Study - Agana Bay Typhoon and Storm-Surge Protection Study (Technical Documentation), U.S. Army Corps of Engineers, Pacific Ocean Division, January 1984.

USACE. 1987. Typhoon Stage-Frequency Analysis for·Agana Bay, Guam (Draft Technical Report), U.S. Army Corps of Engineers, Coastal Engineering Research Center, Waterways Experiment Station, July 1987.

USACE. 1988. Agana Bayfront Storm Surge Protection Study, Territory of Guam (Draft Feasibility Report and Environmental Impact Statement), U.S. Army Corps of Engineers, Honolulu Engineer District, December 1988.

USACE. 1989. Agana Bayfront Storm Surge Protection Study, Guam (Draft Feasibility Report), April 1989.

USACE. 1990. East Agana, Territory Guam, Shore Protection Study, Reconnaissance Report, U.S. Army Corps of Engineers, Honolulu Engineer District, April 1990.

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USACE. 2020. Federal Interest Determination Section 14 Emergency Shoreline Protection East Hagatna, Guam. July 2020.

USACE. 2022a. USACE Project Delivery Team (PDT) trip report of January 2022 site visit. January 2022.

USACE. 2022b. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES)

Williams, T. C., and J. M. Williams. 1988. Radar and visual observations of autumnal (southward) shorebird migration on Guam. Auk 105:460-466.

Williams, T. C. and M. Ying. 1990. A Comparison of Radar Observations of Bird Migration at Haizhou Bay, China, and Guam, Marianas. The Auk, Vol. 107, No. 2 (Apr., 1990), pp. 404-406. https://www.jstor.org/stable/4087627.

2e. 2023 October 18 NMFS Concurrence Letter

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 · Fax: (808) 725-5215

October 18, 2023

Marian Dean
Civil & Public Works Branch
U. S Army Corps of Engineers, Honolulu District
230 Otake St.
Ft. Shafter, HI 96858-5440

RE: Request for Informal ESA Consultation and Conference on an emergency shoreline protection project for East Hagatna, Guam. (I-PI-23-2208-DG, PIRO-2023-02285)

Dear Ms. Dean:

On September 13, 2023, NOAA's National Marine Fisheries Service (NMFS) received your written request for informal consultation on the U.S. Army Corps of Engineers (USACE) proposed action to replace approximately 2,100 linear feet (ft.) of existing, compromised seawall with a rock revetment along South Marine Corps Drive, in cooperation with the Guam Department of Public Works. The proposed action may affect the endangered or threatened species and/or designated critical habitat under our jurisdiction, as identified below in Table 1. On September 18, 2023, NMFS requested additional details on whether the action agency wished to conference on the proposed critical habitat for ESA-listed corals and Central West Pacific green sea turtles, the proposed timeline for this action, and the specifics regarding heavy equipment involved in the action. On September 22, 2023, we received all the necessary information to evaluate the proposed action and initiated a section 7 consultation.

We prepared this response to your request pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 *et seq.*), implementing regulations at 50 CFR 402, and agency guidance for the preparation of letters of concurrence. This letter also underwent pre-dissemination review using standards for utility, integrity, and objectivity in accordance with applicable guidelines issued under the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the Pacific Island Regional Office, Honolulu, Hawaii.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. On June 22, 2023, we proposed clarifications to the language in the

regulations. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the letter of concurrence would be any different under the pre-2019 regulations, the 2019 regulation, or the 2023 proposed regulations. We have determined that our analysis and conclusions would not be any different.

Under section 7(a)(4) of the ESA, each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. While consultations are required when the proposed action may affect listed species, a conference is required only when the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. However, Federal action agencies may request a conference on any proposed action that may affect proposed species or proposed critical habitat (USFWS & NMFS 1998).

Proposed Action

The USACE proposes to construct a 2,100 ft. long by 17 ft. wide (approximately 0.82 acres) rock revetment to replace the existing, compromised seawall along South Marine Corps Drive and East Hagatna Bay in East Hagatna, Guam (Figure 1). The action is authorized pursuant to Section 14 of the Flood Control Act of 1946, which authorizes the study, design, and emergency streambank and shoreline works used to protect public facilities. This alternative has been tentatively identified as the Least Environmentally Damaging Practicable Alternative by the USACE. The continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. To meet the USACE's 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC, the proposed elevation for the revetment is nine ft. above Mean Sea Level (MSL), which is approximately one ft. higher than the existing seawall. Construction from land would occur during low tide to avoid in-water work.



Figure 1: Current undermined seawall along South Marine Corp Drive.

The revetment will contain compacted fill as the foundation, a geotextile filter fabric, a double layer of under-layer stone, a double layer of armor stone, and an oversized toe stone. The armor stone layer is an erosion-resistant material that dissipates the energy of storm waves, prevents further recession of the backshore, and provides protection against wave action. The filter layer supports the rock, provides for the passage of water through the structure, and prevents the underlying soil from being washed through the armor.

The buried toe prevents displacement of the seaward edge of the revetment. Anchoring of the two ft. toe of the revetment involves digging into the underlying limestone and backfilling to the existing shore elevation, resulting in 15 ft. of revetment exposed. The proposed slope of the revetment is 1:1.5. (Figure 2). Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas will increase the total project footprint to 1.45 acres and involve the use of heavy equipment including: backhoes, concrete saws, bulldozers, dump trucks, excavators, front-end loaders, graders, tractors, and cranes.

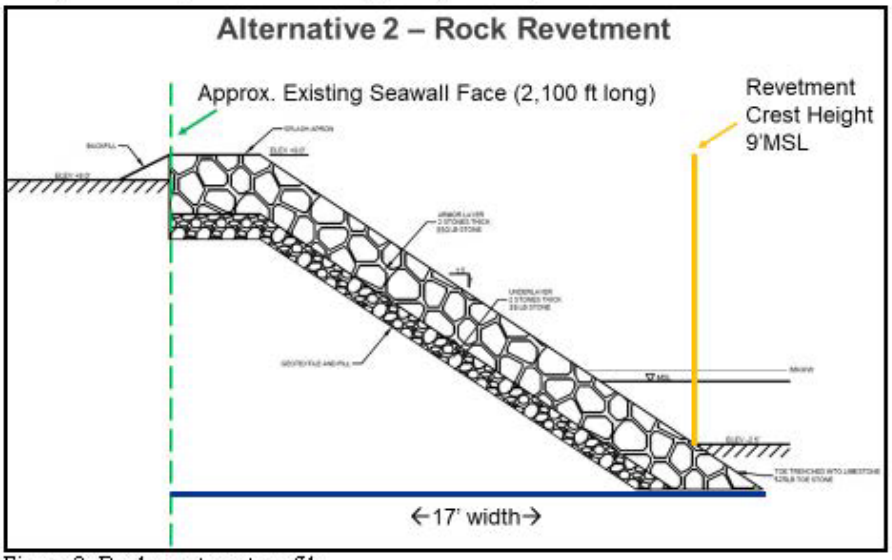


Figure 2: Rock revetment profile.

Best Management Practices

1. Contractors will monitor for the presence of ESA-listed species during all aspects of the permitted action.
    a. A responsible party, i.e., 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.
    b. Observers will survey the area prior to the start of work each day, including prior to resumption of work following any break of more than one-half hour.

3

2. The Action Agency will ensure that a monitoring plan identifies the methods, equipment, communication, and all necessary measures to adequately observe ESA-listed species in the affected areas and communicate with workers.
    a. The Action Agency will ensure that observers are exclusively looking for ESA-listed species at the work site and not assigned to other tasks.
    b. Observers shall report to the 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
    c. If listed species are noticed in the area after work has already begun, that work may continue only if, in the best judgment of the project supervisor, there is no way for the activity to adversely affect the animal(s).
3. Project-related personnel will NOT attempt to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.
4. Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area must be identified on project figures. Project staff will avoid the sensitive resource areas to the greatest extent practicable.
5. The project manager or heavy equipment operators will perform daily pre-work equipment inspections for leaks. All heavy equipment operations will halt should a leak occur and will not proceed until the leak is repaired and the equipment cleaned.
    a. Appropriate materials to contain and clean potential spills will be stored at the worksite and be readily available.
    b. Equipment should always be stored in an appropriate staging area designed to be preventative in terms of containing unexpected spills when equipment is not in use or during fueling.
    c. Drip pans will also be maintained beneath construction equipment. The Contractor would be required to prevent any debris from falling into the water.
6. Fueling of land-based vehicles and equipment will take place away from the water, preferably over an impervious surface.
7. Prevent discharges of chemicals and other fluids dissimilar from seawater into the water column.
8. Before any equipment, anchor(s), or material enters the water or begins operating on the beach, a responsible party, i.e., permittee/site manager/project supervisor, shall verify that no ESA-listed marine animals are in the area where the equipment, anchor(s), or materials are expected to contact the substrate.
9. Tree clearing will be confined to the minimal area necessary to facilitate construction activities, bare areas will be reseeded and maintained until grass/vegetative cover is established.
10. Project footprints are limited to the minimum area necessary to complete the project.

Construction is anticipated to continue until completion in 2026.

Action Area

The action area is defined by regulation as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The action area for the proposed activities encompasses the full extent of the action's modifications

to land, water, and air. For this action, the full extent of direct and indirect effects is the 1.45-acre project area affected by disturbances from human activity (Figure 3).

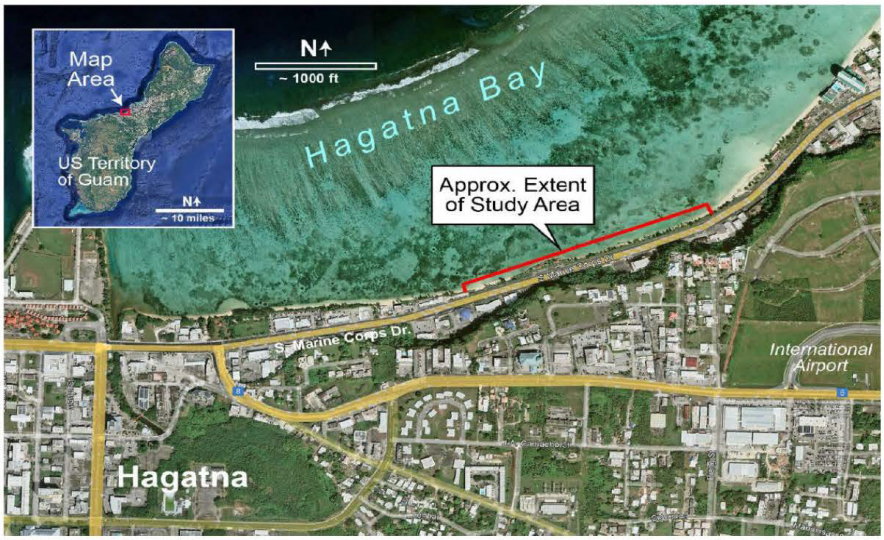


Figure 3: Proposed action area

Listed Species in the Action Area

We are reasonably certain the ESA-listed species and designated critical habitat under our jurisdiction listed in Table 1 occur in the action area, and may be affected by the proposed activities. Detailed information about the biology, habitat, and conservation status of the animals listed in Table 1 is available in their status reviews, recovery plans, federal register notices, and other sources at https://www.fisheries.noaa.gov/species-directory/threatened-endangered.

Table 1. Common name, scientific name, ESA status, effective listing date, critical habitat designation, and recovery plans, with Federal Register reference for ESA-listed species considered in this consultation.

Species/ common name	ESA Status	Effective Listing Date/ FR Notice	Critical Habitat	Recovery Plan
Chelonia mydas Central West Pacific Green Sea Turtle	Endangered	05/06/2016 81 FR 20057	Proposed 07/19/2023 88 FR 46572	
Eretmochelys imbricata Hawksbill Sea Turtle	Endangered	06/03/1970 35 FR 8491		5/22/98 63 FR 28359
Corals *Acropora globiceps*	Threatened	10/10/2014 79 FR 53852	11/27/2020 85 FR 76262 (Proposed)	

Critical Habitat in the Action Area

Proposed Central West Pacific Green Sea Turtle. Proposed critical habitat for Central West Pacific green sea turtles includes the marine environment from the mean high water line to 20 m depth. Detailed information on proposed Central West Pacific green sea turtle critical habitat is available at: https://www.fisheries.noaa.gov/action/proposed-rule-designate-critical-habitat-green-sea-turtles.

The specific areas within the proposed designation, with their physical and biological features are:

1. From the mean high water line to 20 m depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.
2. From the mean high water line to 20 m depth, underwater refugia (*e.g.,* caves, reefs, protective outcroppings, submarine cliffs, and "potholes") and food resources (*i.e.,* seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction.

Corals. We proposed critical habitat for *A. globiceps* and *A. retusa* (11/27/20; 85 FR 76262). On Guam, we described critical habitat for *A. globiceps,* however we did not identify critical habitat for *A. retusa.* Major threats to habitat include ocean warming, ocean acidification, trophic effects of reef fishing, nutrient enrichment, contaminants, and sedimentation. The proposed coral critical habitat consists of substrate and water column habitat characteristics essential for the reproduction, recruitment, growth, and maturation of the listed corals. Sites that support the normal function of all life stages of the corals are natural, consolidated hard substrate or dead coral skeleton free of algae and sediment at the appropriate scale at the point of larval settlement or fragment reattachment, and the associated water column. Several attributes of these sites determine the quality of the area and influence the value of the associated feature to the conservation of the species:

1. Substrate with presence of crevices and holes that provide cryptic habitat, the presence of microbial biofilms, or presence of crustose coralline algae;
2. Reefscape (all the visible features of an area of reef) with no more than a thin veneer of sediment and low occupancy by fleshy and turf macroalgae;
3. Marine water with levels of temperature, aragonite saturation, nutrients, and water clarity that have been observed to support any demographic function; and
4. Marine water with levels of anthropogenically-introduced (from humans) chemical contaminants that do not preclude or inhibit any demographic function.

Analysis of Effects

Under the ESA (50 CFR 402.02), "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial (USFWS & NMFS 1998). Discountable effects are those extremely unlikely to occur. Insignificant effects relate to the size of the impact and should never reach the scale where take[1] occurs. Beneficial effects are contemporaneous positive effects without any adverse effects.

Despite the USACE's use of all BMPs, we identified the following stressors remain, and have the potential to affect listed marine species and/or critical habitat in the action area:

- Direct physical impact,
- Disturbance from human activity,
- Increased turbidity,
- Exposure to wastes and discharges, and
- Loss of habitat.

To assess the effects of proposed actions, we use an exposure-response assessment framework. Effects are discountable if exposure is extremely unlikely to occur. For this reason we first determine the probability of stressors co-occurring with individuals from the listed species, or features of critical habitat. For stressors where exposure is not discountable, we discuss the significance of the species' response.

Direct physical impact

The revetment construction could affect Central West Pacific green sea turtles and hawksbill sea turtles through direct physical impact when heavy machinery along the shoreline excavates, grades, demolishes structures, and removes foliage. Construction of the revetment would occur from land during low tide without in-water activities. Based on a recent survey by the NMFS, the action area is absent of ESA-listed coral species (NMFS 2023).

Green sea turtles have not been observed to nest on Hagatna Bay beaches (Flores per comms. 2022). A NMFS sea turtle tagging project from 2014 through 2019 did not observe any hawksbill or green sea turtles in Hagatna Bay (Gaos et al. 2021). Sea turtles are highly motile in the marine environment and should swim away from these disturbances. Additionally, BMPs ensure that all work will be postponed or halted when ESA-listed marine species are within 50 meters of the proposed work and will only begin/resume after the animals have voluntarily departed the area.

Considering the implemented BMPs, the low frequency of turtle occurrence, and the lack of in-water work, we are reasonably certain that the probability of exposure to direct physical impact from the construction of the revetment to Central West Pacific green sea turtles and hawksbill sea turtles is extremely unlikely and therefore discountable.

Disturbance from human activity

Activities within the proposed action may expose Central West Pacific green sea turtles and hawksbill sea turtles to disturbances from human activity. These disturbances may include visual disturbances from land-based equipment. Based on a recent survey, the action area is absent of ESA-listed coral species, with the closest colony located 100 m away (NMFS 2023).

[1] Under the ESA, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. §1532). We further define "harass" as to create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (Wieting 2016).

Construction equipment and construction workers on land could disturb ESA-listed species. However, the most frequent response to this type of interaction is a low-energy behavioral avoidance, leading to the animal temporarily leaving the area. This low-energy behavioral avoidance could temporarily displace feeding and resting activities.

With the implemented BMPs, we are reasonably certain the effects of disturbances from human activities on Central West Pacific green and hawksbill sea turtles will not reach the scale where harm or harassment occurs and are therefore insignificant.

Increased turbidity

The USACE anticipates the revetment will have positive impacts on nearshore water quality by minimizing future coastal erosion. A short-term increase in turbidity in a localized area during construction of the revetment may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. The USACE anticipates construction to occur predominately from land during low tide. The intertidal zone in the action area is comprised of coarse grain sediments such as sand and cobble and will settle quickly upon disturbance, causing no lasting elevated turbidity.

Elevated turbidity in waters can reduce a turtle's ability to detect predators (Oliver et al. 2000), and sedimentation effects on communities, such as coral reefs and seagrass, can negatively impact turtles' food sources (NMFS and USFWS 1998). Sea turtles are highly motile and can quickly leave turbid areas or avoid localized turbidity plumes in favor of clear water, reducing their exposure risk. *A. globiceps* is not known to occur at the construction site, where a temporary increase in turbidity may occur during the action. We expect the increased sediment loads to be temporary and confined to the immediate area. It will not affect the development process of eggs, larvae, or the reproductive capacities of *A. globiceps* on nearby reefs.

Additionally, the USACE will employ BMPs to help maintain a 50 m distance between these activities and ESA-listed species and minimize disturbing bottom sediment as much as possible. Given the proposed BMPs, we are reasonably certain that the probability of exposure to increased turbidity for Central West Pacific green, hawksbill sea turtles, and *A. globiceps* is extremely unlikely and therefore discountable.

Exposure to wastes and discharges

The action involves construction activities that may expose Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps* to waste and discharge. Construction waste and debris, including plastic bags and other items, may enter the water, and construction equipment can cause accidental spills of petroleum-based products (lubricants, oil, and fuel).

Local and federal regulations prohibit the intentional discharge of pollutants into the marine environment. BMPs establish that the project will maintain an oil spill contingency plan to control and clean spilled petroleum products, and construction equipment and vehicles are checked daily before commencing work to reduce the risk of leaks and discharge. Activities will cease if leaks are detected from heavy equipment operations and will not proceed until repaired. If any accidental spill occurs, it is anticipated to be small in size, contained, and quickly cleaned up before entering the aquatic environment. Based on the low likelihood of an ESA-listed species in the vicinity in the unlikely event of a spill and the adherence to the BMPs that will prevent or minimize potential exposure from spills, we are reasonably certain the probability of exposure to Central West Pacific green, hawksbill sea turtles, and *A. globiceps* is extremely unlikely and, therefore discountable.

Loss of Habitat

Construction activities could result in a loss of habitat that may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. The construction of the revetment will convert an estimated 0.82 acres of beach sand to rock revetment within the action area. Revetments are generally considered to cause less damage to the environment than other types of structures, like vertical seawalls, because they are less prone to wave flanking and limit interference with natural sediment processes, thereby maintaining coastal stability while still allowing some natural coastal processes to occur. Natural shoreline erosion supplies adjacent stretches of coastline with sediment, through longshore sediment transport. Burial of the toe of the revetment maintains an area of shoreline sediment to participate in natural sediment transport processes.

The sandy beach between the existing seawall and the ocean is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock that varies in size between zero and 15 ft. in width (PDT 2022). NMFS surveys in November 2023 confirmed previous observations (USFWS 1992) that the intertidal region within 20 ft. of the wall contains no live coral. No other threatened or endangered species were seen during the surveys at or near the proposed project site (NMFS 2023). Sea turtles use the nearby reef habitat immediately offshore in Hagatna Bay for foraging and resting behaviors (USACE 2023).

Given the relatively small impact area, the lack of ESA-listed corals, and the availability of similar habitat nearby for foraging and resting behaviors for sea turtles, we are reasonably certain effects on Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps* a loss of habitat will not reach the scale where harm or harassment occurs, and therefore are insignificant.

Critical Habitat

The action area for the proposed activities overlaps with the proposed coral critical habitat for *A. globiceps* and for the Central West Pacific green sea turtle's proposed critical habitat. Potential stressors that may affect the essential physical and biological features of these proposed critical habitats and would not occur but for the proposed action include loss of habitat, exposure to wastes and discharge, and exposure to increased turbidity.

Loss of the essential features of the proposed coral critical habitat for *A. globiceps* may occur during the construction of the revetment. Limited impact on the habitat would occur, considering the 0.82 acre footprint of the revetment. The current habitat consists of sand, coral rubble, gravel, and rock and lacks live coral. The intertidal area is unlikely to support coral reproduction, recruitment, growth, and maturation. Therefore, we are reasonably certain the effects of the loss of habitat will not measurably reduce the essential features of the proposed coral critical habitat for *A. globiceps* and are therefore insignificant.

Loss of the essential features of the Central West Pacific green sea turtle's proposed critical habitat may occur during the construction of the revetment. Limited impact on the habitat would occur, considering the 0.82 acre footprint of the revetment. Due to its intertidal nature, this area lacks underwater refugia and food resources of sufficient condition, distribution, diversity, abundance, and density necessary to support sea turtles' survival, development, growth, and reproduction. Based on the poor quality of the habitat for foraging, we are reasonably certain the effects of this loss of habitat will not measurably reduce the conservation value of the physical or biological features of critical habitat for the Central West Pacific green sea turtle and are therefore insignificant.

Exposure to the essential features of the proposed coral critical habitat for *A. globiceps* and Central West Pacific green sea turtle's proposed critical habitat to waste and discharge may occur due to accidental leaks or spills from equipment associated with the action. As discussed in the Exposure to Waste and Discharges section, the implemented BMPs will prevent any discharge into the marine environment and manage leaks or spills. As a result, we are reasonably certain the probability of exposure to waste and discharge on the proposed critical habitats is extremely unlikely and is therefore discountable.

The construction of the revetment may expose the essential features of the proposed coral critical habitats and Central West Pacific green sea turtle's proposed critical habitat to an increase in turbidity. Construction activities in the intertidal zone would occur from land during low tide to minimize in-water construction. As discussed in the Exposure to Increased Turbidity section, the duration of the activities causing the disturbance of sand will be temporary and confined to the immediate area. As a result, we are reasonably certain the probability of exposure to increased turbidity on the proposed critical habitats is extremely unlikely and is therefore discountable.

Conclusion

Considering the information and assessments presented in the consultation request and available reports and information, and in the best scientific information available about the biology and expected behaviors of the ESA-listed marine species considered in this consultation, all effects of the proposed action are either discountable or insignificant. Accordingly, we concur with your determination that the proposed action is not likely to adversely affect the following ESA-listed species and designated critical habitats: Central West Pacific green turtles; proposed critical habit for Central West Pacific green turtles; endangered hawksbill turtles; *A. globiceps* corals; and proposed coral critical habit for *A. globiceps*.

This concludes informal consultation under section 7 of the ESA for species under our jurisdiction. Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect essential fish habitat (EFH). If necessary, it is your responsibility to request EFH consultation for this action with NMFS' Habitat Conservation Division.

Reinitiation Notice

Reinitiation of consultation is required and shall be requested by USACE or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and if:

a. Take occurs to an ESA-listed species;
b. New information reveals effects of the action that may affect ESA-listed species or designated critical habitat in a manner or to an extent not previously considered;
c. The identified action is subsequently modified in a manner that causes an effect to ESA-listed species or designated critical habitat that was not considered in this concurrence; or
d. A new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions, please contact Jamie Marchetti at (808) 725-5084 or Jamie.marchetti@noaa.gov. Thank you for working with us to protect our nation's living marine resources.

Sincerely,

Dawn Golden

Dawn Golden
Assistant Regional Administrator
Protected Resources Division

NMFS File No.: PIRO-2023-02285
PIRO Reference No.: I-PI-23-2208-DG

Literature Cited

Federal Highway Authority. 2006. FHWA Highway Construction Noise Handbook.

Flores, J., Island Team Manager - Mariana Islands, U.S. Fish and Wildlife Service – Ecological Services, Pacific Islands Fish and Wildlife Office; personal communication via email March 16, 2022.

Gaos, A.R.; Martin, S. L.; Jones, T.T. 2020. Sea turtle tagging in the Mariana Islands training and testing study area programmatic report. NOAA, NMFS, PIRO, Honolulu, Hi.

NMFS. 2023. A Preliminary survey of marine species and habitats in the vicinity of a proposed shoreline revetment in East Hagatna, Guam.

Oliver, L.J., Salmon, M., Wyneken, J., Hueter, R., Cronin, T. W. 2000. Retinal anatomy of hatchling sea turtles: anatomical specializations and behavioral correlates. Mar. Fresh. Behav. Physiol. 33: 233-248.

Project Development Team (PDT). 2022. Trip Report.

USACE. 2023. CAP Section 14 Emergency shoreline protection project East Hagatna, Guam. U.S. Army Corp of Engineers, Honolulu District.

USFWS. 1992. Draft Fish and Wildlife Coordination Act Report. U.S. Department of the Interior, Fish and Wildlife Service, Pacific Islands Office.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act.
https://www.fisheries.noaa.gov/webdam/download/64572719

Wieting, D. S. 2016. Interim Guidance on the Endangered Species Act Term "Harass". U.S. Dept. of Commerce, NOAA, NMFS, Office of Protected Resources, Silver Spring, MD, October 21, 2016. Memorandum from the Director of the NMFS Office of Protected Resources to NMFS Regional Administrators.

2f. 2023 November 2 USFWS Response to ESA Consultation

Dean, Marian E CIV USARMY CEPOH (USA)

From: Gombar, Laura P <lauraalexandria_gombar@fws.gov>
Sent: Thursday, November 2, 2023 12:43 PM
To: Dean, Marian E CIV USARMY CEPOH (USA)
Subject: [Non-DoD Source] Informal Section 7 Consultation: East Hagatna Emergency Shoreline Protection
Attachments: BMP_2024-0009184_CAP14.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Hafa adai Marian,

I am currently reviewing the informal Section 7 consultation request for the East Hagatna Emergency Shoreline Protection project. I've looked over the materials and do have some questions regarding the measures provided for sea turtles, for both the green sea turtle and hawksbill sea turtle. The measures state that constant vigilance will be kept for ESA-listed turtles and that competent trained observers will survey adjacent areas (Measure 6 under 2.2.1), but I'm a little unclear on the details of these trained observers. Would these individuals be biologists or trained contractors/project staff and if the latter, could you please describe the details of the training?

The biological evaluation also mentions that tree and foliage removal will occur.. Under the *Temporary Vegetation Removal* section of the biological evaluation, it is stated that approximately 20 trees would be removed. Coconut palm (*Cocos nucifera*) fronds and the fish-kill tree (*Barringtonia asiatica*) are occasionally home plants for endangered tree snails. I do have concerns regarding tree snails and would like to recommend surveys be conducted as these snails are a cryptic species and have been found in vegetation on the sides of the road and along beaches.

I've attached some of the Service standard avoidance measures for Mariana fruit bats, sea turtles, and tree snails. Please let me know if these measures could be incorporated into the project description in addition to the measures already mentioned in the biological evaluation. If you have any questions or concerns regarding these measures, please feel free to reach out to me and we can work together to find what would work for both the species and the project. Thank you & I look forward to hearing from and working with you!

Si Yu'us ma'ase,
Laura Alexandria Gombar
Fish and Wildlife Biologist
USFWS - Pacific Islands Fish & Wildlife Office
mobile: 671-787-3819
lauraalexandria_gombar@fws.gov

1

United States Department of the Interior

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

In Reply Refer To:
2024-0009184

Rhiannon L. Kucharski
WRCP Chief
U.S. Army Corps of Engineers
230 Otake St. Ft. Shafter, HI 96858-5440

Subject: Best Management Practices for CAP Section 14 Emergency Shoreline Protection Project, East Hagatna, Guam

Dear Ms. Rhiannon L. Kucharski,

The U.S. Fish and Wildlife Service (Service) reviewed your informal Section 7 consultation request for the CAP Section 14 Emergency Shoreline Protection Project pursuant to the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*).

Based on information you provided and pertinent information in our files, the following species may be present within the vicinity of the project area.

Listed Species	Common/ Chamorro Name	Range in the Marianas	Listing Status
MAMMALS			
Pteropus mariannus mariannus	Mariana fruit bat, fanihi	Guam, Rota, Saipan, Tinian, Aguiguan, Maug, Asuncion, Agrihan, Pagan, Alamagan, Guguan, Sarigan, Anatahan	Threatened
REPTILES			
Chelonia mydas	Green sea turtle/ haggan	Guam, CNMI	Endangered
Eretmochelys imbricata	Hawksbill sea turtle/ haggan karai	Guam, CNMI	Endangered

Rhiannon L. Kucharski

INVERTEBRATES			
Partula gibba	Humped tree snail, akaleha'	Guam, Rota, Aguiguan, Alamagan, Pagan, Sarigan, Saipan, Tinian, Anatahan*	Endangered
Partula radiolata	Guam tree snail, akaleha'	Guam	Endangered
Samoana fragilis	Fragile tree snail, akaleha'	Guam, Rota	Endangered

We recommend the following avoidance and minimization measures to avoid impacts to listed species:

Mariana Fruit Bat

1. During all project work, monitor the project site and areas within 150 m (492 ft) of project activity for the Mariana fruit bat and if a bat moves into the area, delay work until the animal(s) have left the area of their own accord. Risks to transiting and foraging Mariana fruit bats will be project-specific; coordinate with our office for assistance assessing the project's disturbance duration and intensity in relation to risks to the bat.

Green Sea Turtle & Hawksbill Sea Turtle:

1. No vehicle use on or modification of the beach or dune environment during the sea turtle nesting or hatching season (Throughout the year in the CNMI).
2. Do not remove native vegetation.
3. Cease all actions between nesting sea turtles and the ocean.
4. Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.

To avoid or minimize potential project impacts to sea turtles from lighting implement the following conservation measures:

a. Avoid nighttime work during the nesting and hatching season (Throughout the year in the Marianas).
b. Incorporate design measures into the action or operation of buildings adjacent to the beach to prevent ambient outdoor lighting from reaching the shoreline such as tinting and reducing the height of exterior lighting to below three feet and pointed downward or away from the beach.
c. Minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.

Tree snails (*Partula gibba, Partula radiolata, Samoana fragilis*):

- When work must be conducted in forested areas, a qualified biologist should survey the proposed action areas for the presence of tree snails following the approved Service survey protocol.
- If any tree snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.
- Avoid cutting or removing vegetation within 60 m (200 ft) of the known occurrence to minimize impacts to the tree snails and their habitat.

Rhiannon L. Kucharski

- Mark the trees and shrubs occupied by tree snails with brightly colored flagging tape and keep foot traffic to a minimum of 10 m (33 ft) from marked vegetation to avoid inadvertently dislodging and trampling individuals.
- Avoid clearing understory and canopy vegetation outside existing developed areas; intact vegetation is important for maintaining microclimates and air movement conditions necessary for tree snail survival.
- Confine movement of heavy equipment to existing roadways.

Thank you for your efforts to conserve listed species and native ecosystems in Guam. If you have additional questions, please contact Laura Gombar, Fish and Wildlife Biologist, at (671) 787-3819, or by e-mail: lauraalexandria_gombar@fws.gov.

2g. 2023 December 18 USACE withdrawal of USFWS ESA Consultation

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

December 18, 2023

Civil and Public Works Branch
Programs and Project Management Division

Mr. Earl Campbell
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

Dear Mr. Campbell:

Due to a change in the preferred plan from a revetment to a precast concrete seawall, the Honolulu District, U.S. Army Corps of Engineers (USACE) withdraws its consultation request under Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq), dated September 13, 2023, for the East Hagatna Emergency Shoreline Protection Feasibility Study. We will reinitiate consultation as early as January 2024 with revised designs, avoidance and minimization measures and effects determinations to include listed tree snails, as requested in consultation with Ms. Gombar of your staff.

Should you have any questions regarding the proposed action, please contact Ms. Marian Dean at (808) 379-8223 or via email at Marian.Dean@usace.army.mil.

Sincerely,

Rhiannon Kucharski

Rhiannon L. Kucharski, MPIA, WRCP
Chief, Civil and Public Works Branch and
Legislative Liaison

2h. 2025 May Revised USFWS ESA Biological Assessment

ENDANGERED SPECIES ACT BIOLOGICAL EVALUATION
FOR SPECIES UNDER U.S. FISH AND WILDLIFE JURISDICTION
CAP SECTION 14 EMERGENCY SHORELINE PROTECTION PROJECT
EAST HAGATNA, GUAM



Action Agency:	Honolulu District, U.S. Army Corps of Engineers
Federal Action:	Construction of emergency shoreline protection at existing seawall
Authority:	Section 14 of the Flood Control Act of 1946
Consulting Agencies:	United States Fish and Wildlife Service Pacific Islands Fish and Wildlife Office

Honolulu District
U.S. Army Corps of Engineers

CONTENTS

1. BACKGROUND 1
1.1 PROJECT PURPOSE AND NEED 2
1.2 PROJECT HISTORY 5
2. DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA 6
2.1 PROPOSED ACTION 6
2.2 PROPOSED MITIGATION 9
2.2.1 Pac-SLOPES BMPs 9
2.2.2 Standard BMPs from USFWS 9
2.2.3 Project-Specific BMPs 9
3. DESCRIPTION OF THE ESA ACTION AREA 9
4. LISTED SPECIES & CRITICAL HABITAT IN THE ACTION AREA 15
4.1 CENTRAL WEST PACIFIC GREEN SEA TURTLE (*CHELONIA MYDAS*) 18
4.1.1 Listing Status, Distribution, and Habitat 18
4.1.2 Critical Habitat 18
4.1.3 Potential for Occurrence in Project Area 20
4.2 HAWKSBILL SEA TURTLE (*ERETMOCHELYS IMBRICATA*) 20
4.2.1 Listing Status, Distribution and Habitat 20
4.2.2 Critical Habitat 20
4.2.3 Potential for Occurrence in Project Area 20
4.3 SLEVIN'S SKINK (*EMOIA SLEVINI*) 21
4.3.1 Listing Status 21
4.3.2 Critical Habitat 21
4.3.4 Distribution and Habitat 21
4.3.5 Potential for Occurrence in Project Area 21
4.4 TREE SNAILS (*PARTULA GIBBA*, *PARTULA RADIOLATA*, *SAMOANA FRAGILIS*) 21
4.4.1 Listing Status 21
4.4.2 Critical Habitat 21
4.4.3 Distribution and Habitat 21
4.4.4 Potential for Occurrence in Project Area 22
4.5 MARIANA FRUIT BAT (*PTEROPUS MARIANNUS MARIANNUS*) 23

4.5.1 Listing Status *23*
4.5.2 Critical Habitat *23*
4.5.3 Distribution and Habitat *25*
4.5.4 Potential for Occurrence in Project Area *25*
4.6 BIRDS 25
4.6.1 Listing Status *25*
4.6.2 Critical Habitat *25*
4.6.3 Distribution and Habitat *27*
4.6.4 Potential for Occurrence in Project Area *27*
5. POTENTIAL IMPACTS 27
5.1 DIRECT IMPACTS 27
5.1.1 Sea Turtles *27*
5.1.5 Tree Snails *29*
5.1.6 Mariana Fruit Bat *29*
5.2 INDIRECT AND LONG-TERM PHYSICAL IMPACTS 30
5.2.1 Sediment Erosion/Accretion *30*
5.2.2 Discharge of pollutants *30*
6. EFFECTS OF THE ACTION 31
7. CONCLUSIONS 33
8. LITERATURE CITED 34

ENDANGERED SPECIES ACT BIOLOGICAL EVALUATION
FOR SPECIES UNDER U.S. FISH AND WILDLIFE JURISDICTION
CAP SECTION 14 EMERGENCY SHORELINE PROTECTION PROJECT
East Hagatna, Guam

1. Background

The Emergency Shoreline Protection Project at East Hagatna is a cost-shared effort between the Honolulu District, U.S. Army Corps of Engineers (USACE) and the Government of Guam, represented by the Guam Department of Public Works (DPW). Section 14 of the Flood Control Act of 1946 (Section 14, Public Law 79-525), as amended, authorizes USACE to investigate feasible alternatives that provide emergency shoreline protection of public infrastructure in imminent danger of failing due to bank failure caused by natural erosion and not by inadequate drainage, by the facility itself, or by operation of the facility. Section 14 studies have a federal participation limit of $5,000,000. In the Feasibility phase, the first $100,000 is 100% federally funded and the balance is cost shared 50% federal to 50% non- federal. In the Design & Implementation phase, the cost share is 65% federal to 35% non- federal.

The Federal objective, as stated in the CEQ Principles and Guidelines (P&G), is to contribute to national economic development (NED) consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. The planning objective for the study is to identify the least cost, environmentally acceptable alternative that provides shoreline protection to South Marine Corps Drive and the associated public utilities over a 50-year period of analysis. The least cost alternative plan is considered to be justified if the total cost of the proposed alternative is less than the cost to relocate South Marine Corps Drive.

The high cost of implementation in remote territories such as Guam is a study constraint. Section 1156 of the Water Resources Development Act (WRDA) 1986 provides a territorial waiver under the Feasibility and Design & Implementation phases of CAP studies. In 2021 when this feasibility study was initiated, the Section 1156 waiver was $511,000. While the intent of the territorial waiver is beneficial in most cases, under a Section 14 authority with a limited federal expenditure of $5 million, the territorial waiver hinders the study's ability to qualify under a CAP Section 14 authority. The study team would need to find an implementable solution at a much lower cost than that of a non-territory, which will be difficult in a remote location such as Guam. Given the recent period of high inflation and the high costs associated with mobilizing equipment and personnel to remote territories such as Guam, there may be a limited number of alternatives that qualify within the range of coastal erosion management measures and alternatives that may be considered and selected under this authority.

The location and configuration of the existing seawall places another spatial planning constraint on the formulation of potential solutions: any improvements to the portion of damaged seawall resulting from this study cannot further exacerbate or induce damages to other portions of the seawall.

USACE and DPW have initiated a feasibility study to evaluate measures to repairing the existing seawall to continue to restore protection to South Marine Corps Drive and public utilities in the area, from coastal erosion. The study area includes the west central coast of Guam in East Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and Trinchera Beach Park.

USACE has prepared an Integrated Feasibility Report and Environmental Assessment (IFR/EA) for the East Hagatna, Guam - Continuing Authorities Program (CAP), Section 14 Emergency Shoreline Protection project (Proposed Action/Federal Action) pursuant to Engineering Regulation 1105-2-100 and the National Environmental Policy Act (NEPA). The IFR/EA identifies, evaluates, and discloses all impacts that would result from the implementation of either of several potential alternatives, including the "No Action" alternative (i.e., Future Without Project Condition, modelled under 50 years of different climate change projections), designed to provide emergency shoreline protection within the study area. The draft IFR/EA will be released for a 30-day public and agency comment period in late 2024.

Concurrent to and informing the preparation of the draft IFR/EA, USACE has prepared this Biological Evaluation (BE) to evaluate the potential effects of the Proposed Action on species listed or proposed for listing as endangered or threatened and their designated critical habitat pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended.

1.1 Project Purpose and Need

USACE is proposing structural measures to restore protection of South Marine Corps Drive and other essential infrastructure along the shoreline of East Hagatna Bay in East Hagatna, Guam (Figure 1). Guam is in an area of the Pacific Ocean that has a high risk for tropical storms and typhoons, and the low-lying coastline of East Hagatna is subject to frequent storm wave attack. Large storm events and associated high waves and storm surge has caused significant erosion and undermining of the existing seawall fronting and protecting South Marine Corps Drive. The existing seawall is not anchored into the limestone foundation and instead, sits atop the ground surface, leaving it vulnerable to wave attack. Continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. In some places, less than 20 ft of shoreline separates the road from the beach. Future sea level rise will continue to exacerbate this condition and accelerate the rate of erosion and damage.



Figure 1: Approximate extent of the action area along Hagatna Bay.

Figures 2 and 3, captured by USACE Project Delivery Team (PDT) members on a site visit in January 2022, show the existing condition of the wall along Trinchera Beach and Veteran's Sunset Beach Park in the study area. The greatest damage to the existing seawall is along Veteran's Sunset Beach Park, where some sections of wall are undercut by up to 2 ft of seawater. This undercutting is already causing the seawall to crack and undermining its structural integrity. Figure 2 shows the rocks and concrete skirt eroding out of the seawall on the eastern edge of Veteran's Sunset Beach Park. The western access staircase is in danger of collapsing into the ocean. Erosion has also dislodged some of the larger rocks from the seawall (Figure 3), especially on the eastern end of Veteran's Sunset Beach Park (USACE 2022).



Figure 2: Existing seawall on eastern edge of Veteran's Sunset Beach Park, facing southwest (USACE 2022). The beach has eroded below the rocks and concrete skirt, causing the seawall to crack, and undermining its structural integrity. Close up view of the undercut seawall is on the right



Figure 3: Existing seawall at Trinchera Beach Park, facing northeast (USACE 2022)

Failure of the seawall and exposure of South Marine Corps Drive and associated public utilities to damage would result in economic loss and the potential for decreased public and emergency service provision for people who depend on the road. Without federal intervention, it is assumed that the Government of Guam will bear the full burden of protecting South Marine Corps Drive. They will be fiscally impacted by this responsibility and will likely need to repair or replace failing sections of wall in a piecemeal approach.

Pursuant to Section 14 of the Flood Control Act of 1946 (Public Law 79-525), for which this study is authorized, USACE, in collaboration with the Guam DPW and other agency and public stakeholders may investigate feasible alternatives that provide emergency shoreline protection of public infrastructure. Accordingly, the PDT has developed

potential alternative plans for shoreline stabilization over a 50 year period of analysis (2026-2076).

USACE and the Guam DPW evaluated the final array of alternatives and have tentatively selected Alternative 3: Precast Concrete Seawall. This alternative is considered most practicable with respect to real estate considerations, costs, and logistics as the Tentatively Selected Plan (TSP), is preliminarily identified as the Least Environmentally Damaging Practicable Alternative, and therefore is carried forward for analysis to either confirm the TSP as the recommended plan or select a different alternative. While maximizing net benefits, USACE anticipates this alternative will have positive impacts on nearshore water quality (e.g., by minimizing future coastal erosion) and is supported by the Government of Guam as the TSP.

1.2 Project History

In 1993, USACE drafted an EA for revetments to protect two coastal reaches along South Marine Corps Drive spanning a total of 1,750 linear feet. The EA analyzed impacts to air quality; noise; water quality; marine resources; terrestrial resources; endangered species; economic resources; population; historical, cultural, and archaeological resources; visual aesthetics, and recreation opportunities. USACE conducted consultations pursuant to the Fish and Wildlife Coordination Act, ESA, and National Historic Preservation Act (USACE 1993). The Government of Guam cancelled the USACE project, preferring a vertical rock wall to the proposed revetment, which Guam built in the mid-1990s without federal funding.

In 2021, the Government of Guam requested assistance from USACE to address shoreline erosion along the same shoreline fronting South Marine Corps Drive as previously studied in 1993. USACE and the Government of Guam entered into a cost share agreement to begin the feasibility phase of this study under Section 14. For the current project, early coordination and pre-consultation with National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Guam Division of Aquatic and Wildlife Resources (GDAWR) on threatened and endangered species was conducted during a series of email conversations on March 16, 2022 (HST) and April 12, 2022 (HST). Coordination workshops were held with Guam Coastal Management Program and the NMFS Pacific Islands Regional Office (PIRO), Intergovernmental Coordination and Conservation Branch of the Protected Resources Division (PRD) on June 8, 2022 (HST) and with NMFS, USFWS, U.S. Environmental Protection Agency (USEPA); and GDAWR on June 14, 2022 (HST).

In 2023, USACE evaluated the final array of alternatives and tentatively selected a 2,100-foot-long rock revetment to replace the portion of the existing seawall with the most severe damages. Accordingly, USACE drafted a BE documenting the USACE consideration of potential impacts under the ESA for the 2,100 linear foot revetment, transmitting it to NMFS and USFWS to initiate informal consultation on September 13, 2023. NMFS concurred with the USACE effect determination of may affect not likely to adversely affect, on October 18, 2023. USFWS responded with a Request for

Information on November 2, 2023, that included additional species to include in the BE due to the influence of Typhoon Mawar on terrestrial species distributions.

In December 2023, after further consideration from USACE technical experts, the PDT re-evaluated the final array of alternatives and ultimately decided to revise the tentatively selected plan from a revetment to a Precast Concrete Seawall, i.e., Alternative 3. Accordingly, USACE determined the need to reinitiate consultation with NMFS and revise its consultation with USFWS based on input from USFWS in addition to revision of the tentatively selected plan. This current BE is concerned with the anticipated effects and associated avoidance and minimization measures proposed under the current federal action, a 1,630-foot-long Precast Concrete Seawall to USFWS trust species. This evaluation augments and/or supersedes past consultation with USFWS. NMFS trust species are covered in a reinitiation letter.

2. Description of the Proposed Action and Action Area

2.1 Proposed Action

This Proposed Action would replace 1,630 linear feet of the 2,100 ft existing seawall with a 1 ft wide precast concrete seawall which acts as a cantilever retaining wall (Figure 4). This design utilizes the weight of the backfill to provide resistance to the lateral earth pressures. Concrete wall panels would either be constructed onsite or offsite and transported to the site to replace failing sections of the existing seawall.

Installation of the precast concrete panel wall would occur using conventional land-based, earth moving equipment and includes:

- demolition of approximately 1,630 linear feet and 711 cubic yards of existing block, concrete and rock rubble seawall (demolition waste will be hauled offsite and disposed at a local waste facility),
- removal of up to 20 trees,
- excavation of native coastal soils below and upland of the existing seawall, down to the limestone shelf (the bottom 3 feet, 4 inches of the excavation will be below Mean Sea Level (MSL) and require dewatering),
- installation of a 7-foot-wide base,
- placement of precast concrete panels,
- construction of 3 sets of cast-in-place concrete stairs to allow for beach access,
- replacement of 3 culverts,
- regrade and backfill of the excavated area behind the constructed seawall to the elevation of the pre-existing ground surface,
- installation of a splash apron composed of formed concrete over a gravel fill behind the crest of the structure, and
- reseeding of 3,555 square yards of disturbed area and replanting of 20 trees once construction is completed.

This design has a top elevation of 8.5 feet above MSL, a crest width of 1foot and a buried base that is 7 feet wide. The total disturbed upland area is an approximately 20 feet wide swath of land along the length of the existing wall for excavation and backfill of the existing soils necessary to construct the seawall. In addition to the approximately 20 feet of disturbed area, a minimal additional 30 feet will be needed landward of the disturbed area for staging of the construction equipment. This design does not include any construction in front of the existing seawall. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability to projected sea level change. Construction of the precast concrete seawall is expected to begin in 2026 and take approximately 12 months.

Table 1: Proposed Project Dimensions

Impact	Action	Height	Width	Length	Surface Area
Permanent	Seawall replacement	9 ft	1 ft	1,630 ft	0.036 ac
Temporary	Upland Backfill and Staging Area	9 ft	50 ft	1,630 ft	0.735 ac

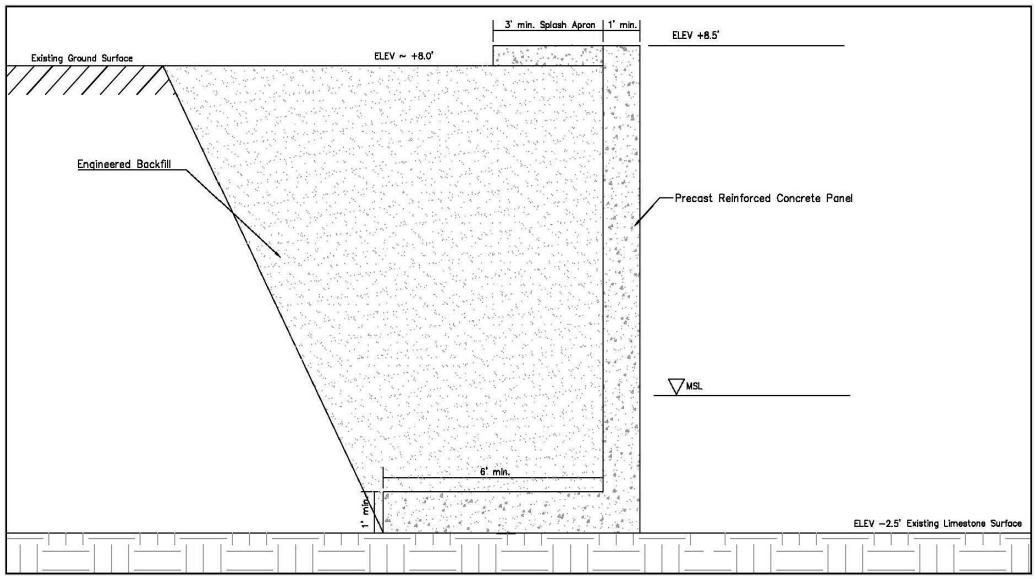


Figure 4: Alternative 3 – Precast Concrete Seawall

DRAFT

2.2 Proposed Mitigation

USACE considers and applies a progressive approach to mitigation: avoidance first, followed by minimization and lastly, compensatory mitigation. The following mitigative measures are proposed because USACE has determined they are appropriate, feasible, practicable and commensurate to anticipated adverse effects. USACE welcomes any additional avoidance and minimization measures USFWS and NMFS may recommend to avoid, minimize, or otherwise mitigate for adverse effects to ESA listed species and designated critical habitat.

2.2.1 Pac-SLOPES BMPs

USACE reviewed the Pac-SLOPES General and Activity-Specific BMPs (USACE and NMFS 2022) for applicability and determined the proposed action is consistent with the Pac-SLOPES covered action described at, *Site Preparation for Above-water, Over-water, or In-Water Construction* and *Maintenance of Existing Bank Stabilization Structures*. All applicable Pac-SLOPES BMPs are listed in Attachment 1 of this BE, in addition to other agency-recommended BMPs and Essential Fish Habitat Conservation Recommendations. USACE understands that inclusion and implementation of these BMPs are necessary to ensure that project-related impacts to ESA listed species are discountable or insignificant.

2.2.2 Standard BMPs from USFWS

USACE reviewed the April 2022 Recommended Standard Best Management Practices For Work In or Around Aquatic Environment (USFWS 2022a), DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands (USFWS 2023a), and Migratory Bird Protections in Guam (USFWS 2023b) for applicability. All applicable are listed in Attachment 1 of this BE, in addition to other agency-recommended BMPs and Conservation Recommendations. USACE understands that inclusion and implementation of these BMPs are necessary to ensure that project-related impacts to ESA listed species are discountable or insignificant.

2.2.3 Project-Specific BMPs

USACE has consulted and coordinated this project action with engineering professionals and environmental resource agencies, including NMFS Protected Resources Division, to develop BMPs that would modify the design in such a manner so as to avoid and/or minimize the impacts to the aquatic and surrounding environment to the greatest extent practicable. Compiled BMPs are provided as Attachment 1 to this BE. Such BMPs will be implemented by the contractor and enforceable through contract specifications.

2.3 Proposed Alternatives

The proposed action is the least environmentally damaging practicable alternative, having the least impact on habitat (Table 2) and other resources.

Table 2: Habitat Area Affected by Each Alternative

Impact	Alt 1: No Action	Alt 2: Revetment	Alt 3: Precast Concrete Seawall	Alt 4: CRM Wall
Temporary: Staging area (parking lot) (acres)	NA	0.20	0.20	0.20
Temporary: Upland Construction Area (acres)	NA	1.10	0.73	0.73
Permanent: Upland (acres)	NA	0	0.04	0.07
Permanent: Beach/Intertidal (acres)	NA	0.63	0	0
Total Impacts	**NA**	**1.93**	**0.97**	**1.00**
Construction NPDES required	NA	>1 acre Yes	<1 acre No	>1 acre Yes
Slope	0	1.5H/1V	0	0.25H/1V

2.3.1 Alternative 1 No Action

Under Alternative 1, no federal actions for emergency shoreline protection would be implemented. Conditions in the proposed action area are anticipated to develop as described in the FWOP condition (Section 2). More frequent and severe tropical storms in combination with relative sea level rise would exacerbate shoreline erosion and leave South Marine Corps Drive exposed to severe damage. Without federal intervention, the Government of Guam will be forced to undertake protection of South Marine Corps Drive itself or risk imminent damage to the roadway and associated public utilities. Without protection, South Marine Corps Drive would eventually need to be relocated or closed at a severe economic cost to the local sponsor.

The No Action Alternative would result in the eventual loss of some or all of the terrestrial environment between South Marine Corps Drive and East Hagatna Bay, and its associated species as the existing seawall collapses and the shoreline erodes. Erosion releases terrigenous sediments and pollution into the bay. Beach and intertidal habitat for resting and feeding by sea turtles would be lost. Erosion over time would contribute a chronic input of landside pollutants into the bay. For these reasons, USACE has determined the No Action Alternative would cause significant impacts to, and is likely to adversely affect, federal threatened and endangered species and their habitat.

2.3.2 Alternative 2 Revetment

Alternative 2 would replace the removed section of the seawall with a revetment. Engineered revetments reduce the erosive power of the waves by dissipating wave energy through the interstices of the stones or armor units. The base of the revetment extends 17.25 ft toward the ocean from the existing seawall toe. The temporary

construction footprint of the revetment is approximately 40 to 50 ft wide to accommodate for construction means and methods. The slope of the structure was kept to 1V:1.5H, to minimize the footprint of the structure. This alternative has the largest footprint of the alternatives included in the final array. Based on current hydrological and site control data, the revetment may be inundated under each tidal datum as illustrated in Figure 5.

Revetment designs utilizing both rock and concrete armor units were considered for the design, with the final selection being concrete armor units, specifically tribar (Figure 12), due to the unavailability of appropriately sized rock (1.2 ton) and the high associated costs of importing rock. The revetment would be constructed parallel to the shoreline and built from the toe trenched into the limestone, approximately -3.5 ft MSL, up to the crest elevation, approximately +8.9 ft MSL, which matches the approximate height of the existing seawall. It was assumed the tribar units would be placed in a single layer, uniformly, as is typical for this type of design. The tribar units have fixed dimensions and are placed directly on top of each other in sloped rows. Underneath the tribar units atop geotextile fabric are two layers of underlayer stone. The toe tribar unit would be cemented at the toe, and grout filled geotextile bags would serve to seal the crest. A splash apron composed of formed concrete over a gravel fill behind the crest of the structure is included to provide scour protection and tie the structure to the existing ground. The 8.9-ft crest elevation design meets the 50-year design requirement for sea level rise (SLR) and is adaptable to the 100-year SLR under the intermediate scenario through the addition of another layer of concrete armor units. A cross section of the revetment design is shown in Figure 6.

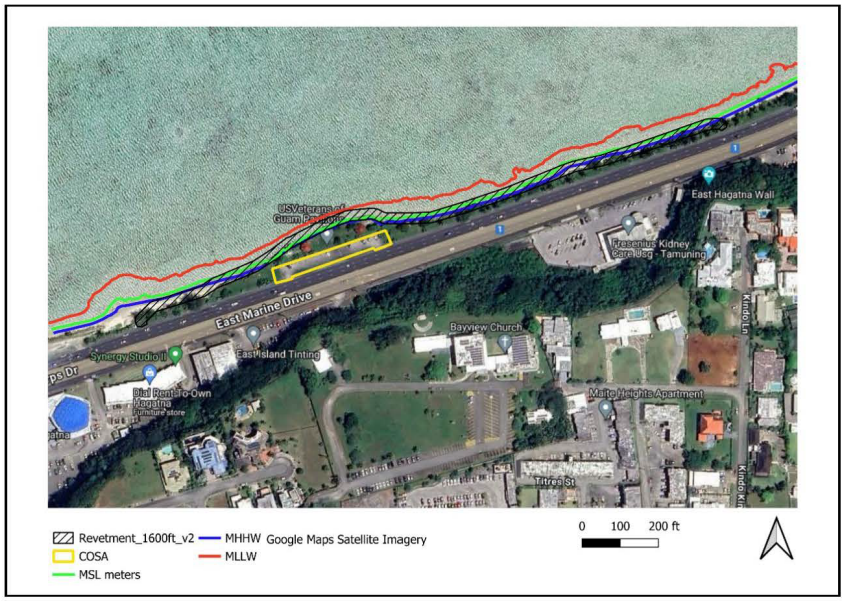


Figure 5: Temporary staging area and revetment extent.

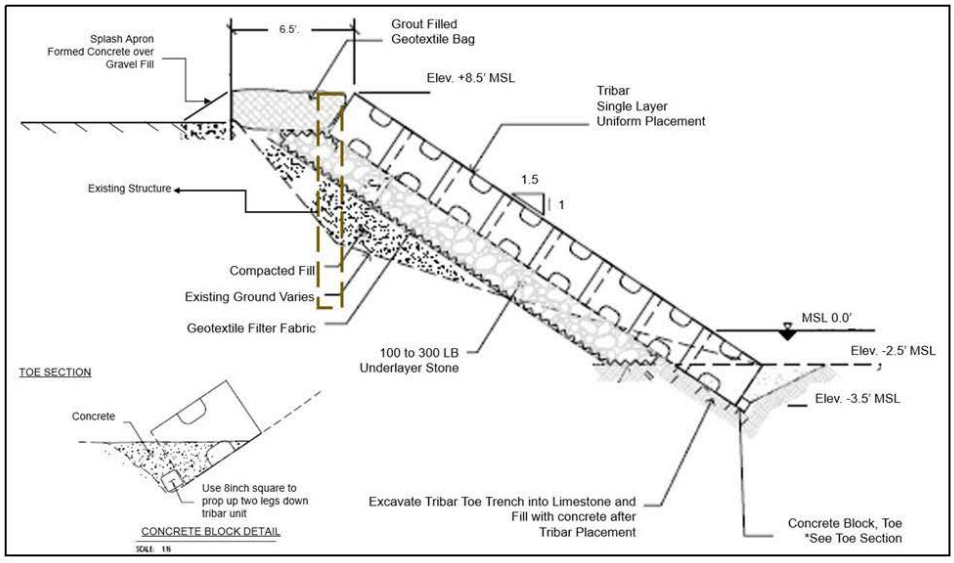


Figure 6. Preliminary schematic of concrete armor unit revetment

The amount of sandy shore habitat that would permanently be lost under the footprint of Alternative 2: Revetment is expected to be less than would be lost to natural forces under the No Action Alternative. Construction activities would convert an estimated 1.1 acres of beach sand to revetment for Alternative 2 and could result in a loss of habitat that may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. Alternative 2 also has the largest upland construction area and takes the longest to build, and therefore has the greatest potential impact on Mariana Fruit Bat and tree snails.

2.3.3 Alternative 4 Concrete Rubble Masonry Seawall

Alternative 4 includes removal of 1,630 linear ft of existing seawall and construction of a CRM seawall in its place. Figure 7 illustrates the lateral extent of the CRM seawall. The design consists of a precast concrete base secured to the limestone shelf and a CRM seawall constructed on top of the concrete foundation (Figure 8). Construction of the CRM wall would consist of excavating the existing soils to the limestone shelf, and then installing the CRM wall. After construction, the excavated area would be regraded to the elevation of the existing ground surface. This design has a total elevation of 8.9-ft above MSL, a crest width of 2-ft and a base that is 9-ft wide, with the total disturbed area being approximately 20-feet due to excavation and backfill of the existing soils. A splash apron composed of formed concrete over a gravel fill behind the crest of the structure is included to provide scour protection and tie the structure to the existing ground. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability.

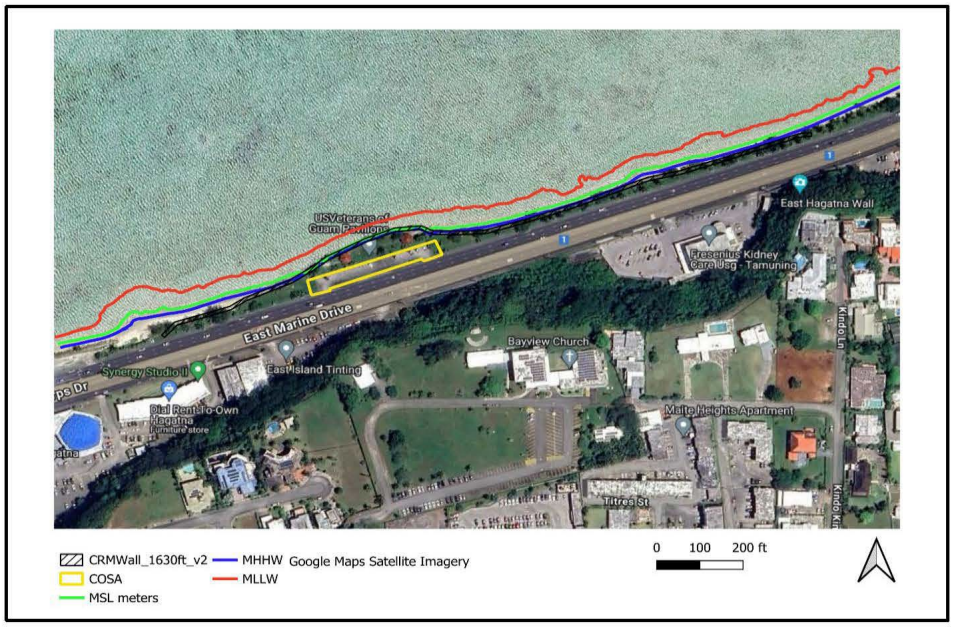


Figure 7: Footprint of concrete rubble masonry wall.

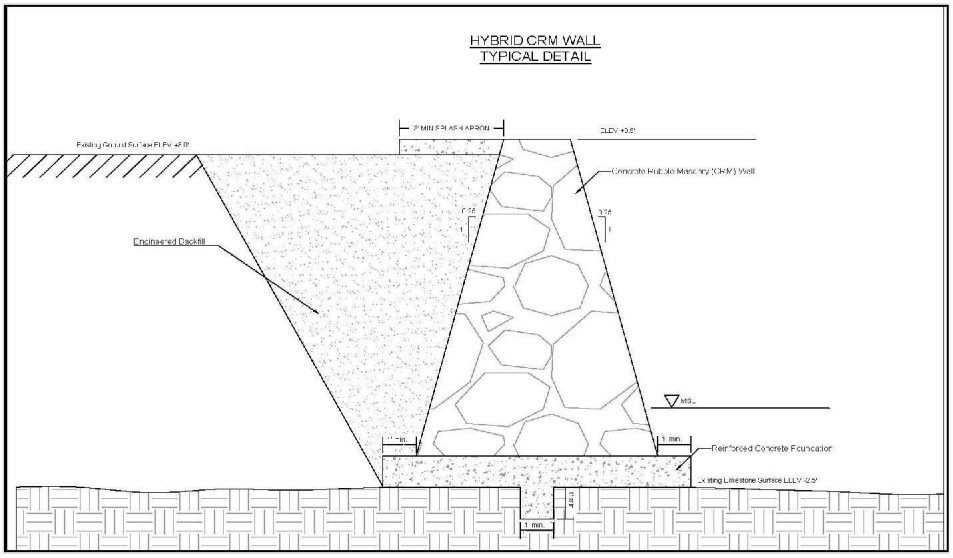


Figure 8: Cross section of concrete rubble masonry wall

The amount of sandy shore habitat that would permanently be lost under the footprint of Alternative 4: Concrete Rubble Masonry Seawall is expected to be less than would be lost to natural forces under the No Action Alternative. Construction activities would convert an estimated 0.34 acres of beach sand to CRM wall for Alternative 4 and could result in a loss of habitat that may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. Alternative 4 also has the largest permanent upland conversion to wall and therefore has greater potential impact on Mariana Fruit Bat and tree snails.

3. Description of the ESA Action Area

The East Hagatna Emergency Shoreline Protection study area (Figure 1) encompasses a 1,630 ft long stretch of Trinchera Beach along Hagatna Bay, which runs parallel to South Marine Corps Drive (also referred to as Highway 1), a main transportation corridor of the island. The study area encompasses the ESA Action Area within which USACE is evaluating the direct and indirect impacts of the proposed action on ESA listed species and designated critical habitat.

USACE has considered direct and indirect impacts to ESA listed species and has determined that the ESA Action Area extends 20 feet inland of the existing seawall, as depicted in Figure 4, and includes the proposed staging area sited on an existing parking lot.

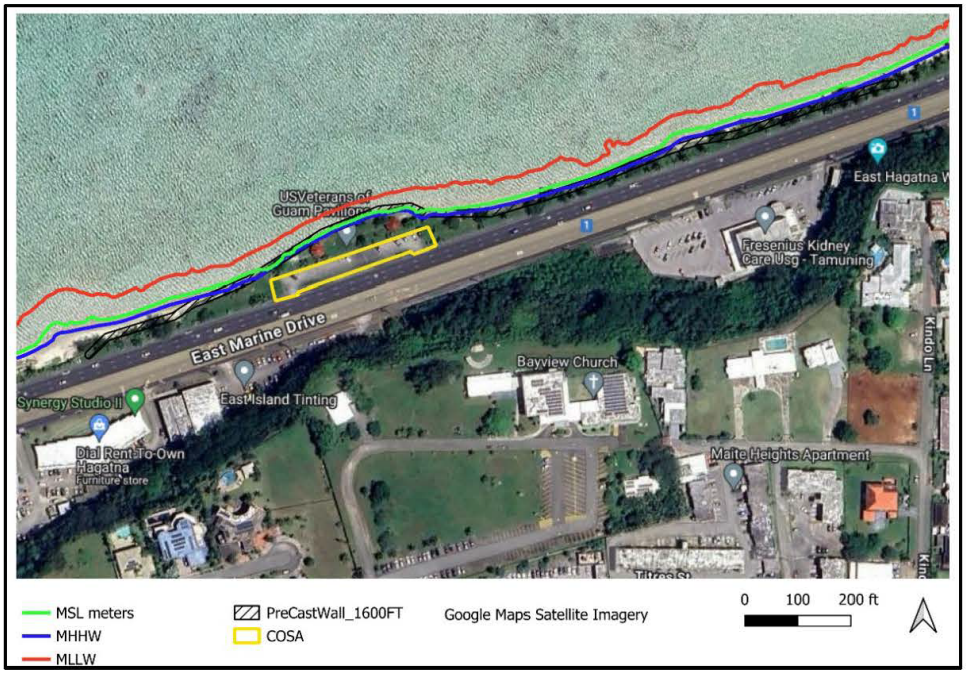


Figure 9: ESA Action Area: The proposed active construction (black polygon) and staging area (yellow polygon). The ESA Action Area extends 20 ft inland of the foot of the existing seawall (Source: USACE, 2022). The redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, March 6, 2024.

The aquatic habitat within the ESA Action Area is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock, supporting no obvious marine communities. NMFS surveys in November 2022 confirmed previous observations (USFWS 1992, NOAA 2005) that the intertidal region within 20 feet seaward of the wall is predominantly sand and does not contain live coral, other macroinvertebrates, seagrasses or fish. Sparse seagrass, macroalgae and fish occur beyond 20 feet from the existing seawall where the depth reaches 3 feet. The depth is shallow, approximately 3 feet, for several hundred feet from the existing seawall (NMFS 2023a).

The width of the sandy beach present between the existing seawall and the ocean varies along the length of the seawall. In some locations toward the eastern end of the project extent, there is approximately 15 feet of beach (USACE 2022). In other areas, such as Veteran's Sunset Beach Park, there is no beach at all. The 1993 Environmental Assessment (USACE 1993) describes Trinchera Beach as extending along approximately 3,400 feet of the East Hagatna shoreline. The beach material is fine calcareous sand with extensive coral, gravel, and rubble. Portions of the shoreline are covered almost exclusively with gravel, rocks, rubble, and small limestone boulders. Small sand and alluvial deltas formed in the vicinities of storm drains and the inner reef flat has a covering of fine sand and silt (USACE 1993, USACE 2022, NMFS 2023b).

The terrestrial habitat was surveyed by PDT members in January 2022 and includes 30 to 50 feet of sparsely vegetated, urbanized habitat within Veteran's Sunset Beach Park and Trinchera Beach Park. Park vegetation is an actively maintained grassy lawn planted with indigenous coconut palm (*Cocos nucifera*) and ironwood (*Casuarina equisetifolia*) trees and the introduced ornamentals plumeria (*Plumeria* sp.) and fish poison tree (*Barringtonia asiatica*).

4. Listed species & Critical habitat in the action area

Pursuant to Section 7 of the ESA, USACE requested technical assistance from USFWS and NMFS. The initial list of threatened and endangered species for Hagatna Bay and its shoreline included Central West Pacific Green Turtle (*Chelonia mydas*), Hawksbill sea turtle (*Eretmochelys imbricata*), Indo-West Pacific scalloped hammerhead shark (*Sphyrna lewini*), giant manta ray (*Manta birostris*), proposed coral critical habitat and the corals *Acropora globiceps*, *A. retusa*, and *Seriatopora aculeata*, and Mariana fruit bat (*Pteropus mariannus mariannus*). On April 12, 2022, NMFS concluded that based on the location of the activity, a mean water depth of less than 3 feet in the project area, and that there would be no vessel use, scalloped hammerhead sharks and giant manta ray need not be included in the BE as the proposed action would have no effect on these species. Ms. Schrader also reported that recent yet to be published surveys

indicate that the coral species *A. retusa* and *S. aculeata* are not likely to be in the proposed project area (Schrader 2022).

In November 2023, USFWS added tree snails to the list of species for consideration in the Action Area due to changes in species distribution after Typhoon Mawar. Therefore, this USACE BE will consider effects of the project on the following federally listed species which are potentially affected by project activities along South Marine Corps Drive and are considered in detail in this BE (Table 2).

Table 3: ESA Listed Species potentially present on or in the vicinity of the study area. None were observed during the NMFS surveys in 2022.

Common Name	Scientific Name	Status	Effective Listing Date / FR Notice	Critical Habitat	Recovery Plan	Jurisdiction	Observed in Action Area	Effects Determination
Sea Turtles								
Green sea turtle, Central West Pacific Distinct Population Segment (DPS) haggan betde	*Chelonia mydas*	Endangered	05/06/2016 81 FR 20057	Proposed 07/19/2023 88 FR 46572	01/12/1998 NMFS 1998	NMFS in ocean. USFWS on land	No	NLAA
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/03/1970 35 FR 8491	No	5/22/1998 63 FR 28359	NMFS in ocean. USFWS on land	No	NLAA
Slevin's Skink	*Emoia slevini*	Endangered		No		USFWS	No	No Effect
Terrestrial Invertebrates								
Humped tree snail, akaleha'	***Partula gibba***	Endangered	11/02/2015 80 FR 59424; 50 CFR 17	No	Draft 11/10/2022 USFWS 2022b	USFWS	No	NLAA
Guam tree snail, akaleha'	***Partula radiolata***	Endangered	11/02/2015 80 FR 59424; 50 CFR 17	No	Draft 11/10/2022 USFWS 2022b	USFWS	No	NLAA
Fragile tree snail, akaleha'	***Samoana fragilis***	Endangered	11/02/2015 80 FR 59424; 50 CFR 17	No	Draft 11/10/2022 USFWS 2022b	USFWS	No	NLAA
Terrestrial Mammals								
Mariana Fruit Bat fanihi	*Pteropus mariannus mariannus*	Endangered	03/30/2010	Not in Action Area 10/28/2004 69 FR 62944	Draft Revision 03/30/2010 USFWS 2010	USFWS	No	NLAA
Birds								
Guam Kingfisher	*Todiramphus cinnamominus*	Endangered		Not in Action Area		USFWS	No	No Effect
Guam Rail	*Gallirallus owstoni*	Endangered		No		USFWS	No	No Effect
Short-tailed Albatross	*Phoebastria (=Diomedea) albatrus*	Endangered		No		USFWS	No	No Effect

No threatened or endangered species were seen during the NMFS 2022 surveys at or near the proposed project site although sea turtles are known to use the waters immediately offshore (NMFS 2023a and c).

DRAFT

4.1 Central West Pacific Green Sea Turtle (*Chelonia mydas*)

4.1.1 Listing Status, Distribution, and Habitat

USACE incorporates by reference the species data provided in Sections 3 and 4 of the USACE-NMFS Pac-SLOPES BE dated March 2, 2022, which describe in detail the listing status, species life cycle information, population trends, threats to the species, and suitable and critical habitat for Green sea turtle. The Central West Pacific Distinct Population Segment comprises the green sea turtles present in Guam. For the purposes of this analysis, the Central West Pacific DPS of green sea turtle was evaluated for effects resulting from project implementation. NMFS has jurisdiction over sea turtles while they are in the water and USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach.

4.1.2 Critical Habitat

Currently there is no designated critical habitat for green sea turtles in Guam. However, NMFS and USFWS have proposed critical habitat for Central West Pacific green sea turtles. Detailed information on NMFS proposed Central West Pacific green sea turtle critical habitat is available at: https://www.fisheries.noaa.gov/action/proposed-rule-designate-critical-habitatgreen-sea-turtles. Detailed information on USFWS proposed critical habitat is available at: https://www.govinfo.gov/content/pkg/FR-2023-07-19/pdf/2023-14225.pdf. Figure 6 depicts the proposed critical habitat designation in East Hagatna Bay.

The specific areas within the proposed designation in Hagatna Bay include:

1. From the mean high water line to 20 meter depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.
2. From the mean high-water line to 20-meter depth, underwater refugia (e.g., caves, reefs, protective outcroppings, submarine cliffs, and “potholes”) and food resources (i.e., seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction (NMFS 2023c).
3. Seven 7 acres in East Agana Bay, Tamuning-Tumon (a.k.a. Tamuneng-Tomhom) Village, west coast of northern Guam, part of the Territory of Guam. This unit is located approximately 1 mile (less than 1 kilometer) northeast of the Capital Village of Hagatna and includes beach and sandy shoals from the MHWL. The landward boundary is the line indicating the beginning of dense vegetation, cliff, or hardened or developed structures. This unit comprises three segments in two areas: (1) two segments (north to south) on Dungcas Beach (2 acre and 3 acres); and (2) one segment on Trinchera Beach (2 acres).

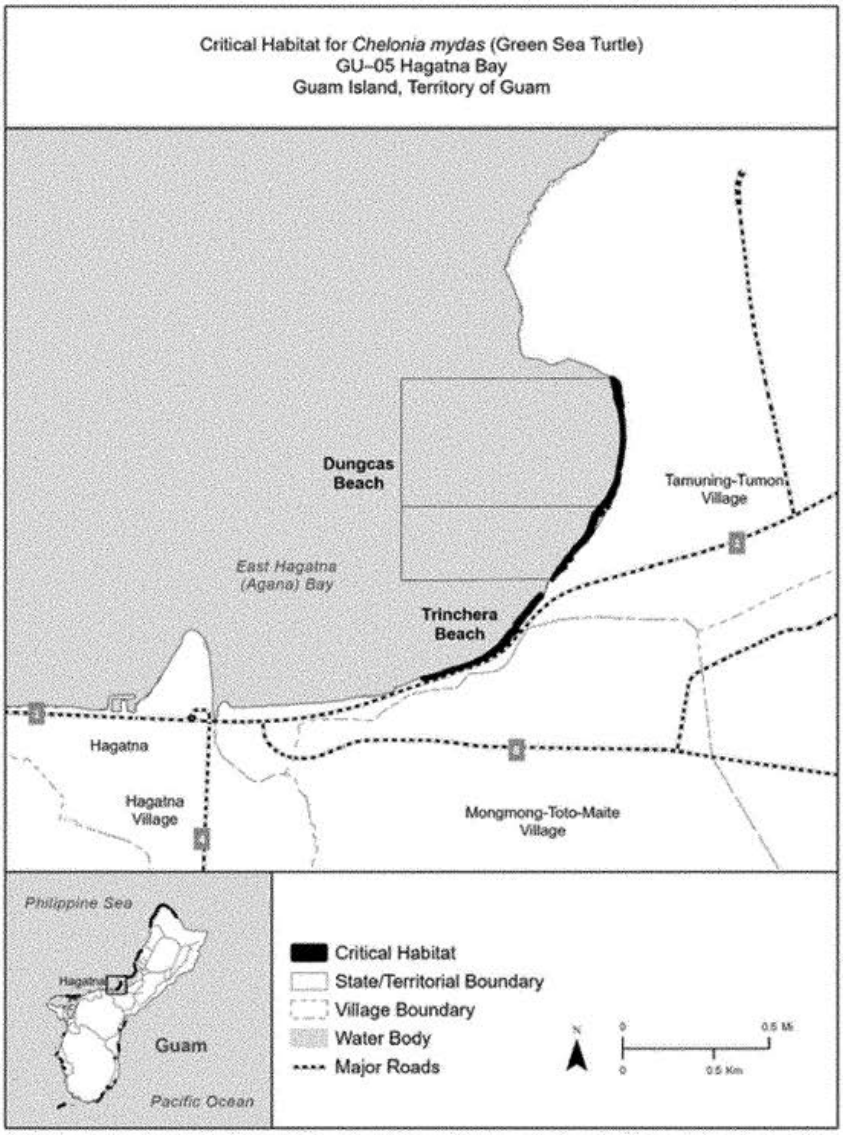


Figure 10: Proposed Green Sea Turtle Critical Habitat in East Hagatna Bay, Guam (USFWS 2023c).

Proposed green sea turtle critical habitat includes the area of Trinchera Beach in front of the existing East Hagatna seawall.

4.1.3 Potential for Occurrence in Project Area

Within the Marianas, green sea turtles are reasonably common and present year-round in the waters. Approximately 22 green sea turtles are known to nest in Guam (Seminoff et al. 2015). In Guam, nesting habitat tends to be in areas isolated from human activity. Nesting has not been observed in the proposed project/action area (USFWS 1992).

While green sea turtles have been observed in the water and on the beach in Hagatna Bay, they have not been observed to nest on Hagatna Bay beaches (Flores 2022). A NMFS sea turtle tagging project from 2014 through 2019 did not tag or observe any Hawksbill or green sea turtles in Hagatna Bay (Gaos et al. 2020). No turtles were observed during the NMFS 2022 surveys (NMFS 2023a). Green sea turtles enter Hagatna Bay and may use the shoreline for foraging habitat. However, this documentation is not recent within the action area. Given the above, it is unlikely that the green sea turtle will enter the project area.

4.2 Hawksbill sea turtle (*Eretmochelys imbricata*)

4.2.1 Listing Status, Distribution and Habitat

USACE incorporates by reference the species data provided in Sections 3 and 4 of the USACE-NMFS Pac-SLOPES BE dated March 2, 2022, which describe in detail the listing status, species life cycle information, population trends, threats to the species, and suitable and critical habitat for Hawksbill sea turtle.

NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach.

4.2.2 Critical Habitat

Hawksbill Sea Turtle critical habitat is only designated for areas of Puerto Rico (50 CFR § 17.95(a). There is no critical habitat designated for Hawkbill sea turtles in the Pacific.

4.2.3 Potential for Occurrence in Project Area

A NMFS sea turtle tagging project did not tag or observe any Hawksbill or Green sea turtles in Hagatna Bay from 2014 through 2019 (Gaos et al. 2020). No turtles were observed during the NMFS 2022 surveys (NMFS 2023b). Hawksbill sea turtles have not been reported in the Bay. Given the above, it is unlikely that Hawksbill sea turtles will enter the project area.

4.3 Slevin's Skink (*Emoia slevini*)

Slevin's skink is a small lizard in the family Scincidae and is the only lizard endemic to the Mariana Islands. Historically, the species has been recorded from Guam, Rota, Aguiguan, Tinian, Sarigan, Alamagan, Pagan, and Asuncion; it is currently extant on Sarigan, Alamagan, and Asuncion, and was recently rediscovered on Cocos Island off southern Guam. The species is found in leaf litter and tree debris in several forest types including native limestone, mixed native, *Casuarina equisetifolia* (ironwood), and coconut (*Cocos nucifera*) forests (USFWS 2022b).

