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**Final Environmental Assessment**  
**Garapan Fishing Base Shoreline Revetment,**  
**Saipan, Commonwealth of the Northern Mariana Islands**  
RTID 0648-XB266



June 9, 2022

Responsible Agency: Pacific Islands Regional Office (PIRO)  
National Marine Fisheries Service (NMFS)  
National Oceanic and Atmospheric Administration (NOAA)

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**Abstract**

The National Marine Fisheries Service (NMFS) proposes to provide Federal funds to the Western Pacific Fishery Management Council (Council) to support construction of a rock revetment along Garapan Fishing Base, Saipan, Commonwealth of the Northern Mariana Islands (CNMI). A revetment is a passive structure that protects against erosion caused by wave action, storm surge, and currents. The Council would, in turn, provide funds to the CNMI Department of Lands and Natural Resources (DLNR), the project proponent, to construct the revetment along the land-lagoon interface stabilizing 380 ft of shoreline along Garapan Fishing Base. Stabilizing the shoreline would protect public land and infrastructure and reduce erosion resulting in improved water quality in Saipan Lagoon along shore. Garapan Fishing Base supports



sustainable fishing infrastructure including a boat ramp, trailer parking, and supports other community activities including shore fishing, community markets and recreation. DLNR proposed and designed the project and would be the project lead. During construction, DLNR would implement a suite of best management practices intended to protect air and water quality, marine benthic habitats and wildlife, historic resources, and other features of the coastal and marine environment.

NMFS prepared a finding of no significant impact (FONSI) supported by the final EA after considering public comment and concluding environmental compliance reviews. Access the [Federal Electronic Rulemaking Portal](#) or by searching <https://www.regulations.gov> using search term, "RTID 0648-XB266."

If you need assistance with this document, please contact NMFS at 808-725-5000.

Cover photograph: Eroding bank at Garapan Fishing Base and Saipan Lagoon. Credit: CNMI DLNR 2021.

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## Abbreviations

APC	Area of Particular Concern (CNMI)
AToN	Aid to Navigation
BECQ	CNMI Bureau of Environmental and Coastal Quality
BMP	Best Management Practice(s)
CEQ	Council on Environmental Quality
Corps	U.S. Army Corps of Engineers (also USACE)
Council	Western Pacific Fishery Management Council
cyd	cubic yards or yd <sup>3</sup>
CNMI	Commonwealth of the Northern Mariana Islands
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DA	Department of the Army
DCRM	CNMI Division of Coastal Resources Management (BECQ)
DLNR	CNMI Department of Lands and Natural Resources
DPS	Distinct Population Segment
DFW	CNMI Division of Fish and Wildlife (DLNR)
EA	Environmental Assessment
EFH	Essential Fish Habitat
ENSO	El Nino Southern Oscillation
EO	Executive Order
ESA	Endangered Species Act
FEP	Fishery Ecosystem Plan
FONSI	Finding of No Significant Impact
FR	Federal Register
ft, ft <sup>2</sup>	foot, feet, square feet
fm	fathom (6 ft)
GHD	GHD, Inc. (company name)
HAPC	Habitat Areas of Particular Concern
HCD	Habitat Conservation Division (PIRO NMFS)
HPO	Historic Preservation Office
MCP	Marine Conservation Plan
MHHW	Mean High High Water
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
nm	nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PIRO	Pacific Islands Regional Office
PRD	Protected Resources Division (PIRO NMFS)
SFD	Sustainable Fisheries Division (PIRO NMFS)
USACE	U.S. Army Corps of Engineers, also Corps
USFWS	U.S. Fish and Wildlife Service
WPFMC	Western Pacific Fishery Management Council or Council
y	yard, yards

## **1 Introduction**

National Oceanic and Atmospheric Administration’s (NOAA) National Marine Fisheries Service (NMFS) proposes to provide Western Pacific Sustainable Fisheries Funds (SFF) to the Western Pacific Fishery Management Council (Council) to support construction of a rock revetment along Garapan Fishing Base, Saipan, Commonwealth of the Northern Mariana Islands (CNMI). A revetment is a sloping structure that is placed on a bank or cliff in such a way as to absorb the energy of incoming water. The revetment protects against erosion caused by wave action, storm surge, and currents. The Council would, in turn, provide funds to the CNMI Department of Lands and Natural Resources (DLNR) to construct the revetment along the land: lagoon interface stabilizing 380 ft of shoreline. DLNR proposed and designed the project and would be the project lead. The project is intended to protect public infrastructure and improve water quality in nearshore Saipan Lagoon. It would also improve public safety and aesthetics. Garapan Fishing Base supports the fishing community and has a boat ramp and parking area for boat trailers and vehicles. Other activities include shore fishing from the nearby pier, along shore, and in coastal lagoon waters, and community markets.

Western Pacific SFF funds derive from Pacific Insular Area Fishery Agreements, certain fines and penalties paid by foreign vessels for violations occurring in the U.S. exclusive economic zone around the CNMI, and funds associated with specified fishing agreements between the CNMI and authorized Hawaii longline fishing vessels. Section 204(e)(7) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) provides for the Council to use SFF Funds to implement projects identified in an approved three-year marine conservation plan or MCP (DLNR 2019). NMFS approved the 2020–2023 MCP for the CNMI on August 4, 2020 (85 FR 29934; May 19, 2020). According to the Council’s application for SFF XII funds (WPFMC 2017), the revetment project supports the CNMI government’s achievement of Objective 4 which is to, “Promote responsible domestic fisheries development to provide long term economic growth and stability and local food production” (DLNR 2019). According to the CNMI MCP, such projects support fisheries development resulting in the harvest of optimal yield of marketable species for both local consumption and export markets. Specific projects listed under Objective 4 include, “Support construction of or improvements to boat harbors, piers, boat ramps, and vessel access points that allow for more efficient and safer access for fishing vessels,” and are a high priority for the CNMI.

### **1.1 Purpose and Need for Action**

The purpose of providing Sustainable Fisheries Funds to the Council is to fund the DLNR’s proposal to build a shoreline revetment at Garapan Fishing Base. The purpose of the revetment is to protect public land and infrastructure that supports responsible domestic fisheries development. The revetment is needed to stabilize the eroding coastline fronting Garapan Fishing Base to protect public land and infrastructure and improve nearshore water quality. By protecting public fisheries infrastructure against erosion, the proposed action would help provide long-term economic growth and stability, support local food production, and enhance food security for the CNMI. Controlling erosion would improve water quality in Saipan Lagoon, which is an important economic, cultural, and biological resource for the CNMI. Improved water quality is expected to increase resilience of the marine environment and improve resilience of

nearshore coastal resources to effects of climate change. Improving the eroding coast would also improve safety and aesthetics.

## 1.2 Highlights of Proposed Action

NMFS proposes to provide Sustainable Fisheries Funds to the Council to support DLNR’s construction of a rock revetment along Garapan Fishing Base, Saipan, CNMI (Figure 1). The Council would in turn, provide funds to the DLNR to construct the revetment along the land: lagoon interface stabilizing 380 ft of shoreline. DLNR proposed the revetment project and would be the project lead. The proposed action is not being undertaken at the direction of or on behalf of NMFS or the Council. Project plan diagrams are included as Appendix A-1 (GHD 2020a). In 2017, the Council estimated the revetment would cost \$80,000 for each 100 ft (WPFMC 2017). The actual funding amount would depend on funding needs at time of construction and the monies available in the SFF. We estimate funding would be around \$320,000. Actual funding availability for this program is contingent upon Federal appropriations.

Garapan Fishing Base is public land and the project is located at 15°12’ North, 145° 43’ East. Section 3 provides more details of construction. Figure 2 in section 3.1 shows an aerial view of Garapan Fishing Base and the approximate location and extent of the revetment.

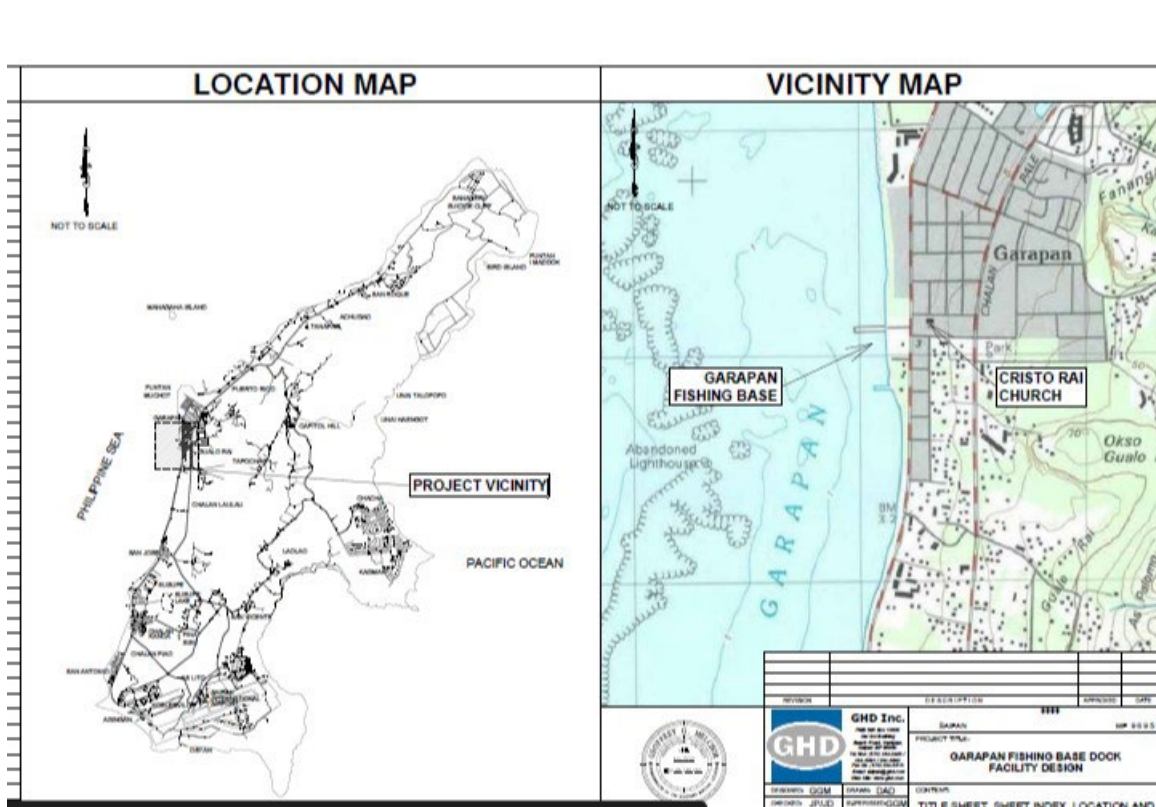


Figure 1. Location of the project in western Saipan, CNMI. Credit: GHD (2020a). Map image based off a U.S. Geological Survey topographic map.



DLNR would be responsible for obtaining required construction permits and would hire a contractor to build the revetment according to the approved plans and contract requirements.

During construction, DLNR would implement a suite of best management practices (BMPs) intended to protect air and water quality, marine benthic habitats and wildlife, historic resources, and reduce noise effects on the coastal and marine environment. DLNR would ensure the contractor follows BMPs highlighted in Appendix A-2 and complies with all other required permit conditions that would include all U.S. Army Corps of Engineers Nationwide Permit (NWP) terms and conditions, General and Regional Conditions; and local construction permit requirements.

Construction would proceed in phases depicted on the attached project plans (Appendix A-1). Phase I begins south of the storm drain which is adjacent to (south of) the Garapan boat ramp. Phase I would extend south along the coast approximately 100 ft (Beginning of Project to Station 1+00). Phase II is the next 100 ft (from Station 1+00 to Station 2+00). Phase III would begin at Station 2+00 through the end of the project (Station 3 +38.9) ending a foot within the property boundary. The revetment would be built of locally mined limestone rock. It would extend approximately 340 ft along the coast, with the final 40 ft consisting of flanking rocks. The revetment crest would be generally 4 to 5 ft in elevation and cemented along the crest for stability. The toe would be set offshore at 4.5 ft below grade and buried in sand and gravel for stability and scour protection. The revetment would extend approximately 15 ft offshore; however, the bottom of the revetment and toe is to be buried in sand, so it would appear to extend between 5 and 8 ft offshore at low tide along most of its length.

Garapan Fishing Base (also called “Fishing Base Boat Ramp” and “Fishing Base”) is a public facility managed by the DLNR on the coast of central western Saipan. Fishing Base is south of and just outside of the main commercial and tourism center known as “Garapan Core.” DLNR maintains a public boat ramp, trailer and vehicle parking area, and other fishing infrastructure including a nearby pier that extends approximately 460 ft out into the lagoon and that is used by fishermen loading and unloading vessels and for shore fishing. Talaya (throw net) fishermen fish along shore, along the pier, and in the shallow lagoon areas offshore. Paddlers (canoers and kayakers) use the offshore lagoon areas (CNMI OGMSC 2020).

### **1.3 Decisions to be Made**

NMFS is the lead agency responsible for ensuring the environmental assessment (EA) complies with the National Environmental Policy Act (NEPA). The NMFS Pacific Islands Regional Administrator (RA) will use information in this EA to evaluate whether funding the revetment project (and subsequent construction by DLNR) has the potential to have significant environmental impacts. If the proposed action does not have the potential for significant environmental impacts, the RA will document the agency’s conclusion in a finding of no significant impact. If the RA determines the proposed action would have the potential for significant environmental impacts, NMFS would need to prepare an environmental impact statement before funding the proposed action.

## **1.4 Roles and Responsibilities**

As the Federal funding agency, NMFS must comply with applicable resource laws including NEPA, the Coastal Zone Management Act (CZMA), the Endangered Species Act (ESA), the Magnuson-Stevens Act, and the National Historic Preservation Act (NHPA) before dispersing SFF funds to the Council.

The Western Pacific Fishery Management Council Executive Director would be responsible for administering Federal financial assistance in accordance with 2 CFR 200 (Uniform Guidance for Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards), which includes complying with the award conditions.

The CNMI DLNR is the government sponsor, project proponent, and project lead. DLNR would be responsible for administering and expending SFF funds received from the Council in accordance with 2 CFR 200. DLNR would be responsible for ensuring BMPs are implemented.

The DLNR's construction contractor would obtain site-specific permits and approvals for the staging area and disposal. DLNR's construction contractor would be responsible for complying with the requirements of their construction permits and with their contract with DLNR.

## **1.5 NEPA Compliance**

NMFS prepared this EA according to the requirements of NOAA Administrative Order (NAO) Section 216-6A, "Compliance with the National Environmental Policy Act, Executive Orders 12114, Environmental Effects Abroad of Major Federal Actions; 11988 and 13690, Floodplain Management; and 11990, Protection of Wetlands" (NOAA 2016), the associated Companion Manual (NOAA 2017), and recent agency interim guidance on application of the 2020 Council on Environmental Quality (CEQ) regulations (NMFS 2021c). Specifically, on July 16, 2020, the CEQ finalized a major update to its regulations implementing the procedural provisions of NEPA (85 FR 43304). NMFS prepared this EA using the 2020 CEQ Regulations for implementing the provisions of the National Environmental Policy Act. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 FR 43372–73 (40 CFR §§ 1506.13, 1507.3(a)). We began to prepare the draft EA in 2021 and, accordingly, we are proceeding under the 2020 regulations. We provide more information about the approach to the analysis for the reader's information in section 6.8.

## **1.6 Action Area**

The action area (the area of potential effect) considered in this EA is the "Extent of Construction" plus an additional 20 ft around the construction zone. The Extent of Construction is shown in the Garapan Fishing Base Facility design plans by GHD (2020a) in Appendix A-1. The action area includes buffers and staging areas. Buffer areas include locations that would not be excavated, but would will be affected by equipment including machinery, silt fences, and the silt curtain. The entire action area would not be subject to excavation. The overall action area (including buffers all around) can be roughly approximated as 80 ft wide x 415 ft long (33,200 ft<sup>2</sup>), plus another 400 ft<sup>2</sup> to account for effects of the construction staging area. This comes out to an action area of approximately 33,600 ft<sup>2</sup> or 0.77 acres.

Excavation, grading, and the revetment construction would occur along the coast and extend out in the lagoon approximately 15–29 ft from the edge of the revetment crest. We estimate the amount of land that would be excavated as 40 ft in width times 380 ft in length. This is a total of approximately 15,200 ft<sup>2</sup> (0.354 acres or three-tenths of an acre) of dry land and submerged land that could be subject to excavation.

Once built, the revetment would have a smaller footprint, and the affected area below mean high high water (MHHW) is estimated as 10 ft x 380 ft or 3,800 ft<sup>2</sup> (0.087 acres or less than one tenth of an acre).

We note GHD’s construction design plans estimate the excavation or “cut” area as 1,324.1 ft<sup>2</sup> (0.03 acres). This is the amount of cut in navigable waters of the United States.

Note that the use of a silt curtain and silt fences would constrain the action area to largely within the DLNR property boundary. The action area does not reach the nearby Garapan Fishing Base pier, which is over 30 m away from the construction site.

### **1.7 Scope of the Analysis**

We focus our environmental effects analysis on the potential effects of construction and the revetment with respect to effects under the baseline (Alternative 1). We consider Saipan Lagoon water quality, special aquatic resources and issues including coastal hazards (flooding), seagrasses and corals, threatened and endangered species, proposed critical habitat, and effects on historic and cultural resources. We consider both short-term and long-term effects and effects in terms of both potential adverse and beneficial effects. Our effects analysis considers effects by the agency and others that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action, consistent with the definition of effects in 40 CFR § 1508.1(g). We consider effects on public health and safety and evaluate whether the action would pose a violation of Federal, state, tribal or local law protecting the environment. We also discuss environmental justice and climate change topics.

### **1.8 Relationship to Other Projects**

The CNMI government is considering other improvements at Garapan Fishing Base and conceptual ideas include a public walkway and fishing platform, floating docks, a pier stabilization project, and restrooms, as examples (GHD 2019, CNMI OGMSC 2020, and WPFMC 2017). NMFS recently funded a request for SFF funds from the Council on behalf of DLNR, for a design and environmental site review for a walkway and fishing platform that DLNR seeks to build next to or over the proposed revetment (WPFMC 2021). The project design and environmental site review for possible walkway and fishing platform are under way. NMFS is also aware of a preliminary design study for a pier, boat ramp, and possible boat docks improvement project by DLNR at Garapan Fishing Base just north of the action area (GHD 2019). However, the Council has not requested funds for other improvement projects and DLNR has prioritized the shoreline revetment action. DLNR recently requested funding from the Governor, CNMI, for a rehabilitation and construction proposal for Garapan Fishing Base (A. Benavente, Secretary, DLNR, communication to P. Ha, Natural Resources Management Specialist, NMFS; email dated March 3, 2022). The proposal was for \$4M for architectural and

engineering design for a breakwater, small marina and environmental assessment contract (including dredging), and steel sheet revetment for the Garapan pier. The proposal has not been funded at this time. Future proposals would undergo appropriate environmental review and coordination at such time as details are available.

The proposed action is not connected to other projects being contemplated by others in the same or nearby areas and the potential environmental effects of the proposed action can be analyzed separately from others under NEPA. We considered guidance in CEQ's NEPA regulations at 40 CFR 1501.9(e)(1) as follows to determine that the proposed action is independent from other projects in the same area:

We reviewed whether the proposed action would automatically trigger other actions that may require an environmental impact statement (EIS). 40 CFR 1501.9 (e)(1)(i). The revetment project does not automatically trigger another action which may require an EIS. The revetment would not automatically lead to approval by the agency of a future walkway, fishing platform, pier, or boat ramp improvement project.

We reviewed whether the proposed action could not proceed unless another action(s) is taken previously or simultaneously. 40 CFR 1501.9 (e)(1)(ii). We found that the revetment does not depend on other actions taking place first or at the same time in order for the proposed action to have utility or purpose. The revetment has independent utility from other projects that are being contemplated at Garapan Fishing Base. The revetment does not require other projects in order to be effective at stabilizing the eroding bank.