4.3.1 Listing Status

Slevin's skink was listed as Endangered by USFWS on November 2, 2015.

4.3.2 Critical Habitat

There is no critical habitat for Slevin's skink.

4.3.4 Distribution and Habitat

One population of Slevin's skink is found in Guam on Cocos Island (USFWS 2024a).

4.3.5 Potential for Occurrence in Project Area

Slevin's skink is only found on Cocos Island and therefore not expected to be in the ESA Action Area (USFWS 2024a).

4.4 Tree Snails (*Partula gibba, Partula radiolata, Samoana fragilis*)

4.4.1 Listing Status

Partula gibba, *Partula radiolata*, and *Samoana fragilis* were listed as endangered in Guam on November 2, 2015 (80 FR 59424; 50 CFR 17).

4.4.2 Critical Habitat

No critical habitat has been designated for tree snails in Guam.

4.4.3 Distribution and Habitat

The humped tree snail (*Partula gibba*; akaleha, denden), fragile tree snail (*Samoana fragilis*; akaleha dogas, denden), and Guam tree snail (*Partula radiolata*; akaleha, denden) are endemic to the forest ecosystem of Guam. The species' historical range included Guam and the Northern Mariana Islands. Tree snails occur in cool, high humidity, shaded forest habitat with sufficiently high and dense growth to provide shade, to conserve moisture, and to affect the production of a rich humus. Tree snails do not appear to require specific host plants but can be found on many different species of large-leaved plants (trees, shrubs, herbaceous plants, and even ferns) both native and

introduced. Stability of environmental factors (temperature, relative humidity and light) are critical factors for juvenile survival. They need live and decaying plant material, as their diet consists of fungi and microalgae (USFWS 2024b-e).

At the time of listing, in 2015, only 1 site on Guam was occupied by the humped tree snail and had no more than 150 individuals (USFWS 2024e). The only humped tree snail reported by Dr. Fiedler from 2015-2019 were in the Haputo Ecological Reserve Area (Fiedler 2018).

Historically, the fragile tree snail was known from 13 populations on Guam. As of 2019, only six populations are known from Guam. All populations appear to be small (<100 individuals) & narrowly dispersed, with the exception of the population at the northern portion of the Haputo Ecological Reserve Area at Finegayan (USFWS 2024c and d). None are reported near Agat (Fiedler 2018).

The Guam tree snail appears widely distributed on Guam. Prior to its listing in 2015, there were approximately 20 known populations of Guam tree snail, but extensive surveys in 2019 identified more than 50 populations (USFWS 2024b and d).

4.4.4 Potential for Occurrence in Project Area



Figure 11: Vegetation at Trinchera Beach / Sunset Veteran's Beach Park.

Based on species specific information received in consultation with USFWS, USACE determined a survey for tree snails was not feasible during this Feasibility (Planning) phase. Due to the mobility of tree snails that can be further accelerated by heavy wind and rain, survey results are current for approximately 6 months or until the next storm or typhoon that could redistribute snails to beyond survey boundaries. If a survey were to show presence of the species currently, USACE does not have the authority to address these species in the current Feasibility phase. USACE would have authority to address the species in Design and Construction, which could be 3 to 10 years in the future, at which time any survey conducted during feasibility would be obsolete.

While a survey for tree snails was not conducted during Feasibility, the ESA Action area lacks suitable habitat for tree snails. Additionally, tree snails have not been previously reported in the area. Vegetation within the Action Area consists of actively maintained grassy lawn and sparse landscaping on and behind the existing wall (Figure 8). Dr. Curt Fiedler visited the project site in June 2024 and observed that tree snails were very unlikely to be found in East Hagatna, he has surveyed nearby and has not found any (Terlaje 2024). Tree snail surveys will be conducted no more than 6 months prior to start of Construction.

4.5 Mariana fruit bat (*Pteropus mariannus mariannus*)

The Mariana fruit bat is a medium-sized fruit bat in the family Pteropodidae that weighs 0.66 to 1.15 pounds and has a forearm length ranging from 5.3 to 6.1 inches; males are slightly larger than females. The underside (abdomen) is colored black to brown, with gray hair interspersed, creating a grizzled appearance. The shoulders (mantle) and sides of the neck are usually bright golden brown but may be paler in some individuals. The head varies from brown to dark brown. The well-formed and rounded ears and large eyes give the face a canine appearance; members of the family Pteropodidae often are referred to as flying foxes (USFWS 2022b).

4.5.1 Listing Status

Mariana Bat was listed as endangered on August 27, 1984 (49 FR 33881-33885). It is managed by USFWS.

4.5.2 Critical Habitat

Although critical habitat has been designated on Guam by the USFWS for Mariana Fruit Bat (50 CFR § 17.95(a)), the Action Area within the Agat Bay Shoreline is not included within any designated critical habitat areas (Figure 8).

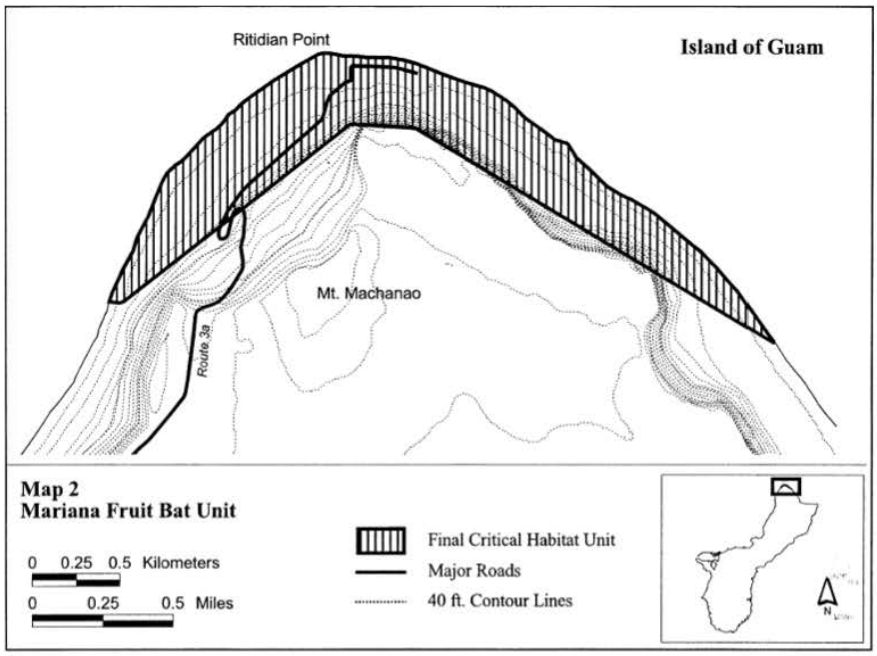


Figure 12: Mariana Fruit Bat Critical Habitat. Federal Register/Vol. 69, No. 208/Thursday, October 28, 2004/Rules and Regulations 62981

Within this area, the primary constituent elements required by the Mariana fruit bat for the biological needs of foraging, sheltering, roosting, and rearing of young are found in areas supporting limestone, secondary, ravine, swamp, agricultural, and coastal forests composed of native or introduced plant species. These forest types provide the primary constituent elements of:

- Plant species used for foraging, such as *Artocarpus sp.* (breadfruit), *Carica papaya* (papaya), *Cycas circinalis* (fadang), *Ficus spp.* (fig), *Pandanus tectorius* (kafu), *Cocos nucifera* (coconut palm), and *Terminalia catappa* (talisai); and

- Remote locations, often within 328 ft (100 m) of clifflines that are 260 to 590 ft (80 to 100 m) tall, with limited exposure to human disturbance; land that contains mature fig, *Mammea odorata* (chopak), *Casuarina equisetifolia* (gago), *Macaranga thompsonii* (pengua), *Guettarda speciosa* (panao), *Neisosperma oppositifolia* (fagot), and other tree species that are used for roosting and breeding.

- Critical habitat does not include existing features and structures within the boundaries of the mapped units, such as buildings, roads, aqueducts, antennas, water

tanks, agricultural fields, paved areas, lawns, and other urban landscaped areas not containing one or more of the primary constituent elements.

4.5.3 Distribution and Habitat

In 2020 GDAWR counted 82 bats on Guam (USFWS 2020a). The primary constituent elements required by the Mariana fruit bat for the biological needs of foraging, sheltering, roosting, and rearing of young are found in areas supporting limestone, secondary, ravine, swamp, agricultural, and coastal forests composed of native or introduced plant species. Plant species used for foraging include *Artocarpus* sp. (breadfruit), *Carica papaya* (papaya), *Cycas circinalis* (fadang), *Ficus* spp. (fig), *Pandanus tectorius* (kafu), *Cocos nucifera* (coconut palm), and *Terminalia catappa* (talisai). Remote locations, often within 328 ft (100 m) of clifflines that are 260 to 590 ft (80 to 100 m) tall, with limited exposure to human disturbance; land that contains mature fig, *Mammea odorata* (chopak), *Casuarina equisetifolia* (gago), *Macaranga thompsonii* (pengua), *Guettarda speciosa* (panao), *Neisosperma oppositifolia* (fagot), and other tree species are used for roosting and breeding (USFWS 2024a).

4.5.4 Potential for Occurrence in Project Area

Guam DAWR has documented sightings of Mariana fruit bat (*Pteropus mariannus mariannus*) passing through the parks in which the Action Area is located. During informal consultation via email, GDAWR stated they have noticed unexplained movements with fruit bats in Guam, most likely a response to the increased development occurring in habitat used by fruit bats in the past (prior to development activities). For this specific site on East Hagatna, GDAWR saw fruit bats on the breadfruit trees along the cliff wall roosting and foraging during breadfruit season between 2010 and 2013. There are still some bread fruit trees along the cliff side, therefore fruit bats may forage in the area during breadfruit season, April to October (Bevacqua and Miller 2020; Quitugua 2022). USACE anticipates that Mariana fruit bat may pass through the Action Area, but will not forage, roost, or nest in the Action Area.

4.6 Birds

4.6.1 Listing Status

ESA listed birds that may occur in the Action Area include the endangered Guam Kingfisher (*Todiramphus cinnamominus*), and Guam Rail (*Gallirallus owstoni*), listed in 1984, and the endangered Short-tailed Albatross (*Phoebastria (Diomedea) albatrus*), listed in 1970.

4.6.2 Critical Habitat

No critical habitat has been designated for the Guam Rail or short-tailed albatross.

There is final critical habitat for Guam Micronesian Kingfisher (published in the Federal Register on October 28, 2004). The Action Area does not overlap the critical habitat

(Figure 9). The primary constituent elements required by the Guam Micronesian kingfisher for the biological needs of foraging, sheltering, roosting, nesting, and rearing of young are found in areas that support limestone, secondary, ravine, swamp, agricultural, and coastal forests composed of native and introduced plant species. These forest types include the primary constituent elements of:

- Closed canopy and well-developed understory vegetation; large (approximately 43 cm (17 in) diameter at breast height), standing dead trees (especially *Tristiropsis obtusangula* (faniok), *Pisonia grandis* (umumu), *Artocarpus spp.* (breadfruit), *Ficus spp.* (fig), and *Cocos nucifera* (coconut palm)); mud nests of *Nasutitermes spp.* termites; and root masses of epiphytic ferns for breeding;
- Sufficiently diverse structure to provide exposed perches and ground surfaces, leaf litter, and other substrates that support a wide range of vertebrate and invertebrate prey species for foraging kingfishers; and
- Sufficient overall breeding and foraging area to support kingfisher territories of approximately 25 ac (10 ha) each.
- Critical habitat does not include existing features and structures within the boundaries of the mapped units, such as buildings, roads, aqueducts, antennas, water tanks, agricultural fields, paved areas, lawns, and other urban landscaped areas not containing one or more of the primary constituent elements.

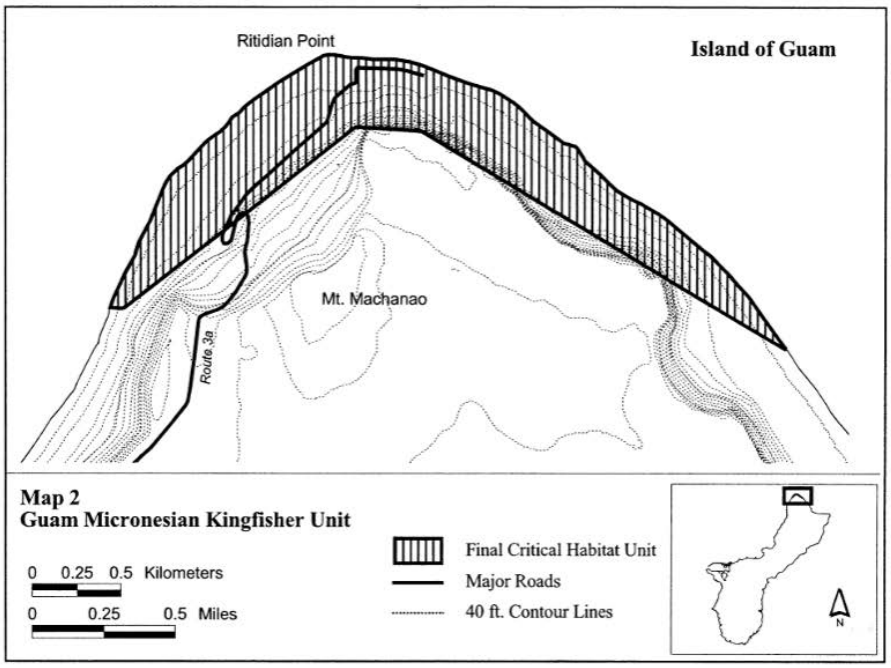


Figure 13: Guam Micronesian Kingfisher Critical Habitat. Federal Register/Vol. 69, No. 208/Thursday, October 28, 2004/Rules and Regulations 62981

4.6.3 Distribution and Habitat

Prior to its extirpation from the wild by 1988, the Guam kingfisher was found only on the island of Guam in all habitats except pure savanna and wetlands. This species is now found only in captivity (USFWS 2014). There are currently 135 sihek in captivity distributed across 25 institutions (24 Association of Zoos and Aquariums accredited institutions in the mainland United States and a breeding facility on Guam) (USFWS 2022b).

The Guam rail has been extirpated in the wild since 1985 (Wiles et al. 1995) and currently consists of 2 populations: 1 maintained in captivity by the Guam Department of Agriculture, Division of Aquatic & Wildlife (DAWR), and a reintroduced population on Cocos island established through a Safe Harbor Agreement. The species prefers edge habitats, especially grassy or secondary vegetation areas which provide good cover (USFWS 2018).

Short-tailed albatross do not breed in Guam or the Marianas (USFWS 2020b).

4.6.4 Potential for Occurrence in Project Area

Guam Kingfisher and Guam rail are not likely to be found in the Project Area because they are believed extinct on Guam except for captive breeding populations. The Short-tailed Albatross does not breed in Guam and has not been observed along East Hagatna.

5. Potential Impacts

Based on the known locations of sensitive species and habitat within the study area, the following impact analysis evaluates the potential for impact to ESA species and designated habitat from replacing the existing seawall within the ESA Action Area. Compared to other alternatives considered under the feasibility study, implementation of the precast concrete seawall was tentatively determined to be economically justified, environmentally sound and engineeringly feasible.

Potential vectors for impact per resource are discussed below. BMPs described at Section 2.2 and in Enclosure 1 are intended to avoid and/or minimize the following impacts.

5.1 Direct Impacts

5.1.1 Sea Turtles

Construction of the Precast Concrete Seawall in the ESA Action Area would temporarily disturb the current beach, involving increased human presence and use of heavy machinery on the beach prior to and during construction, with minimal, limited, and temporary in-water work for site preparation. Construction activities would likely involve the use of heavy machinery, operated from the land, for clearing vegetation growing in

the existing seawall, excavation of the existing seawall, and construction of the precast concrete seawall. If construction must occur at night, artificial lighting may be required.

Potential vectors of impact from in-water and nearshore work include disturbance from human activity and equipment operation, exposure to elevated noise levels, exposure to elevated turbidity and sedimentation, exposure to wastes and discharges, disorientation caused by artificial lighting and loss of nesting habitat. Construction of the precast concrete seawall has the potential to directly strike ESA-listed species should those animals be present when the equipment is operating within the ESA Action Area. Potential injuries and their severity will depend on the animal's proximity to the heavy machinery when struck, the angle of the strike, and the body part impacted, but may include cuts, bruises, broken bones, cracked or crushed carapaces, and amputations, any of which could result in the animal's death. However, sea turtles on land can be clearly seen and avoided and move relatively slowly and construction activities can either be halted or moved to avoid direct impact until the species vacates the action area of its own accord.

Increased presence of humans, e.g., construction personnel, at the beach may impact sea turtles by causing the turtles to avoid the area, or by causing a startle reaction and resulting stress should the construction activity interact with the species. The reaction could range from one extreme where an animal calmly approaches and investigates the activity, to an opposite reaction of panicked flight, where an animal injures itself in an attempt to flee. However, sea turtles typically avoid human activity. Thus, the most likely effect of this interaction will be moderate level stress with a moderate to high energy avoidance behavior leading to the animal rapidly leaving project areas without injury.

Construction activities using heavy equipment within the ESA Action Area such as excavating and constructing the beach toe will elevate ambient noise levels and may cause sea turtles to avoid the in-water area during construction. USACE does not anticipate noise levels that would cause death or damage hearing because no pile driving is anticipated and because noise rapidly dissipates from uplands into marine waters.

Sea turtles breathe air and their ability to breathe should not be impacted by turbidity generated by minimal construction within the intertidal zone. Elevated turbidity levels in the ocean may affect predation and foraging by marine listed species. However, the intertidal zone within the ESA Action Area is comprised of coarse grain sediments such as sand and cobble and is expected to settle immediately upon disturbance causing no lasting elevated turbidity or sedimentation beyond the ESA Action Area.

Construction activities along the beach may involve use of plastic trash or other small ingestible trash that, if inadvertently consumed can cause digestive blockage or suffocation, or if large enough, along with discarded sections of ropes and lines, may entangle marine life. Equipment spills and discharges likely consist of hydrocarbon-based chemicals such fuel oils, gasoline, lubricants, hydraulic fluids, and other toxicants, which could expose protected species to toxic chemicals. Depending on the chemicals and their concentration, exposure could result in a range of effects, from

avoidance of an area to death. Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the marine environment.

Construction of the precast concrete seawall will replace the existing seawall within the ESA Action Area. The precast concrete seawall is designed to prevent erosion of terrigenous sediments into the ocean which would benefit sea turtles by improving water quality. Direct impacts from beach loss are not anticipated because turtles do not nest or bask in the Action Area.

Potential effects to sea turtles that could result from implementation of the proposed action will be avoided and/or minimized using the BMPs listed in Attachment 1. USACE anticipates that sea turtles, in general would avoid the ESA Action Area during the daytime in response to increased human presence and elevated noise levels during construction. Should sea turtles approach the work area, their speed is considerably reduced on land and visibility on land by on-site personnel is uninhibited, allowing for construction activities to either halt immediately or adjust to avoid direct impacts to sea turtles.

Based on the anticipated low presence of green sea turtle in the action area, the implementation of BMPs requiring soft starts, safe operating distances and heightened vigilance within the ESA Action Area, USACE anticipates the proposed action would not result in direct impacts to or loss of individual green or hawksbill turtles, nor would project activities be expected to reduce habitat availability or degrade such habitat so that it becomes unsuitable at a magnitude or duration that could substantially affect the species population.

5.1.5 Tree Snails

Tree snails prefer moist dense forests and are prone to desiccation in other environments (USFWS 2024 a-c; 2023d). While the Action Area is sparsely vegetated, the Precast Concrete Seawall construction will require the removal of as many as 20 trees. At USFWS (2023d) request, a tree snail professional will survey the action area for tree snails prior to staging and construction.

If tree snails are found during surveys, the avoidance and minimization measures recommended by USFWS (Attachment 1) will be implemented. Due to the lack of suitable habitat and with the implementation of these recommended avoidance and minimization measures, direct impacts to tree snails are unlikely.

5.1.6 Mariana Fruit Bat

The shoreline along East Hagatna Bay has been extensively altered by urban development, and the vegetation observed at the proposed project site during the January 2022 PDT visit reflected this. Construction of the Precast Concrete Seawall requires the removal of 1,630 feet of the existing stonewall, involving excavation and subsequent backfill of 20 feet of uplands behind the wall and resulting in a temporarily disturbed area of 0.96 acres. It is estimated that up to 20 trees would be removed

during construction and replaced after construction with appropriate and desirable native species and all bare ground would be revegetated.

None of the trees within the Action Area are species used for roosting or foraging by Mariana fruit bat. Impacts to Mariana fruit bat would be temporary, during construction. Construction of the alternatives would beneficially protect existing and restored terrestrial habitat between the wall and the road. Mariana fruit bat may pass through the Action Area on their way to roosting or foraging areas at night, outside of project working hours.

Potential effects to fruit bats that could result from implementation of the proposed action will be avoided and/or minimized using the BMPs in Attachment 1.

USACE anticipates that fruit bats in general would be roosting during the daytime and not in the ESA Action Area. The Proposed Action would not result in direct effects or loss of individual fruit bats, nor would project activities be expected to reduce habitat availability or degrade such habitat so that it becomes unsuitable at a magnitude or duration that could substantially affect the species population. Due to the lack of suitable habitat and with the implementation of the recommended avoidance and minimization measures (Attachment 1), USACE anticipates direct impacts to Mariana fruit bats to be unlikely.

5.2 Indirect and long-term physical impacts

5.2.1 Sediment Erosion/Accretion

The Precast Concrete Seawall would be constructed within the existing seawall footprint along and maintain the contours of the existing beach profile. Repairing the wall would prevent imminent erosion of landside sediments into the ocean upon damage to the existing seawall. Thus, USACE does not anticipate substantial or permanent exacerbation of erosion of soils or loss of topsoil in the long term.

5.2.2 Discharge of pollutants

Construction activities along the shoreline involving the use of heavy machinery have the potential for inadvertent spills and discharges that may consist of hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could spread into the marine environment and expose protected species to toxic chemicals. Chemical spills into the ocean can indirectly impact sea turtles by affecting mobility and respiration and by degrading the turtles' food source.

Site preparation and excavation for the precast concrete seawall could result in indirect impacts to protected resources through the inadvertent exposure or discharge of excavated native subsurface soil and sediments into tidally influenced areas. Release of terrigenous sediments such as silt, clay and organic matter can elevate turbidity levels within and beyond the ESA Action Area through ocean circulation. These fine grain sediments are more easily suspended and take longer to settle out than coarse grain

sand and cobble, which settles almost immediately. The impact of sedimentation or settling of sediments on coral reefs, depends upon the thickness of the sediment layer and duration of coverage resulting in reduced photosynthesis and diverting energy away from lifecycle activities to sloughing and mucous production and on the extreme end, bleaching and death. Death of native biota can be followed by opportunistic proliferation of invasive species disrupting the balanced ecosystem. Elevated turbidity for extended periods of time reduces solar irradiation affecting photosynthetic organisms and can reduce visibility in the water column for visual foragers and increase vulnerability of prey.

Through best management practices (Attachment 1), hydrocarbons would not affect any listed species during construction. No dive boats or other seacraft will be used, so no hydrocarbon spills occurring from these sources would occur. No refuse or matter of any kind (including trash, garbage, oil, and other liquid pollutants) would be discharged because of project activities.

6. Effects of the Action

Effects on ESA-listed species were considered adverse if implementation of the proposed Project would result in any of the following (Table 4):

- Substantial loss of a T&E species.
- Reduction of habitat availability or degradation of habitat suitability of a magnitude and/or duration that could substantially affect a T&E species population.
- Substantially interfere with the movement of any migratory T&E species.
- Introduction of or contribution to the substantial spread of an invasive species, pests or diseases that would threaten a T&E species.
- Any effect that was not considered discountable (extremely unlikely to occur), insignificant (size of the impact should never cause take), or beneficial (contemporaneous positive effects without any adverse effects)

In consideration of the potential impacts described in Section 5, USACE has considered whether or not such impacts may affect and are likely or not likely to adversely affect ESA-listed species i.e., effects that are not discountable, insignificant or wholly beneficial. Additionally, USACE considered whether or not the proposed action would result in the destruction or adverse modification of critical habitat i.e., alterations that adversely modify any of those physical or biological features that were the basis for determining the habitat to be critical.

When considering the effect, the proposed action would have on the Hawksbill sea turtle and Green sea turtle, USACE evaluated both direct and indirect impacts to sea turtles both in water and on land. In-water construction activities would be limited to the intertidal zone for site preparation purposes, if determined necessary at all, with no impediment to visual monitoring to ensure avoidance of direct impacts to sea turtles in

water. Construction activities on the beach will have no impediment to visual monitoring coupled with daily surveys to ensure no direct impacts to sea turtles on land. Direct impacts to sea turtles in the water and on land are expected to be discountable. The indirect impacts of beach erosion and potential for loss of suitable nesting habitat is minimal as the precast concrete seawall will be constructed higher up on the beach profile and is surrounded by suitable habitat known for nesting. The indirect impacts to sea turtles from impaired water quality and exposure to construction debris and wastes, through implementation of BMPs will be insignificant. **Accordingly, USACE has determined that the proposed action may affect, but is not likely to adversely affect ESA-listed sea turtles.**

Through implementation of BMPs, impacts to the marine environment, substrate, and water column will be minimal. The discrete nature of the limited scope of the proposed action in replacing the existing seawall will ensure no chronic inputs or modification to the marine environment. **Accordingly, USACE has determined the proposed action would neither destroy nor adversely modify proposed marine critical habitat for Green Sea Turtle (Central West Pacific DPS).**

When considering the effect the proposed action would have on Slevin's Skink, USACE understands that the ESA Action Area is absent of habitat suitable for and preferred by these species. The only known population is on Cocos Island and the species does not occur in the Action Area. **Accordingly, USACE has determined that the proposed action will not affect Slevin's Skink.**

When considering the effect the proposed action would have on tree snails, USACE understands that the ESA Action Area is absent of habitat suitable for and preferred by these species. USACE does not anticipate these species to coincide in the ESA Action Area with the proposed action or otherwise be affected by the proposed action. Such direct impacts would be discountable. **Accordingly, USACE has determined that the proposed action may affect but is not likely to adversely affect tree snails**.

When considering the effect the proposed action would have on the Mariana fruit bat, USACE understands that the ESA Action Area is absent of habitat suitable for and preferred by this species however, bats have previously been observed passing through at dusk and dawn on their way to foraging and roosting areas. USACE does not anticipate this species to coincide in the ESA Action Area with the proposed action or otherwise be affected by the proposed action. Such direct impacts would be discountable. **Accordingly, USACE has determined that the proposed action may affect but is not likely to adversely affect Mariana fruit bat**.

When considering the effect the proposed action would have on Guam kingfisher, Guam rail, and short-tailed albatross, USACE understands that the ESA Action Area is absent of habitat suitable for and preferred by these species. Guam Rail is only found on Cocos Island and in captivity. Guam kingfisher is only found in captivity. The short-tailed albatross does not breed on Guam and has not been reported in the ESA Action Area. **Accordingly, USACE has determined that the proposed action will not affect ESA-listed birds.**

Table 4: Summary of Effects on ESA-Listed Species potentially present on or in the vicinity of the ESA Action Area.

Common Name	Scientific Name	Status	Effect
Reptiles			
Green sea turtle	*Chelonia mydas*	Endangered	NLAA
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	NLAA
Slevin's Skink	*Emoia slevini*	Endangered	No Effect
Mammals			
Mariana Fruit Bat	*Pteropus mariannus mariannus*	Endangered	NLAA
Invertebrates			
Humped tree snail	*Partula gibba*	Endangered	NLAA
Guam tree snail	*Partula radiolata*	Endangered	NLAA
Fragile tree snail	*Samoana fragilis*	Endangered	NLAA
Birds			
Guam Kingfisher	*Todiramphus cinnamominus*	Endangered	No Effect
Guam Rail	*Gallirallus owstoni*	Endangered	No Effect
Short-tailed Albatross	*Phoebastria (=Diomedea) albatrus*	Endangered	No Effect
Key: NLAA = Not likely to adversely affect.			

7. Conclusions

In conclusion, USACE has determined the following for the Proposed Action:

- The proposed Project may affect, but is not likely to adversely affect, ESA-listed sea turtles, tree snails, and bats.

8. Literature Cited

Bevacqua, Robert F., and Ross H. Miller. 2020. Agroforestry on Guam: Breadfruit Cultivation. Western Pacific Tropical Research Center December 2020. https://www.uog.edu/_resources/files/wptrc/Bread_Fruit_Final.pdf

Fiedler, C. 2018. ASSESSING POPULATIONS OF NATIVE TREE SNAILS (PARTULIDAE PILSBRY, 1900) AND THEIR INTRODUCED PREDATORS IN THE MARIANA ISLANDS: 2015-2018. University of Guam. https://portal.nifa.usda.gov/web/crisprojectpages/1005271-assessing-populations-of-native-tree-snails-partulidae-pilsbry-1900-and-their-introduced-predators-in-the-mariana-islands.html

Flores, Jacqueline, Island Team Manager - Mariana Islands, U.S. Fish and Wildlife Service – Ecological Services, Pacific Islands Fish and Wildlife Office; personal communication via email March 16, 2022.

Gaos, A.R.; S. L. Martin; T.T. Jones. 2020. SEA TURTLE TAGGING IN THE MARIANA ISLANDS TRAINING AND TESTING (MITT) STUDY AREA PROGRAMMATIC REPORT. NOAA, NMFS, PIRO, Honolulu, Hi.

NMFS. 1998. Recovery Plan for U.S. Pacific Populations of the Green Turtle (Chelonia mydas). January 12, 1998. https://www.fisheries.noaa.gov/resource/document/recovery-plan-us-pacific-populations-green-turtle-chelonia-mydas

NMFS. 2023a. A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam. July 13, 2023.

NMFS. 2023b. RE: Request for Informal ESA Consultation and Conference on an emergency shoreline protection project for East Hagatna, Guam. (I-PI-23-2208-DG, PIRO-2023-02285). October 18, 2023.

NMFS. 2023c. Response USACE Shoreline Protection Project 508.

NOAA. 2005. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, Guam and the Northern Mariana Islands Atlas. August 2005. https://www.fisheries.noaa.gov/inport/item/46673 Map ES12.

Quitugua, Jeffrey S. 2022. Jeffrey.Quitugua@doag.guam.gov, Technical Guidance Section, Guam Department of Agriculture, Division of Aquatic and Wildlife Resources personal communication via email March 16, 2022

Schrader, A. Endangered Species Biologist, Contractor with Lynker in support of NOAA Fisheries Southeast Regional Office, U.S. Department of Commerce; Personal communication April 12, 2022.

Terlaje, M. J. 2024. Subject: RE: Listed Tree Snails Questions for Agat Project. Tuesday, June 18, 2024 4:55:10 PM.

USACE and NMFS. 2022. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES).

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USACE. 2022. USACE Project Delivery Team (PDT) trip report of January 2022 site visit. January 2022.

USFWS. 1992. Draft Fish and Wildlife Coordination Act Report. U.S. Department of the Interior, Fish and Wildlife Service, Pacific Islands Office.

USFWS. 2010. Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanihi (Pteropus mariannus mariannus). https://ecos.fws.gov/docs/recovery_plan/100330.pdf

USFWS. 2014. Guam Micronesian kingfisher (Todiramphus cinnamomina cinnamomina) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii. 6 pages.

USFWS. 2018. Endangered and threatened wildlife and plants; Initiation of 5-year status reviews for 156 species in Oregon, Washington, Hawai'i, Palau, Guam, and the Northern Mariana Islands. Federal Register 83(88):20088-20092.

USFWS. 2020a. Mariana fruit bat, Fanihi (Pteropus mariannus mariannus) 5 year review. https://ecos.fws.gov/docs/tess/species_nonpublish/3210.pdf

USFWS. 2020b. Short-tailed Albatross (Phoebastria albatrus) 5-Year Review: Summary and Evaluation.

USFWS. 2022a. Best Management Practices For Work In or Around Aquatic Environments. https://www.fws.gov/sites/default/files/documents/Best%20Management%20Practices%20For%20Work%20In%20or%20Around%20Aquatic%20Environment-April%202022.pdf. April 2022

USFWS. 2022b. Draft Recovery Plan for 23 Species in the Mariana Islands. November 10, 2022. https://ecos.fws.gov/docs/recovery_plan/SIGNED%20-%20Mariana%20Islands%20dRP%20(20221129).pdf

USFWS. 2023a. DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands. August 3, 2023.

USFWS. 2023b. Migratory Bird Protections in Guam.

USFWS. 2023c. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Green Sea Turtle. A Proposed Rule by the Fish and Wildlife Service on 07/19/2023.

USFWS. 2023d. Subject: Informal Section 7 Consultation: East Hagatna Emergency Shoreline Protection. November 2, 2023. Attachment 2f, Appendix A-3, East Hagatna IFR/EA.

USFWS. 2024a. 5-YEAR REVIEW Short Form Summary Species Reviewed: Gualiik halumtanu, gho´luuf (Slevin's skink, Emoia slevini) Current Classification: Endangered. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/17898.pdf

USFWS. 2024b. Fragile tree snail (Samoana fragilis). https://ecos.fws.gov/ecp/species/4835

USFWS. 2024c. Guam Tree Snail. https://ipac.ecosphere.fws.gov/project/EG45PBY7WZFJJAR4RTUFKXPA7A/resources

USFWS. 2024d. Information for Planning and Consultation (IPaC) website, https://ecos.fws.gov/ipac/.

USFWS. 2024e. Humped Tree Snail. https://ecos.fws.gov/ecp/species/61

2i. USFWS Concurrence**

DRAFT

2j. 2025 July Revised NMFS ESA Biological Assessment

ENDANGERED SPECIES ACT BIOLOGICAL EVALUATION
CAP SECTION 14 EMERGENCY SHORELINE PROTECTION PROJECT
EAST HAGATNA, GUAM



Action Agency:	Honolulu District, U.S. Army Corps of Engineers
Federal Action:	Construction of emergency shoreline protection at existing seawall
Authority:	Section 14 of the Flood Control Act of 1946
Consulting Agencies:	National Marine Fisheries Service Pacific Islands Regional Office Protected Resources Division

Honolulu District
U.S. Army Corps of Engineers

EAST HAGATNA EMERGENCY SHORELINE PROTECTION FEASIBILITY STUDY

CONTENTS

1. BACKGROUND 4

1.1 PROJECT PURPOSE AND NEED 5

1.2 PROJECT HISTORY 8

2. DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA 9

2.1 PROPOSED ACTION 9

2.2 PROPOSED MITIGATION 12

2.2.1 Pac-SLOPES BMPs 12

2.2.2 Standard BMPs from USFWS 12

2.2.3 Project-Specific BMPs 12

3. DESCRIPTION OF THE ESA ACTION AREA 17

4. LISTED SPECIES & CRITICAL HABITAT IN THE ACTION AREA 19

4.1 CENTRAL WEST PACIFIC GREEN SEA TURTLE (*CHELONIA MYDAS*) 21

4.1.1 Listing Status, Distribution, and Habitat 21

4.1.2 Critical Habitat 21

4.1.3 Potential for Occurrence in Project Area 23

4.2 HAWKSBILL SEA TURTLE (*ERETMOCHELYS IMBRICATA*) 23

4.2.1 Listing Status, Distribution and Habitat 23

4.2.2 Critical Habitat 23

4.2.3 Potential for Occurrence in Project Area 23

4.3 CORAL (*ACROPORA GLOBICEPS*) 24

4.3.1 Listing Status, Distribution, and Habitat 24

4.3.2 Critical Habitat 24

4.3.4 Potential for Occurrence in Project Area 26

4.4 GIANT CLAM (*TRIDACNA SPP. AND HIPPOPUS SPP.*).....26

4.4.1 Listing Status 26

4.4.2 Critical Habitat.....26

4.4.3 Distribution and Habitat.....26

4.4.4 Potential for Occurrence in Project Area.....27

4.5 TREE SNAILS (*PARTULA GIBBA*, *PARTULA RADIOLATA*, *SAMOANA FRAGILIS*)
.....**ERROR! BOOKMARK NOT DEFINED.**

4.5.1 Listing Status
.....***Error! Bookmark not defined.***

4.5.2 Critical Habitat
.....***Error! Bookmark not defined.***

4.5.3 Distribution and Habitat
.....***Error! Bookmark not defined.***

4.5.4 Potential for Occurrence in Project Area
.....***Error! Bookmark not defined.***

4.6 MARIANA FRUIT BAT (*PTEROPUS MARIANNUS MARIANNUS*)
.....**ERROR! BOOKMARK NOT DEFINED.**

4.6.1 Listing Status
.....***Error! Bookmark not defined.***

4.6.2 Critical Habitat
.....***Error! Bookmark not defined.***

4.6.3 Distribution and Habitat
.....***Error! Bookmark not defined.***

4.6.4 Potential for Occurrence in Project Area ..... ***Error! Bookmark not defined.***

5. POTENTIAL IMPACTS 27

5.1 DIRECT IMPACTS 28

5.1.1 Sea Turtles ..... ***Error! Bookmark not defined.***

5.1.2 Coral and Giant Clams ..... ***Error! Bookmark not defined.***

5.1.5 Tree Snails ..... ***Error! Bookmark not defined.***

5.1.6 Mariana Fruit Bat ..... ***Error! Bookmark not defined.***

5.2 INDIRECT AND LONG-TERM PHYSICAL IMPACTS 30

5.2.1 Sediment Erosion/Accretion 30

5.2.2 Discharge of pollutants 30

6. EFFECTS OF THE ACTION 31

7. CONCLUSIONS 33

8. LITERATURE CITED 33

1. Background

The Emergency Shoreline Protection Project at East Hagatna is a cost-shared effort between the Honolulu District, U.S. Army Corps of Engineers (USACE) and the Government of Guam, represented by the Guam Department of Public Works (DPW). Section 14 of the Flood Control Act of 1946 (Section 14, Public Law 79-525), as amended, authorizes USACE to investigate feasible alternatives that provide emergency shoreline protection of public infrastructure in imminent danger of failing due to bank failure caused by natural erosion and not by inadequate drainage, by the facility itself, or by operation of the facility. Section 14 studies have a federal participation limit of $5,000,000. In the Feasibility phase, the first $100,000 is 100% federally funded and the balance is cost shared 50% federal to 50% non- federal. In the Design & Implementation phase, the cost share is 65% federal to 35% non- federal.

The Federal objective, as stated in the CEQ Principles and Guidelines (P&G), is to contribute to national economic development (NED) consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. The planning objective for the study is to identify the least cost, environmentally acceptable alternative that provides shoreline protection to South Marine Corps Drive and the associated public utilities over a 50-year period of analysis. The least cost alternative plan is considered to be justified if the total cost of the proposed alternative is less than the cost to relocate South Marine Corps Drive.

The high cost of implementation in remote territories such as Guam is a study constraint. Section 1156 of the Water Resources Development Act (WRDA) 1986 provides a territorial waiver under the Feasibility and Design & Implementation phases of CAP studies. In 2021 when this feasibility study was initiated, the Section 1156 waiver was $511,000. While the intent of the territorial waiver is beneficial in most cases, under a Section 14 authority with a limited federal expenditure of $5 million, the territorial waiver hinders the study's ability to qualify under a CAP Section 14 authority. The study team would need to find an implementable solution at a much lower cost than that of a non-territory, which will be difficult in a remote location such as Guam. Given the recent period of high inflation and the high costs associated with mobilizing equipment and personnel to remote territories such as Guam, there may be a limited number of alternatives that qualify within the range of coastal erosion management measures and alternatives that may be considered and selected under this authority.

The location and configuration of the existing seawall places another spatial planning constraint on the formulation of potential solutions: any improvements to the portion of damaged seawall resulting from this study cannot further exacerbate or induce damages to other portions of the seawall.

USACE and DPW have initiated a feasibility study to evaluate measures to repairing the existing seawall to continue to restore protection to South Marine Corps Drive and public utilities in the area, from coastal erosion. The study area includes the west central

coast of Guam in East Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and Trinchera Beach Park.

USACE has prepared an Integrated Feasibility Report and Environmental Assessment (IFR/EA) for the East Hagatna, Guam - Continuing Authorities Program (CAP), Section 14 Emergency Shoreline Protection project (Proposed Action/Federal Action) pursuant to Engineering Regulation 1105-2-100 and the National Environmental Policy Act (NEPA). The IFR/EA identifies, evaluates, and discloses all impacts that would result from the implementation of either of several potential alternatives, including the "No Action" alternative (i.e., Future Without Project Condition, modelled under 50 years of different climate change projections), designed to provide emergency shoreline protection within the study area. The draft IFR/EA will be released for a 30-day public and agency comment period in August 2025.

Concurrent to and informing the preparation of the draft IFR/EA, USACE has prepared this Biological Evaluation (BE) to evaluate the potential effects of the Proposed Action on species listed or proposed for listing as endangered or threatened and their designated critical habitat pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended.

To reduce duplication and retain informational integrity and consistency, USACE incorporates by reference all applicable sections of the USACE-NMFS Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES) Consultation dated March 2, 2022.

1.1 Project Purpose and Need

USACE is proposing structural measures to restore protection of South Marine Corps Drive and other essential infrastructure along the shoreline of East Hagatna Bay in East Hagatna, Guam (Figure 1). Guam is in an area of the Pacific Ocean that has a high risk for tropical storms and typhoons, and the low-lying coastline of East Hagatna is subject to frequent storm wave attack. Large storm events and associated high waves and storm surge has caused significant erosion and undermining of the existing seawall fronting and protecting South Marine Corps Drive. The existing seawall is not anchored into the limestone foundation and instead, sits atop the ground surface, leaving it vulnerable to wave attack. Continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. In some places, less than 20 ft of shoreline separates the road from the beach. Future sea level rise will continue to exacerbate this condition and accelerate the rate of erosion and damage.



Figure 1: Approximate extent of the action area along Hagatna Bay.

Figures 2 and 3, captured by USACE Project Delivery Team (PDT) members on a site visit in January 2022, show the existing condition of the wall along Trinchera Beach and Veteran's Sunset Beach Park in the study area. The greatest damage to the existing seawall is along Veteran's Sunset Beach Park, where some sections of wall are undercut by up to 2 ft of seawater. This undercutting is already causing the seawall to crack and undermining its structural integrity. Figure 2 shows the rocks and concrete skirt eroding out of the seawall on the eastern edge of Veteran's Sunset Beach Park. The western access staircase is in danger of collapsing into the ocean. Erosion has also dislodged some of the larger rocks from the seawall (Figure 3), especially on the eastern end of Veteran's Sunset Beach Park (USACE 2022).



Figure 2: Existing seawall on eastern edge of Veteran's Sunset Beach Park, facing southwest (USACE 2022). The beach has eroded below the rocks and concrete skirt, causing the seawall to crack, and undermining its structural integrity. Close up view of the undercut seawall is on the right



Figure 3: Existing seawall at Trinchera Beach Park, facing northeast (USACE 2022)

Failure of the seawall and exposure of South Marine Corps Drive and associated public utilities to damage would result in economic loss and the potential for decreased public and emergency service provision for people who depend on the road. Without federal intervention, it is assumed that the Government of Guam will bear the full burden of protecting South Marine Corps Drive. They will be fiscally impacted by this responsibility and will likely need to repair or replace failing sections of wall in a piecemeal approach.

Pursuant to Section 14 of the Flood Control Act of 1946 (Public Law 79-525), for which this study is authorized, USACE, in collaboration with the Guam DPW and other agency and public stakeholders may investigate feasible alternatives that provide emergency shoreline protection of public infrastructure. Accordingly, the PDT has developed

potential alternative plans for shoreline stabilization over a 50 year period of analysis (2026-2076).

USACE and the Guam DPW evaluated the final array of alternatives and have tentatively selected Alternative 3: Precast Concrete Seawall. This alternative is considered most practicable with respect to real estate considerations, costs, and logistics as the Tentatively Selected Plan (TSP), is preliminarily identified as the Least Environmentally Damaging Practicable Alternative, and therefore is carried forward for analysis to either confirm the TSP as the recommended plan or select a different alternative. While maximizing net benefits, USACE anticipates this alternative will have positive impacts on nearshore water quality (e.g., by minimizing future coastal erosion) and is supported by the Government of Guam as the TSP.

1.2 Project History

In 1993, USACE drafted an EA for revetments to protect two coastal reaches along South Marine Corps Drive spanning a total of 1,750 linear feet. The EA analyzed impacts to air quality; noise; water quality; marine resources; terrestrial resources; endangered species; economic resources; population; historical, cultural, and archaeological resources; visual aesthetics, and recreation opportunities. USACE conducted consultations pursuant to the Fish and Wildlife Coordination Act, ESA, and National Historic Preservation Act (USACE 1993). The Government of Guam cancelled the USACE project, preferring a vertical rock wall to the proposed revetment, which Guam built in the mid-1990s without federal funding.

In 2021, the Government of Guam requested assistance from USACE to address shoreline erosion along the same shoreline fronting South Marine Corps Drive as previously studied in 1993. USACE and the Government of Guam entered into a cost share agreement to begin the feasibility phase of this study under Section 14. For the current project, early coordination and pre-consultation with National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Guam Division of Aquatic and Wildlife Resources (GDAWR) on threatened and endangered species was conducted during a series of email conversations on March 16, 2022 (HST) and April 12, 2022 (HST). Coordination workshops were held with Guam Coastal Management Program and the NMFS Pacific Islands Regional Office (PIRO), Intergovernmental Coordination and Conservation Branch of the Protected Resources Division (PRD) on June 8, 2022 (HST) and with NMFS, USFWS, U.S. Environmental Protection Agency (USEPA); and GDAWR on June 14, 2022 (HST).

In 2023, USACE evaluated the final array of alternatives and tentatively selected a 2,100-foot-long rock revetment to replace the portion of the existing seawall with the most severe damages. Accordingly, USACE drafted a BE documenting the USACE consideration of potential impacts under the ESA for the 2,100 linear foot revetment, transmitting it to NMFS and USFWS to initiate informal consultation on September 13, 2023. NMFS concurred with the USACE effect determination of may affect not likely to adversely affect, on October 18, 2023.

In December 2023, after further consideration from USACE technical experts, the PDT re-evaluated the final array of alternatives and ultimately decided to revise the tentatively selected plan from a revetment to a Precast Concrete Seawall, i.e., Alternative 3. Accordingly, USACE determined the need to reinitiate consultation with NMFS. This current BE is concerned with the anticipated effects and associated avoidance and minimization measures proposed under the current federal action, a 1,630-foot-long Precast Concrete Seawall. This evaluation augments and/or supersedes past consultations with NMFS. Reinitiation with USFWS was conducted through a separate evaluation.

2. Description of the Proposed Action and Action Area

2.1 Proposed Action

This Proposed Action would replace 1,630 linear feet of the 2,100 ft existing seawall with a 1 ft wide precast concrete seawall which acts as a cantilever retaining wall (Figure 4). This design utilizes the weight of the backfill to provide resistance to the lateral earth pressures (Figure 4). Concrete wall panels would either be constructed onsite or offsite and transported to the site to replace failing sections of the existing seawall.

Installation of the precast concrete panel wall would occur using conventional land-based, earth moving equipment and includes:

- demolition of approximately 1,630 linear feet and 711 cubic yards of existing block, concrete and rock rubble seawall (demolition waste will be hauled offsite and disposed at a local waste facility),
- removal of up to 20 trees,
- excavation of native coastal soils below and upland of the existing seawall, down to the limestone shelf (the bottom 3 feet, 4 inches of the excavation will be below Mean Sea Level (MSL) and require dewatering),
- installation of a 7-foot-wide base,
- placement of precast concrete panels,
- construction of 3 sets of cast-in-place concrete stairs to allow for beach access,
- replacement of 3 culverts,
- regrade and backfill of the excavated area behind the constructed seawall to the elevation of the pre-existing ground surface,
- installation of a splash apron composed of formed concrete over a gravel fill behind the crest of the structure, and
- reseeding of 3,555 square yards of disturbed area and replanting of 20 trees once construction is completed.

This design has a top elevation of 8.5 feet above MSL, a crest width of 1foot and a buried base that is 7 feet wide. The total disturbed upland area is an approximately 20 feet wide swath of land along the length of the existing wall for excavation and backfill of the existing soils necessary to construct the seawall. In addition to the

approximately 20 feet of disturbed area, a minimal additional 30 feet will be needed landward of the disturbed area for staging of the construction equipment. This design does not include any construction in front of the existing seawall. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability to projected sea level change.

Pending inclusion in that year's appropriations, Design is expected in federal fiscal year 2028.

Construction of the precast concrete seawall is expected to begin in federal fiscal year 2030 and take approximately 12 months.

Table 1: Proposed Project Dimensions

Impact	Action	Height	Width	Length	Surface Area
Permanent	Seawall replacement	9 ft	1 ft	1,630 ft	0.036 ac
Temporary	Upland Backfill and Staging Area	9 ft	50 ft	1,630 ft	0.735 ac

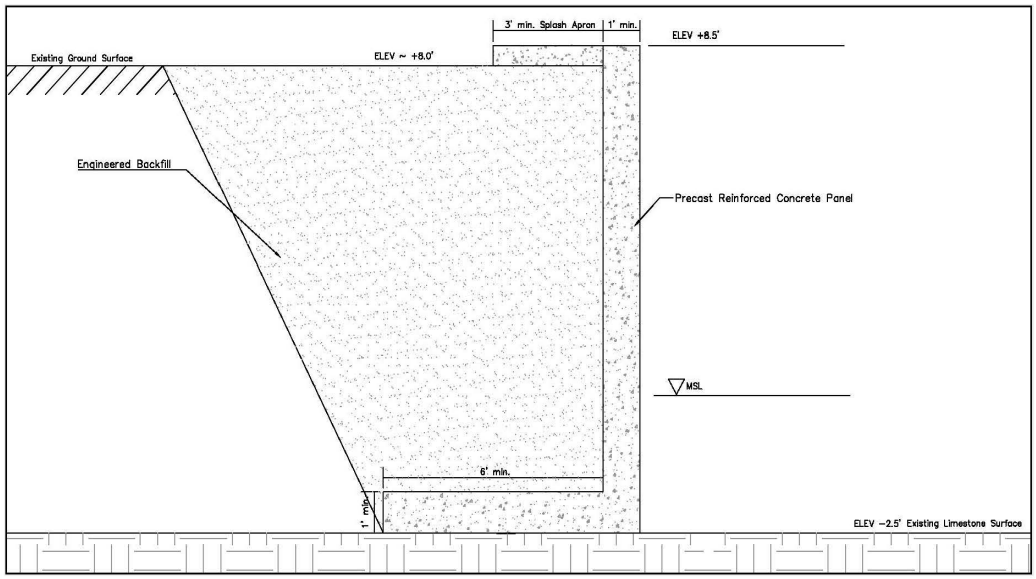


Figure 4: Alternative 3 – Precast Concrete Seawall

11

2.2 Proposed Mitigation

USACE considers and applies a progressive approach to mitigation: avoidance first, followed by minimization and lastly, compensatory mitigation. The following mitigative measures are proposed because USACE has determined they are appropriate, feasible, practicable and commensurate to anticipated adverse effects. USACE welcomes any additional avoidance and minimization measures USFWS and NMFS may recommend to avoid, minimize, or otherwise mitigate for adverse effects to ESA listed species and designated critical habitat.

2.2.1 Pac-SLOPES BMPs

USACE reviewed the Pac-SLOPES General and Activity-Specific BMPs (USACE and NMFS 2022) for applicability and determined the proposed action is consistent with the Pac-SLOPES covered action described at, *Site Preparation for Above-water, Over-water, or In-Water Construction* and *Maintenance of Existing Bank Stabilization Structures*. All applicable Pac-SLOPES BMPs are listed in Attachment 1 of this BE, in addition to other agency-recommended BMPs and Essential Fish Habitat Conservation Recommendations. USACE understands that inclusion and implementation of these BMPs are necessary to ensure that project-related impacts to ESA listed species are discountable or insignificant.

2.2.2 Standard BMPs from USFWS

USACE reviewed the April 2022 Recommended Standard Best Management Practices For Work In or Around Aquatic Environment (USFWS 2022b), DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands (USFWS 2023b), and Migratory Bird Protections in Guam (USFWS 2023c) for applicability. All applicable are listed in Attachment 1 of this BE, in addition to other agency-recommended BMPs and Conservation Recommendations. USACE understands that inclusion and implementation of these BMPs are necessary to ensure that project-related impacts to ESA listed species are discountable or insignificant.

2.2.3 Project-Specific BMPs

USACE has consulted and coordinated this project action with engineering professionals and environmental resource agencies, including NMFS Protected Resources Division, to develop BMPs that would modify the design in such a manner so as to avoid and/or minimize the impacts to the aquatic and surrounding environment to the greatest extent practicable. Compiled BMPs are provided as Attachment 1 to this BE. Such BMPs will be implemented by the contractor and enforceable through contract specifications.

2.3 Proposed Alternatives

The proposed action is the least environmentally damaging practicable alternative, having the least impact on habitat (Table 2) and other resources.

Table 2: Habitat Area Affected by Each Alternative

Impact	Alt 1: No Action	Alt 2: Revetment	Alt 3: Precast Concrete Seawall	Alt 4: CRM Wall
Temporary: Staging area (parking lot) (acres)	NA	0.20	0.20	0.20
Temporary: Upland Construction Area (acres)	NA	1.10	0.73	0.73
Permanent: Upland (acres)	NA	0	0.04	0.07
Permanent: Beach/Intertidal (acres)	NA	0.63	0	0
Total Impacts	**NA**	**1.93**	**0.97**	**1.00**
Construction NPDES required	NA	>1 acre Yes	<1 acre No	>1 acre Yes
Slope	0	1.5H/1V	0	0.25H/1V

2.3.1 Alternative 1 No Action

Under Alternative 1, no federal actions for emergency shoreline protection would be implemented. Conditions in the proposed action area are anticipated to develop as described in the FWOP condition (Section 2). More frequent and severe tropical storms in combination with relative sea level rise would exacerbate shoreline erosion and leave South Marine Corps Drive exposed to severe damage. Without federal intervention, the Government of Guam will be forced to undertake protection of South Marine Corps Drive itself or risk imminent damage to the roadway and associated public utilities. Without protection, South Marine Corps Drive would eventually need to be relocated or closed at a severe economic cost to the local sponsor.

The No Action Alternative would result in the eventual loss of some or all of the terrestrial environment between South Marine Corps Drive and East Hagatna Bay, and its associated species as the existing seawall collapses and the shoreline erodes. Erosion releases terrigenous sediments and pollution into the bay. Beach and intertidal habitat for resting and feeding by sea turtles would be lost. Erosion over time would contribute a chronic input of landside pollutants into the bay. For these reasons, USACE has determined the No Action Alternative would cause significant impacts to, and is likely to adversely affect, federal threatened and endangered species and their habitat.

2.3.2 Alternative 2 Revetment

Alternative 2 would replace the removed section of the seawall with a revetment. Engineered revetments reduce the erosive power of the waves by dissipating wave

energy through the interstices of the stones or armor units. The base of the revetment extends 17.25 ft toward the ocean from the existing seawall toe. The temporary construction footprint of the revetment is approximately 40 to 50 ft wide to accommodate for construction means and methods. The slope of the structure was kept to 1V:1.5H, to minimize the footprint of the structure. This alternative has the largest footprint of the alternatives included in the final array. Based on current hydrological and site control data, the revetment may be inundated under each tidal datum as illustrated in Figure 5.

Revetment designs utilizing both rock and concrete armor units were considered for the design, with the final selection being concrete armor units, specifically tribar (Figure 12), due to the unavailability of appropriately sized rock (1.2 ton) and the high associated costs of importing rock. The revetment would be constructed parallel to the shoreline and built from the toe trenched into the limestone, approximately -3.5 ft MSL, up to the crest elevation, approximately +8.9 ft MSL, which matches the approximate height of the existing seawall. It was assumed the tribar units would be placed in a single layer, uniformly, as is typical for this type of design. The tribar units have fixed dimensions and are placed directly on top of each other in sloped rows. Underneath the tribar units atop geotextile fabric are two layers of underlayer stone. The toe tribar unit would be cemented at the toe, and grout filled geotextile bags would serve to seal the crest. A splash apron composed of formed concrete over a gravel fill behind the crest of the structure is included to provide scour protection and tie the structure to the existing ground. The 8.9-ft crest elevation design meets the 50-year design requirement for sea level rise (SLR) and is adaptable to the 100-year SLR under the intermediate scenario through the addition of another layer of concrete armor units. A cross section of the revetment design is shown in Figure 6.

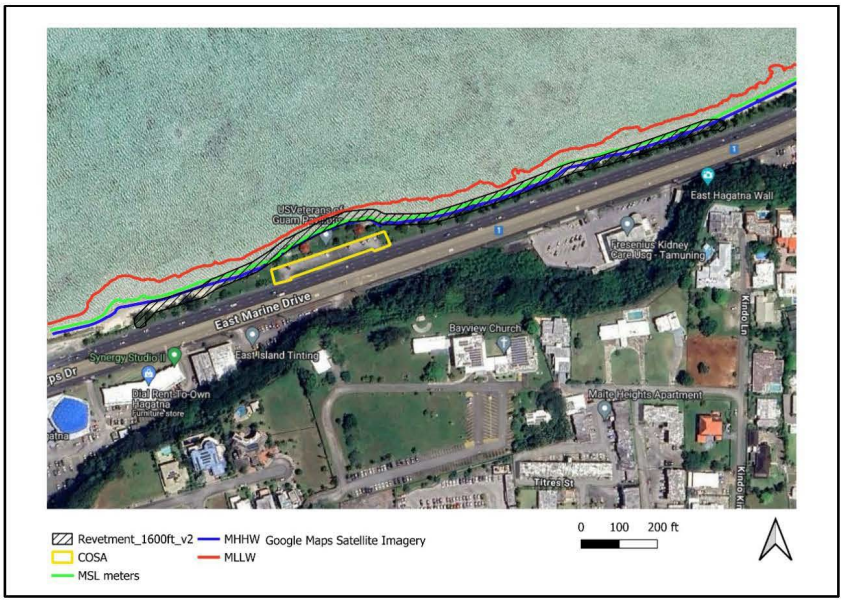


Figure 5: Temporary staging area and revetment extent.

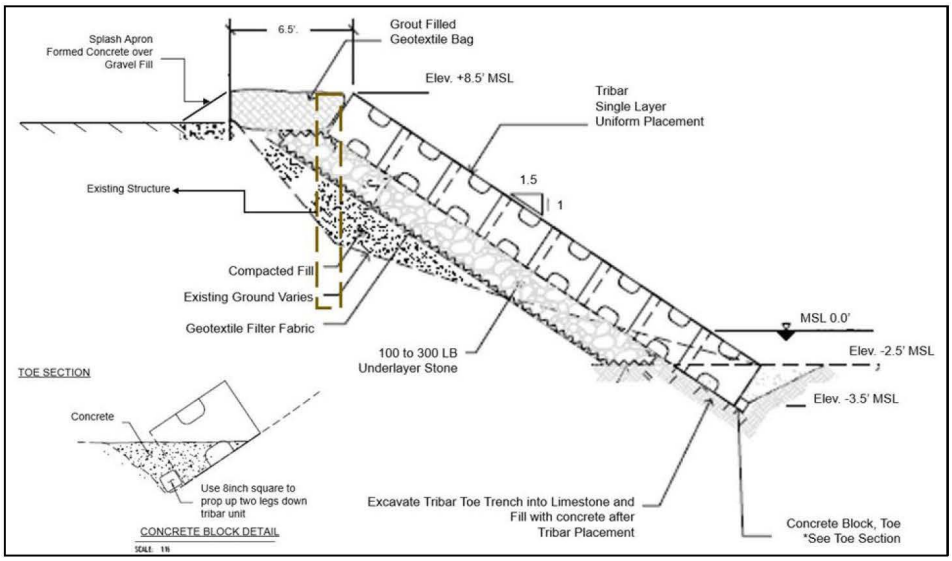


Figure 6. Preliminary schematic of concrete armor unit revetment

The amount of sandy shore habitat that would permanently be lost under the footprint of Alternative 2: Revetment is expected to be less than would be lost to natural forces under the No Action Alternative. Construction activities would convert an estimated 1.1 acres of beach sand to revetment for Alternative 2 and could result in a loss of habitat that may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. Alternative 2 also has the largest upland construction area and takes the longest to build, and therefore has the greatest potential impact on Mariana Fruit Bat and tree snails.

2.3.3 Alternative 4 Concrete Rubble Masonry Seawall

Alternative 4 includes removal of 1,630 linear ft of existing seawall and construction of a CRM seawall in its place. Figure 7 illustrates the lateral extent of the CRM seawall. The design consists of a precast concrete base secured to the limestone shelf and a CRM seawall constructed on top of the concrete foundation (Figure 8). Construction of the CRM wall would consist of excavating the existing soils to the limestone shelf, and then installing the CRM wall. After construction, the excavated area would be regraded to the elevation of the existing ground surface. This design has a total elevation of 8.9-ft above MSL, a crest width of 2-ft and a base that is 9-ft wide, with the total disturbed area being approximately 20-feet due to excavation and backfill of the existing soils. A splash apron composed of formed concrete over a gravel fill behind the crest of the structure is included to provide scour protection and tie the structure to the existing ground. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability.

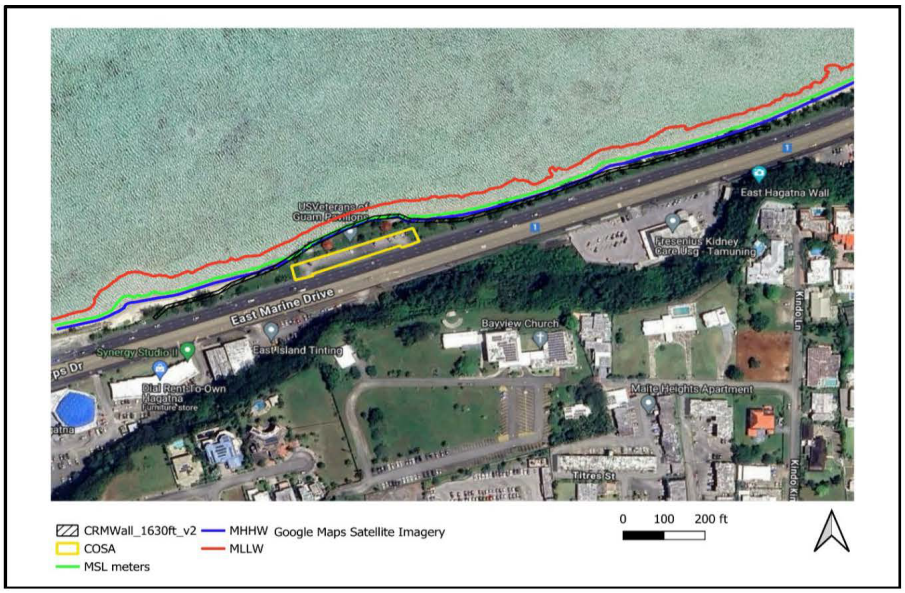


Figure 7: Footprint of concrete rubble masonry wall.

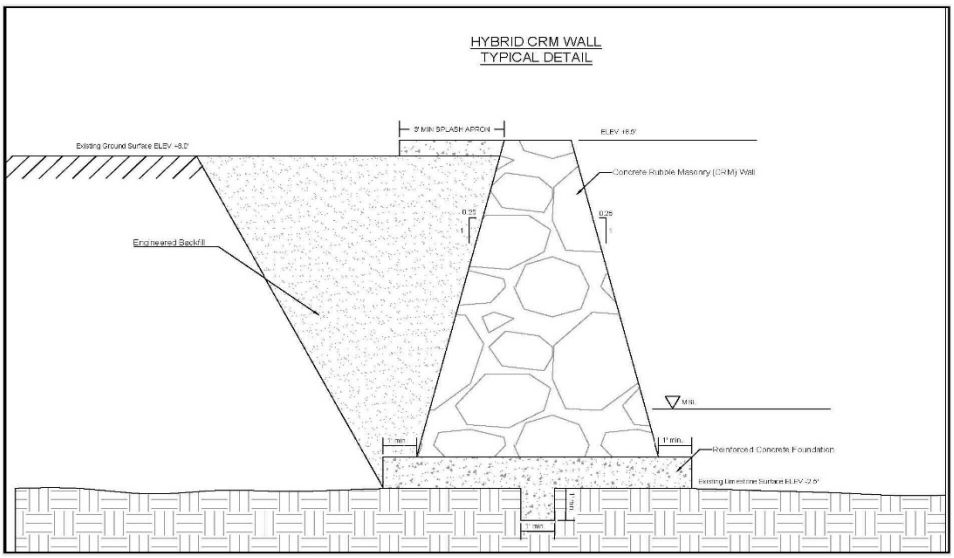


Figure 8: Cross section of concrete rubble masonry wall

The amount of sandy shore habitat that would permanently be lost under the footprint of Alternative 4: Concrete Rubble Masonry Seawall is expected to be less than would be lost to natural forces under the No Action Alternative. Construction activities would convert an estimated 0.34 acres of beach sand to CRM wall for Alternative 4 and could result in a loss of habitat that may affect Central West Pacific green sea turtles, hawksbill sea turtles, and *A. globiceps*. Alternative 4 also has the largest permanent upland conversion to wall and therefore has greater potential impact on Mariana Fruit Bat and tree snails.

3. Description of the ESA Action Area

The East Hagatna Emergency Shoreline Protection study area (Figure 1) encompasses a 1,630 ft long stretch of Trinchera Beach along Hagatna Bay, which runs parallel to South Marine Corps Drive (also referred to as Highway 1), a main transportation corridor of the island. The study area encompasses the ESA Action Area within which USACE is evaluating the direct and indirect impacts of the proposed action on ESA listed species and designated critical habitat.

USACE has considered direct and indirect impacts to ESA listed species and has determined that the ESA Action Area extends 20 feet inland of the existing seawall, as depicted in Figure 4, and includes the proposed staging area sited on an existing parking lot.

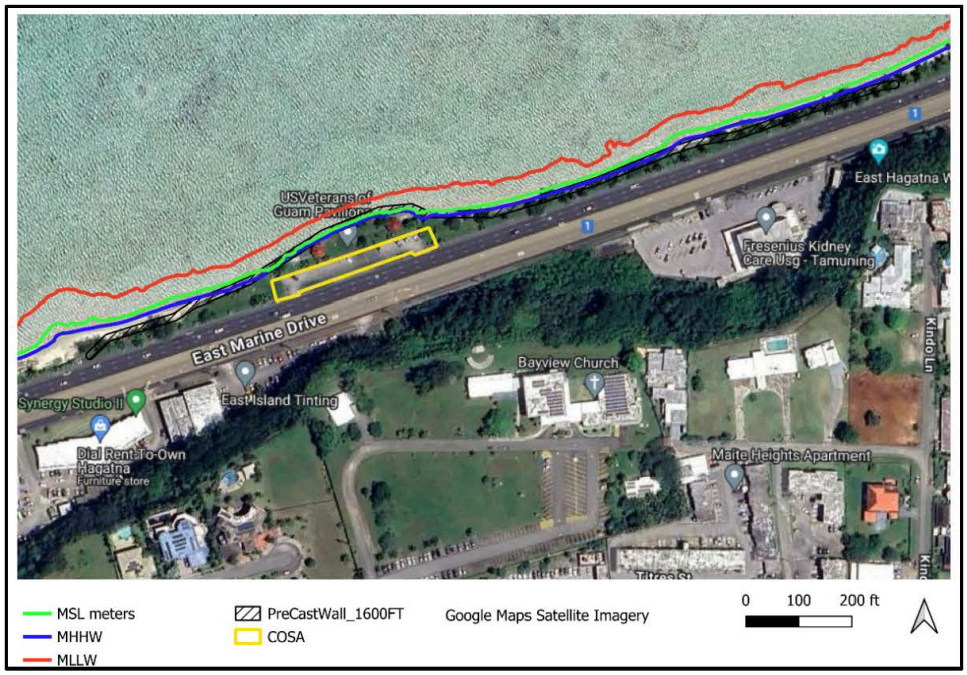


Figure 9: ESA Action Area: The proposed active construction (black polygon) and staging area (yellow polygon). The ESA Action Area extends at least 20 ft inland of the foot of the existing seawall and includes the staging area (Source: USACE, 2022). The redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, March 6, 2024.

The aquatic habitat within the ESA Action Area is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock, supporting no obvious marine communities. NMFS surveys in November 2022 confirmed previous observations (USFWS 1992, NOAA 2005) that the intertidal region within 20 feet seaward of the wall is predominantly sand and does not contain live coral, other macroinvertebrates, seagrasses or fish. Sparse seagrass, macroalgae and fish occur beyond 20 feet from the existing seawall where the depth reaches 3 feet. The depth is shallow, approximately 3 feet, for several hundred feet from the existing seawall (NMFS 2023a).

The width of the sandy beach present between the existing seawall and the ocean varies along the length of the seawall. In some locations toward the eastern end of the project extent, there is approximately 15 feet of beach (PDT 2022). In other areas, such as Veteran's Sunset Beach Park, there is no beach at all. The 1993 Environmental Assessment (USACE 1993) describes Trinchera Beach as extending along approximately 3,400 feet of the East Hagatna shoreline. The beach material is fine

calcareous sand with extensive coral, gravel, and rubble. Portions of the shoreline are covered almost exclusively with gravel, rocks, rubble, and small limestone boulders. Small sand and alluvial deltas formed in the vicinities of storm drains and the inner reef flat has a covering of fine sand and silt (USACE 1993, PDT 2022, NMFS 2023b).

The terrestrial habitat was surveyed by PDT members in January 2022 and includes 30 to 50 feet of sparsely vegetated, urbanized habitat within Veteran's Sunset Beach Park and Trinchera Beach Park. Park vegetation is an actively maintained grassy lawn planted with indigenous coconut palm (*Cocos nucifera*) and ironwood (*Casuarina equisetifolia*) trees and the introduced ornamentals plumeria (*Plumeria* sp.) and fish poison tree (*Barringtonia asiatica*).

4. Listed species & Critical habitat in the action area

Pursuant to Section 7 of the ESA, USACE requested technical assistance from USFWS and NMFS. The initial list of threatened and endangered species for Hagatna Bay and its shoreline included Central West Pacific Green Turtle (*Chelonia mydas*), Hawksbill sea turtle (*Eretmochelys imbricata*), Indo-West Pacific scalloped hammerhead shark (*Sphyrna lewini*), giant manta ray (*Manta birostris*), proposed coral critical habitat and the corals *Acropora globiceps*, *A. retusa*, and *Seriatopora aculeata*, and Mariana fruit bat (*Pteropus mariannus mariannus*). On April 12, 2022, NMFS concluded that based on the location of the activity, a mean water depth of less than 3 feet in the project area, and that there would be no vessel use, scalloped hammerhead sharks and giant manta ray need not be included in the BE as the proposed action would have no effect on these species. Ms. Schrader also reported that recent yet to be published surveys indicate that the coral species *A. retusa* and *S. aculeata* are not likely to be in the proposed project area (Schrader 2022).

This USACE BE will consider effects of the project on the following federally listed species which are potentially affected by project activities along South Marine Corps Drive and are considered in detail in this BE (Table 2).

Table 3: ESA Listed Species potentially present on or in the vicinity of the study area. None were observed during the NMFS surveys in 2022.

Common Name	Scientific Name	Status	Effective Listing Date / FR Notice	Critical Habitat	Recovery Plan	Jurisdiction	Observed in Action Area	Effects Determination
Marine Invertebrates								
Giant Clam	*Tridacna derasa* *T. gigas* *Hippopus hippopus*	Endangered Threatened	07/25/2024 89 FR 60498; 50 CFR 223-224	No	No	NMFS	No	No Effect
small-polyp stony coral	*Acropora globiceps***	Threatened	10/10/2014 79 FR 53852	Proposed 11/27/2020 85 FR 76262	06/22/2015 NMFS 2015	NMFS	No	NLAA
Sea Turtles								
Green sea turtle, Central West Pacific Distinct Population Segment (DPS)	*Chelonia mydas*	Endangered	05/06/2016 81 FR 20057	Proposed 07/19/2023 88 FR 46572	01/12/1998 NMFS 1998	NMFS in ocean. USFWS on land	No	NLAA
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/03/1970 35 FR 8491	No	5/22/1998 63 FR 28359	NMFS in ocean. USFWS on land	No	NLAA

No threatened or endangered species were seen during the NMFS 2022 surveys at or near the proposed project site although sea turtles are known to use the waters immediately offshore (NMFS 2023a and c).

20

DRAFT

4.1 Central West Pacific Green Sea Turtle (*Chelonia mydas*)

4.1.1 Listing Status, Distribution, and Habitat

USACE incorporates by reference the species data provided in Sections 3 and 4 of the USACE-NMFS Pac-SLOPES BE dated March 2, 2022, which describe in detail the listing status, species life cycle information, population trends, threats to the species, and suitable and critical habitat for Green sea turtle. The Central West Pacific Distinct Population Segment comprises the green sea turtles present in Guam. For the purposes of this analysis, the Central West Pacific DPS of green sea turtle was evaluated for effects resulting from project implementation. NMFS has jurisdiction over sea turtles while they are in the water and USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach.

4.1.2 Critical Habitat

Currently there is no designated critical habitat for green sea turtles in Guam. However, NMFS and USFWS have proposed critical habitat for Central West Pacific green sea turtles. Detailed information on NMFS proposed Central West Pacific green sea turtle critical habitat is available at: https://www.fisheries.noaa.gov/action/proposed-rule-designate-critical-habitatgreen-sea-turtles. Detailed information on USFWS proposed critical habitat is available at: https://www.govinfo.gov/content/pkg/FR-2023-07-19/pdf/2023-14225.pdf. Figure 6 depicts the proposed critical habitat designation in East Hagatna Bay.

The specific areas within the proposed designation in Hagatna Bay include:

1. From the mean high water line to 20 meter depth, sufficiently dark and unobstructed nearshore waters adjacent to nesting beaches proposed as critical habitat by USFWS, to allow for the transit, mating, and internesting of reproductive individuals, and the transit of post-hatchlings.
2. From the mean high-water line to 20-meter depth, underwater refugia (e.g., caves, reefs, protective outcroppings, submarine cliffs, and “potholes”) and food resources (i.e., seagrass, marine algae, and/or marine invertebrates) of sufficient condition, distribution, diversity, abundance, and density necessary to support survival, development, growth, and/or reproduction (NMFS 2023c).
3. Seven 7 acres in East Agana Bay, Tamuning-Tumon (a.k.a. Tamuneng-Tomhom) Village, west coast of northern Guam, part of the Territory of Guam. This unit is located approximately 1 mile (less than 1 kilometer) northeast of the Capital Village of Hagatna and includes beach and sandy shoals from the MHWL. The landward boundary is the line indicating the beginning of dense vegetation, cliff, or hardened or developed structures. This unit comprises three segments in two areas: (1) two segments (north to south) on Dungcas Beach (2 acre and 3 acres); and (2) one segment on Trinchera Beach (2 acres).

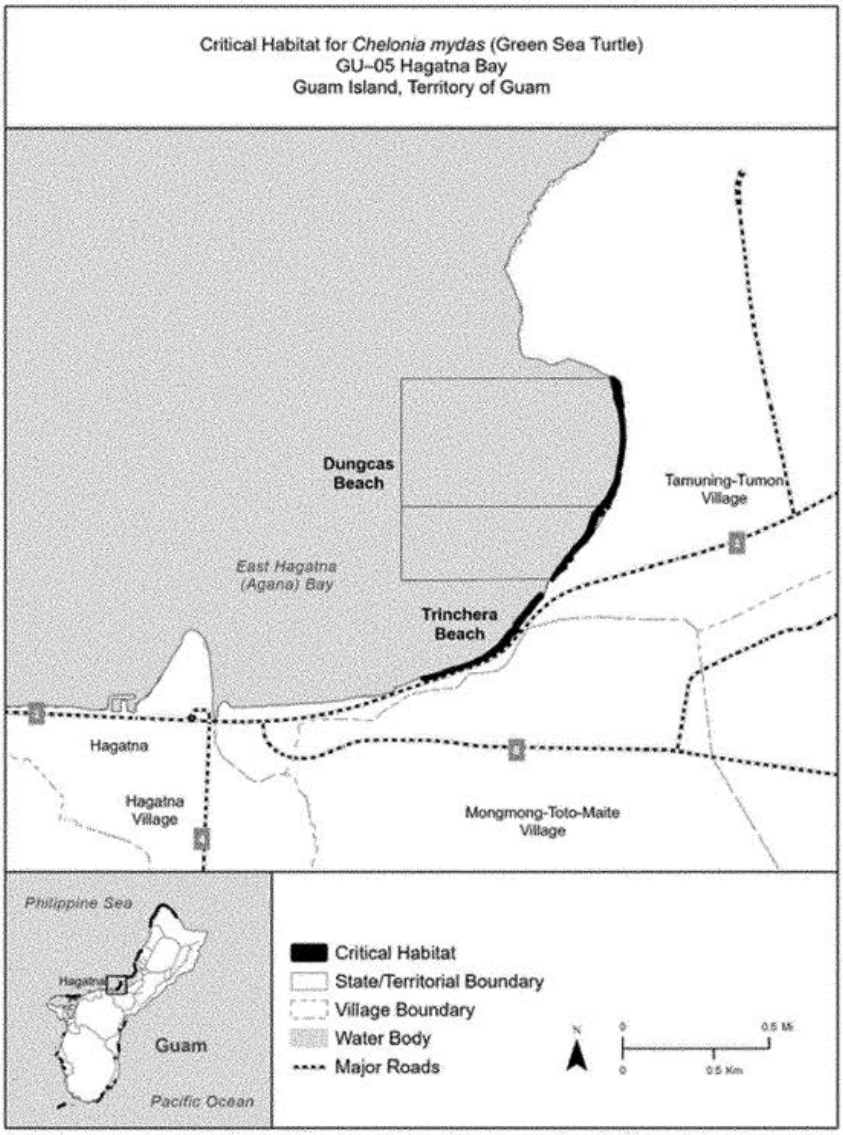


Figure 10: Proposed Green Sea Turtle Critical Habitat in East Hagatna Bay, Guam (USFWS 2023).

22

Proposed green sea turtle critical habitat includes the area of Trinchera Beach in front of the existing East Hagatna seawall.

4.1.3 Potential for Occurrence in Project Area

Within the Marianas, green sea turtles are reasonably common and present year-round in the waters. Approximately 22 green sea turtles are known to nest in Guam (Seminoff et al. 2015). In Guam, nesting habitat tends to be in areas isolated from human activity. Nesting has not been observed in the proposed project/action area (USFWS 1992).

While green sea turtles have been observed in the water and on the beach in Hagatna Bay, they have not been observed to nest on Hagatna Bay beaches (Flores 2022). A NMFS sea turtle tagging project from 2014 through 2019 did not tag or observe any Hawksbill or green sea turtles in Hagatna Bay (Gaos et al. 2021). No turtles were observed during the NMFS 2022 surveys (NMFS 2023a). Green sea turtles enter Hagatna Bay and may use the shoreline for foraging habitat. However, this documentation is not recent within the action area. Given the above, it is unlikely that the green sea turtle will enter the project area.

4.2 Hawksbill sea turtle (*Eretmochelys imbricata*)

4.2.1 Listing Status, Distribution and Habitat

USACE incorporates by reference the species data provided in Sections 3 and 4 of the USACE-NMFS Pac-SLOPES BE dated March 2, 2022, which describe in detail the listing status, species life cycle information, population trends, threats to the species, and suitable and critical habitat for Hawksbill sea turtle.

NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach.

4.2.2 Critical Habitat

Hawksbill Sea Turtle critical habitat is only designated for areas of Puerto Rico (50 CFR § 17.95(a). There is no critical habitat designated for Hawkbill sea turtles in the Pacific.

4.2.3 Potential for Occurrence in Project Area

A NMFS sea turtle tagging project did not tag or observe any Hawksbill or Green sea turtles in Hagatna Bay from 2014 through 2019 (Gaos et al. 2021). No turtles were observed during the NMFS 2022 surveys (NMFS 2023b). Hawksbill sea turtles have not been reported in the Bay. Given the above, it is unlikely that Hawksbill sea turtles will enter the project area.

4.3 Coral (*Acropora globiceps*)

4.3.1 Listing Status, Distribution, and Habitat

USACE incorporates by reference the species data provided in Sections 3 and 4 of the USACE-NMFS Pac-SLOPES BE dated March 2, 2022, which describe in detail the listing status, species life cycle information, population trends, threats to the species, and suitable and critical habitat for coral.

4.3.2 Critical Habitat

Currently there is no designated critical habitat for the coral species. However, NMFS proposed designated critical habitat on November 27, 2020; for seven threatened corals in U.S. waters in the Indo-Pacific (1/26/21; 85 FR 76262), including portions of Hagatna Bay (Figure 7). A revised proposal was published in 2023 and comments closed in February 2024 (NMFS 2023f).

The proposed coral critical habitat consists of substrate and water column habitat characteristics essential for the reproduction, recruitment, growth, and maturation of the listed corals. Sites that support the normal function of all life stages of the corals are natural, consolidated hard substrate or dead coral skeleton free of algae and sediment at the appropriate scale at the point of larval settlement or fragment reattachment, and the associated water column.

Several attributes of these sites determine the quality of the area and influence the value of the associated feature to the conservation of the species:

1. Substrate with presence of crevices and holes that provide cryptic habitat, the presence of microbial biofilms, or presence of crustose coralline algae;

2. Reefscape (all the visible features of an area of reef) with no more than a thin veneer of sediment and low occupancy by fleshy and turf macroalgae;

3. Marine water with levels of temperature, aragonite saturation, nutrients, and water clarity that have been observed to support any demographic function; and

4. Marine water with levels of anthropogenically-introduced (from humans) chemical contaminants that do not preclude or inhibit any demographic function.

While *A. globiceps* proposed critical habitat includes the edge of Hagatna Bay (Figure 7) at a depth of 0 – 39 ft (0 – 12 m), it does not include managed areas (e.g., harbors, navigation channels, anchorages, etc.) or artificial substrates (e.g., aids-to-navigation, seawalls, wharves, boat ramps, fishpond walls, pipes, submarine cables, wrecks, mooring balls, docks, aquaculture cages, etc.) (NMFS 2023f).

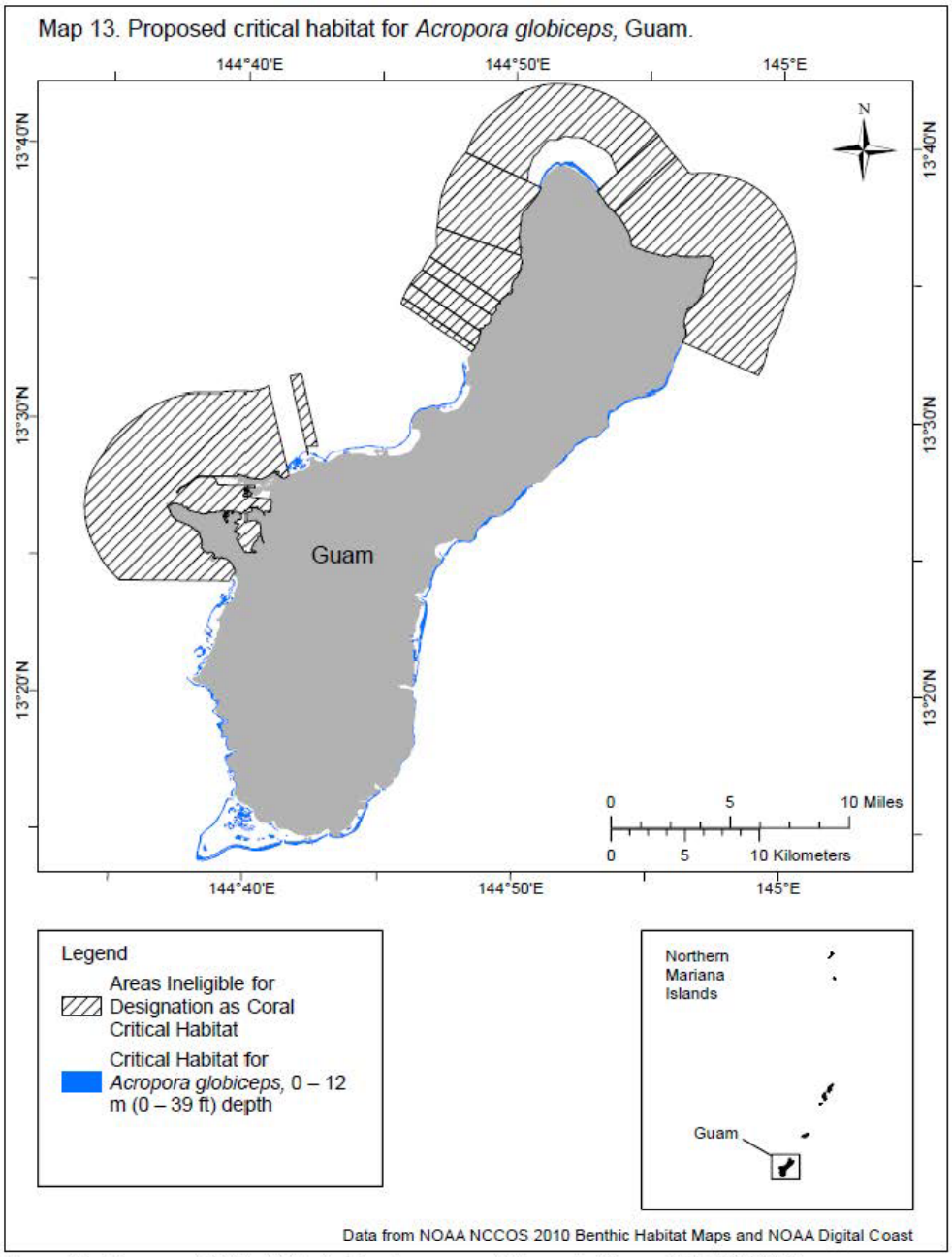


Figure 11: Proposed Critical Habitat for *Acropora globiceps* in Guam (NMFS 2023f).

25

4.3.4 Potential for Occurrence in Project Area

During surveys in 1992 USFWS recorded nine species of coral on the inner reef flat at the proposed project site (Table 4). *A. globiceps* was not one of them (USFWS 1992). Corals were virtually absent on the sand covered inner reef flat within 200 m (656 ft) of the beach (USFWS 1992). *A. globiceps* was not reported in Hagatna Bay during coral monitoring in 2016 through 2021 (Maynard et al. 2017, Burdick et al. 2019, and Raymundo et al. 2022). No *A. globiceps* were observed during the NMFS 2022 surveys (NMFS 2023b) accordingly, *A. globiceps* is not anticipated to occur within the ESA Action Area.

4.4 Giant Clam (*Tridacna spp. and Hippopus spp.*)

Giant clams are the largest living marine bivalves (weighing up to 500 pounds, measuring up to 4.5 feet in length, and living for 100 years) and typically inhabit tropical coral reefs in coastal regions throughout the Indo-Pacific Ocean. Modern giant clams are distributed along shallow shorelines and on reefs in the Indo-West Pacific in the area confined by 30° E and 120° W (*i.e.,* from South Africa to beyond French Polynesia) and between 36° N and 30° S (*i.e.,* from Japan in the North to Australia in the South) and excluding New Zealand and Hawaii, although there are reports that at least two species have been introduced in Hawaii (*T. derasa* and *T. squamosa*). Although most extant giant clams mainly occur within the tropical Indo-Pacific region, three species (*T. maxima*, *T. squamosa* and *T. costata*) are found as far west as East Africa or the Red Sea (89 FR 60498, July 25, 2024).

4.4.1 Listing Status

On 25 July 2024 NMFS proposed listing the giant clams *H. porcellanus, T. mbalavuana*, *T. squamosina*, *T. derasa*, and *T. gigas* as endangered species and *H. hippopus* as a threatened species under the ESA (89 FR 60498, July 25, 2024). Of these, only *H. hippopus*, *T. derasa*, and *T. gigas* are found in Guam. *T. squamosa* and *T. maxima* are proposed for listing as threatened under section 4(e) of the ESA for similarity of appearance but are not applicable to this analysis since the proposed action does not include collection (NOAA 2024c). Therefore, this analysis will only focus on *H. hippopus*, *T. derasa*, and *T. gigas.*

4.4.2 Critical Habitat

There is no designated or proposed critical habitat for giant clams (89 FR 60498, July 25, 2024).

4.4.3 Distribution and Habitat

Giant clam distribution is not uniform, with greater diversity found in the central Indo-Pacific. Although giant clams are typically associated with and are prominent inhabitants of coral reefs, this is not an obligate relationship. Giant clams are typically found living on sand or attached to coral rock and rubble by byssal threads, but they can be found in

a wide variety of habitats, including live coral, dead coral rubble, boulders, sandy substrates, seagrass beds, macroalgae zones, etc. (89 FR 60498, July 25, 2024).

Historical reports and fossil evidence indicate that *H. hippopus*, *T. derasa*, *T. gigas*, and *T. squamosa* are all native to Guam but *T. squamosa* is the only one of the seven species in this report that still occurs there, albeit at very low abundance. The other three species are reportedly extirpated (NOAA 2024d).

Guam Aquaculture Development and Training Center and University of Guam Marine Laboratory have imported *T. derasa, T. gigas* and *T. squamosa* for mariculture and reintroduction, however, the effectiveness of this has not been documented. More recently, the Division of Aquatic and Wildlife Resources in Guam initiated a community-led giant clam (*T. maxima*) mariculture program in 2021, with funding from NMFS, to establish a sustainable source of food and income for local communities and revitalize cultural ties to giant clams as a natural resource (NOAA 2024e).

4.4.4 Potential for Occurrence in Project Area

NMFS report that *H. hippopus* is extinct, and *T. derasa*, and *T. gigas* are reintroduced through mariculture in Guam (NMFS 2024). NMFS did not report any giant clams in their 2022 surveys (NMFS 2023), accordingly, *H. hippopus*, *T. derasa*, and *T. gigas* are not anticipated to occur within the ESA Action Area.

5. Potential Impacts

Based on the known locations of sensitive species and habitat within the study area, the following impact analysis evaluates the potential for impact to ESA species and designated habitat from replacing the existing seawall within the ESA Action Area. Compared to other alternatives considered under the feasibility study, implementation of the precast concrete seawall was tentatively determined to be economically justified, environmentally sound and engineeringly feasible.

Under the ESA (50 CFR 402.02), “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The applicable standard to find that a proposed action is “not likely to adversely affect” listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial (USFWS & NMFS 1998). Discountable effects are those extremely unlikely to occur. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Beneficial effects are contemporaneous positive effects without any adverse effects.

Potential vectors for impact per resource are discussed below. BMPs described at Section 2.2 and in Enclosure 1 are intended to avoid and/or minimize the following impacts.

5.1 Direct Impact

5.1.1 Sea Turtles

Construction of the Precast Concrete Seawall in the ESA Action Area would temporarily disturb the current beach, involving increased human presence and use of heavy machinery on the beach prior to and during construction, with minimal, limited, and temporary in-water work for site preparation. Construction activities would likely involve the use of heavy machinery, operated from the land, for clearing vegetation growing in the existing seawall, excavation of the existing seawall, and construction of the precast concrete seawall. If construction must occur at night, artificial lighting may be required.

Potential vectors of impact from in-water and nearshore work include disturbance from human activity and equipment operation, exposure to elevated noise levels, exposure to elevated turbidity and sedimentation, exposure to wastes and discharges, disorientation caused by artificial lighting and loss of nesting habitat. Construction of the precast concrete seawall has the potential to directly strike ESA-listed species should those animals be present when the equipment is operating within the ESA Action Area. Potential injuries and their severity will depend on the animal's proximity to the heavy machinery when struck, the angle of the strike, and the body part impacted, but may include cuts, bruises, broken bones, cracked or crushed carapaces, and amputations, any of which could result in the animal's death. However, sea turtles on land can be clearly seen and avoided and move relatively slowly and construction activities can either be halted or moved to avoid direct impact until the species vacates the action area of its own accord.

Increased presence of humans, e.g., construction personnel, at the beach may impact sea turtles by causing the turtles to avoid the area, or by causing a startle reaction and resulting stress should the construction activity interact with the species. The reaction could range from one extreme where an animal calmly approaches and investigates the activity, to an opposite reaction of panicked flight, where an animal injures itself in an attempt to flee. However, sea turtles typically avoid human activity. Thus, the most likely effect of this interaction will be moderate level stress with a moderate to high energy avoidance behavior leading to the animal rapidly leaving project areas without injury.

Construction activities using heavy equipment within the ESA Action Area such as excavating and constructing the beach toe will elevate ambient noise levels and may cause sea turtles to avoid the in-water area during construction. USACE does not anticipate noise levels that would cause death or damage hearing because no pile driving is anticipated and because noise rapidly dissipates from uplands into marine waters.

Sea turtles breathe air and their ability to breathe should not be impacted by turbidity generated by minimal construction within the intertidal zone. Elevated turbidity levels in the ocean may affect predation and foraging by marine listed species. However, the intertidal zone within the ESA Action Area is comprised of coarse grain sediments such as sand and cobble and is expected to settle immediately upon disturbance causing no lasting elevated turbidity or sedimentation beyond the ESA Action Area.

Construction activities along the beach may involve use of plastic trash or other small ingestible trash that, if inadvertently consumed can cause digestive blockage or suffocation, or if large enough, along with discarded sections of ropes and lines, may entangle marine life. Equipment spills and discharges likely consist of hydrocarbon-based chemicals such fuel oils, gasoline, lubricants, hydraulic fluids, and other toxicants, which could expose protected species to toxic chemicals. Depending on the chemicals and their concentration, exposure could result in a range of effects, from avoidance of an area to death. Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the marine environment.

Construction of the precast concrete seawall will replace the existing seawall within the ESA Action Area. The precast concrete seawall is designed to prevent erosion of terrigenous sediments into the ocean which would benefit sea turtles by improving water quality. Direct impacts from beach loss are not anticipated because turtles do not nest or bask in the Action Area.

Potential effects to sea turtles that could result from implementation of the proposed action will be avoided and/or minimized using the BMPs listed in Attachment 1. USACE anticipates that sea turtles, in general would avoid the ESA Action Area during the daytime in response to increased human presence and elevated noise levels during construction. Should sea turtles approach the work area, their speed is considerably reduced on land and visibility on land by on-site personnel is uninhibited, allowing for construction activities to either halt immediately or adjust to avoid direct impacts to sea turtles.

Based on the anticipated low presence of green sea turtle in the action area, the implementation of BMPs requiring soft starts, safe operating distances and heightened vigilance within the ESA Action Area, USACE anticipates the proposed action would not result in direct impacts to or loss of individual green or hawksbill turtles, nor would project activities be expected to reduce habitat availability or degrade such habitat so that it becomes unsuitable at a magnitude or duration that could substantially affect the species population.

5.1.2 Coral and Giant Clams

Direct impacts to these marine species include direct physical impact with heavy machinery or humans. Physical damage on coral reefs is often associated with the breakage or dislodging of coral colonies but can also manifest itself less severely (e.g., tissue abrasion). Physical damage that reduces coral cover reduces ecological productivity and protection for other reef species including giant clams, increases

opportunity for colonization by invasive algae, reduces resiliency to climate change and increases vulnerability to further physical damage.

Fast growing scleractinian "stony" corals, such as branching *Acropora spp.* are particularly vulnerable to physical damage because their carbonate skeletons are less dense and relatively brittle compared to slow growing massive corals. However, this characteristic is actually beneficial to corals. Fragmentation is an extremely important mode of distribution and reproduction for many reef building corals, often allowing them to become locally dominant (Highsmith 1982). Clams have similar life stages and habitat preferences to coral and suffer similar effects, though clams are not always found in association with coral (82 FR 28946).

Direct physical impacts to coral and clams from the Proposed Action would be avoided through implementation of the BMPs in Attachment 1. Appropriate BMPs for the ESA-listed corals should be sufficient to prevent harm or harassment to the giant clams.

Based on a recent survey by NMFS of the ESA Action Area, the ESA Action Area is absent of ESA-listed clams and coral species, with the closest coral colony 100 meters away from the seawall (NMFS 2023). Accordingly, the project would have no direct impact to ESA-listed corals and clams within the ESA Action Area.

5.2 Sediment Erosion/Accretion

The Precast Concrete Seawall would be constructed within the existing seawall footprint along and maintain the contours of the existing beach profile. Repairing the wall would prevent imminent erosion of landside sediments into the ocean upon damage to the existing seawall. Thus, USACE does not anticipate substantial or permanent exacerbation of erosion of soils or loss of topsoil in the long term.

5.3 Discharge of pollutants

Construction activities along the shoreline involving the use of heavy machinery have the potential for inadvertent spills and discharges that may consist of hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could spread into the marine environment and expose protected species to toxic chemicals. Oil globules can adhere to coral tissue and soluble oil components can be absorbed from the water column by coral polyps (Van Dam 2011). Effects on coral colonies include mortality, tissue death, reduced growth, impaired reproduction, bleaching, reduced photosynthetic rates, and decreased cellular lipid content which is correlated with coral fitness. Spills occurring near or at peak reproductive season (e.g., summer spawning months for most jurisdictions in the Western Pacific Region) could adversely affect an entire year of reproductive effort because coral gametes and eggs are buoyant, potentially bringing them into direct contact with floating oil. Chemical spills into the ocean can also indirectly impact sea turtles by affecting mobility and respiration and by degrading the turtles' food source.

Site preparation and excavation for the precast concrete seawall could result in indirect impacts to protected resources through the inadvertent exposure or discharge of

excavated native subsurface soil and sediments into tidally influenced areas. Release of terrigenous sediments such as silt, clay and organic matter can elevate turbidity levels within and beyond the ESA Action Area through ocean circulation. These fine grain sediments are more easily suspended and take longer to settle out than coarse grain sand and cobble, which settles almost immediately. The impact of sedimentation or settling of sediments on coral reefs, depends upon the thickness of the sediment layer and duration of coverage resulting in reduced photosynthesis and diverting energy away from lifecycle activities to sloughing and mucous production and on the extreme end, bleaching and death. Death of native biota can be followed by opportunistic proliferation of invasive species disrupting the balanced ecosystem. Elevated turbidity for extended periods of time reduces solar irradiation affecting photosynthetic organisms and can reduce visibility in the water column for visual foragers and increase vulnerability of prey.

Through best management practices (Attachment 1), hydrocarbons would not affect any listed species during construction. No dive boats or other seacraft will be used, so no hydrocarbon spills occurring from these sources would occur. No refuse or matter of any kind (including trash, garbage, oil, and other liquid pollutants) would be discharged because of project activities.

6. Effects of the Action

Effects on ESA-listed species were considered adverse if implementation of the proposed Project would result in any of the following (Table 4):

- Substantial loss of a T&E species.
- Reduction of habitat availability or degradation of habitat suitability of a magnitude and/or duration that could substantially affect a T&E species population.
- Substantially interfere with the movement of any migratory T&E species.
- Introduction of or contribution to the substantial spread of an invasive species, pests or diseases that would threaten a T&E species.
- Any effect that was not considered discountable (extremely unlikely to occur), insignificant (size of the impact should never cause take), or beneficial (contemporaneous positive effects without any adverse effects)

In consideration of the potential impacts described in Section 5, USACE has considered whether or not such impacts may affect and are likely or not likely to adversely affect ESA-listed species i.e., effects that are not discountable, insignificant or wholly beneficial. Additionally, USACE considered whether or not the proposed action would result in the destruction or adverse modification of critical habitat i.e., alterations that adversely modify any of those physical or biological features that were the basis for determining the habitat to be critical.

When considering the effect, the proposed action would have on the Hawksbill sea turtle and Green sea turtle, USACE evaluated both direct and indirect impacts to sea turtles both in water and on land. In-water construction activities would be limited to the intertidal zone for site preparation purposes, if determined necessary at all, with no impediment to visual monitoring to ensure avoidance of direct impacts to sea turtles in water. Construction activities on the beach will have no impediment to visual monitoring coupled with daily surveys to ensure no direct impacts to sea turtles on land. Direct impacts to sea turtles in the water and on land are expected to be discountable. The indirect impacts of beach erosion and potential for loss of suitable nesting habitat is minimal as the precast concrete seawall will be constructed higher up on the beach profile and is surrounded by suitable habitat known for nesting. The indirect impacts to sea turtles from impaired water quality and exposure to construction debris and wastes, through implementation of BMPs will be insignificant. **Accordingly, USACE has determined that the proposed action may affect, but is not likely to adversely affect ESA-listed sea turtles.**

Through implementation of BMPs, impacts to the marine environment, substrate, and water column will be minimal. The discrete nature of the limited scope of the proposed action in replacing the existing seawall will ensure no chronic inputs or modification to the marine environment. Accordingly, USACE has determined the proposed action would neither destroy or adversely modify proposed marine critical habitat for Green Sea Turtle (Central West Pacific DPS).

When considering the effect, the proposed action would have on the coral *Acropora globiceps*, USACE understands that the ESA Action Area is absent of any listed species and that the nearest ESA-listed species occurs approximately 100 meters offshore of the ESA Action Area therefore, USACE does not anticipate this species to be directly affected by the proposed action. However, although in-water work will be minimal, the ESA Action Area minimally includes the intertidal area fronting the shoreline and provides a means of conveying project generated turbidity, wastes and discharges to the marine environment. Indirect impacts to water quality may affect listed corals near the ESA Action Area, specifically, *Acropora globiceps*, however, USACE anticipates that due to the work being sited predominately on land and through implementation of BMPs listed at Section 2.2, such adverse impacts are expected to be both insignificant and discountable. **Accordingly, USACE has determined that the proposed action may affect, but is not likely to adversely affect *Acropora globiceps*.**

When considering the effect, the proposed action would have on giant clams, USACE understands that the ESA Action Area is absent of any listed species and no giant clams were observed during NMFS surveys in 2023, therefore, USACE does not anticipate these species to be directly affected by the proposed action. However, although in-water work will be minimal, the ESA Action Area minimally includes the intertidal area fronting the shoreline and provides a means of conveying project generated turbidity, wastes and discharges to the marine environment. Indirect impacts to water quality may affect listed giant clams near the ESA Action Area, however, USACE anticipates that due to the work being sited predominately on land and through

implementation of BMPs listed at Section 2.2, such adverse impacts are expected to be both insignificant and discountable. **Accordingly, USACE has determined that the proposed action will not affect giant clams**.

Table 4: Summary of Effects on ESA-Listed Species potentially present on or in the vicinity of the ESA Action Area.

Common Name	Scientific Name	Status	Effect
Sea Turtles			
Green sea turtle	*Chelonia mydas*	Endangered	NLAA
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	NLAA
Marine Invertebrates			
small-polyp stony coral	*Acropora globiceps*	Threatened	NLAA
Giant Clam	*Tridacna derasa* *Tridacna squamosa* *Tridacna gigas* *Hippopus hippopus*	Proposed for listing in 2024	No Effect
Key: NLAA = Not likely to adversely affect.			

7. Conclusions

In conclusion, USACE has determined the following for the Proposed Action:

- The proposed Project may affect, but is not likely to adversely affect, ESA-listed sea turtles, corals, giant clams, tree snails, and bats. In general, direct impacts to listed coral and clam species would not occur or are highly unlikely.

8. Literature Cited

Bevacqua, Robert F., and Ross H. Miller. 2020. Agroforestry on Guam: Breadfruit Cultivation. Western Pacific Tropical Research Center December 2020. https://www.uog.edu/_resources/files/wptrc/Bread_Fruit_Final.pdf

Burdick, David, Valerie Brown, and Roxanne Miller. 2019. report of the Comprehensive Long-term Coral Reef Monitoring at Permanent Sites on Guam project. University of Guam Marine Laboratory.

Flores, Jacqueline, Island Team Manager - Mariana Islands, U.S. Fish and Wildlife Service – Ecological Services, Pacific Islands Fish and Wildlife Office; personal communication via email March 16, 2022.

Gaos, A.R.; S. L. Martin; T.T. Jones. 2020. SEA TURTLE TAGGING IN THE MARIANA ISLANDS TRAINING AND TESTING (MITT) STUDY AREA PROGRAMMATIC REPORT. NOAA, NMFS, PIRO, Honolulu, Hi.

Guam Coastal Management Program. 2011. PROCEDURES GUIDE FOR ACHIEVING FEDERAL CONSISTENCY WITH THE GUAM COASTAL MANAGEMENT PROGRAM https://bsp.guam.gov/wp-bsp-content/uploads/2021/02/Federal-Consistency-Guidebook.pdf

Kerr, A. M. A. K. Miller, C. Brunson, and A. M. Gawel. 2017. Commercially Valuable Sea Cucumbers of Guam Results of a Stock Assessment. A Report Prepared for the Director, Department of Agriculture and Wildlife Resources, Territory of Guam, USA. University of Guam Marine Laboratory. Technical Report 162. May

Maynard, J., Johnson, S.M., Burdick, D.R., Jarrett, A., Gault, J., Idechong, J., Miller, R., Williams, G.J., Heron, S.F., Raymundo, L. 2017. Coral reef resilience to climate change in Guam in 2016. NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 29, 51 pp. https://www.coris.noaa.gov/activities/guam_coral_resilience/

NMFS. 1998. Recovery Plan for U.S. Pacific Populations of the Green Turtle (Chelonia mydas). January 12, 1998. https://www.fisheries.noaa.gov/resource/document/recovery-plan-us-pacific-populations-green-turtle-chelonia-mydas

NMFS. 2015. 15 Indo-Pacific Coral Species Recovery Outline. June 22, 2015. https://www.fisheries.noaa.gov/resource/document/15-indo-pacific-coral-species-recovery-outline

NMFS. 2022. Records of ESA-listed Coral Species in U.S. Pacific Islands Waters and Application to Critical Habitat. June 2022, NMFS Pacific Islands Regional Office, Honolulu, HI.

NMFS. 2023a. A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam. July 13, 2023.

NMFS. 2023b. RE: Request for Informal ESA Consultation and Conference on an emergency shoreline protection project for East Hagatna, Guam. (I-PI-23-2208-DG, PIRO-2023-02285). October 18, 2023.

NMFS. 2023c. Response USACE Shoreline Protection Project 508.

NMFS. 2023d. Recovery Status Review for 15 Species of Indo-Pacific Reef-building Corals Listed under the Endangered Species Act. July 2023, Pacific Islands Regional Office NOAA National Marine Fisheries Service https://www.fisheries.noaa.gov/resource/document/recovery-status-review-15-species-indo-pacific-reef-building-corals

NMFS. 2023e. Critical Habitat Information Report: Appendix A Records of ESA-listed Coral Species in U.S. Pacific Islands Waters And Application to Critical Habitat. https://www.fisheries.noaa.gov/s3/2023-11/04-Appendix-A-coral-critical-habitat-report-202311-final.pdf

NMFS. 2023f. Endangered and Threatened Species; Designation of Critical Habitat for Five Species of Threatened Indo-Pacific Corals. Federal Register 88(229): 83644-83691. https://www.regulations.gov/document/NOAA-NMFS-2016-0131-0070

NMFS. 2024. Species Directory: Acropora globiceps. https://www.fisheries.noaa.gov/species/acropora-globiceps-coral/overview

NOAA Fisheries. 2015. Listed Corals in the Indo-Pacific: Acropora globiceps. https://media.fisheries.noaa.gov/dam-migration/acropora-globiceps-coral-report-508.pdf

NOAA. 2005. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, Guam and the Northern Mariana Islands Atlas. August 2005. https://www.fisheries.noaa.gov/inport/item/46673 Map ES12.

Quitugua, Jeffrey S. 2022. Jeffrey.Quitugua@doag.guam.gov, Technical Guidance Section, Guam Department of Agriculture, Division of Aquatic and Wildlife Resources personal communication via email March 16, 2022

Raymundo LJ, Burdick D, Hoot WC, Miller RM, Brown V, Reynolds T, Gault J, Idechong J, Fifer J, Williams A. 2019. Successive bleaching events cause mass coral mortality in Guam, Micronesia. Coral Reefs 38:677–700. https://link.springer.com/article/10.1007/s00338-019-01836-2

Schrader, A. Endangered Species Biologist, Contractor with Lynker in support of NOAA Fisheries Southeast Regional Office, U.S. Department of Commerce; Personal communication April 12, 2022.

Terlaje, M. J. 2024. Subject: RE: Listed Tree Snails Questions for Agat Project. Tuesday, June 18, 2024 4:55:10 PM.

USACE and NMFS. 2022. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES).

USACE and NMFS. 2022b. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES)

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USFWS. 1992. Draft Fish and Wildlife Coordination Act Report. U.S. Department of the Interior, Fish and Wildlife Service, Pacific Islands Office.

USFWS. 2010. Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanihi (Pteropus mariannus mariannus). https://ecos.fws.gov/docs/recovery_plan/100330.pdf

USFWS. 2020. Mariana fruit bat, Fanihi (Pteropus mariannus mariannus) 5 year review. https://ecos.fws.gov/docs/tess/species_nonpublish/3210.pdf

USFWS. 2022a. Draft Recovery Plan for 23 Species in the Mariana Islands. November 10, 2022. https://ecos.fws.gov/docs/recovery_plan/SIGNED%20-%20Mariana%20Islands%20dRP%20(20221129).pdf

USFWS. 2022b. Best Management Practices For Work In or Around Aquatic Environments. https://www.fws.gov/sites/default/files/documents/Best%20Management%20Practices%20For%20Work%20In%20or%20Around%20Aquatic%20Environment-April%202022.pdf. April 2022

USFWS. 2023. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Green Sea Turtle. A Proposed Rule by the Fish and Wildlife Service on 07/19/2023.

USFWS. 2023a. DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands. August 3, 2023.

USFWS. 2023b. DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands. August 2023.

USFWS. 2023c. Migratory Bird Protections in Guam.

USFWS. 2023d. Subject: Informal Section 7 Consultation: East Hagatna Emergency Shoreline Protection. November 2, 2023. Attachment 2f, Appendix A-3, East Hagatna IFR/EA.

USFWS. 2024a. Fragile tree snail (Samoana fragilis). https://ecos.fws.gov/ecp/species/4835

USFWS. 2024b. Guam Tree Snail. https://ipac.ecosphere.fws.gov/project/EG45PBY7WZFJJAR4RTUFKXPA7A/resources

USFWS. 2024c. Humped Tree Snail. https://ecos.fws.gov/ecp/species/61

Williams, T. C. and M. Ying. 1990. A Comparison of Radar Observations of Bird Migration at Haizhou Bay, China, and Guam, Marianas. The Auk, Vol. 107, No. 2 (Apr., 1990), pp. 404-406. https://www.jstor.org/stable/4087627.

Williams, T. C., and J. M. Williams. 1988. Radar and visual observations of autumnal (southward) shorebird migration on Guam. Auk 105:460-466.

DRAFT

2k. NMFS Concurrence

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

July 22, 2025

Civil and Public Works Branch
Programs and Project Management Division

Ms. Dawn Golden
Protected Resources Division, NOAA Fisheries, U.S. Department of Commerce
1845 Wasp Blvd., Bldg 176, Room 2884
Honolulu, HI 96818

RE: Request for Informal ESA Consultation and Conference on an emergency shoreline protection project for East Hagatna, Guam. (I-PI-23-2208-DG, PIRO-2023-02285)

Dear Ms. Golden:

This letter is to inform you that the Honolulu District, U.S. Army Corps of Engineers (USACE) has revised the tentatively selected plan for emergency shoreline protection measures along Hagatna Bay at East Hagatna, U.S. Territory of Guam. Following internal USACE project reviews and discussions with the Government of Guam, we have modified our design from a 2,100 linear-foot rock revetment to a 1,630 linear-foot precast concrete seawall. We initiated informal consultation with your office on September 11, 2023, for the original plan. Due to the change in the proposed action, we would like to reinitiate informal consultation for the revised tentatively selected plan, i.e., proposed action, that may affect threatened and endangered species pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.).

The proposed action consists of replacing approximately 1,630 linear feet of the existing, compromised seawall with a precast concrete seawall. The top crest elevation needed for the design to meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to the intermediate 100-year SLC scenario is 8.5 feet above Mean Sea Level (MSL), approximately 0.5 feet higher than the existing seawall. The seawall will be approximately 1 foot wide, with the total disturbed area estimated at 20 feet seaward and 20 feet landward along the length of the seawall for site preparation, demolition, upland excavation, and backfill. At this time, construction of project features will be predominately upland of the seawall with limited and temporary work occurring in the intertidal zone for site preparation.

USACE previously initiated informal consultation with the National Marine Fisheries Service (NMFS) for the original 2,100 linear foot revetment on September 13,

2023. NMFS concurred with our assessment of not likely to adversely affect on October 12, 2023.

As documented in the attached Biological Evaluation, USACE evaluated the potential effects of the proposed action on threatened and endangered species and designated critical habitat within the ESA Action Area. A summary of the species, listing status, and effect determination is provided in the table below.

Table 1. Species and critical habitat protected under the ESA potentially present within the ESA Action Area and under NMFS jurisdiction.

Common Name	Scientific Name	Status	Effects Determination	Request
Giant clam	Tridacna derasa Tridacna gigas Hippopus hippopus	Endangered Threatened	NLAA	Conference on Proposed Listing, Letter of Concurrence
Small-polyp stony coral	Acropora globiceps**	Threatened	NLAA	Informal Consultation and Conference on Proposed Critical Habitat, Letter of Concurrence
Green sea turtle, Central South Pacific Distinct Population Segment (DPS)	Chelonia mydas	Endangered	NLAA	Informal Consultation and Conference on Proposed Critical Habitat, Letter of Concurrence
Hawksbill sea turtle	Eretmochelys imbricata	Endangered	NLAA	Informal Consultation, Letter of Concurrence

The enclosed biological evaluation contains the following information recommended for inclusion in a biological assessment pursuant to 50 CFR 402.1-2(f):

(1) The results of an on-site inspection of the area affected by the action to determine if listed or proposed species are present or occur seasonally.

(2) The views of recognized experts on the species at issue.

(3) A review of the literature and other information.

(4) An analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies.

(5) An analysis of alternate actions considered by the Federal agency for the proposed action.

As concluded in the biological evaluation, the Corps has determined that all impacts to the hawksbill and green sea turtles and the coral *Acropora globiceps* would be either insignificant or discountable and accordingly the proposed action may affect but is not likely to adversely affect these listed sea turtles and corals. Pursuant to Section 7 of the ESA, the Corps requests your concurrence on this determination and conferencing for the proposed green sea turtle and coral critical habitat, and proposed listing of giant clams.

Completing consultation in this feasibility phase based on currently available engineering and environmental information will allow USACE to proceed into the design and construction phase. If approved by our agency to move into the next phase, the design for the seawall will be further developed in consideration of and incorporating the avoidance and minimization measures discussed in consultation with NMFS for impacts to ESA. USACE understands that should the proposed action change substantially relative to the assessed effects to ESA, USACE will evaluate the need to reinitiate consultation with NMFS at that time.

Thank you for your attention to this matter. Should you have any questions regarding the proposed action, please contact Ms. Marian Dean of my staff at (808) 379-8223 or via email at Marian.Dean@usace.army.mil.

Sincerely,

MACINNES.ANDREW.DOUGLAS.1368729082

Digitally signed by MACINNES.ANDREW.DOUGLAS.1368729082
Date: 2025.07.22 13:12:11 -10'00'

Andrew D. MacInnes
Acting Chief, Civil/Public Works Branch
Honolulu District

Enclosure

DRAFT

Attachment 3. MSA / EFH Consultation

**Technical Assistance Request to NMFS is part of Attachment 1b.*

3a. Draft EFH Evaluation

3b. NMFS Concurrence Letter

DRAFT

3a. 2023 September 13 EFH Evaluation

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT ASSESSMENT

EAST HAGATNA CAP SECTION 14 EMERGENCY SHORELINE PROTECTION PROJECT

East Hagatna, Guam

*Email EFH to Steven McKagan - NOAA Federal ***steven.mckagan@noaa.gov*** and Jonathan Brown - NOAA Federal ***jonathan.brown@noaa.gov*** at NMFS PIRO Habitat Conservation Division.

Action Agency:	Honolulu District, U.S. Army Corps of Engineers
Federal Action:	Construction of shoreline protection at East Hagatna, Guam
Consulting Agencies:	National Marine Fisheries Service Pacific Islands Regional Office Protected Resources Division & Habitat Conservation Division United States Fish and Wildlife Service Pacific Islands Fish and Wildlife Office

Honolulu District
U.S. Army Corps of Engineers

1

3a. (cont.) Draft EFH Evaluation

CONTENTS

1. INTRODUCTION 2

1.1 PROJECT PURPOSE AND NEED 3

2. DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA 6

2.1 DESCRIPTION OF THE PROPOSED ACTION 6

2.1.1 Alternative Analysis 7

2.3 CONSERVATION MEASURES 8

2.3.1 Species Protections 8

2.3.2 Pollution Prevention 10

2.3.3 Erosion Control 12

2.3.4 Habitat Restoration 12

2.3.5 EFH BMPs 13

2.3 DESCRIPTION OF THE STUDY AREA AND PROPOSED ACTION AREA 13

3. ESSENTIAL FISH HABITAT IN THE ACTION AREA 16

4.0 POTENTIAL IMPACTS 18

4.1 DIRECT IMPACTS 18

4.3 INDIRECT AND LONG-TERM PHYSICAL IMPACTS 18

4.3.1 Sediment Erosion/Accretion 18

4.3.2 Discharge of pollutants 18

5.0 EFFECTS DETERMINATION AND CONCLUSIONS 20

6. CUMULATIVE EFFECTS 20

7.0 CONCLUSIONS 21

8.0 LITERATURE CITED 21

1

3a. (cont.) Draft EFH Evaluation

1. Introduction

The Emergency Shoreline Protection Project at East Hagatna is being developed as a cost-shared effort between the Honolulu District, U.S. Army Corps of Engineers (USACE) and the Government of Guam, represented by the Guam Department of Public Works (DPW). This emergency shoreline protection feasibility study is authorized under Section 14 of the Flood Control Act of 1946 (Public Law 79-525), as amended. The project will provide emergency shoreline protection from coastal erosion to South Marine Corps Drive and public utilities in the area. The project area includes the west central coast of Guam in Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and Trinchera Beach Park.

Note that while the project will take place on Guam, due to the location of USACE staff in Alaska and Hawaii, dates throughout the Integrated Feasibility Report and Environment Assessment, including appendices, are given for Hawaii standard time, not Guam time.

Approximately 2,100 feet (ft) of South Marine Corps Drive is at imminent risk of failure due to storm surge and wave attack. An existing seawall constructed between the shoreline and the main thoroughfare in the study area is threatened by shoreline erosion and is experiencing severe undercutting, leaving South Marine Corps Drive vulnerable to increased future damage. The proposed project consists of replacing approximately 2,100 linear ft of existing, compromised seawall with a rock revetment. The top crest elevation needed for the design to meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC under the intermediate scenario is 9ft above Mean Sea Level (MSL), approximately 1 ft higher than the existing seawall. The revetment will be approximately 17 ft wide, constructed parallel to the shoreline and extending seaward.

To that end, USACE has prepared a Draft Integrated Feasibility Report and NEPA Document (IFR/NEPA) for the East Hagatna, Guam - Continuing Authorities Program (CAP), Section 14 Emergency Shoreline Protection project (Proposed Action/Federal Action) pursuant to Engineering Regulation 1105-2-100 and the National Environmental Policy Act (NEPA). The IFR/NEPA identifies, evaluates, and discloses all impacts that would result from the implementation of either of several potential alternatives, including the “No Action” alternative (i.e., Future Without Project Condition, modelled under 50 years of different climate change projections), designed to provide emergency shoreline protection within the study area.

The purpose of this Evaluation is to address the effect of the East Hagatna Emergency Shoreline Protection Project on Essential Fish Habitat established under the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. ch. 38 § 1801 et seq.).

Early coordination and pre-consultation with National Marine Fisheries Service (NMFS), on essential fish habitat was conducted during a coordination workshop with NMFS,

National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), United States Environmental Protection Agency (USEPA); and Guam Division of Aquatic and Wildlife Resources (GDAWR) on 14 June 2022 (HST).

1.1 Project Purpose and Need

The purpose of the Proposed Project is to replace the existing, compromised seawall with a rock revetment along approximately 2,100 linear ft of shoreline along South Marine Corps Drive in East Hagatna, Guam.

Guam is in an area of the Pacific Ocean that has a high risk for tropical storms and typhoons, and the low-lying coastline of East Hagatna is subject to frequent storm wave attack. Large storm events and associated high waves and storm surge has caused significant erosion, undermining the existing seawall. The existing seawall is not anchored into the limestone foundation and instead, sits atop the ground surface, leaving it vulnerable to wave attack. Continual undermining of the seawall has put South Marine Corps Drive and public utilities in the immediate vicinity of the study area at imminent risk of damage. In some places, less than 20 ft of shoreline separates the road from the beach. Future sea level rise will continue to exacerbate this condition and accelerate the rate of erosion and damage.

South Marine Corps Drive is a major arterial roadway that extends approximately 22 miles from Andersen Air Force Base in Yigo on the northeastern corner of the island down to Naval Base Guam in Santa Rita in the central western area of the island. Both military bases play a vital role in regional and national security. Closure of South Marine Corps Drive or significant traffic delays would result in impacts to the U.S. Military's ability to prepare for and respond to a crisis in the region.

Additionally, South Marine Corps Drive connects numerous island villages on the west side of the island including the capital city of Hagatna. Guam Department of Public Works traffic counts indicate an average of 51,000 vehicles pass through the section of road at risk daily. Damage to the road and public utilities beneath it would delay the southern villages' access to essential services such as hospitals and emergency responders, thereby resulting in health and safety risks, as well as a significant disruption to Guam's economy.

The most critical problem in the study area is the imminent failure of an existing seawall that would leave South Marine Corps Drive subject to heavy damage from storm surge and wave attack. Figures 1 to 3, captured by USACE Project Delivery Team (PDT) members on a site visit in January 2022, show the existing condition of the wall along Trinchera Beach and Veteran's Sunset Beach Park in the study area. The greatest damage to the existing seawall is along Veteran's Sunset Beach Park, where some sections of wall are undercut by up to 2 ft of seawater. This undercutting is already causing the seawall to crack and undermine the structural integrity of the seawall. Figure 3 shows the rocks and concrete skirt eroding out of the seawall on the eastern edge of Veteran's Sunset Beach Park. The western access staircase is in danger of collapsing into the ocean. Erosion has also dislodged some of the larger rocks from the

seawall, especially on the eastern end of Veteran's Sunset Beach Park (USACE 2022a).



Figure 1: Existing seawall on eastern edge of Veteran's Sunset Beach Park, facing southwest (USACE 2022a). The beach has eroded below the rocks and concrete skirt, causing the seawall to crack, and undermining its structural integrity.



Figure 2: Existing seawall at Trinchera Beach Park, facing northeast (USACE 2022a)

4

3a. (cont.) Draft EFH Evaluation



Figure 3: Close up view facing south of the undercut Hagatna Bay seawall (USACE 2022a)

If the existing seawall fails, South Marine Corps Drive and associated public utilities will be subject to more frequent and severe storm damage as the shoreline in the study area continues to erode. This will be exacerbated by long-term sea level rise. Heavy damage to the South Marine Corps Drive may necessitate road closure or relocation. This would result in economic loss and the potential for decreased public and emergency service provision for people who depend on the road. Without federal intervention, it is assumed that the Government of Guam will bear the full burden of protecting South Marine Corps Drive. They will be fiscally impacted by this responsibility and will likely need to repair or replace failing sections of wall in a piecemeal approach.

USACE has developed potential alternative plans for shoreline stabilization over a 50-year period of analysis (2026-2076) by identifying coastal hazards and potential structural shoreline stabilization management measures within the study area affected by coastal erosion and future changes to sea level.

USACE and the Guam DPW evaluated the results of the feasibility study and recommend Alternative 2: Rock Revetment: replacing approximately 2,100 linear ft of existing, compromised seawall with a 17 ft wide rock revetment. The revetment crest elevation of 9 ft above mean sea level (MSL) meets the USACE 50-year design requirement for sea level change (SLC) and is adaptable to 100-year SLC under the intermediate scenario at 9 ft above MSL. This alternative is considered most practicable with respect to real estate considerations, costs, and logistics as the Tentatively Selected Plan (TSP) and has been tentatively identified as the Least Environmentally Damaging Practicable Alternative and is carried forward for analysis to either confirm the TSP as the recommended plan or select a different alternative. While maximizing net benefits, it has anticipated positive impacts on nearshore water quality (e.g., by

minimizing future coastal erosion) and is supported by the Guam Government. The Guam Government supports Alternative 2 as the TSP.

The proposed Action and Action Area for this project will include an area of permanent impact required for placement of the rock revetment and an area of temporary impact for access, construction, and staging areas (COSA). These are described in detail in Section 2. Section 3 describes the listed species and habitats that could be potentially affected by the proposed Project activities, as well as an analysis of effects of the proposed Action on these species and habitats. Section 4 provides a description of the environmental baseline conditions. Section 5 provides a summary of overall effects of the proposed Action and Section 6 includes a discussion of potential cumulative effects. Section 2.2 summarizes the measures and best management practices (BMPs) that would be used to avoid and minimize impacts to the natural resources. Preparation and implementation of these BMPs would reduce the potential construction-related water quality impacts to a less-than-significant level. With implementation of these best management practices, the extent of impacts from the proposed Action are expected to be less than significant.

2. Description of the Proposed Action and Action Area

2.1 Description of the Proposed Action

This Proposed Action is the construction of a 2100 ft long by 17 ft wide (approximately 35,700 ft^2 or 0.82 acres) rock revetment (Figure 4) along the coast at East Hagatna.

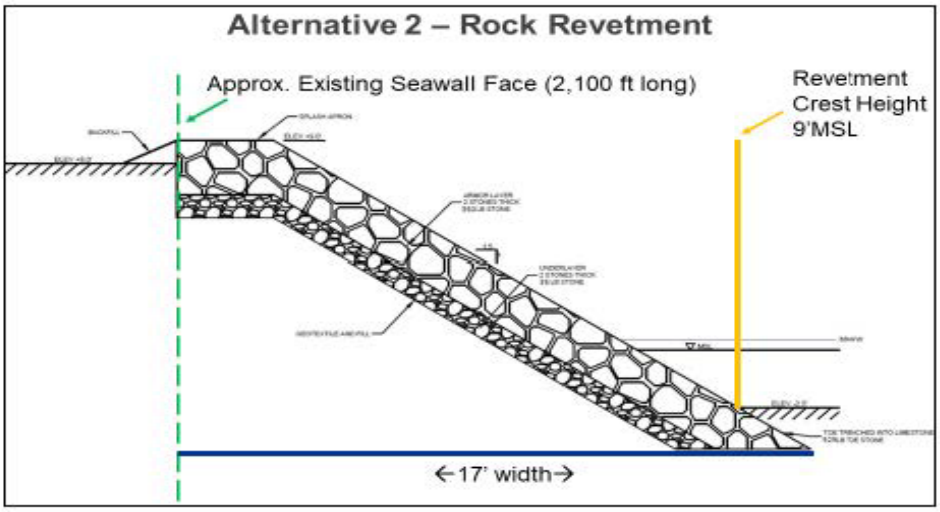


Figure 4: Alternative 2 - Rock Revetment

3a. (cont.) Draft EFH Evaluation

The base of the revetment would extend 17 feet toward the ocean from the crest of the existing seawall. The toe of the revetment would be anchored in the limestone. The revetment installation would begin with construction at the toe (-2.5 ft. MSL) and up to the crest elevation (+9ft. MSL), just 1 foot above the current highest point of 8 feet (Figure 4). The present assumption is the revetment could be constructed from the land during low tide without in-water construction. To seat the toe a small trench will need to be dug into the underlying limestone. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.

Revetments are a type of "hard" sloping coastal engineering structure that runs parallel to the shoreline to protect landward areas and infrastructure from waves, tides, currents, and storm surge (water build up above the average tide level). They can be used in areas exposed to both high and low wave energy.

The major components of the proposed revetment are the rock armor layer, filter, and toe (Figure 4). The rock armor layer is an erosion resistant material that dissipates the energy of storm waves, prevents further recession of the backshore, and provides basic protection against wave action. The filter layer supports the rock, provides for the passage of water through the structure, and prevents the underlying soil from being washed through the armor. The buried toe prevents displacement of the seaward edge of the revetment. Revetments can be constructed as carefully designed engineered structures protecting long lengths of shoreline with some permeability allowing for increased wave dissipation in the interstices of the revetment in comparison to non-permeable structures such as concrete seawalls that reflect and can accelerate wave energy radially.

2.1.1 Alternative Analysis

Relocation of the road was considered but

Soft engineering strategies (i.e., natural, and nature-based measures) such as vegetation barriers and use of beach fill were considered as potential solutions early in the planning phase of this project. However, these solutions would not be effective in reducing the effects of coastal storm damages in the proposed Action Area. Due to the high wave energy environment in the Action Area, vegetation alone

Revetments are generally considered to cause less damage to the environment than other types of structures, like vertical seawalls, because they are less prone to wave flanking and limit interference with natural sediment processes, thereby maintaining coastal stability while still allowing some natural coastal processes to occur. Natural shoreline erosion supplies adjacent stretches of coastline with sediment, through longshore sediment transport. Burial of the toe of the revetment maintains an area of shoreline sediment to participate in natural sediment transport processes.

Sloping revetments are more effective at dissipating wave energy and less subject to significant loadings because of wave impact. Smooth, vertical seawalls are the least

7

effective at dissipating wave energy; instead, the structures reflect wave energy seawards. Reflection creates turbulence, capable of suspending sediments (Bush et al. 2004), thus making them more susceptible to erosion. The problems of wave reflection and scour can be reduced to some degree by incorporating slopes and irregular surfaces such as tribar into the structure design. Slopes encourage wave breaking and therefore energy dissipation while irregular surfaces scatter the direction of wave reflection (French 2001). Pilarczyk (1990) recommends the use of maximum seawall slopes of 1:3 to minimize scour due to wave reflection. The proposed slope of the tribar revetment is 1:1.5. Scour at the foot of a sloped revetment is less of concern than at the base of a vertical seawall.

Revetments are less susceptible to erosive forces that occur in front of the structure. Seawalls, while effective at preventing erosion of the land area behind the wall, often do not stop erosion in front of the structure which affects localized sediment availability (French 2001). As a result, seawall maintenance costs can be high (Pilarczyk 1990).

The revetment is comprised of compacted fill as the foundation and base grade, a geotextile filter fabric, a double layer of underlayer stone, a double layer of armor stone, and anchoring by an oversized toe stone. At the specified 1.5H/1V slope, the revetment is expected to be 17 feet wide, extending towards the ocean, with a crest elevation of +9 ft MSL. Depending on the cost and local availability of material, this revetment could be capped with either a two-stone layer of 200 lb. armor stones or pre-cast concrete armor units. This design will meet USACE coastal engineering criteria for expected design life and adaptability to RSLC. The expected design life of this system, assuming proper installation and routine maintenance, is on the order of 50 years.

2.3 Conservation Measures

The following avoidance, minimization, and conservation measures would reduce the effects to habitats and species to less than a significant level. Incorporation of a toe at the foot of the revetment will increase the useful life of the structure. In turn, this longevity will help reduce future impacts to the beach and reef due to maintenance and repair work.

2.3.1 Species Protections

Shoreline work will be done during low tide and equipment will be operated from the upland area to minimize in water work. Construction will cease under unusual conditions such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

Construction will be scheduled for time periods which minimize conflicts with the recruitment and traditional harvest of culturally-significant reef fishes (manahac), the presence of foraging migratory birds on the inner reef flat, or peak coral spawning season (June 1 to September 30), if practicable.

3a. (cont.) Draft EFH Evaluation

Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area will be identified on project figures. Project staff will be instructed to avoid the sensitive resource areas to the greatest extent practicable, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.

Holes that might be left open overnight will be sealed each night with plywood, soil or other materials to prevent entrapment of reptiles, amphibians and small mammals.

Constant vigilance will be kept for the presence of ESA-listed marine species (sea turtles, marine mammals, sharks, rays) during all aspects of the proposed action. Competent trained observers will be designated to survey the areas adjacent to the action area for ESA-listed marine species. The competent observer will not be simultaneously engaged in any other activity.

Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour. Additional periodic surveys throughout the work day are strongly recommended.

All work shall be postponed or halted when ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work, and will only begin/resume after the animals have voluntarily departed the area.

If ESA-listed marine species are noticed within 50 meters (54.7 yards, 164 feet) after work has already begun, that work may continue only if, in the best judgement of a biologist, the activity will not adversely affect (i.e. disturb or harm) the animal(s).

Project-related personnel shall NOT conduct activities resulting in a take of an ESA-listed species, a species proposed for listing, or listed or proposed critical habitat. “Take” as defined under the ESA means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct”. Activities that would qualify as take include attempting to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.

Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area must be identified on project figures. Project staff must be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.

Before any equipment or material enters the water, a site manager will verify that no ESA-listed marine animals are in the area where the equipment or materials are expected to contact the substrate.

Equipment operators will employ “soft starts” when initiating work each day and after each break of 30 minutes or more that directly impacts the bottom. Buckets and other equipment will be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo. All objects lowered to

the bottom will be lowered in a controlled manner. This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.

In-water excavation and movement of large armor stones will not be undertaken if any ESA-listed marine animals are within 50 meters (54.7 yards, 164 feet) of the authorized work, and those operations will immediately shut-down if an ESA-listed marine animal enters within 50 meters (54.7 yards, 164 feet) of the authorized work. This condition is intended to ensure that no ESA-listed marine animals are exposed to sound levels anywhere near the TTS threshold isopleths.

The site of excavation or discharge will contain no known forage or resting habitat for ESA-listed marine species.

Observer logs. All non-take interactions with listed species (e.g. a species entering the shut-down zone and work is shut down correctly) must be documented and reported to the Corps and NMFS in monitoring logs (Table 2 in Appendix B of PacSLOPES 2022). Monitoring logs shall be completed daily. If no ESA-listed species are observed, the observer will record “0” in the daily report. All monitoring logs must be submitted to the NMFS within 90 calendar days of the completion of the project. The Corps will provide final reports to NMFS as part of the annual report. The monitoring logs will be submitted in a digital and queryable database to the NMFS reporting contact, and include:

1. total hours and dates of monitoring

2. identification of which ESA species were observed and in what location and circumstances, including date, numbers of individuals of species observed, the outcome of the species observance relative to the authorized project, and any factors which may have affected visibility,

3. if applicable, observed ESA species behaviors and movement types relative to the project activity at time of observation

If an ESA-listed species is adversely affected as a result of the project, all work must stop until coordination with the Corps and NMFS has been completed. If observers become aware of any injured, sick, or dead marine mammal or turtle (whether or not it may be related to the proposed action), they will immediately call the NOAA Statewide Hawaii Marine Wildlife Hotline at 888-256-9840. As described in Pac-SLOPES 2022.

2.3.2 Pollution Prevention

A pollution control plan for the project site and adjacent areas will be prepared and implemented and at a minimum will include:

- Proper installation and maintenance of equipment diapers, or drip pans.
- A contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials.

3a. (cont.) Draft EFH Evaluation

- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
- All project-related materials and equipment placed in the water will be free of pollutants.
- Daily pre-work inspections of heavy equipment and vessels for cleanliness and leaks, with all heavy equipment operations and vessel use postponed or halted until leaks are repaired and equipment is cleaned.
- Fueling of land-based vehicles and equipment shall take place at least 50 feet (15 meters) away from the water, preferably over an impervious surface.
- All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
- Debris and other wastes will be prevented from entering or remaining in the marine environment during the project.

Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment will not result in a discharge to any waters of the state, and will be located outside of waters of the United States in areas where accidental spills will not enter or affect such waters. All fueling of equipment will be done more than 50 feet from open water. All construction equipment will be properly tuned and maintained prior to and for the duration of onsite operations. The equipment will be checked by a certified mechanic and determine to be running in proper condition before it is operated. If construction related materials reach surface waters, appropriate spill response procedures would be initiated as soon as the incident is discovered. In addition, the Guam EPA will be notified via email and telephone within twenty-four (24) hours of occurrence.

Cover or two feet of free board space will be maintained on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that will be traveling along freeways or major roadways should be covered.

Vehicle speeds on unpaved roads will be limited to 15 miles per hour.

Site access will be treated to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.

Idling time will be minimized either by shutting equipment off when not in use or reducing the time of idling to five minutes. Clear signage will be provided that posts this requirement for workers at the entrances to the site.

Drilling and dredging will be restricted to uncontaminated areas, and any associated waste or spoils must be completely isolated and disposed of in an approved upland disposal location.

2.3.3 Erosion Control

Construction will incorporate best management practices described in the Guam 2017 Erosion and Sediment Control Field Guide, including a stormwater management plan and an erosion control plan.

Appropriate erosion control measures will be incorporated by the construction contractor in order to prevent sediment from entering waterways and to minimize temporary turbidity impacts. Examples include, but are not limited to: straw bales/wattles, erosion blankets, silt fencing, silt curtains, mulching, revegetation, and temporary covers. Sediment and erosion control measures will be maintained by the contractor during construction at all times. Control measures will be inspected periodically by the construction contractor, particularly during and after significant rain events.

All deliberately exposed soil or subsoil materials used in the project near water would be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

Silt curtains or other effective containment devices to help contain silt and other suspended particles placed in the water column as a result of excavation and construction activities will be used and properly installed to avoid degradation of adjacent coral reefs, and aquatic vegetation.

Store all dredge spoil behind maintained berms above the influence of the tides.

Temporary access roads and drilling pads must avoid steep slopes, where grade, soil types, or other features suggest a likelihood of excessive erosion or failure; existing access routes must be utilized or improved whenever possible, in lieu of construction of new access routes.

The maximum amount of material placed shall not exceed the minimum needed for erosion protection. All material will be placed in a manner that will avoid erosion by normal or expected high flows.

2.3.4 Habitat Restoration

All tree felling or limbing will be conducted under the supervison of a certified arborist or licensed forester.

All disturbed areas will be immediately stabilized following cessation of activities for any break in work longer than 4 days.

Temporary fills must be removed in their entirety.

All removed trees will be replaced with appropriate species for the particular location. Large trees, greater than 2-inch diameter at breast height, will be used as much as possible based nursery on availability. All areas impacted by construction must be stabilized and revegetated with native species as appropriate. Clearing will be confined to the minimal area necessary to facilitate construction activities, while all bare areas

will be reseeded and maintained until grass/vegetative cover is established. All areas will be cleaned of any trash and debris and returned, as close as possible, to the condition prior to initiation of project activities.

2.3.5 EFH BMPs

Upon completion of all activities, all project materials shall be removed, and all areas temporarily impacted by construction activities shall be fully restored to their pre-construction conditions.

If anchoring on the seafloor is necessary, then anchors must be placed exclusively in soft sediments. Anchors and anchor components must cause no direct physical impact to corals. Anchor and anchorline footprints of all in-water equipment must be designed to occupy the smallest footprint necessary to achieve safe and effective anchorage.

The construction work plan and all other environmental-compliance related plans i.e., stormwater management, pollution control, must include a contingency planning that details progressive, action-specific, risk-informed responses to faulty equipment, spills, and inadvertent discharges.

If in-water work is required, in-water sediment containment devices must be used to contain project generated turbidity and prevent spread beyond the active work area. Sediment containment devices must be inspected with adequate frequency to minimize potential failure and ensure proper use and installation throughout construction. If a turbid plume is emitted from the enclosure, work must stop until the source is identified and corrected.

2.3 Description of the Study Area and Proposed Action Area

Guam is located in the North Pacific Ocean between the Commonwealth of the Northern Mariana Islands (to the north) and the Federated States of Micronesia (to the south), as shown in the inset map of Figure 5.

3a. (cont.) Draft EFH Evaluation



Figure 5: Guam location map with study area

The East Hagatna Emergency Shoreline Protection study area encompasses a 2,100 ft long stretch of Trinchera Beach along Hagatna Bay, which runs parallel to South Marine Corps Drive (also referred to as Highway 1), a main transportation corridor of the island. In some places, less than 20 ft of shoreline separates the road from the beach. The project extent is bounded on the western end by a strip mall parking lot that has an access ramp through the seawall down to the beach, and centers on the Veteran's Sunset Beach Park. Upland of the eastern extent of the project area is the Antonio B. Won Pat International Airport.

The study area includes 2,100 linear ft of existing seawall situated parallel to and between the Hagatna Bay shoreline and South Marine Corps Drive (Figure 5). The project footprint may extend as far as 20 ft seaward from the existing seawall, 30 ft inland of the existing seawall, and 5 ft down into the limestone subgrade. The existing seawall height ranges from approximately 7.5 to 8.9 ft above MSL and is composed of large volcanic rocks cemented together, likely built after a 1993 USACE feasibility study

3a. (cont.) Draft EFH Evaluation

for the project area. The study area encompasses the ESA Action Area within which USACE is evaluating the effects of the proposed action on ESA listed species and designated critical habitat.

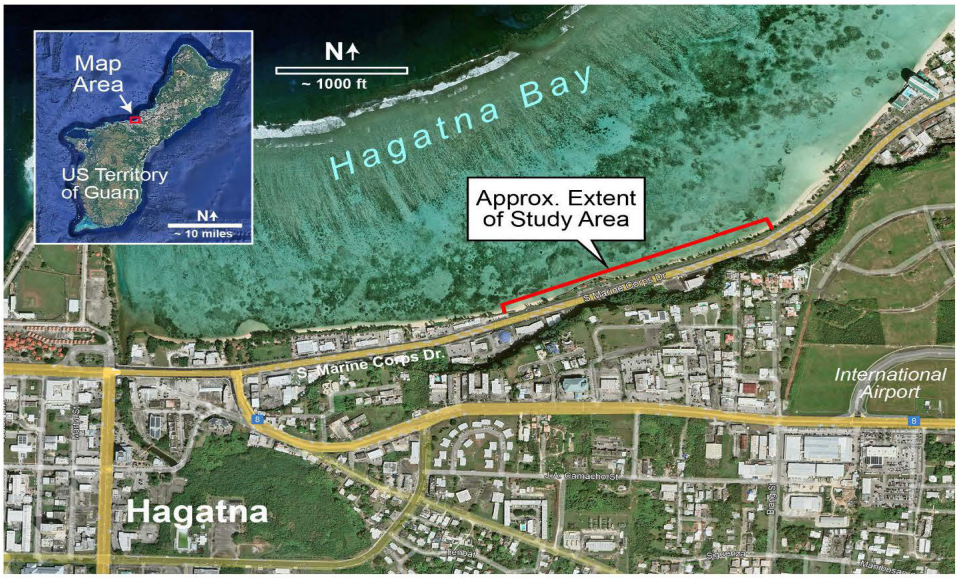


Figure 6: Approximate extent of the project area along Hagatna Bay.

Hagatna Bay is surrounded by dense residential, commercial, and military development. The low-lying shoreline is bounded to the south by a high cliff inland of South Marine Corps Drive. A strip of small commercial establishments is located between South Marine Corps Drive and the cliff (USACE 1993).

The ESA Action Area is 30 feet inland from the existing seawall to 20 feet seaward of the existing seawall, as depicted in Figure 7 and includes on staging area on an existing parking lot. The habitat within the Action Area is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock, supporting no obvious aquatic communities. NMFS surveys in November 2022 confirmed previous observations (USFWS 1992, NOAA 2005) that the intertidal region within 20 ft of the wall is predominantly sand and does not contain live coral, other macroinvertebrates, seagrasses or fish. Sparse seagrass, macroalgae and fish occur beyond 20 ft. from the existing seawall where the depth reaches 1 ft. The depth is shallow, approximately 1 foot, for several hundred ft from the existing seawall (NMFS 2023).

3a. (cont.) Draft EFH Evaluation



Figure 7: Proposed Project Action Area: The proposed active construction and staging area are indicated in black. The project area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. Rock Revetment Footprint. Redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, May 31, 2022.

Because work will occur in the water, it has the potential to impact the following ESA-listed species that occur in the area: Central West Pacific Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*), the coral *Acropora globiceps,* and their habitat. The endangered Mariana Fruit Bat *(Pteropus mariannus mariannus)* has been observed passing through the upland area where work will also occur.

Table 1: Proposed Action Area Dimensions

Impact	Area	Height	Width	Length	Surface Area
Permanent	Beach/Intertidal Construction Area	10 ft	17 ft	2100 ft	0.82 ac
Temporary	Intertidal Toe Trenching	-2.5 ft	3 ft	2100 ft	0.14 ac
Temporary	Upland Backfill and Staging Area	10 ft	30 -50 ft	2100 ft	1.45 ac

3. Essential Fish Habitat in the Action Area

The water column from the shoreline to EEZ, and from the surface to 1000 m and all bottom habitat from the shoreline to a depth of 400 m (200 fm) around the islands of

3a. (cont.) Draft EFH Evaluation

Guam are designated as EFH by the Western Pacific Fishery Management Council and NMFS and support various life stages for the management unit species (MUS) identified under the Mariana Bottomfish Fishery Ecosystem Plan. The MUS and life stages found in these waters include eggs, larvae, juveniles, and adults of American Samoa Bottomfish and Pelagic Fisheries (WPFMC 2009).The NMFS EFH Mapper was accessed on April 19, 2022 for the area within and surrounding East Hagatna Harbor. While Hagatna Bay is part of the Guam Bottomfish EFH and Mariana Islands Coral Reef Ecosystem EFH, it does not contain any Habitat Areas of Particular Concern (HAPC) or EFH Areas Protected from Fishing (EFHA) (Figure 6).

Guam bottomfish management unit species (MUS) means the following fish:

Local name	Common name	Scientific name
lehi/maroobw	red snapper, silvermouth	*Aphareus rutilans*
tarakitu/etam	giant trevally, jack	*Caranx ignobilis*
tarakiton attelong, orong	black trevally, jack	*Caranx lugubris*
bueli, bwele	lunartail grouper	*Variola louti*
buninas agaga', falaghal moroobw	red snapper	*Etelis carbunculus*
abuninas, taighulupegh	red snapper	*Etelis coruscans*
mafuti, atigh	redgill emperor	*Lethrinus rubrioperculatus*
funai, saas	blueline snapper	*Lutjanus kasmira*
buninas, falaghal-maroobw	yellowtail snapper	*Pristipomoides auricilla*
buninas, pakapaka, falaghal-maroobw,	pink snapper	*Pristipomoides filamentosus*
buninas, falaghal-maroobw	yelloweye snapper	*Pristipomoides flavipinnis*
	pink snapper	*Pristipomoides seiboldii*
buninas rayao amariyu, falaghal-maroobw	flower snapper	*Pristipomoides zonatus*

EFH for the Marianas FEP extends through the water column from the shoreline to EEZ, and from the surface to 1000 m deep and includes all bottom habitat from the shoreline to a depth of 400 m (200 fm) (WPFMC 2018).

In terms of substrate EFH, soft beach substrate that is periodically covered by normal high tide is the primary habitat type and comprises approximately 67% of the of the proposed Action Area (includes unconsolidated sediments, e.g., sandy beach, rubble, and scattered boulders). Seaward of the project footprint, beyond the intertidal zone is a reef flat comprised of healthy coral reef. The reef flat is characterized by water depth of approximately 0.1 - 2 m over primarily Hard Bottom Pavement with smaller areas of Mixed Habitat Structure consisting of Scattered Coral Rock in Unconsolidated Sediment. Habitat Complexity at the reef flat was low with relief generally less than 1 m. The nearest live coral colony is approximately 27 m away from the edge of runway cement and approximately 10 m outside of the proposed Action Area. Specific habitats considered as EFH are listed in Table 3.

3a. (cont.) Draft EFH Evaluation

Table 2: Bottom Habitat and Ecosystems of the Guam Bottomfish EFH within the EFH Action Area

Bottom Habitat/Ecosystem	Present in EFH Action Area
intertidal	Yes
mangrove forest	No
seagrass bed	No
coral reef	Yes
deep reef slopes, banks, and seamounts	No
deep ocean and pelagic ecosystems	No

There are intertidal and coral reef bottom habitats within the EFH Action Area. There are no mangrove forest, seagrasses, deep reef slopes, banks and seamounts, deep ocean, or pelagic ecosystems occurring within the EFH Action Area. These EFH habitats are not discussed or considered further in this analysis.

4.0 Potential Impacts

Based on the known locations of sensitive species and habitat within the study area, the following impact analysis evaluates the potential for impact to ESA species and designated habitat from constructing the Rock Revetment within the ESA Action Area. Compared to other alternatives considered under the feasibility study, implementation of the tribar revetment was tentatively determined to be economically justified, environmentally sound and engineeringly feasible.

Potential vectors for impact per resource are discussed below. BMPs described at Section 2.2 are intended to avoid and/or minimize the following impacts.

4.1 Direct Impacts

4.3 Indirect and long-term physical impacts

4.3.1 Sediment Erosion/Accretion

The rock revetment would be constructed along and maintain the contours of the existing beach profile. Thus, USACE does not anticipate substantial or permanent exacerbation of erosion of soils or loss of topsoil in the long term. The toe of the revetment would be buried with native sediments consistent with the pre-construction conditions.

4.3.2 Discharge of pollutants

Construction activities along the shoreline involving the use of heavy machinery has the potential for inadvertent spills and discharges that may consist of hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could spread into the marine environment and expose protected species to toxic chemicals. Oil globules can adhere to coral tissue and soluble oil components can be absorbed from the water column by coral polyps (Van Dam 2011). Effects on coral

3a. (cont.) Draft EFH Evaluation

colonies include mortality, tissue death, reduced growth, impaired reproduction, bleaching, reduced photosynthetic rates, and decreased cellular lipid content which is correlated with coral fitness. Spills occurring near or at peak reproductive season (e.g., summer spawning months for most jurisdictions in the Western Pacific Region) could adversely affect an entire year of reproductive effort because coral gametes and eggs are buoyant, potentially bringing them into direct contact with floating oil. Chemical spills into the ocean can also indirectly impact sea turtles by affecting mobility and respiration and by degrading the turtles' food source.

Site preparation and excavation of the revetment footprint could result in indirect impacts to protected resources through the inadvertent exposure or discharge of excavated native subsurface soil and sediments into tidally influenced areas. Release of terrigenous sediments such as silt, clay and organic matter can elevate turbidity levels within and beyond the ESA Action Area through ocean circulation. These fine grain sediments are more easily suspended and take longer to settle out than coarse grain sand and cobble which settles almost immediately. The impact of sedimentation or settling of sediments on coral reefs, depends upon the thickness of the sediment layer and duration of coverage resulting in reduced photosynthesis and diverting energy away from lifecycle activities to sloughing and mucous production and on the extreme end, bleaching and death. Death of native biota can be followed by opportunistic proliferation of invasive species disrupting the balanced ecosystem. Elevated turbidity for extended periods of time reduces solar irradiation affecting photosynthetic organisms and can reduce visibility in the water column for visual foragers and increase vulnerability of prey.

In addition to the BMPs listed at Section 2.2, implementation of the following BMPs could avoid and/or minimize the aforementioned indirect impacts:

- Project operations must be planned to accommodate weather and ocean forecasts. Operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
    - Rationale: Adverse weather and wave conditions facilitate conveyance of land-based pollutants with the marine environment, increasing potential for inadvertent spills or damage to sediment-erosion control measures. These measures would minimize the potential for indirect impacts associated with pollutant releases into the ocean.
- The Contractor must designate on-site personnel responsible for ensuring no inadvertent discharges of debris, petroleum, or other harmful materials into the water.
    - Rationale: This BMP emphasizes on-site responsibility to avoid inadvertent discharges of pollutants to the ocean to avoid indirect impacts to protected resources.

Through best management practices, hydrocarbons would not affect any listed species during construction. No dive boats or other seacraft will be used, so no hydrocarbon

spills occurring from these sources would occur. No refuse or matter of any kind (including trash, garbage, oil, and other liquid pollutants) would be discharged because of project activities.

5.0 Effects Determination and Conclusions

In terms of EFH, an effect is adverse if the impact reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. The Corps has considered the potential for adverse effects resulting from the proposed action and anticipates impacts to be minimal--temporary and limited to the intertidal zone (between high and low tide mark) and immediately adjacent shallow-water habitats. Through implementation of the project BMPs, the proposed action would not reduce the quantity of EFH and would minimially affect the quality of EFH. **Accordingly, the Corps has determined that the proposed action may adversely affect EFH, but does not have the potential to cause substantial adverse effects.**

6. Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR Section 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The potential for cumulative impacts to the environment from the proposed action was evaluated by reviewing other projects and activities in the vicinity of the East Hagatna seawall that could directly or secondarily affect the same environmental resources as the proposed action. The analysis generally includes actions that were recently completed, are currently underway, or are programmed to occur in the foreseeable future, and are directly related to coastal shoreline protection, are located within or proximate to the proposed measure sites and/or would directly or secondarily affect resources in Hagatna Bay. Based on a review of the related actions, this analysis incorporates the following past projects and activities:

- Agana Small Boat Harbor O&M breakwater repair and dredging
- Hagatna (Agana) River Flood Risk Management Project. This project was terminated in 2022.

The effects of these actions were considered in combination with the degree and timing of the potential adverse and beneficial effects of the proposed alternatives to determine the types and significance of potential cumulative effects on ESA listed species. For this analysis, implementation of the project is considered cumulatively significant if, in concert with other past, present, or reasonably foreseeable future actions, it would exacerbate the declining status of an identified resource (a resource that is already

adversely affected) or create a condition in which an effect is initially minor but is part of an irreversible declining trend.

7.0 Conclusions

In conclusion, USACE has determined the following for the Proposed Action:

- The proposed Project is not likely to adversely affect any EFH, the project has the potential to have minimal, temporary effects on EFH, but by following the proposed avoidance and minimization measures as described, the proposed Action would not be likely to adversely affect EFH. As described above, the effects of this project will be temporary and restricted to a confined area of coastline. In water-work would not be expected to be conducted and all practical means to work from the landward side of the project site will be considered so that impacts to EFH are avoided.

8.0 Literature cited

Amesbury, S. S. 1978. Studies on the Biology of the Reef Fishes of Guam. Part I: Distribution of Fishes on the Reef Flats of Guam. Part II: Distribution of Eggs and Larvae of Fishes at Selected Sites on Guam. University of Guam Marine Laboratory Technical Report. 52:1-58.

Bevacqua, Robert F., and Ross H. Miller. 2020. Agroforestry on Guam: Breadfruit Cultivation. Western Pacific Tropical Research Center December 2020. https://www.uog.edu/_resources/files/wptrc/Bread_Fruit_Final.pdf

Blumenstock, D. I. 1959. Climate. In Military Geology of Guam, Mariana Islands. Intelligence Division, Office of the Engineer, Headquarters, U. S. Army Forces Pacific. 282 pp.

Department of the Navy. 2021. 2020 U.S. Navy Annual Marine Species Monitoring Report for the Pacific: A Multi-Range-Complex Monitoring Report for Hawaii-Southern California Training and Testing (HSTT), Mariana Islands Training and Testing (MITT), Northwest Training and Testing (NWTT), and the Gulf of Alaska Temporary Maritime Activities Area (GOA TMAA). Prepared by the Department of the Navy. Prepared for and submitted to National Marine Fisheries Service, Silver Spring, Maryland. April 2021

Emery, K. O. 1962. Marine Geology of Guam. Geological Survey Professional Paper. 403B:I-76.

Fabian, V.P. & A.G. Fujimura. 2020. Survey of Guam Benthic Habitats and Coral Health. 39 pages https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechReport166_Fabian_Fujimura2020.pdf

Flores, Jacqueline, Island Team Manager - Mariana Islands, U.S. Fish and Wildlife Service – Ecological Services, Pacific Islands Fish and Wildlife Office; personal communication via email March 16, 2022.

3a. (cont.) Draft EFH Evaluation

Gaos, A.R.; S. L. Martin; T.T. Jones. 2020. SEA TURTLE TAGGING IN THE MARIANA ISLANDS TRAINING AND TESTING (MITT) STUDY AREA PROGRAMMATIC REPORT. NOAA, NMFS, PIRO, Honolulu, Hi.

Gourley, John ; Tosatto, Michael D. ; Kingma, Eric ;. 2014 . Environmental assessment proposed construction of an American Disabilities Act compliant fishing platform at Paseo de Susana park. Environmental assessment proposed construction of an American Disabilities Act compliant fishing platform at Paseo de Susana park (noaa.gov)

Government of Guam. 2017. Guam Erosion and Sediment Control Guide. http://epa.guam.gov/wp-content/uploads/2019/04/ESC_fieldguide_Guam2017.pdf based on the regulations at http://www.guamcourts.org/CompilerofLaws/GAR/22GAR/22GAR002-10.pdf

Grecni, Z. ,W. Miles, R. King, A. Frazier, and V. Keener. 2020. CLIMATE CHANGE IN GUAM: INDICATORS AND CONSIDERATIONS FOR KEY SECTOR. Pacific Islands Regional Climate Assessment (PIRCA). East-West Center, Honolulu, HI. November 9, 2020. https://www.eastwestcenter.org/publications/climate-change-in-guam-indicators-and-considerations-key-sectors

Guam Coastal Management Program. 2011. PROCEDURES GUIDE FOR ACHIEVING FEDERAL CONSISTENCY WITH THE GUAM COASTAL MANAGEMENT PROGRAM https://bsp.guam.gov/wp-bsp-content/uploads/2021/02/Federal-Consistency-Guidebook.pdf

GUAM DIVISION OF AQUATIC AND WILDLIFE RESOURCES. 2019. GUAM WILDLIFE ACTION PLAN (GWAP). Revised JANUARY 10, 2019. Department of Agriculture, Government of Guam, Mangilao, Guam 96913. https://doag.guam.gov/wp-doag-content/uploads/2021/11/GU-DOAG-DAWR-2016-GWAP-2019-07-17.pdf

Guam Environmental Protection Agency (GEPA). 1978. Environmental Setting. In. Guam Water Quality Management Plan, 208. Environmental Protection Agency, Government of Guam. 2:1-9.

Hensley, R. A., and T. S. Sherwood. 1993. An Overview of Guam's Inshore Fisheries. Marine Fisheries Review 55(2):129-138.

https://doag.guam.gov/wp-doag-content/uploads/2019/06/DAWRcolorbk-copy.pdf

Jenkins, J. M. 1980. Seasonality and Relative Abundance of Guam Shorebirds. Micronesica. 17(1):181-183.

Jenkins, J.M. 1983. The Native Forest Birds of Guam. Ornithological Monographs 31.

Kerr, A. M. A. K. Miller, C. Brunson, and A. M. Gawel. 2017. Commercially Valuable Sea Cucumbers of Guam Results of a Stock Assessment. A Report Prepared for the Director, Department of Agriculture and Wildlife Resources, Territory of Guam, USA. University of Guam Marine Laboratory. Technical Report 162. May

Lazaro, M.; O. Kuegler, S. Stanton, A. Lehman, J. Mafnas, M. Yatskov. 2020. Guam's forest resources: Forest Inventory and Analysis, 2013. Resource Bulletin PNW-RB-270. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 43 p. https://www.fs.usda.gov/treesearch/pubs/59433

Maben, A. F. 1980. Survey and Inventory of Shorebirds on Cuam. FY 1980 Aquatic and Wildlife Resources Annual Report, Department of Agriculture, Guam. p. 189-198.