We note that DLNR is currently studying the same location for a future possible walkway and over-water fishing platform, and both of those concepts anticipate a rock revetment being in place. However, the revetment has independent utility from these projects that are in the early design phase. Building the revetment would not lead to automatic approval of a future walkway or fishing platform, and the environmental study and design work does not either narrow or limit NMFS' options regarding which alternative to select under this EA.

We reviewed whether the proposed action is an interdependent part of a larger action and whether it depends on the larger action for its justification. 40 CFR 1501.9 (e)(1)(iii). We found that the revetment, while being in the same general area as other future possible projects being contemplated by the DLNR, is not an interdependent part of a larger action. The revetment has independent utility and does not require any other project to justify the action.

In summary, although the proposed Garapan revetment project is in the same vicinity as future projects being contemplated by the DLNR at Garapan Fishing Base, the proposed revetment project is not connected to another action and is not an interdependent part of a larger action such that the revetment would cause interrelated effects. Other future projects have not been formally proposed or funded, although design plans have been developed for a pier stabilization project.

Neither funding the construction nor the revetment itself would automatically result in the need for other projects or the automatic approval of agency action related to other projects contemplated for the same location. The proposed action would not automatically result in follow-on proposals. In the future, should NMFS propose or receive a request for funding for

another project in the same area, once the agency has a proposal for action, NMFS would complete any required project-specific environmental compliance, public review, and permitting before construction could begin.

## **1.9 Public Review and Comments**

### **1.9.1 Summary of public review and comments**

On January 28, 2022, NMFS published a notice of availability of the draft EA (NMFS 2022b) in the *Federal Register* and provided a 30-day public review and comment period (87 FR 4565). Detailed instructions for obtaining the document and commenting through “Regulations.gov,” or by mail were provided in the draft EA. The notice and link to the electronic rulemaking portal were also posted on the NOAA NMFS Pacific Islands Regional Office website. We provided phone contact numbers for additional assistance, if required.

We provided copies of the notice of availability and the draft EA through email to the following external agencies:

- CNMI Bureau of Environmental and Coastal Quality, Division of Coastal Resources Management
- CNMI DLNR and DFW
- CNMI Historic Preservation Office
- CNMI State Library
- U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office
- U.S. Department of the Army, Corps of Engineers, Guam Field Office

A copy of the notice of availability was also provided to adjacent interests including the landowner to the south of Garapan Fishing Base and DLNR’s tenant on the property.

During the public comment period, NMFS received one response. The commenter, from Saipan, supported the proposed action of building the proposed rock revetment in order to strengthen and preserve dry land. The commenter advised NMFS that steel metal sheets used to be piled around the islet and would be a more effective countermeasure against erosion and wave movements in the area, particularly during storms. The commenter also suggested NMFS and the DLNR consider using steel bar barricades such as are used at Smiling Cove Marina.

We acknowledge support for the proposed revetment design and for the project in general. We note that the other materials and location noted are outside of the scope of this project; however, NMFS will provide the comment to the DLNR for its consideration in future projects in the area.

### **1.9.2 Highlights of changes made in the final EA**

In completing this EA, we incorporate minor changes associated with finalizing the EA, information associated with completing an ESA informal section 7 consultation, and information about the CNMI Bureau of Environmental and Coastal Quality’s – Department of Coastal Resources Management’s (DCRM) concurrence with NMFS’s Coastal Zone Management Act Federal Consistency Determination of March 28, 2022. We added minor clarifications that the proposed action is a hybrid of Federal and territorial agency actions. We expressly clarify that

NMFS' role is funding. The Council would receive and oversee disbursement of SFF funds. DLNR is the project proponent and local project lead. We clarify that DLNR is not constructing the revetment at the direction of or for the benefit of NMFS. This clarification did not change the environmental effects analysis.

On January 31, 2022, NMFS Pacific Islands Regional Office (PIRO) Protected Resources Division (PRD) provided NMFS with a letter of concurrence (LOC) to our determination of effects on ESA-listed species. NMFS PRD considered research on effects of dredging on fishes to apply to our effects analysis related to noise effects on sea turtles and sharks. The consultation did not substantively change our analysis of effects on ESA-listed turtles, hammerhead sharks, or corals, or on proposed coral critical habitat. We added information about the requirement to re-initiate consultation if certain conditions are met in the future.

## **2 Alternatives Including the Proposed Action**

### **2.1 Alternative 1: No Action (Status Quo): Do not build a revetment to stabilize the shoreline along Garapan Fishing Base**

*Alt. 1, Baseline, Description:* This is the environmental baseline. Under Alternative 1, NMFS would not provide SFF funds to the Council, and DLNR would not build a revetment along the shore at Garapan Fishing Base. This alternative does not meet the purpose and need or objectives for the project or the objectives in the CNMI MCP, but it allows us to evaluate the relative intensity of environmental effects of the proposed action.

*Alt. 1, Baseline, Expected Outcomes:* Under the baseline, coastal erosion would continue along Garapan Fishing Base resulting in loss of land and public infrastructure. Coastal water quality would continue to be degraded by sediments and nutrient inputs from land-based erosion. Trees and shrubs would continue to fall into the lagoon resulting in sedimentation and posing safety hazards. Derelict structures along the coast would remain in place. A narrow intertidal beach of silty, sandy, gravel with rocks from a previous limestone revetment would be present at low tide and would be fully submerged at mean high tide.

Current uses at Garapan Fishing Base including boat trailer parking and use of the boat ramp would continue. Limited recreation would continue including hook and line fishing and talaya (net) fishing from shore, and talaya fishing and canoe/kayak paddling further out in the lagoon.

Nearshore lagoon waters would continue to support natural habitats including seagrass beds, macro and turf algae, and marine fish and invertebrates; however, water and habitat quality would continue to be degraded through erosion.

### **2.2 Alternative 2: CNMI DLNR would build a revetment to stabilize the shoreline along Garapan Fishing Base (Preferred Alternative/Proposed Action)**

*Alt. 2, Proposed Action, Description:* Under Alternative 2, NMFS would provide SFF funds to the Council to support construction of a rock revetment along Garapan Fishing Base, Saipan, CNMI (Figure 1). The Council would, in turn, provide funds to the DLNR to construct the revetment along the land-lagoon interface stabilizing 380 ft of shoreline. DLNR would be the project proponent and project lead and would construct the revetment. DLNR would be

responsible for obtaining required construction permits and would hire a contractor to build the revetment according to the approved plans and contract requirements. DLNR would implement a suite of BMPs intended to protect air and water quality, marine benthic habitats and wildlife, historic resources, and other features of the coastal and marine environment during construction. BMPs are summarized in Appendix A-2. Construction is described in more detail in section 3 below.

*Alt. 2, Proposed Action, Expected outcomes:* The rock revetment is intended to stabilize the shoreline along Garapan Fishing Base and protect public land and infrastructure. The project would replace approximately 380 ft of eroding shoreline with a limestone rock revetment. Approximately 3,800 ft<sup>2</sup> (0.087 acres) or less than one-tenth of an acre of silty, sandy, rocky intertidal beach would be replaced with a sloped limestone rock revetment. Some beach would emerge along most of the coast at low tide, but the beach would be underwater at high tide.

Trees and shrubs in the project footprint, short sections of cemented seawalls, and derelict concrete and wood objects would be removed from within the construction area (see demolition plan). Turf grass would be replanted on Fishing Base as soon as possible to secure topsoil.

The project would not substantially change public uses. Garapan Fishing Base would continue to support vessel launching and trailer parking. Limited amounts of fishing, paddling, and other active and passive recreation would continue. Talaya net and hook and line fishermen would still be able to fish along the beach during low tide, but access to the beach at low tide, would be at either end of the revetment. Talaya fishermen could continue to fish further out in the lagoon shallows and paddlers could continue to paddle in the nearby lagoon waters.

Water quality in the nearshore lagoon would improve due to a reduction in erosion. Natural habitats including seagrass beds, sand, and rocks would continue to support an array of marine algae, fish, and invertebrates.

### **2.3 Alternatives Considered and Rejected from Detailed Consideration**

DLNR considered “soft measures” as alternatives to hard structures such as the revetment to limit coastal erosion. DLNR considered living shorelines, planting native beach vegetation, maintaining or establishing vegetative buffers. DLNR and NMFS rejected soft measure alternatives because they would be infeasible. Maintenance dredging along shore to ensure continued navigational use makes water depths too deep for vegetation such as mangroves. Furthermore, the proposed ongoing use of the area for fishing vessels makes using a living shoreline (use of strand vegetation to stabilize the shoreline) infeasible. In 2017, the U.S. Army Corps of Engineers studied options for shoreline stabilization including beach nourishment with vegetation at Garapan Fishing Base (USACE 2017b). Their report showed beach replenishment with vegetation would be very costly. The estimates were \$13.7M to build and \$62M to maintain a beach with vegetation over the life of the project for a 0.5 mile-long beach.

DLNR considered using native plants appropriate for current site conditions to restore land areas disturbed by the work, but determined that site conditions and current landscaping make the use of salt-tolerant turf grass more appropriate. U.S. Army Corps of Engineers’ Regional Condition 3a (Post-Construction BMPs) in the Honolulu District Regional Conditions applicable to the

2017 NWP 13, requires applicants to consider using native plants for this purpose (USACE 2017c); however, DLNR finds non-native turf grass to be salt tolerant, it provides the hardiness needed for the uses of the parcel, and is already used broadly at Garapan Fishing Base as groundcover; and, therefore, DLNR did not find a reasonable replacement that would meet this condition.

The design of the stabilized limestone rock revetment was recommended by marine engineers hired by the DLNR, and is of a minimal height and breadth needed for bank stabilization while allowing continued maintenance dredging and vessel use. The site is subject to high wave energy during storms and the proposed design (capped revetment, large limestone rocks over stabilized substrate, and buried toe) would be more stable than a dumped rock revetment and would reduce wave energy along the coast rather than reflect it as a cemented seawall might. A partial revetment would not provide sufficient bank protection, so a shorter design was not considered in detail. The Honolulu District Regional Conditions for the 2017 Nationwide Permits describes projects that provide wave dissipation, interstitial spaces for fish, crustacean and invertebrate habitat to be environmentally sensitive shoreline stabilization techniques, under Regional Condition 9 – Bank Stabilization.

## 2.4 Summary Features of the Alternatives and Expected Outcomes

Table 1 shows features of the alternatives and expected outcomes for two alternatives. We provide the environmental effects analysis in section 4, below.

Table 1. Features of the Alternatives and Expected Outcomes.

Topic or Resource:	Alternative 1: No Action (Baseline/Status Quo)	Alternative 2: Proposed Action
Action:	DLNR would not build a revetment. Federal funds would not be expended for a shoreline revetment at Garapan Fishing Base.	DLNR would use Federal Sustainable Fisheries Funds to build a rock revetment to stabilize 380 ft of shoreline fronting Garapan Fishing Base in Saipan Lagoon.
Erosion:	The shoreline would continue to erode from storm surge and runoff.	The revetment would stabilize the shoreline and would prevent erosion.
Coastal infrastructure and vegetation:	Public land and a parking lot along the coast would not be protected from erosion. Trees and shrubs would continue to fail along the coast.	The revetment would protect public land and a parking lot along the coast from erosion. DLNR would remove failing vegetation and built structures along the shoreline as part of construction.



Topic or Resource:	Alternative 1: No Action (Baseline/Status Quo)	Alternative 2: Proposed Action
Boating, fishing and paddling outcomes:	<p>Fishermen would continue to use the Garapan Fishing Base boat ramp and parking area. Continued erosion would undermine the parking lot and other coastal infrastructure and land.</p> <p>Limited amounts of recreational fishing would continue along the pier and along shore during low tide and in shallow offshore areas. Canoe and kayak paddling would continue in deeper lagoon areas.</p>	<p>During construction, some portions of the Fishing Base and along the coast would be temporarily closed for public safety.</p> <p>The revetment would not substantially change use of the boat ramp or parking lot or change other recreational uses.</p> <p>A portion of the beach fronting Garapan Fishing Base would be converted to rock revetment. Some beach would be exposed along most of the coast during low tide.</p>
Other community activities:	<p>Garapan Fishing Base would continue to support community activities including a small market near Beach Road and night market events. Continued erosion would undermine the parking lot and other coastal lands.</p>	<p>During construction, DLNR would temporarily close some portions of Fishing Base for public safety. Construction would not affect the public market near Beach Road.</p> <p>The revetment would not change community uses of Fishing Base over the long term. The revetment would protect public land along Garapan Fishing Base from erosion once the revetment is built.</p>
Land areas	<p>Fishing Base is mostly open space that is paved with asphalt, covered with gravel, or planted in turf grass and sparse plantings. Trees and shrubs along shore are failing. Degraded built objects along shore would remain in place.</p>	<p>DLNR would remove a narrow strip of trees and shrubs along the shore and would plant turf grass to stabilize open areas behind the revetment. A sloped rock revetment would replace the eroding bank and remove objects slated for demolition. DLNR would continue to maintain trees and shrubs outside of the project footprint.</p>
Marine habitats	<p>The coast features a silty, sandy, gravely intertidal beach. Along shore, the lagoon has been dredged to allow vessels to be used. Further offshore and outside of the action area, marine areas feature <i>Enhalus acoroides</i> seagrass stands and rocks with macroalgae or turf algae. Marine water quality is compromised by sediment and nutrient inputs from the eroding bank as well as from point- and non point-sources. The community and CNMI government are working to improve and protect water quality of Saipan Lagoon.</p>	<p>A portion of the narrow intertidal beach (generally between 5 and 8 ft from shore) would be replaced with a rock revetment. Because the revetment would be partially buried, a narrow strip of beach would be present at low tide. Offshore areas would continue to be maintained (dredged) to allow vessels to be used along shore. Seagrasses and corals are not within the action area and would be protected during construction through of best management practices. The revetment is expected to improve water quality in nearshore marine areas over the long term by reducing sediment and nutrient inputs.</p>

### 3 Revetment Construction

#### 3.1 Location and General Setting

**Location and ownership:** Garapan Fishing Base is public land located along the coast in western Saipan (Figs. 1 and 2). The project is located at 15°12' North, 145° 43' East (15.202, 145.716). The property is administered by the DLNR. The property boundary extends into nearshore areas of Saipan Lagoon (see Appendix A-1, Sheet C-1).



Figure 2. Satellite image of the location of the project in Garapan, Saipan.  
Credit: GHD (2020a) from Google Earth satellite imagery.



Figure 3. The project site at Garapan Fishing Base.  
 Credit: From GHD (2020a) from Google Earth satellite imagery.

### 3.2 Construction Site Conditions

Garapan Fishing Base is a low-lying, flat parcel, mostly in open space that is either paved or planted in grass (Figure 3). A narrow band of trees and shrubs is failing along the water’s edge. A narrow sandy, silty, gravelly intertidal beach is exposed along the shore at low tide.

The lagoon has been dredged along shore to accommodate vessels and bottom habitat is mostly sand and coral rubble (DLNR 2021). Farther out in the lagoon, just beyond the dredged area, marine habitat becomes dominated by *Enhalus acoroides* seagrass interspersed with rocks with macroalgae or turf algae. Beyond that, well seaward of the action area, lagoon habitats feature sand patches, seagrass beds, turf and macro algae, and coral habitats (Fig. 2, and Appendix D, Figures D-1, D-2). The barrier reef over half a mile away offshore protects the lagoon and, together with seagrass beds and coral reefs in the lagoon, reduces the force of waves along Garapan Fishing Base compared with waves at the reef front.

The parcel is around 4 to 5 ft in elevation along most of the coast, but is only 2 to 3 ft in elevation near the storm drain. Beyond the parking area and open areas, a small building and parking lot support a small food market next to Beach Road. To the north, there is a storm drain, boat ramp, Garapan Fishing Base pier, and open space. The parcel to the south is vegetated with trees. Across Beach Road are homes, businesses and to the north and east, across Beach Road, well beyond the project area, is the Cristo Rai Church (Figure 1).

CNMI is warm and humid year round with a mean annual temperature of 83°F and a mean annual rainfall of 84 inches (Starmer et al. 2008). The dry season is generally from January through June and the rainy season is generally from July to December (Lander 2004). According to Lander (2004), rainfall varies with weather systems that include thunderstorms, mesoscale convection systems, monsoon squalls, tropical cyclones, and typhoons. Year-to-year variation of rainfall in Saipan is closely linked to the El Niño/Southern Oscillation phenomenon. Dry conditions follow an El Niño and typhoon threat increases during an El Niño year. Saipan experiences high rainfall and intense winds from typhoons. Most of the year, the wind on Saipan is from the east, but during summer and early autumn, the winds can become west to southwest for up to a month at a time. Summers et al. (2017) report Saipan Lagoon water temperatures range from 27°–37°C (80.6°–86°F).

### *Land Use and Zoning*

Garapan Fishing Base is public land used to support vessels, small scale fishing from shore and pier, and low-intensity public recreation. The area is not generally suitable for swimming because of boat traffic. The 2013 Saipan Zoning Map (CNMI DPL 2019) shows that most of the parcel is Zoned “Public Resource (PR),” but a portion of the parcel from mid-way to the southern end is in the “Tourist Resort (TR)” zone (Appendix D, Figure D-3).

### *Flood Hazard Zone*

The project is in a designated flood hazard zone (Appendix D, Figure D-4). According to Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) panel 0600000033C, the revetment would be built within a Special Flood Hazard Area (AE EL7). Most of Garapan Fishing Base along with other coastal portions of western Saipan (as depicted in FIRM panels) have a 1-percent or greater chance of being equaled or exceeded during any given year. This is the “base flood” or “100-year flood.” Detailed hydraulic analyses found that the base flood elevation is 7 ft.

### *Coastal Zone Management*

CNMI’s Bureau of Environmental and Coastal Quality (BECQ), Division of Coastal Resources Management (DCRM) exercises regulatory power over the coastal zone including areas designated as areas of particular concern (APCs). The agency works to ensure coastal developments and activities are fairly and effectively regulated to minimize impacts to coastal resources. Under Title 15 of CNMI’s Coastal Resources Management Rules and Regulations (Chapter 15-10), the action area is within the following three APCs:

- **Shoreline APC** – The action area is located between the mean high water mark and 150 ft inland
- **Lagoon and Reef APC** - This APC extends seaward from the mean high water mark to the outer slope of the reef. The action area is partially in the lagoon. We consider effects on lagoon water and habitat quality, seagrass beds, which are a resource of special management interest for the Lagoon and Reef APC, effects on corals, and on other lagoon and reef resources. Erosion control is among uses allowed under the Lagoon and Reef APC.

- **Coastal Hazards APC** - Because the action area is in a CNMI Coastal Flood Hazard APC, we consider effects on flooding.

NMFS coordinated our review of potential effects of the alternatives of on coastal resources in with the CNMI BECQ DCRM. DCRM determined that DLNR will need to obtain a DCRM Coastal Permit.

### 3.2.1 Photographs of site conditions



Figure 4. Photographs showing erosion, failing trees and shrubs, and nearshore marine areas in the construction zone along Garapan Fishing Base.  
Credit: DLNR 2021.

### 3.2.2 Photographs of nearby infrastructure



Figure 5. Photograph of nearby Garapan Boat ramp.  
Credit: S. McKagan, NMFS, 2017.

The boat ramp is approximately 30 ft north of the revetment project site.



Figure 6. Storm drain adjacent to the revetment project site.  
Credit: DLNR 2021.

### 3.2.3 Lagoon (marine) site conditions

The construction zone is along a sandy/silty/rocky intertidal beach. The nearshore areas are very shallow being less than 1 ft deep at mean low tide and deeper in areas alongshore where the lagoon has been dredged (NOAA Chart, Appendix D, Fig. D-5).