National Oceanic and Atmospheric Administration (NOAA). 2005. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, Guam and the Northern Mariana Islands Atlas. August 2005. https://www.fisheries.noaa.gov/inport/item/46673 Map ES12.

NOAA. 2009. Coral Reef Habitat Assessment for U.S. Marine Protected Areas: U.S. Territory of Guam. February 2009. https://www.coris.noaa.gov/activities/habitat_assessment/guam.pdf

NOAA. 2022a. Datums for 1630000, Apra Harbor, Guam. Tide Predictions - NOAA Tides & Currents.

NOAA. 2022b. Online ESA mapper. https://www.fisheries.noaa.gov/resource/tool-app/environmental-consultation-organizer-eco

NOAA. 2022c. The ESA list for the Mariana Islands at: https://www.fisheries.noaa.gov/pacific-islands/endangered-species-conservation/marine-protected-species-mariana-islands

National Marine Fisheries Service, Pacific Islands Regional Office (NMFS-PIRO). 2019. Endangered Species Act Critical Habitat Information Report: Basis and Impact Considerations of Critical Habitat Designations for Threatened Indo-Pacific Corals *Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Seriatopora aculeata*. October 2019. Honolulu, HI.

NMFS. 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. NOAA Technical Memorandum NMFS-OPR-59. 167 p. https://media.fisheries.noaa.gov/dam-migration/tech_memo_acoustic_guidance_%2820%29_%28pdf%29_508.pdf

Quitugua, Jeffrey S. 2022. Jeffrey.Quitugua@doag.guam.gov, Technical Guidance Section, Guam Department of Agriculture, Division of Aquatic and Wildlife Resources personal communication via email March 16, 2022

Project Development Team (PDT). 2022. Trip Report.

Randall, R. H. 1978. Corals. In Randall, R. H. (ed.). 1978. Guam's Reefs and Beaches. Part II: ·Transect Studies. University of Guam Marine Laboratory Technical Report. 48:28-76.

Randall, R. H. and J. Holloman. 1974. Coastal Survey of Guam. University of Guam Marine Laboratory Technical Report. 14:1-404.

Randall, R. H. and L. G. Eldredge. 1976. Atlas of the Reefs and Beaches of Guam. Coastal Zone Management Section, Bureau of Planning, Government of Guam. 191 pp.

Raymundo, L.J., M.D. Andersen, C. Moreland-Ocho, A. Castro, C. Lock, N. Burns, F. Taijeron, D. Combosch, & D. Burdick. 2022. Conservation and Active Restoration of Guam's Staghorn Acropora Corals. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechRep168_Raymundo_2022.pdf.

Reyes, E. 2022. Personal Communication. Resource Agency Workshop 8 June 2022 Webex.

Hensley, R. A., and T. S. Sherwood. 1993. An Overview of Guam's Inshore Fisheries. https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/MFR/mfr552/mfr55215.pdf#:~:text=In%20the%20past%2C%20subsistence%20fishing%20provided%20Guam%27s%20residents,accepted%20spelling%20of%20the%20indigenous%20people%20of%20Guam.

Schrader, A. Endangered Species Biologist, Contractor with Lynker in support of NOAA Fisheries Southeast Regional Office, U.S. Department of Commerce; Personal communication April 12, 2022.

Stinson, D. W.; G. J. Wiles; and J. D. Reichel. 1997. Occurrence of Migrant Shorebirds in the Mariana Islands (Incidencia de Aves Costeras Migratorias en Las Islas Marianas). Journal of Field Ornithology, Vol. 68, No. 1 (Winter, 1997), pp. 42-55. https://www.jstor.org/stable/4514191?seq=1

Taborosi, D. 2013. Environments of Guam. Produced by Island Research & Education Initiative and Water and Environmental Research Institute of the Western Pacific. Published by Bess Press, Honolulu, Hawaii.

Tracey, J. I., Jr., S. 0. Schlanger, J. T. Stark, D. B. Doan, and H. G. May. 1964. General Geology of Guam. Geological Survey Professional P.aper. 403A:I-104.

U.S. Fish and Wildlife Service (USFWS). 1981. U.S. Fish and Wildlife Service Mitigation Policy. Federal Register. 46(15):7644-7663.

USFWS. 1992. Draft Fish and Wildlife Coordination Act Report. U.S. Department of the Interior, Fish and Wildlife Service, Pacific Islands Office.

USFWS. 2022. Information for Planning and Consultation (IPaC) website, https://ecos.fws.gov/ipac/. Accessed January 2022.

USFWS. 2020. Mariana fruit bat, Fanihi (*Pteropus mariannus mariannus*) 5 year review. https://ecos.fws.gov/docs/tess/species_nonpublish/3210.pdf

3a. (cont.) Draft EFH Evaluation

United States Navy. 2015. Guam and CNMI Military Relocation (2012 Roadmap Adjustments) SEIS Final July 2015. https://www.guambuildupeis.us/

United States Army Corps of Engineers (USACE). 1979. Guam Comprehensive Study - Stage 1 Report, U.S. Army Corps of Engineers, Honolulu Engineer District, August 1979.

USACE. 1981. Shoreline Investigations, Agana, Guam, U.S. Army Corps of Engineers, Honolulu Engineer District, September 1981. This report described existing shoreline features, structures, and conditions and showed the boundaries of storm surge and storm wave flooding at Agana Bay.

USACE. 1983. Flood Insurance Study, Territory of Guam, U.S. Army Corps of Engineers, Pacific Ocean Division, September 1983.

USACE. 1984. Guam Comprehensive Study - Agana Bay Typhoon and Storm-Surge Protection Study (Technical Documentation), U.S. Army Corps of Engineers, Pacific Ocean Division, January 1984.

USACE. 1987. Typhoon Stage-Frequency Analysis for·Agana Bay, Guam (Draft Technical Report), U.S. Army Corps of Engineers, Coastal Engineering Research Center, Waterways Experiment Station, July 1987.

USACE. 1988. Agana Bayfront Storm Surge Protection Study, Territory of Guam (Draft Feasibility Report and Environmental Impact Statement), U.S. Army Corps of Engineers, Honolulu Engineer District, December 1988.

USACE. 1989. Agana Bayfront Storm Surge Protection Study, Guam (Draft Feasibility Report), April 1989.

USACE. 1990. East Agana, Territory Guam, Shore Protection Study, Reconnaissance Report, U.S. Army Corps of Engineers, Honolulu Engineer District, April 1990.

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USACE. 2020. Federal Interest Determination Section 14 Emergency Shoreline Protection East HagÅtÑa, Guam. July 2020.

USACE. 2022. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES)

Williams, T. C., and J. M. Williams. 1988. Radar and visual observations of autumnal (southward) shorebird migration on Guam. Auk 105:460-466.

3a. (cont.) Draft EFH Evaluation

Williams, T. C. and M. Ying. 1990. A Comparison of Radar Observations of Bird Migration at Haizhou Bay, China, and Guam, Marianas. The Auk, Vol. 107, No. 2 (Apr., 1990), pp. 404-406. https://www.jstor.org/stable/4087627.

3b. 2023 October 12 NMFS Response Letter

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax: (808) 725-5215

Rhiannon Kucharski
Chief, Civil and Public Works Branch and Legislative Liaison
U.S. Army Corps of Engineers, Honolulu District
230 Otake Street, Building 230
Fort Shafter, Hawaii 96858-5540

October 12, 2023

Dear Ms. Kucharski,

The National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division (NMFS) received the U.S. Army Corps of Engineers, Honolulu District, Civil Works Branch (USACE) request to initiate an essential fish habitat (EFH) consultation and an EFH assessment on September 13, 2023, to replace an existing seawall with a rock revetment adjacent to East Hagatna Bay along South Marine Corps Drive on the island of Guam. Due to the structural integrity of the existing seawall having become compromised from wave attack because of its design flaw of not being anchored into the limestone foundation, continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. This project aims to protect South Marine Corps Drive and public utilities in the area from coastal erosion. NMFS has reviewed the consultation materials it received in pursuant to EFH provision (Section 305(b)) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U S C 1855(b)).

Consultation History
NMFS provided technical assistance on June 2, 2022, by participating in the East Hagatna Emergency Shoreline Protection Project Cooperating and Participating Agency Workshop that discussed eight proposed replacement and repair alternatives to the existing seawall. On July 22, 2022, NMFS provided technical assistance intended to help integrate EFH considerations into the scoping process of USACE for its study and participated in a conference call with USACE and U.S. Fish and Wildlife Service (USFWS) to discuss Fish and Wildlife Coordination Act compliance on August 21, 2022; since past studies of fish and wildlife resources identified by USACE as detailed in its June 28, 2022 letter did not include the vicinity of the project area. It was agreed that an assessment in the form of a survey was needed for the proposed project footprint of which the Services (i.e., NMFS and USFWS) volunteered to perform for the USACE. On August 25, 2022, the USACE and NMFS discussed its approach for conducting the assessment that included logistics and survey methods to account for NOAA Trust Resources (e.g., living marine resources and their habitats) in and around the proposed project footprint. To what extent they may be impacted, a preliminary survey of reconnaissance in nature was determined to be appropriate for

recording mainly qualitative observations. On November 1, 2, and 7, 2022, NMFS performed an in-water survey, and sent a summary report to USACE on June 22, 2023, that detailed its methods, findings, and recommendations. A subsequent Planning Aid Letter was sent from NMFS to USACE on July 13, 2023.

USACE selected Alternative 2: Rock Revetment as it considered it to be the most practicable with respect to real estate considerations (i.e., coastal squeeze between the ocean and South Marine Corps Drive), met the climate change and sea level rise engineering requirements within the cost limitations (i.e., $9,000,000 USD), logistics as the Tentatively Selected Plan, and was the least environmentally damaging alternative.

Project Description

The proposed action for this project is to remove an existing seawall and construct a 2,100-foot (ft) long by 17 ft wide (approximately 35,700 ft^2 or 0.82 acres [ac]) rock revetment using heavy equipment and machinery.

To meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC under the intermediate scenario, the design of its top crest elevation needs to be 9 ft above mean sea level (MSL), which is about 1 ft higher than the existing seawall. The base of the revetment would extend 17 feet toward the ocean from the crest of the existing seawall. The 2 ft toe of the revetment would be anchored in the limestone and backfilled to the existing shore elevation, resulting in 15 ft of revetment exposed. The revetment installation would begin with construction at the toe (-2.5 ft MSL) and proceed up to the crest elevation (+9 ft MSL), just 1 foot above the current highest point of 8 feet. To seat the toe, a small trench will need to be dug into the underlying limestone. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.

The revetment is comprised of compacted fill as the foundation and base grade, a geotextile filter fabric, a double layer of underlayer stone, a double layer of armor stone, and an anchoring by an oversized toe stone. The rock armor layer is an erosion resistant material that dissipates the energy of storm waves, prevents further recession of the backshore, and provides basic protection against wave action. Depending on the cost and local availability of material, this revetment could be capped with either a two-stone layer of 200-pound armor stones or pre-cast concrete armor units. The filter layer supports the rock, provides for the passage of water through the structure, and prevents the underlying soil from being washed through the armor. The buried toe prevents displacement of the seaward edge of the revetment. This design will meet USACE coastal engineering criteria for expected design life and adaptability to relative sea level change. The expected design life of this system, assuming proper installation and routine maintenance, is of 50 years.

Essential Fish Habitat

The marine water column from the surface to a depth of 3,280 ft (1,000 m) from shoreline to the outer boundary of the Exclusive Economic Zone (200 nautical miles), and the seafloor from the shoreline out to a depth of 1,312 ft (400 m) around each of the Mariana Islands, have been designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's Pelagic and Mariana Archipelago Fishery Ecosystem Plans. The MUS and life stages found specifically within the action area include eggs, larvae, juveniles, and adults for Bottomfish and Pelagic MUS. Specific types of habitats considered as EFH within, or adjacent to, the proposed project area include coral reef, patch reefs, hard substrate, artificial substrate,

seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Baseline Condition
The proposed action of this project to construct a rock revetment may extend as far as 20 ft seaward from the existing seawall and 5 ft down into the limestone subgrade. The surface substrate within the tentative project footprint is mainly intertidal sand with pockets of exposed rubble and cobble. Sand is a spatially dominant surface feature in the neighboring submerged region (out to approximately 50 meters distant). Biological resources in the submerged area included scattered patches of seagrass and algae in various aggregate densities, with a limited number of scattered corals (12 individuals that ranged in size from 1 to 118 inches [2.5 to 300 centimeters] greatest length) (NMFS 2023).

Adverse Effects
Habitat types considered as EFH within, or adjacent to, the proposed project area includes living (e.g., coral, seagrass, algae, and crustose coralline algae) and non-living (e.g., hard substrate, artificial substrate, sand) benthic habitat forming EFH that may be adversely affected and lost. Effects could include removal or impairment of a feature that normally serves as shelter or provides structure for something else to grow on.

The proposed action may result in the following adverse effects to EFH described below.

Physical Damage: Shallow water benthic organisms are vulnerable to physical damage as they are unable to avoid the impact. Direct contact to the hardbottom by equipment and materials and installation activities could lead to short and long-term to permanent adverse effects. Steps should be taken during the demolition and removal of the existing seawall and the construction of the rock revetment to minimize contact with the hardbottom offshore of the project by equipment and materials.

Sedimentation: Sedimentation may occur from the re-suspended sediment during demolition and removal of the existing seawall and/or construction of the rock revetment. Increased turbidity could affect the water column around the project area or may travel to adjacent habitats with wave or tidal conditions. Sedimentation is not likely to cause significant impacts to fish in the nearshore environment because of their mobility, but some effects are still possible. Fish may be displaced from their normal home range which could result in negative intra- and interspecies interactions and impact fitness, leading to lower reproductive success and a lower ability to find prey or avoid predators (Kjelland et al. 2015). Sensitive organisms in the nearshore environment such as seagrass and coral reef organisms are easily smothered by sediment (Golbuu et al. 2003). With sedimentation rates > 100 milligrams/cm/day, it can kill exposed coral tissue within a few days (Riegl and Branch 1995).

Chemical Contamination: In general, the impacts from contaminants in the marine environment is dependent on how long the chemical components persist and their tendency to bioaccumulate in the food web (van Dam et al. 2011). Some pollutants are environmentally persistent and can take years or even decades to biodegrade (Minton 2017). Increases in nutrients, pollutants and contaminants to the marine environment can reduce fitness and cause mortality of exposed organisms. These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Some pollutants are environmentally persistent and can take years or even decades to biodegrade, and others can bioaccumulate and biomagnify through the food chain, eventually posing as a direct threat to human health. Many contaminants readily attach to sediment particles and are

transported into the ocean where they become entrained in the bottom sediment of estuaries, reefs, and potentially deeper ocean ecosystems. When not properly maintained, equipment could release contaminants (e.g., oil, fuel) into the marine environment.

Invasive Species: Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Species can be introduced to new biogeographies, typically via transport on vessel hulls or in ballast water. Invasive species rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

Nutrient Loading: Nutrient loading may occur due to the dredging of sediments, excavation, and the runoff from the local urbanized landscape. Elevated nutrient levels from in-ground and underground sources are particularly notable in karst environments (Moosdorf et al. 2015). An imbalance of nutrients can favor algae blooms that prevent other photosynthetic benthic fauna from establishing and dominating in nearshore environments. Nitrogen-based compounds associated with water treatment and urban runoff is also linked to disease and health declines in coral (Redding et al. 2013).

Noise: Noise has a broad range of potential effects, especially when it has high amplitude (Casper et al. 2016) or when it is less intense but long-lasting (Popper and Hastings 2009). For fish, intense and high amplitude sounds can cause immediate death or tissue damage that may ultimately result in mortality (McCauley et al. 2003). At the very least it may impact their fitness in sub-lethal ways (Casper et al. 2016). Alternatively, chronic noise at moderate levels will not likely result in mortality but may mask biologically important sounds and alter the natural soundscape. This can cause hearing loss reduction and have adverse effects on an organism's stress levels and immune system; persistent noise can also affect coral spawning (Minton 2017, Lecchini et al. 2018). Studies on invertebrate species have shown that chronic exposure to noise may lead to increased metabolic rates, causing a reduction in growth and reproduction (Lagardère 1982). Noise from this project will be generated by equipment (e.g., heavy equipment and machinery), but little sound is expected to propagate into the marine environment, unless the equipment operates in the water.

USACE-proposed Mitigation

To avoid and minimize potential adverse effects to EFH, the following best management practices (BMPs) and minimization measures will be implemented:

1. Project footprints shall be limited to the minimum area necessary to complete the project. The revetment shall be constructed along and maintain the contours of the existing seawall. Any portion of the revetment toe or face located furthest seaward shall be buried with native sediments and restored to pre-construction condition.
2. Shoreline work shall be done during low tide and equipment shall be operated from the upland area to minimize in water work. Construction activities shall occur on the beach and above the tideline. Work on the toe shall only occur at low tide and not in water, as practicable. Appropriate sediment control BMPs (turbidity or silt curtains) shall be installed around the active work area prior to construction and maintained until construction is complete and the work area returned to pre-construction conditions.
3. Project operations shall be planned to accommodate weather and ocean forecasts. Operations shall cease under unusual conditions such as periods of heavy rain, large tidal events, and high

surf conditions, and otherwise avoid in water work, except for efforts to avoid or minimize resource damage.

4. All project construction shall be restricted to March – September. Construction shall be scheduled for time periods which minimize conflicts with the recruitment and traditional harvest of culturally significant reef fishes (manahac), the presence of foraging migratory birds on the inner reef flat, or peak coral spawning season (June 1 to September 30), if practicable. Construction work at night shall be avoided so that construction lighting on beaches is minimized to the fullest extent possible to avoid disorienting and potentially causing harm to wildlife.
5. Upon development of final construction plans and prior to site disturbance, the USACE shall clearly delineate the limits of construction on project plans. All construction, site disturbance, and vegetation removal shall be located within the delineated construction boundaries. The storage of equipment and materials, and temporary stockpiling of soil shall be located within designated areas only, and outside of natural habitat areas/channel. The limits of construction shall be delineated in the field with temporary construction fencing, staking, or flagging.
6. Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within the project area shall be identified on project plans and flagged onsite (staked, or otherwise demarcated). Project staff shall be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas and securing all in-water equipment in a manner that shall prevent the equipment from being dragged across the substrate. Prior to construction activities, a USACE approved environmental monitor shall conduct pre-construction environmental training for all construction crew members. The training shall focus on required mitigation measures and conditions of any regulatory agency permits and approvals (if required). The training shall also include a summary of sensitive species and habitats potentially present within and adjacent to the project site.
7. Equipment operators shall employ “soft starts” when initiating work each day and after each break of 30 minutes or more that directly impacts the bottom. Buckets and other equipment shall be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo. All objects lowered to the bottom shall be lowered in a controlled manner. This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.
8. No corals or coralline algae colonies will be directly handled. If anchoring on the seafloor is necessary, then anchors must be placed exclusively in soft sediments. Anchors and anchor components must cause no direct physical impact to corals. Anchor and anchorline footprints of all in-water equipment must be designed to occupy the smallest footprint necessary to achieve safe and effective anchorage.
9. Required permits shall be obtained and the contractor shall abide by all applicable requirements, avoidance, and minimization measures, and BMPs within the permits. A copy of the permit(s) shall be available at the project site(s) during construction for review by the construction contractor, site personnel and agencies. All personnel performing work on the project shall be familiar with the content of the permit(s) and posted location(s) at the project site.
10. Construction shall be designed and phased to minimize the extent of clearing and grubbing; maintain existing vegetation (to the extent possible); sequence activities to minimize exposure of cleared areas; provide temporary soil stabilization (e.g., mulching; hydroseeding; soil binders, geotextiles, etc.); provide dust control (but avoid excess dust control watering); install sediment barriers (e.g., silt fencing, turbidity curtains) and implement bank stabilization practices (e.g.,

erosion control blankets); cover loose materials in haul trucks; stabilize construction entrance/exit and provide tire wash; revegetate temporarily disturbed areas if needed.

11. When construction is completed in each area, the construction contractor shall restore all temporarily disturbed areas within the temporary construction easement by planting an appropriate, preferably native, groundcover. The native species to be planted shall be approved in advance by the USACE. Upon completion of all activities, all project materials shall be removed, and all areas temporarily impacted by construction activities shall be fully restored to their pre-construction conditions.
12. Construction shall incorporate best management practices described in the Guam 2017 Erosion and Sediment Control Field Guide, including a stormwater management plan commensurate to the size of the project, prepared and carried out to ensure that effects to water quality and hydrology are minimized by the structure slowing the entry of water into the soil is minimal, and an erosion control plan for the project site and adjacent areas. Erosion controls shall be properly installed before any alteration of the project area may take place.
13. The construction contractor shall prepare and implement a Pollution Control Plan for the project site and adjacent areas and at a minimum shall include:
    a. Proper installation and maintenance of equipment diapers, or drip pans.
    b. A contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials.
    c. Appropriate materials to contain and clean potential spills shall be stored at the work site and be readily available.
    d. All project-related materials and equipment placed in the water shall be free of pollutants.
    e. Daily pre-work inspections of heavy equipment and vessels for cleanliness and leaks, with all heavy equipment operations and vessel use postponed or halted until leaks are repaired and equipment is cleaned.
    f. All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
    g. Debris and other wastes shall be prevented from entering or remaining in the marine environment during the project.
    h. Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment shall not result in a discharge to any waters of the state and shall be located outside of waters of the United States in areas where accidental spills shall not enter or affect such waters. All fueling of equipment shall be done more than 50 feet (15 meters) from open water, preferably over an impervious surface. All construction equipment shall be properly tuned and maintained prior to and for the duration of onsite operations. The equipment shall be checked by a certified mechanic and determine to be running in proper condition before it is operated. If construction related materials reach surface waters, appropriate spill response procedures shall be initiated as soon as the incident is discovered. In addition, the Guam EPA shall be notified via email and telephone within twenty-four (24) hours of occurrence.
    i. If in-water work is required, in-water sediment containment devices must be used to contain project generated turbidity and prevent spread beyond the active work area. Sediment containment devices must be inspected with adequate frequency to minimize potential failure and ensure proper use and installation throughout construction. If a turbid plume is emitted from the enclosure, work must stop until the source is identified and corrected.

j. The contractor shall maintain the construction area in a clean and organized condition, free of litter and excess equipment/materials.
k. All dredge spoil shall be stored behind maintained berms above the influence of the tides.
l. All deliberately exposed soil, subsoil, or underlayer 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 non-invasive vegetation matting, hydro-seeding, etc.
m. The maximum amount of material placed shall not exceed the minimum needed for erosion protection. All material shall be placed in a manner that shall avoid erosion by normal or expected high flows.
n. The project shall implement proper storage and handling techniques for concrete-curing compounds; perform washout of concrete trucks in designated areas only; containment in wash water pits; proper disposal of material from washout facilities.
o. The project shall implement proper sanitary/septic waste management during construction.
p. Project-related materials shall not be stockpiled in the intertidal zone, reef flats, sandy beach and adjacent vegetated areas and shall be protected from erosion (e.g., with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf. Any project-related debris, trash, or equipment be removed from the beach or dune if not actively being used.

14. The construction contractor shall prepare a project-specific Hazardous Materials Management Plan and Emergency Response Plan prior to initiation of construction. The plan shall identify types of hazardous materials to be used during construction and the types of wastes that shall be generated. All project personnel shall be provided with project-specific training to ensure that all hazardous materials and wastes are handled in a safe and environmentally sound manner.
15. The construction contractor shall prepare a Spill Prevention and Contingency Plan. The Plan shall be implemented prior to and during site disturbance and construction activities. The plan shall include measures to prevent or avoid an incidental leak or spill, including identification of materials necessary for containment and clean-up and contact information for management and agency staff. The plan and necessary containment and clean-up materials shall be kept within the construction area during all construction activities. Workers shall be educated on measures included in the plan at the pre-construction meeting or prior to beginning work on the project.
16. Project operations must be planned to accommodate weather and ocean forecasts. Operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
17. Project operations must be planned to accommodate weather and ocean forecasts. Operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

NMFS Concerns

Shoreline hardening is typically not encouraged by NMFS (NOAA 2015). Shoreline hardening tends to be disruptive to adjacent beach and natural shoreline dynamics (Fletcher et al. 1997, Coyle and Dethier 2010), and may cause coastal erosion on adjacent unreinforced sites and the proliferation of additional hardening (Abbott 2013). The proposed action of this project may lower biodiversity and abundance of benthic infauna associated with narrower soft-sediment shores along hardened infrastructure (Dugan and Hubbard 2006, Dugan et al. 2008), and lower abundances of benthic infauna associated with coarser sediments (Sobocinski et al. 2010). Furthermore, the loss of upland vegetated habitat can cause cascade

effects that impact coastal waters from shifts in nutrient availability by altered nutrient cycling in the intertidal (e.g., decrease rate of denitrification) (O'Meara et al. 2015) and from bioaccumulation of toxins in benthic infauna and nekton (Franca et al. 2005) by reduced pollutant filtration (Reboreda and Cacador 2007). These impacts may adversely affect EFH by reducing its quantity and quality. Lastly, the proposed action of this project does not provide plans to manage seawater retreat into the ocean or major flood protection to infrastructure (i.e., South Marine Corps Drive and adjacent public utilities) that it aims to protect from coastal erosion that may otherwise become trapped behind the constructed hardened infrastructure of a rock revetment because of this project.

Conservation Recommendations

Pursuant to Section 305(b)(2) (as described by 50 CFR 600.920 and 600.925(b)) of the MSA, we provide the following conservation recommendations that when implemented, will ensure that potential adverse effects to EFH at the proposed action areas are avoided, minimized, and offset.

Conservation Recommendation #1: Develop a plan to manage the demolition and removal of the existing seawall that avoid and minimize direct and indirect effects (e.g., noise, turbidity/sediment, pollution/discharge) to EFH.

Conservation Recommendation #2: Develop a plan (e.g., coastal inundation) to manage seawater retreat into the ocean that may otherwise become trapped behind the hardened infrastructure as a result of this project.

Conservation Recommendation #3: Develop a plan (e.g., flood) to manage rainfall that may otherwise become trapped behind the hardened infrastructure because of this project.

Conservation Recommendation #4: Coordinate with NMFS Pacific Islands Regional Office to determine dates to use for planning to avoid peak coral spawning periods for in-water activities.

Conservation Recommendation #5: NMFS recommends that USACE conduct modelling or monitor, if modelling cannot be accomplished prior to the start of the proposed action, to predict how proposed activities will influence sediment transport, water motion, and other coastal processes.

Conclusion

NMFS greatly appreciates the efforts of USACE to comply with the EFH provision of the MSA and recognizes that USACE proposed BMPs and mitigation strategies that, when adhered to and implemented, may avoid and minimize adverse effects to EFH. However, due to the proposed project activities, potential long-term or permanent impacts to EFH may result in substantial adverse effects to nearshore EFH from physical damage and associated spatial and temporal losses of function and service. Therefore, we disagree with the determination of USACE that its adverse effects to EFH will be minimal and temporary. We have determined that the proposed project may adversely affect EFH and provided explanations of our concerns and conservation recommendations for implementation to avoid and minimize them.

Please be advised that regulations Section 305(b)(4)(B) (as described by 50 CFR 600.920) to implement the EFH provisions of the MSA require that Federal activities agencies provide a written response to this letter within 30 days of its receipt; a preliminary response is acceptable if more time is needed. The final response must include a description of measures to avoid, minimize, or offset effects to EFH from the proposed activities. If the response is inconsistent with our EFH conservation recommendations, an

explanation for not implementing them must be provided at least 10 days prior to the final approval of the proposed activities.

Please contact Jonathan Brown at jonathan.brown@noaa.gov with any comments, questions, or concerns. Thank you for coordinating on this proposed action.

Sincerely,

Gerry Davis
Assistant Regional Administrator
National Marine Fisheries Service
Pacific Islands Regional Office

References

Abbott, T. 2013. Shifting shorelines and political winds – The complexities of implementing the simple idea of shoreline setbacks for oceanfront developments in Maui, Hawaii. Ocean & Coastal Management 73: 13-21. http://www.doi.org/10.1016/j.ocecoaman.2012.12.010.

Casper, B. M., T. J. Carlson, M. B., Halvorsen, and A. N. Popper. 2016. Effects of Impulsive Pile-Driving Exposure on Fishes. Advances in Experimental Medicine and Biology. 875: 125-32.

Coyle, J. M., and M. N. Dethier. 2010. Appendix C: review of shoreline armoring literature. Pages 245-266 in Shipman, H., M. N. Dethier, G. Gelfenbaum, K. L. Fresh, and R. S. Dinicola (eds.), Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010–5254, 262 p.

Dugan, J. E., and D. M. Hubbard. 2006. Ecological responses to coastal armoring on exposed sandy beaches. Shore and Beach 74: 10–16.

Dugan J. E., D. M. Hubbard, I. F. Rodil, D. L. Revell, and S. Schroeter. 2008. Ecological effects of coastal armoring on sandy beaches. Marine Ecology 29: 160–170.

Fletcher, C. H., R. A. Mullane, and B. M. Richmond. 1997. Beach loss along armored shorelines on Oahu, Hawaiian Islands. Journal of Coastal Research 13: 209-215.

França S., C. Vinagre, I. Caçador, and H. N. Cabral. 2005. Heavy metal concentrations in sediment, benthic invertebrates and fish in three salt marsh areas subjected to different pollution loads in the Tagus Estuary (Portugal). Marine Pollution Bulletin 50: 998–1003.

Golbuu, Y., S. Victor, E. Wolanski, and R. H. Richmond. 2003. Trapping of fine sediment in a semi-enclosed bay, Palau, Micronesia. Estuarine, Coastal and Shelf Science. 57(5): 941-949.

Goldberg J., and C. Wilkinson. 2004. Global threats to coral reefs: Coral bleaching, global climate change, disease, predator plagues and invasive species. Status of Coral Reefs of the World. 67-92 p.

Kjelland, M. E., C. M. Woodley, T. M. Swannack, and D. L. Smith. 2015. A review of the potential effects of suspended sediment on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. Environment Systems and Decisions. 35: 334-50.

Lagardère, J. P. 1982. Effects of noise on growth and reproduction of Crangon crangon in rearing tanks. Marine Biology 71: 177-85.

Lecchini, D., F. Bertucci, C. Gache, A. Khalife, M. Besson, N. Roux, C. Berthe, S. Singh, E. Parmentier, M. N. Nugues, and R. M. Brooker. 2018. Boat noise prevents soundscape-based habitat selection by coral planulae. Scientific Reports: 8(1): 1-9.

McCauley, R. D., J. Fewtrell, and A. N. Popper. 2003. High intensity anthropogenic sound damages fish ears. Journal of the Acoustical Society of America. 113: 638-42.

Minton, D. 2017. Non-fishing effects that may adversely affect essential fish habitat in the Pacific Islands Region. National Oceanic and Atmospheric Administration Final Report for contract AB-133F-15-CQ-0014.

Moosdorf, N., T. Stieglitz, H. Waska, H. H. Dürr, and J. Hartmann. 2015. Submarine groundwater discharge from tropical islands: a review. Grundwasser. 20(1): 53-67.

National Marine Fisheries Service (NMFS). 2023. A preliminary survey of marine species and habitats in the vicinity of a proposed shoreline revetment in East Hagatna, Guam. Final report prepared for the United States Army Corps of Engineers Honolulu District, 12 p.

National Oceanographic and Atmospheric Administration (NOAA). 2015. Guidance for considering the use of living shorelines, 35 p.

O'Meara T., S. P. Thompson, and M. F. Piehler. 2015. Effects of shoreline hardening on nitrogen processing in estuarine marshes of the US mid-Atlantic coast. Wetlands Ecology and Management 23: 385–394.

Popper, A.N., and M. C. Hastings. 2009. The effects on fish of human-generated sound. Integrative Zoology. 4: 43-52.

Reboreda, R., and I. Cacador. 2007. Halophyte vegetation influences in salt marsh retention capacity for heavy metals. Environmental Pollution 146: 147–154.

Redding, J. E., R. L. Myers-Miller, D. M. Baker, M. Fogel, L. J. Raymundo, and K. Kim. 2013. Link between sewage-derived nitrogen pollution and coral disease severity in Guam. Marine Pollution Bulletin. 73(1): 57-63.

Riegl, B., and G. M. Branch. 1995. Effects of sediment on the energy budgets of four scleractinian (bourne 1900) and five alcyonacean (lamouroux 1816) corals. Journal of Experimental Marine Biology and Ecology. 186(2): 259-275.

Sobocinski, K. L., J. R. Cordell, and C. A. Simenstad. 2010. Effects of shoreline modifications on supratidal macroinvertebrate fauna on Puget Sound, Washington, beaches. Estuaries and Coasts 33: 699–711.

van Dam, J. W., A. P. Negri, S. Uthicke, and J. F. Mueller. 2011. Chemical pollution on coral reefs. In Ecological Impacts of Toxic Chemicals. 187-211 p.

3c. 2023 October 23 USACE Response to NMFS Conservation Recommendations

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

October 23, 2023

Civil and Public Works Branch
Programs and Project Management Division

Mr. Gerald Davis
Assistant Regional Administrator
National Marine Fisheries Service
Pacific Islands Region, Habitat Conservation Division
National Oceanic and Atmospheric Administration
Inouye Regional Center
1845 Wasp Boulevard, Building 176, Room 2884
Honolulu, HI 96818

Dear Mr. Davis:

Thank you for the National Marine Fisheries Service's (NMFS) letter dated October 12, 2023, providing Essential Fish Habitat (EFH) Conservation Recommendations (CRs) for the proposed East Hagatna Emergency Shoreline Protection located in East Hagatna, Guam. The CRs were provided in response to receiving the U.S. Army Corps of Engineers' (USACE) request on September 13, 2023, to initiate consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act for the proposed action.

Provided below is USACE's response to the five CRs provided in your letter.

Conservation Recommendation #1 (CR#1): Develop a plan to manage the demolition and removal of the existing seawall that avoid and minimize direct and indirect effects (e.g., noise, turbidity/sediment, pollution/discharge) to EFH.

Response: Consistent with NMFS' recommendation above, USACE will implement industry standard, site-specific best management practices including but not limited to shoring and silt containment devices staged along the length of the revetment to maintain integrity of the existing wall until fully replaced. Scheduling of work will be timed to account for tidal fluctuations and forecasted weather.

Conservation Recommendation #2 (CR#2): Develop a plan (e.g., coastal inundation) to manage seawater retreat into the ocean that may otherwise become trapped behind the hardened infrastructure as a result of this project.

Response: Consistent with NMFS' recommendation above, USACE proposes a shoreline stabilization measure that addresses coastal inundation. Engineered revetments reduce the erosive power of the waves by dissipating wave energy through the interstices of the stones or armor units. The revetment is intentionally designed so that water passes in between the stones or tribar units from wave runup and then back out through the same spaces between the stones or tribar units. Seawater which overtops the structure would also drain back through the structure. The rock or tribar used as armor stone will not be grouted and is intended to provide for flow through the interstices between the rocks or tribar units. Further, water trapped behind the structure would cause collapse of the structure. Allowing flow through the rock or tribar armor units increases stability.

Conservation Recommendation #3 (CR#3): Develop a plan (e.g., flood) to manage rainfall that may otherwise become trapped behind the hardened infrastructure because of this project.

Response: Consistent with NMFS' recommendation above, USACE proposes to construct a permeable shoreline stabilization measure that breaks up wave energy, dissipates erosive forces and allows flow through the interstices in between the rocks or tribar units, in both directions. The permeable revetment is necessary to prevent trapping of storm water landside of the structure as it would undermine its structural integrity.

Conservation Recommendation #4 (CR#4): Coordinate with NMFS Pacific Islands Regional Office to determine dates to use for planning to avoid peak coral spawning periods for in-water activities.

Response: Consistent with NMFS' recommendation above, USACE has coordinated with NMFS Pacific Islands Regional Office to confirm dates of full moon on July 14, 2026 with a window of peak hard coral spawning from July 7 to August 4, 2026. USACE will advise our construction contractor to schedule in-water construction work outside of mass-coral spawning times, as indicated above.

Conservation Recommendation #5 (CR#5): NMFS recommends that USACE conduct modelling or monitor, if modelling cannot be accomplished prior to the start of the proposed action, to predict how proposed activities will influence sediment transport, water motion, and other coastal processes.

Response: Inconsistent with this CR, USACE will not be conducting pre- and post-construction sediment transport modeling. The proposed rock revetment will replace an existing sea wall that has impacted shoreline transport to a certain degree since construction. Replacement of the existing sea wall is expected to have similar impacts to longshore sediment transport processes, sand erosion and accretion. Additionally, the rock revetment construction introduces registry that is absent in the current sea wall.

Where seawalls May refract and accelerate wave energy, rock revetments are designed to dissipate energy. Accordingly, the USACE anticipates minimal adverse impact to longshore sediment transport within and adjacent to the project area. Because USACE anticipates no more than minimal impacts, USACE has determined further analysis, i.e. modeling is not warranted.

The USACE appreciates working with NMFS on the consultation of this project and acknowledges the importance of implementing CRs to protect important marine resources. In addition, USACE is confident that the incorporation of CRs into our plans and specifications, combined with the best management practices, will ensure that there are no substantial adverse effects to EFH.

Should you have any questions regarding the proposed action, please contact Ms. Marian Dean at (808) 379-8223 or via email at Marian.Dean@usace.army.mil.

Sincerely,

Enclosure

JENNIFER R. MOORE, PMP
Deputy District Engineer for Programs
& Project Management Division

3d. 2024 April 24 EFH Evaluation

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

March 15, 2024

Civil and Public Works Branch
Programs and Project Management Division

Mr. Gerry Davis
Habitat Conservation Division, NOAA Fisheries, U.S. Department of Commerce
1845 Wasp Blvd., Bldg 176, Room 2884
Honolulu, HI 96818

Dear Mr. Davis:

This letter is to inform you that the Honolulu District, U.S. Army Corps of Engineers (USACE) has revised the tentatively selected plan for emergency shoreline protection measures along Hagatna Bay at East Hagatna, U.S. Territory of Guam. We initiated abbreviated consultation with your office on September 11, 2023 for the prior plan, a 2,100 linear foot revetment. Following internal USACE project reviews and discussions with the Government of Guam, we have modified our design to a 1,630 linear foot precast concrete seawall. Accordingly, we would like to reinitiate abbreviated consultation for the revised tentatively selected plan, i.e., proposed action, that may adversely affect Essential Fish Habitat (EFH) pursuant to Section 305(b)(2) of the Magnuson Stevens Fishery Conservation and Management Act.

The proposed action consists of replacing approximately 1,630 linear feet (ft) of existing, compromised seawall with a precast concrete seawall. The top crest elevation needed for the design to meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC under the intermediate scenario is 8.5 ft above Mean Sea Level, approximately 0.5 ft higher than the existing seawall. The seawall will be approximately 1 ft wide, with the total disturbed area estimated at 20 ft seaward and 20 ft landward of the existing seawall for site preparation, demolition and upland excavation and backfill. At this time, construction of project features will be predominately upland of the seawall with limited and temporary work occurring in the intertidal zone for site preparation.

USACE initiated abbreviated EFH consultation in September 2023 with the National Marine Fisheries Service (NMFS) for a 2,100 linear foot rock revetment. NMFS recommendations for that alternative are incorporated herein as applicable. In December 2023 in response to design concerns about the revetment, the USACE tentatively selected plan changed to a 1,630-ft long precast concrete seawall. USACE has prepared the enclosed EFH assessment in accordance with paragraph (e) of Title 50 Code of Federal Regulations Part 600.920 (Subpart K) to evaluate the impact of the

revised proposed action on EFH designated for federally managed fishery species. USACE has determined the proposed action may adversely affect EFH but does not have the potential to cause substantial adverse effects to EFH. Accordingly, USACE transmits the enclosed EFH assessment and this written request to initiate abbreviated consultation with NMFS.

Based on this determination, USACE requests written response from NMFS within 30-days of your receipt of this letter. Should NMFS respond with recommendations to conserve such habitat, USACE will respond within 30 days, and no less than 10 days prior to final agency action for any responses inconsistent with a conservation recommendation.

Should you have any questions regarding the proposed action, please contact Ms. Marian Dean at (808) 379-8223 or via email at Marian.Dean@usace.army.mil.

Sincerely,

Digitally signed by ROUSE.MICHAEL.BARRY.1155134743
Date: 2024.04.19 11:37:21 -08'00'

Michael B. Rouse
Chief, Environmental Resources Section, Honolulu and Alaska Regional Planning Team

Enclosure

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT
ESSENTIAL FISH HABITAT ASSESSMENT OF POTENTIAL ADVERSE EFFECTS TO EFH FROM THE
CAP SECTION 14 EMERGENCY SHORELINE PROTECTION PROJECT
EAST HAGATNA, GUAM

Revised April 18, 2024



Action Agency: Honolulu District, U.S. Army Corps of Engineers
Federal Action: Construction of emergency shoreline protection
Authority: Section 14 of the Flood Control Act of 1946
Consulting Agency: National Marine Fisheries Service
Pacific Islands Regional Office
Habitat Conservation Division

Honolulu District
U.S. Army Corps of Engineers

EAST HAGATNA EMERGENCY SHORELINE PROTECTION ESSENTIAL FISH HABITAT ASSESSMENT

CONTENTS

1. INTRODUCTION 2

1.1 PROJECT PURPOSE AND NEED 3

1.2 PROJECT HISTORY 5

2. DESCRIPTION OF THE PROPOSED ACTION *(1. DESCRIPTION OF THE ACTION)* 6

2.1 PROPOSED ACTION 6

2.2 PROPOSED MITIGATION (*4. PROPOSED MITIGATION, IF APPLICABLE*) 9

2.2.1 Programmatic EFH Consultation Conservation Recommendations (CRs) 9

2.2.2 Project-Specific BMPs 9

3. DESCRIPTION OF THE EFH ACTION AREA 9

4. ENVIRONMENTAL BASELINE 10

4.1 FEDERALLY MANAGED FISHERIES AND DESIGNATED EFH 10

4.2 MARINE SURVEY 11

5. IMPACT ANALYSIS (*2. ANALYSIS OF THE POTENTIAL ADVERSE EFFECTS OF THE ACTION ON EFH AND THE MANAGED SPECIES*) 12

4.1 DIRECT IMPACTS 13

4.3 INDIRECT AND LONG-TERM PHYSICAL IMPACTS 14

4.3.1 Sediment Erosion/Accretion 14

4.3. Cumulative Effects 14

6. CONCLUSION. (*3. USACE CONCLUSIONS REGARDING THE EFFECTS OF THE ACTION ON EFH*) 15

7. LITERATURE CITED 15

1

1. Introduction

The Emergency Shoreline Protection Project at East Hagatna is being developed as a cost-shared effort between the Honolulu District, U.S. Army Corps of Engineers (USACE) and the Government of Guam, represented by the Guam Department of Public Works (DPW). Section 14 of the Flood Control Act of 1946 (Public Law 79-525), as amended, authorizes USACE to investigate feasible alternatives that provide emergency shoreline protection. This feasibility study is evaluating measures to protect South Marine Corps Drive and public utilities in the area, from coastal erosion. The study area includes the west central coast of Guam in East Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and Trinchera Beach Park.

USACE prepared an updated Integrated Feasibility Report and Environmental Assessment (IFR/EA) for the East Hagatna, Guam - Continuing Authorities Program (CAP), Section 14 Emergency Shoreline Protection project (Proposed Action/Federal Action) pursuant to Engineering Regulation 1105-2-100 and the National Environmental Policy Act (NEPA) to account for a revised tentatively selected plan that reduces the overall length of the shore protection project and also modifies the construction material. The updated IFR/EA identifies, evaluates, and discloses all impacts that would result from the implementation of either of several potential alternatives, including the "No Action" alternative (i.e., Future Without Project Condition, modelled under 50 years of different climate change projections), designed to provide emergency shoreline protection within the study area. The draft IFR/EA will be re-released for a 30-day public and agency comment period in July 2024.

The proposed project by USACE constitutes a federal action. USACE has evaluated potential environmental effects and anticipates the federal action may adversely affect essential fish habitat (EFH) in the action area temporarily during construction. In accordance with Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. 1801 *et seq*.), USACE has prepared and transmits this EFH Assessment (EFHA) to re-initiate abbreviated EFH consultation with the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office, Habitat Conservation Division on the proposed federal action. *New information in this EFHA is italicized.*

To reduce duplication and retain informational integrity and consistency, USACE incorporates by reference all applicable sections of the USACE-NMFS Programmatic EFH Consultation dated July 29, 2022. The proposed action constitutes: 1. Maintenance, Repairs, Removal, and Replacement of Existing Structures in Waters of the U.S., and 10. Temporary Construction, Access, and Dewatering Activities, activities which are covered under the USACE-NMFS Programmatic EFH Consultation (USACE and NMFS 2022) but not in the combination proposed for this action. To USACE's knowledge, EFH consultation did not occur for the original structure.

This EFHA was prepared in accordance with the implementing regulations at 50 CFR 600.920(e), and includes the following mandatory contents:

1. Description of the action;

2. Analysis of the potential adverse effects of the action on EFH and the managed species;
3. Federal agency's conclusions regarding the effects of the action on EFH; and
4. Proposed mitigation, if applicable.

Mandatory contents are annotated in the Sections below, where documented. This EFHA will become part of the final IFR/EA.

Early coordination and pre-consultation with NMFS, regarding presence of and impacts to EFH was conducted during an agency coordination workshop with NMFS, the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (USEPA), and Guam Division of Aquatic and Wildlife Resources (DAWR) on June 14, 2022 (HST*). USACE initiated abbreviated EFH consultation in September 2023 with NMFS for a 2,100 linear foot rock revetment. NMFS recommendations for that alternative are incorporated herein as applicable. In December 2023 in response to design concerns about the revetment, the preferred alternative changed to a precast concrete seawall, and is the subject of this revised EFHA.*

1.1 Project Purpose and Need

The purpose of the proposed project is to replace the existing, compromised seawall with a precast concrete seawall along approximately 1,630 linear ft of shoreline between South Marine Corps Drive and East Hagatna Bay in East Hagatna, Guam (Figure 1).



3

Figure 1: Approximate extent of the action area along Hagatna Bay.

Guam is in an area of the Pacific Ocean that has a high risk for tropical storms and typhoons, and the low-lying coastline of East Hagatna is subject to frequent storm wave attack. Large storm events and associated high waves and storm surge has caused significant erosion, undermining the existing seawall. The existing seawall is not anchored into the limestone foundation and instead, sits atop the ground surface, leaving it vulnerable to wave attack. Continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. In some places, less than 20 ft of shoreline separates the road from the beach. Future sea level rise will continue to exacerbate this condition and accelerate the rate of erosion and damage.

Figures 2 and 3, captured by USACE Project Delivery Team (PDT) members on a site visit in January 2022, show the existing condition of the wall along Trinchera Beach and Veteran's Sunset Beach Park in the study area. The greatest damage to the existing seawall is along Veteran's Sunset Beach Park, where some sections of wall are undercut by up to 2 ft of seawater. This undercutting is already causing the seawall to crack and undermining its structural integrity. Figure 2 shows the rocks and concrete skirt eroding out of the seawall on the eastern edge of Veteran's Sunset Beach Park. The western access staircase is in danger of collapsing into the ocean. Erosion has also dislodged some of the larger rocks from the seawall (Figure 3), especially on the eastern end of Veteran's Sunset Beach Park (USACE 2022).



Figure 2: Existing seawall on eastern edge of Veteran's Sunset Beach Park, facing southwest (USACE 2022). The beach has eroded below the rocks and concrete skirt, causing the seawall to crack, and undermining its structural integrity.



Figure 3: Existing seawall at Trinchera Beach Park, facing northeast (USACE 2022)

Failure of the seawall and exposure of South Marine Corps Drive and associated public utilities to damage would result in economic loss and the potential for decreased public and emergency service provision for people who depend on the road. Without federal intervention, it is assumed that the Government of Guam will bear the full burden of protecting South Marine Corps Drive. They will be fiscally impacted by this responsibility and will likely need to repair or replace failing sections of wall in a piecemeal approach.

Incorporating concerns communicated by Guam DPW and with agency input, the USACE has developed potential alternative plans for shoreline stabilization over a 50-year period of analysis (2027-2077). *USACE and the Guam DPW evaluated the final array of alternatives and recommend Alternative 3: Precast Concrete Seawall.* This alternative is considered most practicable with respect to real estate considerations, costs, and logistics as the Tentatively Selected Plan (TSP) and has been tentatively identified as the Least Environmentally Damaging Practicable Alternative. While maximizing net benefits, USACE anticipates this alternative will have positive impacts on nearshore water quality (e.g., by minimizing future coastal erosion) and is supported by the Guam Government as the TSP.

1.2 Project History

Early coordination and pre-consultation with NMFS, on EFH was conducted during a coordination workshop with NMFS, USFWS, USEPA; and Guam DAWR on June 14, 2022 (HST). A Fish and Wildlife Coordination Act survey was completed by NMFS in November 2023, the results of which are incorporated herein.

USACE transmitted its EFHA to NMFS to initiate abbreviated consultation for a 2,100 linear foot revetment on September 8, 2023. NMFS concurred with the USACE effect determination on October 12, 2023, with the following Conservation Recommendations (CR):

1) Develop a plan to manage the demolition and removal of the existing seawall that avoid and minimize direct and indirect effects (e.g., noise, turbidity/sediment, pollution/discharge) to EFH;

2) Develop a plan (e.g., coastal inundation) to manage seawater retreat into the ocean that may otherwise become trapped behind the hardened infrastructure as a result of this project;

3) Develop a plan (e.g., flood) to manage rainfall that may otherwise become trapped behind the hardened infrastructure because of this project; and,

4) Coordinate with NMFS Pacific Islands Regional Office to determine dates to use for planning to avoid peak coral spawning periods for in-water activities.

USACE responded to each of NMFS' CRs on October 23, 2023, that USACE will incorporate these CRs into the proposed action. USACE determined that a fifth CR from NMFS to conduct modelling or monitor, if modelling cannot be accomplished prior to the start of the proposed action, to predict how proposed activities will influence sediment transport, water motion, and other coastal processes; is outside the authority of this project.

In December 2023 the Tentatively Selected Plan, i.e., Preferred Alternative, changed to Alternative 3: Precast Concrete Seawall. The assessment of potential adverse effects to EFH presented in this EFHA and the basis to initiate EFH consultation is for the currently proposed Precast Concrete Seawall. This evaluation augments and supersedes past consultations.

2. Description of the Proposed Action *(1. Description of the Action)*

2.1 Proposed Action

This Proposed Action is the construction of a 1,630 ft long by 1 ft wide (approximately 1,630 ft^2 or 0.03 acres) precast concrete seawall (Figure 4) along the coast at East Hagatna. Construction is anticipated to start in The proposed action would replace 1,630 linear feet of the existing, damaged seawall with a precast concrete seawall which acts as a cantilever retaining wall. This design utilizes the weight of the backfill to provide resistance to the lateral earth pressures (Figure 5). Concrete wall panels would either be constructed onsite or offsite and transported to the site to replace failing sections of the existing seawall.

Installation of the precast concrete panel wall would occur using conventional land-based, earth-moving equipment and includes:

- *demolition of approximately 1,630 linear ft (711 cy) of existing block, concrete and rock rubble seawall (the demolition will be hauled offsite and disposed at a local waste facility),*
- *removal of 20 trees,*
- *excavation of native coastal soils below and upland of the existing seawall down to the limestone shelf (the bottom 3'4" of the excavation will be below MSL and require dewatering),*
- *installation of a 7-foot-wide base,*

- *placement of precast concrete panels,*
- *construction of 3 sets of cast-in-place concrete stairs to allow for beach access,*
- *replacement of 3 culverts,*
- *regrade of the excavated area to the elevation of the pre-existing ground surface,*
- *installation of a splash apron composed of formed concrete over a gravel fill behind the crest of the structure, and*
- *reseeding of 3,555 square yards and replanting of 20 trees once construction is completed.*

This design has a top elevation of 8.5-ft above MSL, a crest width of 1-ft and a buried base that is 7-ft wide, with the total disturbed upland area being approximately 20- ft due to excavation and backfill of the existing soils. In addition to the approximately 20 feet of disturbed area. This design does not include any construction in front of the existing seawall. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability to SLC. Construction of the revetment is expected to begin in 2027 and take approximately 12 months.

The proposed action described above is similar to the following activity categories of the USACE-NMFS (2022) Programmatic EFH Consultation: 1. Maintenance, Repairs, Removal, and Replacement of Existing Structures in Waters of the U.S., and 10. Temporary Construction, Access, and Dewatering Activities. USACE proposes to implement those conservation recommendations (CRs) applicable to these activity categories, as described in Section 2.2.1, below.

7

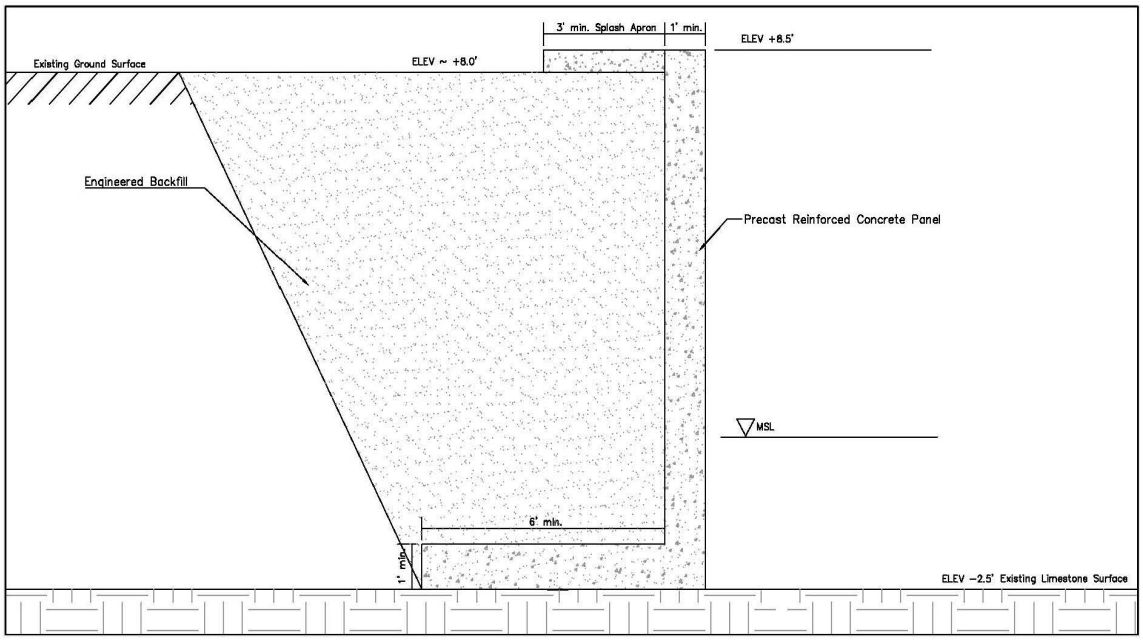


Figure 4: Alternative 3 – Precast Concrete Seawall

8

DRAFT

2.2 Proposed Mitigation (*4. Proposed mitigation, if applicable*)

USACE proposes the following mitigation to conserve EFH. USACE considers and applies a progressive approach to mitigation: avoidance first, followed by minimization and lastly, offset. The following mitigative measures are proposed because they are appropriate, feasible, practicable and commensurate to anticipated adverse effects and will become specifications of any construction contract to be enforceable upon the selected contractor to implement. In accordance with Section 305(b)(4)(a) of the Magnuson-Stevens Act, USACE welcomes any additional CRs NMFS may recommend to conserve EFH.

2.2.1 Programmatic EFH Consultation Conservation Recommendations (CRs)

USACE has determined the following CRs are applicable and commensurate to the anticipated impacts and expect that adverse effects to EFH would be avoided and or minimized to the greatest extent practicable through implementation of these CRs. The CRs below have been excerpted from the Programmatic Consultation and are appended to the end of this EFHA (Attachment 1). CRs from the original consultation are also included.

1. CRs for physical impacts to benthic communities:
   VI.A. 1, 2, 3, 4, 5, 6
2. CRs for increase in sedimentation and/or turbidity:
   VI.B. 1, 2, 3, 4, 5, 6
3. CRs for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater:
   VI.C. 1, 2, 3, 4,
4. CRs for increase in acoustic impacts:
   VI.D. 1, 2
5. CRs for invasive species:
   VI.E. 1

2.2.2 Project-Specific BMPs

USACE has consulted and coordinated this project with engineering professionals and environmental resource agencies, including NMFS Habitat Conservation Division, to develop BMPs that would modify the design in such a manner so as to avoid and/or minimize the impacts to the aquatic and surrounding environment to the greatest extent practicable. Compiled BMPs are provided as Attachment 1 to this EFHA. Such BMPs will be implemented by USACE and its contractor and enforceable through contract specifications.

3. Description of the EFH Action Area

The EFH Action Area is the review area within which USACE considered and evaluated direct and indirect impacts of the proposed action on designated EFH and federally managed fishery species. *The EFH Action Area for the proposed action is defined as a*

20 foot buffer around the East Hagatna Emergency Shoreline Protection project area (Figure 5), a 1,630 ft long stretch of existing seawall along the shoreline of Hagatna Bay, which runs parallel to South Marine Corps Drive (also referred to as Highway 1). The current project area extends 30 ft less into the ocean and is 570 ft shorter along the shoreline than the original action area.

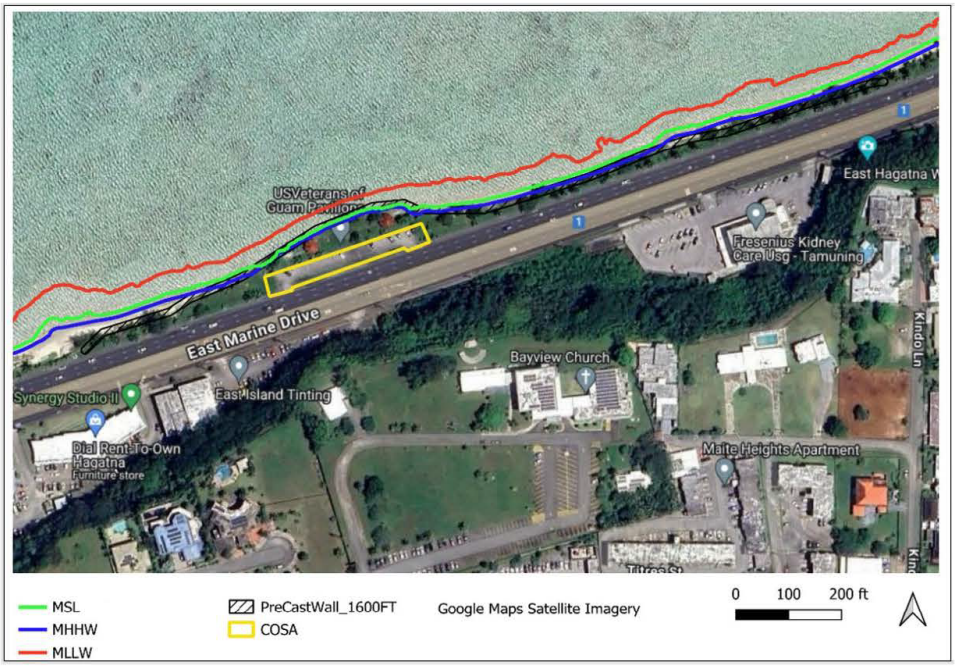


Figure 5: Precast concrete seawall footprint (black polygon). The proposed staging area is in the park parking lot (COSA; yellow polygon). The project area includes 1,630 linear feet of existing sea wall along South Marine Corps Drive. The redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure source: USACE, March 6, 2024.

4. Environmental Baseline

4.1 Federally Managed Fisheries and Designated EFH

The EFH Action Area contains EFH designated for the Mariana Bottomfish management unit species (MUS), Pelagic MUS, and Crustaceans: Lobsters/Crab. The formal EFH designation is described in the Fishery Ecosystem Plans (FEP) for the Mariana Archipelago (Amendment #5, 2018) and Pelagic Fisheries (2010), respectively. The EFH Action Area is absent of any Habitat Areas of Particular Concern (HAPC).

Table 1: Mariana Bottomfish MUS

Local name	Common name	Scientific name
lehi/maroobw	red snapper, silvermouth	*Aphareus rutilans*
tarakitu/etam	giant trevally, jack	*Caranx ignobilis*
tarakiton attelong, orong	black trevally, jack	*Caranx lugubris*
bueli, bwele	lunartail grouper	*Variola louti*
buninas agaga', falaghal moroobw	red snapper	*Etelis carbunculus*
abuninas, taighulupegh	red snapper	*Etelis coruscans*
mafuti, atigh	redgill emperor	*Lethrinus rubrioperculatus*
funai, saas	blueline snapper	*Lutjanus kasmira*
buninas, falaghal-maroobw	yellowtail snapper	*Pristipomoides auricilla*
buninas, pakapaka, falaghal-maroobw,	pink snapper	*Pristipomoides filamentosus*
buninas, falaghal-maroobw	yelloweye snapper	*Pristipomoides flavipinnis*
	pink snapper	*Pristipomoides seiboldii*
buninas rayao amariyu, falaghal-maroobw	flower snapper	*Pristipomoides zonatus*

EFH for the Marianas MUS extends through the water column from the shoreline to Exclusive Economic Zone (EEZ), and from the surface to 1000 m deep and includes all bottom habitat from the shoreline to a depth of 400 m (200 fm) (WPRFMC 2018). EFH for the Pelagic MUS Egg/larval stage is the water column down to a depth of 200 m (100 fm) from the shoreline to the outer limit of the EEZ and for the Juvenile/adult stages, the water column down to a depth of 1,000 m (500 fm). EFH for the Crustaceans (lobsters/crab) MUS Egg/larval stage is the water column down to a depth of 150 m (75 fm) from the shoreline to the outer limit of the EEZ and for the juvenile/adult stages, the bottom from the shoreline down to a depth of 100 m (50 fm) EFH for the Marianas FEP extends through the water column from the shoreline to EEZ, and from the surface to 1000 m deep and includes all bottom habitat from the shoreline to a depth of 400 m (200 fm) (WPFMC 2018).

4.2 Marine Survey

Sixty-seven percent (67%) of the EFH Action Area is periodically covered by MSL. This intertidal habitat extends approximately 6 m (20 ft.) distant from the existing seawall/shoreline in most places. Thirty-three percent (33%) of the EFH Action Area is above MSL. The intertidal substrate is predominantly sand (roughly 70 % of the combined area) with pockets of aggregated rubble and cobble present. Live corals, other macroinvertebrates, seagrasses and fishes were not observed in the intertidal habitat (NMFS 2023).

The submerged habitat from 6 to 50 m averaged approximately 1 m (3 ft.) in depth and was primarily covered by sand (approximately 50 % in total) with limited hard bottom evident. Sparse and moderately dense areas of macroalgae and seagrasses were

observed as scattered patches and appeared as the primary habitat for a variety of observed fishes. Corals were not observed (NMFS 2023).

Twelve scattered colonies of *Porites australiensis*, *Porites cylindrica, and Pocillopora damicornis* occurred beyond 25 m from the existing seawall. No species listed as management units (Magnuson-Stevens Fishery Conservation and Management Act, MSA 16 U.S Code § 1801 et seq.) were observed within 50m of the existing seawall (NMFS 2023). The nearest reported coral reef is four hundred (400) m seaward of the project footprint (Raymundo et al. 2022), beyond the intertidal zone and outside the area surveyed by NMFS (2023). The nearshore region in east Hagatna is designated as level 1 EFH (i.e. based simply on the "geographic range of a species [or life stage]"; 50 CFR Part 600 Subpart J; WPRFMC, 2009). Specific habitats considered as EFH are listed in Table 2

Table 2: Bottom Habitat and Ecosystems of the Marianas Bottomfish EFH within the EFH Action Area

Bottom Habitat/Ecosystem	Present in EFH Action Area
intertidal	Yes
mangrove forest	No
seagrass bed	No
coral reef	No
deep reef slopes, banks, and seamounts	No
deep ocean and pelagic ecosystems	No

There are intertidal bottom habitats within the EFH Action Area. There are no mangrove forest, seagrass beds, coral reef, deep reef slopes, banks and seamounts, deep ocean, or pelagic ecosystems occurring within the EFH Action Area. These EFH habitats are not discussed or considered further in this analysis.

5. Impact Analysis (*2. Analysis of the potential adverse effects of the action on EFH and the managed species*)

The proposed action described is similar to the following activity categories of the USACE-NMFS Programmatic EFH Consultation: 1. Maintenance, Repairs, Removal, and Replacement of Existing Structures in Waters of the U.S., and 10. Temporary Construction, Access, and Dewatering Activities. In the programmatic consultation, USACE and NMFS describe in extensive detail potential for the following impacts to occur from these activities:

A. Physical impacts to benthic communities,

B. Increase in sedimentation and/or turbidity,

C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater,

D. Increase in acoustic impacts, and

E. Increase in invasive species.

In an effort to reduce duplication and retain informational integrity and consistency, USACE incorporates by reference the discussion provided at Section V of the USACE-NMFS Programmatic EFH Consultation dated July 29, 2022. The subsections below describe project-specific impacts relative to EFH within the action are.

BMPs described at Section 2.2.2 and Attachment 1 are intended to avoid and/or minimize the following impacts.

5.1 Direct Impacts

The proposed pre-cast concrete seawall will replace a large portion of the existing seawall experiencing the most damage, without increasing the existing footprint seaward. Staging of equipment necessary for demolition, excavation, and installation of the replacement seawall are expected to occur from the land without the need to stage equipment in the water. However, the reach of equipment will likely extend into intertidal waters for site preparation and to facilitate installation of the new seawall. In-water work would occur only in those reaches of the seawall that extend further seaward and only temporarily during construction. Unlike the previously proposed revetment, the currently proposed precast concrete seawall would not permanently convert any intertidal habitat consisting of unconsolidated sediments to semipermeable rock revetment.

As it relates to designated water column and substrate EFH, direct impacts associated with seawall construction include the potential for conversion of open water to uplands or existing sandy substrate to impermeable concrete. Direct impacts may also be temporary during construction such as deterrence of managed fishery species from the nearshore construction area.

The extent of the proposed seawall replacement has been minimized to only the area where the most extensive damage has occurred. In addition, the pre-cast concrete seawall will not expand the seaward footprint of the existing seawall and accordingly will not convert or otherwise reduce the quantity of existing substrate and/or water column EFH to uplands. Additionally, USACE understands from the NMFS survey that coral and seagrasses do not occur within the EFH Action Area. The closest observed coral colonies are 55 feet seaward of the seaward extent of the EFH Action Area. Accordingly, USACE does not anticipate any direct impacts to habitat forming organisms such as corals and seagrass from the proposed action. Any impact to federally managed fishery species and their prey would be temporary only during construction. USACE anticipates these fish to return soon after construction is complete as there would be no permanent change to EFH that would permanently affect use of this habitat by federally managed fishery species or their prey.

USACE acknowledges that repair to the existing seawall is necessary to prevent further and future erosion of terrigenous sediments, i.e., pollutants into the marine environment.

5.2 Indirect and long-term physical impacts

USACE defines indirect impacts as inadvertent, non-immediate, and/or requiring conveyance.

5.2.1 Sediment Erosion/Accretion

The seawall would be constructed along and maintain the contours of the existing beach profile. Thus, USACE does not anticipate substantial or permanent exacerbation of erosion of soils or loss of topsoil in the long term that may affect the quantity or quality of EFH. The toe of the seawall would be buried with native sediments consistent with the pre-construction conditions. Due to the near identical footprint of the replacement wall USACE anticipates the proposed seawall would respond to, i.e., diffract ocean wave energy, similar to the existing seawall and not cause erosion or accretion of sediments along the Hagatna Bay shoreline differently than the status quo. Replacement of the existing damaged wall will curtail erosion of terrigenous sediments into the marine environment for the life of the structure.

5.3. Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR Section 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The potential for cumulative impacts to the environment from the proposed action was evaluated by reviewing other projects and activities in the vicinity of the East Hagatna seawall that could directly or secondarily affect the same environmental resources as the proposed action. The analysis generally includes actions that were recently completed, are currently underway, or are programmed to occur in the foreseeable future, and are directly related to coastal shoreline protection, are located within or near the EFH Action Area and/or would directly or secondarily affect resources in Hagatna Bay. Based on a review of the related actions, this analysis incorporates the following projects and activities:

- Agana Small Boat Harbor O&M breakwater repair occurring atop the existing harbor structures with minimal in-water work scheduled for summer 2024 was determined to not have the potential to cause substantial adverse effects to EFH. Impacted EFH and federally managed fisheries will have at least 3 years to recover from the insubstantial impacts before the East Hagatna project begins construction.
- Hagatna (Agana) River Flood Risk Management Project. This project was terminated in 2022.

The effects of these actions were considered in combination with the degree and timing of the potential adverse and beneficial effects of the proposed alternatives to determine the types and significance of potential cumulative effects on ESA listed species. For this analysis, implementation of the project is considered cumulatively significant if, in concert with other past, present, or reasonably foreseeable future actions, it would exacerbate the declining status of an identified resource (a resource that is already adversely affected) or create a condition in which an effect is initially minor but is part of an irreversible declining trend. USACE maintains that the proposed action would have minimal impacts to EFH both individually and cumulatively.

6. Conclusion. (*3. USACE Conclusions Regarding the Effects of the Action on EFH*)

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act,, an effect is adverse if the impact reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH.

USACE has considered the potential for adverse effects resulting from the proposed action and anticipates impacts to be minimal--temporary and limited to the intertidal zone (between high and low tide mark) and immediately adjacent shallow-water column and benthic habitats. Based on the results of the USFWS survey, USACE understands the EFH Action Area is typical of nearshore environments, primarily unconsolidated sediments and lacking robust, complex benthic habitats that support federally managed fisheries or their prey species, the loss of which would be substantial. Additionally, the proposed seawall replacement in the existing footprint would not convert existing marine waters to uplands or otherwise result in the loss of water column or substrate EFH. Through implementation of the project BMPs (Attachment 1), anticipated impacts to substrate and water column EFH from construction activities occuring on land, in the intertidal zone and minimally in subtidal marine waters would no more than minimally affect the quality of EFH temporarily during construction. **Accordingly, the USACE has determined that the proposed action may adversely affect EFH, but does not have the potential to cause substantial adverse effects.**

7. Literature Cited

NMFS. 2023. A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam.

Project Development Team (PDT). 2022. Trip Report.

Raymundo, L.J., M.D. Andersen, C. Moreland-Ocho, A. Castro, C. Lock, N. Burns, F. Taijeron, D. Combosch, & D. Burdick. 2022. Conservation and Active Restoration of Guam's Staghorn Acropora Corals. https://www.uog.edu/_resources/files/ml/technical_reports/UOGML_TechRep168_Raymundo_2022.pdf.

USACE. 2022. Project Development Team Trip Report.

USACE-NMFS. 2022. Magnuson-Stevens Fishery Conservation and Management Act, Programmatic Essential Fish Habitat Consultation.

Western Pacific Fishery Management Council (WPFMC). 2018. Amendment 4 – Fishery Ecosystem Plan for American Samoa, Amendment 5 – Fishery Ecosystem Plan for the Mariana Archipelago, Amendment 5 – Fishery Ecosystem Plan for the Hawaii Archipelago, Ecosystem Components -Including an Environmental Assessment and Regulatory Impact Review. November 1, 2018. Honolulu, HI.

Western Pacific Regional Fishery Management Council (WPRFMC). 2009. Fishery ecosystem plan for the Mariana Archipelago, 231 p.

3e. 2024 May 20 NMFS Response Letter

Dean, Marian E CIV USARMY CEPOH (USA)

From: Alexandria Barkman - NOAA Federal <alexandria.barkman@noaa.gov>
Sent: Monday, May 20, 2024 3:01 PM
To: Dean, Marian E CIV USARMY CEPOA (USA)
Cc: Terlaje, Michael J CIV POH; Gerry Davis - NOAA Federal; Malia Chow - NOAA Federal; David Delaney - NOAA Federal; Sean Hanser - NOAA Federal
Subject: [Non-DoD Source] Re: Request for reinitiation: USACE Shoreline Protection Project for East Hagatna, Guam

Marian,

The National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division (NMFS) received the U.S. Army Corps of Engineers, Honolulu District, Civil Works Branch (USACE) request to re-initiate an essential fish habitat (EFH) consultation and an EFH assessment on April 24, 2024, for shoreline protection measures along Hagatna Bay at East Hagatna, U.S. Territory of Guam. Due to the structural integrity of the existing seawall having become compromised from wave attack because of its design flaw of not being anchored into the limestone foundation, the continual undermining of the seawall has put South Marine Corps Drive and adjacent public utilities at imminent risk of damage. This project aims to protect South Marine Corps Drive and public utilities in the area from coastal erosion. NMFS has reviewed the updated consultation materials it received in pursuant to EFH provision (Section 305(b)) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U S C 1855(b)).

Consultation History
NMFS provided technical assistance on June 2, 2022, by participating in the East Hagatna Emergency Shoreline Protection Project Cooperating and Participating Agency Workshop that discussed eight proposed replacement and repair alternatives to the existing seawall. On July 22, 2022, NMFS provided technical assistance intended to help integrate EFH considerations into the scoping process of USACE for its study and participated in a conference call with USACE and U.S. Fish and Wildlife Service (USFWS) to discuss Fish and Wildlife Coordination Act compliance on August 21, 2022; since past studies of fish and wildlife resources identified by USACE as detailed in its June 28, 2022 letter did not include the vicinity of the project area. It was agreed that an assessment in the form of a survey was needed for the proposed project footprint of which the Services (*i.e.*, NMFS and USFWS) volunteered to perform for the USACE. On August 25, 2022, the USACE and NMFS discussed its approach for conducting the assessment that included logistics and survey methods to account for NOAA Trust Resources (e.g., living marine resources and their habitats) in and around the proposed project footprint. To what extent they may be impacted, a preliminary survey of reconnaissance in nature was determined to be appropriate for recording mainly qualitative observations. On November 1, 2, and 7, 2022, NMFS performed an in-water survey, and sent a summary report to USACE on June 22, 2023, that detailed its methods, findings, and recommendations. A subsequent Planning Aid Letter was sent from NMFS to USACE on July 13, 2023.

USACE selected Alternative 2: Rock Revetment as it considered it to be the most practicable with respect to real estate considerations (*i.e.*, coastal squeeze between the ocean and South Marine Corps Drive), met the climate change and sea level rise engineering requirements within the cost limitations (*i.e.*, $9,000,000 USD), logistics as the Tentatively Selected Plan, and was the Least Environmentally Damaging Practicable Alternative.

The EFH consultation request for the revetment was received on September 11, 2023. NMFS responded with conservation recommendations (CRs) on October 12, 2023.

On April 24, 2024 NMFS received a request from USACE to re-initiate the EFH consultation due to the revised tentatively selected plan for emergency shoreline protection measures.

Project Description
The prior proposed action for this project was to remove an existing seawall and construct a 2,100-foot (ft) long by 17 ft wide (approximately 35,700 ft^2 or 0.82 acres [ac]) rock revetment using heavy equipment and machinery. Following internal USACE project reviews and discussions with the Government of Guam, USACE modified the design to a 1,630 linear foot precast concrete seawall to replace the existing 1,630 ft seawall.

The existing seawall made of concrete and rock rubble will be demolished, and the debris will be hauled offsite and disposed of at a local waste facility. Site preparations will include removal of 20 trees and excavation of native coastal soils below and upland of the existing seawall down to the limestone shelf. Dewatering will be required because the excavations will be below the mean sea level (MSL). A 7-ft wide base will be installed before pre-cast concrete panels are placed. This design utilizes the weight of the backfill to provide resistance to the lateral earth pressures. Concrete wall panels constructed either onsite or offsite and transported to the site will replace failing sections of the existing seawall. A splash apron composed of formed concrete over a gravel fill will be installed behind the crest of seawall. In addition to the seawall replacement, three culverts will be replacements and three sets of concrete stairs will be installed for beach access. In-water work would occur only in those reaches of the seawall that extend further seaward and only temporarily during construction. Unlike the previously proposed revetment, the currently proposed precast concrete seawall would not permanently convert any intertidal habitat consisting of unconsolidated sediments to semipermeable rock revetment. Reseeding of 3,555 square yards and replanting of 20 trees will take place once construction is completed.

This design has a top elevation of 8.5 ft above MSL, a crest width of 1 ft and a buried base that is 7 ft wide, with the total disturbed upland area being approximately 20 ft due to excavation and backfill of the existing soils. This design does not include any construction in front of the existing seawall. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability to sea-level change. Construction is expected to begin in 2027 and take approximately 12 months.

Essential Fish Habitat
The marine water column from the surface to a depth of 3,281 ft from shoreline to the outer boundary of the Exclusive Economic Zone (200 nautical miles), and the seafloor from the shoreline out to a depth of 1,312 ft around each of the Mariana Islands, have been designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's Pelagic and Mariana Archipelago Fishery Ecosystem Plans. The MUS and life stages found specifically within the action area include eggs, larvae, juveniles, and adults for Bottomfish and Pelagic MUS. Specific types of habitats considered as EFH within, or adjacent to, the proposed project area include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Baseline Condition
The proposed pre-cast concrete seawall will replace a large portion of the existing seawall without increasing the existing footprint seaward. The previously proposed rock revetment may have extended as far as 20 ft seaward from the existing seawall. The surface substrate within the tentative project footprint is mainly intertidal sand with pockets of exposed rubble and cobble. Sand is a spatially dominant surface feature in the neighboring submerged region (out to approximately 50 meters distant). Biological resources in the submerged area includes scattered patches of seagrass and algae in various aggregate densities, with a limited number of scattered corals (12 individuals that ranged in size from 1 to 118 inches greatest length) (NMFS 2023a).

Adverse Effects
Habitat types considered as EFH within, or adjacent to, the proposed project area includes living (e.g., coral, seagrass, algae, and crustose coralline algae) and non-living (e.g., hard substrate, artificial substrate, sand) benthic habitat forming EFH that may be adversely affected and lost. Effects could include removal or impairment of a feature that normally serves as shelter or provides structure for something else to grow on.

The proposed action may result in the following adverse effects to EFH described below.

Physical Damage: Shallow water benthic organisms are vulnerable to physical damage as they are unable to avoid the impact. Direct contact to the hardbottom by equipment and materials and installation activities could lead to short and long-term to permanent adverse effects. Steps should be taken during the demolition and removal of the existing seawall and the installation of the new seawall to minimize contact with the hardbottom offshore of the project by equipment and materials.

Sedimentation: Sedimentation may occur from the re-suspended sediment during demolition and removal of the existing seawall, construction of the new seawall, and excavation of sediments. Increased turbidity could affect the water column around the project area or may travel to adjacent habitats with wave or tidal conditions. Sedimentation is not likely to cause significant impacts to fish in the nearshore environment because of their mobility, but some effects are still possible. Fish may be displaced from their normal home range which could result in negative intra- and interspecies interactions and impact fitness, leading to lower reproductive success and a lower ability to find prey or avoid predators (Kjelland *et al.* 2015). Sensitive organisms in the nearshore environment such as seagrass and coral reef organisms are easily smothered by sediment (Golbuu *et al.* 2003). With sedimentation rates > 100 milligrams/cm/day, it can kill exposed coral tissue within a few days (Riegl and Branch 1995).

Chemical Contamination: In general, the impacts from contaminants in the marine environment is dependent on how long the chemical components persist and their tendency to bioaccumulate in the food web (van Dam *et al.* 2011). Some pollutants are environmentally persistent and can take years or even decades to biodegrade (Minton 2017). Increases in nutrients, pollutants and contaminants to the marine environment can reduce fitness and cause mortality of exposed organisms. These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Some pollutants are environmentally persistent and can take years or even decades to biodegrade, and others can bioaccumulate and biomagnify through the food chain, eventually posing as a direct threat to human health. Many contaminants readily attach to sediment particles and are transported into the ocean where they become entrained in the bottom sediment of estuaries, reefs, and potentially deeper ocean ecosystems. When not properly maintained, equipment could release contaminants (e.g., oil, fuel) into the marine environment.