Saipan Lagoon features a rich tropical marine ecosystem with a diversity of habitats that include silty sand, rocks and rubble along shore, mixed seagrass-sand-macroalgae, dense seagrass stands, shallow mid-lagoon reef, sandy areas, and coral reef and barrier reef along the fore-reef or seaward side of the lagoon (Houk and Van Woesik 2008, Kendall et al. 2017). Appendix D, Figures D-1 and D-2, show generalized plots of bottom habitats of Saipan Lagoon and probability of coral occurrence, respectively, in the project area (Kendall et al. 2017). These figures show that the nearshore areas are devoid of both seagrass and hard corals.

In a 2021 in-water site assessment off Garapan Fishing Base, DLNR found that habitats in the construction footprint consist of sand/silt and turf algae on rocks (see summary data of DLNR's 2021 report in Appendix B). Just beyond the DLNR boundary, substrate and habitat include *Enhalus acoroides* seagrass with limited sand, and *Enhalus acoroides* and green macroalgae (*Halimeda* sp. and *Caulerpa* sp.). Seagrass is not present within the construction footprint. The DLNR found a single colony of a common hard coral, *Pocillopora damicornis*, outside the DLNR boundary and well beyond the construction footprint. This is consistent with the habitat map generated by Houk and van Woesik (2008).

Because of BMPs we do not expect construction to affect reefs or mid-lagoon areas, both of which are well beyond the action area. For the readers' interest, Houk and van Woesik (2008) describe the variety of habitat types found in different areas of Saipan Lagoon in more detail. In general, we can see that maintenance dredging along shore has cleared the action area of seagrass and the prevalence of *Enhalus acoroides* seagrass just beyond the dredged channel is expected based on typical patterns of distribution.

Lagoon waters and substrates in and near the action area support a variety of plants, reef fishes, and invertebrates (DLNR 2021). Green sea turtles are often seen in Saipan Lagoon and are primarily juveniles. Juvenile hawksbill turtles are seen in lower numbers. Both are more likely to be found foraging well outside of the action area and neither species is generally seen along shore near Garapan Fishing Base (Kolinski et al. 2001, Summers et al. 2017).

### 3.2.4 Design highlights

Figure 7 provides a diagram of the revetment. The revetment would span a distance of approximately 380 linear ft along the coast. At the northern edge, the revetment would be fairly vertical so the revetment would not impede storm water drainage into the lagoon. The top (crest) of the revetment facing the lagoon would be at an elevation of between 4 and 5 ft. For most of the distance, the revetment would have a slope of 2Horizontal:1Vertical. The revetment would extend seaward approximately 16 ft or less along most of the shore, with the toe and bottom portion of the revetment buried in up to 4.5 ft of sand. This would provide stability and allow vessels to use the nearshore areas. The revetment would appear to extend around 5 to 8 ft into the lagoon from the edge of the crest before being buried under sand. At the southern boundary, the

revetment would transition to a broader flatter slope. The crest would rise approximately 6 inches above grade on land. It would be a minimum of 7.9 ft wide and cemented for stability. More details of the revetment design are in Appendix A-1.

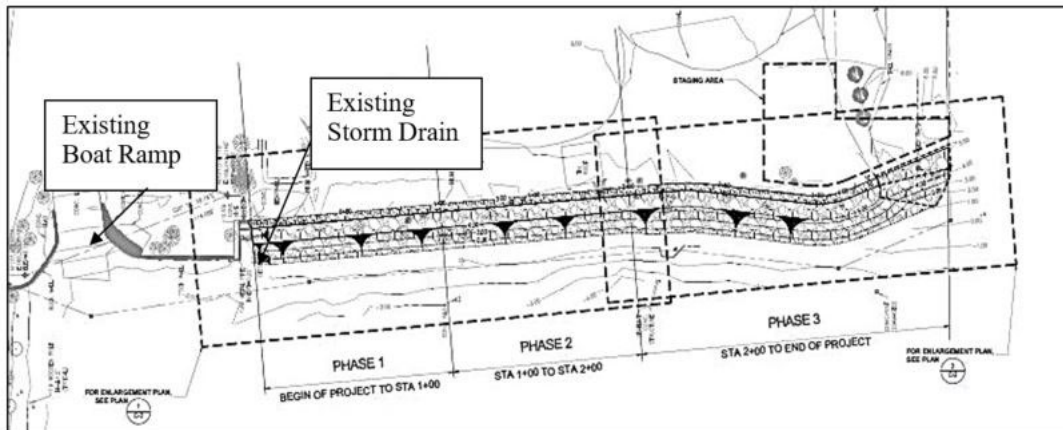


Figure 7. Overview of as-built plan diagram.  
Credit: GHD 2020a.

### 3.3 Construction Overview

Each phase (roughly 100 ft per phase) may take up to 6 months to complete, but timing depends on site conditions. The start date would be contingent upon project approval and funding. Phase I is anticipated to begin in early 2022 and the revetment is expected to be completed in 2023 or sooner, depending on funding and construction scheduling.

The contractor would begin construction on the south side of the existing storm drain and move southward in phases. The contractor would store equipment in a designated staging area on the southern portion of the parcel. The boat ramp and seawall to the north of the storm drain are not affected. The contractor would control access to portions of the property temporarily as needed for public safety, but boat ramp use is not expected to be affected. With the exception of the actual excavation equipment apparatus (e.g. clamshell buckets, or the scoop and articulated arm of a backhoe, hydraulic head, etc.), heavy equipment would be operated from above and out of the water.

**Mitigation:** DLNR has included a number of BMPs in the project design to prevent and reduce environmental effects including protecting water quality and benthic habitat, protecting marine wildlife, properly handling historic resources that may be uncovered, and promoting public safety. We summarize BMPs in Appendix A-2.

**Establishing erosion control barriers:** The contractor would install erosion control measures including silt fences, an in-water silt curtain, and dewatering basins before beginning earthworks.

**Water quality monitoring:** DLNR will prepare and follow an approved Water Quality Monitoring Plan reviewed and approved by BECQ. Prior to beginning earthworks, DLNR would take baseline turbidity measurements at pre-determined sites along the coast including at a



control point. Monitoring would continue daily according to the monitoring plan. If turbidity measurements exceed established thresholds for the approved zone of mixing, the contractor would stop work until measurements return to baseline levels.

**Pre-construction subsurface testing for historic resources:** Prior to excavation or grubbing, the CNMI DLNR will obtain the services of a Secretary of the Interior (SOI) standards-certified archaeologist to conduct a preliminary backhoe (subsurface) testing study. An archaeologist would also monitor the project.

**Demolition and replanting:** The contractor would use a chain saw and excavator or other equipment to remove trees and shrubs along the shore and would re-establish turf grass on shore as soon as possible to prevent erosion. The contractor would remove several derelict structures including broken wood and metal posts (pilings) in the lagoon, a deteriorating concrete slab, a seawall, a small brick/cement building, and concrete pads on shore (see Appendix E for photos of these items). Debris and green waste would be taken off site and disposed of at an approved site.

**Revetment:** The contractor would use an excavator and other equipment from shore to build the revetment. Percussive methods such as pile-driving and vibratory hammers are not required. After excavating and contouring, the contractor would establish the base (a layer of compressed fill), then place geotextile fabric over the prepared underlayment. Toe rocks would be placed in a 4.5 ft-deep trench. The contractor would cover the toe and lower portion of the revetment with sand/sediment to grade. The crest would be stabilized with concrete.

**Cut:** GHD estimates cut as 1,324.1 cyd or 0.03 acres.

**Fill:** The silt curtain is a temporary fill that would be deployed around the immediate work area. The silt curtain would be less than 150 ft long for each phase. The silt curtain would entrain an area of up to 3,000 ft<sup>2</sup> (150 ft x 20 ft) or 0.06 acres at most. As construction moves southward, the silt curtain might be reduced in extent.

The revetment fill (volume between 0 and 0.91 ft or mean high high water) is permanent fill estimated as 29.32 cyd. Over 380 ft we estimate this would be 0.077 cyd per linear foot.

DLNR would use the minimum amount of material placed in jurisdictional waters that is necessary for erosion protection given the conditions of the site. The project would not create more land for the property owner or reclaim previously lost land.

**Construction staging:** Vehicles and materials would be stored on the parcel at the southeast end. Fuels, solvents, and other hazardous wastes would be used and stored in a manner to prevent accidental spills. Spill response materials would be on hand to allow response to accidental spills. The contractor would establish and maintain silt fences around the work site and between the staging area and the lagoon.

**Public access:** The contractor would secure the construction site for public safety.

**Erosion, sediment, and contaminant control:** The contractor would follow an erosion control plan, which includes using and maintaining temporary silt fences and an in-water silt curtain,

retention basin(s) and dewatering cells, sealing any open trenches as soon as possible, and replanting land areas with salt-resistant turf grass as soon as possible after construction to prevent soil erosion. Sediment control barriers and in-water turbidity barriers are shown in the construction diagrams in Appendix A-1. On land, one section of the silt fence would be installed on the lagoon side of the construction site.

The contractor would follow a water quality monitoring plan developed by the DLNR in coordination with the BECQ and would adjust work in response to water quality measurements as required.

The in-water turbidity barrier, made of geotextile fabric, would be connected to posts secured into the substrate or connected to a boom float. Sufficient slack in the fabric would account for marine tidal fluctuations and wave activities. The upper edge would float and the bottom would be secured at the lagoon floor using chain weights.

The contractor would routinely check the silt fences and silt curtain to ensure they are fully functional. Slack ropes and gaps would be fixed.

No project-related material (fill, revetment rock, pipe, etc.) is to be stockpiled in the water (intertidal zone, seagrass beds).

The contractor would have and follow a spill prevention and response plan. Fueling vehicles would be done over an impervious surface. Equipment and gear would be clean before it would be used in water, and leaks would be fixed before the gear is used in the water.

The contractor would prevent trash and debris from entering the marine environment and would dispose construction and demolition debris, un-reclaimed dredge spoils and green waste at a CNMI government-approved site.

#### **Other water quality protection measures:**

To the extent practicable, prior to removing or moving the silt curtain, the contractor would allow time for residual silt to settle out of the water column, and allow temperatures to normalize.

The contractor would use new materials. All equipment, materials, gear and instruments that have been used at other sites will be examined and rinsed with fresh water at a location away from the lagoon to prevent introducing invasive species to the site.

DLNR will inform the contractor of the option to use natural sunscreen or physical means of sun protection to avoid sunscreen contamination of lagoon waters.

**Storm preparation and response:** The construction contractor would follow the BMPs and other requirements of their contract with DLNR. The contractor will curtail work during adverse weather conditions and will implement more intensive measures to secure the worksite in advance of storms with winds of gale force or greater.

**Wildlife protection:** In addition to other construction site and work requirements, other BMPs would help protect ESA-listed marine species. Visual inspections of the work site and the turbidity barrier would be done by a competent observer prior to installing the silt curtain, prior to the start of work each day, and at the end of the day to check for any ESA-listed species that might be near or in the silt curtain. The curtain would connect with the silt fence on land and would exclude ESA-listed species. The contractor would check for and fix gaps and loose lines to prevent entanglements. In-water work would be postponed or halted if an ESA-listed turtle or shark is observed within 50 y of the work and would only begin/resume after the animal has voluntarily departed the area or in coordination with the DLNR and NMFS.

To prevent the potential for adverse effects on coral larvae from turbidity, construction will temporarily stop during the key coral spawning period identified by the DLNR in coordination with the BECQ.

**Protection of historic, cultural, and archaeological resources:** DLNR has worked with the CNMI Historic Preservation Office to develop a number of BMPs to protect undiscovered resources that might be uncovered during construction. DLNR will provide for a pre-construction backhoe survey and project monitoring by a SOI standards-certified archaeologist. Other details are in the BMPs in Appendix A-2.

**Post-construction replanting:** The contractor would replant disturbed grass areas using non-native salt-tolerant turf grass as soon as possible to prevent soil erosion. Turf grass would provide the hardiness needed for the uses of the parcel and is used throughout Garapan Fishing Base.

**Traffic management:** The site is located far from the main roadway and is past the existing parking area for the boat ramp. The construction site might temporarily affect parking in a portion of the project area. Construction is not expected to result in traffic congestion.

**Noise:** Temporary construction noise would be generated by vehicles; use of the chain saw, excavator, and cement mixer; and excavation and construction. The work would occur during daytime hours and is over 350 ft from residences or businesses, with the exception of an adjacent small market, approximately 175 ft from the construction site, which is in an enclosed building.

**Air quality:** Construction would generate limited emissions from vehicles and equipment on a temporary basis. The contractor would implement dust control measures to prevent dust from entering the atmosphere through minimizing the amount of exposed soil and restoring ground cover over dredge stockpiles.

**Storm water control:** Storm water is to be contained within the site so as not to discharge onto neighboring properties.

**Post-construction public use:** Public uses including boat ramp, shore fishing, public markets, and picnicking would continue after the revetment is built.

### 3.3.1 Permits and other authorizations

#### *CNMI Government Permits and Authorizations*

DLNR would need to obtain a permit from CNMI BECQ DCRM because the project is within a number of Areas of Particular Concern (15 CMC 15-10-101). CNMI DLNR would obtain a BECQ Earthmoving and Erosion Control Permit issued in accordance with Northern Mariana Islands Administrative Code (NMIAC) Chapter 65-30, § 65-30-101.

Section 401 Water Quality Certification. Because the project would result in discharges into waters of the United States, DLNR would obtain a water quality certification or waiver from the CNMI BECQ in accordance with 33 CFR 330.4(c) and (d). DLNR would implement a water quality monitoring plan developed in collaboration with the CNMI BECQ.

#### *Federal Reviews and Authorizations*

U.S. Army Corps of Engineers Permit. DLNR would coordinate with the U.S. Department of the Army (DA) U.S. Army Corps of Engineers, Honolulu District (Corps) regarding a DA permit or permits. A permit is required under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act of 1972 (33 U.S.C. 1344). DLNR would seek authorization from the Corps under NWP 13 (Bank Stabilization) and may seek authorization under NWP 16 (Return Water from Upland Contained Disposal Areas), if required. NWPs may be authorized for projects for which there are no more than minimal individual and cumulative adverse environmental effects.

The Honolulu District Engineer would evaluate the proposed activity, and if he or she determines the proposed activity will result in more than minimal adverse environmental effects, he or she would exercise discretionary authority and require an individual permit.

NMFS will complete the following environmental compliance reviews before the revetment is constructed: National Environmental Policy Act, Coastal Zone Management Act (Federal Consistency Determination), National Historic Preservation Act Section 106 consultation, Endangered Species Act and Marine Mammal Protection Act reviews, and Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat) review. We include a summary of these reviews in Section 6, below.

## **4 Affected Resources and Potential Effects of the Proposed Action**

This section describes the setting and resources of concern that may be affected by the proposed action and the potential effects of the proposed action on the resource or issue. We describe our analytical approach to the environmental effects analysis under the 2020 CEQ regulations described in section 6.8, below. “Effects” or “impacts” means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives (40 CFR 1508.1(g)).

## **4.1 Geographic Scale and Setting**

### **4.1.1 Geographic scale**

The proposed action is a small-scale local project with effects primarily limited in duration and extent and associated primarily with construction activities. DLNR would incorporate a suite of BMPs into their construction contract and required plans. The BMPs and other contract provisions would help ensure the effects of construction on the environment are minimized and would meet the requirements of various laws intended to protect the environment.

### **4.1.2 Setting**

Saipan, the capital of the CNMI, is the largest and most populated island in the Commonwealth. The island is approximately 12 miles long and covers about 45 square miles. The population of Saipan was 43,385 people in 2020 and CNMI's total population was 47,329 people (U.S. Census 2021 data, presented in Wilson et al. 2021). The population of all three islands decreased compared with counts from 2010. Economic growth, food security, conservation and management of natural resources, and cultural and historic preservation are important concerns. Eco-tourism, historic tourism, and nature-based activities are important to tourists and locals (OGMSC 2020).

Saipan Lagoon is a resource area of substantial ecological and socio-economic value and hosts a rich diversity of marine life. The project is adjacent to a community boat ramp and parking lot that support fishing and other recreational uses. Within the action area, substrates and water quality have been disturbed by past fill, bank erosion, maintenance dredging, human uses, storms, and storm-water and runoff from inland areas. Our environmental effects analysis focuses on resources that may be affected and we focus on potential effects of construction on water and benthic habitat quality beyond the silt curtain, seagrasses, marine habitats and wildlife of management concern including ESA-listed sea turtles and hard corals, proposed critical habitat, and on coastal flooding.

According to the summary by CNMI's Office of Planning and Development (2019), the climate of the CNMI is characterized by relatively high and uniform temperatures with an annual mean temperature of 83°F, with an average range on Saipan between 75 and 87 °F with the lowest and highest temperatures in the dry and wet seasons, respectively. The humidity is normally high with monthly averages between 79% and 86%, with the most intense humidity factor between the months of July and November. The mean annual rainfall is approximately 83.8 in. with intermittent variance throughout the year. The seasonal patterns are designated as dry and wet season, with greater rainfall experienced during the period of July and November. Heavy and prolonged rainfall usually is associated with tropical depressions and typhoons that pass over or near the islands.

CNMI is expected to continue to be affected by climate change and Government agencies and the public continue to work to understand, plan for, and decrease vulnerability of the community to climate change. These efforts have resulted in a number of studies and reports that we reviewed while preparing this EA. The climate change vulnerability assessment for CNMI (Greene and Skeelee 2014) provides recommendations the community and government can take

to reduce vulnerability to climate change. Grecni et al. (2021) provide a summary of climate change considerations for the CNMI including a discussion of causes and indicators and projections of changes. We also considered information in the 2021 “Summary for Policymakers from Working Group I to the Sixth Assessment Report (Physical)” from the Intergovernmental Panel on Climate Change (2021). According to Grecni et al. (2021) and supported by the IPCC (2021), among the projections of future climate conditions are increased temperatures, more frequent and intense extreme rainfall events that will result in increased runoff and increased potential for flooding and erosion. Fewer, but stronger storms are anticipated in the future, as well as longer periods without rainfall. Sea level rise and sea level change are expected to affect coastal areas of Saipan through flooding and coral bleaching associated with low tides (exposure) and warming water temperatures. The revetment would not change ocean chemistry (pH), water circulation, or ocean temperature. We consider effects of the revetment on coastal flooding in section 4.2.6 and consider greenhouse gas emissions in section 4.8.4.

## 4.2 Physical Conditions

### 4.2.1 Air Quality

**Alt. 1, Baseline; Air Quality:** Ambient air quality on Saipan and at the project site is good to excellent. Vessels and vehicles using boat ramp and nearby roadway are sources of emissions. Land is open and there are no nearby sensitive receptors. A small indoor market is approximately 170 ft from the construction area and is adjacent to Beach Road. Exhaust emissions from nearby vessels and vehicles dissipate over open space areas and are not known to be having large adverse effects on air quality.

**Alt. 2, Proposed Action; Potential effects on air quality:** Construction could temporarily affect air quality through emissions from heavy equipment and power tools and fugitive dust from earthworks, stockpiles, and exposed soil. BMPs would prevent dust from polluting the air around the construction site.

Because trenching would be shallow and in sandy sediment, excavation is not expected to result in noxious odors.

Given the lack of sensitive receptors and limited duration of construction together with conditions of the site that include open space with excellent air circulation, and given BMPs that would prevent fugitive dust, the project is not expected to have no more than minor temporary adverse effects on air quality, even when considered in combination with ongoing activities.

Due to BMPs, site conditions, and the continuation of current levels of uses after the revetment is built, we conclude the proposed action will not have the potential for large adverse effects on air quality during construction and will not change air quality in the long-term.