Invasive Species: Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Species can be introduced to new biogeographies, typically via transport on vessel hulls or in ballast water. Invasive species rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

Nutrient Loading: Nutrient loading may occur due to the dredging of sediments, excavation, and the runoff from the local urbanized landscape. Elevated nutrient levels from in-ground and underground sources are particularly notable in karst environments (Moosdorf *et al.* 2015). An imbalance of nutrients can favor algae blooms that prevent other photosynthetic benthic fauna from establishing and dominating in nearshore environments. Nitrogen-based compounds associated with water treatment and urban runoff is also linked to disease and health declines in coral (Redding *et al.* 2013).

Noise: Noise has a broad range of potential effects, especially when it has high amplitude (Casper *et al.* 2016) or when it is less intense but long-lasting (Popper and Hastings 2009). For fish, intense and high amplitude sounds can cause immediate death or tissue damage that may ultimately result in mortality (McCauley *et al.* 2003). At the very least it may impact their fitness in sub-lethal ways (Casper *et al.* 2016). Alternatively, chronic noise at moderate levels will not likely result in mortality but may mask biologically important sounds and alter the natural soundscape. This can cause hearing loss reduction and have adverse effects on an organism's stress levels and immune system; persistent noise can also affect coral spawning (Minton 2017, Lecchini *et al.* 2018). Studies on invertebrate species have shown that chronic exposure to noise may lead to increased metabolic rates, causing a reduction in growth and reproduction (Lagardère 1982). Noise from this project will be generated by equipment (e.g., heavy

equipment and machinery), but little sound is expected to propagate into the marine environment, unless the equipment operates in the water.

Climate Change
NMFS considers the adverse effects of actions in the context of expected environmental changes due to climate change within the action area (NMFS 2023b). Sea level rise and increased frequency of intense storms as a result of climate change threaten nearshore infrastructure in Guam (Grecni *et al.* 2020). The new seawall will be taller than the previous seawall to account for sea level rise, and the new design will allow water to get past the wall from more intense rain that is expected. USACE anticipates this alternative will have positive impacts on nearshore water quality by minimizing future coastal erosion. As nearshore areas are inundated with more frequency over time, runoff from land will also increase, potentially increasing turbidity, chemical contamination, and nutrient runoff. Seawalls reflect wave energy, potentially increasing turbidity in the area.

USACE-proposed Mitigation
The USACE has included a thorough list of BMPs, including four CRs from the previous EFH consultation for the East Hagatna Shoreline Protection project. The BMPs, when implemented, will avoid and minimize most adverse impacts to EFH in the project area.

NMFS Concerns
Shoreline hardening is typically not encouraged by NMFS (NOAA 2015). Shoreline hardening tends to be disruptive to adjacent beach and natural shoreline dynamics (Fletcher et al. 1997, Coyle and Dethier 2010), and may cause coastal erosion on adjacent unreinforced sites and the proliferation of additional hardening (Abbott 2013). The proposed action of this project may lower biodiversity and abundance of benthic infauna associated with narrower soft-sediment shores along hardened infrastructure (Dugan and Hubbard 2006, Dugan et al. 2008), and lower abundances of benthic infauna associated with coarser sediments (Sobocinski et al. 2010). Furthermore, the loss of upland vegetated habitat can cause cascade effects that impact coastal waters from shifts in nutrient availability by altered nutrient cycling in the intertidal (e.g., decrease rate of denitrification) (O'Meara et al. 2015) and from bioaccumulation of toxins in benthic infauna and nekton (Franca et al. 2005) by reduced pollutant filtration (Reboreda and Cacador 2007). These impacts may adversely affect EFH by reducing its quantity and quality.

Conservation Recommendation
Pursuant to Section 305(b)(2) (as described by 50 CFR 600.920 and 600.925(b)) of the MSA, we provide the following CR that when implemented, will ensure that potential adverse effects to EFH at the proposed action areas are avoided, minimized, and offset.

Conservation Recommendation 1: Visually monitor water quality (*e.g.,* for increases in turbidity) due to the project. If there is a sudden increase in turbidity, cease work and ensure the BMPs are in place (*e.g.*, silt curtains).

Conclusion
NMFS greatly appreciates the efforts of USACE to comply with the EFH provision of the MSA and recognizes that USACE proposed BMPs and mitigation strategies that, when adhered to and implemented, may avoid and minimize adverse effects to EFH. However, due to the proposed project activities, potential long-term or permanent impacts to EFH may result in substantial adverse effects to nearshore EFH from physical damage and associated spatial and temporal losses of function and service. Therefore, we disagree with the determination of USACE that its adverse effects to EFH will be minimal and temporary. We have determined that the proposed project may adversely affect EFH and provided explanations of our concerns and a CR for implementation to avoid and minimize them.

Please be advised that regulations Section 305(b)(4)(B) (as described by 50 CFR 600.920) to implement the EFH provisions of the MSA require that Federal activities agencies provide a written response to this letter within 30 days of its receipt; a preliminary response is acceptable if more time is needed. The final response must include a description of measures to avoid, minimize, or offset effects to EFH from the proposed activities. If the response is inconsistent with our EFH CR, an explanation for not implementing them must be provided at least 10 days prior to the final approval of the proposed activities.

Please contact me at alexandria.barkman@noaa.gov with any comments, questions, or concerns. Thank you for coordinating on this proposed action.

Regards,
Alex

References

Abbott, T. 2013. Shifting shorelines and political winds – The complexities of implementing the simple idea of shoreline setbacks for oceanfront developments in Maui, Hawaii. *Ocean & Coastal Management* 73: 13-21. http://www.doi.org/10.1016/j.ocecoaman.2012.12.010.

Casper, B. M., T. J. Carlson, M. B., Halvorsen, and A. N. Popper. 2016. Effects of Impulsive Pile-Driving Exposure on Fishes. *Advances in Experimental Medicine and Biology*. 875: 125-32.

Coyle, J. M., and M. N. Dethier. 2010. Appendix C: review of shoreline armoring literature. Pages 245- 266 in Shipman, H., M. N. Dethier, G. Gelfenbaum, K. L. Fresh, and R. S. Dinicola (eds.), Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010–5254, 262 p.

Dugan, J. E., and D. M. Hubbard. 2006. Ecological responses to coastal armoring on exposed sandy beaches. *Shore and Beach* 74: 10–16.

Dugan, J. E., D. M. Hubbard, I. F. Rodil, D. L. Revell, and S. Schroeter. 2008. Ecological effects of coastal armoring on sandy beaches. *Marine Ecology* 29: 160–170.

Fletcher, C. H., R. A. Mullane, and B. M. Richmond. 1997. Beach loss along armored shorelines on Oahu, Hawaiian Islands. *Journal of Coastal Research* 13: 209-215.

França S., C. Vinagre, I. Caçador, and H. N. Cabral. 2005. Heavy metal concentrations in sediment, benthic invertebrates and fish in three salt marsh areas subjected to different pollution loads in the Tagus Estuary (Portugal). *Marine Pollution Bulletin* 50: 998–1003.

Golbuu, Y., S. Victor, E. Wolanski, and R. H. Richmond. 2003. Trapping of fine sediment in a semi- enclosed bay, Palau, Micronesia. *Estuarine, Coastal and Shelf Science*. 57(5): 941-949.

Goldberg, J., and C. Wilkinson. 2004. Global threats to coral reefs: Coral bleaching, global climate change, disease, predator plagues and invasive species. *Status of Coral Reefs of the World*. 67-92 p.

Grecni, Z., W. Miles, R. King, A. Frazier, and V. Keener, 2020: *Climate Chang in Guam:Indicators and Considerations for Key Sectors.* Report for the Pacific Islands Regional Climate Assessment. Honolulu, HI: East-West Center, http://www.eastwestcenter.org/PIRCA-Guam.

Kjelland, M. E., C. M. Woodley, T. M. Swannack, and D. L. Smith. 2015. A review of the potential effects of suspended sediment on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. *Environment Systems and Decisions*. 35: 334-50.

Lagardère, J. P. 1982. Effects of noise on growth and reproduction of Crangon crangon in rearing tanks. *Marine Biology* 71: 177-85.

Lecchini, D., F. Bertucci, C. Gache, A. Khalife, M. Besson, N. Roux, C. Berthe, S. Singh, E. Parmentier, M. N. Nugues, and R. M. Brooker. 2018. Boat noise prevents soundscape-based habitat selection by coral planulae. *Scientific Reports*: 8(1): 1-9.

McCauley, R. D., J. Fewtrell, and A. N. Popper. 2003. High intensity anthropogenic sound damages fish ears. *Journal of the Acoustical Society of America*. 113: 638-42.

Minton, D. 2017. Non-fishing effects that may adversely affect essential fish habitat in the Pacific Islands Region. National Oceanic and Atmospheric Administration Final Report for contract AB-133F-15-CQ- 0014.

Moosdorf, N., T. Stieglitz, H. Waska, H. H. Dürr, and J. Hartmann. 2015. Submarine groundwater discharge from tropical islands: a review. Grundwasser. 20(1): 53-67.

National Marine Fisheries Service (NMFS). 2023a. A preliminary survey of marine species and habitats in the vicinity of a proposed shoreline revetment in East Hagatna, Guam. Final report prepared for the United States Army Corps of Engineers Honolulu District, 12 p.

National Marine Fisheries Service (NMFS). 2023b. Procedure for Addressing Climate Change in NMFS Essential Fish Habitat Consultations. Office of Habitat Conservation, 20 p.

National Oceanographic and Atmospheric Administration (NOAA). 2015. Guidance for considering the use of living shorelines, 35 p.

O'Meara T., S. P. Thompson, and M. F. Piehler. 2015. Effects of shoreline hardening on nitrogen processing in estuarine marshes of the US mid-Atlantic coast. *Wetlands Ecology and Management* 23: 385–394.

Popper, A.N., and M. C. Hastings. 2009. The effects on fish of human-generated sound. *Integrative Zoology*. 4: 43-52.

Reboreda, R., and I. Cacador. 2007. Halophyte vegetation influences in salt marsh retention capacity for heavy metals. *Environmental Pollution* 146: 147–154.

Redding, J. E., R. L. Myers-Miller, D. M. Baker, M. Fogel, L. J. Raymundo, and K. Kim. 2013. Link between sewage-derived nitrogen pollution and coral disease severity in Guam. *Marine Pollution Bulletin*. 73(1): 57-63.

Riegl, B., and G. M. Branch. 1995. Effects of sediment on the energy budgets of four scleractinian (bourne 1900) and five alcyonacean (lamouroux 1816) corals. *Journal of Experimental Marine Biology and Ecology*. 186(2): 259-275.

Sobocinski, K. L., J. R. Cordell, and C. A. Simenstad. 2010. Effects of shoreline modifications on supratidal macroinvertebrate fauna on Puget Sound, Washington, beaches. *Estuaries and Coasts* 33: 699–711.

van Dam, J. W., A. P. Negri, S. Uthicke, and J. F. Mueller. 2011. Chemical pollution on coral reefs. *In Ecological Impacts of Toxic Chemicals*. 187-211 p.

On Wed, Apr 24, 2024 at 2:40 PM Dean, Marian E CIV USARMY CEPOH (USA) <Marian.Dean@usace.army.mil> wrote:

> USACE) has revised the tentatively selected plan for emergency shoreline protection measures along Hagatna Bay at East Hagatna, U.S. Territory of Guam. We initiated abbreviated consultation with your office on September 11, 2023 for the prior plan, a 2,100 linear foot revetment. Following internal USACE project reviews and discussions with the Government of Guam, we have modified our design to a 1,630 linear foot precast concrete seawall. Accordingly, we would like to reinitiate abbreviated consultation for the revised tentatively selected plan, i.e., proposed action, that may adversely affect Essential Fish Habitat (EFH) pursuant to Section 305(b)(2) of the Magnuson Stevens Fishery Conservation and Management Act.

3f. 2024 May 29 USACE Response to NMFS Conservation Recommendations

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

May 29, 2024

Civil and Public Works Branch
Programs and Project Management Division

Mr. Gerry Davis
Habitat Conservation Division, NOAA Fisheries, U.S. Department of Commerce
1845 Wasp Blvd., Bldg 176, Room 2884
Honolulu, HI 96818

Dear Mr. Davis:

Thank you for the National Marine Fisheries Service's (NMFS) letter dated May 20, 2024, providing Essential Fish Habitat (EFH) Conservation Recommendations (CRs) for the proposed East Hagatna Emergency Shoreline Protection located in East Hagatna, Guam. The CRs were provided in response to receiving the U.S. Army Corps of Engineers' (USACE) EFH Assessment and request for consultation on April 24, 2024.

Provided below is USACE's response to the one CR provided in your letter.

Conservation Recommendation #1: Visually monitor water quality (e.g., for increases in turbidity) due to the project. If there is a sudden increase in turbidity, cease work and ensure the BMPs are in place (e.g., silt curtains).

Response: USACE will implement industry standard, site-specific best management practices (BMPs) including use of silt curtains to isolate and contain the work area. Consistent with NMFS' recommendation above, USACE will visually monitoring water quality in the marine waters surrounding the work area for increases in turbidity, and regularly inspecting and maintaining BMPs to ensure they are properly installed and functioning as intended. If turbidity is observed external to the sediment containment BMPs, USACE will temporarily suspend work in order to inspect the BMPs and adjust accordingly.

The USACE appreciates working with NMFS on the EFH consultation for this project and acknowledges the importance of implementing CRs to protect important marine resources. In addition, USACE is confident that the incorporation of CRs into our plans and specifications, combined with the BMPs, will ensure that there are no substantial adverse effects to EFH. Completing consultation in this feasibility phase based on currently available engineering and environmental information will allow USACE to proceed into design and construction. If approved by our agency to move into the next phase, the design for the seawall will be further developed in consideration of and incorporating the avoidance and minimization measures discussed in

consultation with NMFS for impacts to EFH. USACE understands that should the proposed action change substantially relative to the assessed effects to EFH, USACE will evaluate the need to reinitiate consultation with NMFS at that time.

Should you have any questions regarding the proposed action, please contact Ms. Marian Dean of my staff at (808) 379-8223 or via email at Marian.Dean@usace.army.mil.

Sincerely,

Digitally signed by ROUSE.MICHAEL.BARRY.1155134743
Date: 2024.05.29 16:53:50 -08'00'

Michael B. Rouse
Chief, Environmental Resources Section, Honolulu and Alaska Regional Planning Team

Attachment 4. CWA Consultation

4a. 2022 July CWA Section 404(b)(1) evaluation

Section 404(b)(1) Clean Water Act 40 CFR Part 230

Evaluation of the Effects of Discharge of Dredged or Fill Materials into the Waters of the United States

East Hagåtña Continuing Authorities Program (CAP) Section 14 Emergency Shoreline Protection

Hagåtña, Guam

I. **PROJECT DESCRIPTION**

The following is provided in accordance with Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) as amended by the Clean Water Act of 1977 (CWA) (Public Law 95-217, 33 U.S.C. § 1251 et seq.). Its intent is to succinctly state and evaluate information regarding the effects of discharge of dredge or fill material into the waters of the United States (WOTUS). As such, it is not meant to stand-alone and relies heavily upon information provided in the environmental document to which it is attached, the East Hagåtña, Guam CAP Section 14 Emergency Shoreline Protection Integrated Feasibility Report and Environmental Assessment (IFR/EA).

The project will provide emergency shoreline protection from coastal erosion to South Marine Corps Drive and public utilities in the area. The project area includes the west central coast of Guam in Hagåtña Bay, east of the capital of Hagåtña along South Marine Corps Drive and Trinchera Beach Park. Under the Recommended Plan, 2,100 feet of existing seawall would be replaced with a rock revetment (Figure 1). The base of the revetment would extend 17 feet toward the ocean from the crest of the existing seawall. The toe of the revetment would be anchored in the limestone. The revetment installation would begin with construction at the toe (approximately -2.5 ft. MSL) and up to the crest elevation (approximately +9ft. MSL), 1 foot above the current highest estimated point of 8 feet (Figure 2). The present assumption is the revetment could be constructed from the land during low tide without operating from the beach or marine waters. To seat the toe a small trench will need to be dug into the underlying limestone. The footprint provided for the revetment in Figure 1 shows the maximum extent that could be needed for construction. The footprint of the finished revetment is estimated to be 0.82 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline. Excavation, grading, structure demolition, tree, and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.

4a. (cont.) CWA Section 404(b)(1) evaluation



Figure 1: Proposed Project Area: The proposed active construction and staging area (COSA) are indicated in black. The project area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. Rock Revetment Footprint. Redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, May 31, 2022.

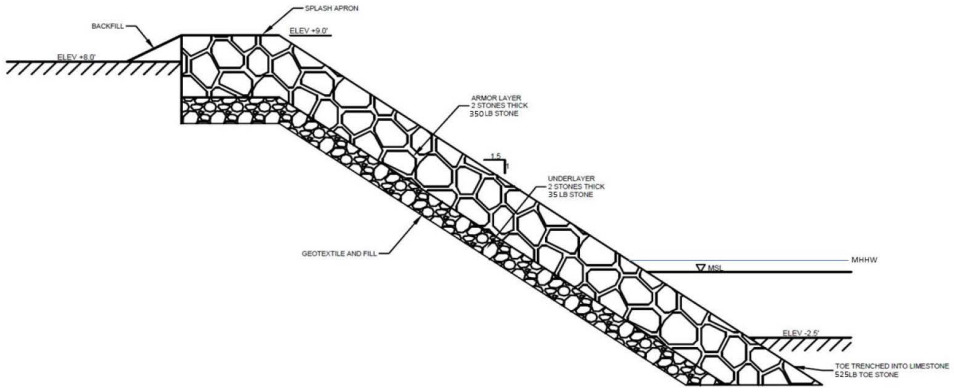


Figure 2: Rock revetment cross section, showing where MSL and MHHW will potentially intersect with the structure. Figure by Catie Dillon, May 31, 2022.

The revetment is comprised of compacted fill as the foundation and base grade, a geotextile filter fabric, a double layer of underlayer stone, a double layer of armor stone, and anchoring by an oversized toe stone. At the specified 1.5H/1V slope, the revetment is expected to be 17 feet

4a. (cont.) CWA Section 404(b)(1) evaluation

wide, extending towards the ocean, with a crest elevation of +9 ft MSL. Depending on the cost and local availability of material, this revetment could be capped with either a two-stone armor layer or pre-cast concrete armor units. This design will meet USACE coastal engineering criteria for expected design life and adaptability to RSLC. The expected design life of this system (assuming proper installation and routine maintenance) is on the order of 50 years.

A. Authority

Authorization for the East Hagåtña Emergency Shoreline Protection Feasibility Study is provided by Section 14 of the 1946 Flood Control Act, as amended.

This activity is regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA (33 U.S.C § 1344). Section 230.10(a) of the 404(b)(1) guidelines state "an alternative is practicable if it is available and capable of being done after taking into considerations costs, existing technology, and logistics in light of overall project purposes." Pursuant to the Section 404(b)(1) Guidelines (40 CFR 230), the least environmentally damaging practicable alternative (LEDPA) must be practicable in terms of technology, cost, and logistics in light of overall project purpose, and produce the least environmental damage. Impacts to aquatic and terrestrial habitat would be avoided where possible, minimized where avoidance is not possible, and compensated when they occur. The rock revetment is the only practicable alternative that meets design requirements and CAP 14 funding constraints.

B. General Description of Dredged and Fill Material

Construction of the proposed revetment would involve:

- various sized rock material for the armor stones, underlayer stones, and toe stones
- Excavation of sand and limestone rock to place the toe stone
- Compacted fill as the foundation and base grade layer
- Geotextile fabric on top of the compacted fill
- Installing and removing all mitigation measures

An estimated 5491 cubic yards of various grades of rock material would be used to build the revetment, while approximately 537 cubic yards of fill and 191 cubic yards of excavated sand would be placed to create the foundation and backfill the toe and revetment. The majority of the revetment structure would be placed upland; the lower, seaward portion would extend below the high tide line in most places (see Figure 2; the USACE is using the Mean Higher High Water (MHHW) vertical datum as a reasonable proxy for the high tide line), and therefore constitute a discharge to WOTUS under Section 404 of the CWA.

Armor stone, and other large rock would likely come from a quarry on the island, while fill material may be obtained from onsite or other island sources. Sand excavated during trenching of the structure toe will be used to bury the toe after structure completion.

An estimated 584 cubic yards of material would be excavated from the shoreline of Hagåtña Bay during construction, for placement of the toe. This material is expected to consist primarily

of sand and limestone rock. Material that is not used as fill during project construction would be placed at an upland disposal site, as yet to be determined.

C. Description of the Proposed Discharge Site

The floor of Hagåtña Bay in the project area is approximately 2.5 feet of sand over limestone bedrock (Burdick 2005). There are varying amounts of sandy beach present between the existing seawall and the ocean. In some locations toward the eastern end of the project extent, there is approximately 15 feet of beach. In other areas, such as Veteran's Sunset Beach Park, there is no beach at all. Trinchera Beach extends along approximately 3,400 feet of the East Hagåtña shoreline (USACE 1993). The beach material is fine calcareous sand with extensive coral rubble, gravel, and marine debris. Portions of the shoreline are covered almost exclusively with gravel, rocks, rubble, and small limestone boulders. Small sand and alluvial deltas had formed in the vicinities of storm drains and the inner reef flat has a covering of fine sand and silt (USACE 1993). The footprint of the finished revetment is estimated to be 0.82 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline.

D. Description of Discharge Methods

Preferably, we will be able to do the construction from land at low tide and have no in water construction. Material will be excavated from the shoreline and placed for the revetment using an excavator located on the upland. Fill for the revetment would be placed by excavator and other construction machinery.

II. FACTUAL DETERMINATION

A. Physical Substrate Determinations

Most of the material discharged at the construction site will originate in the construction site. The rock revetment will be coarser than the majority of the existing sandy beach and substrate, replacing 0.82 acres of predominantly sandy substrate with a high-relief rocky substrate.

B. Water Circulation. Fluctuation and Salinity Determinations

The rock revetment would reduce wave energy within and near the area, which will cause localized changes to water circulation along the beach. The rock revetment would protect a portion of the shoreline along Hagåtña Bay from further erosion. No freshwater streams enter the project area and the existing culverts would be extended oceanward with the structure extents, but no noticeable effects on salinity are anticipated.

C. Suspended Particulate/Turbidity Determinations

Guam Environmental Protection Agency reported background turbidity severity in Hagåtña Bay in 2020 and 2021 as none to mild and visibility as 2.5 to 18.5 meters as measured by secchi disk (NWQMC 2022). Excavation is expected to be performed with an excavator operated from the upland area. Construction activities will be confined mainly to the shoreline area with little in-

water work. Excavation of materials seaward of the existing seawall will be conducted so as to minimize turbidity. As far as is practicable and feasible, necessary excavations in the intertidal zone will be conducted during low tide conditions to minimize turbidity effects. Construction materials will be relatively free of silt or other fine particulate material. There may be some localized, transient increases in turbidity created by excavation and setting of stones under all structural improvements. No significant long- term effects on water quality are anticipated under any of the project alternatives. Project construction is not expected to have any significant impacts on the marine environment. Any turbidity effects generated by site preparation and placement of stones are expected to be localized and transient: particulates should quickly settle to the bottom or be carried away by wave action and currents. Generation of turbidity will be minimized by avoiding excavation work during periods of high water.

D. Contaminant Determinations

There are no records of chemical contamination in the project area, though World War II era unexploded ordinance are a risk on most accessible shorelines of Guam. Dungca's Beach and Trinchera Beach along East Hagåtña Bay are reported to be impaired for bacteria (GEPA 2020). West Hagåtña Beach, outside the project area, was also reported to be impaired for bacteria (GEPA 2020). Bacterial contamination along the beaches has been attributed to 30 stormwater outfalls (CEPA 1979 and Chan 1977 cited in USACE 1990) which also discharge large amounts of solids and nitrate-nitrogen (Zolan et al. 1978 cited in USACE 1990), wastewater, sewage overflow, and stormwater runoff (GEPA 2020). At low tide, odors are produced from anaerobic conditions and algal growth on storm drain deltas, the largest of which occur off the Naval Air Station drain along Trinchera Beach and the Tamuning drains along Dungca's Beach (USACE 1990). Shoreline algal growth appears to be a natural phenomenon caused by greatly elevated nutrient concentrations in groundwater seepage (USACE 1990).

Care will be exercised to ensure that no contamination of the marine environment results from construction activities. Best management practices will be employed to ensure that no debris, petroleum products or other deleterious material is allowed to fall, flow, leach or otherwise enter the water.

The Clean Water Act Section 404(b)(1) guidelines state, "Dredged or filled material is most likely to be free from chemical, biological, or other pollutants where is composed primarily of sand, gravel, or other naturally occurring inert material. Dredged material so composed is generally found in areas of high current or wave energy..." (40 CFR 230.60). As described in previous sections, the material to be excavated consists of a few feet of wave-driven coarse sand and gravel, on top of much denser formations of weathered bedrock. The USACE determines that the material to be excavated meets the above description from 40 CFR 230.60 and is highly unlikely to have received and retained contaminants.

E Aquatic Ecosystem and Organism Determinations

As described above in Section 1C, the habitat that would be directly impacted by the proposed project is a narrow, highly variable intertidal strand of sand, coral rubble, gravel, and rock, supporting no obvious aquatic communities. A previous survey of the Hagåtña Bay benthic

environments (NOAA 2005) found the benthic habitat within several hundred meters of shore consists of uncolonized sand, or sand sparsely colonized by seagrasses. The nearest areas of coral were found well offshore.

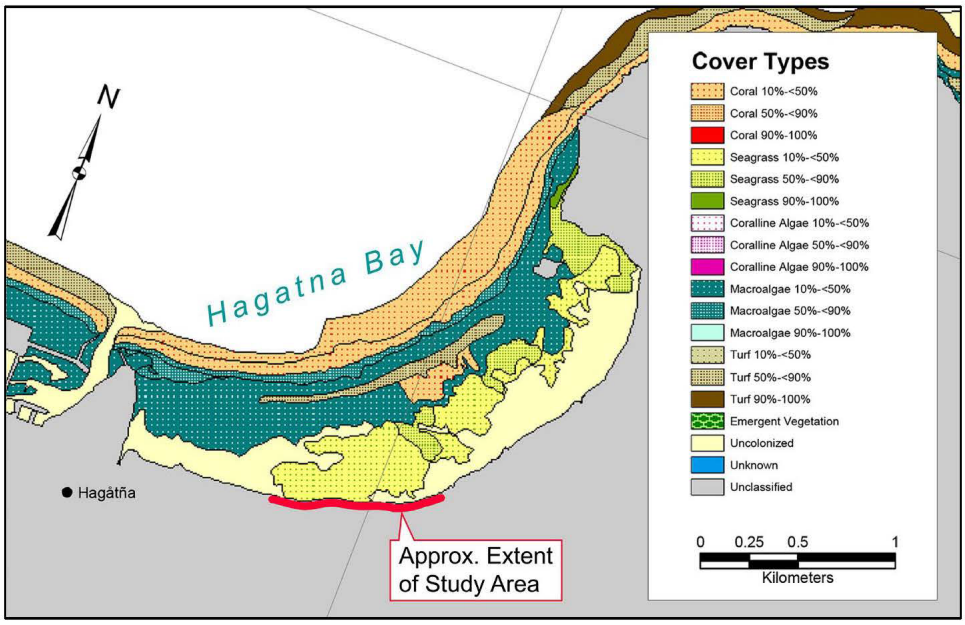


Figure 3. Benthic habitat cover types within Hagåtña Bay (adapted from NOAA 2005).

F. Proposed Discharge Site Determinations

Construction of the rock revetment would replace approximately 0.82 acres of a flat sandy substrate with a high-relief rock substrate. The rock structures would be similar to large boulders and bedrock outcroppings observed on the seafloor near the rocky headland west of the project site (see the Biological Evaluation and Essential Fish Habitat Assessment in Attachment 2a for further descriptions). They would be expected to recruit similar communities of marine algae and invertebrates.

G. Determination of Cumulative Effects on the Aquatic Ecosystem

The construction of the rock revetment may alter the local ecosystem in the long term, although not necessarily in a negative way. The rocky substrate should support new communities of aquatic organisms not currently found along Trinchera Beach, but similar to those found in nearby rocky coastal habitat.

4a. (cont.) CWA Section 404(b)(1) evaluation

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. Adaptation of the Section 404(b)(I) Guidelines to this Evaluation

The proposed project complies with the requirements outlined in the Environmental Protection Agency's Guidelines for Specification of Disposal Sites for Dredged or Fill Material.

B. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic

If the excavated material is suitable for the purpose, some of it may be used in project construction. All other material will be disposed of in an as yet to be determined upland site.

C. Compliance with Applicable State Water Quality Standards

The proposed project will not lead to exceedances of applicable Guam water quality standards.

D. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act

No toxic effluents that would affect water quality parameters are associated with the proposed project. Therefore, the project complies with toxic effluent standards of Section 307 of the Clean Water Act.

E. Compliance with Endangered Species Act of 1973

The USACE has been in informal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), under Section 7 of the Endangered Species Act (ESA). The ESA-listed species that have been considered under this study are summarized in Table 1. The USACE has determined that no listed species will be adversely affected by this project (see Appendix 3, Attachment 2a). USFWS and NMFS have/have not concurred.

Table 1. ESA-Listed Species Potentially Affected by the Proposed Action

Species Common Name	Listed Population	ESA Status	USACE Determination of Effect	Critical Habitat Adversely Modified?	Agency Jurisdiction
Mariana Fruit Bat		Endangered	Not likely to adversely affect	No	USFWS
Coral Acropora globiceps		Threatened	Not likely to adversely affect	No	NMFS
Green Sea Turtle	Central West Pacific	Endangered	Not likely to adversely affect	No	NMFS in water USFWS on shore

4a. (cont.) CWA Section 404(b)(1) evaluation

Hawksbill sea turtle		Endangered	Not likely to adversely affect	No	NMFS in water USFWS on shore

F. Evaluation of Extent of Degradation of the Waters of the United States

There are no municipal or private water supplies in the area that could be negatively affected by the proposed project. Commercial interests would benefit from shoreline stabilization. There would be no significant adverse impacts on plankton, fish, shellfish, wildlife, or special aquatic sites.

G. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Shoreline work will be done during low tide and equipment will be operated from the upland area to minimize in water work. Construction will cease under unusual conditions such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

Construction will be scheduled for time periods which minimize conflicts with the recruitment and traditional harvest of culturally-significant reef fishes (manahac), the presence of foraging migratory birds on the inner reef flat, or peak coral spawning season (June 1 to September 30), if practicable.

Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area will be identified on project figures. Project staff will be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.

Construction will incorporate best management practices described in the Guam 2017 Erosion and Sediment Control Field Guide. Silt curtains or other effective containment devices to help contain silt and other suspended particles placed in the water column as a result of excavation and construction activities will be used and properly installed to avoid degradation of adjacent coral reefs, and aquatic vegetation. All deliberately exposed soil or subsoil materials used in the project near water would be protected from erosion and stabilized as soon as possible with geotextile filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.

All project-related materials and equipment placed in the water will be free of pollutants. Debris and other wastes will be prevented from entering or remaining in the marine environment during the project. Excavation will be restricted to uncontaminated areas.

The maximum amount of material placed shall not exceed the minimum needed for erosion protection. All material will be placed in a manner that will avoid erosion by normal or expected high flows.

4a. (cont.) CWA Section 404(b)(1) evaluation

Before any equipment or material enters the water, a site manager shall verify that no ESA-listed marine animals are in the area where the equipment or materials are expected to contact the substrate.

Temporary fills will be removed in their entirety. All areas impacted by construction will be stabilized and revegetated with native species as appropriate. All removed trees will be replaced with appropriate species for the particular location. Large trees, greater than 2-inch diameter at breast height, will be used as much as possible based on nursery availability. Some trees are currently located within the existing wall (i.e. the rock and concrete was poured around the trunk) or are located very close to the wall, where as they grow their roots would begin to interfere with the project's stability. These trees will be will replaced in a location that is more conducive to tree survival and will not interfere with the project's stability. Clearing would be confined to the minimal area necessary to facilitate construction activities, while all bare areas would be reseeded and maintained until grass/vegetative cover is established. All areas will be cleaned of any trash and debris and returned, as close as possible, to the condition prior to initiation of project activities.

H. On the Basis of the Guidelines. the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is Specified as complying with the requirements of these guidelines.

4a. (cont.) CWA Section 404(b)(1) evaluation

IV. FINDING OF COMPLIANCE

No significant adaptations of the 404(b)(1) guidelines were made relative to this evaluation. The proposed project would not cause or contribute to significant degradation of waters of the U.S., including adverse effects on human health; life stages of organisms dependent on the aquatic ecosystem; ecosystem diversity; productivity and stability; and recreational, aesthetic, and economic values.

A review of the proposed project indicates that:

1. The discharge represents the least environmentally damaging practicable alternative, and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem.

____X____ Yes _____No

2. The activity does not appear to (1) violate applicable state water quality standards or effluent standards prohibited under the CWA, or (2) jeopardize the existence of federally listed endangered or threatened species or designated marine sanctuary.

____X____ Yes _____No

3. The activity will not cause or contribute to significant degradation of waters of the U.S., including adverse effects on human health; life stages of organisms dependent on the aquatic ecosystem; ecosystem diversity; productivity and stability; and recreational, aesthetic, and economic values.

_____X_____ Yes _____No

4. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

_____X_____ Yes _____No

Note: A negative response indicates that the proposed project does not comply with the guidelines.7. On the basis of the guidelines the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

4a. (cont.) CWA Section 404(b)(1) evaluation

V. REFERENCES

Burdick, D.R. 2005. Guam Coastal Atlas. 149 pages. https://www.uog.edu/_resources/files/ml/technical_reports/114Burdick_2005_UOGMLTechReport114.pdf.

Guam Environmental Protection Agency (GEPA). 2020. Integrated Report.

National Oceanic and Atmospheric Administration (NOAA). 2005. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, Guam and the Northern Mariana Islands Atlas. August 2005.

National Water Monitoring Council (NWQMC). 2022. Water Quality Data Portal. https://www.waterqualitydata.us/. Accessed 5 July 2022. Organization Identifier: 21Guam. Sites: East Hagåtña Bay Reef Flat, East Hagåtña Bay Seagrass, West Hagåtña Bay Reef Flat, and West Hagåtña Bay Seagrass.

United States Army Corps of Engineers (USACE). 1990. East Agana, Guam, Shore Portection Study.

USACE. 1993. Draft Detailed Project Report and Environmental Assessment East Agana, Territory of Guam Flood Control Study

4b. 2025 May Revised CWA Section 404(b)(1) Checklist

CLEAN WATER ACT SECTION 404 (b)(1) EVALUATION
U.S. ARMY CORPS OF ENGINEERS

PROJECT: East Hagatna Continuing Authorities Program (CAP) Section 14 Emergency Shoreline Protection, Agat, Guam

PROJECT MANAGER: Michael Terlaje Phone: (207) 598-9389

FORM COMPLETED BY: Marian Dean Phone: 808-379-8223

PROJECT DESCRIPTION: Insert project description.

The following is provided in accordance with Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) as amended by the Clean Water Act of 1977 (CWA) (Public Law 95-217, 33 U.S.C. § 1251 et seq.). Its intent is to succinctly state and evaluate information regarding the effects of discharge of dredge or fill material into the waters of the United States (WOTUS). As such, it is not meant to stand-alone and relies heavily upon information provided in the environmental document to which it is attached, , the East Hagatna, Guam CAP Section 14 Emergency Shoreline Protection Integrated Feasibility Report and Environmental Assessment (IFR/EA).

The project will provide emergency shoreline protection from coastal erosion to South Marine Corps Drive and public utilities in the area. The project area includes the west central coast of Guam in Hagatna Bay, east of the capital of Hagatna along South Marine Corps Drive and U.S. Veterans of Guam Pavilions (Figure 1).

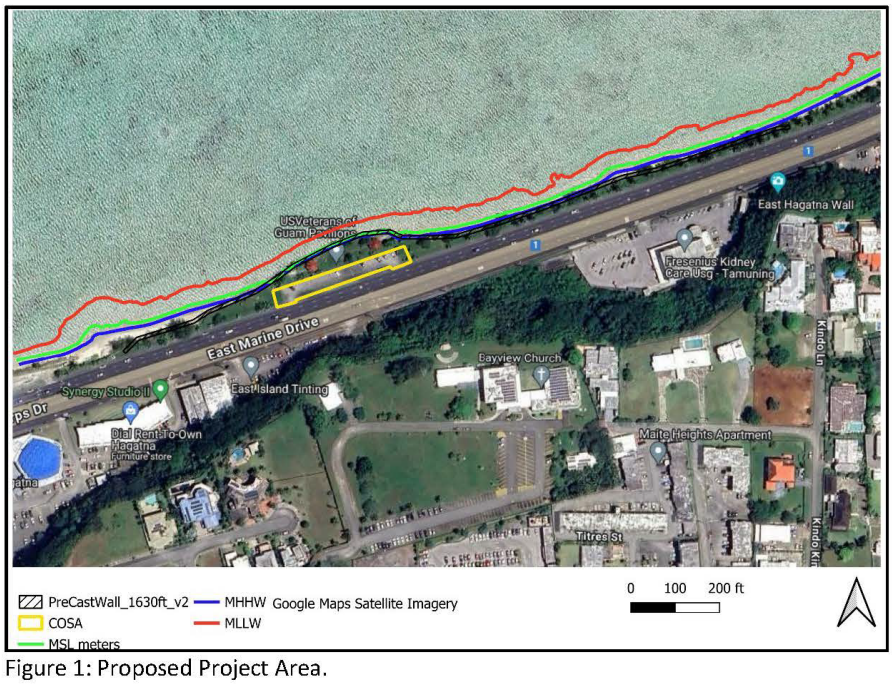


Figure 1: Proposed Project Area.

1

The project area includes 1,630 linear feet of existing sea wall (black **polygon**) along South Marine Corps Drive. The staging area is located in Veterans Beach Park parking lot (yellow polygon). Sections of the wall along US Veterans of Guam Pavilions is at Mean Sea Level (MSL; green line) and above mean higher high water (MHHW; blue line). None of the project is below mean lower low water (MLLW; red line).

Under the Recommended Plan, 1,630 feet of existing seawall would be replaced with a 1ft wide precast concrete seawall (Figure 2).

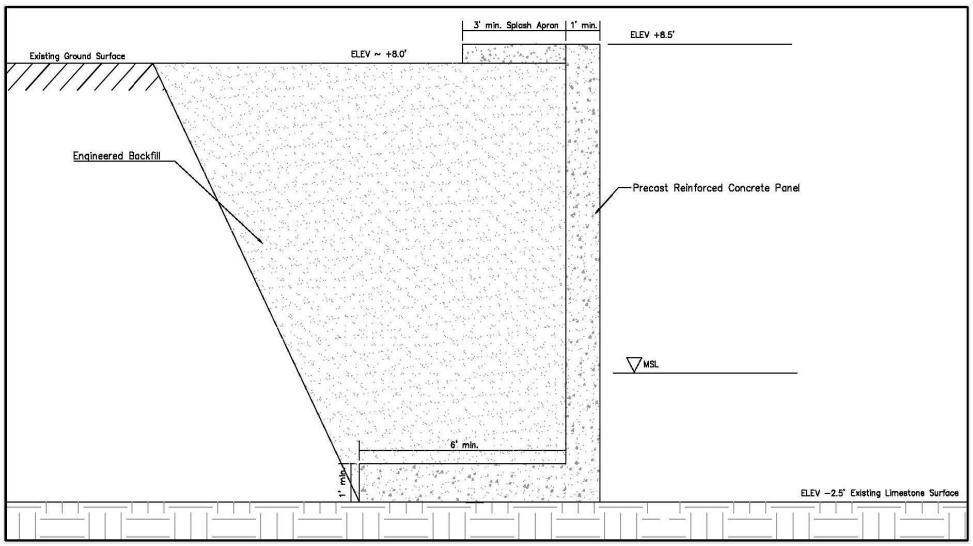


Figure 2: Precast Concrete Panel Seawall cross section, showing where MSL and MHHW will potentially intersect with the structure. Figure by Catie Dillon, March 6, 2024.

Concrete wall panels would either be constructed onsite or offsite and transported to the site to replace failing sections of the existing seawall. Installation of the precast concrete panel wall would occur using conventional land-based earth moving equipment and includes:

- demolition of approximately 1,630 linear ft (711 cy) of existing seawall
- removal of 20 trees
- excavation of two to three feet of native soils below and upland of the existing seawall to the limestone shelf (13,037 cy)
- installation of a 7 foot wide base
- placement of precast concrete panels
- construction of 3 sets of concrete stairs to allow for beach access and replacement of 3 culverts
- regrade of the excavated area to the elevation of the pre-existing ground surface
- installation of a splash apron composed of formed concrete over a gravel fill behind the crest of the structure

This design has a top elevation of 8.5-ft above MSL, a crest width of 1-ft and a buried base that is 7-ft wide, with the total disturbed upland area being approximately 20- ft due to excavation and backfill of the existing soils. In addition to the approximately 20 feet of disturbed area, a minimal additional 30 feet will be needed landward of the disturbed area for the working

platform of the construction equipment. While this design does not include any construction in front of the existing seawall, an estimated 13,037 cy of native soil would be excavated to install the 1 ft thick 7 ft wide cantilevered base and 1ft thick 10 ft high precast concrete panels. This excavated native soil would be placed to backfill behind the wall. While the precast concrete seawall would be in the footprint of the original wall, that footprint extends below the high tide line along the park (see Figure 1; the USACE is using the Mean Higher High Water (MHHW) vertical datum as a reasonable proxy for the high tide line), and therefore constitutes a discharge to WOTUS under Section 404 of the CWA.

The concrete used for the precast panels would come from Guam and be the same concrete used for similar applications in Guam.

Excavated native soil that is not used as fill during project construction would be placed at an upland disposal site, as yet to be determined.

This Recommended Plan meets USACE's coastal engineering criteria for expected design life and adaptability to sea level change (SLC). Construction of the seawall is expected to begin in 2026 and take approximately 12 months. Construction would not occur between 12 July to 9 August 2027 to avoid impacts to the peak coral spawning period during in-water activities.

1. Review of Compliance (Section 230.10(a)-(d)).

a.	The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to or be located in the aquatic ecosystem to fulfill its basic purpose See IFREA Section 4	|X| YES	| NO
b.	The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary See IFREA Sections 4.1.4 and 4.2.4	|X| YES	| NO
c.	The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values See IFREA Sections 4.1.4, 4.3.1, and 4.4	|X| YES	| | NO
d.	Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem See IFREA Environmental Appendix Attachment 8	|X| YES	| | NO

3

2. Technical Evaluation Factors (Subparts C-F).

	Signif-icant		Not Signif-icant*		N/A
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C) (Sec. 230.20-230.25).					
1) Substrate.			X		
2) Suspended particulates/turbidity.			X		
3) Water.			X		
4) Current patterns and water circulation.			X		
5) Normal water fluctuations.			X		
6) Salinity gradients.			X		
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)(Sec. 230.30-230.32).					
1) Threatened and endangered species.			X		
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web.			X		
3) Other wildlife.			X		
c. Potential Impacts on Special Aquatic Sites (Subpart E)(Sec. 230.40-230.45).					
1) Sanctuaries and refuges.			X		
2) Wetlands.					X
3) Mud flats.					X
4) Vegetated shallows.			X		
5) Coral reefs.			X		
6) Riffle and pool complexes.					X
d. Potential Effects on Human Use Characteristics (Subpart F)(Sec 230.50-230.45)					
1) Municipal and private water supplies.					X
2) Recreational and commercial fisheries.			X		
3) Water-related recreation.			X		
4) Aesthetics.			X		
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.			X		

3. Evaluation and Testing (Subpart G) (Sec. 230.60-230.61)

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical characteristics.....	X
2) Hydro-geography in relation to known or anticipated sources of contaminants.....	X
3) Results from previous testing of the material or similar material in the vicinity of the project ..	
4) Known, significant sources of persistent pesticides from land runoff or percolation	X
5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	X
6) Public records of significant introduction of contaminants from industries, municipalities, or other sources	X

7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities ..... | X|
8) Other sources (specify) ..... | |

List appropriate references.

Burdick, David ; Brown, Valerie ; Miller, Roxanna. 2019. A report of the Comprehensive Long-term Coral Reef Monitoring at Permanent Sites on Guam project. https://repository.library.noaa.gov/view/noaa/29489

Erftemeijer, P. L. A. and R. Lewis III. 2006. Environmental impacts of dredging on seagrass: a review. Marine Pollution Bulletin 52: 1553-1572.

Gaos, A.R., S. L. Martin, and T.T. Jones. 2020. SEA TURTLE TAGGING IN THE MARIANA ISLANDS TRAINING AND TESTING (MITT) STUDY AREA PROGRAMMATIC REPORT. NOAA, NMFS, PIRO, Honolulu, Hi.

NMFS. 2023a. A Preliminary Survey of Marine Species and Habitats in the Vicinity of a Proposed Shoreline Revetment in East Hagatna, Guam. USEPA. 2022a. ECHO. https://echo.epa.gov/facilities/facility-search/results

USEPA. 2023b. How's My Waterway? For Guam. https://mywaterway.epa.gov/community/guam/overview.

USEPA. 2023c. EnviroAtlas. https://enviroatlas.epa.gov/enviroatlas/interactivemap/Guam Environmental Protection Agency (GEPA). 2020. Integrated Report.

Integrated Feasibility Report and Environmental Assessment (IFREA) for East Hagatna Emergency Shoreline Protection, East Hagatna, Guam

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

|X| YES | | NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site. *Section 4 not applicable because the material excavated for placement of the wall will be backfilled to restore the elevation of the ground surface to its pre-construction condition (see Figure 15 in Section 3.4.3 of the IFREA).*

1) Depth of water at disposal site ..... | |
2) Current velocity, direction, and variability at the disposal site ..... | |
3) Degree of turbulence ..... | |
4) Water column stratification ..... | |
5) Discharge vessel speed and direction ..... | |
6) Rate of discharge ..... | |
7) Dredged material characteristics (constituents, amount, and type of material, settling velocities) ..... | |
8) Number of discharges per unit of time ..... | |
9) Other factors affecting rates and patterns of mixing (specify) ..... | |

List appropriate references:

Integrated Feasibility Report and Environmental Assessment (IFREA) for Agat Emergency Shoreline Protection, Agat, Guam

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable

	YES		NO

5. Actions To Minimize Adverse Effects (Subpart H)(Sec. 230.70-230.77).

	YES		NO
All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X		

List actions taken:
a. See Attachment 8 of the Environmental Appendix of the IFREA

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

		YES	NO
a.	Physical substrate (review sections 2a, 3, 4, and 5 above).	X	
b.	Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	X	
c.	Suspended particulates/turbidity (review sections 2a, 3, 4, and 5).	X	
d.	Contaminant availability (review sections 2a, 3, and 4).	X	
e.	Aquatic ecosystem structure, function and organisms(review sections 2b and c, 3, and 5)	X	
f.	Proposed disposal site (review sections 2, 4, and 5).		X
g.	Cumulative effects on the aquatic ecosystem.	X	
h.	Secondary effects on the aquatic ecosystem.	X	

7. Findings of Compliance or non-compliance. (Sec. 230.12)

	YES	NO
The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines ...	X	

May 21, 2025
DATE

Chris Floyd
Acting Chief, Environmental Resources
Hawaii and Alaska Regional Planning Team

6

4c. 2023 August 21 CWA Section 401 Water Quality Certification

GUAM ENVIRONMENTAL PROTECTION AGENCY • AHENSIAN PRUTEKSIÓN LINA'LA' GUÅHAN
LOURDES A. LEON GUERRERO • GOVERNOR OF GUAM | JOSHUA F. TENORIO • LIEUTENANT GOVERNOR OF GUAM
MICHELLE C. R. LASTIMOZA • ADMINISTRATOR

AUG 2 1 2023

Rhiannon L. Kucharski, MPIA, WRCP
Chief, Civil and Public Works Branch and
Legislative Liaison
Programs and Project Management Division
U.S. Army corps of Engineers, Honolulu District
230 Otake Street, Building 230
Fort Shafter, Hawaii 96858-5440

Reference: EAST HAGATNA SHORELINE PROJECT FEASIBILITY STUDY

Dear Ms. Kucharski:

In response to your letter dated July 21, 2023, Guam EPA herein acknowledges the Corps' coordination of this project with the Agency and the Corps' plans to obtain a water quality certification at a later date, prior to implementation of the project.

We understand the Corps recognizes the requirement to obtain certification from the Guam Environmental Protection Agency (Guam EPA) for any proposed discharges into Waters of the U.S. associated with the federally permitted shoreline protection project in compliance with applicable provisions of Section 401 of the Clean Water Act. To account for the lack of information presently available, the Corps is proposing to apply for and obtain water quality certification when sufficient detail is available during the environmental permitting process of the Pre-Construction Engineering and Design Phase that follows the current Feasibility Phase.

Guam EPA has recently accessed a copy of the proposed project's July 2023 Draft Integrated Feasibility Report and Environmental Assessment. Kindly keep the Agency apprised of any project changes, as appropriate.

Sincerely,

MICHELLE C.R. LASTIMOZA
ADMINISTRATOR

cc: Michael Terlaje, ACOE

GUAM EPA | 17-3304 Mariner Avenue Tiyan Barrigada, Guam 96913-1617 | Tel: (671) 300.4751/2 | Fax: (671) 300.4531 | epa.guam.gov
ALL LIVING THINGS OF THE EARTH ARE ONE • *MANUNU TODU I MANLÁLA'LA'*
Like and follow guamepa

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

July 21, 2023

Civil and Public Works Branch
Programs and Project Management Division

Mr. Brian Bearden
Chief Engineer
Water Division
Guam Environmental Protection Agency
17-3304 Mariner Avenue
Tiyan Barrigada, Guam 96913

Dear Mr. Bearden:

The Honolulu District, U.S. Army Corps of Engineers (Corps) has initiated a feasibility study to evaluate measures to protect the East Hagatna shoreline bordering South Marine Corps Drive, Hagatna Bay, Hagatna, Guam. The study is authorized under Section 14 of the Flood Control Act of 1946, authorizing the Corps to plan and construct emergency streambank and shoreline protection projects to protect endangered highways, highway bridge approaches, public facilities such as water and sewer lines, churches, public and private nonprofit schools and hospitals, and other nonprofit public facilities. The Government of Guam, represented by the Guam Department of Public Works, is the non-Federal sponsor for this study.

The Corps hosted an interagency coordination meeting on June 14, 2022 that your agency attended, to present the project details and share information regarding resource impacts and concerns in preparation for a National Environmental Policy Act Environmental Assessment. In accordance with Section 401 of the Clean Water Act (33 USC § 1341), the Corps acknowledges the requirement to obtain certification from the Guam Environmental Protection Agency (EPA) that any proposed discharges associated with the shoreline protection project will comply with the applicable provisions of the Clean Water Act. However, the details of the feasibility level of conceptual design are inadequate to identify and describe all proposed discharges with sufficient detail to apply for and obtain a Section 401 Water Quality Certification. To account for the lack of information presently available, we are proposing to apply for and obtain a water quality certification from your agency when sufficient detail is available, during the environmental permitting process of the Pre-Construction Engineering and Design Phase that follows this Feasibility Phase. The Corps seeks written confirmation acknowledging the Corps' coordination of this project with your agency, your agency's potential preliminary findings, if available, and acknowledgement of the Corps' plans to obtain a water quality certification at a later date, prior to implementation of the project.

We request your written confirmation within 30 days of the date of this letter. As this study progresses, we will continue to keep your agency apprised of any changes, as appropriate. Should you have any questions or comments, please contact the study project manager, Mr. Michael Terlaje of my Civil and Public Works Branch, at (671) 727-2491 or via email at Michael.J.Terlaje@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon L. Kucharski, MPIA, WRCP
Chief, Civil and Public Works Branch and
Legislative Liaison

4d. 2024 September 12 USACE Notification to Guam EPA of change to project

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

September 13, 2024

Civil and Public Works Branch
Programs and Project Management Division

Ms. Michelle C.R. Lastimoza
Administrator
Guam Environmental Protection Agency
17-3304 Mariner Avenue
Tiyan Barrigada, Guam 96913

Reference: EAST HAGATNA SHORELINE PROJECT FEASIBILITY STUDY

Dear Ms. Lastimoza:

Thank you for your letter dated August 21, 2023, acknowledging Honolulu District, U.S. Army Corps of Engineers (USACE) coordination with Guam Environmental Protection Agency on the 2,100 linear foot rock revetment and the USACE plan to obtain a water quality certification prior to implementation of the project.

In December 2023 the preferred alternative for the project changed to 1,630 linear feet of a precast concrete seawall which would have the same footprint as the seawall it is replacing. The revised Integrated Feasibility Report and Environmental Assessment will be released for public and agency comment in Fall 2024.

In accordance with Section 401 of the Clean Water Act (33 USC § 1341), USACE acknowledges the requirement to obtain certification from the Guam Environmental Protection Agency (EPA) that any proposed discharges associated with the shoreline protection project will comply with the applicable provisions of the Clean Water Act. However, the details of the feasibility level of conceptual design are inadequate to identify and describe all proposed discharges with sufficient detail to apply for and obtain a Section 401 Water Quality Certification. To account for the lack of information presently available, we are proposing to apply for and obtain a water quality certification from your agency when sufficient detail is available, during the environmental permitting process of the Pre-Construction Engineering and Design Phase that follows this Feasibility Phase. USACE seeks written confirmation acknowledging USACE' coordination of this project with your agency, your agency's potential preliminary findings, if available, and acknowledgement of USACE' plans to obtain a water quality certification at a later date, prior to implementation of the project.

We request your written confirmation within 30 days of the date of this letter. As this study progresses, we will continue to keep your agency apprised of any changes, as appropriate. Should you have any questions or comments, please contact the study project manager, Mr. Michael Terlaje of my Civil and Public Works Branch, at (671) 727-2491 or via email at Michael.J.Terlaje@usace.army.mil. Thank you for your cooperation.

Sincerely,

Digitally signed by ROUSE.MICHAEL.BARRY.1155134743
Date: 2024.09.13 15:11:58 -08'00'

Michael B. Rouse
Chief, Environmental Resources Section, Honolulu and Alaska Regional Planning Team

Attachment 5. CZMA Consultation

5a. 2022 June 2 Project Notification to Guam Coastal Management Program

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Edwin Reyes
Administrator, Guam Coastal Management Program
Government of Guam, Bureau of Statistics and Plans
P.O. Box 2950
Hagatna, Guam 96932

Dear Administrator Reyes:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to the Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. 1451 et seq.), as amended, USACE invites the Guam Coastal Management Program (GCMP) to participate in this study and requests any available information regarding resources occurring within the study area. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to protected resources. As more information is gathered, the impact areas relative to each protected resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the general public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating agency and participating agency workshop scheduled for June 9, 2022. We

5a. (cont.) Project Notification to Guam Coastal Management Program

will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations. This letter of request for information from your agency constitutes USACE's scoping request pursuant to NEPA. To reduce redundancy, a separate NEPA scoping letter will not be sent to your office. Any additional comments provided pursuant to NEPA will be fully considered and incorporated into the administrative record.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

5a. (cont.) Project Notification to Guam Coastal Management Program

Enclosure 1

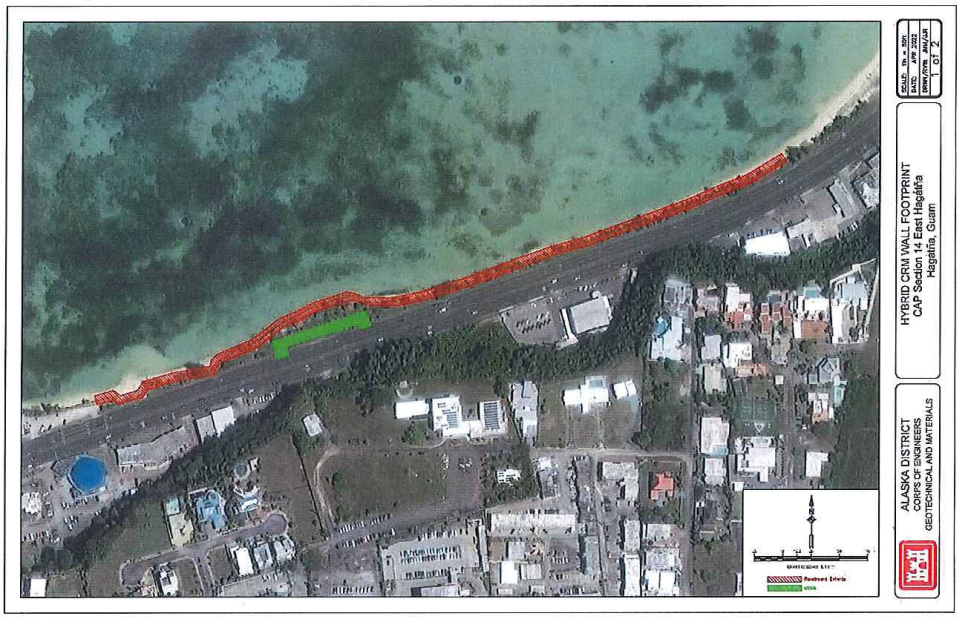


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

5b. 2023 July 13 CZMA Federal Consistency Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

July 13, 2023

Civil and Public Works Branch
Programs and Project Management Division

Edwin Reyes
Administrator, Guam Coastal Management Program
Government of Guam, Bureau of Statistics and Plans
P.O. Box 2950
Hagatna, Guam 96932

Dear Administrator Reyes,

The Honolulu District, United States Army Corps of Engineers (Corps) is investigating the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam pursuant to Section 14 of the Continuing Authorities Program. In accordance with Section 307(c) of the Coastal Zone Management Act of 1972 (16 USC § 1456) the Corps understands that the proposed development project that may affect coastal uses and/or resources is subject to review by your office, to ensure consistency with the Guam Coastal Zone Management (CZM) Program.

As described during the June 9, 2022, Agency Coordination Workshop, the Corps evaluated measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay. Initial measures considered included rock revetment, modified concrete masonry wall, and vertical concrete and sheet piling wall. The Recommended Plan is the Rock Revetment, which may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

The Corps has reviewed the enforceable policies of the Guam Coastal Management Program and determined that based on the described activities have a range of coastal effects, some of which may include reasonably foreseeable effects on coastal uses or resources or direct or indirect environmental benefits and determined that the proposed federal action is consistent, to the maximum extent practicable, with the Guam CZM Program. The Corps seeks your concurrence on this determination. Transmitted with this letter is the Guam CZM Program Assessment and Supplemental Information Form (Enclosure 1) for your review and the draft Integrated Feasibility Report and NEPA Document (Enclosure 2) for your reference.

5b. (cont.) CZMA Federal Consistency Determination

Should you have any questions or comments, please reference the East Hagatna Emergency Shoreline Protection Project and contact either our Environmental Coordinator, Mrs. Marian Dean at (808) 379-8223 or via email at marian.dean@usace.army.mil or the Project Manager, Mr. Mike Terlaje at 671-727-2491 or via email at michael.j.terlaje@usace.army.mil. Thank you for your cooperation.

Sincerely,

Steven Howard
Acting Chief, Civil and Public Works

Enclosures

5b. (cont.) CZMA Federal Consistency Determination

The GCMP Assessment Format and Supplemental Information Form may be reproduced and submitted along with other required information to the BSP.

GUAM COASTAL MANAGEMENT PROGRAM ASSESSMENT

DATE OF APPLICATION: 13 July 2023

NAME OF APPLICANT: U.S. Army Corps of Engineers (USACE), Honolulu District

ADDRESS: 230 Otake Street, Fort Shafter, HI 96858-5440

TELEPHONE NO. 808-835-4031 Fax No. N/A Cell No: 808-379-8223

E-MAIL ADDRESS: Marian.Dean@usace.army.mil

TITLE OF PROPOSED PROJECT: East Hagatna Emergency Shoreline Protection

COMPLETE FOLLOWING PAGES

FOR BUREAU OF STATISTICS AND PLANS ONLY:

DATE APPLICATION RECEIVED: _____

OCRM NOTIFIED: _____ LIC. AGENCY NOTIFIED: _____

APPLICANT NOTIFIED: _____ PUBLIC NOTICE GIVEN: _____

OTHER AGENCY REVIEW REQUESTED: _____

_____

_____

DETERMINATION:

( ) CONSISTENT ( ) NON-CONSISTENT ( ) FURTHER INFORMATION REQUESTED

OCRM NOTIFIED: _____ LIC. AGENCY NOTIFIED: _____

APPLICANT NOTIFIED: _____

ACTION LOG:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

DATE REVIEW COMPLETED: _____

5b. (cont.) CZMA Federal Consistency Determination

FEDERAL CONSISTENCY SUPPLEMENTAL INFORMATION FORM

Date: 13 July 2023

Project/Activity Title or Description: East Hagatna Emergency Shoreline Protection

The Recommended Plan is the replacement of 2,100 feet of seawall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E with a Rock Revetment (Figures 1 and 2) which would extend 17 feet toward the ocean from the crest of the existing seawall. The toe of the revetment would be anchored in the limestone. The revetment installation would begin with construction at the toe (-2.5 ft. MSL) and up to the crest elevation (+9ft. MSL), just 1 foot above the current highest point of 8 feet (Figure 2). The present assumption is the revetment could be constructed from the land during low tide without operating from the beach or marine waters. To seat the toe a small trench will need to be dug into the underlying limestone. The footprint provided for the revetment in Figure 1 shows the maximum extent that could be needed for construction. The footprint of the finished revetment is estimated to be 0.82 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.



Figure 1: Proposed Project Area: The proposed active construction and staging area (COSA) along South Marine Corps Drive are indicated in black. Redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). USACE, 2022.

5b. (cont.) CZMA Federal Consistency Determination

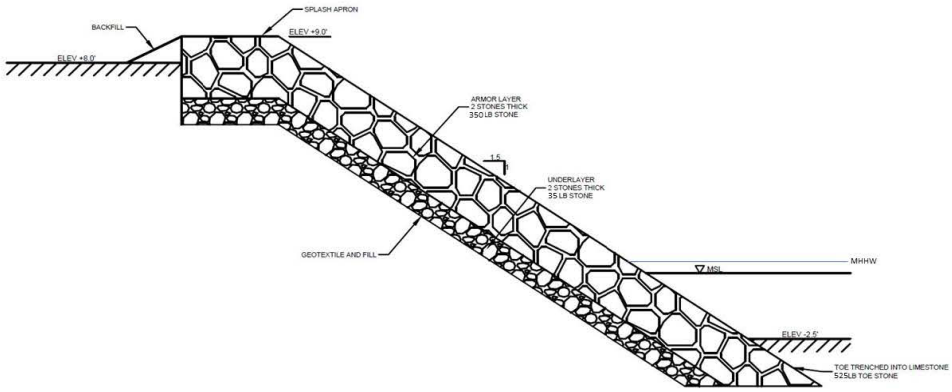


Figure 2: Rock revetment cross section, showing where MSL and MHHW will potentially intersect with the structure. USACE, 2022.

The revetment is comprised of compacted fill as the foundation and base grade, a geotextile filter fabric, a double layer of underlayer stone, a double layer of armor stone, and anchoring by an oversized toe stone. Depending on the cost and local availability of material, this revetment could be capped with either a two-stone armor layer or pre-cast concrete armor units. This design will meet USACE coastal engineering criteria for expected design life and adaptability to RSLC. The expected design life of this system (assuming proper installation and routine maintenance) is on the order of 50 years.

Trinchera Beach extends along approximately 3,400 feet of the East Hagatna shoreline (USACE 1993). The beach material is fine calcareous sand with extensive coral rubble, gravel, and marine debris which varies in width from 15 feet toward the eastern end of the project extent, to no beach at all along Veteran's Sunset Beach Park (PDT 2022). The project will replace approximately 0.82 acres of this shoreline habitat with a rock revetment. The direct in-water footprint will vary along the project length.

Location:__ 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive _

Other applicable area(s) affected, if appropriate:

__Up to 17 feet seaward of the wall and 30 feet upland of the wall for the 2100 foot length, see Figure 1

Est. Start Date: _2026_____ Est. Duration:_____12 months_____

APPLICANT

Name & Title__Marian Dean, Environmental Planner

Agency/Organization: __U. S. Army Corps of Engineers, Honolulu District

Address ____230 Otake Street,_

_____Fort Shafter, HI_____ Zip Code_ 96858-5440_

5b. (cont.) CZMA Federal Consistency Determination

Telephone No. during business hours:

C: 808-379-8223

Fax (____) _____

E-mail Address: ___ marian.dean@usace.army.mil_____

AGENT

Name & Title _____

Agency/Organization Address_____ Zip Code_____

Telephone No. during business hours:

A/C (___) _____

A/C (___) _____

Fax (___) _____

E-mail Address: _____

CATEGORY OF APPLICATION (check one only)

(X) I - Federal Agency Activity

( ) II - Federal Permit or License

( ) III - Federal Grants & Assistance

TYPE OF STATEMENT (check one only)

(X) Consistency

( ) General Consistency (Category I only)

( ) Negative Determination (Category I only)

( ) Non-Consistency (Category I only)

APPROVING FEDERAL AGENCY (Categories II & III only)

Agency _____

Contact Person _____

Telephone No. during business hours:

Area Code ( )_____

Area Code ( )_____

5b. (cont.) CZMA Federal Consistency Determination

FEDERAL AUTHORITY FOR ACTIVITY

Title of Law The 1946 Flood Control Act, as amended (33 USC 701r) for Emergency Shoreline Protection under the Continuing Authorities Program

Section Section 14

OTHER GUAM APPROVALS REQUIRED:

Date of	Agency	Type of Approval	Application Status
2025	Guam EPA	Clean Water Act Section 401 Water Quality Certification	To be submitted after Preconstruction Engineering & Design in 2024 and before start of construction in 2026

5b. (cont.) CZMA Federal Consistency Determination

DEVELOPMENT POLICIES (DP):

DP 1. Shore Area Development

Intent: To ensure environmental and aesthetic compatibility of shore area land uses.

Policy: Only those uses shall be located within the Seashore Reserve which:

- enhance, are compatible with or do not generally detract from the surrounding coastal area's aesthetic and environmental quality and beach accessibility; or
- can demonstrate dependence on such a location and the lack of feasible alternative sites.

Discussion: Consistent. The proposed project is located within the Seashore Reserve and is necessary to reduce beach erosion and coastal storm risk along the East Hagatna shoreline. An existing seawall, protecting South Marine Corps Drive and associated landside infrastructure, is in need of repair. The Recommended Plan proposes to replace the damaged seawall to restore protection to the existing development ensures the environmental and aesthetic compatibility of shore area land uses. The Recommended Plan must occur within the Seashore Reserve because that is the location of the current seawall and relocating South Marine Corps Drive is not possible within funding and authorization constraints. The Recommended Plan replaces all or part of the existing seawall and therefore ensures environmental and aesthetic compatibility of the existing shore area land uses.

See Section 2 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing shoreline and Section 4 for more information on the potential project effects on the shoreline.

DP 2. Urban Development

Intent: To cluster high impact uses such that coherent community design, function, infrastructure support and environmental compatibility are assured.

Policy: Commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities shall be concentrated within appropriate zone as outlined on the Guam Zoning Code.

Discussion: Consistent. The project occurs in the already developed urban area of Tamuning, just east of Hagatna. A seawall already exists in the Shore Area as protection for the beach parks, South Marine Corps Drive, and associated infrastructure. This project is a replacement of the existing damaged seawall to provide increased protection to the existing development.

See section 2.3.1 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing land use and section 4.3.1 for more information on the potential project effects on land use.

DP 3. Rural Development

Intent: To provide a development pattern compatible with environmental and infrastructure support suitability and which can permit traditional lifestyle patterns to continue to the extent practicable.

Policy: Rural districts shall be designated in which only low density residential and agricultural uses will be acceptable. Minimum lot size for these uses should be one-half acre until adequate infrastructure including functional sewering is provided.

5b. (cont.) CZMA Federal Consistency Determination

Discussion: Not Applicable. The project occurs in the already developed urban area of East Hagatna. The project area does not have rural land use designation.

See section 2.3.1 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing land use and section 4.3.1 for more information on the potential project effects on land use.

DP 4. Major Facility Siting

Intent: To include the national interest in analyzing the siting proposals for major utilities, fuel and transport facilities.

Policy: In evaluating the consistency of proposed major facilities with the goals, policies, and standards of the Comprehensive Development and Coastal Management Plans, Guam shall recognize the national interest in the siting of such facilities, including those associated with electric power production and transmission, petroleum refining and transmission, port and air installations, solid waste disposal, sewage treatment, and major reservoir sites.

Discussion: Not Applicable. The project is a seawall replacement and does not meet the definition of a major facility.

DP 5. Hazardous Areas

Intent: Development in hazardous areas will be governed by the degree of hazard and the land use regulations.

Policy: Identified hazardous lands, including flood plains, erosion-prone areas, air installations' crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.

Discussion: Consistent. The project area is identified as a coastal high hazard flood zone (Zone VE - 1% Annual Chance Flood Hazard) in the FEMA Flood Insurance Rate Maps. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Project activities within the flood zone would comply with all applicable laws and regulations. The project is not located in geologically unstable zones, such as cliff lines or severe slopes. The construction of the proposed project would reduce the risk to human life and safety and facilitate floodplain management.

See section 2.1 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing physical environment and section 4.1 for more information on the potential project effects on the physical environment.

DP 6. Housing

Intent: To promote efficient community design placed where the resources can support it.

Policy: The government shall encourage efficient design of residential areas, restrict such development in areas highly susceptible to natural and manmade hazards, and recognize the limitations of the island's resources to support historical patterns of residential development.

Discussion: Not Applicable. The project is a seawall replacement and does not include housing.

5b. (cont.) CZMA Federal Consistency Determination

DP 7. Transportation

Intent: To provide transportation systems while protecting potentially impacted resources.

Policy: Guam shall develop an efficient and safe transportation system, while limiting adverse environmental impacts on primary aquifers, beaches, estuaries, coral reefs and other coastal resources.

Discussion: Consistent. The project protects potentially impacted transportation resources. The project is the replacement of an existing seawall providing protection to South Marine Corps Drive and other existing infrastructure. While construction of the rock revetment will have temporary effects on the nearshore marine environment during construction, best management practices will be used to minimize temporary effects to the maximum extent practicable and to ensure no lasting effects to coastal resources of Hagatna Bay. The protection of South Marine Corps Drive will also avoid the need to build additional transportation corridors to replace it.

See section 2 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing coastal resources and section 4 for more information on the potential project effects on the coastal environment.

DP 8. Erosion and Siltation

Intent: To control development where erosion and siltation damage is likely to occur.

Policy: Development shall be limited in areas of 15% or greater slope by requiring strict compliance with erosion, sedimentation, and land use regulations, as well as other related land use guidelines for such areas.

Discussion: Consistent. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. The project is replacement of an existing seawall providing protection to South Marine Corps Drive and other existing infrastructure. While construction of the rock revetment will have temporary minimal effects on the nearshore marine environment during construction, best management practices will be used to minimize temporary effects such as elevated turbidity to the maximum extent practicable and to ensure no lasting effects to Hagatna Bay.

See section 2.1 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing physical environment, section 4.1 for more information on the potential project effects on the physical habitat, and Attachment 6 of Appendix 3 for best management practices to be used to minimize effects.

RESOURCES POLICIES (RP):

RP 1. Air Quality

Intent: To control activities to ensure good air quality.

Policy: All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.

Discussion: Consistent. The proposed project would comply with all air and water quality laws, including the implementation of BMPs. Construction vehicles would be operated in accordance with the provisions of the Clean Air Act. The proposed action would not include the

5b. (cont.) CZMA Federal Consistency Determination

disposal of any hazardous substances into the air or other media.

See section 4.1.2 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on the potential project effects on air quality, section 4.1.5 for potential effects on water quality, Attachment 6 of Appendix 3 for best management practices to be used to minimize effects and Section 3 of Appendix 3 for discussion of project compliance with the Clean Water Act and Clean Air Act.

RP 2. Water Quality

Intent: To control activities that may degrade Guam's drinking, recreational, and ecologically sensitive waters.

Policy: Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuaries, reef and aquifer areas.

Discussion: The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Construction would strictly comply with erosion, sedimentation, and related land and water use districting guidelines, as well other related land and water use policies. USACE would operate in accordance with the provisions of the Clean Water Act and all other local and Federal policies governing water pollution. The proposed action would not include the disposal of any hazardous substances into the water or other media. BMPs would be in place to minimize the accidental release of materials into the waterways. A Clean Water Act (CWA) 404(b)(1) analysis can be found in Appendix 3 of the IFR/NEPA. The Rock Revetment would temporarily impact approximately 1 acre below the MHHW line, which represents the jurisdictional boundary of the CWA. Avoidance, minimization, and conservation measures established by the Permit and IFR/NEPA would be implemented to reduce effects to water quality (see Attachment 6 of Appendix 3 for detailed mitigation strategies). Since the total disturbance would be greater than one acre, the contactor would be required to obtain a Construction General Permit (Section 402 of the CWA, 33 U.S.C. § 1342; 40 C.F.R. § 122.26), implement stormwater controls, and prepare a Stormwater Pollution Prevention Plan (SWPPP) to minimize the amount of sediment and other pollutants associated with construction sites from being discharged in stormwater runoff. Temporary erosion control BMPs would be used, such as straw wattles, silt curtains, or erosion matting to prevent sediment runoff into the bay. The proposed project would comply with all air and water quality laws, including the implementation of BMPs. Construction vehicles would be operated in accordance with the provisions of the Clean Air Act. The proposed action would not include the disposal of any hazardous substances into the air or other media. The project would comply with all appropriate Federal and local policies to ensure that subsurface work would have no impact on groundwater. The proposed project does not include the drilling or operation of wells.

See section 2.1.5 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information about the existing water quality, section 4.1.5 for more information on potential project impacts on water quality; sections 2.1.3 and 2.1.4 for hydrology, hydraulics, and geomorphology of the area; section 2.1.2 for air quality; Attachment 6 of Appendix 3 for avoidance and minimization mitigation implementation, and Section 3 of Appendix 3 for discussion of project compliance with the Clean Water Act and Clean Air Act.

RP 3. Fragile Area

Intent: To protect significant cultural areas, and natural marine and terrestrial wildlife and plant habitats.

5b. (cont.) CZMA Federal Consistency Determination

Policy: Development in the following types of fragile areas including Guam's Marine Protected Areas (MPA) shall be regulated to protect their unique character.

- historical and archeological sites
- wildlife habitats
- pristine marine and terrestrial communities
- limestone forests
- mangrove stands and other wetlands
- coral reefs

Discussion: Consistent. The proposed project does not occur in an MPA, pristine marine and terrestrial communities, limestone forests, mangrove stands, other wetlands or coral reefs.

No known historic properties have formally been reported within the Area of Potential Effect (APE) at this time; however, consultation has identified at least one burial within the APE and there is a likelihood that subsurface cultural resources and/or other burials exist that could be impacted by construction along the shoreline. Consultation with the Guam State Archaeologist identified additional cultural resources and burial locations that have not yet been formally reported (J. M. Joseph, pers. comm. 2022). USACE has therefore proposed to conduct a phased identification and evaluation effort pursuant to 36 CFR § 800.4(b)(2) and to develop a Memorandum of Agreement (MOA) in accordance with 36 CFR § 800.6 that will identify actions to minimize or mitigate significant impacts as required. The project will be developed in compliance with Section 106, NHPA. See section 4.5 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on potential project impacts to cultural, historic, and archeological resources.

The project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Since the coral reef lies approximately 100 yards offshore, the proposed activities would not take place within or near reefs. There would be no direct negative effect on living marine resources. There would be no change to water flow, nutrient levels, or other natural processes that would in turn impact the reefs. Standard best management practices (BMPs) would be used during construction to prevent siltation in the lagoon. Standard BMPs would be used as necessary during construction to minimize effects.

The project area is on public land with no residential dwellings. The proposed project would be built on a sandy shoreline next to a pre- existing structure (a pedestrian walkway). Standard avoidance, minimization, and conservation measures such as a pre-construction surveys would be used to avoid any significant impact to wildlife. This proposed project is designed to prevent shoreline erosion.

See section 4 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on potential project impacts affecting the hydrology, hydraulics, and geomorphology of the area, including potential effects to the island shoreline. For more information on potential effects to coral reefs, refer to section 4.2 in the East Hagatna Emergency Shoreline Protection IFR/NEPA.

RP 4. Living Marine Resources

Intent: To protect marine resources in Guam's waters.

Policy: All living resources within the waters of Guam, particularly fish, shall be protected from

over harvesting and, in the case of corals, sea turtles and marine mammals, from any taking whatsoever.

Discussion: Consistent. The proposed project would take place in accordance with the requirements of the Endangered Species Act, the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act and the Essential Fish Habitat Provisions of the Magnuson Stevens Act. The proposed project would not result in the degradation of wildlife habitat or harm the function or integrity of the reefs or seagrass beds in Hagatna Bay. The East Hagatna Emergency Shoreline Protection IFR/NEPA further discusses potential effects to federally protected natural resources, as well as avoidance and minimization measures to reduce these effects. No part of the project would involve the take or collection of fish, marine mammals, or Guam listed species for any purpose. No part of the proposed project would be perceptible to fish, marine mammals, or species on the Guam endangered species list, or otherwise significantly affect their behavior or the quality of their habitat.

See section 4.2 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on potential project impacts to marine habitat and species, and special-status species. See Attachment 6 of Appendix 3 for discussion of mitigation measures that would minimize many adverse environmental impacts.

RP 5. Visual Quality

Intent: To protect the quality of Guam's natural scenic beauty

Policy: Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.

Discussion: Consistent. The proposed project would preserve the scenic resources of the Commonwealth, and would be in compliance with sign, litter, zoning, building codes, and related land use laws. The proposed seawall would raise the height of the existing seawall by 1 foot to ensure adequate structural integrity and in consideration of climate change. The minor change in elevation would not obstruct or degrade scenic views.

See section 4.5.3 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on potential project effects to aesthetics and visual resources.

RP6. Recreation Areas

Intent: To encourage environmentally compatible recreational development.

Policy: The Government of Guam shall encourage development of varied types of recreational facilities located and maintained so as to be compatible with the surrounding environment and land uses, adequately serve community centers and urban areas and protect beaches and such passive recreational areas as wildlife, marine conservation and marine protected areas, scenic overlooks, parks, and historical sites.

Developments, activities and uses shall comply with the Guam Recreational Water Use Management Plan (RWUMP).

Discussion: Consistent. The proposed activities would allow recreational and subsistence usage and includes the incorporation of maintaining existing access to the beach. The rock revetment would reduce the risk of shoreline erosion from harming the Bay and reefs. There

would be no significant effects to the Bay or reefs from either alternative. The sea grass beds off the shore would be preserved and the quality and value of the beds would not be degraded. Standard best management practices (BMPs) would be used during construction to prevent siltation in the bay. There would be no effect on areas of historical and cultural significance.

The proposed project would not preclude or inhibit the development or enhancement of recreational facilities compatible with the surrounding environment. The project would protect the recreational infrastructure along South Marine Corps Drive.

See section 4.2 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on effects to marine resources.

RP 7. Public Access

Intent: To ensure the right of public access.

Policy: The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all Guam recreation areas, parks, scenic overlooks, designated conservation areas and their public lands. Agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.