### 4.2.2 Noise

**Alt. 1, Baseline; Noise:** Vehicles and vessels using the community boat ramp and parking area generate noise in the project location. The boat ramp is located approximately 250 ft from Beach Road, which is another source of vehicle noise. The open space provides a buffer between noises from the Garapan boat ramp and homes, businesses, and a church, all of which are located over

300 ft away, with the exception of an indoor market that is approximately 170 ft from the ramp. There are no sensitive receptors (e.g., schools, hospitals, etc.) in the immediate vicinity of the project site.

**Alt. 2, Proposed Action; Potential effects related to noise:** Construction equipment (excavators, chainsaws) and depositing gravel and rocks at the work site would be the primary source of noise during the daytime on weekdays. Construction activity may result in loud sounds. The loudest noise is likely to be associated with heavy equipment and power tools needed to demolish built structures, remove trees, for dredging, and compacting the revetment base, and when depositing fill materials. The project will not use percussive, vibratory, or hydraulic equipment and rocks will be deposited in a controlled manner.

We estimate sound levels based on published values, but actual levels would depend on the equipment used. According to the National Institutes of Health, sound levels associated with heavy construction equipment range from 80 to 120 dB(A) or A-weighted decibels (Spencer and Kovalchik 2007).

- Power tools commonly used in construction produce sound levels up to 115dB(A) (Spencer and Kovalchik 2007)
- Chainsaw: 85 dBA at 50 ft away (FHA/DOT 2018)
- Excavator: 85 dBA at 50 ft away (FHA/DOT 2018).
- Large clamshell dredge: 142 dB at 50 m (~150 ft) away (USACE 2017a)

To estimate the potential effect of sound related to the revetment project on sea turtles and scalloped hammerhead sharks, we consider information in an analysis of noise effects from dredging developed by the U.S. Army Corps of Engineers' (Corps) for their proposed regulated activities in the Pacific Islands, that included bank stabilization (USACE 2017a). The Corps applied the following effects thresholds for marine mammals and pinnipeds when evaluating effects of noise from its proposed action on sea turtles:

- Effects threshold for injury to cetaceans:  $\geq 180$  decibels or dB (based on levels of harassment as defined by the Marine Mammal Protection Act), threshold for Level A harassment for cetaceans).
- Effects threshold for behavioral impacts, cetaceans and pinnipeds for continuous noises:  $\geq 120$ db.

The Corps took the loudest estimated source level sound for a dredge (167dB for a very large clamshell excavator) and applied a level of  $-15\text{LogR}$  for transmission loss, to determine that the 160dB isopleth would fall at 3m from the source, and the 120 dB isopleth would be out at 1,260m (USACE 2017a). The Corps estimated that sound intensity from a large industrial sized clamshell dredge measured out at 50 m and 100 m from the source would be approximately 142dB and 137dB respectively. The Corps concluded that a mandatory work shut-down range of 50m would ensure that no ESA-listed marine animals would be exposed to sound levels anywhere near the temporary threshold shift (TTS) threshold (a level of effect that causes temporary behavioral impacts due to temporary reduced sensitivity). The Corps also concluded marine mammals might experience an insignificant level of behavioral modification in the form of temporary avoidance of the area out as far as 1,260 m (USACE 2017a).

In its January 31, 2022 LOC, NMFS PRD considered the potential for elevated noise related to excavation to affect sea turtles and hammerhead sharks. In addition to the effects analysis in the biological evaluation NMFS provided in December 2021 (NMFS 2021a), NMFS PRD also considered noise effects of an industrial sized dredge on fishes, and we incorporate that analysis by reference (see NMFS 2002d, for more details). We note that our consideration of potential effects of noise on sea turtles and sharks considers the ongoing setting of moderate levels of human disturbance associated with boat launching, and vehicle and recreational use of the adjacent boat ramp and parking area. The review includes acknowledgement that the proposed action would not involve percussive or hydraulic construction methods and equipment would maintain control over rocks during construction (as opposed to dumping rocks).

Based on summaries by the Corps (2010, 2017a) in its Pac-SLOPES biological evaluations for 2010 and 2017, noise effects on marine mammals and other marine life would vary with the frequency, intensity and duration of the sound source and the hearing characteristics of the affected animal. Effects may include: (1) physical injury and/or permanent hearing damage (referred to as permanent threshold shift or PTS) and behavioral impacts through temporarily reduced sensitivity (referred to as temporary threshold shifts or TTS); temporarily masked communications or acoustic environmental cues, and modified behavior such as attraction and avoidance of an area.

NMFS PRD concluded its review of potential effects of construction noise related to the proposed action on sea turtles and sharks finding that the proposed action would not produce in-water sound levels exceeding 124 dB re 1  $\mu$ Pa (NMFS 2022d). This is because the type of excavator used is smaller than the size of dredges studied in the references applied by NMFS; soft bottom substrate in the action area which would reduce the sound level and attenuate noise, low likelihood of turtles or hammerhead sharks in shallow nearshore areas near the boat ramp, and due to the presence of a silt curtain and stop-work BMPs which would prevent sea turtles or hammerhead sharks from entering the excavation site. NMFS PRD concurred that project conditions and the mandatory shut-down range of 50 y will ensure that no ESA-listed marine animal would be exposed to sound levels anywhere near the PTS or TTS isopleths.

Applying research on noise effects on fishes described in more detail in the LOC (NMFS 2022d), NMFS PRD used a noise threshold of 160 dB re 1  $\mu$ Pa threshold for behavioral impacts to sea turtles and set the PTS and ITS for sea turtles at 220 dB re 1  $\mu$ Pa and 200 dB re 1  $\mu$ Pa, respectively. NMFS PRD concluded that direct injury and hearing impairment in sea turtles would not occur because underwater noise produced by all activities in the action area would lack the amplitude or duration to exceed TTS and PTS thresholds. NMFS is reasonably certain the proposed action is extremely unlikely to expose sea turtles to noise levels above their behavioral response threshold.

In its LOC (NMFS 2022d), NMFS PRD also reviewed studies of noise effects on fish hearing and we incorporate that information by reference. NMFS found that peak sound levels from the revetment work would be less than the behavioral response threshold for fishes and turtles (150 dB). Because the probability of fishes (hammerhead sharks) being located at or near the Fishing Base is low, any physiological stress and behavioral reactions would likely be short-term (seconds or minutes) and would be expected to return to normal shortly after disturbance ceases



or the individual moves away. Therefore, NMFS concluded the probability of exposure to elevated noise to sharks is extremely unlikely (NMFS 2022d).

Based on our review of potential noise effects, under Alternative 2, noise effects in the marine environment would be from land-based demolition and excavation on terrestrial and marine areas, excavation and ground forming on land and in marine areas, and construction of the revetment within the silt curtain. The silt curtain would form a physical barrier that would exclude sea turtles and sharks from the immediate construction zone. The contractor would maintain control of rocks, when depositing materials into the work site. The contractor would also maintain an awareness of the presence of sea turtles and sharks and would stop work if an ESA-listed turtle or shark comes within 50 y of the work site. During construction, we expect that sounds from the excavator and other equipment would likely cause any turtles or sharks that are nearby to avoid the area well before they enter close to the construction area. Based on this analysis, we conclude that individual sea turtles and hammerhead sharks would not be exposed to sound at levels that could cause physical damage to their hearing or that would substantially affect their behavior and the proposed action would result in no more than temporary and minor adverse effects on ESA-listed turtles or hammerhead sharks in the short term.

With respect to noise effects on land areas, due to the lack of sensitive receptors in nearby terrestrial areas and dissipation of sound over open space areas, because work would be done during regular working hours during the workweek, we conclude project noise would have no more than temporary and minor adverse effects on nearby communities in the short term.

Once built, the revetment would not change land or water use in any way that would affect noise levels in the mid- and long-term.

#### 4.2.3 Views

**Alt. 1, Baseline; Views:** Garapan Fishing Base is a flat, low-lying parcel featuring open space, a parking lot, a boat ramp, and a building along Beach Road (Figure 3). Most of the parcel is paved or planted with turf grass. A narrow strip of trees and shrubs is present along the shore, and other trees are planted on the lot near the parking lot and boat ramp. The view looking seaward from Beach Road includes the small market building next to Beach Road, parking areas, flat lawn, and a derelict concrete building along the coast. Saipan Lagoon can be seen behind a row of trees and shrubs.

From the water, a person looking inland from the lagoon would see trees and shrubs that are failing, the undercut eroding bank, and a derelict concrete building.

**Alt. 2, Proposed Action; Potential effects on views:** The revetment would be low on the landscape, approximately level with ground level onshore and generally between four and five feet above the beach along most of the length. Due to its low aspect, the revetment would not impede existing views in any direction.

Removing the failing vegetation would result in greater visibility of Saipan Lagoon from land areas including from Beach Road. After the trees and shrubs along the coast and derelict building are removed, people looking landward from the lagoon would see the low limestone rock revetment, the parking area, landscape plantings that remain, buildings, and the inland

mountains. The revetment would blend with other beach areas along the coast when viewed from a distance offshore.

#### 4.2.4 Water Quality

**Alt. 1, Baseline; Water quality:** There are no terrestrial surface waters (e.g., wetlands, lakes, streams) in the project area.

Carruth (2003) describes groundwater resources of Saipan. The construction area is in the western coastal plain, which is comprised of deposits of Pleistocene and Holocene Age-emerged limesand beach, artificial fill, and volcanic outwash. In general the native soils are quite porous.

Garapan Fishing Base is located in an area that has a relatively high water table that fluctuates with the tide. Exploration bores by MGS (2019) found groundwater levels as shallow as 3.3 ft deep. Submarine groundwater discharge in the project area is a source of inputs of freshwater, nutrients and pollutants into the lagoon (Carruth 2003, Knapp et al. 2020).

CNMI BECQ has established water quality standards regulations at Title 65-130 (updated September 2021). The BECQ regulates water quality to protect their use and value for propagation of aquatic life, recreational purposes, and public water supply use, taking into consideration their use and value for commerce.

Marine waters near Garapan Fishing Base are designated Class AA Marine Waters (Highest Quality). Class AA marine waters are described and defined in Part 100 §65-130-101(a) as follows:

“(1) It is the objective of this class that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-related source or actions. To the extent possible, the wilderness character of such areas shall be protected. Mixing zones for dredging and the discharge of dredged or fill material may be permitted as allowed under NMIAC § 65-130-525. Mixing zones for any other discharge into these waters are prohibited.

(2) Siting of any source of wastewater discharge within 50 ft of any waterbody, or within 25 ft of the top of any cliff/steep embankment (greater than 10 ft vertical drop or having greater than 50% slope) above any waterbody is prohibited. This setback is a minimum setback and any additional setbacks listed in the CNMI DCRM Regulations [NMIAC, title 15, chapter 10] or the CNMI Wastewater Treatment and Disposal Rules and Regulations [NMIAC, title 65, chapter 120] shall apply.

(3) The uses to be protected in this class of waters are to support the propagation of aquatic life; fish and shellfish consumption; conservation of coral reefs and wilderness areas; oceanographic research; aesthetic enjoyment; and primary contact recreation in and on the water without risk to human health.

(4) The classification of any water area as class AA shall not preclude other uses of such waters compatible with these goals and in conformance with the criteria applicable to them.”

The Commonwealth has an anti-degradation policy described at §65-130-010, and has established three tiers of water quality protection. To summarize at a high level, we provide the following:

Tier 3 waters are high quality waters that constitute an outstanding CNMI resource and where lowered water quality is *prohibited*. Tier 3 waters are within Class AA waters.

Tier 2 waters are “Waters where the water quality exceeds the levels necessary to support protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water shall be maintained and protected, unless the Commonwealth finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Commonwealth’s continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. The Regulations provide provisions for allowing such degradation of water quality. Tier 2 waters are also within Class AA waters, but with significantly more daily users. Table B-2 in BECQ (2020) shows that Garapan Fishing Base in West Takpochao is classified as a Class AA, Tier 2 water body.

Tier 1 waters include all waters where the existing level of quality routinely falls below or just above the applicable water quality criteria for Designated Uses (DUs) which require a minimum level of water quality necessary to protect existing uses. Tier 1 waters include ports, marinas, harbors, and receiving waters for waste water treatment plant outfalls with Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permitted mixing zones and are within Class A waters.

It is policy that any action that may lower water quality is subject to a review by CNMI BECQ for consistency with the anti-degradation policy.

*Baseline water quality at Garapan Fishing Base Dock:* Inputs to marine waters at Garapan Fishing Base that affect lagoon water quality come from a storm water drain, storm water runoff, bank erosion, and groundwater which introduce sediments, nutrients, and bacteria into the lagoon. Urban runoff from expansive paved and populated areas contribute to an excess of nutrients and aerobic bacteriological activity resulting in decreased oxygenation of coastal waters. The BECQ report speculates that low pH could be associated with boat maintenance, road or other new construction projects or cleaning solutions used on boats.

The BECQ DEQ is working with the community to manage inputs from land sources and to address failing wastewater infrastructure and improve water quality. BECQ monitors water quality on a rotational 8-week schedule (BECQ 2020). Garapan Fishing Dock (Water quality Sample Station ID WB21) was previously part of sampling segment 19B, W. Takpochao (central), but is now part of monitoring site 19C, W. Takpochao (South). According to Table C-1 in BECQ (2020), coastal waters in the project area are classified as “impaired.” According to Table C-10 in BECQ (2020), sampling segment 19C, W.

Takpochau (South) is on the impaired list because of water quality issues of low dissolved oxygen, low pH, and high nitrate.

According to the BECQ's beach monitoring website (BECQ 2021), Garapan Fishing Dock (monitoring site WB21) often receives Red Flag closure notices (48 hour fishing/swimming closures) due to enterococci bacteria standards being exceeded. Some of the latest Red Flag closures included those on July 20 and 27; Aug. 10, 23, and 31; and Sept 8 and 20, 2021. The BECQ notes that bacteria can be from human or animal waste or the natural environment.

BECQ (2020) summarizes the status of the four designated uses for site 19C W. Takpochau (South), in Table C-31. They report the status of the four designated uses as follows:

- Aquatic Life DU is not supported due to measures of habitat (low dissolved oxygen and low pH) and nitrate (NO<sub>3</sub>) exceedances.
- Fish Consumption: There is insufficient information to evaluate fish consumption.
- Recreation is not supported (enterococci exceeds standards and pH is low).
- Aesthetic enjoyment/other uses are fully supported.

Water quality standards at Garapan Fishing Base are summarized in Table 2, below.

**Alt. 2, Proposed Action; *Potential effects on water quality:***

The project would not affect surface waters; there are no surface waters in or near the action area.

DLNR has included a suite of BMPs that the contractor would be required to follow. These include preventing erosion, preventing and responding to chemical spills, monitoring water quality, and stop work provisions to protect corals during a key spawning event.

DLNR will obtain a water quality certification for the proposed action because a federal license or permit is required to construct the revetment, and it may result in discharge into the waters of the United States. DLNR will develop a water quality monitoring plan for the project that will support an anti-degradation policy review by BECQ and that will help ensure that the proposed action will accord with the applicable provisions of the CWA (Sections 301, 302, 303, 306, and 307), the CNMI water quality standards. The monitoring plan and review will help ensure the project would not interfere with the attainment or maintenance of the existing or designated use of Commonwealth waters, and all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on aquatic life and human health (CNMI Water Quality Regulations §65-130-601).

DLNR's Water Quality Monitoring Plan will describe the mitigation measures that will be implemented to control turbidity plumes and other possible construction-associated pollutants such as oil and suspended sediment during demolition, excavation, and building the revetment and the associated water quality sampling regime to show the project will meet CNMI water quality standards. CNMI Water Quality Standards regulations at §65-130-530, cover "Dredging

and Discharge of Dredged or Fill Material.” The regulations explain that dredging and dredged spoil discharge generally result in short-term discharge and do not represent continuous discharge that will affect designated uses over a long term. The regulations describe that discharge from the dewatering of excavations and shoreline stabilization projects can also cause short-term suspension of sediments similar to that caused by dredge and fill discharges. The regulations allow for mixing zones to be granted for dredging activities, other in-water construction-related activities, and the discharge of dredged or fill material provided that: (1) All other requirements of the Part are met; and (2) The proposed activity satisfies the anti-degradation policy requirements described in § 65-130-010.

CNMI Water Quality Standards regulations provide a helpful high-level summary of concerns related to dredging and discharge of dredged or fill materials on colonies of reef building organisms and seagrasses. The regulations explain that discharge can bury corals, release contaminants such as hydrocarbons into the water column, reduce light penetration through the water, and increase the level of suspended particles (increase turbidity), thus adversely affecting health and resiliency for a variety of coral species, which in turn provide habitat for aquatic life.

The regulations also outline concerns around dredging and discharge of dredged or fill material on sea grass beds. The concerns include the potential for smothering vegetation and benthic organisms, creating unsuitable conditions for the continued vigor of seagrasses by changing water circulation patterns, releasing nutrients that increase undesirable algal populations, releasing chemicals that adversely affect plants and animals, increasing turbidity levels (thereby reducing light penetration and hence photosynthesis), and changing the capacity of a vegetated shallow to stabilize bottom materials and decrease channel shoaling.

Other concerns include the potential for dredging and the discharge of dredged or fill material to reduce the value of vegetated shallows as nesting, spawning, nursery, cover and forage areas, as and affecting their value in protecting shorelines from erosion and wave action. The activity may also encourage the growth of nuisance vegetation.

Sedimentation is a primary water quality concern for the project. DLNR’s BMPs include a suite of actions that would prevent erosion and large releases of sediment into the lagoon during construction. The use of silt fences, a silt curtain, dewatering cells, and implementing an approved water quality monitoring plan would all reduce the potential for large adverse effects on lagoon water quality in terms of turbidity. DLNR will focus water quality monitoring on turbidity (which will also be a proxy for total suspended solids). Baseline measurements would be established before construction begins. “Mixing zone” means an area of a surface water body of specified dimensions where a discharge undergoes dilution in the vicinity of the discharge point. A mixing zone is an allocated impact zone where water quality criteria can be exceeded, but where acutely toxic conditions are prevented (except as defined within a limited zone of initial dilution) and where public health and welfare are not endangered (CNMI § 65-130-015 Definition). DLNR will measure turbidity in the authorized mixing zone and compare the measurements with those of ambient conditions in the control location. This is how DLNR would detect temporary degradation of water quality outside of the silt curtain. Should a turbidity measurement be greater than 1.0 Nephelometric Units (NTU) above ambient, or other standard authorized by the BECQ, DLNR would stop work until the issue is resolved and water quality return to allowable levels.

The contractor would be responsible for securing the construction site including properly transporting, using, storing, and disposing of hazardous materials. DLNR has incorporated a suite of BMPs into the proposed action to help ensure the contractor would prevent and respond quickly to accidental spills. The precautions and response would prevent hazardous materials from polluting land areas and subsurface and coastal waters.

The proposed action is a small-scale project that would not change water circulation patterns. During construction, water temperatures in the silt curtain may increase, but the contractor would allow water to normalize before removing or moving the silt curtain. Lagoon water would continue to circulate in nearshore marine areas during construction and after the revetment is built. Therefore, the project is not expected to affect water temperature.

The proposed action would not change bacterial levels, pH, or nutrient inputs. Providing a period for water in the silt curtain to settle before moving or removing the silt curtain would allow the minor amount of nutrients that may be re-suspended during excavation to settle out or be diluted.

In accordance with revised CNMI water quality regulations, because the proposed action has the potential to adversely affect coral reproduction, DLNR has proposed a work stoppage period for the project during the peak coral spawning period which is around the May, June, and/or July full moon(s) (to be determined by BECQ). The stoppage period, if determined to be applicable, shall be no less than twenty one calendar days around each full moon determined by BECQ. In determining whether an activity has the potential to affect coral spawning, when reviewing a proposed construction activity, BECQ considers the magnitude of the sediment plume generated by the proposed activity; the most likely extent and directions of drift of the sediment plume; the type of sediment and its composition; and the proximity of broadcast spawning coral species to the proposed activity and expected sediment plume (§65-130-530 (b)(3) (iii)).

The peak spawning period for *Acropora* spp. corals in the CNMI has been determined to be during the month of June (Keith et al. 2016). The coral spawning period is estimated to be 21 days per event, which includes 8 days before the full moon and 14 days after. DLNR and BECQ will consult with local NMFS PIRO Habitat Conservation Division (HCD) Biologist to determine the date of mass coral spawning and avoid in-water construction during the primary spawning period.

Although much of the construction work would be done from shore using an excavator, the contractor would enter the water to place and monitor the silt curtain and take water samples. As a result, in-water work has the potential to introduce toxicopathological chemicals into the water column through the use of sunscreens containing oxybenzone, butylparaben, octinoxate, and 4-methylbenzylidene camphor. These ingredients are known to harm corals (Downs et al. 2017). CNMI Public Law No. 21-20 prohibits the "...importation, sale, and distribution in the CNMI sunscreen containing oxybenzone and octinoxate without a prescription from a licensed healthcare provider..." but sunscreens with these ingredients remain in use. As a BMP, to reduce the potential for harmful sunscreen chemicals to be introduced into the water off Garapan, DLNR proposes to advise its contractor of Public Law No. 21-20 and encourage the use of natural, less harmful sunscreen when its use is necessary for sun protection and to consider using long sleeves, leggings, hats, and hoods to protect themselves. This BMP is expected to minimize

the potential for toxicopathological chemicals to be released into the water near Garapan during construction.

DLNR's BMPs are expected to prevent large adverse effects from the proposed action on turbidity and nutrients. Over the long-term, there would be an improvement to water quality in terms of turbidity, sedimentation, and nutrients by reducing erosion along the shore. We expect a minor beneficial improvement to aquatic life DU, including improved seagrass resilience.

The project is not expected to change to Fish Consumption or Recreation DUs. This is because the project would not affect bacteria levels, pH, and may have only minor improvements to dissolved oxygen levels.

The proposed action would not change the current status (full attainment) of the aesthetic enjoyment/other uses DU, though water along Garapan is expected to be clearer after the revetment is built.

In summary, construction would be done in a manner that would protect water quality to the extent possible. The work would be in accordance with applicable CNMI water quality standards and regulations that allow shoreline stabilization projects to proceed, with certain conditions. Due to the suite of BMPs that would be implemented, and given the site conditions, the proposed action would not affect pH, bacteria or temperature. The project would not have more than minor temporary and adverse effects on turbidity and sedimentation during construction and those effects would be within authorized levels. By stabilizing the shoreline and controlling erosion, the revetment would have moderate beneficial effects on water quality in terms of reduced turbidity and nutrients over the long term. There could be minor improvements to dissolved oxygen related to reductions in sediments and nutrients. Water quality improvements are expected to enhance the viability of seagrasses and improve ecosystem functions.

Table 2 summarizes our review of potential effects of the proposed action with respect to water quality standards and other topics.

Table 2. Saipan Lagoon Water Quality Standards and Potential Effects of the Alternatives on Water Quality.

Source: CNMI Administrative Code, Title 65: Division of Environmental Quality, Chapter 65-130 Water Quality Standards.

Topic or standard for Class AA Marine Waters or all Waters (Part 400 §65-130-401) updated 6/21/21	Alt. 1. Baseline water quality standards.	Alt. 2. Effects of the proposed action on water quality standards.
Salinity: No alterations of the marine environment shall occur that would alter the salinity of marine ...waters more than 10% from ambient conditions or which would otherwise adversely affect the indigenous biota and sedimentary patterns. §65-130-425.	Nearshore marine waters have small inputs of freshwater from storm water runoff and submarine groundwater discharge.	The proposed action would not change salinity.
Temperature: Water temperature shall not vary by more than 1.0°C from the ambient conditions. §65-130-430.	Marine water temperature at the site is affected by season, cloud cover, solar heating, tidal conditions, and water circulation.	<p>The proposed action would not change water temperatures in the lagoon beyond the silt curtain. The contractor would allow water temperature to normalize before removing or moving the silt curtain. There would be no more than minor and temporary changes to water temperature.</p> <p>The revetment would not affect water temperatures because circulation of water in the lagoon is not expected to change. There would be no change to marine water temperature over the long term.</p>
Dissolved Oxygen (DO): Concentration of dissolved oxygen (DO) in all waters shall not be less than 75% saturation. When ambient conditions are less than 75% saturation, there shall be no worsening of water quality from ambient conditions. §65-130-415.	Segment 19C, W. Takpochau (South) DO measurements occasionally exceed the standard. The CNMI government is working to address land-based sources that lead to lowered DO measurements.	<p>During construction, the proposed action is not expected to affect DO in the lagoon.</p> <p>Over the long-term, minor improvements to DO are expected as the revetment controls erosion resulting in less sedimentation and lower nutrient inputs.</p>



Topic or standard for Class AA Marine Waters or all Waters (Part 400 §65-130-401) updated 6/21/21	Alt. 1. Baseline water quality standards.	Alt. 2. Effects of the proposed action on water quality standards.
<p>Turbidity: Turbidity at any point, as measured by nephelometric turbidity units (NTU), shall not exceed 0.5 NTU over ambient conditions. (AA) §65-130-435.</p>	<p>Erosion, runoff, inputs from the storm drain, disturbance of the substrate from vessel use and storm conditions contribute to turbidity in the project area.</p>	<p>During construction, due to BMPs, the proposed action would have no more than minor effects on turbidity beyond the silt curtain. DLNR would monitor turbidity beyond the silt curtain in the zone of mixing and at a control station. The DLNR would put into effect an appropriate response if measurements exceed the standards, such as stopping work and correcting the problem. This will help ensure the project does not degrade water quality.</p> <p>The revetment would reduce turbidity in the immediate vicinity of the revetment by controlling erosion and nutrient inputs. The revetment is expected to have moderate beneficial effects on turbidity in the long term.</p>
<p>Microbiological Requirements: The enterococci concentration shall not exceed a geometric mean of 35 Most Probable Number (MPN) per 100 mL based on samples taken in any 30-day interval. No single sample shall exceed 130 Enterococci MPN per 100 mL. §65-130-401.</p>	<p>Enterococci standards are often exceeded at Garapan Fishing Dock (monitoring site WB21).</p>	<p>The proposed action would not affect levels of enterococci bacteria.</p>

Topic or standard for Class AA Marine Waters or all Waters (Part 400 §65-130-401) updated 6/21/21	Alt. 1. Baseline water quality standards.	Alt. 2. Effects of the proposed action on water quality standards.
<p>pH: pH shall not deviate more than 0.5 from a value of 8.1; no lower than 7.6 or higher than 8.6. When ambient conditions have a pH below 7.6 or above 8.6, there shall be no worsening of water quality from ambient conditions. (AA) §65-130-405.</p>	<p>pH measurements in the area sometimes deviate from the standard.</p>	<p>No effect. No change to pH from construction or after the revetment is built.</p>
<p>Nutrients: Nitrate-Nitrogen (NO<sub>3</sub>-N): Nitrate-Nitrogen concentrations shall not exceed 0.20 mg/l (AA).</p> <p>When ambient conditions exceed these criteria, there shall be no worsening of water quality from ambient conditions. §65-130-410.</p>	<p>NO<sub>3</sub> standards are exceeded occasionally at Garapan Fishing Base. Inputs are from septic systems, sanitary sewer overflows, and urban runoff/storm sewers. Nutrients enter waters off Garapan Fishing Base through groundwater, at the existing storm drain, through runoff, and through shoreline erosion.</p>	<p>During construction, the use of a silt curtain would prevent nutrients that are re-suspended from being released into the lagoon. Allowing water to normalize before moving the silt curtain would allow nutrients to settle out or be reabsorbed. Effects of construction on nutrients in the lagoon would be no more than minor.</p> <p>Over the long term, the revetment would likely result in a minor beneficial effect on nutrient levels in nearshore areas by stabilizing the shoreline and reducing erosion.</p>
<p>Total Filterable Suspended Solids (TSS): Concentrations of suspended matter at any point shall not exceed 5 mg/l. When ambient conditions exceed this criteria, there shall be no worsening of water quality from ambient conditions. (AA) §65-130-420.</p>	<p>Baseline turbidity will be established before construction starts at pre-established monitoring stations.</p>	<p>Turbidity measurements will serve as a proxy for TSS during the water quality monitoring unless grab samples are required by BECQ. Temporary increase in suspended solids (silt) within siltation barrier near the construction site during construction. BMPs would reduce sedimentation of water in the lagoon beyond the silt curtain and effects would be no more than minor. TSS would be reduced after the revetment is built and turf cover is re-established. Effects of the revetment on TSS would be minor and beneficial.</p>

Topic or standard for Class AA Marine Waters or all Waters (Part 400 §65-130-401) updated 6/21/21	Alt. 1. Baseline water quality standards.	Alt. 2. Effects of the proposed action on water quality standards.
<p>Oil and Petroleum Products: The concentration of oil or petroleum products in any Commonwealth waters shall not: (a) Be detectable as a visible film, sheen, or discoloration of the surface, or cause an objectionable odor; b) Cause tainting of fish or other aquatic life, be injurious to the indigenous biota or wildlife, or cause objectionable taste in drinking water. (c) Form an oil deposit on beaches or shoreline, on marine debris, or on the bottom of a body of water. §65-130-445.</p>	<p>Vessels and storm water runoff are likely sources of oil and petroleum products.</p>	<p>DLNR included BMPs that would prevent the introduction of or spills of petroleum products or oils. The contractor would secure the site, carry spill response materials, and respond to accidental spills. BMPs would help ensure the proposed action would not exceed the standard for oil and petroleum products.</p> <p>The revetment would not change vessel use in any way that would increase oil and petroleum in the site.</p>
<p>Toxic Pollutants: ...all waters shall be free from toxic pollutant concentrations that are lethal to, or that produce detrimental physiological responses in human, plant, or animal life...</p> <p>(see other criteria) §65-130-450.</p>		<p>DLNR has included BMPs that would prevent the introduction of or spills of hazardous materials or toxic chemicals. The contractor would secure the site, carry spill response materials, and respond to accidental spills. BMPs would help ensure the proposed action would help ensure that the project would not exceed the standard for toxic pollutants.</p>
<p>Mixing Zones, when Permitted §65-130-501.</p>		<p>The DLNR's water quality monitoring plan will be coordinated with the BECQ. This will identify any alternative water quality standards that apply for a limited period within the mixing zone.</p>

Topic or standard for Class AA Marine Waters or all Waters (Part 400 §65-130-401) updated 6/21/21	Alt. 1. Baseline water quality standards.	Alt. 2. Effects of the proposed action on water quality standards.
Toxicopathological chemicals	Several ingredients in some sunscreens contain chemicals that are harmful to coral reefs. CNMI public law prohibits importation, sale, and distribution of sunscreen containing oxybenzone and octinoxate without a prescription because of the harmful effect on coral reefs.	BMPs based on education about the chemicals to avoid and alternative methods of sun protection would reduce the potential for the proposed action to result in damage to corals from toxicopathological chemicals.
Designated Use (DU) Values:	<p>Aquatic Life DU: Not supported due to low DO, low pH, and nitrate (NO<sub>3</sub>) exceedances. Benthic substrate and coral diversity/seagrass trends for water quality study area 19C: Impaired due to low DO and pH measurements.</p> <p>Fish Consumption DU: There is insufficient information to evaluate fish consumption. Frequent Red Flag fishery closures due to enterococci exceedances.</p> <p>Recreation DU: Not supported (enterococci exceeds standards and pH is low)</p> <p>Aesthetic enjoyment/other uses are fully supported.</p>	<p>Aquatic Life DU: Potential limited improvement to DO, with reduction in turbidity and nutrients. Limited improvement to seagrass resilience in immediate vicinity after revetment is built.</p> <p>Fish Consumption DU: No change.</p> <p>Recreation DU: No effect (No change to enterococci or pH).</p> <p>Aesthetic enjoyment: No large change. Possible improvement to water clarity due to erosion control after revetment built.</p>

#### 4.2.5 Soils, Sediments

**Alt. 1, Baseline; Soils, sediments:** Soils at Garapan Fishing Base have been affected by past development and erosion. Soils in the project area are composed of layers of mixed fill (topsoil, gravel, other components) over Shioya soil (Russell 2021). Shioya soil is a loamy sand over a layer of water-deposited coral sand (Young 1979). Engineers found sandy gravel fill (medium dense consistency) down to 5.5 ft, and sand with silt and gravel (very loose to medium density) from 3 to 27 ft deep (MGS 2019). Within the lagoon, sand is produced through natural processes including through calcareous algae (e.g., *Halimeda* and *Padina*), and grazing on corals by certain fish species that breaks corals down into sand. Within the action area, this nearshore silty, sandy, rocky substrate supports *Enhalus acoroides* seagrass, turf algae, and some macroalgae including *Halimeda* and *Caulerpa*, and turf algae (DLNR 2021).

Under the baseline, land-based soils would continue to erode into the lagoon as a result of storm water runoff and storm surge and the coastline is expected to continue to retreat landward. Water quality would continue to be adversely affected by sediments due to erosion.

**Alt. 2, Proposed Action; Potential effects on soils and sediments:** The proposed action would stabilize the shoreline along approximately 380 ft between Garapan Fishing Base and the lagoon. Once built, the revetment would slow the rate of loss of soil and reduce the amount of sedimentation of nearshore marine areas. Land-based soil would continue to enter the lagoon during storms through runoff, but at reduced rate. During construction, DLNR's contractor would apply BMPs to prevent sediment from spreading beyond the silt curtain into the larger lagoon environment. These measures include installing and maintaining silt fences and a silt curtain, using a dewatering basin with raised perimeters lined with filtration fabric, sealing open trenches and replanting areas disturbed by construction as soon as possible after groundcover is disturbed. These measures would control erosion from the construction site.

In summary, over the short-term, soil loss and siltation would be controlled through erosion control measures. Over the long-term, the proposed action would reduce soil loss and sediment inputs into the marine environment. The project would have positive moderate effects on soil loss and on sediments in the marine environment.

#### 4.2.6 Coastal flooding

**Alt. 1, Baseline; Coastal flooding:** The project is located in the low-lying western coastal plain, which is subject to inundation from flood waters. FEMA has established areas along the coast that are in flood hazard zone (AE EL7) as depicted on the clip of a FEMA Flood Insurance Rate Map shown in Appendix D (Fig. D-4). Garapan Fishing Base and other areas are subject to inundation by a flood that has a 1-percent or greater chance of being equaled or exceeded during any given year. This is the "base flood" or "100-year flood." Detailed hydraulic analyses found that the base flood elevation is 7 ft.

Flooding can originate as excess rainfall, coastal wave surge, or in the long-term, from sea level rise and sea level change. Due to ocean processes, current sea level can be lower or higher than average by 1 foot (Grecni et al. 2021) or more (Lander 2004). Flood water currently drains into

the lagoon through the storm drain or, during heavy storms, directly over the bank. Storm water also percolates through the permeable soils on Garapan Fishing Base.

According to the summary report by Grecni et al. (2021), sea level rise is expected to continue and the rate of rise is expected to accelerate in the future. Global Mean Sea Level (GMSL) rise projections range from 0.3–0.6 ft by the year 2030. By the year 2050, the projected range of GMSL rise is between 0.5 and 1.2 ft, and by the year 2100, the projected range is between 1.0 and 4.3 ft. Sea level rise is projected to cause coastal flooding along western Saipan to become more frequent and severe. Inundation of Garapan Fishing Base and other areas under different sea level rise scenarios can be found at [U.S. Geological Survey TerriaMap](#) and viewed on [NOAA's Sea Level Rise Viewer](#). We note that Garapan Fishing Base is built of fill at a higher level and appears to be subject to inundation at a slower rate than the neighboring property to the south.

**Alt. 2. Proposed Action; Effects on coastal flooding:** The revetment is not expected to change the likelihood of flooding or the intensity of flooding at Garapan Fishing Base or in adjacent areas. As shown in Appendix A, the revetment would be approximately 6 inches above grade, therefore the crest would be at between 4 and 5 ft elevation through much of its span. The crest would be at approximately 2 ft elevation at the northernmost extent along the storm drain. Wave surge and rainfall would continue to affect Garapan Fishing Base and other areas as it is under the baseline. Once the revetment is built, flood water would continue to drain off the parcel through the storm drain, along the sides of or over the top of the revetment. Flood water could also drain by percolating through soils and through the revetment.

The revetment would stabilize the shoreline along Garapan Fishing Base and protect public infrastructure, and was designed to be stable under anticipated storm surge, but it was not intended to prevent wave run-up under storm conditions. At approximately 2 to 3 ft above MHHW, the revetment crest would exceed still water heights for some time, but performance of the revetment would depend on future conditions.

## 4.3 Biological Resources

### 4.3.1 Terrestrial habitats and wildlife

**Alt. 1, Baseline; Terrestrial habitats and wildlife:** Terrestrial areas at the Garapan Fishing Base have been disturbed through past human uses. Urban built-up areas are paved with gravel, asphalt, or planted in grass. It features “urban” vegetation that includes sparse landscape plantings of naturally occurring indigenous tropical trees and shrubs, vines, and grasses. There is no high quality terrestrial wildlife habitat on upland areas.

According to vegetation maps in Liske-Clark (2015), the parcel to the south features introduced forest vegetation that likely supports common native and introduced birds. DLNR reports that no ESA-listed species have been observed on or near Garapan Fishing Base. The project parcel does not feature high quality natural habitat and there have been no reports of native land birds, fruit bats, snails, or insects on the parcel, with the exception of Pacific Golden-plover (*Pluvialis fulva*) a common migratory bird that forages on flat open areas during the winter months. This species can tolerate relatively high levels of disturbance from vehicles and people. White tern, *Gygis*

*alba*, an indigenous seabird that roosts and nests in trees on shore, may be found in trees nearby, but white terns are not reported from Garapan Fishing Base.

The parcel does not support nesting by sea turtles. Beach areas are tidally inundated and upland areas have been substantially modified and are actively used as parking areas or for other uses.

**Alt. 2, Proposed Action; Potential effects on terrestrial wildlife and habitat:** The project would not affect ESA-listed land-based species due to geographic separation and lack of suitable habitat. The project would not affect green or hawksbill turtle nesting sites because there is not suitable sea turtle nesting habitat at Garapan Fishing Base including nearshore beach areas.

During construction, Pacific Golden-plovers would likely continue to visit the parcel to forage in portions of the Fishing Base that are in open grass. Plovers could also relocate to other nearby lawns and open space areas. The contractor would restore turf grass as part of the project and plovers are expected to resume use of the parcel once the staging area is removed. Due to the availability of suitable habitat for plovers nearby and restoration of turf areas, the proposed action would have no more than minor effects on Pacific Golden-plover in the short-term and no effects in the long-term.

#### 4.3.2 Marine habitats and wildlife

**Alt. 1, Baseline; Marine habitats and wildlife:** Saipan Lagoon as a whole is a barrier reef and associated lagoon. The nearshore marine habitat is intertidal and a beach made up of calcareous sand mixed with silt and small gravel can be exposed at low tide. Further offshore, a narrow channel has been dredged. *Enhalus* seagrass grows in dense clumps just beyond the dredged channel. Water conditions are generally calm, protected by the barrier reef well offshore, but conditions along shore can be affected by storm-related waves, storm water, and runoff from land.