Discussion: Consistent. Means of Public Access to the shoreline are part of the Project Design and neither proposed alternative would disrupt existing public access. Public Access may be temporarily impacted during construction but would not be permanently interrupted or otherwise affected by the proposed federal action. The proposed wall is designed at a slope to allow walking along its surface.

See section 4.3 of the East Hagatna Emergency Shoreline Protection IFR/NEPA for more information on potential project impacts on public access.

RP 8. Agricultural Lands

Intent: To stop urban types of development on agricultural land.

Policy: Critical agricultural land shall be preserved and maintained for agricultural use.

Discussion: Not applicable. The proposed action would not take place on or near commercial or private agricultural lands, including grazing lands. The project area is urban and has no neighboring agricultural activities or landuse designations.

References

Bureau of Statistics and Plans – Guam Coastal Management Program (BSP-GCMP). 2020. 2021-2025 Section 309 Assessment and Strategy Report. https://bsp.guam.gov/wp-bsp-content/uploads/2021/05/GCMP_Section309_2020_FINAL_er-2.12.2021.pdf

BSP-GCMP. 2011. Procedures Guide for Achieving Federal Consistency with the Guam Coastal Management Program.

Burdick, D.R. 2005. Guam Coastal Atlas. 149 pages. https://www.uog.edu/_resources/files/ml/technical_reports/114Burdick_2005_UOGMLTechReport114.pdf.

Project Development Team (PDT). 2022. Trip Report.

5b. (cont.) CZMA Federal Consistency Determination

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USACE. 2023. East Hagatna Emergency Shoreline Protection Draft Integrated Feasibility Report ad NEPA Document.

Conclusion

Based upon the above information, data and analysis USACE finds that the proposed federal action is consistent to the maximum extent practicable with the enforceable policies of the Guam Coastal Zone Management Program. Pursuant to 15 CFR § 930.41, the Guam Coastal Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR §930.41(b). The State's concurrence will be presumed if the State's response is not received by the USACE on the 60th day from receipt of this determination.

We request that the Guam CZM Program response, or any questions or concerns regarding the proposed activities, be sent to Marian Dean at marian.dean@usace.army.mil.

5c. 2023 September 8 CZMA Federal Consistency Certification

LOLA E. LEON GUERRERO
Director
MATTHEW C. SANTOS
Deputy Director

BUREAU OF STATISTICS AND PLANS

Guam Coastal Management Program

LOURDES A. LEON GUERRERO
Governor of Guam
JOSHUA F. TENORIO
Lieutenant Governor

SEP 0 8 2023

Rhiannon L. Kucharski, MPIA, WRCP
Chief, Civil and Public Works Branch
U.S. Army Corps of Engineers, Honolulu District
230 Otake Street, Building 230
Fort Shafter, Hawaii 96858-5440

RE: Coastal Zone Management Act (CZMA) Federal Consistency Review for U.S. Army Corps of Engineers' Consistency Determination for its proposed Emergency shoreline protection of South Marine Corps Drive at Hagåtña Bay *(GCMP FC No. 2023-0019)*

Hafa Adai! The Guam Coastal Management Program of the Bureau of Statistics and Plans (Bureau) has completed its review of the Consistency Determination by U.S. Army Corps of Engineers received on July 24, 2023. U.S. Army Corps of Engineers ("the federal agency") has submitted its determination relative to the proposed Emergency shoreline protection of South Marine Corps Drive at Hagåtña Bay.

The Bureau coordinated this review with partnering agencies, provided Public Notice, and received comments from the Department of Agriculture (DoAg), Guam Environmental Protection Agency (GEPA), and Guam Waterworks Authority (GWA). Furthermore, the Bureau hereby concurs with the federal agency's certification that the proposal is consistent with the enforceable policies of the Bureau's Guam Coastal Management Program (GCMP) based upon the following comments and conditions:

Development Policy 5. Hazardous Areas. *Identified hazardous lands, including floodplains, erosion-prone areas, air installations, crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.*

The federal agency represents, in part:

> The project area is identified as a coastal high hazard flood zone (Zone VE - 1% Annual Chance Flood Hazard) in the FEMA Flood Insurance Rate Maps. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Project activities within the flood zone would comply with all applicable laws and regulations. The project is not located in geologically unstable zones, such as cliff lines or severe slopes. The construction of the

proposed project would reduce the risk to human life and safety and facilitate floodplain management.

The project is within a Special Flood Hazard Area, which is subject to Guam's Floodplain Management Ordinance, which can be found on pages 168-175 the 2022 Guidebook to Development Requirements on Guam. The guidebook can be made available upon request by the Guam Coastal Management Program.

Pursuant to Development Policy 5, Hazardous Areas, the federal agency shall be advised to ensure that the final design for the project meets the standards established for Special Flood Hazard Areas in the Floodplain Management Ordinance.

Resource Policy 2. Air Quality. *All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.*

Disturbance of the ground surface and other construction activities may result in temporary and localized effects to air quality as a result of the generation of fugitive dust. Appropriate BMPs should be used to address fugitive dust.

Pursuant to Resource Policy 2, Air Quality, the applicant shall use appropriate fugitive dust BMPs, including good housekeeping, dust suppression using water or chemical dust suppressants, covering open-body trucks when hauling material that may release material into the air, installing windbreaks or fences near ground disturbing activities and around storage piles.

Resource Policy 3. Water Quality. *Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuarine, reef and aquifer areas.*

GEPA provided the following comments:

1. Any work that disturbs the ground's surface must be protected through appropriate implementation of erosion and sediment control (E&SC) BMPs, installed in accordance with the Guam Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10). As required in the regulations, necessary permits must be secured prior to start of construction activities and earth-moving operations shall be performed so as not to violate applicable provisions of the Guam Water Quality Standards Regulations (22 GAR [Ch.] 05).
2. Construction BMPs must be installed in conformance with the design criteria of the 2006 CNMI & Guam Stormwater Management Manual, as implemented by Executive Order 2012-02 and the Guam Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10), to adequately treat and carry surface water run-off into a catchment facility within the project site. These BMPs will prevent erosion damage and sedimentation that circumvents water

quality impact or water degradation. BMPs must be provided at the source to ensure that water quality standard limitations are adequately met. The following are the Guam EPA recommended BMPs that will help minimize water quality impacts:

a. During construction, the contractor must ensure that project materials, such as gravel and boulders, are free from silt or sediments or washed materials must be used. No materials are allowed to be stockpiled in marine waters.
b. Project related materials and equipment are not allowed to be in the water. The contractor must ensure that equipment used at the project site will not cause oil leaks and a spill prevention kit must be readily available at the site. Providing oil drip pans with the equipment when parked is highly recommended.
c. Appropriate erosion and sediment control measures must be provided by the contractor to prevent sediment to be carried by stormwater run-off or prevent any water flows into nearby water bodies.
d. Dredge or excavated materials from the areas with waters must be stockpiled inside the berm or silt fence to ensure that water displacement from the dredge spoil will not carry sediment back into fresh or marine waters.
e. Installing silt curtains or other appropriate sediment containment devices is highly recommended in areas where work in the water will be conducted to ensure that sediment will be contained in the work area --- avoiding any water quality degradation.
f. Construction debris and other waste must be prevented from entering water bodies during construction and must be disposed of in a proper manner at Guam EPA permitted sites.

3. Prior to the start of construction, [the] contractor must prepare and submit the Environmental Protection Plan (EPP) and Erosion and Sediment Control Plan (E&SCP) as required [by] (22 GAR [Ch.] 10). The EPP will describe the environmental protective measures such as methods and equipment to be used, management of expected or anticipated environmental problems during and after construction, and methods on how to control or mitigate potential adverse effects on the environment during construction.
4. The construction contractor must ensure that construction activity will not violate the Guam Water Quality Standards regulations or contribute to significant degradation of the waters of Guam.
5. The proposed project is qualified under the coverage of the "Stormwater Construction General Permit" (CGP), under the National Pollutant Discharge Elimination System (NPDES) permit system. A Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the U.S. Environmental Protection Agency (USEPA). Copies of the NOI and SWPPP must also be submitted to Guam EPA as required by Section 10105.B.5.d of Guam's Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10). Guam provisions stated in the NPDES Stormwater 2022 CGP must be strictly implemented to ensure water quality in the area is protected.
6. Any construction dewatering activities must be permitted prior to any dewatering actions. Provisions stated in the USEPA 2022 NPDES CGP. Section 2.4-dewatering requirements must

be considered in the implementation of dewatering activities. Prior to discharge, all construction discharges must be treated to the degree that meets Guam water Quality Standards.

DoAG provided the following comments, in part:

Best Management Practices must be established and employed at the project area to protect the vegetation, shoreline, and marine habitats along Marine Corps Drive in Hagåtña Bay. Although these habitats are not identified as Conservation Areas or Marine Protected Areas, they are habitats that support federally and locally protected species.

The proposed development project occurs over the North Guam Lens Aquifer, Guam's Sole Source Aquifer and the source of about 80% of Guam's drinking water. In addition, Hagåtña Bay is a reef area, supporting an ecosystem for various living marine organisms. Thus, the protection of water quality as outlined by GEPA in this area is important to the territory.

Pursuant to Resource Policy 3, Water Quality, the applicant shall:

1. implement appropriate E&SC BMPs, installed in accordance with the Guam Soil Erosion and Sediment Control Regulations, 22 GAR Ch. 10). Secure necessary permits prior to start of construction activities and earth-moving operations shall be performed so as not to violate applicable provisions of the Guam Water Quality Standards Regulations, 22 GAR Ch. 5.
2. Install construction BMPs in conformance with the design criteria of the 2006 CNMI & Guam Stormwater Management Manual, as implemented by Executive Order 2012-02 and the Guam Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10), to adequately treat and carry surface water run-off into a catchment facility within the project site. These BMPs will prevent erosion damage and sedimentation that circumvents water quality impact or water degradation. BMPs must be provided at the source to ensure that water quality standard limitations are adequately met. The following are the Guam EPA recommended BMPs that will help minimize water quality impacts:
    a. During construction, the contractor must ensure that project materials, such as gravel and boulders, are free from silt or sediments or washed materials must be used. No materials are allowed to be stockpiled in marine waters.
    b. Project related materials and equipment are not allowed to be in the water. The contractor must ensure that equipment used at the project site will not cause oil leaks and a spill prevention kit must be readily available at the site. Providing oil drip pans with the equipment when parked is highly recommended.
    c. Appropriate erosion and sediment control measures must be provided by the contractor to prevent sediment to be carried by stormwater run-off or prevent any water flows into nearby water bodies.

d. Dredge or excavated materials from the areas with waters must be stockpiled inside the berm or silt fence to ensure that water displacement from the dredge spoil will not carry sediment back into fresh or marine waters.
e. Installing silt curtains or other appropriate sediment containment devices is highly recommended in areas where work in the water will be conducted to ensure that sediment will be contained in the work area --- avoiding any water quality degradation.
f. Construction debris and other waste must be prevented from entering water bodies during construction and must be disposed of in a proper manner at Guam EPA permitted sites.

3. prepare and submit the Environmental Protection Plan (EPP) and Erosion and Sediment Control Plan (E&SCP) as required by 22 GAR Ch. 10.
4. ensure that construction activity will not violate the Guam Water Quality Standards regulations or contribute to significant degradation of the waters of Guam.
5. submit a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) to the U.S. Environmental Protection Agency (USEPA) relative to the Construction General Permit. Copies of the NOI and SWPPP must also be submitted to Guam EPA Guam provisions stated in the NPDES Stormwater 2022 CGP must be strictly implemented to ensure water quality in the area is protected.
6. ensure that any construction dewatering activities is permitted prior to any dewatering actions.

Resource Policy 4. Fragile Areas. *Development in the following types of fragile areas shall be regulated to protect their unique character: historic and archeological sites, wildlife habitats, pristine marine and terrestrial communities, Limestone forests, and mangrove stands and other wetlands.*

DoAg provided the following comments, in part:

The project area is an active area for nesting white fairy tern, Gygis alba and yellow bittern, Ixobrychus sinensis, protected under the Migratory Bird Treaty Act. Nesting season is year-round for both species. Between August and May, migratory shorebirds frequent the shoreline to forage and roost. ACOE and their contractor must have a biologist on site to survey for nesting birds and presence of other migratory birds during August and May period when these species occur on island, one week prior the project start date. All work is to cease until the species leave their area on its own volition. Nesting birds present must not be disturbed and all work 150 feet from the nests must not occur until the completion of the nesting period. All construction equipment and materials must be covered when not in use or stored on site. Micronesian starling, Aplonis opaca, occurs in Hagåtña area. This species are cavity nesters and nest year-round. Seagrass colony occurs near the shoreline along the bay. Construction work near the seagrass colony requires a buffer to be installed to protect the species from any impacts of the construction.

Pursuant to Resource Policy 4, Fragile Areas, the applicant shall:

1. be advised to have a biologist on site to survey for nesting protected species of birds under the Migratory Bird Treaty Act one week prior to the project start date. Should any protected bird species be present, cease all work until the species leaves of its own volition. Nesting birds present should not be disturbed and all work within 150 feet should cease until completion of the nesting period. Cover all construction equipment and materials when not in use or stored on site, to avoid opportunistic nesting.
2. be advised to install a buffer between the project site and the nearby seagrass colony.

Resource Policy 6. Visual Quality. *Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.*

Route 1 is adjacent to Hagåtña Bay, offering a unique scenic experience for motorists and other users such as organized Guam Marathons, recreational runners, and bikers. The natural charm of the area also includes mature native trees that provide texture and color to the marine and mosaic skyline backdrop of the bay. The height of the proposed rock revetment can potentially have a reasonable and foreseeable impact on the significant scenic resource of Hagåtña Bay.

Demolition/rehabilitation/construction activities will result in the generation of solid waste which must be disposed of appropriately. Any temporary BMPs installed during the project must be removed when the rehabilitation/construction activities have been completed.

Pursuant to Resource Policy 6, Visual Quality, the applicant agency shall:

1. ensure the height of the proposed rock revetment does not gravely diminish the view of the bay for motorists, Guam Marathons and/or recreational runners, and bikers along this section of Route 1.
2. ensure to save, transplant, or replant the equivalent biomass along the upland extent of the project area. This could allow for designing the structure to allow for intermittent tree planting integration.
3. ensure proper disposal of all solid waste generated as a result of the project.
4. remove any temporary BMPs installed during the project once rehabilitation/construction activities have been completed.

Resource Policy 8. Public Access. *The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all territorial recreation areas, parks, scenic overlooks, designated conservation areas and their public lands; and agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.*

DoAg provided the following comment:

> Seasonal fish runs for Ti'ao, Manahac, E'e, and Atulai occurs through the year. During the seasonal fish run fishers will use the area more frequently. Reasonable access should be provided for fishers during the seasonal fish run.

The proposed development project is along an existing, narrow beach along much of its span and adjacent to submerged lands used as a recreational area. The demolition of the existing sea wall and construction of the proposed revetment would limit access to the beach. The effect of the design height and material used in the revetment structure will impact public access to the shoreline as it has done so in Talofofo Bay.

Pursuant to Resource Policy 8, Public Access, the applicant shall:

1. ensure reasonable access for fishers during the seasonal fish run is not impacted.
2. ensure that public access to the recreational waters and the surrounding beach areas outside the project area are not restricted by the federal agency or its contractors.
3. ensure that the final engineering design reasonably provides access to the recreational waters in East Hagåtña Bay.

Therefore, based on the conditional concurrence stated above and the Bureau's review of all other information submitted, we find the application to be consistent with the approved development and resource policies of the Guam Coastal Management Program (GCMP), in accordance with the Coastal Zone Management Act of 1972, (P.L. 92-583) as amended, (P.L. 94-370). The Federal Consistency concurrence, however, does not preclude the need for securing other federal and Government of Guam permits, clearances and approvals prior to the start of this project.

Per 15 CFR §930.4(b), if the requirements for conditional concurrences specified in 15 CFR §930.4(a), (1) through (3), are not met, then all parties shall treat this conditional concurrence letter as an objection pursuant to 15 CFR Part 930 subpart C. Furthermore, if an objection is determined, you are hereby notified that, pursuant to 15 CFR §930.63(e) and 15 CFR Part 930, subpart H, you have the opportunity to appeal an objection resulting from not meeting the requirements of 15 CFR §930.4(a), (1) through (3), to the Secretary of Commerce within 30 days after receiving this conditional concurrence letter.

The proposed action shall be operated and completed as represented in the Coastal Zone Management (CZM) federal consistency certification. Significant changes to the subject proposal shall be submitted to the Bureau for review and approval and may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment. This condition is necessary to ensure that the proposed actions are implemented as reviewed for consistency with the enforceable policies of GCMP. Guam Land Use policies (E.O. 78-37), are the federally approved enforceable policies of GCMP that applies to this condition.

5c. cont. CZMA Federal Consistency Certification

Please do not hesitate to contact Mr. Julian Janssen, Federal Activities Planner at 671-475-4201 or email julian.janssen@bsp.guam.gov or Mr. Edwin Reyes, Coastal Program Administrator at 671-475-9672 or email edwin.reyes@bsp.guam.gov. Si Yu'os Ma'åse'.

Sincerely,

LOLA E. LEON GUERRERO
Director

Attachments

Cc: NOAA-OCM
DoAgr-DAWR
DLM
DPR-SHPO
DPW
GEPA
GWA

Lourdes A. Leon Guerrero
Governor
Joshua F. Tenorio
Lt. Governor

Guam Department of Agriculture
Dipåttamenton Agrikotturan Guåhan
163 Dairy Road, Mangilao, Guam 96913

Chelsa Muña
Director
Roy Gamboa
Deputy Director

MEMORANDUM

To: **Lola Leon Guerrero**, Director
Bureau of Statistics and Plans

From: Roy Gamboa, Acting Director Roy Gamboa Digitally signed by Roy Gamboa Date: 2023.08.28 15:22:03 +10'00'

Date: August 28, 2023

SUBJECT: **Federal Consistency Review: U.S Army Corps of Engineers' (ACOE) Consistency Determination for its proposed emergency shoreline protection of South Marine Corps Drive at Hagåtña Bay (GCMP FC 2023-0019)**

Hafa adai!

The Department of Agriculture (DOAG) has reviewed the proposed U.S. Army Corps of Engineers' (ACOE) Consistency Determination for its proposed emergency shoreline protection of South Marine Corps Drive, Hagåtña Bay. The purpose of the project is to repair and replace either sections of, or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagåtña Bay. Measures considered include rock revetment, modified concrete masonry wall, and vertical concrete and sheet piling wall. The tentative plan is the rock revetment constructed of either rock or concrete armor units.

ACOE must abide by the following Federal Consistency Policies:

Resource Policy 1. Conservation of Natural Resources.

The project area is an active area for nesting white fairy tern, *Gygis alba* and yellow bittern, *Ixobrychus sinensis*, protected under the Migratory Bird Treaty Act. Nesting season is year-round for both species. Between August and May, migratory shorebirds frequent the shoreline to forage and roost. ACOE and their contractor must have a biologist on site to survey for nesting birds and presence of other migratory birds during August and May period when these species occur on island, one week prior the project start date. All work is to cease until the species leave their area on its own volition. Nesting birds present must not be disturbed and all work 150 feet from the nests must not occur until the completion of the nesting period. All construction equipment and materials must be covered when not in use or stored on site. Micronesian starling, *Aplonis opaca*, occurs in Hagåtña area. This species are cavity nesters and nest year-round. Seagrass colony occurs near the shoreline along the bay. Construction work near the seagrass colony requires a buffer to be installed to protect the species from any impacts of the construction.

Resource Policy 4. Fragile Areas.

Best Management Practices must be established and employed at the project area to protect the vegetation, shoreline, and marine habitats along Marine Corps Drive in Hagåtña Bay. Although these habitats are not identified as Conservation Areas or Marine Protected Areas, they are habitats that support federally and locally protected species.

5c. cont. CZMA Federal Consistency Certification

Resource Policy 8. Public Access.

Seasonal fish runs for Ti'ao, Manahac, E'e, and Atulai occurs through the year. During the seasonal fish run fishers will use the area more frequently. Reasonable access should be provided for fishers during the seasonal fish run.

If you have any concerns, please contact Mr. Jeffrey Quitugua at Jeffrey.Quitugua@doag.guam.gov or permits@doag.guam.gov.

5c. cont. CZMA Federal Consistency Certification

GUAM ENVIRONMENTAL PROTECTION AGENCY • AHENSIAN PRUTEKSIÓN LINA'LA' GUÅHAN
LOURDES A. LEON GUERRERO • GOVERNOR OF GUAM | JOSHUA F. TENORIO • LIEUTENANT GOVERNOR OF GUAM
MICHELLE C. R. LASTIMOZA • ADMINISTRATOR

AUG 24 2023

MEMORANDUM

TO: Director, Bureau of Statistics and Plans

ATTN: Administrator, Guam Coastal Management Program

FROM: Administrator

SUBJECT: Federal Consistency Review for the *East Hagatna Emergency Shoreline Protection Project* – replacement of 2,100 feet of seawall (from east end to west end) with a Rock Revetment (Ref. GCMP FC 2023-0019)

Hafa adai Ms. Leon Guerrero,

Buenas yan Saluda. The Guam Environmental Protection Agency (GEPA) has reviewed the above referenced Federal Consistency project application submitted to the Bureau by the U.S. Army Corps of Engineers (USACE), Honolulu District. The proposed project will replace 2,100 feet of seawall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E with a Rock Revetment which would extend 17 feet toward the ocean from the crest of the existing seawall. The toe of the revetment would be anchored in the limestone. The revetment installation would begin with construction at the toe (-2.5 ft. MSL) and up to the crest elevation (+9ft. MSL), just 1 foot above the current highest point of 8 feet. The present assumption is the revetment could be constructed from the land during low tide without operating from the beach or marine waters. To seat the toe, a small trench will need to be dug into the underlying limestone. The footprint of the finished revetment is estimated to be 0.82 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 1.45 ac.

Trinchera Beach extends along approximately 3,400 feet of the East Hagatna shoreline (USACE 1993). The beach material is fine calcareous sand with extensive coral rubble, gravel, and marine debris which varies in width from 15 feet toward the eastern end of the project extent, to no beach at all along Veteran's Sunset Beach Park (PDT 2022). The project will replace approximately 0.82 acres of this shoreline habitat with a rock revetment. The direct in-water footprint will vary along the project length.

To account for the lack of information presently available, the Corps is proposing to apply for and obtain water quality certification when sufficient detail is available during the environmental permitting process of the Pre-Construction Engineering and Design Phase that follows the current Feasibility Phase. Attached for your reference is a letter from GEPA acknowledging the USACOE's coordination of this project with

GUAM EPA | 17-3304 Mariner Avenue Tiyan Barrigada, Guam 96913-1617 | Tel: (671) 300.4751/2 | Fax: (671) 300.4531 | epa.guam.gov
ALL LIVING THINGS OF THE EARTH ARE ONE • *MANUNU TODU I MANLÅLA'LA'*
Like and follow guamepa

5c. cont. CZMA Federal Consistency Certification

the Agency and the USACOE's plans to obtain a water quality certification at a later date, prior to implementation of the project.

GEPA has additionally determined that the proposed activities when properly executed will not result in any significant impacts to the environment. Guam EPA stresses the importance of protecting our environment and offers the following comments:

1.) Any work that disturbs the ground's surface must be protected through appropriate implementation of erosion and sediment control (E&SC) BMPs, installed in accordance with the Guam Soil Erosion and Sediment Control Regulations (22 GAR 10). As required in the regulations, necessary permits must be secured prior to start of construction activities and earth-moving operations shall be performed so as not to violate applicable provisions of the Guam Water Quality Standards Regulations (22 GAR 05).

2.) Construction BMPs must be installed in conformance with the design criteria of the 2006 CNMI & Guam Stormwater Management Manual, as implemented by Executive Order 2012-02 and the Guam Soil Erosion and Sediment Control Regulations (22 GAR 10), to adequately treat and carry surface water run-off into a catchment facility within the project site. These BMPs will prevent erosion damage and sedimentation that circumvents water quality impact or water degradation. BMPs must be provided at the source to ensure that water quality standard limitations are adequately met. The following are the Guam EPA recommended BMPs that will help minimize water quality impacts:

   a. During construction, the contractor must ensure that project materials, such as gravel and boulders, are free from silt or sediments or washed materials must be used. No materials are allowed to be stockpiled in marine waters.
   b. Project related materials and equipment are not allowed to be in the water. The contractor must ensure that equipment used at the project site will not cause oil leaks and a spill prevention kit must be readily available at the site. Providing oil drip pans with the equipment when parked is highly recommended.
   c. Appropriate erosion and sediment control measures must be provided by the contractor to prevent sediment to be carried by stormwater run-off or prevent any water flows into nearby water bodies.
   d. Dredge or excavated materials from the areas with waters must be stockpiled inside the berm or silt fence to ensure that water displacement from the dredge spoil will not carry sediment back into fresh or marine waters.
   e. Installing silt curtains or other appropriate sediment containment devices is highly recommended in areas where work in the water will be conducted to ensure that sediment will be contained in the work area --- avoiding any water quality degradation.
   f. Construction debris and other waste must be prevented from entering water bodies during construction and must be disposed of in a proper manner at Guam EPA permitted sites.

3.) Prior to the start of construction, contractor must prepare and submit the Environmental Protection Plan (EPP) and Erosion and Sediment Control Plan (E&SCP) as required (22 GAR 10). The EPP will describe the environmental protective measures such as methods and equipment to be used, management of expected or anticipated environmental problems during and after construction, and methods on how to control or mitigate potential adverse effects on the environment during construction.

5c. cont. CZMA Federal Consistency Certification

4.) The construction contractor must ensure that construction activity will not violate the Guam Water Quality Standards regulations or contribute to significant degradation of the waters of Guam.

5.) The proposed project is qualified under the coverage of the "Stormwater Construction General Permit" (CGP), under the National Pollutant Discharge Elimination System (NPDES) permit system. A Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the U.S. Environmental Protection Agency (USEPA). Copies of the NOI and SWPPP must also be submitted to Guam EPA as required by Section 10105.B.5.d of Guam's Soil Erosion and Sediment Control Regulations (22 GAR 10). Guam provisions stated in the NPDES Stormwater 2022 CGP must be strictly implemented to ensure water quality in the area is protected.

6.) Any construction dewatering activities must be permitted prior to any dewatering actions. Provisions stated in the USEPA 2022 NPDES CGP, Section 2.4-**dewatering requirements** must be considered in the implementation of dewatering activities. Prior to discharge, all construction discharges must be treated to the degree that meets Guam water Quality Standards.

Please direct any questions to me or email Program Coordinator Margaret Aguilar, EMAS Division, at margaret.aguilar@epa.guam.gov. *Dångkolu na si Yu'us ma'åse'.*

MICHELLE C.R. LASTIMOZA

Attachment

cc: Julian Janssen, BSP/GCZMP
Mike Terlaje, ACOE
Maricar Quezon, GEPA

5c. cont. CZMA Federal Consistency Certification

GUAM ENVIRONMENTAL PROTECTION AGENCY • AHENSIAN PRUTEKSIÓN LINA'LA' GUÅHAN
LOURDES A. LEON GUERRERO • GOVERNOR OF GUAM | JOSHUA F. TENORIO • LIEUTENANT GOVERNOR OF GUAM
MICHELLE C. R. LASTIMOZA • ADMINISTRATOR

AUG 2 1 2023

Rhiannon L. Kucharski, MPIA, WRCP
Chief, Civil and Public Works Branch and
Legislative Liaison
Programs and Project Management Division
U.S. Army corps of Engineers, Honolulu District
230 Otake Street. Building 230
Fort Shafter, Hawaii 96858-5440

Reference: EAST HAGATNA SHORELINE PROJECT FEASIBILITY STUDY

Dear Ms. Kucharski:

In response to your letter dated July 21. 2023, Guam EPA herein acknowledges the Corps' coordination of this project with the Agency and the Corps' plans to obtain a water quality certification at a later date. prior to implementation of the project.

We understand the Corps recognizes the requirement to obtain certification from the Guam Environmental Protection Agency (Guam EPA) for any proposed discharges into Waters of the U.S. associated with the federally permitted shoreline protection project in compliance with applicable provisions of Section 401 of the Clean Water Act. To account for the lack of information presently available, the Corps is proposing to apply for and obtain water quality certification when sufficient detail is available during the environmental permitting process of the Pre-Construction Engineering and Design Phase that follows the current Feasibility Phase.

Guam EPA has recently accessed a copy of the proposed project's July 2023 Draft Integrated Feasibility Report and Environmental Assessment. Kindly keep the Agency apprised of any project changes, as appropriate.

Sincerely,

MICHELLE C.R. LASTIMOZA
ADMINISTRATOR

cc: Michael Terlaje. ACOE

GUAM EPA | 17-3304 Mariner Avenue Tiyan Barrigada, Guam 96913-1617 | Tel: (671) 300.4751/2 | Fax: (671) 300.4531 | epa.guam.gov
ALL LIVING THINGS OF THE EARTH ARE ONE • *MANUNU TODU I MANLÅLATA'*
Like and follow us on epa

5c. cont. CZMA Federal Consistency Certification

GUAM WATERWORKS AUTHORITY
"Better Water. Better Lives."
Gloria B. Nelson Public Service Building | 688 Route 15, Mangilao, Guam 96913
P.O. Box 3010, Hagåtña, Guam 96932
Tel. No. (671) 300-6846/48 Fax No. (671) 648-3290

August 25, 2023

Ms. Lola Leon Guerrero
Director
Bureau of Statistics and Plans
Sagan Planu Siha Yan Emfotmasion
P.O. Box 2950
Hagåtña, Guam 96932

Subject: Federal Consistency Review: U.S. Army Corps of Engineers' Consistency Determination for its proposed emergency shoreline protection of South Marine Corps Drive at Hagatna Bay (GCMP FC 2023-0019)

Hafa Adai Ms. Leon Guerrero,

The Guam Waterworks Authority (GWA) has reviewed the subject Federal Consistency application and does not have any comments. GWA does not have any water or wastewater infrastructure that will be impacted by the proposed project.

If you have any questions or comments, please feel free to contact Paul Kemp, Assistant General Manager of Compliance and Safety at paulkemp@guamwaterworks.org.

Sincerely,

Miguel C. Bordallo, P. E.
General Manager

CC: Thomas A. Cruz, P.E. AGM Operations
Paul Kemp, AGM Compliance and Safety
Jeanet Babauta, P.E. AGM Engineering

5d. 2024 September 12 CZMA Federal Consistency Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
230 OTAKE STREET, BUILDING 230
FORT SHAFTER, HAWAII 96858-5440

September 12, 2024

Civil and Public Works Branch
Programs and Project Management Division

Edwin Reyes
Administrator, Guam Coastal Management Program
Government of Guam, Bureau of Statistics and Plans
P.O. Box 2950
Hagatna, Guam 96932

RE: Coastal Zone Management Act (CZMA) Federal Consistency Review for U. S. Army Corps of Engineers' (USACE) Consistency Determination for its proposed Emergency shoreline protection of South Marine Corps Drive at Hagatna Bay (*GCMP FC NO. 2023-0019*)

Dear Administrator Reyes,

Thank you for the September 8, 2023, CZMA Federal Consistency Certification package for the proposed 2,100 linear foot rock revetment emergency shoreline protection along South Marine Corps Drive, Hagatna, Guam. Due to a change in the preferred plan from a revetment to a precast concrete seawall, USACE submits this revised determination of federal consistency with the Guam Coastal Zone Management (CZM) Program for review by your office in accordance with Section 307(c) of the Coastal Zone Management Act of 1972 (16 USC § 1456).

USACE reevaluated measures to replace a reduced length of 1,630 linear feet of existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay. The Recommended Plan is now the Precast Concrete Seawall, which will be built in the footprint of the existing seawall. The proposed action consists of replacing approximately 1,630 linear ft of existing, compromised seawall with a precast concrete seawall. The top crest elevation needed for the design to meet the USACE 50-year design requirement for sea level change (SLC) and be adaptable to 100-year SLC under the intermediate scenario is 8.5 ft above Mean Sea Level (MSL), approximately 0.5 ft higher than the existing seawall. The seawall will be approximately 1 ft wide, with the total disturbed area being approximately 20 ft. due to excavation and backfill of the existing soils. At this time, construction of project features will be predominately upland of the seawall with limited and temporary work occurring in the intertidal zone for site preparation.

The USACE has reviewed the enforceable policies of the Guam Coastal Management Program and determined that based on the described activities have a

range of coastal effects, some of which may include reasonably foreseeable effects on coastal uses or resources or direct or indirect environmental benefits and determined that the proposed federal action is consistent, to the maximum extent practicable, with the Guam CZM Program. The USACE seeks your concurrence on this determination. Transmitted with this letter is the Guam CZM Program Assessment and Supplemental Information Form (Enclosure 1) for your review and the draft Integrated Feasibility Report and NEPA Document (Enclosure 2) for your reference.

Should you have any questions or comments, please reference the East Hagatna Emergency Shoreline Protection Project and contact either our Environmental Coordinator, Mrs. Marian Dean at (808) 379-8223 or via email at marian.dean@usace.army.mil or the Project Manager, Mr. Mike Terlaje at 671-727-2491 or via email at michael.j.terlaje@usace.army.mil. Thank you for your cooperation.

Sincerely,

Digitally signed by ROUSE.MICHAEL.BARRY.1155134743
Date: 2024.09.12 09:15:59 -08'00'

Michael B. Rouse
Chief, Environmental Resources
Section, Honolulu and Alaska Regional Planning Team Enclosures

The GCMP Assessment Format and Supplemental Information Form may be reproduced and submitted along with other required information to the BSP.

GUAM COASTAL MANAGEMENT PROGRAM ASSESSMENT

DATE OF APPLICATION: 12 September 2024

NAME OF APPLICANT: U.S. Army Corps of Engineers (USACE), Honolulu District

ADDRESS: 230 Otake Street, Fort Shafter, HI 96858-5440

TELEPHONE NO. 808-835-4031 Fax No. N/A Cell No: 808-379-8223

E-MAIL ADDRESS: Marian.Dean@usace.army.mil

TITLE OF PROPOSED PROJECT: East Hagatna Emergency Shoreline Protection

COMPLETE FOLLOWING PAGES

FOR BUREAU OF STATISTICS AND PLANS ONLY:

DATE APPLICATION RECEIVED:_____

OCRM NOTIFIED: _____ LIC. AGENCY NOTIFIED:_____

APPLICANT NOTIFIED: _____ PUBLIC NOTICE GIVEN:_____

OTHER AGENCY REVIEW REQUESTED:_____

_____

_____

DETERMINATION:

( ) CONSISTENT ( ) NON-CONSISTENT ( ) FURTHER INFORMATION REQUESTED

OCRM NOTIFIED: _____LIC. AGENCY NOTIFIED:_____

APPLICANT NOTIFIED: _____

ACTION LOG:

1._____

2._____

3._____

4._____

5._____

6._____

DATE REVIEW COMPLETED: _____

FEDERAL CONSISTENCY SUPPLEMENTAL INFORMATION FORM

Date: 12 September 2024

Project/Activity Title or Description: East Hagatna Emergency Shoreline Protection

The Recommended Plan is the replacement of 1,630 feet of seawall between (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E with a Precast Concrete Seawall (Figures 1 and 2) which acts as a cantilever retaining wall. Concrete wall panels would either be constructed onsite or offsite and transported to the site to replace failing sections of the existing seawall.

Installation of the precast concrete panel wall would occur using conventional land-based earth moving equipment and includes:

- demolition of approximately 1,630 linear ft (711 cy) of existing seawall,
- removal of 20 trees,
- excavation of two to three feet of native soils below and upland of the existing seawall to the limestone shelf (12,074 cy),
- installation of a 7 foot wide 1 foot thick concrete base,
- placement of 10 foot high precast concrete panels,
- construction of 3 sets of concrete stairs to allow for beach access and replacement of 3 culverts,
- regrade of the excavated area to the elevation of the pre-existing ground surface, and
- installation of a splash apron composed of formed concrete over a gravel fill behind the crest of the structure.

This design has a top elevation of 8.5-ft above MSL, a crest width of 1-ft and a buried base that is 7-ft wide, with the total disturbed upland area being approximately 20- ft due to excavation and backfill of the existing soils. In addition to the approximately 20 feet of disturbed area, a minimal additional 30 feet will be needed landward of the disturbed area for the working platform of the construction equipment. This design does not include any construction in front of the existing seawall. This alternative meets the USACE coastal engineering criteria for expected design life and adaptability to SLC. Construction of the precast concrete seawall is expected to begin in 2026 and take approximately 12 months. The footprint provided for the Precast Concrete Seawall in Figure 1 shows the maximum extent that could be needed for construction.

The footprint of the finished Precast Concrete Seawall is estimated to be 0.04 acres (ac). The direct in-water footprint will vary along the project length with the existing shoreline. Excavation, grading, structure demolition, tree and foliage removal, staging, and upland buffer areas are expected to increase the total project footprint to 0.97 ac.

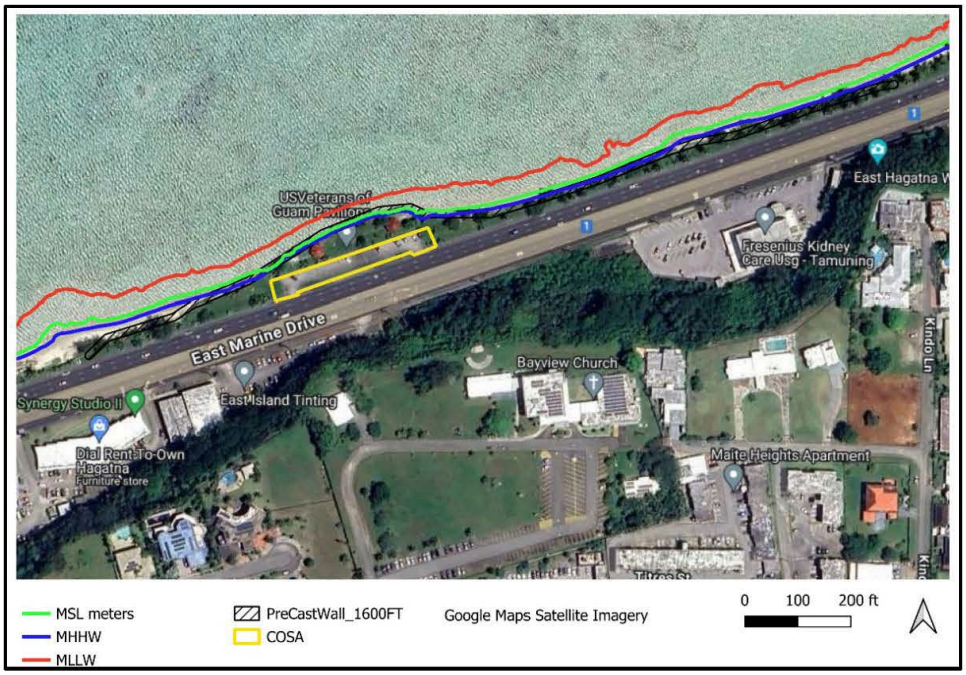


Figure 1: Proposed Project Area: The proposed active construction (black polygon) and staging area (yellow polygon). The ESA Action Area extends 20 ft inland of the foot of the existing seawall (Source: USACE, 2022). The redline indicates mean lower low water (MLLW), green line indicates mean sea level (MSL), blue line indicates mean higher high water (MHHW). Figure by Catie Dillon, March 6, 2024.

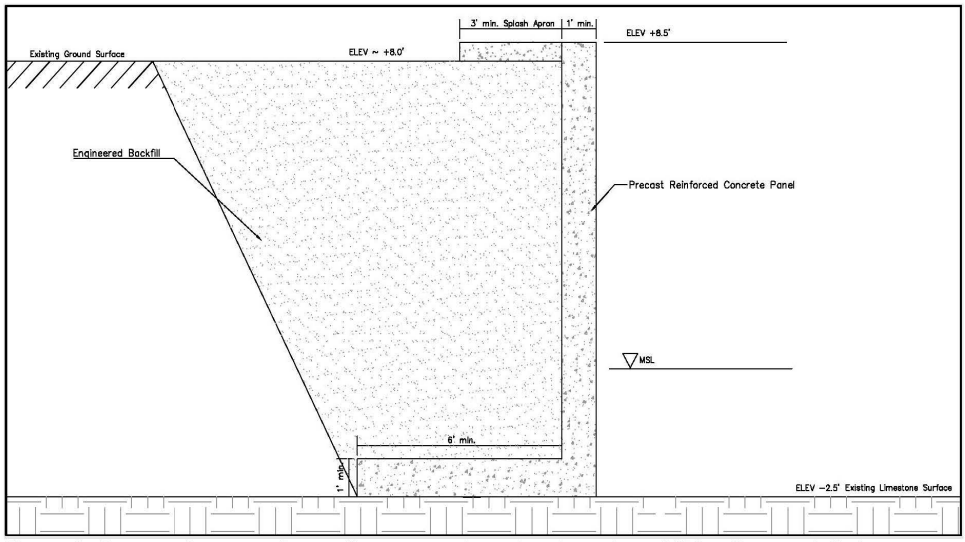


Figure 2: Precast Concrete Seawall cross section, showing where MSL will potentially intersect with the structure.

Location: 1,630 linear feet of existing sea wall between (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive _

Other applicable area(s) affected, if appropriate:
Up to 20 feet upland of the wall for the 1,630 foot length, and a staging area in the U.S. Veterans Pavilions park, see Figure 1

Est. Start Date: 2026 **Est. Duration**: 12 months

APPLICANT
Name & Title: Marian Dean, Environmental Planner
Agency/Organization: U. S. Army Corps of Engineers, Honolulu District
Address 230 Otake Street, Fort Shafter, HI 96858-5440
Telephone No. during business hours: 808-379-8223
E-mail Address: marian.dean@usace.army.mil

AGENT
Name & Title
Agency/Organization Address
Telephone No. during business hours:
A/C (___)
Fax (___)
E-mail Address:

CATEGORY OF APPLICATION (check one only)
(X) **I - Federal Agency Activity**
( ) **II - Federal Permit or License**
( ) **III - Federal Grants & Assistance**

TYPE OF STATEMENT (check one only)
(X) **Consistency**
( ) **General Consistency (Category I only)**
( ) **Negative Determination (Category I only)**
( ) **Non-Consistency (Category I only)**

APPROVING FEDERAL AGENCY (Categories II & III only)
Agency
Contact Person
Telephone No. during business hours:
Area Code ( )
Area Code ( )

FEDERAL AUTHORITY FOR ACTIVITY

Title of Law The 1946 Flood Control Act, as amended (33 USC 701r) for Emergency Shoreline Protection under the Continuing Authorities Program

Section Section 14

OTHER GUAM APPROVALS REQUIRED:

Date of	Agency	Type of Approval	Application Status
2025	Guam EPA	Clean Water Act Section 401 Water Quality Certification	To be submitted after Preconstruction Engineering & Design in 2025 and before start of construction in 2026

DEVELOPMENT POLICIES (DP):

DP 1. Shore Area Development

Intent: To ensure environmental and aesthetic compatibility of shore area land uses.

Policy: Only those uses shall be located within the Seashore Reserve which:

- enhance, are compatible with or do not generally detract from the surrounding coastal area's aesthetic and environmental quality and beach accessibility; or
- can demonstrate dependence on such a location and the lack of feasible alternative sites.

Discussion: Consistent. The proposed project is located within the Seashore Reserve and is necessary to reduce beach erosion and coastal storm risk along the East Hagatna shoreline. An existing seawall, protecting South Marine Corps Drive and associated landside infrastructure, is in need of repair. The Recommended Plan proposes to replace the damaged seawall to restore protection to the existing development ensures the environmental and aesthetic compatibility of shore area land uses. The Recommended Plan must occur within the Seashore Reserve because that is the location of the current seawall and relocating South Marine Corps Drive is not possible within funding and authorization constraints. The Recommended Plan replaces all or part of the existing seawall and therefore ensures environmental and aesthetic compatibility of the existing shore area land uses.

See Section 2 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing shoreline and Section 4 for more information on the potential project effects on the shoreline.

DP 2. Urban Development

Intent: To cluster high impact uses such that coherent community design, function, infrastructure support and environmental compatibility are assured.

Policy: Commercial, multi-family, industrial and resort-hotel zone uses and uses requiring high levels of support facilities shall be concentrated within appropriate zone as outlined on the Guam Zoning Code.

Discussion: Consistent. The project occurs in the already developed urban area of Tamuning, just east of Hagatna. A seawall already exists in the Shore Area as protection for the beach parks, South Marine Corps Drive, and associated infrastructure. This project is a replacement of the existing damaged seawall to provide increased protection to the existing development.

See section 2.3.1 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing land use and section 4.3.1 for more information on the potential project effects on land use.

DP 3. Rural Development

Intent: To provide a development pattern compatible with environmental and infrastructure support suitability and which can permit traditional lifestyle patterns to continue to the extent practicable.

Policy: Rural districts shall be designated in which only low density residential and agricultural uses will be acceptable. Minimum lot size for these uses should be one-half acre until adequate infrastructure including functional sewering is provided.

Discussion: Not Applicable. The project occurs in the already developed urban area of East Hagatna. The project area does not have rural land use designation.

See section 2.3.1 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing land use and section 4.3.1 for more information on the potential project effects on land use.

DP 4. Major Facility Siting

Intent: To include the national interest in analyzing the siting proposals for major utilities, fuel and transport facilities.

Policy: In evaluating the consistency of proposed major facilities with the goals, policies, and standards of the Comprehensive Development and Coastal Management Plans, Guam shall recognize the national interest in the siting of such facilities, including those associated with electric power production and transmission, petroleum refining and transmission, port and air installations, solid waste disposal, sewage treatment, and major reservoir sites.

Discussion: Not Applicable. The project is a seawall replacement and does not meet the definition of a major facility.

DP 5. Hazardous Areas

Intent: Development in hazardous areas will be governed by the degree of hazard and the land use regulations.

Policy: Identified hazardous lands, including flood plains, erosion-prone areas, air installations' crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.

Discussion: Consistent. The project area is identified as a coastal high hazard flood zone (Zone VE - 1% Annual Chance Flood Hazard) in the FEMA Flood Insurance Rate Maps. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Project activities within the flood zone would comply with all applicable laws and regulations. The project is not located in geologically unstable zones, such as cliff lines or severe slopes. The construction of the proposed project would reduce the risk to human life and safety and facilitate floodplain management.

See section 2.1 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing physical environment and section 4.1 for more information on the potential project effects on the physical environment.

DP 6. Housing

Intent: To promote efficient community design placed where the resources can support it.

Policy: The government shall encourage efficient design of residential areas, restrict such development in areas highly susceptible to natural and manmade hazards, and recognize the limitations of the island's resources to support historical patterns of residential development.

Discussion: Not Applicable. The project is a seawall replacement and does not include housing.

DP 7. Transportation

Intent: To provide transportation systems while protecting potentially impacted resources.

Policy: Guam shall develop an efficient and safe transportation system, while limiting adverse environmental impacts on primary aquifers, beaches, estuaries, coral reefs and other coastal resources.

Discussion: Consistent. The project protects potentially impacted transportation resources. The project is the replacement of an existing seawall providing protection to South Marine Corps Drive and other existing infrastructure. While construction of the Precast Concrete Seawall will have temporary effects on the nearshore marine environment during construction, best management practices will be used to minimize temporary effects to the maximum extent practicable and to ensure no lasting effects to coastal resources of Hagatna Bay. The protection of South Marine Corps Drive will also avoid the need to build additional transportation corridors to replace it.

See section 2 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing coastal resources and section 4 for more information on the potential project effects on the coastal environment.

DP 8. Erosion and Siltation

Intent: To control development where erosion and siltation damage is likely to occur.

Policy: Development shall be limited in areas of 15% or greater slope by requiring strict compliance with erosion, sedimentation, and land use regulations, as well as other related land use guidelines for such areas.

Discussion: Consistent. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. The project is replacement of an existing seawall providing protection to South Marine Corps Drive and other existing infrastructure. While construction of the Precast Concrete Seawall will have temporary minimal effects on the nearshore marine environment during construction, best management practices will be used to minimize temporary effects such as elevated turbidity to the maximum extent practicable and to ensure no lasting effects to Hagatna Bay.

See section 2.1 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing physical environment, section 4.1 for more information on the potential project effects on the physical habitat, and Attachment 6 of Appendix 3 for best management practices to be used to minimize effects.

RESOURCES POLICIES (RP):

RP 1. Air Quality

Intent: To control activities to ensure good air quality.

Policy: All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.

Discussion: Consistent. The proposed project would comply with all air quality laws, including the implementation of BMPs. Construction vehicles would be operated in accordance with the

provisions of the Clean Air Act. The proposed action would not include the disposal of any hazardous substances into the air or other media.

See section 2.1.1 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on air quality, Section 4.1.1 for potential project effects, and section 6.9.1 for best management practices to be used to minimize effects.

RP 2. Water Quality

Intent: To control activities that may degrade Guam's drinking, recreational, and ecologically sensitive waters.

Policy: Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuaries, reef and aquifer areas.

Discussion: The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Construction would strictly comply with erosion, sedimentation, and related land and water use districting guidelines, as well other related land and water use policies. USACE would operate in accordance with the provisions of the Clean Water Act and all other local and Federal policies governing water pollution. The proposed action would not include the disposal of any hazardous substances into the water or other media. BMPs would be in place to minimize the accidental release of materials into the waterways. A Clean Water Act (CWA) 404(b)(1) analysis is included as Attachment 4b of Appendix 3 of the IFR/EA. As a replacement of the existing seawall, the Precast Concrete Seawall would have maintain the current impacts below the MHHW line, which represents the jurisdictional boundary of the CWA. Avoidance, minimization, and conservation measures established by the Permit and IFR/EA would be implemented to reduce effects to water quality. Since the total disturbance i less than one acre, the contactor would not be required to obtain a Construction General Permit (Section 402 of the CWA, 33 U.S.C. § 1342; 40 C.F.R. § 122.26). Temporary erosion control BMPs would be used, such as straw wattles, silt curtains, or erosion matting to prevent sediment runoff into the bay. The proposed project would comply with all water quality laws, including the implementation of BMPs. The project would comply with all appropriate Federal and local policies to ensure that subsurface work would have no impact on groundwater. The proposed project does not include the drilling or operation of wells.

See section 2.1.5 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information about the existing water quality, section 4.1.5 for more information on potential project impacts on water quality; and section 6.9 for BMPs.

RP 3. Fragile Area

Intent: To protect significant cultural areas, and natural marine and terrestrial wildlife and plant habitats.

Policy: Development in the following types of fragile areas including Guam's Marine Protected Areas (MPA) shall be regulated to protect their unique character.

- historical and archeological sites
- wildlife habitats
- pristine marine and terrestrial communities
- limestone forests
- mangrove stands and other wetlands

- coral reefs

Discussion: Consistent. The proposed project does not occur in an MPA, pristine marine and terrestrial communities, limestone forests, mangrove stands, other wetlands or coral reefs.

No known historic properties have formally been reported within the Area of Potential Effect (APE) at this time; however, consultation has identified at least one burial within the APE and there is a likelihood that subsurface cultural resources and/or other burials exist that could be impacted by construction along the shoreline. Consultation with the Guam State Archaeologist identified additional cultural resources and burial locations that have not yet been formally reported (J. M. Joseph, pers. comm. 2022). USACE has therefore proposed to conduct a phased identification and evaluation effort pursuant to 36 CFR § 800.4(b)(2) and to develop a Memorandum of Agreement (MOA) in accordance with 36 CFR § 800.6 that will identify actions to minimize or mitigate significant impacts as required. The project will be developed in compliance with Section 106, NHPA. See section 4.5 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on potential project impacts to cultural, historic, and archeological resources.

The project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Since the coral reef lies approximately 100 yards offshore, the proposed activities would not take place within or near reefs. There would be no direct negative effect on living marine resources. There would be no change to water flow, nutrient levels, or other natural processes that would in turn impact the reefs. Standard best management practices (BMPs) would be used during construction to prevent siltation in the lagoon. Standard BMPs would be used as necessary during construction to minimize effects.

The project area is on public land with no residential dwellings. The proposed project would be built on a sandy shoreline next to a pre- existing structure (a pedestrian walkway). Standard avoidance, minimization, and conservation measures such as a pre-construction surveys would be used to avoid any significant impact to wildlife. This proposed project is designed to prevent shoreline erosion.

See section 4 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on potential project impacts affecting the hydrology, hydraulics, and geomorphology of the area, including potential effects to the island shoreline. For more information on potential effects to coral reefs, refer to section 4.2 in the East Hagatna Emergency Shoreline Protection IFR/EA.

RP 4. Living Marine Resources

Intent: To protect marine resources in Guam's waters.

Policy: All living resources within the waters of Guam, particularly fish, shall be protected from over harvesting and, in the case of corals, sea turtles and marine mammals, from any taking whatsoever.

Discussion: Consistent. The proposed project would take place in accordance with the requirements of the Endangered Species Act, the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act and the Essential Fish Habitat Provisions of the Magnuson Stevens Act. The proposed project would not result in the degradation of wildlife habitat or harm the function or integrity of the reefs or seagrass beds in Hagatna Bay. The East

Hagatna Emergency Shoreline Protection IFR/EA further discusses potential effects to federally protected natural resources, as well as avoidance and minimization measures to reduce these effects. No part of the project would involve the take or collection of fish, marine mammals, or Guam listed species for any purpose. No part of the proposed project would be perceptible to fish, marine mammals, or species on the Guam endangered species list, or otherwise significantly affect their behavior or the quality of their habitat.

See section 4.2 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on potential project impacts to marine habitat and species, and special-status species. See section 6.9 for discussion of mitigation measures that would minimize many adverse environmental impacts.

RP 5. Visual Quality

Intent: To protect the quality of Guam's natural scenic beauty

Policy: Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.

Discussion: Consistent. The proposed project would preserve the scenic resources of the Commonwealth, and would be in compliance with sign, litter, zoning, building codes, and related land use laws. The proposed seawall would raise the height of the existing seawall by 1 foot to ensure adequate structural integrity and in consideration of climate change. The minor change in elevation would not obstruct or degrade scenic views.

See section 4.5.2 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on potential project effects to aesthetics and visual resources.

RP6. Recreation Areas

Intent: To encourage environmentally compatible recreational development.

Policy: The Government of Guam shall encourage development of varied types of recreational facilities located and maintained so as to be compatible with the surrounding environment and land uses, adequately serve community centers and urban areas and protect beaches and such passive recreational areas as wildlife, marine conservation and marine protected areas, scenic overlooks, parks, and historical sites.

Developments, activities and uses shall comply with the Guam Recreational Water Use Management Plan (RWUMP).

Discussion: Consistent. The proposed activities would allow recreational and subsistence usage and includes the incorporation of maintaining existing access to the beach. The Precast Concrete Seawall would reduce the risk of shoreline erosion from harming the Bay and reefs. There would be no significant effects to the Bay or reefs from either alternative. The sea grass beds off the shore would be preserved and the quality and value of the beds would not be degraded. Standard best management practices (BMPs) would be used during construction to prevent siltation in the bay. There would be no effect on areas of historical and cultural significance.

The proposed project would not preclude or inhibit the development or enhancement of recreational facilities compatible with the surrounding environment. The project would protect

the recreational infrastructure along South Marine Corps Drive.

See section 4.2 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on effects to marine resources.

RP 7. Public Access

Intent: To ensure the right of public access.

Policy: The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all Guam recreation areas, parks, scenic overlooks, designated conservation areas and their public lands. Agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.

Discussion: Consistent. Means of Public Access to the shoreline are part of the Project Design and neither proposed alternative would disrupt existing public access. Public Access may be temporarily impacted during construction but would not be permanently interrupted or otherwise affected by the proposed federal action. The proposed wall includes 3 sets of stairs to provide access to the beach and water.

See section 4.3 of the East Hagatna Emergency Shoreline Protection IFR/EA for more information on potential project impacts on public access.

RP 8. Agricultural Lands

Intent: To stop urban types of development on agricultural land.

Policy: Critical agricultural land shall be preserved and maintained for agricultural use.

Discussion: Not applicable. The proposed action would not take place on or near commercial or private agricultural lands, including grazing lands. The project area is urban and has no neighboring agricultural activities or landuse designations.

References

Bureau of Statistics and Plans – Guam Coastal Management Program (BSP-GCMP). 2020. 2021-2025 Section 309 Assessment and Strategy Report. https://bsp.guam.gov/wp-bsp-content/uploads/2021/05/GCMP_Section309_2020_FINAL_er-2.12.2021.pdf

BSP-GCMP. 2011. Procedures Guide for Achieving Federal Consistency with the Guam Coastal Management Program.

Burdick, D.R. 2005. Guam Coastal Atlas. 149 pages. https://www.uog.edu/_resources/files/ml/technical_reports/114Burdick_2005_UOGMLTechReport114.pdf.

Project Development Team (PDT). 2022. Trip Report.

USACE. 1993. Draft East Agana, Territory of Guam, Detailed Project Report and Environmental Assessment, U.S. Army Corps of Engineers, Honolulu Engineer District, July 1993 (terminated at Sponsor's request).

USACE. 2023. East Hagatna Emergency Shoreline Protection Draft Integrated Feasibility

Report ad NEPA Document.

Conclusion

Based upon the above information, data and analysis USACE finds that the proposed federal action is consistent to the maximum extent practicable with the enforceable policies of the Guam Coastal Zone Management Program. Pursuant to 15 CFR § 930.41, the Guam Coastal Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR §930.41(b). The State's concurrence will be presumed if the State's response is not received by the USACE on the 60th day from receipt of this determination.

We request that the Guam CZM Program response, or any questions or concerns regarding the proposed activities, be sent to Marian Dean at marian.dean@usace.army.mil.

5e. 2024 November 8 CZMA Federal Consistency Certification

LOLA E. LEON GUERRERO
Director
MATTHEW C. SANTOS
Deputy Director

BUREAU OF STATISTICS AND PLANS
Sagan Planu Siha Yan Emfotmasion

LOURDES A. LEON GUERRERO
Governor of Guam
JOSHUA F. TENORIO
Lieutenant Governor

November 8, 2024

Michael B. Rouse
Chief, Environmental Resources Section
Honolulu and Alaska Regional Planning Team
U.S. Army corps of Engineers, Honolulu District
230 Otake Street, Building 230
Fort Shafter, Hawaii 96858-5440

RE: Coastal Zone Management Act (CZMA) Federal Consistency Review for U.S. Army Corps of Engineers' Consistency Determination for its proposed Emergency Shoreline Protection of South Marine Corps Drive at Hagåtña Bay *(GCMP FC No. 2023-0019 Supplemental)*

Hafa Adai! The Guam Coastal Management Program of the Bureau of Statistics and Plans (Bureau) has completed its review of the Consistency Determination by U.S. Army Corps of Engineers received on September 19, 2024. U.S. Army Corps of Engineers ("the federal agency") has submitted its revised determination of federal consistency relative to the proposed Emergency Shoreline Protection of South Marine Corps Drive at Hagåtña Bay.

The Bureau coordinated this review with partnering agencies and provided Public Notice for comments. Furthermore, the Bureau hereby concurs with the federal agency's certification that the proposal is consistent with the enforceable policies of the Bureau's Guam Coastal Management Program (GCMP) based upon the following conditions:

Development Policy 5. Hazardous Areas. *Identified hazardous lands, including floodplains, erosion-prone areas, air installations, crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.*

The federal agency represents, in part:

> The project area is identified as a coastal high hazard flood zone (Zone VE - 1% Annual Chance Flood Hazard) in the FEMA Flood Insurance Rate Maps. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Project activities within the

flood zone would comply with all applicable laws and regulations. The project is not located in geologically unstable zones, such as cliff lines or severe slopes. The construction of the proposed project would reduce the risk to human life and safety and facilitate floodplain management.

The project is within a Special Flood Hazard Area, which is subject to Guam's Floodplain Management Ordinance, which can be found on pages 168-175 the 2022 Guidebook to Development Requirements on Guam. The guidebook can be made available upon request by the Guam Coastal Management Program.

Pursuant to Development Policy 5, Hazardous Areas, the federal agency shall be advised to ensure that the final design for the project meets the standards established for Special Flood Hazard Areas in the Floodplain Management Ordinance.

Resource Policy 2. Air Quality. *All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.*

Disturbance of the ground surface and other construction activities may result in temporary and localized effects to air quality as a result of the generation of fugitive dust. Appropriate BMPs should be used to address fugitive dust.

Pursuant to Resource Policy 2, Air Quality, the applicant shall:

(1) Comply with the Air Pollution Control Act.
(2) Use appropriate fugitive dust BMPs, including good housekeeping, dust suppression using water or chemical dust suppressants, covering open-body trucks when hauling material that may release material into the air, installing windbreaks or fences near ground disturbing activities and around storage piles.

Resource Policy 3. Water Quality. *Safe drinking water shall be assured and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuarine, reef and aquifer areas.*

The Federal Agency states:

> "The seawall will be approximately 1 ft wide, with the total disturbed area being approximately 20 ft. due to excavation and backfill of the existing soils. At this time, construction of project features will be predominately upland of the seawall with limited and temporary work occurring in the intertidal zone for site preparation."

Ground disturbance and construction activities upland and within the intertidal zone may adversely affect the coastal use and resource. Best management practices should be

implemented and maintained throughout the entire construction process to prevent pollution and to protect Guam's waters.

Pursuant to Resource Policy 3, Water Quality, the applicant shall:

(1) Comply with the Water Pollution Control Act, 10 GCA Ch. 47; the Guam Safe Drinking Water Act, 10 GCA Ch. 53; and the Water Resources Conservation Act 10 GCA Ch. 46.
(2) Implement appropriate erosion and sediment control BMPs, installed in accordance with the Guam Soil Erosion and Sediment Control Regulations, 22 GAR Ch. 10).
(3) Ensure that project materials, such as gravel and boulders, are free from silt or sediments or washed materials must be used. No materials are allowed to be stockpiled in marine waters.
    a. Project related materials and equipment are not allowed to be in the water. The contractor must ensure that equipment used at the project site will not cause oil leaks and a spill prevention kit must be readily available at the site. Providing oil drip pans with the equipment when parked is highly recommended.
    b. Appropriate erosion and sediment control measures must be provided by the contractor to prevent sediment and runoff from entering water bodies. Consider installing silt curtains or flexible, floating barrier to contain suspended sediment along the shoreline or within the waterbody.
    c. Dredged or excavated materials from the areas with waters must be stockpiled inside the berm or silt fence to ensure that water displacement from the dredge spoil will not carry sediment back into fresh or marine waters.

Resource Policy 6. Visual Quality. *Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from scenic overlooks, highways and trails.*

Route 1 is adjacent to Hagåtña Bay, offering a unique scenic experience for motorists and other users such as organized Guam Marathons, recreational runners, and bikers. The natural charm of the area also includes mature native trees that provide texture and color to the marine and mosaic skyline backdrop of the bay. The height of the proposed precast concrete seawall can potentially have a reasonable and foreseeable impact on the significant scenic resource of Hagåtña Bay.

Demolition/rehabilitation/construction activities will result in the generation of solid waste which must be disposed of appropriately. Any temporary BMPs installed during the project must be removed when the rehabilitation/construction activities have been completed.

Pursuant to Resource Policy 6, Visual Quality, the applicant agency shall:

(1) Ensure the height of the proposed seawall does not gravely diminish the view of the bay for motorists, Guam Marathons and/or recreational runners, and bikers along this section of Route 1.
(2) Ensure proper disposal of all solid waste generated as a result of the project.
(3) Remove any temporary BMPs installed during the project once rehabilitation/construction activities have been completed.

Resource Policy 8. Public Access. *The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all territorial recreation areas, parks, scenic overlooks, designated conservation areas and their public lands; and agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.*

The proposed development project is along an existing, narrow beach along much of its span and adjacent to submerged lands used as a recreational area. The demolition of the existing sea wall and construction of the proposed precast concrete seawall would limit access to the beach. The effect of the design height and material used in the precast concrete seawall structure will impact public access to the shoreline as it has done so in Talofofo Bay.

Pursuant to Resource Policy 8, Public Access, the applicant shall:

(1) Ensure reasonable access for fishers during the seasonal fish run is not impacted.
(2) Ensure that public access to the recreational waters and the surrounding beach areas outside the project area are not restricted by the federal agency or its contractors.
(3) Ensure that the final engineering design reasonably provides access to the recreational waters in East Hagåtña Bay.

Therefore, based on the conditional concurrence stated above and the Bureau's review of all other information submitted, we find the application to be consistent with the approved development and resource policies of the Guam Coastal Management Program (GCMP), in accordance with the Coastal Zone Management Act of 1972, (P.L. 92-583) as amended, (P.L. 94-370). The Federal Consistency concurrence, however, does not preclude the need for securing other federal and Government of Guam permits, clearances and approvals prior to the start of this project.

Per 15 CFR §930.4(b), if the requirements for conditional concurrences specified in 15 CFR §930.4(a), (1) through (3), are not met, then all parties shall treat this conditional concurrence letter as an objection pursuant to 15 CFR Part 930 subpart C. Furthermore, if an objection is determined, you are hereby notified that, pursuant to 15 CFR §930.63 and 15 CFR Part 930, subpart H, you have the opportunity to appeal an objection resulting from not

meeting the requirements of 15 CFR §930.4(a), (1) through (3), to the Secretary of Commerce within 30 days after receiving this conditional concurrence letter.

The proposed action shall be operated and completed as represented in the Coastal Zone Management (CZM) federal consistency certification. Significant changes to the subject proposal shall be submitted to the Bureau for review and approval and may require a full CZM federal consistency review, including publication of a public notice and provision for public review and comment. This condition is necessary to ensure that the proposed actions are implemented as reviewed for consistency with the enforceable policies of GCMP. Guam Land Use policies (E.O. 78-37), are the federally approved enforceable policies of GCMP that apply to this condition.

Please do not hesitate to contact Ms. Esther Taitague, Federal Activities Planner at 671-475-9673 or email esther.taitague@bsp.guam.gov or Mr. Edwin Reyes, Coastal Program Administrator at 671-475-9672 or email edwin.reyes@bsp.guam.gov. Si Yu'os Ma'åse'.

Sincerely,

MATTHEW C SANTOS
Acting Director

Attachments

Cc: NOAA Liaison
DoAgr
DLM
DPR-SHPO
DPW
GEPA
GWA

Attachment 6. NHPA Consultation

6a. USACE Project Notification to Guam Preservation Trust (GPT), Guam Department of Chamorro Affairs (GDCA), Guam State Historic Preservation Officer (SHPO)
6b. USACE Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO
6c. USACE Assessment of Effect submitted to GPT, GDCA, and SHPO
6d. GPT response to USACE

DRAFT

6a. 2022 February 24 Notification of Project to Guam Preservation Trust, Guam DCA, and Guam SHPO

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

February 24, 2022

CEPOA-PM-C-ER

Mr. Patrick Lujan
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, GU 96910

Dear Mr. Lujan,

The U.S. Army Corps of Engineers (USACE), Honolulu District, is conducting a study to determine the feasibility of shoreline protection along part of Hagatna Bay in East Hagatna, Guam. More specifically, the project will focus on approximately ½ mile of the Trinchera Beach along Marine Corps Drive at Veteran's Sunset Beach Park (Figure 1). In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (54 USC § 306108), the purpose of this letter is to notify you of a Federal undertaking [36 CFR § 800.3(c)(3)].

Authority

The USACE is conducting this study under the Continuing Authorities Program (CAP), as authorized by Section 14 of the 1946 Flood Control Act, as amended (33 USC § 701r). The Federal Interest Determination for this project was approved by the USACE Pacific Ocean Division on September 23, 2020. The study timeline is meant to comply with USACE Engineering Pamphlet 1105-2-58.

Study Timeline

On January 10th, 2022, the USACE conducted a Site Visit at the proposed project area to delineate the extent of shoreline erosion and further clarify study boundaries. We submitted a Request for Assistance to your office later that day and met with your staff on January 11th to discuss the proposed project. On January 26th, in response to our Request for Assistance, your staff notified us of the availability of the requested documents. Over the next few months, the USACE and its Non-Federal Sponsor, the Government of Guam, will develop an array of alternatives that can address the shoreline erosion. We anticipate that these potential alternatives will be narrowed down to a Tentatively Selected Plan

6a. (cont.) Notification of Undertaking to SHPO, GPT, and GDCA

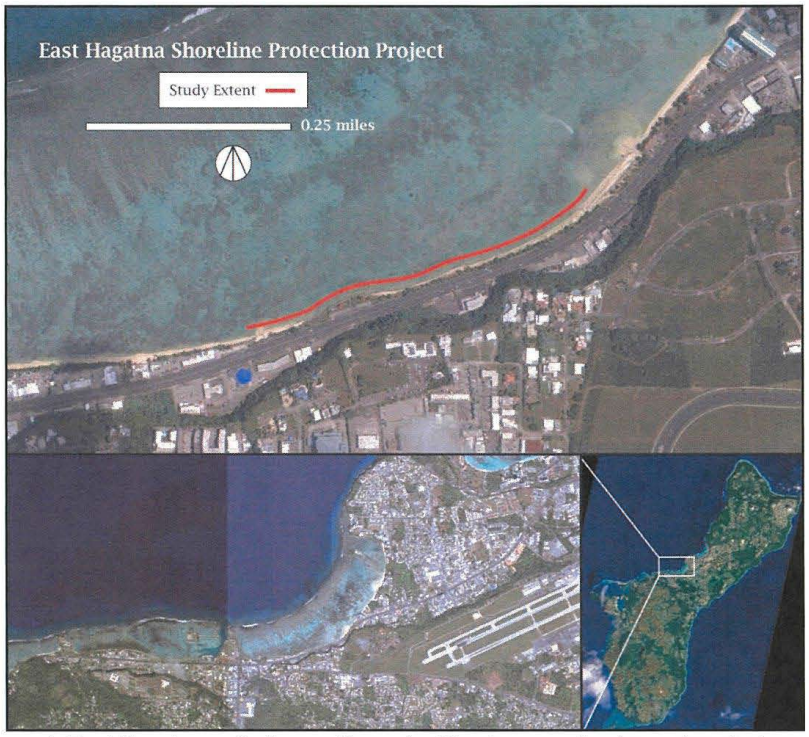


Figure 1. East Hagatna project area, Guam (red line is approximate erosion study area).

(TSP) in June 2022. At that time, the USACE will assess the potential effect of the proposed TSP on historic properties within the Area of Potential Effect and seek your concurrence on our assessment. A Public Comment Period on the Draft Feasibility Study and Integrated Environmental Assessment is anticipated to begin in August 2022. If you have any questions or concerns about this study, please contact me by phone at 907-753-2672 or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section
Alaska District

cc:
Mr. Joseph Quinata, Chief Program Officer, Guam Preservation Trust
Mr. Melvin Won Pat-Borja, President, Guam Department of Chamorro Affairs

6a. (cont.) Notification of Undertaking to SHPO, GPT, and GDCA

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

February 24, 2022

CEPOA-PM-C-ER

Joseph Quinata
Chief Program Officer
Guam Preservation Trust
P.O. Box 3036
Hagatna, GU 96932

Dear Mr. Quinata:

The U.S. Army Corps of Engineers (USACE), Honolulu District, is conducting a study to determine the feasibility of shoreline protection along part of Hagatna Bay in East Hagatna, Guam. The feasibility study is being conducted in partnership with the Government of Guam. In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, the purpose of this letter is to notify you of a Federal undertaking [36 CFR § 800.3(f)].

You are receiving this letter because we believe that the Guam Preservation Trust may have an interest in cultural resources in the general project area. A letter addressed to the Guam State Historic Preservation Officer, which provides more information about the project area and anticipated timeline, is enclosed. We invite you to bring any relevant cultural resources concerns or information to our attention.

If you have any questions or concerns about this study, please contact me by phone at 907-753-2672 or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section
Alaska District

6a. (cont.) Notification of Undertaking to SHPO, GPT, and GDCA

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

February 24, 2022

CEPOA-PM-C-ER

Melvin Won Pat-Borja
President
Guam Department of Chamorro Affairs
P.O. Box 2950
Hagatna, GU 96932

Dear President Won Pat-Borja:

The U.S. Army Corps of Engineers (USACE), Honolulu District, is conducting a study to determine the feasibility of shoreline protection along part of Hagatna Bay in East Hagatna, Guam. The feasibility study is being conducted in partnership with the Government of Guam. In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, the purpose of this letter is to notify you of a Federal undertaking [36 CFR § 800.3(f)].

You are receiving this letter because we believe that the Department of Chamorro Affairs may have an interest in cultural resources in the general project area. A letter addressed to the Guam State Historic Preservation Officer, which provides more information about the project area and anticipated timeline, is enclosed. We invite you to bring any relevant cultural resources concerns or information to our attention.

If you have any questions or concerns about this study, please contact me by phone at 907-753-2672 or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section
Alaska District

6b. 2022 June 2 Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Melvin Won Pat-Borja
President
Guam Department of Chamorro Affairs
P.O. Box 2950
Hagatna, Guam 96932

Dear President Won Pat-Borja

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, USACE invites the Guam Department of Chamorro Affairs to participate in this study and requests any available information regarding resources occurring within the study area. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to resources. As more information is gathered, the impact areas relative to each resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

cooperating agency and participating agency workshop scheduled for June 9, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

Enclosure 1

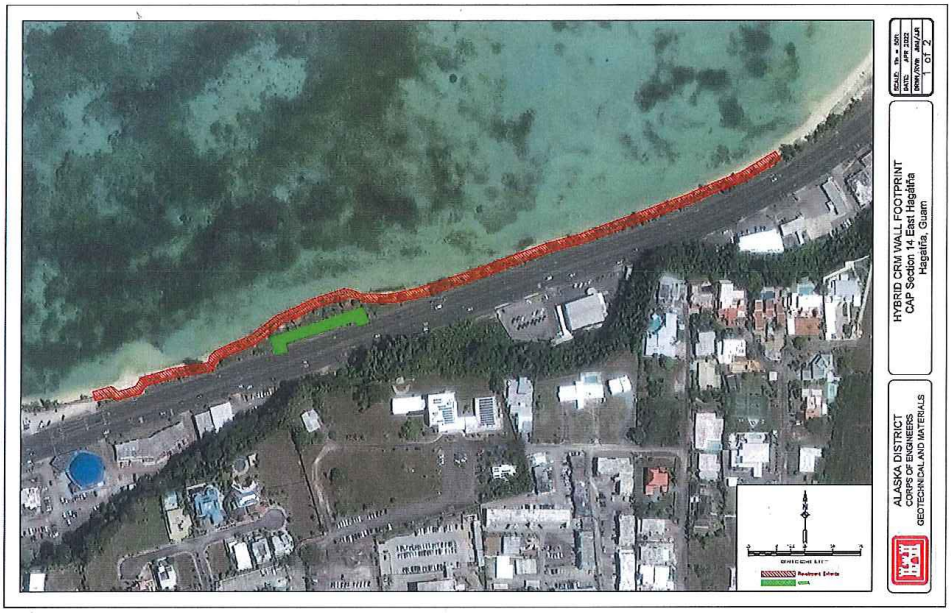


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along South Marine Corps Drive. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Joseph Quinata
Chief Program Officer
Guam Preservation Trust
P.O. Box 3036
Hagatna, Guam 96932

Dear Mr. Quinata:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, USACE invites the Guam Preservation Trust to participate in this study and requests any available information regarding resources occurring within the study area. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to resources. As more information is gathered, the impact areas relative to each resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a cooperating agency and participating agency workshop scheduled for June 9, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R. Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

Enclosure 1

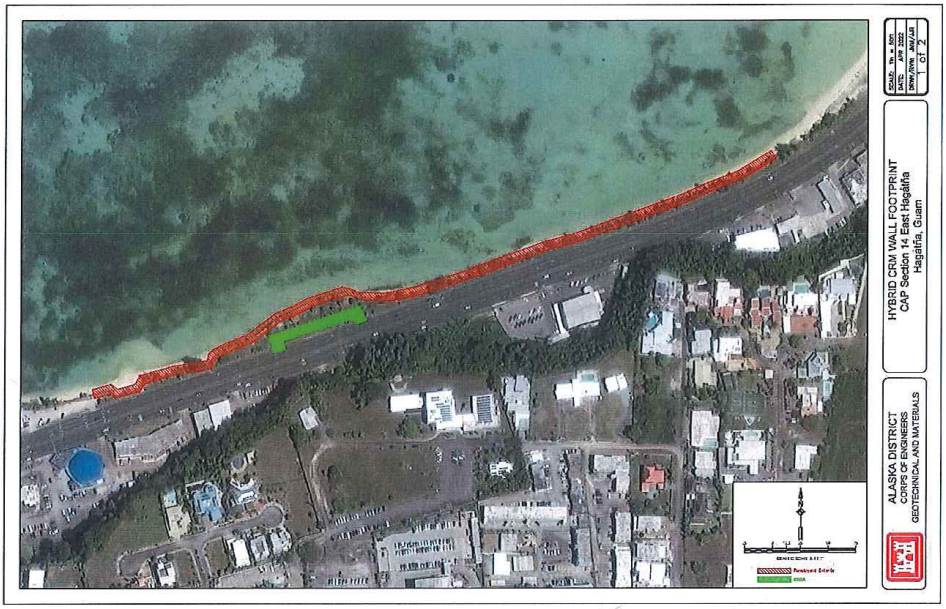


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along Marine Corps Drive (labeled as South Marine Corps Drive on some maps). The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

02 JUN 2022

Civil and Public Works Branch
Programs and Project Management Division

Patrick Lujan
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, Guam 96910

Dear Mr. Lujan:

The United States Army Corps of Engineers (USACE) Honolulu District, and the Government of Guam are in the early stages of a feasibility study for the East Hagatna Emergency Shoreline Protection Project pursuant to Section 14 of the Continuing Authorities Program. The purpose of the study is to investigate the feasibility of emergency shoreline protection of South Marine Corps Drive, Hagatna, Guam. As part of the feasibility study, USACE is preparing appropriate documentation to comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321).

USACE is evaluating measures to both repair and replace either sections or the entire 2,100 linear foot long existing sea wall along South Marine Corps Drive adjacent to Hagatna Bay (Figure 1). Initial measures under consideration include rock revetment, modified concrete masonry wall, vertical concrete, and sheet piling wall. The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone (Figure 1). The study is still in the early planning phase; no specific measures have been developed and no final recommendations proposed.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, USACE invites the Guam State Historic Preservation Office to participate in this study and requests any available information regarding resources occurring within the study area. For the purposes of this request, the study area comprises the area within which USACE is considering direct and indirect impacts to resources. As more information is gathered, the impact areas relative to each resource will be further refined.

As part of this scoping initiative, we are collaborating with federal, state, and local agencies and the public to provide input as we prepare a NEPA environmental assessment for the study. We respectfully request your agency's attendance at a

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

cooperating agency and participating agency workshop scheduled for June 9, 2022. We will continue coordination of the workshop logistics via email (forthcoming). During the workshop, we will discuss the status of the feasibility study, existing information to inform the study, resource and regulatory agencies' concerns, issues, and needs to complete the study, including completing necessary coordination and consultations and obtaining all environmental compliance permits. In addition, pursuant to Section 1501.8(b)(6) of NEPA and Section 1005(g)(1) of WRRDA 2014, we will develop a schedule for reviewing the feasibility study and complying with applicable environmental laws and regulations.

Should you have any questions or comments, please contact our Environmental Coordinator, Mr. Christopher Floyd at 907-753-2700 or via email at christopher.b.floyd@usace.army.mil and Project Manager, Mr. Jeffrey Herzog at 808-835-4029 or via email at jeffrey.a.herzog@usace.army.mil. Thank you for your cooperation.