The marine substrate within the project footprint consists mainly of sand, rubble, silt and turf alga (DLNR 2021). Areas adjacent to the project site, just beyond the action area, are composed of calcareous green algae (*Caulerpa* and *Halimeda*), seagrass (*Enhalus acoroides*) and sand dominated cover types (DLNR 2021). Further offshore, beyond the action area, marine habitats include mixed seagrass algae (*Halimeda maculosa/Enhalus/Halodule* (seagrass) mix and staghorn *Acropora* coral (see habitat, Appendix D, Figs. D-1, D-2).

The narrow intertidal beach supports intermittent foraging by shorebirds at low tide. Shorebirds are most abundant in the Mariana Islands from September to April (Stinson et al. 2016). Common shorebirds that may be seen in the project area include Pacific Golden-plover, Whimbrel (*Numenius phaeopus*), Ruddy Turnstone (*Arenaria interpres*), and Grey-tailed Tattler (*Heteroscelus brevipes*) along with other visitor and migrant shorebirds (see, for example, shorebirds list in Stinson et al. 1997).

During a 2021 site survey, DLNR staff found common nearshore marine fishes and invertebrates (Appendix B). The survey team found one coral colony (*Pocillopora damicornis*) just outside of the project footprint. In general, habitats in the footprint were bare sandy, silty, rocky intertidal areas nearshore, turf algae on rubble, *Enhalus acoroides* seagrass, and mixed macroalgae.

Although DLNR staff found very limited coral and no coral reefs in their site survey, habitat mapping plots indicate there is likely coral further offshore from the action area near the boat ramp (see predictive plot, Appendix D, Figure D-2). According to the Saipan Lagoon Use Management Plan (2020), an area known as “Fishing Base Staghorn” is near the Fishing Base Boat Ramp, a few hundred yards offshore from the pier. It contains one of Saipan’s largest stands of staghorn coral (*Acropora* spp.). The reef extends well over 500 meters and is a preferred spot for juvenile napoleon wrasse or humphead wrasse (*Cheilinus undulatus*). The benthic community at this site once consisted of 100% coral cover (all staghorn *Acropora*); however, the site is highly vulnerable to bleaching given branching *Acropora* species are among the most susceptible of all coral types to thermal bleaching.

Although sea turtles were not observed during the DLNR’s site visit and are not generally reported from nearshore marine waters along Garapan Fishing Base, endangered green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) are found in Saipan Lagoon and could forage in nearby seagrass areas. They are more likely to be found near the outer reef portion of Saipan Lagoon (Summers et al. 2017). Similarly, threatened scalloped hammerhead sharks could occur in Saipan Lagoon, but have not been confirmed in the CNMI. If present, juveniles and neonates could be present in waters near Garapan Fishing Base. Although three species of threatened Indo-Pacific corals occur around the CNMI (*Acropora globiceps*, *A. retusa*, and *Seriatopora aculeata*), none has been identified near the project site. However coral larvae from other hard corals or ESA-listed corals could be present in the water column or nearby areas, particularly during peak coral spawning events. Similarly, four species of giant clams that are candidate species for listing under the ESA may occur in the lagoon (see Appendix C) and giant clam planktonic larvae could be in the water column particularly during peak spawning for clams.

The construction site is too shallow for marine mammals to be present and none have been seen in inner Saipan Lagoon.

**Alt. 2, Proposed Action; Potential effects on marine habitats and wildlife:** The project would unavoidably disturb benthic habitat within the narrow excavation zone inside the silt curtain during construction. DLNR has opted to voluntarily remove benthic macroinvertebrates (e.g., sea cucumbers, *Trochus niloticus*, and other large shells, sea stars) within the silt curtain at the start of each phase, but other benthic species in the excavation zone close to shore would be destroyed. The number of individuals lost would be small in relation to their natural numbers, and once the revetment is built, and sand and sediment restored in the lower portions, benthic organisms would recolonize the area. Therefore, although excavation would adversely affect some organisms over an area estimated as three-tenths of an acre, over the mid-term and long-term the effects of excavation on benthic species would be no more than minor.

DLNR proposed a number of BMPs that would protect lagoon water quality and nearshore benthic habitats. These include establishing and maintaining erosion controls, preventing pollution and contamination from hydrocarbons or toxicopathological chemicals, preventing marine debris from entering the lagoon, and additional measures to protect marine wildlife and habitats such as preventing the introduction or spread of invasive species and preventing adverse effects to sea turtles, and preventing adverse effects on spawning corals during a key spawning event. These BMPs would protect other marine life in the project area. Site conditions and BMPs



allow us to conclude that construction would have no more than minor and temporary adverse effects on water quality (see section 4.2.4, above), seagrass, corals and giant clams (coral and giant clam larvae), marine fish and invertebrates, and sea turtles. We discuss effects on ESA-listed turtles, sharks, corals, and designated and proposed critical habitat in more detail in section 4.4.2 below. Over the long-term, water quality improvements would have moderate beneficial effects on water quality, seagrasses, and marine fishes and invertebrates.

During construction, shorebirds are likely to avoid the area, but would be able to resume intertidal foraging of the beach at low tide along most of the coast. The temporary disruption of foraging would affect a small portion of habitat available to shorebirds so the effects would be no more than minor in the short- and insignificant in the long-term.

Once built, the revetment would not affect biodiversity because it would continue to provide ecological functions and services. The revetment would not create a barrier to animal movements between habitats, or eliminate a large amount of rare habitat. Approximately 0.087 acres of unconsolidated beach would be converted to limestone rock. The revetment rocks would provide 3-dimensional structuring habitat that could provide shelter and substrate for small fishes when submerged, and invertebrates. Once built, the same fishes and invertebrates that currently occur in the project area (DLNR 2021) are likely to continue to use the area. Over the mid- and long-term, water quality improvements are expected to enhance the viability of nearby *Enhalus* seagrass beds, which provide habitat for marine fishes and invertebrates. Because of the small relative size of the revetment, and low-level of effects on marine wildlife, the revetment does not have the potential to affect predator-prey relationships.

Reducing erosion has the potential to reduce nutrients in nearshore lagoon waters, which in turn has the potential to change the occurrence and distribution of seagrasses (Houk and Camacho 2010). However, nutrients are still likely to drain into the nearshore areas through the nearby storm drain, so even with water quality improvements, the revetment is not expected to result in changes to the type of seagrass or macroalgae that occurs in the area.

The proposed action would not affect marine mammals as none are present or expected to be in shallow nearshore waters fronting Garapan Fishing Base.

### **4.3.3 Designated management areas and vulnerable ecosystems**

The proposed action would not adversely affect a vulnerable ecosystem including shallow or deep coral ecosystems. There are no deep coral ecosystems in the area. Coral ecosystems are in Saipan Lagoon, but are not expected to be adversely affected by the proposed action. BMPs would prevent adverse effects on water quality and marine habitats (see section 4.2.4 and 4.3.2). The proposed action would not affect a designated marine management area. The Lighthouse Reef Trochus Sanctuary was established to conserve a marine gastropod or shell, *Trochus niloticus*, is farther out in the lagoon approximately 3/4<sup>th</sup> mile (1 km) southwest of the action area, and would not be affected by the proposed action. DLNR would use new materials and would rinse gear that has been used at other sites. These BMPs would prevent the potential introduction or spread of invasive algae (e.g., *Chaetomorpha* spp.) and prevent adverse effects on lagoon coral habitats and the Trochus Sanctuary.

#### 4.3.4 Essential Fish Habitat and Habitat Areas of Particular Concern

**Alt. 1, Baseline; EFH and HAPC:** The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines essential fish habitat (EFH) as, “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (50 CFR, section 600.10). The MSA requires any Federal agency that may adversely affect EFH to consult with NMFS. Adverse effects on EFH are defined as “any impact that reduces the quality and/or quantity of EFH,” and may include “site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.” 50 CFR §600.810(a). 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.” Habitat Areas of Particular Concern (HAPC) are subsets of EFH identified pursuant to 50 CFR, section 600.815(a)(8).

EFH and HAPC off Garapan Fishing Base are defined in the Council’s approved Fishery Ecosystem Plans for the Mariana Archipelago (WPFMC 2009a) as amended in 2017 (WPFMC and NMFS 2017) and Pelagic Fisheries of the Western Pacific (WPFMC 2009b). Designated EFH and HAPC in the project area and a list of Mariana bottomfish management unit species (BMUS) and Pelagic MUS are described in Appendix F.

In summary, the water column and seafloor in the project area and beyond are designated EFH for eggs, larvae, juvenile, and adult life stages of Mariana BMUS and Western Pacific MUS listed in Appendix F, Tables F-1 and F-2, respectively. There are no areas in Saipan Lagoon that contain bottomfish or Pelagic HAPC. We note that Amendment 5 to the Mariana Islands FEP (WPFMC and NMFS 2019) designated former Mariana Islands coral reef ecosystem MUS, crustacean MUS, and precious coral MUS as “ecosystem component species,” and there is currently no designated EFH or HAPC for ecosystem component species (WPFMC and NMFS 2018).

Water quality in the project area is slightly degraded due to ongoing erosion and point and non-point source pollutants. The government of the CNMI and others are working to improve water quality in Saipan Lagoon.

**Alt. 2, Proposed Action; Potential effects on EFH/HAPC:** The project would not affect HAPC because there is none in the action area or nearby.

NMFS prepared an assessment of effects on EFH that was coordinated with NMFS PIRO HCD in accordance with Section 305(b)(D)(2) of the Magnuson-Stevens Act (NMFS 2021a). Our evaluation included the following:

##### *Direct disturbance of benthic habitat during excavation*

Excavation would temporarily disturb benthic habitat and would result in the loss of individual benthic marine species that are part of the food web. Excavation would affect approximately three-tenths of an acre of submerged land within the silt curtain. The habitat in the action area is devoid of corals or seagrasses and mainly features sandy silty rocky substrate and water column. As the revetment is built, the contractor would restore substrate over the lowermost portion of

the revetment and this nearshore sandy gravelly substrate is expected to be recolonized over time. Less than one-tenth of an acre of benthic intertidal and subtidal habitat would be converted to rock after construction.

Once the revetment is built, water quality would improve and the area will still provide habitat for all stages of bottomfish and pelagic MUS and for other marine species. BMPs, particularly the silt curtain, would help minimize the effects of excavation and construction on areas beyond the construction zone.

*Effects on water and benthic habitat quality from sedimentation, nutrient re-suspension, thermal effects, or chemical contamination (hydrocarbons and toxicopathological agents)*

The construction work has the potential to result in increased turbidity and slightly increased nutrients and temperature within the silt curtain during construction. If the erosion control gear should fail, the project could result in effects beyond the construction zone. The project is not expected to result in changes to oxygen, pH, or bacteria levels. In the long term, the revetment is expected to positively affect water quality in a limited area along the coast by reducing erosion.

The contractor would follow a suite of BMPs that would protect lagoon water quality during construction. These include measures to prevent sedimentation and contamination of lagoon waters, and to prevent marine debris from entering the lagoon. Water quality monitoring and provisions to stop work, if required to maintain water quality, would help ensure that the project does not result in widespread sedimentation. Allowing sediments and nutrients to settle out of the water column and temperatures to normalize before removing or moving the silt curtain would help prevent effects on lagoon water quality in terms of turbidity, nutrients, and temperature. BMPs are expected to be sufficient to ensure the project will have no more than minor effects on bottomfish and pelagic EFH as a result of effects on water quality. Over the long-term the project is expected to improve water quality by reducing erosion, and therefore, the project would have long term beneficial effects on water column and bottom EFH.

*Effects of direct physical contact with habitat or MUS with rocks or equipment*

Excavation and construction would occur within the silt curtain, so direct physical contact with benthic organisms would be limited to those within the immediate construction area. The silt curtain would be anchored in the soft sediment at the bottom, connected to floats at the surface and connected to silt fences on land. Therefore, there would be only a limited potential for pelagic MUS or bottomfish MUS to enter the construction zone. The silt curtain would serve as a barrier to most motile species. Seagrasses and corals are not inside the silt curtain. Therefore, we conclude that there is little potential for adverse effects on habitat, BMUS, or PMUS related to direct physical contact with rocks or equipment.

*Effects due to entrainment in the silt curtain or entanglement of habitat or MUS with marine debris or gear*

The silt curtain may trap a small number of fish or eggs; although very few are likely to end up in the silt curtain because the work site is quite shallow. Individual fish that end up in the silt curtain may succumb due to poor water quality, but some could survive until the silt curtain is moved or removed. Because the silt curtain would be temporary, and because site conditions are

not likely to result in large amounts of fish being affected, we conclude that the silt curtain in the water column would not result in large adverse effects to EFH in terms of entrainment of PMUS or BMUS.

DLNR has included a number of BMPs that would prevent marine debris from entering the lagoon environment. Marine debris has the potential to cause suffocation and entangle marine species, and can smother or break corals and seagrasses. The contractor would be responsible for securing the construction site and would check the silt fences and silt curtain daily. Debris would be routinely removed from the silt fences and silt curtain. The contractor would secure the site and gear in advance of strong storms and would remove the silt curtain prior to a large damaging storm. These BMPs would prevent a catastrophic failure of the silt curtain and would prevent debris and gear from having an adverse effect on EFH.

#### *Effects on EFH due to the introduction of invasive species*

The transfer and introduction of invasive species could occur if materials or gear used at other sites is used at Garapan Fishing Base. Invasive species have the potential to displace native species, cause the loss of native genotypes, modify physical habitat, change assemblage structure, and affect food web dynamics and ecosystem processes (Minton 2017). *Chaetomorpha* sp., an invasive green filamentous algae, has become a problem on the east side of Saipan in Laolao Bay, smothering the reef flat and shallow spur and grove reefs in that area, stressing and killing coral colonies in some cases (S. McKagan, NMFS PIRO HCD pers. comm. to P. Ha, NMFS PIRO SFD, 2021).

DLNR has included a number of BMPs that would prevent the introduction of invasive algae or other species. First, materials including the silt fences and the silt curtain are required to be new. Rocks are to be obtained from a local quarry or from on site. The contractor would be required to inspect and rinse gear and clothing that is to be used in the water using fresh water and washing gear at an area upland. These practices would prevent the transfer of invasive species from other sites and prevent the project from adversely affecting EFH through the introduction of invasive species.

#### *Beneficial effects on EFH*

Stabilizing the shoreline is expected to reduce erosion and improve water quality and this is expected to have permanent, though limited, beneficial effects on water column and benthic EFH.

#### *Potential cumulative effects on EFH*

We are not aware of ongoing effects that have the potential to increase the severity of effects of the project on EFH. Pollutants would continue to enter the marine environment near Garapan through point and non point-sources and we are aware that the CNMI government and others would continue to work to monitor water quality and reduce pollution inputs into Saipan Lagoon. Because adverse effects on water quality and benthic habitats would be temporary and confined to within the silt curtain, effects of the proposed action do not have the potential to combine with existing sources of water pollution to cause large adverse effects on water column EFH.

As confirmed by the EFH effects review completed by NMFS PIRO HCD on January 5, 2022, we conclude that during construction, the proposed action would unavoidably temporarily adversely affect benthic habitat and water quality (designated EFH) within the silt curtain. BMPs would be proactive management strategies to avoid and minimize adverse effects to EFH within the action area (NMFS 2022c). These BMPs, when implemented, would ensure that adverse effects to EFH would be no more than minimal.

During construction, BMPs would be sufficient to constrain adverse effects of construction on the water column and benthic EFH to areas within the silt curtain while serving as a barrier between motile organisms and construction equipment and rocks. The contractor would follow BMPs intended to prevent sediments, other pollutants, debris and invasive species from entering lagoon waters, and to minimize the potential for adverse effects due to catastrophic gear failure during strong storms. This allows us to conclude the effects of construction on EFH would be no more than minor.

The conversion of less than one-tenth of an acre of intertidal benthic habitat to limestone rock would be permanent, but is small in relation to the available water column and benthic habitats available to MUS and their prey. The rock revetment would provide 3-dimensional structuring habitat when submerged. Improved water quality would have limited permanent and positive effects on water and seagrass habitats.

Overall, the proposed BMPs would help ensure adverse effects to EFH would be avoided or minimized and minor adverse effects to EFH would be offset by improving water column and seagrass quality. Because the project would not result in the unavoidable loss of corals or seagrass, NMFS does not need a proposal to offset loss of EFH.

#### **4.4 Protected Species**

##### **4.4.1 Protected species under the jurisdiction of the USFWS and USFWS-designated Critical Habitat**

***Alt. 1, Baseline; Effects on USFWS-listed species and USFWS-designated Critical Habitat:***

There are no endangered or threatened species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) at Garapan Fishing Base or adjacent areas. The parcel and nearby areas do not contain habitat suitable for foraging or roosting by ESA-listed fruit bats, birds, butterflies, or land snails. Endangered green turtles (*Chelonia mydas*) nest in some areas of Saipan but have not been noted to nest at Garapan Fishing Base according to an 11-year long study of nesting by Summers et al. (2018). Garapan Fishing Base does not have habitat suitable for sea turtle nesting. Terrestrial areas have been paved or planted in turf grass and beach areas are inundated at high tide. No critical habitat has been designated for this species.

Endangered hawksbill turtles (*Eretmochelys imbricata*) are relatively rare around Saipan and are not known to nest at Garapan Fishing Base. Garapan Fishing Base does not have habitat suitable for sea turtle nesting. Terrestrial areas have been paved or planted in turf grass and beach areas are inundated at high tide. No critical habitat has been designated for this species.

***Alt. 2, Proposed Action; Potential effects on USFWS-listed species and USFWS-designated Critical Habitat:*** Due to the geographic separation of the proposed action from ESA-listed birds,

butterfly, and fruit bat, and the lack of suitable habitat for nesting sea turtles and humped tree snail, the proposed action would not affect ESA-listed species under the jurisdiction of the USFWS.

Because there is no designated or proposed critical habitat on land areas in the CNMI, the proposed revetment would not affect critical habitat for ESA-listed species under the jurisdiction of the USFWS.

#### 4.4.2 ESA-listed marine species under the jurisdiction of NMFS

**Alt. 1, Baseline, NMFS ESA-listed species:** NMFS ESA-listed marine species that are known to occur in waters of the Mariana Islands are shown in Appendix C. Because the proposed project is immediately adjacent to the shoreline, NMFS anticipates only the following ESA-listed species under NMFS jurisdiction may potentially occur in or near the action area:

- Endangered green turtle (*Chelonia mydas*), Central West Pacific Distinct Population Segment (DPS)
- Endangered hawksbill turtle (*Eretmochelys imbricata*)
- Threatened Scalloped hammerhead shark (*Sphyrna lewini*) from the Indo-West Pacific DPS; and
- Larvae of threatened reef-building corals: *Acropora globiceps*, *A. retusa*, and *Seriatopora aculeata*. Based on recent information from NMFS PIRO PRD, neither *A. retusa* nor *S. aculeata* have been confirmed as occurring on Saipan (NMFS 2022d). However, as all three are listed in the CNMI, we consider effects on these species.

Green and hawksbill turtles are routinely seen in Saipan Lagoon and could potentially occur in nearshore waters near the action area, although they have not been seen in shallow inshore waters in the vicinity of the action area according to DLNR. ESA-listed corals have not been found in or near the action area, but because they are broadcast spawners, their planktonic larvae could be in the water column particularly after coral spawning events. Although scalloped hammerhead sharks are not confirmed within Saipan Lagoon, adult scalloped hammerhead sharks could occur in lagoon waters and juvenile and neonate hammerhead sharks could, potentially, occur in nearshore waters including off Garapan Fishing Base.