Sincerely,

R Kucharski

Rhiannon Kucharski, WRCP
Chief, Civil and Public Works
and Legislative Liaison

6b. (cont.) Cooperating Agency Workshop Notification to GDCA, GPT, and SHPO

Enclosure 1

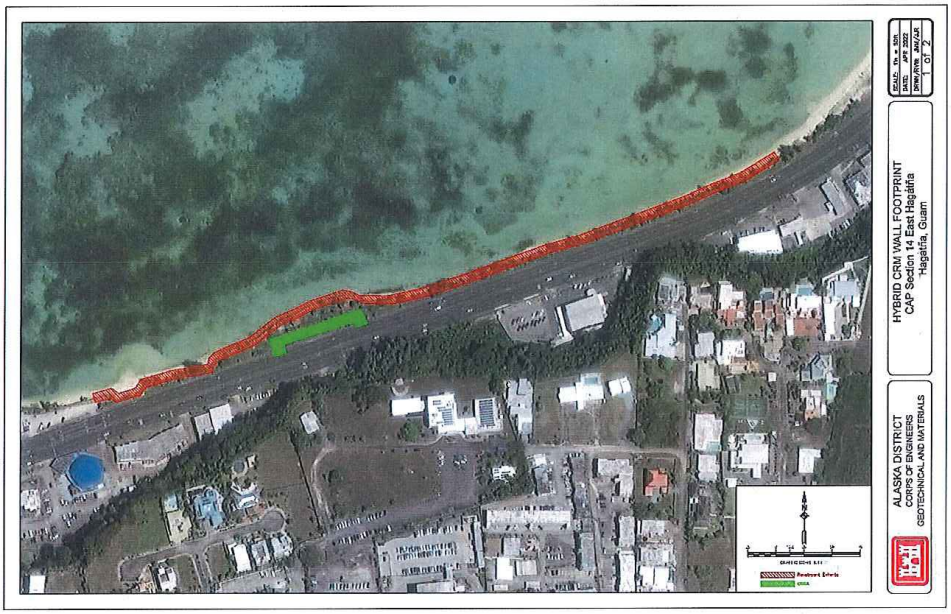


Figure 1: Proposed Project Area: The proposed active construction area is red. The proposed staging area is green. The study area includes 2100 linear feet of existing sea wall from (east end) 13.480339N, 144.768446E to (west end) 13.478478N, 144.762843E along Marine Corps Drive (labeled as South Marine Corps Drive on some maps). The project footprint may extend as far as 20 feet into the water from the existing seawall, 30 feet upland of the seawall, and 5 feet down into the limestone.

6c. 2023 March 15 USACE Assessment of Effect submitted to GPT, GDCA, and SHPO

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 15, 2023

CEPOA-PMC-E

Mr. Patrick Lujan
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, GU 96910

Dear Mr. Lujan:

The U.S. Army Corps of Engineers (USACE), Honolulu District, is conducting a study to determine the feasibility of shoreline protection along part of Hagåtña Bay on the island of Guam. The tentatively selected plan, a rock revetment, would be placed along approximately 2,100 feet of Trinchera Beach bordering Marine Corps Drive in Tamuning, Guam (Figure 1). The proposed rock revetment constitutes an undertaking pursuant to 36 CFR § 800.3(a) and therefore requires consultation under Section 106 of the National Historic Preservation Act (54 USC § 306108). In compliance with the implementing regulations of Section 106 of the NHPA, the purpose of this letter is to seek your concurrence on an assessment of effect (36 CFR § 800.4(b)(2)).

Study Authority

USACE is conducting this study with its Non-Federal Sponsor, the Government of Guam, under the Continuing Authorities Program (CAP) authorized by Section 14 of the 1946 Flood Control Act, as amended (33 USC § 701r). The Federal Interest Determination for this project was approved by the USACE Pacific Ocean Division on September 23, 2020. The Government of Guam and USACE Honolulu District executed a Federal Cost Share Agreement for this study on August 18, 2021. For the purposes of compliance with Section 106 of the NHPA, USACE is the lead agency.

Project Description

The existing rock seawall along the Trinchera Beach shoreline which protects Marine Corps Drive along Hagåtña Bay has been severely compromised by erosion (Figures 2 and 3). This seawall was constructed in the 1990s by the Government of

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

Guam (E. Reyes, personal communication 2022). To address this erosion and protect Marine Corps Drive, USACE and the Government of Guam propose to replace approximately 2,100 linear feet of the existing rock seawall with a rock revetment.



Figure 1. East Hagåtña Shoreline Protection study area in Tamuning, Guam.

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA



Figure 2. Existing rock seawall along Trinchera Beach.



Figure 3. Existing rock seawall at Veteran's Beach Sunset Park.

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

The proposed revetment will consist of compacted fill at its foundation, upon which geotextile filter fabric, a double layer of underlayer stones (35 lbs/stone), and a double layer of armor stone (350 lbs/stone) will be placed. The revetment will be anchored on the seaward side by a toe composed of oversized stone (525 lbs/stone). In order to meet the USACE 50-year design requirement for sea level change and be adaptable to a 100-year modeled sea level change, the crest elevation of the revetment will be constructed to 9 feet above Mean Sea Level, raising the existing elevation by 1 foot. At the required design slope, the revetment is expected to extend 17 feet seaward from the crest (Figure 4).

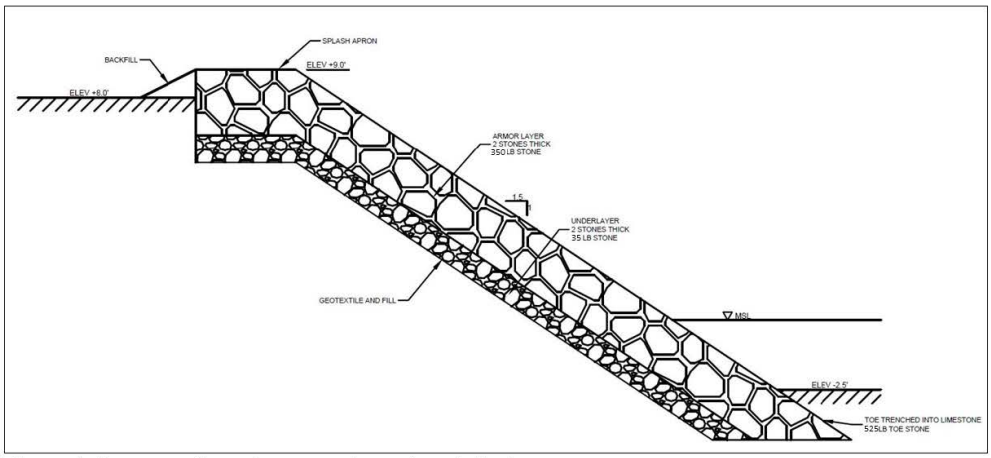


Figure 4. Cross-section of proposed revetment design.

Area of Potential Effect

The proposed rock revetment approved for funding and construction by USACE constitutes an undertaking pursuant to 36 CFR § 800.3(a), requiring compliance with Section 106 of the NHPA. The proposed undertaking will impact approximately 2,150 feet of Trinchera Beach, centered on the Veteran's Sunset Beach Park. Although the ground disturbance anticipated during removal of the current seawall and construction of the revetment will not extend much further inland than the existing seawall, it is likely that materials and equipment will be staged along the grassy park area between Marine Corps Drive and Hagåtña Bay.

In accordance with 36 CFR § 800.4(a), USACE has identified the proposed undertaking's area of potential effects (APE) to include both the revetment footprint and staging areas (see Figure 5). The APE encompasses approximately 1.8 hectares (4.5 acres).

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA



Figure 5. Area of potential effects (APE) outlined in yellow; approximate locations of known cultural features indicated with red dots; approximate boundary of the San Antonio Village site (66-01-261) outlined in red.

Background

The island of Guam was first occupied more than 3,500 years ago by seafaring peoples from Southeast Asia, ancestors of the CHamoru people. The history of Guam is broadly divided into six periods: Pre-Latte, Latte, Spanish, First American, Japanese Occupation, and Second American (Guam Historic Resources Division 2022). When the Spanish first anchored in Hagåtña Bay in 1668, Hagåtña was one of the principal villages on Guam. Although the Spanish missionaries were initially welcomed by the CHamoru and given land to build their church, the good relationship did not last. The island's first foreign military installation, thought to have been constructed near the beach in Hagåtña, was completed in 1683 (Walth et al. 2016). During the Spanish-Chamorro Wars, the CHamoru built a stone wall from the cliff edge to the water in the vicinity of Trinchera Beach. However, by the early 1700s the East Hagåtña Bay area had been abandoned due to population reduction (Moore et al. 1988; Davis 1990). In the early 1800s, immigrant Carolinians settled in the area. Occupation of this new community, referred to as Tamuning, began in 1816. In 1884, the Spanish created a settlement in Tamuning called Maria Cristina where they consolidated all Carolinians on the island. In 1901, the Carolinians were expelled from Guam by the United States (Moore et al. 1988).

Previous Archaeological Investigations

The earliest archaeological excavations in the general vicinity of the study area were conducted in the 1920s by Hans G. Hornbostel on behalf of the Bernice P. Bishop Museum of Hawai'i. This investigation, among others, have recovered evidence of

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

extensive occupations during the Latte Period. Cultural materials dating to the Pre-Latte Period have also been identified by Hunter-Anderson et al. (2006) and Amesbury et al. (2015). Walth et al. (2016:215) reviewed radiocarbon dates collected from multiple archaeological investigations in the area and determined that 14% of the archaeological sites in Hagåtña Bay date to the Pre-Latte Period, 62% date to the Latte Period, and 24% date to the Spanish/First American Period.

Most archaeological investigations in the area have been undertaken in association with cultural resource management of various construction projects. These previous projects include road work (Moore et al. 1988; Amesbury et al. 1991; Walth et al. 2016) and building developments (Brown and Haun 1989; Amesbury et al. 1990; Davis 1990; Haun et al. 1990; Olmo 1997, 1999; Beardsley 2003; Hunter-Anderson et al. 2006; Amesbury et al. 2015). USACE has previously conducted limited archaeological investigations in association with feasibility studies in both the general area (Pangelinan and Price 1986; Cordy and Allen 1988) and along Trinchera Beach (Watanable 1994). More recent archaeological investigations, for which reports have not yet been finalized, include sewer line installations and cell phone tower installations; burials were identified at multiple locations (J. M. Joseph, pers. comm. 2022).

Identification of Historic Properties

In January 2022, USACE archaeologist Kelly Eldridge conducted a non-invasive pedestrian survey of the APE. Shovel-testing was not conducted out of concern that digging holes along the landward side of the existing seawall would further destabilize the damaged structure. No surficial cultural resources were identified. A review of the published literature, as well as grey literature and other documentation provided to USACE by the Guam Historic Resources Division in response to Requests for Assistance, identified 14 known cultural resources in the general vicinity of the APE (Table 1; see also Figure 5). Nine of the known cultural resources are subsurface archaeological sites identified during construction efforts, and of those, at least six are historic properties in accordance with 36 CFR § 800.16(l).

Table 1. Known cultural resources in the general vicinity of the study area (GHRD 2022).

GHPI Number	Site Name	Cultural Period	NRHP Status
66-01-0177	Apotgun: Graphic Center	Pre-Latte, Latte	Eligible for Listing
66-01-0177	Apotgun: Agana Beach Condo	Latte, Spanish	Eligible for Listing
66-01-0259	Maria Cristina: Excavation Unit 1-1	Latte	Eligible for Listing
66-01-0260	Maria Cristina: Excavation Unit 1-2	Latte	Eligible for Listing
66-01-0261	San Antonio Village & SLC Burial Trench	Latte, Spanish	Eligible for Listing
66-01-0262	Maria Cristina: Burial Site	Spanish	Eligible for Listing
66-01-0263	Maria Cristina: Excavation Unit 4-1	Spanish	*Unknown*
66-01-0299	Apotgun: Ryoko Condo Site	Pre-Latte, Latte	Eligible for Listing
66-01-1016	Charlie Corn House	Second American	*Unknown*

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

66-01-1035	U.S. Naval Cemetery	First American, Second American	Listed
66-01-1052	Agana Japanese Caves	Japanese Occupation	*Unknown*
66-01-1082	Agana Pillbox	Japanese Occupation	Listed
66-01-1105	Dungcas Beach Defense Guns	Japanese Occupation	Listed
-	Tick Tock	Latte	*Unknown*
-	ABC Condo	Spanish	*Unknown*

GHPI = Guam Historic Properties Inventory
NRHP = National Register of Historic Places

The pedestrian survey did not identify any cultural resources in the project area. The review of published and available grey literature did not identify known cultural resources within the APE; however, personal communications with the Guam State Archaeologist, Mr. John Mark Joseph, have indicated the existence of cultural resources within the APE that will be described in forthcoming reports from multiple entities. There are no records that the Government of Guam uncovered any subsurface cultural materials during construction of the existing rock seawall during the 1990s. Additionally, when questioned during the January site visit and at subsequent meetings, Government of Guam representatives did not know of any cultural resources that were identified during the construction of the seawall.

Assessment of Effect

The USACE has made a reasonable and good faith effort to identify historic properties per 36 CFR § 800.4(b)(1). Extensive subsurface cultural materials and burials have been recovered to the east and west of the APE, and at least one burial has been identified within the APE. The presence of these subsurface cultural resources suggests that there is a strong potential that subsurface cultural resources will be affected during revetment construction on the beach side of Marine Corps Drive, within the APE.

Of particular concern is the possibility that previously unknown human burials could be identified during construction. The historic U.S. Naval Cemetery is located approximately 1,500 feet west of the APE, and burials have been identified at subsurface archaeological sites approximately 1,400 feet west and 1,200 feet east of the APE, as well as within the southwestern corner of the APE itself. In accordance with Territory of Guam Executive Order 89-24, if "such burials cannot practically be left undisturbed, removal shall be done with proper archaeological methods and documentation" and any analyses will be limited. Any individuals removed from their original burial locations would be reburied in an appropriate and respectful manner at a location approved by the Guam State Historic Preservation Officer.

Due to the inability to determine whether there are subsurface cultural resources within the APE, USACE proposes to conduct a phased identification and evaluation effort in accordance with 36 CFR § 800.4(b)(2), formally documented in a Memorandum

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

of Agreement (MOA) developed in accordance with 36 CFR § 800.6. The MOA is expected to require, at minimum, that an on-site archaeologist who meets the *Secretary of the Interior's Historic Preservation Professional Qualification Standards* (36 CFR § 61; 48 FR 44716) monitor all ground-disturbing construction activities within the APE. The MOA will also include development of a Human Remains Recovery Plan that meets the requirements of Guam Territorial Executive Order No. 89-24 and adheres to the Guam Department of Parks and Recreation's 2010 Section IV Reburial Guidelines Amendment.

Conclusion

USACE and its Non-Federal Sponsor, the Government of Guam, plan to replace an existing damaged seawall with a rock revetment along Trinchera Beach in East Hagåtña Bay to address shoreline erosion along Marine Corps Drive. Due to the likelihood that subsurface cultural resources and/or burials exist within the APE, USACE seeks your concurrence on a phased identification and evaluation effort pursuant to 36 CFR § 800.4(b)(2) and invites you to participate in the development of an MOA in accordance with 36 CFR § 800.6. If you have any questions or concerns about this study, please contact USACE Archaeologist Kelly Eldridge by phone at 907-753-2672 or email at kelly.a.eldridge@usace.army.mil.

Sincerely,

ELDRIDGE.KELLY.ANNE.1377123170 Digitally signed by ELDRIDGE.KELLY.ANNE.1377123170 Date: 2023.03.15 15:38:13 -08'00'

Kelly A. Eldridge
Environmental Resources Section
Alaska District

cc:
Mr. Joseph Quinata, Chief Program Officer, Guam Preservation Trust
Mr. Melvin Won Pat-Borja, President, Guam Department of Chamorro Affairs

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

References

Amesbury, J.R., Moore, D.R., and E.F. Wells
1990. Archaeological Investigations at the ABC Condo Project Area, Tamuning, Guam. Micronesian Archaeological Research Services.

Amesbury, J.R., Hunter-Anderson, R.L., and D.R. Moore
1991. An Archaeological Study of the San Antonio Burial Trench and a Report on the Archaeological Monitoring of Road Construction along Marine Drive between Routes 8 and 4, Agana, Guam. Micronesian Archaeological Research Services.

Amesbury, J.R., Moore, D.R., Hefner, J.T., and K.C. Linde
2015. Archaeological Monitoring and Data Recovery at the Graphic Center, Lot 2116-R2NEW, Tamuning, Guam, Part of the Apotguan Village Site, 66-01-0177. Micronesian Archaeological Research Services.

Brown, R.S. and A.E. Haun
1989. Subsurface Archaeological Reconnaissance Survey, Ryoko Condominium Project Area. Paul H. Rosendahl, PhD., Inc.

Beardsley, F.R.
2003. Archaeological Investigations in Apotguan, Guam: Agana Beach Condominium Site. Volume 1: Testing, Data Recovery, and Monitoring. International Archaeological Research Institute, Inc.

Cordy, R. and J. Allen
1988. Archaeological Investigations of the Agana and Fonte River Basins, Guam. U.S. Army Corps of Engineers, Pacific Ocean Division.

Davis, B.D.
1990. Research Design and Data Recovery Plan for Archaeological Mitigation at the Proposed Agana Beach Condominium, Apurguan, East Agana Bay, Guam, Mariana Islands. International Archaeological Research Institute, Inc.

Guam Historic Resources Division (GHRD)
2022. Guam Historic Properties Inventory (GHPI) Documents. Department of Parks and Recreation.

Haun, A.E., Brown, R.S., and B.J. Dilli
1990. Subsurface Archaeological Inventory Survey, Chiyoda II Hotel Site, Apurguan, Tamuning Municipality, Territory of Guam. Paul H. Rosendahl, Ph.D., Inc.

Hunter-Anderson, R.L., Moore, D.R., Amesbury, J.R., Cummings, L.S., Puseman, K., and J. Dexter
2006. Archaeological Investigations at Bluewater Properties, Dungca's Beach, East Hagåtña, Guam. Micronesian Archaeological Research Services.

Moore, D.R., Hunter-Anderson, R.L, and J.R. Amesbury
1988. Route 1 Reconstruction (Route 8 to Camp Watkins Road): Archaeological Analysis of the East Agana Area Materials. Tokyo Seikitokyu Joint Venture.

Olmo, R.K.
1997. Findings from Archaeological Testing at the 1974.63 sq. m Lin Commercial Building Project property, Lot #2031-1-3, Dededo, Guam. International Archaeological Research Institute, Inc.
1999. Archaeological Investigations at the Calvo East Hagåtña Bay Office Building, Guam. International Archaeological Research Institute, Inc.

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

Pangelinan, A. and S.T. Price
1986. An Archaeological Reconnaissance for the Agana River Flood Control Project. U.S. Army Corps of Engineers, Pacific Ocean Division.
Walth, C.K., Yee, S., Amesbury, J.R., Whitehead, W., Cannon, M., Hudson, L., Moore, D.R., Olmo, R., Leon-Guerrero, L., Kanai, R., Quintanilla, R., and E. Rumong
2016. Final Report: Archaeological Investigations for the Agana Bridge #1 and Route 1/Route 8 Intersection Improvements Project (GU-NH-0001 (14)), Hagåtña, Guam. Vol. I. SWCA Environmental Consultants.
Watanable, F.K.
1994. Historic Preservation Assessment for East Agana Shore Protection Study at Trinchera Beach Vicinity, Section 103, Feasibility Phase. U.S. Army Corps of Engineers, Honolulu District.

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 15, 2023

CEPOA-PMC-E

Joseph Quinata
Chief Program Officer
Guam Preservation Trust
P.O. Box 3036
Hagatna, GU 96932

Dear Mr. Quinata:

The U.S. Army Corps of Engineers (USACE), Honolulu District, under the Civil Works Program is conducting a feasibility study on shoreline protection along part of Hagåtña Bay on the island of Guam. This study is being conducted in partnership with the Government of Guam, our Non-Federal Sponsor. In compliance with Section 106 of the National Historic Preservation Act (NHPA), the purpose of this letter is to invite your consultation on our assessment of the proposed undertaking's effect on historic properties (36 CFR § 800.3(f)).

You are receiving this letter because we believe that the Guam Preservation Trust may have an interest in cultural resources in the general project area. A letter addressed to the Guam State Historic Preservation Officer (SHPO), which assesses the proposed undertaking, is enclosed. It describes the known cultural resources in the area and the potential impact that the proposed undertaking may have on those resources. Per Section 101(b)(3) of the NHPA, the SHPO advises and assists Federal agencies in carrying out Section 106 responsibilities. Per 36 CFR § 800.3(c)(4), the SHPO has 30 days to respond to USACE's notification; within this time period, we invite you to bring any cultural resources concerns or information to our attention.

If you have any questions about this project or would like to share information with us, please contact me by phone at (907) 753-2672 or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section
Alaska District

6c. (cont.) USACE Assessment of Effect (Alternative 2) submitted to SHPO, GPT, and GDCA

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 15, 2023

CEPOA-PMC-E

Melvin Won Pat-Borja
President
Guam Department of Chamorro Affairs
P.O. Box 2950
Hagatna, GU 96932

Dear President Won Pat-Borja:

The U.S. Army Corps of Engineers (USACE), Honolulu District, under the Civil Works Program is conducting a feasibility study on shoreline protection along part of Hagåtña Bay on the island of Guam. This study is being conducted in partnership with the Government of Guam, our Non-Federal Sponsor. In compliance with Section 106 of the National Historic Preservation Act (NHPA), the purpose of this letter is to invite your consultation on our assessment of the proposed undertaking's effect on historic properties (36 CFR § 800.3(f)).

You are receiving this letter because we believe that the Department of Chamorro Affairs may have an interest in cultural resources in the general project area. A letter addressed to the Guam State Historic Preservation Officer (SHPO), which assesses the proposed undertaking, is enclosed. It describes the known cultural resources in the area and the potential impact that the proposed undertaking may have on those resources. Per Section 101(b)(3) of the NHPA, the SHPO advises and assists Federal agencies in carrying out Section 106 responsibilities. Per 36 CFR § 800.3(c)(4), the SHPO has 30 days to respond to USACE's notification; within this time period, we invite you to bring any cultural resources concerns or information to our attention.

If you have any questions about this project or would like to share information with us, please contact me by phone at (907) 753-2672 or by email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Archaeologist
Environmental Resources Section
Alaska District

6d. 2023 March 16 GPT Response to USACE

GUAM PRESERVATION TRUST
INANGOKKON INADAHI GUÅHAN
P.O. Box 3036, Hagåtña, Guam 96932 • Tel: 671-472-9439/40 • Fax: 671-477-2047 • guampreservationtrust.org

March 16, 2023

Ms. Kelly A. Edridge
Archaeologist, Environmental Resources Division
Alaska District
U.S. Army Corps of Engineers
JBER, AK 99506-0898

Dear Ms. Edridge,

Thank you for your March 15 letter regarding the project of conducting a feasibility study on shoreline protection along part of Hagåtña Bay and the potential impact of the proposed undertaking on cultural resources identified.

As a partner in preservation, GPT appreciates the invitation to express our concerns with the project which balances the need of historic preservation with the needs of the proposed revetment to meet the USACE 50-year design requirement for sea level change and protect the Trinchera Beach shoreline and Marine Corps Drive in Hagåtña. I agree with the plans to develop a Memorandum of Agreement as the identified Area of Potential Effect was determined to have a strong potential to affect cultural resources. I also appreciate the reasonable and good faith effort that the USACE has done to be in accordance with the various provisions of the National Historic Preservation Act and other local regulations and statutes.

In your letter, you invited us to bring any cultural resources concerns or information to your attention. At this moment, while we have no further concerns on historic properties that have already been identified by your office, GPT is interested in the cumulative and total effects that the project will have on traditional cultural practices such as traditional fishing that occur at the area and to ensure studies and plans are able to take account of these cultural practices and resources. Upon concurrence with the Guam State Historic Preservation Office on your phased identification and evaluation effort, GPT looks forward to joining in any future discussions regarding this project where we can be of assistance. Should you have any questions, please feel free to contact me at jqpreservation@guam.net or by phone at (671) 472-9439.

Sincerely,

JOE QUINATA
Chief Program Officer

6e. 2024 March 29 USACE Notification to GPT, GDCA, and SHPO

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 28, 2024

CEPOA-PMC-E

Joseph Quinata
Chief Program Officer
Guam Preservation Trust
P.O. Box 3036
Hagatna, GU 96932

Dear Mr. Quinata:

The U.S. Army Corps of Engineers (USACE), Honolulu District, under the Civil Works Program is conducting a feasibility study on shoreline protection along part of Hagåtña Bay on the island of Guam. This study is being conducted in partnership with the Government of Guam, our Non-Federal Sponsor. In compliance with Section 106 of the National Historic Preservation Act (NHPA), the purpose of this letter is to invite your consultation on our assessment of the proposed undertaking's effect on historic properties (36 CFR § 800.3(f)).

You received a similar letter assessing the proposed undertaking's potential effect on historic properties last year on March 16, 2023. The tentatively selected plan to protect the shoreline at that time involved the construction of a revetment. Although no historic properties are known to be within the project area, the possibility for as-yet-unknown subsurface cultural resources is high. Due to the subsurface impacts associated with the construction of a revetment, USACE had proposed to conduct a phased investigation under a Memorandum of Agreement or Programmatic Agreement to minimize or mitigate any potential adverse effects. In your response to our assessment of effect, which we received on July 19, 2023, you stated that the Guam Preservation Trust was interested in the cumulative and total effects that the project would have on traditional cultural practices such as traditional fishing that occur in the area.

Our initial Agreement Kick-Off Meeting was held at the Guam State Historic Preservation Office (SHPO) on October 3, 2023. Since that time, the Government of Guam has informed us that the proposed revetment is not acceptable, in part because of the aesthetic impacts of a tribar revetment, but also due to the potential impact on traditional fishing practices in Hagåtña Bay. Our engineers have therefore identified a new tentatively selected plan to protect against shoreline erosion: a precast concrete wall. This seawall would be built along approximately 1,630 feet of Trinchera Beach bordering Marine Corps Drive, replacing the existing seawall.

Please find enclosed USACE's assessment that the new tentatively selected plan will result in no historic properties affected, conditional upon a qualified archaeological monitor being present during construction. In accordance with Section 101(b)(3) of the NHPA, the SHPO advises and assists Federal agencies in carrying out Section 106 responsibilities. Per 36 CFR § 800.3(c)(4), the SHPO has 30 days to respond to USACE's notification; within this time period, we invite you to bring any cultural resources concerns or information to our attention.

If you have any questions about this project or would like to share information with us, please contact the Project Manager, Mr. Michael Terlaje, by phone 671-727-2491 or by email at michael.j.terlaje@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Senior Archaeologist
Environmental Resources Section
Alaska District

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 28, 2023

CEPOA-PMC-E

Melvin Won Pat-Borja
President
Guam Department of Chamorro Affairs
P.O. Box 2950
Hagatna, GU 96932

Dear President Won Pat-Borja:

The U.S. Army Corps of Engineers (USACE), Honolulu District, is conducting a feasibility study on shoreline protection along part of Hagåtña Bay on the island of Guam. This study is being done in partnership with the Government of Guam, our Non-Federal Sponsor. In compliance with Section 106 of the National Historic Preservation Act (NHPA), the purpose of this letter is to invite your consultation on our assessment of the proposed undertaking's effect on historic properties (36 CFR § 800.3(f)).

You received a similar letter assessing the proposed undertaking's potential effect on historic properties last year on March 16, 2023. The tentatively selected plan to protect the shoreline at that time involved the construction of a revetment. Although no historic properties are known to be within the project area, the possibility for as-yet-unknown subsurface cultural resources is high. Due to the subsurface impacts associated with the construction of a revetment, USACE had proposed to conduct a phased investigation under a Memorandum of Agreement or Programmatic Agreement to minimize or mitigate any potential adverse effects. On October 3, 2023, Joseph Santos from your office attended our Agreement Kick-Off Meeting.

Since that time, the Government of Guam has informed us that the proposed revetment is not acceptable, in part because of the aesthetic impacts of a tribar revetment, but also due to the potential impact on traditional fishing practices in Hagåtña Bay. Our engineers have therefore identified a new tentatively selected plan: a precast concrete wall. This seawall would be built along approximately 1,630 feet of Trinchera Beach bordering Marine Corps Drive, replacing the existing seawall.

Please find enclosed USACE's assessment that the new tentatively selected plan will result in no historic properties affected, conditional upon a qualified archaeological monitor being present during construction. In accordance with Section 101(b)(3) of the NHPA, the SHPO advises and assists Federal agencies in carrying out Section 106 responsibilities. Per 36 CFR § 800.3(c)(4), the SHPO has 30 days to respond to

USACE's notification; within this time period, we invite you to bring any cultural resources concerns or information to our attention.

If you have any questions about this project or would like to share information with us, please contact the Project Manager, Mr. Michael Terlaje, by phone 671-727-2491 or by email at michael.j.terlaje@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Senior Archaeologist
Environmental Resources Section
Alaska District

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 29, 2024

SUBJECT: East Hagåtña Shoreline Protection Project, RC # 2022-0529

Mr. Patrick Lujan
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, GU 96910

Dear Mr. Lujan:

Please find enclosed a letter regarding a shoreline protection project along Trinchera Beach at Hagåtña Bay proposed by the U.S. Army Corps of Engineers (USACE) and our Non-Federal Sponsor, the Government of Guam. The proposed shoreline protection project constitutes an undertaking that has the potential to cause effects on historic properties pursuant to 36 CFR § 800.3(a) and therefore requires consultation under Section 106 of the National Historic Preservation Act (54 USC § 306108). USACE has determined that the proposed undertaking will result in **no historic properties affected** (36 CFR § 800.4[d][1]). In compliance with Section 106, the purpose of the enclosed letter is to seek your concurrence on this assessment of effect.

If you have any questions about this project, please contact the Project Manager, Mr. Michael Terlaje, by email at michael.j.terlaje@usace.army.mil or by phone 671-727-2491.

Sincerely,

Kelly A. Eldridge
Senior Archaeologist
Environmental Resources Section
Alaska District

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

March 28, 2024

CEPOA-PMC-E

Mr. Patrick Lujan
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, GU 96910

Dear Mr. Lujan:

The U.S. Army Corps of Engineers (USACE), Honolulu District, is continuing to conduct a study to determine the feasibility of shoreline protection along part of Hagåtña Bay on the island of Guam. On March 16, 2023, USACE submitted a letter to you regarding our determination that the proposed tentatively selected plan, a revetment, could potentially result in an adverse effect on as-yet-unknown historic properties. You acknowledged receipt of this letter on March 17, 2023, and concurred with our assessment of adverse effect on May 15, 2023. On October 3, 2023, we held a kick-off meeting to begin development of a Programmatic Agreement that would allow for minimization or mitigation of potential impacts during a phased identification effort.

Since that time, our Non-Federal Sponsor for the proposed shoreline protection project, the Government of Guam, has determined that the tentatively selected plan identified last year is not acceptable due to its aesthetic impacts and potential disruption of local fishing activities. Our engineers have therefore identified a new tentatively selected plan: a precast concrete wall. This seawall would be placed along approximately 1,630 feet (ft) of Trinchera Beach bordering Marine Corps Drive in Tamuning, Guam (Figure 1). This is a reduction in length from the previously discussed revetment, which would have been approximately 2,150 ft long.

The proposed seawall constitutes an undertaking pursuant to 36 CFR § 800.3(a) and therefore requires consultation under Section 106 of the National Historic Preservation Act (54 USC § 306108). In compliance with the implementing regulations of Section 106 of the NHPA, the purpose of this letter is to seek your concurrence on an assessment of effect (36 CFR § 800.4[d][1]).



Figure 1. East Hagåtña Shoreline Protection study area in Tamuning, Guam.

Study Authority

USACE is conducting this study in cooperation with the Government of Guam under the Continuing Authorities Program (CAP) authorized by Section 14 of the 1946 Flood Control Act, as amended (33 USC § 701r). The Federal Interest Determination for this project was approved by the USACE Pacific Ocean Division on September 23, 2020. The Government of Guam and USACE Honolulu District executed a Federal Cost Share Agreement for this study on August 18, 2021. For the purposes of compliance with Section 106 of the NHPA, USACE is the lead agency.

Project Description

The existing rock seawall along the Trinchera Beach shoreline, which protects Marine Corps Drive along Hagåtña Bay, has been severely compromised by erosion

(Figures 2 and 3). This seawall was constructed in the 1990s by the Government of Guam (E. Reyes, personal communication 2022). To address this erosion and protect Marine Corps Drive, USACE and the Government of Guam propose to replace approximately 1,630 linear ft of the existing rock seawall with a precast concrete wall.



Figure 2. Existing rock seawall along Trinchera Beach; view southwest.



Figure 3. Existing rock seawall at Veteran's Beach Sunset Park; view southwest.

The proposed precast concrete wall will be a cantilever retaining wall consisting of individual concrete panels that are at least 1 ft thick. The existing rock seawall will be removed and the ground behind it will be excavated down to the limestone shelf and dug back approximately 7 ft. The "L-shaped" concrete wall will then be installed and the inland side backfilled with clean material. A 3-ft long concrete splash apron will be added onto the inland side of the seawall crest (Figure 4).

To meet the USACE 50-year design requirement for sea level change and be adaptable to a 100-year modeled sea level change, the crest elevation of the seawall will be constructed to 8.5 feet above Mean Sea Level, matching the height of the existing wall. Three concrete stairs will provide access points for pedestrians through the seawall from the high ground to the ocean and/or beach.

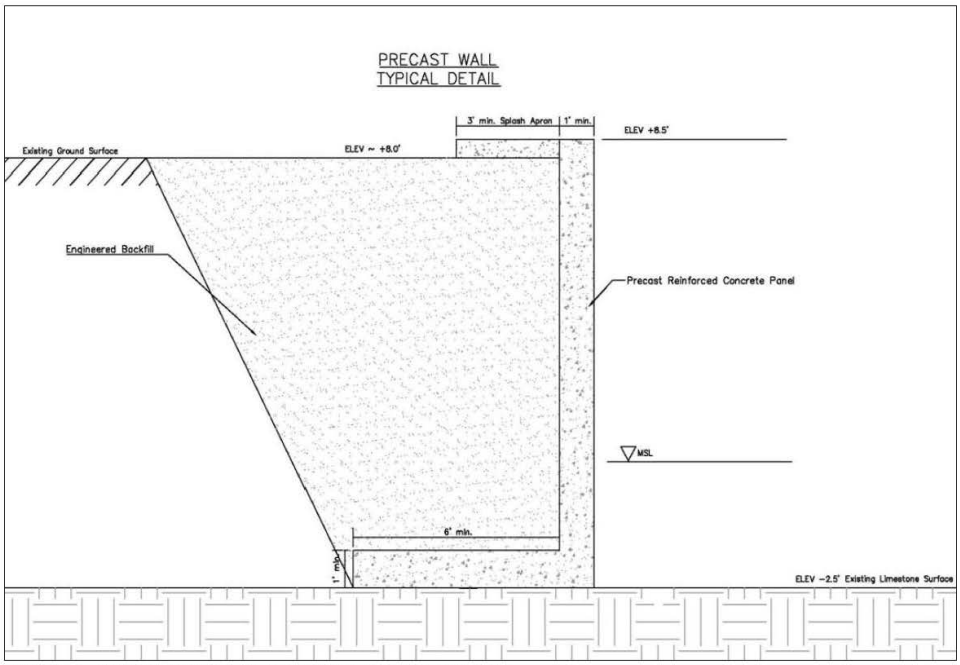


Figure 4. Cross-section of proposed seawall design.

Area of Potential Effect

The proposed seawall approved for funding and construction by USACE constitutes an undertaking pursuant to 36 CFR § 800.3(a), requiring compliance with Section 106 of the NHPA. This proposed undertaking will impact approximately 1,650 ft of Trinchera Beach, centered on Veterans Sunset Beach Park. Although the subsurface ground disturbance anticipated during removal of the current seawall and construction

of the new precast concrete wall will only extend 20 ft inland from the existing seawall at most, materials and equipment are anticipated to be staged along the grassy park area between Marine Corps Drive and Hagåtña Bay and at Veterans Sunset Beach Park.

In accordance with 36 CFR § 800.4(a), USACE has identified the proposed undertaking's area of potential effects (APE) to include areas of subsurface disturbance (the precast concrete wall footprint) and areas of limited surface disturbance (staging areas, equipment working platforms) (Figure 5). The APE encompasses approximately 0.62 hectares (1.54 acres).



Figure 5. APE outlined in yellow; approximate locations of known cultural features indicated with red dots; approximate boundary of the San Antonio Village site (66-01-261) outlined in red.

Background

The island of Guam was first occupied more than 3,500 years ago by seafaring peoples from Southeast Asia, ancestors of the CHamoru people. The history of Guam is broadly divided into six periods: Pre-Latte, Latte, Spanish, First American, Japanese Occupation, and Second American (Guam Historic Resources Division 2022). When the Spanish first anchored in Hagåtña Bay in 1668, Hagåtña was one of the principal villages on Guam. At that time, Spanish missionaries reported that Hagåtña "had 53 main houses and about 150 smaller ones" (Fritz 2001:13). Although the Spanish missionaries were initially welcomed by the CHamoru and given land to build their church, the good relationship did not last.

The island's first foreign military installation, thought to have been constructed near the beach in Hagåtña, was completed in 1683 (Walth et al. 2016). During the Spanish-

Chamorro Wars, the CHamoru built a stone wall from the cliff edge to the water in the vicinity of Trinchera Beach. However, by the early 1700s the East Hagåtña Bay area had been abandoned due to population reduction (Moore et al. 1988; Davis 1990). In the early 1800s, immigrant Carolinians settled in the area. Occupation of this new community, referred to as Tamuning, began in 1816. In 1884, the Spanish created a settlement in Tamuning called Maria Cristina where they consolidated all Carolinians on the island. In 1901, the Carolinians were expelled from Guam by the United States (Moore et al. 1988).

During the Japanese invasion of Guam in World War II, the Japanese Special Naval Landing Force boarded six landing craft in Hagåtña Bay to come ashore at Dungcas Beach on December 10, 1941. Guam was the first American territory captured during the war. The Japanese created a roadblock at the narrowest point of the beach road between Dungcas Beach and Agana (Hagåtña), likely near Trinchera Beach. Agana was recaptured by the U.S. military on July 31, 1944 as they pushed northward to the Tiyan Airfield (Denfeld 1997).

Historical aerial imagery of the project area indicates that Trinchera Beach was a vegetated, gently sloping concave shoreline until shortly after World War II. Aerial photographs from 1953 show an unvegetated promontory where Veterans Sunset Beach Park is now located (Figure 6). This promontory is not visible in the photographs from the early 1940s, which suggested that it may have been constructed in association with road upgrades during the late 1940s or early 1950s.

Previous Archaeological Investigations

The earliest archaeological excavations in the general vicinity of the study area were conducted in the 1920s by Hans G. Hornbostel on behalf of the Bernice P. Bishop Museum of Hawai'i. This investigation, among others, have recovered evidence of extensive occupations during the Latte Period. Cultural materials dating to the Pre-Latte Period have also been identified by Hunter-Anderson et al. (2006) and Amesbury et al. (2015). Walth et al. (2016:215) reviewed radiocarbon dates collected from multiple archaeological investigations in the area and determined that 14% of the archaeological sites in Hagåtña Bay date to the Pre-Latte Period, 62% date to the Latte Period, and 24% date to the Spanish/First American Period.

Most archaeological investigations in the area have been undertaken in association with cultural resource management of various construction projects. These previous projects include road work (Moore et al. 1988; Amesbury et al. 1991; Walth et al. 2016) and building developments (Brown and Haun 1989; Amesbury et al. 1990; Davis 1990; Haun et al. 1990; Olmo 1997, 1999; Beardsley 2003; Hunter-Anderson et al. 2006; Amesbury et al. 2015). USACE has previously conducted limited archaeological investigations in association with feasibility studies in both the general area (Pangelinan and Price 1986; Cordy and Allen 1988) and along Trinchera Beach (Watanable 1994). More recent archaeological investigations, for which reports have not

yet been finalized, include sewer line installations and cell phone tower installations; burials were identified at multiple locations (J. M. Joseph, pers. comm. 2022).

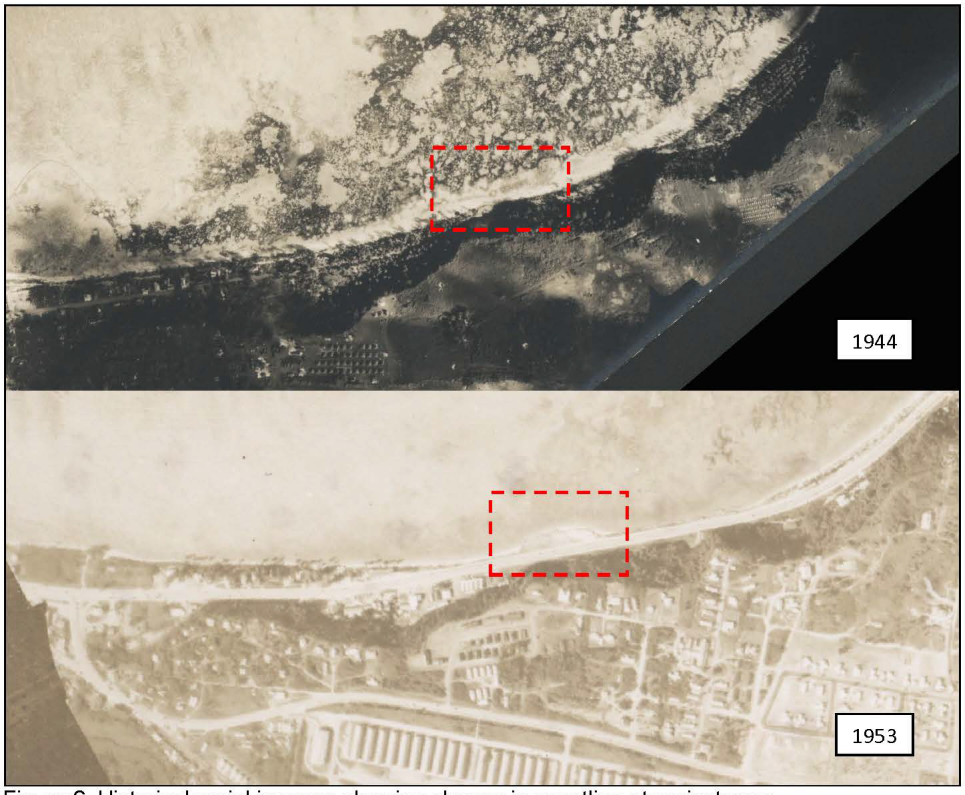


Figure 6. Historical aerial imagery showing change in coastline at project area.

Identification of Historic Properties

In January 2022, a Secretary of the Interior (SOI)-qualified USACE archaeologist, Kelly Eldridge, conducted a non-invasive pedestrian survey of the APE. Shovel-testing was not conducted out of concern that excavating along the existing seawall would further destabilize the damaged structure. No surficial cultural resources were identified. A review of the published literature, archival photographs, grey literature, and other documentation provided to USACE by the Guam Historic Resources Division in response to Requests for Assistance, identified 14 known cultural resources in the general vicinity of the APE (Table 1; see also Figure 5). Nine of the known cultural resources are subsurface archaeological sites identified during construction efforts, and of those, at least six are historic properties in accordance with 36 CFR § 800.16(l).

Table 1. Known cultural resources in the general vicinity of the study area (GHRD 2023).

GHPI Number	Site Name	Cultural Period	NRHP Status
66-01-0177	Apotgun: Graphic Center	Pre-Latte, Latte	Eligible for Listing
66-01-0177	Apotgun: Agana Beach Condo	Latte, Spanish	Eligible for Listing
66-01-0259	Maria Cristina: Excavation Unit 1-1	Latte	Eligible for Listing
66-01-0260	Maria Cristina: Excavation Unit 1-2	Latte	Eligible for Listing
66-01-0261	San Antonio Village & SLC Burial Trench	Latte, Spanish	Eligible for Listing
66-01-0262	Maria Cristina: Burial Site	Spanish	Eligible for Listing
66-01-0263	Maria Cristina: Excavation Unit 4-1	Spanish	*Unknown*
66-01-0299	Apotgun: Ryoko Condo Site	Pre-Latte, Latte	Eligible for Listing
66-01-1016	Charlie Corn House	Second American	*Unknown*
66-01-1035	U.S. Naval Cemetery	First American, Second American	Listed
66-01-1052	Agana Japanese Caves	Japanese Occupation	*Unknown*
66-01-1082	Agana Pillbox	Japanese Occupation	Listed
66-01-1105	Dungcas Beach Defense Guns	Japanese Occupation	Listed
-	Tick Tock	Latte	*Unknown*
-	ABC Condo	Spanish	*Unknown*

GHPI = Guam Historic Properties Inventory
NRHP = National Register of Historic Places

The pedestrian survey did not identify any cultural resources in the project area. The review of published and available grey literature did not identify any known cultural resources within the APE; however, personal communications with the Guam State Archaeologist, Mr. John Mark Joseph, have indicated the existence of cultural resources near the APE that will be described in forthcoming reports from multiple entities. There are no records that the Government of Guam uncovered any subsurface cultural materials during construction of the existing rock seawall during the 1990s. Additionally, when questioned during the January site visit and at subsequent meetings, Government of Guam representatives did not know of any cultural resources that were identified during the construction of the seawall.

Assessment of Effect

The USACE has made a reasonable and good faith effort to identify historic properties in accordance with 36 CFR § 800.4(b)(1). Extensive subsurface cultural materials and burials have been recovered to the east and west of the APE, and, although not identified in the literature, at least one burial has been identified near the APE (J. M. Joseph, pers. comm. 2023). The presence of these subsurface cultural resources suggests that there is a potential that as-yet-unknown subsurface cultural resources exist within the APE. The construction methodology of the proposed precast concrete wall, however, is not expected to impact any subsurface area beyond what was already impacted by the installation of the existing seawall.

Although no subsurface cultural materials were identified during the construction of the existing seawall along Trinchera Beach, due to the potential for an inadvertent discovery, USACE will have an on-site archaeologist who meets the *Secretary of the Interior's Historic Preservation Professional Qualification Standards* (36 CFR § 61; 62 FR 33708) monitor all ground-disturbing construction activities within the APE. The SOI-qualified archaeologist will be familiar with local cultural periods and their associated artifacts and ecofacts. If human remains are discovered during construction of the proposed undertaking, USACE will follow Guam Territorial Executive Order No. 89-24 and adhere to the Guam Department of Parks and Recreation's General Guidelines for Archaeological Burials, including the Section IV Reburial Guidelines Amendment of 2010.

Conclusion

USACE and its Non-Federal Sponsor, the Government of Guam, plan to replace an existing damaged seawall with a rock revetment along Trinchera Beach in East Hagåtña Bay to address shoreline erosion along Marine Corps Drive. The proposed undertaking will not affect any historic properties and is not anticipated to affect any as-yet-unknown subsurface cultural resources. Following 36 CFR § 800.4(d)(1), USACE seeks your concurrence on the determination that the proposed undertaking will result in **no historic properties affected**, conditional upon monitoring by an SOI-qualified archaeologist.

If you have any questions or concerns about this study or the proposed CRM seawall, please contact USACE Project Manager Michael Terlaje by phone at 671-727-2491 or email at michael.j.terlaje@usace.army.mil, or Archaeologist Kelly Eldridge by phone at 907-753-2672 or email at kelly.a.eldridge@usace.army.mil.

Sincerely,

Kelly A. Eldridge
Senior Archaeologist
Environmental Resources Section
Alaska District

cc:
Mr. Joseph Quinata, Chief Program Officer, Guam Preservation Trust
Mr. Melvin Won Pat-Borja, President, Guam Department of Chamorro Affairs
Ms. Yvonne Manglona-Juaneza, Planner, Guam Bureau of Statistics and Plans

References

Amesbury, J.R., Moore, D.R., and E.F. Wells
1990. Archaeological Investigations at the ABC Condo Project Area, Tamuning, Guam. Micronesian Archaeological Research Services.

Amesbury, J.R., Hunter-Anderson, R.L., and D.R. Moore
1991. An Archaeological Study of the San Antonio Burial Trench and a Report on the Archaeological Monitoring of Road Construction along Marine Drive between Routes 8 and 4, Agana, Guam. Micronesian Archaeological Research Services.

Amesbury, J.R., Moore, D.R., Hefner, J.T., and K.C. Linde
2015. Archaeological Monitoring and Data Recovery at the Graphic Center, Lot 2116-R2NEW, Tamuning, Guam, Part of the Apotguan Village Site, 66-01-0177. Micronesian Archaeological Research Services.

Brown, R.S. and A.E. Haun
1989. Subsurface Archaeological Reconnaissance Survey, Ryoko Condominium Project Area. Paul H. Rosendahl, PhD., Inc.

Beardsley, F.R.
2003. Archaeological Investigations in Apotguan, Guam: Agana Beach Condominium Site. Volume 1: Testing, Data Recovery, and Monitoring. International Archaeological Research Institute, Inc.

Cordy, R. and J. Allen
1988. Archaeological Investigations of the Agana and Fonte River Basins, Guam. U.S. Army Corps of Engineers, Pacific Ocean Division.

Davis, B.D.
1990. Research Design and Data Recovery Plan for Archaeological Mitigation at the Proposed Agana Beach Condominium, Apurguan, East Agana Bay, Guam, Mariana Islands. International Archaeological Research Institute, Inc.

Denfeld, D. Colt
1997. *Hold the Marianas: The Japanese Defense of the Islands.* White Mane Publishing Company, Inc. Shippensburg, PA.

Fritz, Georg
2001. *The Chamorro: A History and Ethnography of the Mariana Islands*. Elfriede Craddock, Trans. Occasional Historical Papers Series No. 1. CNMI Division of Historic Preservation. Commonwealth of the Northern Marian Islands.

Guam Historic Resources Division (GHRD)
2023. Guam Historic Properties Inventory (GHPI) Documents. Department of Parks and Recreation.

Haun, A.E., Brown, R.S., and B.J. Dilli
1990. Subsurface Archaeological Inventory Survey, Chiyoda II Hotel Site, Apurguan, Tamuning Municipality, Territory of Guam. Paul H. Rosendahl, Ph.D., Inc.

Hunter-Anderson, R.L., Moore, D.R., Amesbury, J.R., Cummings, L.S., Puseman, K., and J. Dexter
2006. Archaeological Investigations at Bluewater Properties, Dungca's Beach, East Hagåtña, Guam. Micronesian Archaeological Research Services.

Moore, D.R., Hunter-Anderson, R.L, and J.R. Amesbury
1988. Route 1 Reconstruction (Route 8 to Camp Watkins Road): Archaeological Analysis of the East Agana Area Materials. Tokyo Seikitokyu Joint Venture.
Olmo, R.K.
1997. Findings from Archaeological Testing at the 1974.63 sq. m Lin Commercial Building Project property, Lot #2031-1-3, Dededo, Guam. International Archaeological Research Institute, Inc.
1999. Archaeological Investigations at the Calvo East Hagåtña Bay Office Building, Guam. International Archaeological Research Institute, Inc.
Pangelinan, A. and S.T. Price
1986. An Archaeological Reconnaissance for the Agana River Flood Control Project. U.S. Army Corps of Engineers, Pacific Ocean Division.
Walth, C.K., Yee, S., Amesbury, J.R., Whitehead, W., Cannon, M., Hudson, L., Moore, D.R., Olmo, R., Leon-Guerrero, L., Kanai, R., Quintanilla, R., and E. Rumong
2016. Final Report: Archaeological Investigations for the Agana Bridge #1 and Route 1/Route 8 Intersection Improvements Project (GU-NH-0001 (14)), Hagåtña, Guam. Vol. I. SWCA Environmental Consultants.
Watanable, F.K.
1994. Historic Preservation Assessment for East Agana Shore Protection Study at Trinchera Beach Vicinity, Section 103, Feasibility Phase. U.S. Army Corps of Engineers, Honolulu District.

6f. 2024 April 17 SHPO Response

Lourdes A. Leon Guerrero
Governor
Joshua F. Tenorio
Lt. Governor

Department of Parks and Recreation
Dipattamenton Plaset yan Dibuetsion
Government of Guam
Director's Office, Parks and Recreation Divisions:
#1 Paseo de Susana, Hagåtña, Guam 96910
P.O. Box 2950, Hagåtña, Guam 96932
(671) 475-6288; Facsimile (671) 477-0997
Guam Historic Resources Division:
490 Chalan Palasyo, Agana Heights, Guam 96910
(671) 475-6294/6355; Facsimile (671) 477-2822

Angel R. Sablan
Acting Director
Warren Pelletier
Deputy Director

April 17, 2024

In reply refer to:
RC 2022-0529

Kelly A. Eldridge
Senior Archaeologist
Department of the Army
Alaska District, U.S. Army Corps of Engineers
P.O. Box 6898
Jber, AK 99506-0898

Subject: East Hagatna Shoreline Protection Project RC# 2022-0529

Hafa Adai Ms. Kelly A. Eldridge:

Thank you for your notification of an undertaking pursuant to Section 106 of the National Historic Preservation Act (54 USC§306108). We concur with your determination of no historic properties affected. There is sufficient documentation to support this determination in your report of March 29, 2024.

The report recommends that an SOI-qualified archaeologist will monitor the project. Please notify GHRD in the event of any inadvertent discovery, and provide this office with a letter report of the results of monitoring.

Should you have any questions, please contact Mr. Logan Myers, Archaeologist, at (671) 475-6339 or by email: logan.myers@dpr.guam.gov.

Sincerely,

Patrick Q. Lujan
State Historic Preservation Officer

DRAFT

Attachment 7. MBTA Consultation

From: Wang, Olivia
To: Dean, Marian E CIV USARMY CEPOH (USA); Flores, Jacqueline B; Kim, Jiny
Cc: Czachura, Kevin K; Pe"a, Ryan; Gombar, Laura P
Subject: [Non-DoD Source] RE: [EXTERNAL] Migratory Bird Protections in Guam
Date: Thursday, August 31, 2023 8:02:34 AM
Attachments: image001.png
image002.png
MigratoryBirdInformation_25Aug2023.docx

Hi Marian,

Attached is the updated MBTA information sheet. The main update is that as of December 2021, incidental take is again prohibited under MBTA and therefore you'll need a permit if any activities have detrimental effects to birds or their nests. I also updated the document with links to general management and mitigation methods for birds.

Looking through the document, some more specific recommendations: seems like since there are no MBTA listed species nesting in the vicinity of the work site, effect on birds would be minimal. If the work can be done outside of peak shorebird migration periods (August – May) that would be ideal to minimize potential impact. If any work is done at night/if any outdoor lighting is used, I would be aware of potential issues with seabird attraction and fallout, but if all work is being done during daylight hours then not an issue.

Let me know if you have any further questions or things to clarify!

Olivia

From: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Sent: Friday, August 25, 2023 10:16 AM
To: Wang, Olivia <olivia_wang@fws.gov>; Flores, Jacqueline B <jacqueline_flores@fws.gov>; Kim, Jiny <jiny_kim@fws.gov>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Gombar, Laura P <lauraalexandria_gombar@fws.gov>
Subject: RE: [EXTERNAL] Migratory Bird Protections in Guam

Olivia,
Very good to meet you!
Thank you for your assistance on this.

Marian

Marian Dean
Environmental Planner
Civil & Public Works Branch

230 Otake St.
Ft. Shafter, HI 96858-5440
marian.dean@usace.army.mil
808-379-8223

From: Wang, Olivia <olivia_wang@fws.gov>
Sent: Friday, August 25, 2023 7:02 AM
To: Flores, Jacqueline B <jacqueline_flores@fws.gov>; Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>; Kim, Jiny <jiny_kim@fws.gov>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Gombar, Laura P <lauraalexandria_gombar@fws.gov>
Subject: [Non-DoD Source] RE: [EXTERNAL] Migratory Bird Protections in Guam

Hi Marian,

The attached MBTA document is outdated; I will work on getting some updated general guidance to you soon. I'm also happy to meet and discuss MBTA related aspects of the feasibility report if you want more specific input on project planning. Let me know.

Also as Jackie said, I am the new MBTA person for the Pacific Region, so please contact me if you have other MBTA related concerns going forward!

Thanks,
Olivia

From: Flores, Jacqueline B <jacqueline_flores@fws.gov>
Sent: Thursday, August 24, 2023 6:54 PM
To: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>; Kim, Jiny <jiny_kim@fws.gov>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Gombar, Laura P <lauraalexandria_gombar@fws.gov>; Wang, Olivia <olivia_wang@fws.gov>
Subject: RE: [EXTERNAL] Migratory Bird Protections in Guam

Hafa Adai Marian,
We would normally include the attached for MBTA information since it's not our authority. The attached was what was provided by MBTA Regional Office at the time. Olivia Wang is now the MBTA person for the Pacific Region. I would defer to her if the information needs to be updated.

Thanks
Jackie

From: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Sent: Friday, August 25, 2023 11:45 AM
To: Flores, Jacqueline B <jacqueline_flores@fws.gov>; Kim, Jiny <jiny_kim@fws.gov>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Gombar, Laura P <lauraalexandria_gombar@fws.gov>
Subject: Re: [EXTERNAL] Migratory Bird Protections in Guam

Yes, we did in March 2022.
Project development was paused for several months, but we're finally wrapping up the feasibility report and environmental assessment: https://www.poh.usace.army.mil/Missions/Civil-Works/Civil-Works-Projects/East-Hagatna/
The ESA Biological Evaluation is currently under internal review, and we plan to send it to the agencies for concurrence soon.

Guam Division of Aquatic and Wildlife Resources reports migratory birds including the White Tern (*Gygis alba*), Pacific Reef Heron (*Egretta sacra*), Eurasian Tree Sparrow (*Passer montanus*), Philippine Turtle Dove (*Streptopelia dusumier*), Yellow Bittern (*Ixobrychus sinensis*), and Common Sandpiper (*Actitis hypoleucos*) flying through our project area, but not nesting or foraging.

Are there "**standard migratory bird protection measures required under the Migratory Bird Treaty Act and/or Migratory Bird Conservation Act**" that I could incorporate into our project planning?

Thank you,
Marian

From: Flores, Jacqueline B <jacqueline_flores@fws.gov>
Sent: Thursday, August 24, 2023 12:55 PM
To: Kim, Jiny <jiny_kim@fws.gov>; Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Gombar, Laura P <lauraalexandria_gombar@fws.gov>
Subject: [Non-DoD Source] Re: [EXTERNAL] Migratory Bird Protections in Guam

Hafa Adai Marian,
This project sounds familiar. Did you reach out to our office for ESA information?

Thanks
Jackie

From: Kim, Jiny <jiny_kim@fws.gov>
Sent: Friday, August 25, 2023 8:00 AM
To: Marian.Dean@usace.army.mil <Marian.Dean@usace.army.mil>
Cc: Czachura, Kevin K <kevin_czachura@fws.gov>; Pe'a, Ryan <ryan_pea@fws.gov>; Flores, Jacqueline B <jacqueline_flores@fws.gov>
Subject: Fw: [EXTERNAL] Migratory Bird Protections in Guam

Hi Marian,

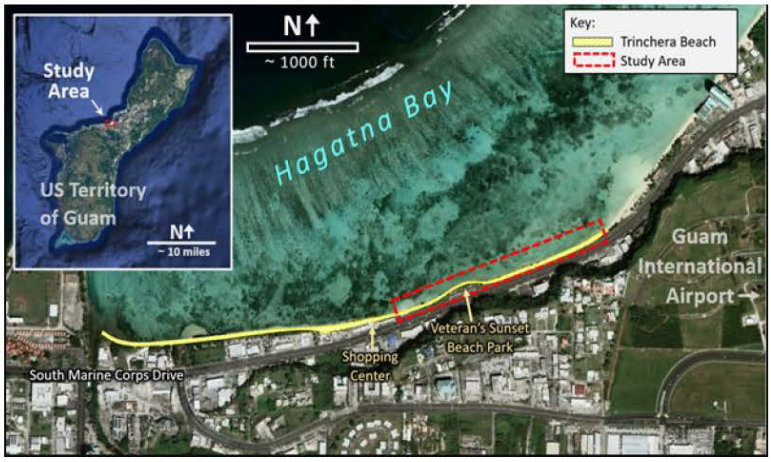
I am copying Jackie (the Island Team manager in which your work is occurring), and Ryan and Kevin (who work on DoD projects within our office). They will be the best people to address your question.

Thank you,
Jiny

From: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Sent: Thursday, August 24, 2023 11:53 AM
To: Kim, Jiny <jiny_kim@fws.gov>
Cc: Nadig, Aaron <aaron_nadig@fws.gov>
Subject: RE: [EXTERNAL] Migratory Bird Protections in Guam

I have an entire website to share: https://www.poh.usace.army.mil/Missions/Civil-Works/Civil-Works-Projects/East-Hagatna/

We propose to replace 2100 feet of an existing seawall with a rock (or tribar if not enough rock is available) revetment along South Marine Corps Drive (within the red box below):



The construction staging area would be in the parking lot of Veteran's Sunset Beach Park. All construction would occur from the landward side at low tide and therefore out of the water as much as practicable.

Thank you,
Marian

Marian Dean
Environmental Planner
Civil & Public Works Branch

230 Otake St.
Ft. Shafter, HI 96858-5440
marian.dean@usace.army.mil
808-379-8223

From: Kim, Jiny <jiny_kim@fws.gov>
Sent: Thursday, August 24, 2023 11:01 AM
To: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Cc: Nadig, Aaron <aaron_nadig@fws.gov>
Subject: [Non-DoD Source] Re: [EXTERNAL] Migratory Bird Protections in Guam

Hi Marian,

Thanks for your email. I will either find you a contact or provide some recommendations for your project. Do you happen to have a project description I can share?

Mahalo,
Jiny

From: Dean, Marian E CIV USARMY CEPOH (USA) <Marian.E.Dean@usace.army.mil>
Sent: Thursday, August 24, 2023 9:36 AM
To: Nadig, Aaron <aaron_nadig@fws.gov>; Kim, Jiny <jiny_kim@fws.gov>
Subject: [EXTERNAL] Migratory Bird Protections in Guam

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Aaron and Jiny,
Hope you are well.

As you may be aware, we have a project on the East Hagatna waterfront in Guam. Guam Division of Aquatic and Wildlife Resources reports migratory birds flying through our project area, but not nesting or foraging.

Are there "**standard migratory bird protection measures required under the Migratory Bird Treaty Act and/or Migratory Bird Conservation Act**" that I could incorporate into our project planning?

I couldn't find anything applicable on the USFWS website, but I may not be looking in the correct place.

Thank you for any assistance you can provide,
Marian

Marian Dean
Environmental Planner
Civil & Public Works Branch

Dear Project Proponent:

Thank you for your inquiry and for your interest in protecting Migratory Birds. There are several resources available to you in order to generate a Migratory Bird Species List for your project and to understand how to reduce impact on migratory birds.

1) Migratory Bird Species List:
A list of the migratory bird species covered by the Migratory Bird Treaty Act, is available at this link.

2) IPaC:
The Information for Planning and Conservation tool, is an online tool through which users may use to generate a list of Threatened and Endangered Species (https://ecos.fws.gov/ipac/). Information in IPaC is incomplete for migratory birds, particularly for birds on Pacific islands.

3) Site-specific Bird Species Lists:
The best way to create a site-specific bird species list is for a biologist to visit the site and record bird occurrence throughout the year. If this is not possible, project proponents can generate a bird occurrence list in eBird which can inform your creation of a site-specific list of Migratory Birds.

Once you arrive at the eBird website, click "Explore," and enter your state, county, province or country into the "Explore Regions" search bar. From there you can zoom into your specific project area, or select a hot spot that is closer to your project area.

3) Conservation Measures to reduce project effects on birds:

The M-Opinion developed by the Dept. of Justice solicitors in December 2017 states that incidental take is no longer a violation of the Migratory Bird Treaty Act. While take of nesting birds might occur during your project, if that take occurs incidentally to the purpose of your otherwise legal activity, then that take is not prohibited. If birds are purposefully killed, that is, the take is intentional, then it is prohibited unless you have a permit authorizing that take. It is likely that your construction activities as described would not violate MBTA if birds were harmed incidentally during the course of your development. Regardless, we encourage developers to minimize and avoid incidental take of migratory birds if possible.

Conservation measures geared toward specific activities may reduce your project's impacts on birds. Several fact sheets are available through the USFWS Office of Migratory Birds Website.

Vegetation Management is one of the most common construction-related activities that affects migratory birds. In particular, vegetation clearing associated with the construction may be timed to avoid peak nesting of birds; this is the easiest way to avoid incidentally killing or disturbing nesting birds. If timing of construction cannot be altered, consider removing any potential nesting trees, shrubs, or other bird nesting habitat in the footprint of the project at a time when the birds are not nesting, e.g. well in advance of construction. In order to plan the

vegetation removal or other habitat disturbance, take account of the amount of time that a species of bird needs to complete their nesting effort, from egg laying to fledging, and plan your activity far in advance. Additional guidelines for vegetation control are available through the USFWS Office of Migratory Birds.

If take cannot be avoided, e.g birds are actively nesting in trees that are slated for removal and site clearing cannot wait until the young fledge, then consider contacting a permitted rehabilitation facility to take the orphaned eggs or young. It might also be possible to discourage birds from nesting in trees by hazing, or bothering them in some way to the point that they abandon the site prior to settling in and laying an egg.

A similar approach can be taken for ground-nesting and burrow-nesting species, including seabirds. If a ground-disturbing activity must take place, plan it outside the nesting season.

Information on birds and their nesting seasons can be found by searching for species name at Wikipedia, and Cornell's All About Birds web site.

Attachment 8. Clean Air Act Analysis

Attachment 8: Air Quality

TABLE OF CONTENTS

1 Background 414
2 Direct Short Term Construction Emissions 418
3 Indirect Long-Term Operations and Maintenance (O&M) Emissions 422
4 Other Emissions 424
5 Effects Determination 424
5.1 Alternative 2 - No Action: 426
5.2 Alternative 1 – Open Cell Piling Seawall 426
6 Literature Cited 426

TABLE OF TABLES

Table 8-1: Daily Construction Emissions by Equipment for Alternative 1: No Action 415
Table 8-2: Daily Construction Emissions by Equipment for Alternative 2: Concrete Armor Revetment 415
Table 8-3: Daily Construction Emissions by Equipment for Alternative 3: Open Cell Piling Seawall 415
Table 8-4: Daily Construction Emissions by Equipment for Alternative 4: Secant Pile Seawall 416
Table 8-5: O&M Emissions by Equipment for Alternative 1: No Action 416
Table 8-6: O&M Emissions by Equipment for Alternative 2: Revetment 416
Table 8-7: O&M Emissions by Equipment for Alternative 3: Open Cell Piling Seawall 417
Table 8-8: O&M Emissions by Equipment for Alternative 4: Secant Pile Seawall 417
Table 8-9: Short-term Direct GHG Emissions from construction equipment in metric tons for construction year 2027 422
Table 8-10: Long Term Indirect Emissions from Operations and Maintenance Activities in metric tons 423
Table 8-11: Gross and Net Total Emissions in metric tons by alternative 425

ABBREVIATIONS AND ACRONYMS

CAA	Clean Air Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon dioxide
cy	cubic yards
GHG	Greenhouse Gas
hp	horsepower
hrs	hours
lbs	pounds
NAAQS	National Ambient Air Quality Standards
PEAT	Project Emissions Analysis Tool
NEPA	National Environmental Policy Act
NO_x	Nitrous Oxide
O&M	Operations and Maintenance
PM_{10}	Particulate Matter - 10 micron
$PM_{2.5}$	Particulate Matter - 2.5 micron
ROG	Reactive Organic Gases
SO_x	Sulfur Oxides
US	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code of Regulations
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compounds

Background

As required by the Clean Air Act of 1972 (CAA; 42 USC §7401 et seq.), the United States Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants including carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, ozone, and lead. U.S. Army Corps of Engineers (USACE) developed a methodology (Project Emissions Analysis Tool [PEAT]) to analyze the components for air quality and incorporate them within NEPA documents.

Quantifying greenhouse gas emissions as required by federal and state laws to the minimum consideration required to meet a statutory requirement per OMB M-25-27 and to meet requirements per OMB Circular A-4 (2003). Currently there are federal requirements for reporting greenhouse gas emissions for stationary sources per 42 U.S. Code § 7411 (a) (3) (e.g., facilities, buildings) through the EPA for Title V Permits and Prevention of Significant Deterioration (PSD).

Within this evaluation, four (4) alternatives for the East Hagatna Emergency Shoreline Protection Feasibility Study were considered for emissions:
1. No Action
2. Concrete Armor Revetment
3. Precast Concrete Seawall
4. Concrete Rubble Masonry (CRM) Wall

For air quality effects analysis, criteria pollutant and GHG emissions were quantified for the no action alternative based on annual repair of the existing concrete rubble masonry wall throughout the other alternatives' construction period and 50-year project life. Emissions associated with the eventual loss of the facility and increased travel time to the nearest replacement location were not calculated for this analysis. The alternatives' emissions were quantified based on construction vehicle and equipment requirements for 1 year of construction (PEAT does not calculate portions of a year), and O&M vehicle and equipment requirements for O&M every 20 years over a 50-year project lifespan.

The GHG emissions were calculated using the type, quantity, horsepower, total hours, and associated emission factors of the equipment in the USACE PEAT model (USACE 2025; Tables 8-1 through 8-9). Estimates of the number and type of construction vehicles, fuel type used, and hours for each are very rough and not considered to represent actual final construction circumstances but are comparable across the alternatives.

Table 8-1: Daily Construction Emissions by Equipment for Alternative 1: No Action

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	2	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.007	0.061	0.006	0.000	0.001	0.001	11.111	0.000
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.385	1.485	2.377	0.007	0.086	0.077	197.721	0.010
Dump Trucks (10 CY)	400	0.38	2	304	16	40	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.037	0.172	0.422	0.001	0.021	0.017	231.782	0.025
										Peak Daily Emissions					**0.43**	**1.72**	**2.81**	**0.01**	**0.11**	**0.09**	**440.61**	**0.03**
										Annual Project Emissions (grams)					**48,547.664**	**194,561.571**	**317,752.696**	**930.768**	**12,281.111**	**10,684.962**	**49,899,448.705**	**3,960.287**

Table 8-2: Daily Construction Emissions by Equipment for Alternative 2: Concrete Armor Revetment

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	10	1	4	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.027	0.246	0.024	0.000	0.004	0.002	44.442	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.385	1.485	2.377	0.007	0.086	0.077	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	12	1824	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.082	0.387	0.950	0.003	0.048	0.038	286.835	0.002
Dump Trucks (10 CY)	400	0.38	4	608	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.027	0.129	0.317	0.001	0.016	0.013	173.836	0.019
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Tractor (Crawler/Dozer)	165	0.37	1	61.05	8	N/A	0.151	0.812	0.996	0.001	0.056	0.050	66.798	0.003	0.447	2.405	2.949	0.004	0.166	0.148	197.721	0.010
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
										Peak Daily Emissions					**2.95**	**14.49**	**20.08**	**0.04**	**0.91**	**0.80**	**3472.27**	**0.18**
										Annual Project Emissions (grams)					**333,866.962**	**1,641,199.144**	**2,273,701.994**	**4,852.020**	**102,594.522**	**90,479.335**	**393,234,516.057**	**20,856.848**

Table 8-3: Daily Construction Emissions by Equipment for Alternative 3: Precast Concrete Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	12	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.032	0.295	0.029	0.001	0.004	0.003	53.331	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	2	597.92	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.771	2.969	4.755	0.014	0.172	0.153	395.442	0.019
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	1	152	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.007	0.032	0.079	0.000	0.004	0.003	23.903	0.000
Dump Trucks (10 CY)	400	0.38	8	1216	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.055	0.258	0.633	0.002	0.032	0.026	347.673	0.038
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Concrete Truck (8 cy)	235	0.38	2	178.6	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.014	0.064	0.158	0.000	0.008	0.006	82.629	0.009
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Water Truck (3000 gal)	320	0.38	1	121.6	8	N/A	0.149	0.545	0.748	0.003	0.027	0.024	**4.193**	**0.000**	0.452	1.656	2.274	0.008	0.083	0.074	12.748	0.000
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
										Peak Daily Emissions					**3.55**	**16.14**	**22.70**	**0.06**	**0.93**	**0.83**	**3685.16**	**0.22**
										Annual Project Emissions (grams)					**402,124.088**	**1,827,299.436**	**2,570,673.126**	**6,591.069**	**105,825.496**	**93,541.029**	**417,344,365.396**	**24,851.220**

Table 8-4: Daily Construction Emissions by Equipment for Alternative 4: Concrete Rubble Masonry Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [(1)]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	12	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.032	0.295	0.029	0.001	0.004	0.003	53.331	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	2	597.92	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.771	2.969	4.755	0.014	0.172	0.153	395.442	0.019
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	1	152	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.007	0.032	0.079	0.000	0.004	0.003	23.903	0.000
Dump Trucks (10 CY)	400	0.38	8	1216	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.055	0.258	0.633	0.002	0.032	0.026	347.673	0.038
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Water Truck (3000 gal)	320	0.38	1	121.6	8	N/A	0.149	0.545	0.748	0.003	0.027	0.024	**4.193**	**0.000**	0.452	1.656	2.274	0.008	0.083	0.074	12.748	0.000
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
										Peak Daily Emissions					**3.54**	**16.07**	**22.54**	**0.06**	**0.93**	**0.82**	**3602.53**	**0.21**
										Annual Project Emissions (grams)					**400,571.799**	**1,819,999.419**	**2,552,738.983**	**6,539.011**	**104,919.205**	**92,816.943**	**407,986,646.301**	**23,857.557**

Table 8-5: Daily O&M Emissions by Equipment for Alternative 1: No Action

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	2	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.007	0.061	0.006	0.000	0.001	0.001	11.111	0.000
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Dump Trucks (10 CY)	400	0.38	2	304	16	10	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.009	0.043	0.106	0.000	0.005	0.004	57.945	0.006
										Peak Daily Emissions					**0.26**	**1.12**	**1.42**	**0.01**	**0.05**	**0.04**	**266.78**	**0.02**
										Annual Project Emissions (grams)					**29,030.726**	**127,299.262**	**161,056.174**	**694.581**	**5,771.318**	**5,056.272**	**30,212,491.593**	**1,817.364**

Table 8-6: Daily O&M Emissions by Equipment for Alternative 2: Concrete Armor Revetment

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day[)]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
Quarry delivery trucks	1	1	1	1	10	1	0.002	0.012	0.013	0.000	0.001	0.000	**4.193**	**0.000**	0.017	0.117	0.129	0.000	0.005	0.004	41.935	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	10	1	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.482	1.856	2.972	0.009	0.108	0.096	247.151	0.012
Backhoe (1.50 CY)	95	0.37	1	35.15	10	1	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.135	1.259	0.913	0.002	0.048	0.042	247.151	0.012
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
										Peak Daily Emissions					**1.88**	**8.21**	**12.85**	**0.03**	**0.51**	**0.45**	**1903.74**	**0.11**
										Annual Project Emissions (grams)					**213,442.159**	**929,878.025**	**1,455,236.726**	**3,054.260**	**57,479.102**	**51,049.089**	**215,598,562.296**	**12,489.374**

Table 8-7: Daily O&M Emissions by Equipment for Alternative 3: Precast Concrete Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Concrete Truck (8 cy)	235	0.38	1	89.3	10	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.007	0.032	0.079	0.000	0.004	0.003	41.314	0.004
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
										Peak Daily Emissions					**1.26**	**5.01**	**8.92**	**0.02**	**0.35**	**0.31**	**1408.82**	**0.09**
										Annual Project Emissions (grams)					**142,342.547**	**567,545.611**	**1,009,745.551**	**1,820.197**	**39,765.048**	**35,282.022**	**159,548,538.355**	**10,228.507**

Table 8-8: Daily O&M Emissions by Equipment for Alternative 4: CRM Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Concrete Truck (8 cy)	235	0.38	1	89.3	10	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.007	0.032	0.079	0.000	0.004	0.003	41.314	0.004
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
										Peak Daily Emissions					**1.26**	**5.01**	**8.92**	**0.02**	**0.35**	**0.31**	**1408.82**	**0.09**
										Annual Project Emissions (grams)					**142,342.547**	**567,545.611**	**1,009,745.551**	**1,820.197**	**39,765.048**	**35,282.022**	**159,548,538.355**	**10,228.507**

Direct Short Term Construction Emissions

Direct Emissions are a *direct result of the project* (e.g. construction)

Table 8-1: Daily Construction Emissions by Equipment for Alternative 1: No Action

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	2	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.007	0.061	0.006	0.000	0.001	0.001	11.111	0.000
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.385	1.485	2.377	0.007	0.086	0.077	197.721	0.010
Dump Trucks (10 CY)	400	0.38	2	304	16	40	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.037	0.172	0.422	0.001	0.021	0.017	231.782	0.025
										Peak Daily Emissions					**0.43**	**1.72**	**2.81**	**0.01**	**0.11**	**0.09**	**440.61**	**0.03**
										Annual Project Emissions (grams)					**48,547.664**	**194,561.571**	**317,752.696**	**930.768**	**12,281.111**	**10,684.962**	**49,899,448.705**	**3,960.287**

Table 8-2: Daily Construction Emissions by Equipment for Alternative 2: Concrete Armor Revetment

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	10	1	4	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.027	0.246	0.024	0.000	0.004	0.002	44.442	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.385	1.485	2.377	0.007	0.086	0.077	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	12	1824	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.082	0.387	0.950	0.003	0.048	0.038	286.835	0.002
Dump Trucks (10 CY)	400	0.38	4	608	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.027	0.129	0.317	0.001	0.016	0.013	173.836	0.019
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Tractor (Crawler/Dozer)	165	0.37	1	61.05	8	N/A	0.151	0.812	0.996	0.001	0.056	0.050	66.798	0.003	0.447	2.405	2.949	0.004	0.166	0.148	197.721	0.010
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
										Peak Daily Emissions					**2.95**	**14.49**	**20.08**	**0.04**	**0.91**	**0.80**	**3472.27**	**0.18**
										Annual Project Emissions (grams)					**333,866.962**	**1,641,199.144**	**2,273,701.994**	**4,852.020**	**102,594.522**	**90,479.335**	**393,234,516.057**	**20,856.848**

Table 8-3: Daily Construction Emissions by Equipment for Alternative 3: Precast Concrete Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	12	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.032	0.295	0.029	0.001	0.004	0.003	53.331	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	2	597.92	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.771	2.969	4.755	0.014	0.172	0.153	395.442	0.019
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	1	152	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.007	0.032	0.079	0.000	0.004	0.003	23.903	0.000
Dump Trucks (10 CY)	400	0.38	8	1216	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.055	0.258	0.633	0.002	0.032	0.026	347.673	0.038
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Concrete Truck (8 cy)	235	0.38	2	178.6	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.014	0.064	0.158	0.000	0.008	0.006	82.629	0.009
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Water Truck (3000 gal)	320	0.38	1	121.6	8	N/A	0.149	0.545	0.748	0.003	0.027	0.024	**4.193**	**0.000**	0.452	1.656	2.274	0.008	0.083	0.074	12.748	0.000
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
										Peak Daily Emissions					**3.55**	**16.14**	**22.70**	**0.06**	**0.93**	**0.83**	**3685.16**	**0.22**
										Annual Project Emissions (grams)					**402,124.088**	**1,827,299.436**	**2,570,673.126**	**6,591.069**	**105,825.496**	**93,541.029**	**417,344,365.396**	**24,851.220**

Table 8-4: Daily Construction Emissions by Equipment for Alternative 4: Concrete Rubble Masonry Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	12	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.032	0.295	0.029	0.001	0.004	0.003	53.331	0.000
3/4 Ton Pickup Truck	385	0.38	4	585.2	8	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.020	0.130	0.137	0.000	0.006	0.004	63.741	0.001
Crane (40 Ton)	365	0.29	1	105.85	8	N/A	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.252	0.891	1.635	0.004	0.060	0.053	298.420	0.016
Loader, (18.30 CY Bucket, 4x4)	808	0.37	2	597.92	8	N/A	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.771	2.969	4.755	0.014	0.172	0.153	395.442	0.019
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Semi Truck (75,000 LB Cap)	400	0.38	1	152	8	15	0.001	0.006	0.014	0.000	0.001	0.001	**4.193**	**0.000**	0.007	0.032	0.079	0.000	0.004	0.003	23.903	0.000
Dump Trucks (10 CY)	400	0.38	8	1216	8	15	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.055	0.258	0.633	0.002	0.032	0.026	347.673	0.038
Backhoe (1.50 CY)	95	0.37	2	70.3	8	N/A	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.217	2.014	1.460	0.004	0.076	0.068	395.442	0.019
Generator	65	0.42	2	54.6	8	N/A	0.038	0.216	0.220	0.000	0.011	0.009	60.993	0.003	0.255	1.452	1.477	0.003	0.071	0.063	409.871	0.019
Dozer D8	310	0.4	1	124	8	N/A	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.733	2.968	5.398	0.008	0.215	0.192	765.057	0.053
Water Truck (3000 gal)	320	0.38	1	121.6	8	N/A	0.149	0.545	0.748	0.003	0.027	0.024	**4.193**	**0.000**	0.452	1.656	2.274	0.008	0.083	0.074	12.748	0.000
Grader	200	0.41	1	82	8	N/A	0.100	0.368	0.670	0.002	0.023	0.020	132.743	0.007	0.328	1.208	2.198	0.006	0.075	0.067	435.397	0.022
Roller Compactor (6 Ton)	85	0.38	1	32.3	8	N/A	0.058	0.387	0.380	0.001	0.027	0.024	67.035	0.004	0.175	1.177	1.155	0.002	0.082	0.073	203.786	0.013
							Peak Daily Emissions								**3.54**	**16.07**	**22.54**	**0.06**	**0.93**	**0.82**	**3602.53**	**0.21**
							Annual Project Emissions (grams)								**400,571.799**	**1,819,999.419**	**2,552,738.983**	**6,539.011**	**104,919.205**	**92,816.943**	**407,986,646.301**	**23,857.557**

Table 8-5: Daily O&M Emissions by Equipment for Alternative 1: No Action

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	2	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.007	0.061	0.006	0.000	0.001	0.001	11.111	0.000
Loader, (4 CY Bucket, 4x4)	211	0.37	1	78.07	8	N/A	0.081	0.344	0.443	0.002	0.015	0.013	66.798	0.003	0.241	1.020	1.311	0.006	0.045	0.040	197.721	0.010
Dump Trucks (10 CY)	400	0.38	2	304	16	10	0.001	0.006	0.014	0.000	0.001	0.001	7.624	0.001	0.009	0.043	0.106	0.000	0.005	0.004	57.945	0.006
							Peak Daily Emissions								**0.26**	**1.12**	**1.42**	**0.01**	**0.05**	**0.04**	**266.78**	**0.02**
							Annual Project Emissions (grams)								**29,030.726**	**127,299.262**	**161,056.174**	**694.581**	**5,771.318**	**5,056.272**	**30,212,491.593**	**1,817.364**

Table 8-6: Daily O&M Emissions by Equipment for Alternative 2: Concrete Armor Revetment

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day)**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	N/A	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
Quarry delivery trucks	1	1	1	1	10	1	0.002	0.012	0.013	0.000	0.001	0.000	**4.193**	**0.000**	0.017	0.117	0.129	0.000	0.005	0.004	41.935	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Loader, (18.30 CY Bucket, 4x4)	808	0.37	1	298.96	10	1	0.130	0.502	0.803	0.002	0.029	0.026	66.798	0.003	0.482	1.856	2.972	0.009	0.108	0.096	247.151	0.012
Backhoe (1.50 CY)	95	0.37	1	35.15	10	1	0.037	0.340	0.247	0.001	0.013	0.011	66.798	0.003	0.135	1.259	0.913	0.002	0.048	0.042	247.151	0.012
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
							Peak Daily Emissions								**1.88**	**8.21**	**12.85**	**0.03**	**0.51**	**0.45**	**1903.74**	**0.11**
							Annual Project Emissions (grams)								**213,442.159**	**929,878.025**	**1,455,236.726**	**3,054.260**	**57,479.102**	**51,049.089**	**215,598,562.296**	**12,489.374**

Table 8-7: Daily O&M Emissions by Equipment for Alternative 3: Precast Concrete Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Concrete Truck (8 cy)	235	0.38	1	89.3	10	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.007	0.032	0.079	0.000	0.004	0.003	41.314	0.004
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
										Peak Daily Emissions					**1.26**	**5.01**	**8.92**	**0.02**	**0.35**	**0.31**	**1408.82**	**0.09**
										Annual Project Emissions (grams)					**142,342.547**	**567,545.611**	**1,009,745.551**	**1,820.197**	**39,765.048**	**35,282.022**	**159,548,538.355**	**10,228.507**

Table 8-8: Daily O&M Emissions by Equipment for Alternative 4: CRM Seawall

Emission Source Data							Emission Factors for Construction Equipment								Daily Emissions from Construction Activities (lbs/day)							
Construction Activity/Equipment Type	**Power Rating (Hp)**	**Load Factor**	**# Active**	**Hourly Hp-Hrs**	**Hrs per Day [1]**	**Miles Per Day**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**ROG**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**
Worker vehicles	1	1	5	1	4	1	0.001	0.006	0.001	0.000	0.000	0.000	**1.111**	**0.000**	0.013	0.123	0.012	0.000	0.002	0.001	22.221	0.000
3/4 Ton Pickup Truck	385	0.38	1	146.3	10	10	0.001	0.009	0.009	0.000	0.000	0.000	**4.193**	**0.000**	0.005	0.033	0.034	0.000	0.001	0.001	15.935	0.000
Crane (40 Ton)	365	0.29	1	105.85	10	1	0.109	0.384	0.705	0.002	0.026	0.023	128.629	0.007	0.315	1.113	2.044	0.005	0.075	0.066	373.025	0.020
Concrete Truck (8 cy)	235	0.38	1	89.3	10	15	0.001	0.006	0.014	0.000	0.001	0.001	7.248	0.001	0.007	0.032	0.079	0.000	0.004	0.003	41.314	0.004
Dozer D8	310	0.4	1	124	10	1	0.229	0.928	1.687	0.003	0.067	0.060	239.080	0.017	0.916	3.711	6.747	0.010	0.269	0.240	956.321	0.066
										Peak Daily Emissions					**1.26**	**5.01**	**8.92**	**0.02**	**0.35**	**0.31**	**1408.82**	**0.09**
										Annual Project Emissions (grams)					**142,342.547**	**567,545.611**	**1,009,745.551**	**1,820.197**	**39,765.048**	**35,282.022**	**159,548,538.355**	**10,228.507**

. Direct emissions for the Agat Shoreline Protection are short term emissions resulting from the use of construction equipment (**Table 8-9**). Alternative 1 No Action does not have a construction component and therefore has no emissions in Table 8-9.