Ten ESA-listed marine species have been reported as occurring or likely occurring in waters of the Mariana Islands Archipelago but have not been confirmed in Saipan Lagoon. These species would not be affected by the proposed action due to geographic separation and therefore are not analyzed further:

- Endangered blue (*Balaenoptera musculus*), fin (*B. physalus*), sei (*B. borealis*), Western North Pacific Humpback (*Megaptera novaeangliae*), and sperm (*Physeter macrocephalus*) whales
- Endangered leatherback turtle (*Dermochelys coriacea*), North Pacific loggerhead turtle (*Caretta caretta*), or olive ridley turtle (*Lepidochelys olivacea*)
- Threatened giant manta ray (*Manta birostris*)
- Threatened oceanic whitetip shark (*Carcharhinus longimanus*)

### *Highlights of green and hawksbill turtles in the action area:*

Nearshore waters of the CNMI provide developmental and foraging habitat for green and hawksbill turtles (Summers et al. 2017; Kolinski et al. 2001). In an assessment of green turtle populations around Saipan, Kolinski et al. (2001) found that reef areas of Saipan Lagoon offshore of Garapan Fishing Base supported relatively high numbers of green turtles compared to many other areas of Saipan and most were juveniles. Summers et al. (2017) focused part of their demographic study of sea turtles on Saipan at Balisa, the part of the lagoon near the barrier reef well offshore from Garapan Fishing Base. Most of the green and hawksbill turtles they caught were approximately 1.5 km offshore from the action area.

In their 7½ year-long demographic study of turtles, Summers et al. (2017) caught 462 turtles in two areas of Saipan. Of these, 447 were green turtles and just 15 were hawksbill turtles. Most of the green turtles Summers et al. (2017) caught around Saipan were juveniles and all of the hawksbill turtles were juveniles. Ninety three percent of the turtles caught on Saipan were associated with coral habitats where they were resting, foraging and swimming. Green turtles were also associated with coral and hard bottom areas with macroalgae, and some unconsolidated sand areas along bank and shelf areas.

Figure 2 in Summers et al. (2017) shows most of the turtles in the vicinity of Garapan Lagoon were caught near the outer reef, some occurred closer to shore, and one green turtle was caught close to shore to the north of Garapan pier. They concluded that in Saipan Lagoon near Garapan Fishing Base, the preferred habitat is coral reefs near the reef front (e.g., well beyond the action area) which provides abundant food sources (macroalgae and sponges). Kolinski et al. (2001) noted that two seagrass species *Enhalus acoroides* and *Halodule uninervis* are turtle forage seagrass species that occur in Garapan Lagoon along with certain green, red, and brown algae. Hirth (1997), Kolinski et al. (2001) and Summers et al. (2017) list several species of red, brown and green algae as green turtle forage. The green macroalgae, *Caulerpa* sp. and *Halimeda* sp., are both found just beyond the action area. Thus, seagrasses and macroalgae adjacent to the project site are considered forage for green turtles.

According to Summers et al. (2018), green sea turtles nest year-round in the CNMI with peak nesting activities between March and July. Their 10-year long survey of nesting in the southern islands including Saipan documented 78 nesters on Saipan with most nesting activities occurring at sandy beaches along the east and southern coastline. Green turtles do not nest within the project action area at Garapan Fishing Base. Summers et al. (2018) did not observe or report nesting on any beaches near Garapan Fishing Base, and this is likely because there is no suitable nesting habitat for green or hawksbill turtles on the site. Coastal areas fronting Garapan Fishing Base are submerged at high tide and terrestrial areas have been compacted and are paved or planted in turf grass.

Green turtles found around the CNMI belong to the endangered Central West Pacific DPS, listed on April 6, 2016 (81 FR 20058). Green turtles are not usually observed in waters offshore from Garapan Fishing Base in or in the action area. This is likely because of disturbance from vessels using the boat ramp. Should a green turtle enter the area, because it is an air-breathing marine reptile, it would be visible at or near the surface of the water to a land-based observer.

Hawksbill turtles were listed as endangered on July 28, 1978 (43 FR 32800). Hawksbill turtles are relatively rare around Saipan and most of those that do occur are juveniles. All of the hawksbill turtles caught by Summers et al. (2017) and reported by Kolinski et al. (2001) around Saipan were juveniles. According to these sources, hawksbill turtles are most likely to be foraging and resting in coral areas in the outer portion of the Lagoon. Coral reefs provide abundant food sources (macroalgae and sponges). There is no coral reef habitat in the action area for the revetment project, but there is some coral reef closer to the boat ramp.

Around Guam and the CNMI, only between 5 and 10 female hawksbill turtles were estimated to nest annually (NMFS and USFWS 2013).

There is no suitable nesting habitat for hawksbill turtles at Garapan Fishing Base. Coastal areas are submerged at high tide and terrestrial areas have been compacted and subject to human uses.

*Highlights of scalloped hammerhead shark in the action area:*

According to literature cited in Miller et al. 2014, scalloped hammerhead sharks (*Sphyrna lewini*) are a circumglobal species inhabiting coastal warm temperate and tropical seas. They occur over continental and insular shelves, deep waters, over seamounts, and near islands (Miller et al. 2014). The species is highly mobile and partly migratory moving along continental margins as well as between oceanic islands in tropical waters (Miller et al. 2014). Scalloped hammerhead sharks that occur around CNMI are from the threatened Indo-West Pacific distinct population segment (DPS), which NMFS listed as threatened on July 3, 2014 (79 FR 38213). Miller et al. (2014) determined that the population has a moderate risk of extinction now and in the foreseeable future. Threats across this species' range include overexploitation in fisheries, mortality at vessels, effects of land-based contaminants, loss of nursery habitat, and large-scale impacts such as climate change that affect ocean temperature, currents, and food chain dynamics (Conant et al. 2020, and Miller et al. 2014).

The Mariana Islands constitutes a very small portion of its range, and the species has not been confirmed from around Saipan. Scalloped hammerhead sharks are reported to pup from January through March just outside the inner Apra Harbor entrance channel on Guam, although this is reportedly a rare occurrence (U.S. DON 2010). Although scalloped hammerhead sharks have not been confirmed around Saipan and have only rarely been seen around Guam, if the adults occur in Saipan Lagoon, neonates or juveniles could potentially swim near the project area.

*Highlights of ESA-listed corals in the Action Area:*

NMFS listed three species of hard corals that may occur in the Mariana Islands as threatened under the ESA (79 FR 5385: September 10, 2014); *Acropora globiceps*, *A. retusa*, and *Seriatopora aculeata*. According to that Final Rule, *Acropora globiceps* colonies generally occur on upper reef slopes, reef flats, and adjacent habitats in depths ranging from 0 to 8 m. *Acropora retusa* colonies generally occupy shallow reef slope and back-reef areas, such as upper reef slopes, reef flats, shallow lagoons, and its depth range is one to five meters. *Seriatopora aculeata* colonies generally occur in a broad range of habitats on the reef slope and back-reef, including but not limited to upper reef slopes, mid-slope terraces, lower reef slopes, reef flats, and lagoons. Among the threats these corals face are sedimentation, nutrients, sea-level rise, increased ocean



temperatures (leading to coral bleaching), predation by Crown-of-Thorns seastar (*Acanthaster planci*) and *Drupella* spp. gastropods, disease outbreaks, pollutants, coastal erosion, and physical damage from human activities (e.g., vessel groundings, anchors, trampling).

*A. globiceps* occurs from the west Pacific to the central Pacific as far east as the Pitcairn Islands; within the CNMI it is known from southern islands. Liske-Clarke (2015) reported abundance at tens of millions of colonies worldwide; but actual abundance in the CNMI is unknown. *Acropora globiceps* is the only ESA-listed species that is reasonably expected to be present in Saipan Lagoon (NMFS 2022d). *A. globiceps* is included by NMFS in Table 1 of the Proposed Critical Habitat Proposed Rule as having been confirmed around Saipan and Garapan Bank. In 2020, NMFS proposed Critical Habitat for this species in certain waters in the CNMI (85 FR 76262; November 27, 2020).

*A. retusa* is distributed from the Red Sea and Indian Ocean to the central Pacific. The species occurs on upper reef slopes, reef flats and lagoons 1–5 m deep. Abundance is millions of colonies globally, but within the CNMI the species' occurrence is unknown (Liske-Clark 2015). At this time, *A. retusa* has not been confirmed in Saipan Lagoon (NMFS 2022d). In 2020, NMFS proposed Critical Habitat for this species in certain waters around the CNMI (85 FR 76262; November 27, 2020).

*S. aculeata* occurs from the west Pacific to the central Pacific as far east as the Pitcairn Islands; but within the CNMI the species' distribution is unknown (Liske-Clarke 2015). At this time, this species has not been confirmed in Saipan Lagoon (NMFS 2022d); however *S. aculeata* is included in Table 1 of the Proposed Critical Habitat Proposed Rule as having been confirmed around Saipan and Garapan Bank. NMFS proposed Critical Habitat for this species around the CNMI in 2020 (85 FR 76262; November 27, 2020).

Because of the lack of suitable habitat conditions for hard corals within the action area, no adult or juvenile colonies of listed corals are known to occur in the project location or expected to be directly affected by the revetment. There is a small potential for larvae of ESA-listed corals to be in the water column during spawning events, so we consider the potential for turbidity, nutrients, and contaminants to enter the lagoon beyond the silt curtain to potentially affect ESA-listed corals. DLNR has included BMPs as part of required construction activities that are specifically intended to prevent adverse effects on coral larvae during the main *Acropora* coral spawning event, which is in June in the northwest Pacific Ocean (Keith et al. 2016).

## **Alt. 2, Proposed Action; Potential effects on ESA-listed species under the jurisdiction of NMFS:**

On December 9, 2021, NMFS prepared a biological evaluation and initiated consultation on the potential effects of the proposed action on ESA-listed species (NMFS 2021a). At the same time, NMFS requested conferencing on the potential effects of the proposed action on proposed coral critical habitat (NMFS 2021a). We find that the proposed action has the potential to affect endangered green and hawksbill turtles and threatened scalloped hammerhead sharks through:

- Exposure to degraded water (e.g., turbidity, nutrient re-suspension) during construction
- Exposure to wastes or discharges of pollutants during construction (e.g., hydrocarbons or toxicopathological agents)

- Direct contact with equipment or rocks
- Entrapment or entanglement in erosion control barrier(s)
- Entanglement with or ingestion of marine debris
- Disturbance from human activity and equipment operation and exposure to elevated noise levels
- Potential ecosystem changes (e.g., potential for invasive species to be introduced or spread)
- Beneficial effects related to improved water quality

Although ESA-listed coral colonies are not found in or near the action area, construction has the potential to affect larvae of three species of threatened Indo-Pacific corals through:

- Exposure to degraded water quality during construction
- Exposure to wastes or discharges of pollutants during construction
- Damage from catastrophic loss of silt curtain or marine debris
- Damage from marine debris
- Potential for invasive species to be introduced or spread, and
- Beneficial effects related to improved water quality

*Review of potential effects on NMFS-listed endangered and threatened marine species:*

DLNR would implement a suite of BMPs that would protect water quality. The erosion control devices would limit sedimentation and limit the extent of sedimentation to areas within the silt curtain. Water quality monitoring and stop-work provisions would help ensure that problems with the silt curtain would be detected and addressed in a timely manner. BMPs would help ensure that the contractor properly use, store, and transport hazardous materials and would have and use spill response materials to respond quickly to potential spills. The contractor would maintain the construction site on an ongoing basis and would secure equipment and supplies in advance of storms. This would reduce the potential for the project to introduce marine debris into the lagoon environment, which would reduce the potential for debris to be ingested by sharks or turtles, or for debris to damage coral or other bottom habitat. BMPs would protect water quality during the peak coral spawning period, which would protect coral larvae in areas beyond the immediate action area.

The contractor would follow BMPs and other contract provisions to prevent the introduction of invasive species. These provisions would prevent introducing invasive algae into Saipan Lagoon from other parts of the island, which would protect lagoon ecosystems that support ESA-listed turtles, hammerhead shark, and corals.

Other BMPs that would protect coral larvae include DLNR advising its contractor about concerns around the potential lethal effects to corals of using sunscreens with toxicopathological agents, options for reef-safe sunscreens or the use of protective clothing, and a requirement to stop work during the critical coral spawning event.

The silt curtain would provide a barrier between motile marine species and the construction site, so there would be little potential for construction equipment or materials to directly contact sea turtles or hammerhead sharks.

BMPs require the contractor to actively monitor the worksite for the approach of an ESA-listed shark or turtle and stop work if either comes within 50 yards of the work site. As described above in section 4.2.2, this would help prevent adverse effects of construction noise on hammerhead sharks or turtles. The contractor would also be responsible for monitoring the silt curtain for gaps and loose lines and to check at least twice daily for any entangled hammerhead shark or turtle. Should a hammerhead shark or turtle be found, the contractor would coordinate with DLNR and NMFS to release the animal.

We found that the revetment would improve water quality over the near and long term. This would have positive effects on seagrasses which support green and hawksbill sea turtles, nearby coral reefs, and may result in limited improvement to settlement habitats for coral larvae further out in the lagoon.

We conclude that features of the proposed action including BMPs would allow DLNR to protect water quality and limit the potential for large adverse effects on water quality, marine habitats and on ESA-listed turtles, hammerhead sharks, and corals. The proposed action would result in improvements of water quality in the mid- and long-term. We also conclude that that the proposed action would not have the potential for more than temporary and minor adverse effects on sea turtles, scalloped hammerhead sharks, or ESA-listed corals during construction and that the proposed action would result in moderate beneficial effects on ESA-listed marine species in the mid- to long-term through improvements to water quality and benthic habitat. Our review of potential effects did not find a cumulative effect that was large and adverse when ongoing activities at the nearby boat ramp were considered.

In its January 31, 2022, LOC, NMFS PRD concurred that the proposed action may affect but would not adversely affect endangered green or threatened turtles, scalloped hammerhead sharks, or *Acropora globiceps* (NMFS 2022d).

#### **4.4.3 NMFS-designated Critical Habitat**

***Alt. 1, Baseline; NMFS-designated Critical Habitat:*** NMFS has not designated critical habitat for any ESA-listed species in Saipan Lagoon.

***Alt. 2, Proposed Action; Potential effects on NMFS-designated Critical Habitat:*** The project would not affect NMFS-designated critical habitat as there is none in Saipan Lagoon.

#### **4.4.4 NMFS-proposed Critical Habitat**

***Alt. 1, Baseline; Proposed Critical Habitat:*** NMFS proposed critical habitat for three species of threatened Indo-Pacific corals found around Saipan and for corals in other Pacific areas on November 27, 2020 (85 FR, 76262) available on the [Federal Register](#). The action area falls within proposed critical habitat Unit 9, “Saipan and Garapan Bank.” Unit 9 comprises, “All waters 0-40 m depth around Saipan and Garapan Bank, except the areas specified in paragraph (d) of this section, and the national security exclusion (six Navy berths) specified in paragraph (e) of this section.” Paragraph d(13)(i) and (ii) specifically excluded the Garapan Fishing Base from proposed critical habitat consideration:

“(i) Critical habitat does not include the Commonwealth Ports Authority harbors, basins, and navigation channels, their seawall breakwaters; all other channels, turning basins, berthing areas that are periodically dredged or maintained, and a 25 m radius of substrate around each of the aid to navigation (AToN) bases.

(ii) Critical habitat does not include artificial substrates, including but not limited to: The 15 USCG-managed fixed AToNs, Territory-managed boat ramps at Smiling Cove (Garapan), Sugar Dock (Chalan Kanoa), Tanapag, Fishing Base (Garapan), and Lower Base (Tanapag); and all other AToNs, seawalls, wharves, docks, boat ramps, moorings, pipes, wrecks, and other artificial structures.”

**Alt. 2, Proposed Action;** *Potential effects on proposed Critical Habitat:* Because the action area is an area that is periodically dredged or maintained as a channel and is part of Garapan Fishing Base, we conclude that construction will not directly affect areas proposed as coral critical habitat.

The proposed action has the potential to affect other portions of Saipan Lagoon that are proposed for coral critical habitat that are beyond the action area. Such effects could, potentially include sedimentation, water pollution including hazardous materials, and sunscreens that are toxic to reef-building corals.

DLNR would implement a range of BMPs that would prevent sedimentation, water pollution, and the introduction of invasive species. BMPs (Appendix A-2) include requirements that the contractor use and maintain erosion control devices including a silt curtain, silt fences, and dewatering cells; ensure parts of equipment that enter the water are clean and free of oils; prevent debris from entering the environment; ensure hazardous materials are not released and that spill response materials are immediately available and used in accordance with a spill response plan; and to clean gear to prevent the spread of invasive algae, among others. The DLNR would advise the contractor to avoid the use of sunscreens that have toxicopathological effects on reef-building corals. Other BMPs that would prevent widespread sedimentation are the requirement for the DLNR to monitor water quality in accordance with a water quality monitoring plan. The contractor would secure the construction area in advance of powerful storms. Other BMPs include stop work provisions should turbidity values exceed allowable levels, and during a key coral spawning period to help ensure construction would not result in high sediment loads during coral spawning.

Because the action area does not support hard corals and is in an area that is routinely dredged and specifically excluded from proposed critical habitat designation, the proposed action would not affect proposed critical habitat within the action area. Although the proposed action could potentially affect areas beyond the action area that are proposed as critical habitat for two species of Indo-Pacific corals, BMPs are expected to prevent adversely modifying proposed critical habitat for three species of threatened corals.

We conclude that because of BMPs and improvements of water quality in the mid- and long-term, the proposed action may affect, but would not likely adversely modify proposed critical habitat for three species of Indo-Pacific reef building corals. In its LOC, NMFS PRD determined the action area is excluded from proposed critical habitat and due to features of the proposed

action, lack of ESA-listed corals in the action area, and BMPs that will prevent widespread siltation or contamination, the proposed action is not likely to adversely affect proposed critical habitat (NMFS 2022d).

#### 4.4.5 Marine mammals

**Alt. 1, Baseline;** *Marine mammals:* The construction site is too shallow for marine mammals to be present and none have been seen in inner Saipan Lagoon.

**Alt. 2. Proposed Action;** *Potential effects on marine mammals:* The proposed action would not affect marine mammals protected under the Marine Mammal Protection Act because they are not present in the action area or in nearby areas.

#### 4.4.6 Migratory birds

**Alt. 1, Baseline;** *Migratory birds:* The action areas supports a small number of foraging Pacific Golden-plovers, and provides incidental foraging habitat for shorebirds at low tide, which are protected under the Migratory Bird Treaty Act (MBTA).

**Alt. 2. Proposed Action;** *Potential effects on migratory birds:* Construction would temporarily displace foraging plovers and shorebirds because of human disturbance and temporary habitat modification within the construction zone. The plovers would readily resume foraging once turf grass is restored and equipment is removed (within approximately 2 years). During construction, plovers could forage on adjacent areas as they are able to habituate to humans and vehicles and open grass areas are common in nearby areas. Migratory shorebirds would be able to forage along other coastal beaches nearby and would resume use of the beach areas at low tide after construction. The amount of beach exposed at low tide would be slightly reduced due to the replacement with rock revetment, so suitable foraging area would be available at lower tides. The reduction in beach foraging area would be small compared to habitat available for migratory shorebirds in western Saipan. We conclude that the proposed action would have no more than minor adverse effects on migratory birds protected under the MBTA related to temporary displacement during construction and loss of a small amount of intertidal foraging area. The proposed action is not intended to take migratory birds and NMFS does not require an MBTA permit.

### 4.5 Socio-Economic Effects

Garapan Fishing Base is described in the CNMI BECQ-DCRM (2015) Shoreline Access Plan, as Garapan Site 11: “Fishing Base is an open public area located at the northern end of the Beach Road Pathway, just outside of the main commercial district of Garapan. There is a public boat ramp as well as a cement pier that is often used for fishing. The local Garapan Public Market, which sells local produce and meat, is located at the south end of Fishing Base. Every Thursday vendors and restaurants set up booths at Fishing Base for the weekly Street Market, where visitors can purchase food and souvenirs.” A parking lot was recently constructed to provide parking for vessel trailers.