Table 8-9: Short-term Direct GHG Emissions from construction equipment in metric tons for construction year 2027

Pollutant	*Alternative 1 - No Action Alternative*	*Alternative 2: Concrete Armor Revetment*	*Alternative 3: Precast Concrete Seawall*	*Alternative 4: CRM Wall*
Reactive Organic Gases aka Volatile Organic Compounds (ROG/VOC)	0.00	0.67	0.80	0.80
Carbon Monoxide (CO)	0.00	3.28	3.65	3.64
Sulfur Oxides (SOx)	0.00	0.01	0.01	0.01
Nitrous Oxides (NOx)	0.00	4.55	5.14	5.11
Particulate Matter - 2.5 micron ($PM_{2.5}$)	0.00	0.21	0.21	0.21
Particulate Matter - 10 micron (PM_{10})	0.00	0.18	0.19	0.19
Carbon Dioxide (CO_2)	0.00	786.47	834.69	815.97
Methane (CH_4)	0.00	0.04	0.05	0.05

Indirect Long-Term Operations and Maintenance (O&M) Emissions

Operations and Maintenance(O&M) emissions are calculated to cover the standard USACE project lifetime of 50 years. O&M for the No Action Alternative would occur every year. O&M for the shoreline protection alternatives would occur once every 20 years.

Table 8-10: Long Term Indirect Emissions from Operations and Maintenance Activities in metric tons

Pollutant	*Alternative 1 - No Action Alternative*		*Alternative 2: Concrete Armor Revetment*		*Alternative 3: Precast Concrete Seawall*		*Alternative 4: CRM Wall*	
Pollutant	Yearly O&M Emissions	Project Lifetime O&M Emissions (50 Years)	Yearly O&M Emissions	Project Lifetime O&M Emissions (50 Years)	Yearly O&M Emissions	Project Lifetime O&M Emissions (50 Years)	Yearly O&M Emissions	Project Lifetime O&M Emissions (50 Years)
Reactive Organic Gases aka Volatile Organic Compounds (ROG/VOC)	0.05	2.27	0.01	0.54	0.01	0.36	0.01	0.36
Carbon Monoxide (CO)	0.18	9.00	0.05	2.33	0.03	1.43	0.03	1.44
Sulfur Oxides (SOx)	0.00	0.04	0.00	0.01	0.00	0.00	0.00	0.00
Nitrous Oxides (NOx)	0.28	14.09	0.07	3.65	0.05	2.54	0.05	2.57
Particulate Matter - 2.5 micron ($PM_{2.5}$)	0.01	0.52	0.00	0.13	0.04	2.00	0.00	0.10
Particulate Matter - 10 micron (PM_{10})	0.01	0.46	0.00	0.14	0.00	0.09	0.00	0.09
Carbon Dioxide (CO_2)	30.21	1,510.63	10.87	543.51	8.15	407.28	8.46	422.88
Methane (CH_4)	0.00	0.09	0.00	0.03	0.00	0.03	0.00	0.03

Other Emissions

The proposed action is not anticipated to produce Upstream Emissions necessary for operating project features that would not otherwise be emitted, Downstream Emissions that would not be emitted but for project construction or Connected Emissions from other projects that would not be emitted but for the project. The concrete components would be produced on site and their production is incorporated in the construction analysis.

Effects Determination

Effects on air quality were considered significant if implementation of an alternative plan would result in any of the following:

- Exceedance of federal or Territorial air quality standards established for criteria pollutants, and/or
- Generation of greenhouse gas emissions that would significantly contribute to changes in air quality, precipitation, and/or temperature. There are currently no Federal thresholds of significance established for greenhouse gas emissions, and so it is the responsibility of the NEPA lead agency to decide how significant effects will be determined. To this end, significance for greenhouse gas emissions was determined by comparing the greenhouse gas emissions produced for each project alternative to governmental greenhouse gas reduction goals, while not formally adopting the greenhouse gas reduction goal per se.

Gross and Net emissions are reported in net total metric tons (required), pounds (optional), and calculated using the equation:

$$\boldsymbol{E_{Net} = A_E - NA_E}$$

Where:
ENet = net emissions for each action alternative (grams, pounds, metric tons)
AE = total emissions for the action alternative (subtracting sequestered emissions)
NAE = total emissions for the no-action alternative.

$$\boldsymbol{Emissions = LF * D * EF}$$

Where
Emissions = the mass or weight of each GHG
LF = load factor (unitless)
D = operation data (time or distance)
EF = emissions factor (emissions per time or distance)

Table 8-11: Gross Total Emissions in metric tons by alternative

Pollutant	Alternative 1 - No Action Alternative	Alternative 2: Concrete Armor Revetment	Alternative 3: Precast Concrete Seawall	Alternative 4: CRM Wall
Reactive Organic Gases aka Volatile Organic Compounds (ROG/VOC)	2	1	1	1
Carbon Monoxide (CO)	9	6	5	5
Sulfur Oxides (SOx)	0	0	0	0
Nitrous Oxides (NOx)	15	8	8	8
Particulate Matter - 2.5 micron (PM2.5)	1	0	2	0
Particulate Matter - 10 micron (PM10)	0	0	0	0
Carbon Dioxide (CO2)	1610	1330	1242	1239
Methane (CH4)	0	0	0	0

Table 8-12: Net Total Emissions in metric tons by alternative

Pollutant	Alternative 1 - No Action Alternative	Alternative 2: Concrete Armor Revetment	Alternative 3: Precast Concrete Seawall	Alternative 4: CRM Wall
Reactive Organic Gases aka Volatile Organic Compounds (ROG/VOC)	0	-1	-1	-1
Carbon Monoxide (CO)	0	-4	-4	-4
Sulfur Oxides (SOx)	0	0	0	0
Nitrous Oxides (NOx)	0	-7	-7	-7
Particulate Matter - 2.5 micron (PM2.5)	0	0	1	0
Particulate Matter - 10 micron (PM10)	0	0	0	0
Carbon Dioxide (CO2)	0	-280	-368	-372
Methane (CH4)	0	0	0	0

Alternative 1 - No Action:

Under the No Action Alternative there would be no direct emissions from construction activities, but there would be indirect emissions from continued maintenance if the project was not constructed. Over the construction term (2027-2029) and 50-year period of analysis (2030-2080), the no action alternative would result in the highest total emissions (Table 8-11).

Alternative 2-4

The Action Alternatives would result in one direct emission for construction and two indirect emissions for maintenance within the 50-year design lifespan of the project. There are no anticipated upstream, downstream, or connected emissions from the project. The Preferred Action Alternative 3: Precast Concrete Seawall has the lowest net emissions, less than the baseline of the No Action Alternative (Table 8-12).

Literature Cited

Adapted from Air Quality_Humboldt Jetty_25SEP2019 and the Hawaii Region volume of EP1110-1-8 Construction Equipment Ownership and Operating Expense Schedule, https://www.usace.army.mil/Cost-Engineering/EP1110-1-8/

USACE. 2025. Project Emissions Analysis Tool (PEAT).

USEPA. 2023. Chapter 13: Miscellaneous Sources, AP 42, fifth Edition, Volume I | Clearinghouse for Emission Inventories and Emissions Factors | Technology Transfer Network | US EPA. (2023.). https://www3.epa.gov/ttnchie1/ap42/ch13/

Attachment 9. Environmental Commitments

The environmental commitments include BMPs that serve as avoidance, minimization, rectification, and reduction measures that would be implemented to ensure that potential design and construction-related effects of the Recommended Plan are minimized and/or reduced to a less than significant level. Impacts to certain resources (hydrology, hydraulics, and geomorphology, cultural, socioeconomics, environmental justice, land use/utilities/public services, and recreation) are not anticipated for the proposed action, but some best practices to be implemented are included for some of these resources and/or can be covered through environmental commitments for another resource category. The Environmental Commitments reflect commitments made in consultation with federal and territory resource agencies.

1 EFH CRs (USACE and NMFS 2022a)

Applicable (and slightly modified to ensure applicability) Conservation Recommendations (CRs) adopted from the EFH Programmatic Consultation dated July 29, 2022 (USACE and NMFS 2022a) are presented below.

VI.A. CRs for Physical Impacts to Benthic Communities

1. Equipment, anchors, structures, or fill shall not be deployed in project areas containing live corals, seagrass beds, or visible benthic organisms. Perform pre-deployment reconnaissance (e.g., divers, drop cameras, etc.) to ensure these resources are avoided.
2. Minimize direct impact (direct or indirect contact causing damage) by divers and construction related tools, equipment, and materials with benthic organisms, regardless of size, especially corals and seagrass.
3. Prevent trash and debris from entering the marine environment during the project.
4. Maintain all structures, gear, instrumentation, mooring lines, and equipment to prevent failures.
5. All objects lowered to the bottom shall be lowered in a controlled manner. Note: This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent. This often requires skilled in- water observation.
6. Select work platforms based on the following preferential hierarchy:
    a. conduct all work from land or an existing structure;
7. Ensure new structures minimize shading impacts to marine habitats. Note: Shade minimization measures include: maximizing the height of the structure and minimizing the width of the structure to decrease shade footprint; grated decking material; using the fewest number of pilings necessary to support the structures; and, aligning the boardwalk in a north-south orientation for the path of the sun to cross perpendicular to the length of the structure to reduce the duration of shading.

VI.B. CRs for Increase in Sedimentation and/or Turbidity

1. Appropriate silt containment devices must be properly installed, monitored and maintained.

2. Debris and sediment that is removed from the water shall be disposed of at an appropriate upland location. Sediment and debris must be contained while in transit or on the shore.
3. Project operations must cease under unusual conditions, such as large tidal events, storms, and high surf conditions.
4. Conduct intertidal work at low and/or slack tide to the greatest extent feasible.
5. To minimize impacts to coral larvae, you shall avoid in-water work during mass-coral spawning times or peak coral spawning seasons. Permittees shall coordinate with local NMFS Habitat Conservation Division representatives to determine the exact period when coral spawning would occur for the given year at the project site.
6. Maintain baseline water flow, volume, and velocity of the waterbody.

8. Fully stabilize disturbed upland areas prior to removing silt fences and erosion prevention measures.

VI.C. CRs for Increase in Nutrients, Pesticides and Herbicides, Contaminants, and/or Freshwater

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 (e.g., 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. 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.

VI.D. CRs for Increase in Acoustic Impacts

1. Use a vibratory hammer to install piles when possible. Under conditions where impact hammers are required, when possible, drive as deep as possible with a vibratory hammer prior to the use of an impact hammer.
2. Implement measures to attenuate the sound or minimize impacts to aquatic resources during pile installation. Methods to mitigate sound impacts include, but are not limited to, the following: surround the pile with a dewatered cofferdam and/or air bubble curtain system.

VI.E. Conservation Recommendations for Increase in Invasive Species

1. Prior to in-water work, sanitize equipment or dive gear that has been previously used in an area known to contain invasive species.
    a. In-water tool and dive gear (e.g., wetsuit, mask, fins, snorkel, BC, regulator, weight belt, booties) shall be disinfected by one of the following ways: a 1:52 dilution of commercial bleach in freshwater, a 3 percent free chlorine solution, or

a manufacturer's recommended disinfectant-strength dilution of a quaternary ammonium compound in "soft" (low concentration of calcium or magnesium ions) freshwater.

b. Small boats that have been deployed in the field will be cleaned and inspected daily for organic material, including any algal fragments or other organisms. Organic material, if found, will be physically removed and disposed of according to the ship's solid- waste disposal protocol or in approved secure holding systems. The internal and external surfaces of vessels will be rinsed daily with freshwater and always rinsed and be allowed to dry before redeployment.

2. Vegetated areas impacted during construction must be revegetated with appropriate native species.

2 Additional EFH CRs from previous consultation (NMFS 2023a and 2024)

1. The demolition and removal of the existing seawall will be managed to avoid and minimize direct and indirect effects (e.g., noise, turbidity/sediment, pollution/discharge) to EFH.
2. Seawater retreat into the ocean that may otherwise become trapped behind the hardened infrastructure as a result of this project will be managed by installing weep holes in the wall to let the water that may be trapped escape. The connections between the individual panels will not be watertight so some water will be able to travel between the panels as well.
3. Rainfall that may otherwise become trapped behind the hardened infrastructure because of this project will be managed by installing weep holes in the wall to let the water that may be trapped escape. The connections between the individual panels will not be watertight so some water will be able to travel between the panels as well.
4. USACE will coordinate with NMFS Pacific Islands Regional Office to determine dates to use for planning to avoid peak coral spawning periods for in-water activities.
5. Water quality will be visually monitored for increases in turbidity due to the project. If there is a sudden increase in turbidity, work will cease until BMPs are repaired or replaced (e.g., silt curtains).

3 ESA BMPs from NMFS (USACE and NMFS 2022b)

Applicable (and slightly modified to ensure applicability) Best Management Practices (BMPs) per Pac-SLOPES dated March 2, 2022 (USACE and NMFS 2022b). Highlighted BMPs are applicable and will become specifications of the contract. BMPs not applicable to the proposed action either due to the scope of the proposed action or the location of the action area are struck out, with rationale provided, and will not become specifications of the contract.

A. General BMPs

1. The Corps will retain the right of reasonable access to projects authorized under Pac-SLOPES to monitor the compliance with and effectiveness of contract specifications.
2. To minimize impacts to coral larvae, notably the listed species covered in this

programmatic consultation, the permittee shall avoid in-water work and herbicide application during regionally-specific mass-coral spawning times or peak coral spawning seasons 7 days prior and 21 days after the July full moon, if practicable. (the coral spawning period was coordinated with NMFS PRD and HCD).

3. Constant vigilance shall be kept for the presence of ESA-listed marine species (sea turtles, marine mammals, sharks, rays) during all aspects of the proposed action. In particular, sea turtles are expected to occur in and around the harbor.
4. A responsible party (i.e. permittee/site manager/project supervisor) shall designate an appropriate number of competent trained observers to survey the areas adjacent to the authorized work area (i.e. proposed action) for ESA-listed marine species. The competent observer will not be simultaneously engaged in any other activity (e.g. captaining, operating equipment, etc).
5. Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour. Additional periodic surveys throughout the work day are strongly recommended.
6. All work shall be postponed or halted when ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work, and will only begin/resume after the animals have voluntarily departed the area.
    a. If ESA-listed marine species are noticed within 50 meters (54.7 yards, 164 feet) after work has already begun, that work may continue only if, in the best judgement of a biologist, the activity will not adversely affect (i.e. disturb or harm) the animal(s). For example: divers performing underwater work (excluding the use of toxic chemicals) such as surveys would likely be permissible, whereas operation of heavy equipment is not.
7. Project-related personnel shall NOT conduct activities resulting in a take of an ESA-listed species, a species proposed for listing, or listed or proposed critical habitat. “Take” as defined under the ESA means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct”. Activities that would qualify as take include attempting to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.
8. Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area must be identified on project figures. Project staff must be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.
9. Project construction must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.
10. If an ESA-listed species is adversely affected as a result of the project, all work must stop until coordination with the Corps and NMFS has been completed.
11. Reporting
    a. Observer logs. All non-take interactions with listed species (e.g. a species entering the shut-down zone and work is shut down correctly) must be documented and reported to the Corps and NMFS in monitoring logs (Table 2 in Appendix B).

i. Monitoring logs shall be completed daily. If no ESA-listed species are observed, the observer will record “0” in the daily report.

ii. The monitoring logs will be submitted in a digital and queryable to the NMFS reporting contact(s) in Table 1.

1. total hours and dates of monitoring identification of which ESA species were observed and in what location and circumstances, including date, numbers of individuals of species observed, the outcome of the species observance relative to the authorized project, and any factors which may have affected visibility,

2. if applicable, observed ESA species behaviors and movement types relative to the project activity at time of observation

iii. All monitoring logs must be submitted to the NMFS within 90 calendar days of the completion of the project. The Corps will provide final reports to NMFS as part of the annual report. The final report will be comprised of summaries of monitoring efforts.

B.BMPs for waste and discharge

1. An erosion control plan for the project site and adjacent areas must be prepared and carried out. Erosion controls must be properly installed before any alteration of the project area may take place.
2. A pollution control plan for the project site and adjacent areas must be prepared and implemented. At a minimum, this plan shall include:
    a. Proper installation and maintenance of equipment diapers, or drip pans.
    b. A contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials.
    c. Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
    d. All project-related materials and equipment placed in the water will be free of pollutants.
    e. Daily pre-work inspections of heavy equipment and vessels for cleanliness and leaks, with all heavy equipment operations and vessel use postponed or halted until leaks are repaired and equipment is cleaned.
    f. Fueling of land-based vehicles and equipment shall take place at least 50 feet (15 meters) away from the water, preferably over an impervious surface.
    g. All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
    h. Debris and other wastes will be prevented from entering or remaining in the marine environment during the project.
3. Temporary access roads and drilling pads must avoid steep slopes, where grade, soil types, or other features suggest a likelihood of excessive erosion or failure; existing access routes must be utilized or improved whenever possible, in lieu of construction of new access routes.
4. Temporary fills must be removed in their entirety. All areas impacted by construction

must be returned to pre-construction elevations. The affected areas must be stabilized and revegetated with native species as appropriate.

5. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.

C.BMPs for Activities that may result in <u>Direct Physical Impact</u>

1. Before any equipment, anchor(s), or material enters the water, a responsible party, i.e., permittee/site manager/project supervisor, shall verify that no ESA- listed marine animals are in the area where the equipment, anchor(s), or materials are expected to contact the substrate. If practicable, the use of divers to visually confirm that the area is clear is preferred.
2. Equipment operators shall employ “soft starts” when initiating work each day and after each break of 30 minutes or more that directly impacts the bottom. Buckets and other equipment shall be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo.
3. All objects lowered to the bottom shall be lowered in a controlled manner. This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.

E.BMPs for activities that may result in <u>Exposure to Elevated Noise Levels</u>

1. Maintenance dredging, in-water excavation, movement of large armor stones, and benthic core sampling shall not be undertaken if any ESA-listed marine animals are within 50 meters (54.7 yards, 164 feet) of the authorized work, and those operations will immediately shut- down if an ESA-listed marine animal enters within 50 meters (54.7 yards, 164 feet) of the authorized work. This condition is intended to ensure that no ESA-listed marine animals are exposed to sound levels anywhere near the TTS threshold isopleths.

G. Marina or Harbor Repair and Improvement Activities

1. Repair and replacement of over-water and in-water structures (such as piers, docks, and launch ramps) under Pac-SLOPES is expressly limited to their existing footprints.
2. Repair and removal work will be accomplished in a manner that minimizes the potential spread of invasive species that may reside on the pilings such as immediate removal from the water upon extraction or other appropriate approved containment methods.
3. Removed materials must be disposed of at an approved upland disposal site.

J. Stranded, Injured, Sick , or Dead Marine Mammal or Turtle

1. If observers become aware of any injured, sick, or dead marine mammal or turtle (whether or not it may be related to the proposed action), they will immediately call the NOAA Marine Wildlife Hotline at 888- 256-9840. The observer will be prepared to provide information to the hotline operator about the animal’s condition, location, and other information specific to the situation to help the operator determine the most appropriate response.
2. The observers will submit photos and data as soon as possible regarding stranded,

injured, sick, or dead marine animals that NMFS may use to inform NMFS-directed field responses and/or further analysis to determine whether a taking resulted (see 3. below). Photos and data submitted to NMFS regarding stranded, injured, sick, or dead marine animals will include date, time, location, species, and number of animals, as well as a description of the animal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine animals. The observers will email this documentation to: respectwildlife@noaa.gov, with the subject line indicated as: "Stranded animal information per Pac-SLOPES ESA section 7 consultation."

3. If NMFS responders determine the proposed action resulted in the taking, re-initiation of ESA consultation is warranted. The Corps will collect the following information and include it in the re- initiation request:
    a. Number of individuals and species of listed animals affected;
    b. The date, time, and location of each event (provide geographic coordinates);
    c. Description of the event;
    d. The time the animal(s) was first observed or entered the shutdown zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal;
    e. Mitigation measures implemented prior to and after the take; and
    f. If a vessel struck a marine mammal, the contact information for the observer on duty, or the contact information for the individual piloting the vessel if there was no observer on duty;
    g. Photographs or video footage of the animal(s) (if available).

R. Contact Information

Table 1. Summary of agency contact information.

Reason for Contact	Contact Information
Consultation Questions	ESA email inbox (efhesaconsult@noaa.gov), and Consultation Biologist: Joshua.Rudolph@noaa.gov
Reports & Data Submittal (please include ECO tracking number in subject line)	efhesaconsult@noaa.gov, and CEPOH-Planning@usace.army. mil
NOAA Marine Wildlife Hotline for Notification of Marine Stranding, Entanglement, and Reporting (not related to project activities)	Stranding Hotline (24/7 coverage): (888) 256-9840
Oil Spill & Hazardous Materials Response	U.S. Coast Guard National Response Center: 1-800-424-8802

Illegal Activities (not related to project activities; e.g., feeding, unauthorized harassment, or disturbance to marine mammals)	NMFS Office of Law Enforcement: 1-800-853-1964
NMFS Pacific Islands Regional Office	808-725-5000
USACE Honolulu District Civil and Public Works Branch	CEPOH-Planning@usace.army.mil 808-835-4175

4 ESA BMPs from USFWS

Applicable USFWS Standard BMPs for work in or around aquatic environments (USFWS 2022)

1. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.
2. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, nonnative species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter- control plan and a Hazard Analysis and Critical Control Point plan (HACCP - see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.
3. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (e.g., with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.
4. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.
5. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

Applicable Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands (USFWS 2023a)

DELINEATE THE ACTION AREA AND ZONES OF RISK

1. Delineate the project's action area. The action area includes all areas that may be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. [50 CFR §402.02]. (Related: Indirect effects - those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. [50 CFR §402.02])
2. Delineate the various areas of the project footprint and map buffers around the project footprint along the outer perimeter of areas that may be affected by various project stressors. Threat zones may be delineated within these perimeters. The project footprint should include staging areas outside the construction footprint as well as areas where off-site conservation actions will be conducted to offset project impacts. Delineate the action area within and surrounding the areas of project footprint. For example, include in the action area delineation those areas where project audible noise may exceed 60 decibels (draw a line on the map showing where 60 decibels will occur), and where lighting (the view shed for the increased light pollution), invasive species, increased wildfire threat, changes in water quality, deposition of pesticide, and general human disturbance including line of sight view of human movement and downwind scent from humans, could affect listed species or critical habitat as a result of the proposed action. Also include in the action area the area where edge effects may occur – such as where forest will be more exposed to wind damage due to removal of vegetation within the project footprint, areas where microclimate will be altered, areas where dust from the project site may affect plant photosynthesis, and where groundwater availability or water quality may be affected as a result of the proposed action.
3. Evaluate the stressors associated with different stages of the action that may have different effects with differing spatial and temporal characteristics. Assess the impacts of both the construction in addition to the future uses of the project. For example, clearing of land to construct a building may result in impacts to species during vegetation removal and soil disturbance. Construction may have impacts to a larger or smaller area. Operation and maintenance may entail various disturbances and their associated stressors.

GENERAL MINIMIZATION MEASURES (ALL SPECIES / CRITICAL HABITATS)

Map Native Habitat and Listed Species in the Action Area

To inform project plans, a qualified biologist should thoroughly survey the various threat zones within the action area to map the locations of all threatened and endangered species and their habitats, including host plant locations. A qualified biologist is an environmental professional with at least a bachelor's degree in Biology, Ecology, Natural Resources, Environmental Science, or similar, with significant experience over multiple years working with ESA-listed species and their habitats in Hawaii or the Pacific Islands.

Minimize Removal of Native Vegetation

Refine project site selection based on the information obtained in surveying the action area for listed species and native habitat. Locate development projects on previously-developed areas or areas without native vegetation. Develop the minimum area necessary to complete the project. During and after the completion of project actions, minimize the encroachment and colonization of invasive plant and vine species and restore native vegetation to project areas that do not need to be maintained as open space.

Train Personnel to Avoid Listed Species

Ensure all project personnel involved in construction or use of the proposed action undergo both classroom and field identification training for all listed species they may encounter and that they have systems in place to implement measures to avoid impacts to these species. Maintain records of all training, survey, and listed species observations.

Reduce Risk of Direct Physical Impact

Actions involving the use of heavy equipment such as backhoes and cranes or the placement of materials, such as large stones or concrete shapes, removing debris, clearing vegetation, grading, and dredging have the potential to injure or kill threatened and endangered plants and animals should those species be present during equipment use or project materials placement. Potential injuries and their severity will depend on the species proximity and the nature of the injury to the plant or animal. Refer to the species-specific conservation measures (e.g., buffer distances) below to reduce the potential for direct physical impacts to listed species and require that the project manager ensure the buffer distances are maintained and that all materials and equipment are operated in a controlled manner.

Reduce Entanglement Risk

Temporary or permanent deployment of items such as fencing, wiring, markers, mooring lines, erosion control matting, guy wires, aerial lines, and buoys pose an entanglement or strike risk to flying and swimming wildlife. To minimize the risk, situate these structures well away from areas that may be occupied by species that are vulnerable to strike or entanglement risk, design the structure to minimize entanglement or strike risk, and remove the structure when it is not in use. Use visibility markings on fences and minimized fencing lengths. Use well-maintained single-line moorings with minimal slack in both support and mooring lines, thus preventing loops from forming in the lines. Require the complete removal of mooring systems and fencing at the end of a project's life, along with inspection and maintenance for permanent or long-term deployments, minimizing the risk of entanglement. Use erosion control products with biodegradable netting, rectangular-shaped or flexible mesh with adequate openings will prevent entanglement from erosion control matting.

Avoid Wastes and Discharges

Construction- generated waste may include plastic trash, bags, ropes and lines that could cause digestive blockage, suffocation, or entanglement. Equipment spills and discharges from an action area could include hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could expose protected species to toxic chemicals and contaminate soil or water sources during project implementation. Depending on the chemicals and their concentration, exposure could result in a range of effects, from avoidance of an area to the death of the exposed animal. Short-term effects of accidentally spilled hazardous material could include mortality of ESA-listed species, their prey, or plants that provide habitat. A high concentration of hazardous material may cause suffocation or poisoning of ESA-listed species. Spilled hazardous materials could also injure ESA-listed species or their prey without directly causing mortality through food web interactions. Long-term effects of spilled hazardous materials could include lingering elevated contaminant levels in soils and streambeds that could leach out and continue injuring or reducing reproductive success of ESA-listed species or their prey. Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the environment.

Reduce Wildfire Threat

Wildfire converts significant areas of native forest vegetation to grassland in the Mariana Islands. In a recent 2019 summary, for example, wildfire burned more than 800 acres of shrub and forest vegetation on Guam (https://www.pacificfireexchange.org/research-publications/category/2019-wildfire-summary-in-the-western-pacific). During dry periods, which typically occur February-June and which are more extensive during El Nino years (Aydlett

2017), fires that are otherwise limited to grassy areas burn native forest and shrubland (Athens and Ward 2004, p. 18, Greenlee 2010, entire; Kunz 2018 p. 1, Dendy 2019, entire; Trauernicht and Kunz 2019 p. 1, Trauernicht and Chimera 2020, p. 1 USDA Forest Service, Coral Reef Research Foundation, and Hawaii Wildfire Management Organization, 2023, entire). Where native trees and shrubs are killed by fire, grasses can outcompete native plant seedlings for light, water, and nutrients (Fosberg 1960, p. 40; Stone 1970, p. 184; D'Antonio, and Vitousek 1992, p. 68-70; Minton 2006 p. 21, pp. 25-29; NRCS 2011, p. 1; Johnson 2012, p. 27; and Leary 2018, p. 3-4). Areas converted to grass facilitate the spread of future fires and reduce the area of remaining native forest each successive dry season (Fujioka and Fujii 1980 in Cuddihy and Stone 1990, p. 93; D'Antonio and Vitousek 1992, pp. 70, 73–74; Tunison et al. 2002, p. 122). Implement the following measures to avoid wildfire impacts to listed species; Coordinate further with the Service for project-specific risk assessment assistance when projects will need to exceed the following limits:

1) Restrict activities entailing hot (500 °C or hotter) (or 300 °C for10 minutes or longer or 400 °C for 3 minutes) to areas that are kept bare of vegetation such as paved or maintained gravel areas or keep grass mowed to less than 6-inches in height and develop and maintain wildfire suppression staffing and a system of firebreak roads surrounding the mowed area.
2) Where the above vegetation treatments are not built into the project design, restrict actions to wet times of year when the Keetch-Byram Drought Index (KBDI) is at or below 300 or to periods when KBDI is below 450 and there has been significant wetting rain within the previous 48 hours over the whole area where the high temperature may occur. Historic seasonal KBDI patterns are shown in Figure 1.

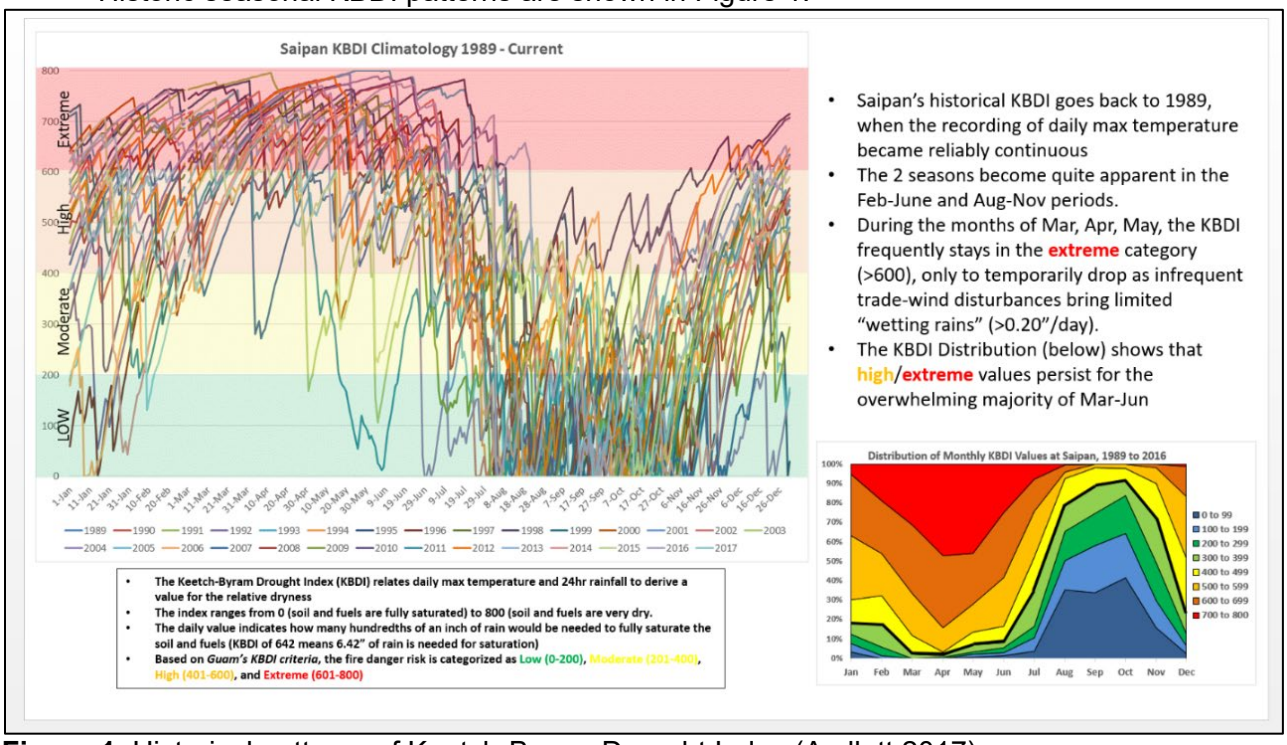


Figure 1. Historical patterns of Keetch-Byram Drought Index (Aydlett 2017).

Biosecurity Protocols

Ensure all work vehicles, machinery, and equipment are cleaned, inspected by its user, and found free of mud, dirt, debris and organisms prior to entry into and exit from the action area.

1) Vehicles, machinery, and equipment must be thoroughly pressure washed in a

designated cleaning area (designated by the responsible land manager) and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs) and other vertebrate species such as rats, mice and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers, grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material (intentionally placed or fallen from trees) are prime sites for accidental transport of invasive species).

2) The interior and exterior of vehicles, machinery, and equipment must be free of garbage and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats will be sanitized with a solution of at least 70-percent isopropyl alcohol or a freshly mixed 10-percent bleach solution.
3) Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter action area. Treatment is the responsibility of the equipment or vehicle owner and operator.

Little Fire Ant:

1) Ensure all work personnel clothing and skin, and all vehicles, machinery, and equipment are inspected for invasive ants prior to moving to the project site and prior to moving from areas occupied by the little fire ant into areas where the ant does not occur.
2) Ensure a visual inspection for little fire ants (*Wasmannia auropunctata*) is conducted prior to entry into action area or movement within the project site, from previously or currently ant-occupied areas, into areas where the ant does not occur.
3) Hygiene is paramount but even the cleanest vehicle may transport little fire ant. Place insect bait into refillable tamper resistant bait stations. Note larger vehicles, such as trucks, may require multiple stations. Monitor bait stations frequently (every week at a minimum) and replace bait as needed. If the station does not have a sticker to identify the contents, apply a sticker listing contents of the station. Refer to the Hawaii Ant Lab's little fire ant fact sheet, which can be downloaded here: https://littlefireants.com/wp-content/uploads/02a-LFA-Fact-Sheet_v2.5_May2020.pdf.
4) Do not use any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) or used in an area infested by ants, for any type of project work until it is sanitized and re-tested following a resting period of at least 24 hours. Infested vehicles must be sanitized following recommendations by the Hawaii Ant Lab (http://www.littlefireants.com) or other ant control expert and in accordance with all State and Federal laws. Treatment is the responsibility of the equipment or vehicle owner and operator.
5) Keep all base yards and staging areas inside and outside natural areas and native habitat free of invasive species.
    a) Ensure base yards and staging areas are inspected at least weekly for invasive species and any invasive found is to be removed immediately. Pay particular attention to where vehicles are parked overnight, keeping areas within 30-feet of vehicles free of debris. Parking on pavement and not under trees, while not always practical, is best.
    b) Project vehicles or equipment stored outside the project footprint, such as a private residence, are to be kept in a pest-free area as defined by the onsite land or project manager.
6) Ensure all cutting tools, including machetes, chainsaws, and loppers are sanitized to remove visible dirt and other contaminants prior to entry into action area and prior to the movement of the tool from an area occupied or formerly known to be occupied by the little fire ant, into an area where the ant is not known to occur. Sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution. One minute after sanitizing, you may apply an oil based lubricant to chainsaw chains or other metallic parts to prevent corrosion.

Coconut Rhinoceros Beetle (CRB)

The coconut rhinoceros beetle (CRB, *Oryctes rhinoceros*) is a large scarab beetle native to Southeast Asia. The species is an invasive pest, the adult beetles primarily attack coconut palms by boring into the crowns to feed on developing leaves. It is also known to feed on bananas, sugarcane, pineapples, oil palms, and pandanus trees. The larval grub stage burrow into and feed upon decomposing mulch and vegetation. On Pacific Islands it has no natural predators, which has led to severe declines and sometimes extirpations of palm species.

The following protocol is recommended for projects that involve green waste and occur on islands where CRB is currently found. For projects with large components of green waste disposal, particularly on Guam and O'ahu, additional consultation with the Service is recommended. For more information about CRB including the current situation on Guam and high/low-risk areas on O'ahu, please visit http://cnas-re.uog.edu/crb/ or https://www.crbhawaii.org/.

Best Management Practices for CRB:

1. Never transport green waste between islands in the Marianas, this also includes:
    1. Mulch, bark, compost
    2. Soil of any kind
    3. Potted plants of any kind
2. Designate secure and managed green waste disposal sites to reduce the number of potential oviposition (laying of eggs) sites and larval food.
3. Green waste disposal sites should be monitored with CRB traps. The following control measures should be utilized at green waste sites.
4. Netting - A gill net with a 1 inch mesh measured knot to knot, made from 0.25 mm nylon monofilament, should be laid over piles of green waste such as palm tree cuttings or decaying organic matter. The netting is helpful for trapping adult beetles emerging from the mulch.
5. If the green waste site is found within or adjacent to chain link fencing, we recommend use of the DeFence trap. These are simply constructed with a 12 ft piece of tekken netting, folded in half, and secured onto a fence line using zip ties. In the middle of the net, attach a solar powered uvLED light, and a CRB pheromone lure protected in a red Solo cup. This trap design is currently among the most effective methods because it does not require many materials and uses the least amount of space on the property.
6. If CRB are detected contact CNMI Forestry at (670) 256-3321 or Department of Lands and Natural Resources at (670) 322-9834 or Guam's Department of Agriculture Biosecurity Division (671) 477-7822 or email at guament@teleguam.net.

SPECIES-SPECIFIC MINIMIZATION MEASURES

Incorporate the following species-specific measures into the project design to minimize the potential for the project to adversely affect listed species.

All Listed Animals - Minimize Outdoor Lighting: Minimize nighttime lighting in forested and beach areas. Direct temporary lighting away from forest habitat. When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with the lowest

lumens necessary). Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary. 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. When activities must be conducted in forested areas where swiftlets may be roosting or foraging, use red light filtered flashlights and headlamps.

*3.25.1.1 Mariana Fruit Bat **(Pteropus mariannus mariannus)** (Gombar 2023)*

a. During all project work, monitor the project site and areas within 150 m (492 ft) of project activity for the Mariana fruit bat and if a bat moves into the area, delay work until the animal(s) have left the area of their own accord. Risks to transiting and foraging Mariana fruit bats will be project-specific; coordinate with our office for assistance assessing the project's disturbance duration and intensity in relation to risks to the bat.

Mariana fruit bats are a large-bodied colonial tree-roosting species. Mariana fruit bats are at their roost during the day and they forage, generally at night, on fruits, nectar, pollen, and some leaves from at least 45 different plant species. Colonies established by one or more bats can grow to over 1,000 individuals. A day roost occupied by one or more female bats is considered a maternal colony. Generally maternal colonies are occupied by a harem of bats – a single male with multiple females. Breeding occurs year-round. Bachelor colonies and solitary male bat roosts are also common. The mother bat carries its bat pups until they become too heavy. When these young bats that are not well developed enough to fly on their own, they are left at the maternal roost when the parents forage at night. Mariana fruit bats are vulnerable at their day roost and foraging habitat to predation by the brown treesnake, disturbance by the little fire ant, and human disturbance. When the Mariana fruit bat on its day roost or when foraging is startled or alarmed by disturbance including viewing human movement, human scent, and noise it is likely to have a stress response and take flight to move away from the disturbance. Prolonged or severe disturbance results in abandonment of the roost. It can take months for bats to return to an abandoned root, if they return at all. Because some members of the public still consider the Mariana fruit bat to be a delicacy and a valued gift to persons of importance, these bats are vulnerable to poaching when they are outside of areas that are actively protected by law enforcement. **Table 1** summarizes the Service's assessment of the potential consequences of human disturbance to the Mariana fruit bat.

Table 1. Summary of Consequences of Human Disturbance to the Mariana Fruit Bat.

Effect to the Colonial Tree-Roosting Bat	Potential Consequences
Startled female drops bat pup	Injury or death of bat pup
Bats abandon maternal colony (a day roost occupied by one or more female bats)	Breeding colony disperses. It can take months for bats to return to an abandoned roost, if they return at all.
	Breeding failure, reduced reproductive effort/success
	Female bat terminates pregnancy
	Increased pup mortality for pup born after dispersal of the colony
	Non-volent bat pup too heavy for the mother bat to carry is abandoned
	Interisland dispersal causes weight loss due to major energy expenditure of long flight; any bat dispersal to public land on Guam is likely to result in their mortality due to poaching.

Bats abandon bachelor colony or solitary male roost	Bachelor colony or solitary male roost is abandoned. It can take months for bats to return to an abandoned roost, if they return at all.
	Bats disperse - interisland dispersal causes weight loss due to major energy expenditure of long flight; any bat dispersal to public land on Guam is likely to result in their mortality due to poaching.
Foraging bat is flushed from feeding - at a site other than its day roost	Stress hormone response; weight loss from increased energy expenditure to get calories
	For the duration of the disturbance, feeding habitat in the project vicinity is removed; bats avoid the area
	Bats disperse - interisland dispersal causes weight loss due to major energy expenditure of long flight; any bat dispersal to public land on Guam is likely to result in their mortality due to poaching.
Nighttime flight / transit is disturbed - bat moves away from disturbance	Bats disperse - interisland dispersal causes weight loss due to major energy expenditure of long flight; any bat dispersal to public land on Guam is likely to result in their mortality due to poaching.
	For the duration of project disturbance, feeding habitat in the project vicinity is removed; bats avoid the area.

Implement the following measures to minimize potential project impacts to the Mariana fruit bat:

1. Avoid removal of and disturbance to (including noise, wildfire, invasive species, human scent, and lighting) bat breeding, feeding, and sheltering habitat.
2. Minimize nighttime lighting in forested areas. Direct temporary lighting away from forest habitat. When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with the lowest lumens necessary). Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary. 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. When activities must be conducted in forested areas where bats may be roosting or foraging, use red light filtered flashlights and headlamps.
3. Avoid human activity within 150 meters (m) (492 feet (ft)) of a Mariana fruit bat day roost; avoid exposing a Mariana fruit bat day roost to any sound in excess of 60 decibels.
    a. To facilitate project design and section 7 consultation, complete surveys of all forest habitat within 150 m (492 ft) of the project site (or the sound-related action area, whichever is larger) for the presence of any Mariana fruit bat day roosts and for transiting or feeding Mariana fruit bats. Methods used to identify roost locations are under development and include watching above the tree canopy to see where bats are flying from when they take flight at dusk, pre-dawn surveys using infrared equipment to further refine bat roost location, and on-the-ground daytime surveys.
    b. No earlier than one week prior to project initiation, complete surveys of all forest habitat within 150 m (492 ft) of the project site (or the sound-related action area, whichever is larger) for the presence of any Mariana fruit bat day roosts and for transiting or feeding Mariana fruit bats. (Note: This measure is intended to minimize disruption to project schedules should a bat occur near the project site. Surveys may be conducted earlier to further facilitate project implementation.)
    c. During project implementation, continue to monitor the action area (the area within 150 meters of project activity or the sound/invasive species/wildfire/lighting/etc., action area, whichever is larger) for the establishment of a Mariana fruit bat day

roost. Coordinate with our office for assistance determining the frequency of day roost surveys - survey frequency (daily, weekly, monthly) which may depend on the frequency and intensity of the anticipated project disturbance. If a Mariana fruit bat day roost is established within 150 m (492 ft) of project activity (or in the project's disturbance-related action area), halt project work and coordinate with our office. Because Mariana fruit bats can establish a day roost in any forest habitat on Guam, we recommend formal consultation for projects lacking flexibility to implement full avoidance measures.

4. Avoid human activity within 150 meters (m) (492 feet (ft)) of a transiting or feeding Mariana fruit bat (these activities generally occur at night). During all project work, monitor the project site and areas within 150 m (492 ft) of project activity for the Mariana fruit bat and if a bat moves into the area, delay work until the animal(s) have left the area of their own accord. Risks to transiting and foraging Mariana fruit bats will be project-specific; coordinate with our office for assistance assessing the project's disturbance duration and intensity in relation to risks to the bat.

Green Sea Turtle & Hawksbill Sea Turtle (Gombar 2023)

a. No vehicle use on or modification of the beach or dune environment during the sea turtle nesting or hatching season (Throughout the year in the CNMI).
b. Do not remove native vegetation.
c. Cease all actions between nesting sea turtles and the ocean.
d. Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.
e. To avoid or minimize potential project impacts to sea turtles from lighting implement the following conservation measures:
f. Avoid nighttime work during the nesting and hatching season (Throughout the year in the Marianas).
g. Incorporate design measures into the action or operation of buildings adjacent to the beach to prevent ambient outdoor lighting from reaching the shoreline such as tinting and reducing the height of exterior lighting to below three feet and pointed downward or away from the beach.
h. Minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.

To avoid or minimize potential project impacts to sea turtles and their nests you will implement the following conservation measures:

1. If work is to commence in potential sea turtle habitat daily searches will be conducted by a qualified biologist before work begins.
2. No vehicle use on or modification of the beach or dune environment during the sea turtle nesting or hatching season (May 1 to December 31 for Hawaii; throughout the year in the CNMI; October 1 to March 31 for American Samoa).
3. Do not remove native dune vegetation.
4. Have a qualified biologist familiar with sea turtles conduct a visual survey of the action area to ensure no basking sea turtles are present.

If a basking sea turtle is found within the action area:

1. Cease all mechanical or construction actions within 100 feet until the animal voluntarily leaves the action area;
2. Cease all actions between the basking turtle and the ocean.

3. Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.
4. Do not stockpile project-related materials in the intertidal zone, reef flats, or stream channels.

To avoid or minimize potential project impacts to sea turtles from lighting implement the following conservation measures:

1. Avoid nighttime work during the nesting and hatching season, which is year-round.
2. Minimize the use of lighting and shield all project-related lights so the light is not visible from the ocean shoreline.
3. If lights can't be fully shielded or if headlights must be used, fully enclose the light source with light filtering tape or filters to use warmer frequencies (red light).
4. Incorporate design measures into the action or operation of buildings adjacent to the beach to prevent ambient outdoor lighting from reaching the shoreline such as tinting or using automatic window shades for exterior windows that face the beach and reducing the height of exterior lighting to below three feet and pointed downward or away from the beach. In order to minimize light intensity, use low pressure sodium 18 watts, 35 watts and lighting sources that produce light of 580 nanometers or longer and, when possible, include timers and motion sensors (Florida Fish and Wildlife Commission, 2018).
5. To avoid impact to nests from foot traffic, implement a 6.1 meter (20 foot) buffer around each nest.

Tree snails (Partula gibba, Partula radiolata, Samoana fragilis)(Gombar 2023)

a. When work must be conducted in forested areas, a qualified biologist should survey the proposed action areas for the presence of tree snails following the approved Service survey protocol.
b. If any tree snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.
c. Avoid cutting or removing vegetation within 60 m (200 ft) of the known occurrence to minimize impacts to the tree snails and their habitat.
d. Mark the trees and shrubs occupied by tree snails with brightly colored flagging tape and keep foot traffic to a minimum of 10 m (33 ft) from marked vegetation to avoid inadvertently dislodging and trampling individuals.
e. Avoid clearing understory and canopy vegetation outside existing developed areas; intact vegetation is important for maintaining microclimates and air movement conditions necessary for tree snail survival.
f. Confine movement of heavy equipment to existing roadways.

The following conservation measures can be adapted for site-specific and project-specific use to minimize the potential for a project to adversely affect listed species. Where unavoidable impacts to listed species are anticipated due to limitations in project design, incorporate conservation measures to ensure the project, overall, will maintain the baseline (maintain the status of the species within the action area). Closely coordinate with the U.S. Fish and Wildlife Service (Service) for assistance developing plans for the translocation and off-site conservation of threatened and endangered species.

Threats to tree snails include habitat destruction and fragmentation resulting from the impacts of nonnative ungulates such as pigs, goats, and deer, habitat modification due to nonnative invasive plants (including forest conversion to grassland due to wildfire), and predation by nonnative reptiles, flatworms and snails.

1. Where work must be conducted in shrub or forested areas, survey proposed project sites for the presence of tree snails. Prior to project implementation, and at a minimum of every three years during project implementation, survey all areas within 100 m (328 ft) of any project area where walking or other project activity may occur for tree snails using the standard prioritized search procedure (Fiedler 2019, entire). If any tree snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected. Because tree snails may be downed and moved to new locations by strong winds, do not conduct project activity that may crush downed tree snails, other than snail survey work, within the 7-day period after typhoon winds in any project site within 100 m (328 ft) of a tree snail location. After any project site within 100 m (328 ft) of an area occupied by a listed tree snail is affected by typhoon-strength winds, re-do tree snail surveys and re-establish buffer protections for new tree snail locations prior to commencing project work. Surveys may only be conducted by a qualified biologist experienced in identifying tree snails and their suitable habitat, with specialized training and field experience surveying for threatened or endangered tree snails in the Pacific Islands.
    a. (Note: Snails, when present, are generally found within the first 5 minutes of searching (Hopper and Smith 1992). At survey sites, qualified surveyors should visually inspect broad-leafed species for 30 min and leaf litter for 10 minutes in search of fresh ground shells. If no live snails or fresh shells are found, the site is believed to not support snails. If live snails are found, quantify snail presence of each species within four $25m^2$ quadrats under dense understory and identify host plants (from Smith 2008)).
2. Physically cordon off, with fencing or netting, for the duration of the project activity, buffer areas to prevent project personnel from entering buffers of 33-ft (10-m) from the outermost snail detection. Alternate methods such as visually flagging buffer areas may be used in some types of projects including areas where field crew work will be restricted to designated roads and trails, and heavy equipment will not encroach into the buffer.
3. To avoid potential adverse effects to listed tree snails, avoid clearing understory and overstory forest vegetation outside existing developed areas. Intact vegetation is important for maintaining microclimates and air movement conditions that allow snails to survive in a given area.
4. Avoid cutting or removing vegetation within 200 feet of the known occurrence to minimize impacts to the tree snails and their habitat.
5. Avoid clearing shrub and forest vegetation outside existing developed areas. Intact vegetation is important for maintaining microclimates and air movement conditions that allow snails to survive in a given area.
6. Confine movement of heavy equipment to existing roadways. If helicopters are used to reach the project site, avoid affecting the occupied site with helicopter rotor wash that could dislodge snails by selecting alternate landing areas.
7. Avoid the use of insecticide within 100 m (328 ft) of any listed tree snail locations. Avoid the aerial application of insecticide via helicopters where listed tree snails occur.

5 Migratory Bird Treaty Act BMPs (USFWS 2023b)

1) Migratory Bird Species List:
Per Guam DoAg: The project area is an active area for nesting white fairy tern, *Gygis alba* and yellow bittern, *lxobrychus sinensis*, protected under the Migratory Bird Treaty Act. Nesting season is year-round for both species. Micronesian starling, *Aplonis opaca*, occurs in Hagatna area. This species is cavity nesters and nest year-round.

2) Conservation Measures to reduce project effects on birds:

- The Migratory Bird Treaty Act prohibits the take (killing, capturing, selling, trading, and transport) of migratory birds (and their nests, eggs, and parts) without prior authorization by U.S. Fish and Wildlife, even if that take occurs incidentally (i.e. unintentionally) to the purpose of otherwise legal activities (This rule was temporarily changed by Dept. of Justice solicitors in December 2017, but that change has since been revoked as of December 3rd 2021). Nests that are inactive can be removed without a permit, but cannot be kept or retained without a permit (More restrictive rules apply to eagles). If incidental take of migratory birds is likely at any point during the project, please contact your regional Migratory Bird Permit Office for further information.
- Between August and May, migratory shorebirds frequent the shoreline to forage and roost. ACOE and their contractor must have a biologist on site to survey for nesting birds and presence of other migratory birds during August and May period when these species occur on island, one week prior the project start date.
- All work is to cease until the species leave their area on its own volition.
- Nesting birds present must not be disturbed and all work 150 feet from the nests must not occur until the completion of the nesting period.
- All construction equipment and materials must be covered when not in use or stored on site.

6 FWCA Recommendations and BMPs from NMFS for East Hagatna (NMFS 2023c)

1. The length of the proposed revetment appears fairly long, so it may be best to consider a staged approach to the dredging and filling (D&F) operations. D&F in the intertidal habitat should be timed to avoid operations in areas that are submerged.
2. Limits on the placement and use of people and equipment in submerged areas are recommended, and direct interactions with vegetative habitats and corals should be avoided.
3. Low impact design (LID) principles should be considered in the revetment design and along the edge of the adjacent road, with a focus on storm water management, sediment impoundment and the control and filtering of urban runoff.
4. Fisher access to the seasonal rabbitfish fishery should be considered and should not be meaningfully inhibited by the project.
5. The area is designated as Essential Fish Habitat, so an EFH MSA consultation will be required. Full consideration should be given to the conservation recommendations that result from that consultation.

6. Appropriate precautions and work stoppages should be implemented if mobile ESA listed species approach or enter the work area. Specific ESA conditions and conservation recommendations may be obtained in consultation with our NMFS Protected Resources Division.
7. Monitoring of adjacent and regional beach profiles and the distribution and densities of regional seagrasses should be implemented to assess the short and long-term effects of the proposed project. Such data will be very useful in informing future Guam revetment proposals and predictions, which we foresee increasing in number and need. Pre- and post-construction measures should be made in the adjacent habitat and appropriate reference areas. Additional measures should be made 3 to 5 years following the project's completion to provide for long-term inference on revetment beach and submerged resources effects.

7 CZMA BMPs from GBSP (2023 and 2024)

Development Policy 5. Hazardous Areas.

Identified hazardous lands, including floodplains, erosion-prone areas, air installations, crash and sound zones and major fault lines shall be developed only to the extent that such development does not pose unreasonable risks to the health, safety or welfare of the people of Guam, and complies with the land use regulations.

1. The project area is identified as a coastal high hazard flood zone (Zone VE -1% Annual Chance Flood Hazard) in the FEMA Flood Insurance Rate Maps. The proposed project is water dependent and in order to reduce beach erosion and coastal storm risk, the locale in direct proximity to the waterline is necessary. Project activities within the flood zone would comply with all applicable laws and regulations. The project is not located in geologically unstable zones, such as cliff lines or severe slopes. The construction of the proposed project would reduce the risk to human life and safety and facilitate floodplain management.
2. The project is within a Special Flood Hazard Area, which is subject to Guam's Floodplain Management Ordinance, which can be found on pages 168-175 the 2022 Guidebook to Development Requirements on Guam. The guidebook can be made available upon request by the Guam Coastal Management Program.
3. Pursuant to Development Policy 5, Hazardous Areas, the federal agency shall be advised to ensure that the final design for the project meets the standards established for Special Flood Hazard Areas in the Floodplain Management Ordinance.

Resource Policy 2. Air Quality.

1. All activities and uses shall comply with all local air pollution regulations and all appropriate Federal air quality standards in order to ensure the maintenance of Guam's relatively high air quality.
2. Disturbance of the ground surface and other construction activities may result in temporary and localized effects to air quality as a result of the generation of fugitive dust. Appropriate BMPs should be used to address fugitive dust.
3. Pursuant to Resource Policy 2, Air Quality, the applicant shall:
    a. Comply with the Air Pollution Control Act.
    b. Use appropriate fugitive dust BMPs, including good housekeeping, dust suppression using water or chemical dust suppressants, covering open-body trucks when hauling material that may release material into the air, installing

windbreaks or fences near ground disturbing activities and around storage piles.

Resource Policy 3. Water Quality.

1. Safe drinking water shall be assured, and aquatic recreation sites shall be protected through the regulation of uses and discharges that pose a pollution threat to Guam's waters, particularly in estuarine, reef and aquifer areas.
2. Ground disturbance and construction activities upland and within the intertidal zone may adversely affect the coastal use and resource. Best management practices should be implemented and maintained throughout the entire construction process to prevent pollution and to protect Guam's waters.
3. Comply with the Water Pollution Control Act, 10 GCACh. 47; the Guam Safe Drinking Water Act, 1 0 GCA Ch. 53; and the Water Resources Conservation Act 10 GCA Ch. 46.
4. Any work that disturbs the ground's surface must be protected through appropriate implementation of erosion and sediment control (E&SC) BMPs, installed in accordance with the Guam Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10). As required in the regulations, necessary permits must be secured prior to start of construction activities and earth-moving operations shall be performed so as not to violate applicable provisions of the Guam Water Quality Standards Regulations (22 GAR [Ch.] 05).
5. Construction BMPs must be installed in conformance with the design criteria of the 2006 CNMI & Guam Stormwater Management Manual, as implemented by Executive Order 2012-02 and the Guam Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10), to adequately treat and carry surface water run-off into a catchment facility within the project site. These BMPs will prevent erosion damage and sedimentation that circumvents water quality impact or water degradation. BMPs must be provided at the source to ensure that water quality standard limitations are adequately met. The following are the Guam EPA recommended BMPs that will help minimize water quality impacts:
    a. During construction, the contractor must ensure that project materials, such as gravel and boulders, are free from silt or sediments or washed materials must be used. No materials are allowed to be stockpiled in marine waters.
    b. Project related materials and equipment are not allowed to be in the water. The contractor must ensure that equipment used at the project site will not cause oil leaks and a spill prevention kit must be readily available at the site. Providing oil drip pans with the equipment when parked is highly recommended.
    c. Appropriate erosion and sediment control measures must be provided by the contractor to prevent sediment to be carried by stormwater run-off or prevent any water flows into nearby water bodies.
    d. Dredge or excavated materials from the areas with waters must be stockpiled inside the berm or silt fence to ensure that water displacement from the dredge spoil will not carry sediment back into fresh or marine waters.
    e. Installing silt curtains or other appropriate sediment containment devices is highly recommended in areas where work in the water will be conducted to ensure that sediment will be contained in the work area --- avoiding any water quality degradation.
    f. Construction debris and other waste must be prevented from entering water bodies during construction and must be disposed of in a proper manner at Guam EPA permitted sites.
6. Prior to the start of construction, [the] contractor must prepare and submit the Environmental Protection Plan (EPP) and Erosion and Sediment Control Plan (E&SCP)

as required [by] (22 GAR [Ch.] 10). The EPP will describe the environmental protective measures such as methods and equipment to be used, management of expected or anticipated environmental problems during and after construction, and methods on how to control or mitigate potential adverse effects on the environment during construction.

7. The construction contractor must ensure that construction activity will not violate the Guam Water Quality Standards regulations or contribute to significant degradation of the waters of Guam.
8. The proposed project is qualified under the coverage of the "Stormwater Construction General Permit" (CGP), under the National Pollutant Discharge Elimination System (NPDES) permit system. A Notice of Intent (NOi) and Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the U.S. Environmental Protection Agency (USEPA). Copies of the Noi and SWPPP must also be submitted to Guam EPA as required by Section 10105.B.5.d of Guam's Soil Erosion and Sediment Control Regulations (22 GAR [Ch.] 10). Guam provisions stated in the NPDES Stormwater 2022 CGP must be strictly implemented to ensure water quality in the area is protected.
9. Any construction dewatering activities must be permitted prior to any dewatering actions. Provisions stated in the USEPA 2022 NPDES CGP. Section 2.4-dewatering requirements must be considered in the implementation of dewatering activities. Prior to discharge, all construction discharges must be treated to the degree that meets Guam water Quality Standards.
10. Ensure that construction activity will not violate the Guam Water Quality Standards regulations or contribute to significant degradation of the waters of Guam.
11. Submit a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) to the U.S. Environmental Protection Agency (USEPA) relative to the Construction General Permit. Copies of the NOI and SWPPP must also be submitted to Guam EPA Guam provisions stated in the NPDES Stormwater 2022 CGP must be strictly implemented to ensure water quality in the area is protected.
12. Ensure that any construction dewatering activities is permitted prior to any dewatering actions.

Resource Policy 4. Fragile Areas.

1. Development in the following types of fragile areas shall be regulated to protect their unique character: historic and archeological sites, wildlife habitats, pristine marine and terrestrial communities, Limestone forests, and mangrove stands and other wetlands.
2. Be advised to have a biologist on site to survey for nesting protected species of birds under the Migratory Bird Treaty Act one week prior to the project start date (white fairy tern, *Gygis alba*, yellow bittern, *Ixobrychus sinensis*, and Micronesian starling, *Aplonis opaca)*. Should any protected bird species be present, cease all work until the species leaves of its own volition. Nesting birds present should not be disturbed and all work within 150 feet should cease until completion of the nesting period. Cover all construction equipment and materials when not in use or stored on site, to avoid opportunistic nesting.
3. Be advised to install a buffer between the project site and the nearby seagrass colony.

Resource Policy 6. Visual Quality.

1. Preservation and enhancement of, and respect for the island's scenic resources shall be encouraged through increased enforcement of and compliance with sign, litter, zoning, subdivision, building and related land-use laws. Visually objectionable uses shall be located to the maximum extent practicable so as not to degrade significant views from

scenic overlooks, highways and trails.

a. Route 1 is adjacent to Hagatna Bay, offering a unique scenic experience for motorists and other users such as organized Guam Marathons, recreational runners, and bikers. The natural charm of the area also includes mature native trees that provide texture and color to the marine and mosaic skyline backdrop of the bay. The height of the proposed precast concrete seawall can potentially have a reasonable and foreseeable impact on the significant scenic resource of Hagatna Bay.

2. Demolition/rehabilitation/construction activities will result in the generation of solid waste which must be disposed of appropriately. Any temporary BMPs installed during the project must be removed when the rehabilitation/construction activities have been completed.
3. Pursuant to Resource Policy 6, Visual Quality, the applicant agency shall:
    a. Ensure the height of the proposed seawall does not gravely diminish the view of the bay.
    b. Ensure to save, transplant, or replant the equivalent biomass along the upland extent of the project area. This could allow for designing the structure to allow for intermittent tree planting integration.
    c. Ensure proper disposal of all solid waste generated as a result of the project.
    d. Remove any temporary BMPs installed during the project once rehabilitation/construction activities have been completed.

Resource Policy 8. Public Access.

1. The public's right of unrestricted access shall be ensured to all non-federally owned beach areas and all territorial recreation areas, parks, scenic overlooks, designated conservation areas and their public lands; and agreements shall be encouraged with the owners of private and federal property for the provision of releasable access to and use of resources of public nature located on such land.
2. Seasonal fish runs for Ti'ao, Manahac, E'e, and Atulai occurs throughout the year. During the seasonal fish run fishers will use the area more frequently. Reasonable access should be provided for fishers during the seasonal fish run.
3. The proposed development project is along an existing, narrow beach along much of its span and adjacent to submerged lands used as a recreational area. The demolition of the existing seawall and construction of the proposed seawall would limit access to the beach. The effect of the design height and material used in the seawall will impact public access to the shoreline.
4. Pursuant to Resource Policy 8, Public Access, the applicant shall:
    a. Ensure reasonable access for fishers during the seasonal fish run is not impacted.
    b. Ensure that public access to the recreational waters and the surrounding beach areas outside the project area are not restricted by the federal agency or its contractors.
    c. Ensure that the final engineering design reasonably provides access to the recreational waters in Agat Bay.

8 Noise and Vibration

The construction contractor shall be required to comply with any municipal noise and vibration ordinances of the Territory of Guam. Activities requiring use of heavy equipment shall be limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Saturday, except Federal holidays and locally observed holidays on Guam. There shall be no construction permitted on Sunday, Federal holidays, or locally observed holidays unless approval is obtained prior.

9 Invasive Species (E.O. 13571 Invasive Species)

Source materials will be free of invasive species and equipment will be cleaned to avoid moving species between locations.

10 Cultural, Historic, and Archaeological Resources (SHPO

USACE will provide for an archaeological monitor who meets the Secretary of the Interior's Historic Preservation Professional Qualification Standards (62 FR 33708) to monitor all ground-disturbing construction activities to minimize potential impacts on inadvertent discoveries. USACE will work with the Guam Historic Resources Division and other stakeholders to develop a Memorandum of Agreement (MOA) pursuant to 36 CFR § 800.6 that will identify appropriate actions to minimize or resolve adverse effects on subsurface historic properties. The MOA will include a Human Remains Recovery Plan in accordance with Guam Territorial Executive Order No. 89-24; the Recovery Plan will adhere to the Guam Department of Parks and Recreation's 2010 Section IV Reburial Guidelines Amendment.
Both a cultural resource finds clause and human remains discovery clause will be included in the project specifications. If any subsurface cultural resources or burials are uncovered during construction activities, all activities will be halted immediately within the area and reported to USACE archaeological staff within 24 hours of discovery. Once reported, USACE archaeological staff will initiate coordination with the appropriate Federal and state agencies. Additional work in the area of the discovery will be suspended at the site until compliance with the executed MOA and all Federal, state, and territorial regulations is successfully completed and USACE archaeological staff provide further directive.

11 References

GBSP. 2023. RE: Coastal Zone Management Act (CZMA) Federal Consistency Review for U.S. Army Corps of Engineers' Consistency Determination for its proposed Emergency shoreline protection of South Marine Corps Drive at Hagatna Bay (GCMP FC No. 2023-0079).

GBSP. 2024. RE: Coastal Zone Management Act (CZMA) Federal Consistency Review for U.S. Army Corps of Engineers' Consistency Determination for its proposed Emergency Shoreline Protection of South Marine Corps Drive at Hagatna Bay (GCMP FC No. 2023-0019 Supplemental)

GSHPO. 2024. Subject: East Hagatna Shoreline Protection Project RC#2022-0529. April 17, 2024.

NMFS. 2023a. Response to EFH Consultation. October 12, 2023.

NMFS. 2023b. Response USACE Shoreline Protection Project 508.

NMFS. 2023c. NMFS Planning Aid Letter for the East Hagatna Emergency Shoreline Protection Project. July 13, 2023.

NMFS. 2024. RE: Request for reinitiation: USACE Shoreline Protection Project for East Hagatna, Guam. May 20, 2024.

USACE and NMFS. 2022a. Magnuson-Stevens Fishery Conservation and Management Act, Programmatic Essential Fish Habitat Consultation.

USACE and NMFS. 2022b. Biological Evaluation of the Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES).

USFWS. 2022. U.S. Fish and Wildlife Service's Recommended Standard Best Management Practices - Aquatic Environment. https://www.fws.gov/media/best-management-practices-work-or-around-aquatic-environments-bmps.

USFWS. 2023a. DRAFT Recommended Measures to Minimize Potential Project Impacts to Threatened and Endangered Species and Critical Habitats in the Mariana Islands. August 3, 2023.

USFWS. 2023b. Migratory Bird Protections in Guam. July 7, 2023

Attachment 10. Draft Finding of No Significant Impact

DRAFT FINDING OF NO SIGNIFICANT IMPACT
HAGATNA, GUAM

The U.S. Army Corps of Engineers, Honolulu District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Draft Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated 7 May 2024, for the East Hagatna Emergency Shoreline Protection addresses protection of 1630 feet of shoreline on Hagatna Bay along South Marine Corps Drive in Hagatna, Guam. The final recommendation is contained in the report of the Chief of Engineers, dated TBD.

The Draft IFR/EA, incorporated herein by reference, evaluated four (4) alternatives n detail, including the No Action Alternative, synonymous with no Federal Action, and analyzed as the Future Without Project (FWOP) condition for comparison with the three (3) action alternatives, including the Proposed Action. The Proposed Action (Alternative 3) is the National Economic Development (NED) Plan , least cost and environmentally acceptable plan and entails replacement of 1630 linear feet of a seawall with a 1 ft wide, 8.5 ft tall precast concrete seawall to reduce the threat of coastal erosion to South Marine Corps Drive and adjacent utilities. Construction of the revetment will require:

- Demolition of approximately 1630 linear feet of existing seawall
- Excavation of soils to the limestone shelf
- Placement of cantilever concrete panels to form a seawall to replace failing sections of the existing seawall
- Regrading excavated areas to the elevation of the existing ground surface
- The precast concrete seawall consists of the following components:
  - Precast concrete cantilever wall panels
  - Splash apron composed of formed concrete over gravel fill
  - Concrete stairs to allow for beach access

A crest elevation of 8.5 ft above MSL meets the USACE 50-year design requirement for sea level change (SLC) and is adaptable to 100-year SLC.

In addition to a “no action” plan, three (3) alternatives were evaluated as described in Section 5. The alternatives included:

- Alternative 2: Revetment
- Alternative 3: Precast Concrete Seawall
- Alternative 4: Concrete Rubble Masonry (CRM) Wall

Natural and Nature-based measures considered included beach fill which was not carried forward because renourishment would be necessary for performance over the 50-year period of analysis and was not feasible under CAP 14 authority. The non-structural measure of relocation of South Marine Corps Drive and buried utilities inland to avoid coastal storm damages was not carried forward because the associated costs were too high. Section 3.4 of the IFR/EA includes a description and section 5.0 includes a comparison of these alternatives.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table S-1:

Table S-1: Summary of Potential Effects of the Recommended Plan.
*Mitigation in the context of this Table refers to the avoidance and minimization measure (BMPs) outlined in Section 6.9 Environmental Commitments of the IFR/EA

	Significant effects	Less than significant effects	No Effect	Beneficial Effect
Climate	☐	☐	☒	☐
Air Quality*	☐	☒	☐	☐
Geology	☐	☒	☐	☐
Hydrology	☐	☒	☐	☐
Water Resources and Quality*	☐	☒	☐	☐
Hazardous, Toxic & Radioactive Wastes	☐	☐	☒	☐
Noise*	☐	☒	☐	☐
Terrestrial Habitats and Species*	☐	☒	☐	☐
Marine Habitats and Species*	☐			

☒
☐
☐

Threatened/Endangered Species/Critical Habitat* ☐
☒
☐
☐

Essential Fish Habitat* ☐
☒
☐
☐

Special Aquatic Sites*☐
☒
☐
☐

Invasive Species* ☐
☒
☐
☐

Land use* ☐
☒
☐
☐

Public infrastructure* ☐
☒
☐
☐

Socioeconomics ☐
☐
☐
☒

Environmental justice ☐
☐
☐
☒

Historical and Archaeological Resources* ☐

☒
☐
☐

Other cultural resources* ☐
☒
☐
☐

Aesthetics ☐
☒
☐
☐

*Effect would cause no substantial adverse change in the environment as measured by the applicable significance criteria; however, standard best management practices have been incorporated that would avoid or reduce the environmental effects to less-than-significant levels.

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan, which include best management practices (BMPs) as detailed in section 6.9 of the IFR/EA

The USACE published a public notice on DD MONTH 2024. Public review of the draft IFR/EA document and FONSI was completed on DD MONTH 2024. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI.

ENDANGERED SPECIES ACT
INFORMAL CONSULATION:

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the USACE determined that the Proposed Action is not likely to adversely affect the following federally listed species or their designated critical habitat: Green Sea Turtle (Chelonia mydas); Hawksbill Sea Turtle (Eretmochelys imbricate); the coral Acropora globiceps, tree snails, and Mariana Fruit Bat (Pteropus mariannus mariannus) and its designated critical habitat; U.S. Fish and Wildlife Service (FWS) (did not) concur(red) with USACE determination on TBD. National Marine Fisheries Service (NMFS) (did not) concur(red) with USACE determination on TBD

NATIONAL HISTORIC PRESERVATION ACT
HISTORIC PROPERTIES NOT ADVERSELY AFFECTED:

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to cause adverse effects on historic properties. The Guam Historic Preservation Office (GHPO) concurred with the finding on April 29, 2023, that no historic properties would be affected by the project. However, consultation has identified at least one burial within the APE and there is a likelihood that subsurface cultural resources and/or other burials exist that could be impacted by construction along the shoreline. Consultation with the Guam State Archaeologist identified additional cultural resources and burial locations that have not yet been formally reported. USACE has therefore proposed to conduct a phased identification and evaluation effort pursuant to 36 CFR § 800.4(b)(2) and to develop a Memorandum of Agreement (MOA) in

accordance with 36 CFR § 800.6 that will identify actions to minimize or mitigate significant impacts as required.

CLEAN WATER ACT SECTION 404(B)(1) COMPLIANCE

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in Attachment 4a of Appendix A-3 of the IFR/EA.

CLEAN WATER ACT SECTION 401 COMPLIANCE:

401 WQC PENDING:

A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the Guam Environmental Protection Agency (GEPA) prior to construction. USACE has obtained a letter of confirmation from the GEPA dated TBD stating that GEPA has no preliminary issues with the USACE moving forward with further designs of this project. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

COASTAL ZONE MANAGEMENT ACT

CZMA CONSISTENCY PENDING:

A determination of consistency with the Guam Coastal Zone Management program pursuant to the Coastal Zone Management Act of 1972 was sent to the Guam CZM Program. All conditions of the consistency determination shall be implemented in order to minimize adverse impacts to the coastal zone.

OTHER SIGNIFICANT ENVIRONMENTAL COMPLIANCE:

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

USACE has coordinated this project with NMFS pursuant to the requirements of the Marine Mammal Protection act (MMPA) and determined that a MMPA permit is not required due to the determination that the type of activities associated with this project do not have the potential to cause a take of a marine mammal.

Implementing the Recommended Plan would result in minimal adverse effects to Essential Fish Habitat (EFH) with no potential for substantial adverse effect to EFH or Managed Unit Species. In the long-term, there are no expected residual adverse effects to EFH or Managed Unit Species. The USACE has determined that a general conformity determination is not required for the Proposed Action. The Proposed Action complies with the requirements of Section 176(c) of the Clean Air Act.

In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the USACE has determined that Environmental Justice Communities would not be subject to disproportionately high and adverse human health or environmental effects because of the Proposed Action. Therefore, the Proposed Action complies with this Executive Order.

No wetlands are located within the proposed project area. Therefore, the Proposed Action complies with Executive Order 11990, Protection of Wetlands.

The Proposed Action would not modify the existing floodplain or flow conveyance capacity of any stream or waterway or change the 100-year floodplain. Therefore, the Proposed Action complies with Executive Order 11988, Floodplain Management.

Technical criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

NAME
RANK, Corps of Engineers
District Commander