#### 4.5.1 Fishing infrastructure and fishing

***Alt. 1, Baseline; Affected fishing infrastructure and fishing:*** Vessel owners, fishermen, and other members of the community use the boat ramp, fish from shore and offshore, and use the facilities and recreational amenities Garapan Fishing Base offers. CNMI's fisheries are sustainably managed and no federally managed fishery resource is overfished or subject to overfishing. All fisheries operate in accordance with territorial and federal laws. Under the baseline, fishery infrastructure at Garapan Fishing Base would eventually be damaged through continued erosion of the shoreline. Continuing sedimentation of nearshore waters would reduce the quality of nearshore marine habitat designated as essential fish habitat for a number of fishery species including eggs, larvae, juveniles and adults of bottomfish and pelagic management unit species.

***Alt. 2, Proposed Action; Potential effects on fishing infrastructure and fishing:*** Fishermen would not be able to access the construction area for shore fishing along the beach during construction. Because construction would occur in phases, fishermen could fish in other lagoon areas including along Garapan Fishing Base, and along the fishing pier during construction. BMPs are expected to prevent adverse effects to nearby habitats and water quality, so we do not expect catches to be affected in areas beyond the silt curtain. Shore fishing along the beach could resume after the safety barriers are removed as each phase is completed.

The revetment would stabilize the shoreline and provide long-term positive public benefits in terms of protecting public land and infrastructure at Fishing Base. Securing infrastructure would allow continued access by community members to fishery resources, which would support food security and jobs.

Reducing erosion would improve water quality in the nearshore marine environment, which would have long-term minor positive benefits on marine fish, and invertebrates and seagrass habitats in the area. This could reduce vulnerability to climate change by improving the viability of seagrasses, which protect coastal areas from storm surge, provide ecosystem services including carbon sequestration.

Fishing would not change as a result of the revetment. Federally managed fisheries would continue to be subject to monitoring and management. Fishing along shore and from the nearby pier by a hook and line and talaya fishermen would continue. Talaya fishermen would be able to fish from the beach at low tide. The revetment would not affect fishing in shallow lagoon areas out past the longshore dredged area.

The change in habitat from unconsolidated beach to rock revetment and beach in the intertidal area would provide limited new habitat because it would be dry at low tide. The rocks would provide limited structuring shelter for marine fishes at high tide.

Overall, construction would not have a large adverse effect on fishing because fishing could continue in nearby areas. The proposed revetment would support continued long-term access to fishery resources by protecting fishery infrastructure. Fishing would continue to be sustainably managed. The revetment would provide long-term improvements to nearshore water quality and marine communities. Because of the limited size of the revetment the effects are considered beneficial and moderate over the long term.

#### 4.5.2 Environmental Justice

*Alt. 1 Baseline; Environmental Justice:* Garapan Fishing Base is not located in or near an area with a disproportionate number of members of low income or minority populations. The community does not engage in subsistence harvesting or gathering of marine resources from Garapan Fishing Base, through there is recreational and cultural fishing that supports a limited amount of fishing for sustenance.

*Alt. 2, Proposed action; Potential Environmental Justice considerations.* The proposed action would not result in large adverse environmental or health effects and would not affect subsistence fishing or consumption of marine resources. Therefore, the project does not have the potential to have disproportionately high and adverse environmental or health effects on minority or low-income populations. The proposed action would not affect the subsistence harvest or consumption of marine resources.

#### 4.5.3 Historic, archaeological, and cultural resources

*Alt. 1, Baseline; Historic, archaeological, and cultural resources:* NMFS undertook a literature review and coordinated with the DLNR and the CNMI Historic Preservation Office (HPO) in 2021 to establish the historic resources baseline for the proposed action and coordinate our determination of potential effects of the proposed action on historic, archaeological and cultural resources. NMFS' section 106 consultation report (NMFS 2021) considered key findings from a 1980 marine site survey off Garapan Fishing base by Thomas and Price (1980), an analysis of archaeological and historical data on fisheries by Amesbury and Hunter-Anderson (2008), information in Allen and Amesbury (2012), a report of potential resources at Garapan Fishing Base by Russell prepared for the HPO (2021), and other literature. Highlights from our section 106 consultation are as follows:

Land areas in the project footprint have been extensively modified over the past century. In particular, the coastal area was largely formed of fill by the U.S. military after World War II. Coastal areas have been dredged and are subject to significant disturbance from storms.

##### 4.5.3.1 Sites listed on the National Register of Historic Places

There are no historic properties listed on the National Register of Historic Places within the action area. Two sites listed on the National Register are well outside of the action area including site #84000207 (Campaneyan Kristo Rai), a Spanish-built 1932 church bell tower located along Beach Road at 15°12'11"N 145°43'04" E; and site # 74002224 (Japanese Lighthouse), which is located on Navy Hill at 15°12'42"N 145°43'54" E. The proposed revetment would not affect these sites.

##### 4.5.3.2 Sites potentially eligible for listing on the National Register of Historic Places in or near the project area

There are a number of sites outside the action area that are not listed on the National Register of Historic Places, but that may be eligible for listing on the National Register of Historic Places.

Garapan Pier. Russell (2021) found that the Garapan pier may be eligible for nomination to the National Register of Historic Places based on National Register eligibility Criterion A. The Criterion requires a property to be associated with events that have made a significant contribution to the broad patterns of our history. The pier is approximately 45 yards north of the construction site and is beyond the action area.

Southern dock. Today only remnants of a former government dock remains. This site is well outside of the action area.

Concrete Japanese-era light (offshore). This object is a small channel marker/navigation light that is described by Thomas and Price (1980) and Russell (2021) to have been part of the Japanese navigational system. According to Russell, the cement navigational light is related to the Japanese coastal navigation complex. It is located half a mile away in the offshore channel and may be eligible for nomination to the National Register of Historic Places. The marker is linked with the Japanese Lighthouse on Navy Hill. This object is approximately 3/4<sup>th</sup> of a mile offshore and is outside of the action area.

Colonial era shipwreck (offshore). A shipwreck located near the offshore Japanese light is believed to be related to the Spanish administration (McKinnon et al. (2016), Russell (2021)). The site is approximately 3/4<sup>th</sup> mile west the proposed revetment in Saipan Lagoon, well outside of the action area.

#### **4.5.3.3 Potentially affected undiscovered historic resources**

Given that the proposed action involves removing vegetation and excavation, undiscovered resources could be uncovered during construction. According to Russell (2021), Garapan Fishing Base was a part of Saipan's most important historic-era village from the Spanish through the Japanese periods. Given its proximity to the central pier and given its proximity to the center of Arabwal/Garapan, historic artifacts may be present within the project impact area. Russell notes that,

“A well-preserved German-era trash pit with glassware, ceramics, and personal items was uncovered by sewer line excavations in along the northern boundary of Kristo Rai Church (along Rosa Street) in the 1980's. The original sandy ground level, in which the trash pit was dug, had been sealed with a layer of crushed coral that once served to support U.S. military warehouses during World War II. Similar features and artifact scatters may be present within the project impact area especially dating to the Japanese period when residences were situated very close to the water. Further, there is a possibility of encountering a segment of the Japanese-era railroad bed and track that ran just to the east of the pier. Finally, isolated artifacts from the World War II period, including unexploded ordinance...although unlikely, there could be artifacts related to prehistoric habitation of the coastal areas found in layers beneath the recent fill.”

#### ***Alt. 2, Proposed Action; Potential effects on historic, archaeological, and cultural resources:***

The proposed action would not adversely affect known resources listed on the National Register of Historic Places. Known resources are well outside of the action area.



The proposed action would not adversely affect known resources that may be eligible for listing on the National Register of Historic Places that are nearby, because they are geographically separated from the construction area and are well beyond the action area.

The proposed action may affect undiscovered resources that may be of potential historic significance that could be uncovered during construction. DLNR and the HPO developed BMPs to help ensure the revetment construction would not have adverse effects on undiscovered resources during construction (see BMPs, Appendix A-2). These include pre-construction backhoe testing, full time monitoring by an archaeologist meeting the Department of Interior Secretary's Professional Standards, a requirement that if there are inadvertent findings during construction, all earthmoving activities will stop and HPO will be notified. This will allow for proper treatment of post-review discoveries.

Due to the disturbed site conditions, lack of known resources or effects on nearby resources that may be eligible for listing on the National Register of Historic sites that are beyond the action area, and because of BMPs that would be in place to ensure DLNR properly treats post-review discoveries in a timely manner in coordination with the HPO, we concluded the proposed undertaking would have no adverse effect on properties listed on or potentially eligible for listing on the National Register of Historic Places. We coordinated our review of potential effects on historic, archaeological and cultural resources with the CNMI Historic Preservation Office under section 106 of the NHPA. By letter of November 2, 2021, the CNMI HPO concurred with NMFS determination that the proposed undertaking would have no adverse effect on historic properties listed on or potentially eligible for listing on the National Register of Historic Places. BMPs would be in place that would protect any unknown resources that may be discovered during construction and would mitigate any potential for adverse effects in the project action area.

#### **4.6 Public Safety and Health**

***Alt. 1, Baseline; Public safety and health:*** CNMI BECQ water quality monitoring shows there have been and continue to be exceedances of water quality standards in terms of enterococci bacteria. As a result, the waters at Fishing Base are occasionally temporarily closed to fishing and swimming (BECQ 2020). Most of the time, Fishing Base is open to fishing and swimming and CNMI considers the water to be safe for these activities. We note that swimming is discouraged at Fishing Base due to the presence of motorized vessels.

Another public safety and health issue is flooding in low-lying areas of Garapan town related to heavy rainfall and storm surge. Climate change effects such as increased sea level change and sea level rise and more intense storms could make flooding worse in the future.

Garapan Fishing Base is not listed as a brownfield or as a Formerly Used Defense Site and there are no known issues with unexploded ordnance (UXOs), UXOs are occasionally found on Saipan during construction.

***Alt. 2, Proposed Action; Potential effects on public safety and health:*** Neither construction nor the revetment have the potential to have large adverse effects on public safety or health. The contractor would be required to secure access to the construction site and maintain the integrity of access areas and roadways for public safety. The silt fences and silt curtain would be physical

barriers between the public and the work site. Construction would not affect bacteria levels. As described in section 4.2.6, the revetment would not make flooding more likely, more frequent, or more intense. If storm surge or rainfall creates ponding, excess floodwater could drain over, around, or through the back of the revetment.

As described in section 4.2.4, the proposed action would not change enterococci levels, and so, would not affect the safety of fishing or fish consumption.

If a UXO is encountered during excavation activities, the contractor would immediately stop work and contact the DLNR and CNMI Department of Public Safety who would make arrangements to have it removed to the CNMI approved UXO storage site.

#### **4.7 CNMI Coastal Zone**

**Alt. 1, Baseline;** *CNMI Coastal Zone resources and APCs:* The action area is located in the CNMI Coastal Zone and is within three Areas of Particular Concern (APC): Coastal Hazards, Shoreline, and Lagoon and Reef APCs.

Current land and water uses at Garapan Fishing Base support sustainable community fishing and recreational and commercial boating. Other uses include access to the lagoon for fishing and paddling. Swimming is not encouraged in the area because of the use of vessels. Community activities include other recreation such as picnicking and Thursday night markets.

Nearshore intertidal beaches provide intermittent foraging habitat for visiting migratory shorebirds. Marine resources include intertidal beaches and nearshore marine habitats that feature seagrasses that support sea turtles and common marine fishes and invertebrates. Nearshore beaches and waters of the lagoon are currently affected by sedimentation and nutrient inputs associated with erosion of the bank. Water is also affected by pollutants stemming from human uses and sometimes natural sources of pollutants from the Garapan watershed.

There are no unique characteristics of the geographic area such as designated parklands, prime farmlands, wetlands, or wild and scenic rivers. The project is not located in or near a marine protected area. A Trochus Sanctuary is located to the southwest well off in the lagoon from the action area.

**Alt. 2, Proposed Action;** *Potential effects on CNMI coastal zone resources:* The project would affect 380 linear ft of coastline. The purpose of the project is a shoreline stabilization project, to use terms from the CNMI coastal zone management program. Shoreline stabilization, when properly managed and conducted under appropriate permits and reviews, is an acceptable activity in the coastal zone.

Public uses: The revetment would not change vessel use in the project area and would allow continued safe use of the Garapan Fishing Base boat ramp. The proposed action would not have more than minor effect on fishing. Access to portions of the shore along Garapan Fishing Base would be temporarily affected during construction of each phase. After construction fishermen could still access the lagoon and shoreline through the Fishing Base. A portion of the beach would be converted to rocks, and fishing along the beach would be limited to low tides.

Coastal Resources: The project would not have the potential for large adverse effects on marine habitats and would not adversely affect habitats of nearshore marine fishes or invertebrates. The project would improve water quality, which is expected to improve seagrass resilience over the mid- and long-term.

BMPs would protect seagrass beds adjacent to the construction area. The revetment would improve water quality in terms of reducing turbidity and nutrient levels, and increased dissolved oxygen levels. Improved water quality is expected to have minor to moderate beneficial effects on seagrasses near the action area. Improved water quality is expected to increase resilience and ecosystem services provided by seagrasses including primary productivity, carbon sequestration, sediment and sand retention, wave energy absorption and habitat for marine wildlife.

BMPs would reduce the potential for adverse effects on coral larvae or areas proposed as critical habitat for coral. Improved water quality after the revetment is built would have minor benefits to corals because hard substrate is not present in the action area.

The proposed action would not make flooding worse and floodwaters could drain around, over, and through the revetment.

DLNR considered “soft measures” and rejected living coastlines and beach replenishment as described in section 2.3 because soft measures would either not be effective or would be too expensive given the conditions of the site and vessel use requirements.

The proposed undertaking would have no potential to adversely affect historic properties listed on or potentially eligible for listing on the National Register of Historic Places. BMPs would be in place that would protect any unknown resources that may be discovered during construction and would mitigate any potential for adverse effects in the project action area.

NMFS provided a Federal Consistency Determination and draft EA to the CNMI BECQ-DCRM on January 14, 2022, for the DCRM’s review in accordance with the Coastal Zone Management Act. The DCRM concurred with our consistency determination on March 28, 2022.

## **4.8 Other Environmental Review Considerations**

### **4.8.1 Relationship to Federal and CNMI laws intended for the protection of the environment**

The proposed action does not have the potential to violate a Federal, State, or local law or requirements imposed for environmental protection. NMFS would complete compliance reviews under NEPA, ESA, MMPA, Magnuson-Stevens Act, CZMA, before funding the project. DLNR would be responsible for obtaining required permits. Section 6 provides a high-level summary of our compliance reviews for the reader’s convenience.

### **4.8.2 Precedent, decisions in principle, irreversible and irretrievable commitments of resources**

*Alt. 1, Baseline; Precedent, decisions in principle, irreversible and irretrievable commitments of resources:* Garapan Fishing Base is public land administered by the CNMI government and that

supports a public boat ramp, parking areas, a community market, shoreline fishing, and recreation. The government identified the project as a priority in its approved Marine Conservation Plan (CNMI DLNR 2019).

DLNR is planning improvements in nearby areas to stabilize the Garapan Pier to protect fishery support infrastructure, but funding is not available and the DLNR has prioritized the revetment project. NMFS is aware of a proposal to stabilize Garapan Pier (GHD 2019); however, a proposal to undertake construction is not currently before the agency for funding. Once NMFS has a proposal, NMFS would develop project-specific environmental compliance and provide an opportunity for public review and input before funding.

***Alt. 2, Proposed Action; Precedent, decisions in principle, irreversible and irretrievable commitments of resources:*** The proposed revetment is a stand-alone project with independent utility from other projects contemplated by the CNMI government (see section 1.8). Construction of the revetment is not a precedent since the shoreline along Garapan Fishing Base has already been stabilized in the past using rocks. The proposal to construct a revetment does not represent a decision in principle with the potential for large and adverse effects. The proposal was identified as a priority for the CNMI in an approved Marine Conservation Plan (DLNR 2019), and it would undergo environmental review prior to proceeding. Finally, construction of the small revetment along a limited section of the coast would not result in an irreversible and irretrievable commitment of resources.

#### **4.8.3 Scientific controversy over effects**

Our environmental analysis found no potential for the proposed action to cause an effect that is considered substantial in magnitude such as the irreversible loss of seagrass or coral ecosystems. We developed our environmental analysis after reviewing applicable reports and studies and in coordination with staff from our collaborators at the DLNR, other CNMI agencies, and Federal agencies who helped us evaluate the potential effects of bank stabilization projects on the environment. The public had an opportunity to review the draft EA and provide comments for our consideration as we finalize the EA. Our coordination with others including CNMI agencies and the public did not reveal the potential for a high degree of scientific controversy related to our environmental effects analysis.

#### **4.8.4 Climate change**

The "Saipan Climate Vulnerability Assessment" by Greene and Skeelee (2014) provides a high level summary of major concerns affecting Saipan (see their section 1.2 "Climate Change Phenomena and Potential Impacts"). Information is not available at the site-specific scale, so they used regional predictions for Saipan based on those developed for the Western North Pacific. Climate change issues of concern for low-lying western Saipan (e.g., Garapan Fishing Base and surrounding areas) include sea level rise, increasing air and ocean temperatures, variable rainfall (possibly less rainfall, possibly more rainfall), variations in intense storms, and changes in ocean chemistry including ocean acidification and lower dissolved oxygen (Greene and Skeelee 2014; IPCC 2021).

For the proposed revetment, we considered the topics of greenhouse gas emissions, sea level rise, consideration of coastal flooding, potential effects on ocean temperature, and effects on seagrass and coral reefs. The project is small and is not expected to change greenhouse gas emissions, air temperature, rainfall, dissolved oxygen, or pH levels.

#### 4.8.4.1 Greenhouse gas emissions

**Alt. 1, Baseline; Greenhouse gas emissions:** Power tools and heavy equipment are used in construction projects around Saipan and result in greenhouse gas emissions associated with fuel. The amount of fuel needed for a project depends on site and project conditions and equipment used (Hajji and Lewis 2017).

**Alt. 2. Proposed Action; Greenhouse gas emissions:** The use of heavy equipment and power tools at the construction site is not expected to result in a large net amount of greenhouse gas emissions because the use of the equipment would offset uses that would likely occur on other projects if the revetment was not being built. The contractor is expected to conserve fuel to reduce the company's operational costs. The revetment would not cause an increase in vessel use. Therefore, we anticipate that the project would not have the potential to result in large new GHG emissions and emissions would be minimized to those needed to build the revetment.

#### 4.8.4.2 Sea level rise

**Alt. 1. Baseline; Sea level rise:** Global sea level is expected to rise due to ocean thermal expansion and glacier mass loss, sheet ice loss, and other factors (IPCC 2021). Projections of global sea level rise are found in various publications including in a recent summary from the International Panel on Climate Change (IPCC) for policy makers (IPCC 2021). The latest global mean sea level (GMSL) increase ranges are estimated as:

- Very low GHG emissions scenario: 0.28–0.55m (0.91–1.8ft) higher by 2100
- Intermediate GHE emissions scenario: 0.44–0.76m (1.4–2.49 ft) higher by 2100
- Very high GHG emissions scenario: 0.63–1.01m (2.06–3.3 ft) higher by 2100

In their study of Garapan area in western Saipan, the U.S. Army Corps of Engineers (2017) summarized sea level change projections at Garapan, Saipan, as follows:

- Low rate of change: 0.23 m (0.7 ft) by 2070; 0.33 m (1.1 ft) by 2120
- High rate of change: 0.9 m (2.9 ft) by 2070; 2m (7.2 ft) by 2120.

Sea level change in the Mariana Islands is affected by oceanic processes. The Corps described that in addition to sea level rise, due to the El Nino Southern Oscillation (ENSO) phenomenon, larger water level fluctuations may be observed in the Mariana Islands on shorter timescales when compared to overall sea level rise trends (USACE 2017b). The Corps recommended that given this amount of variability and a high rate of future sea level change under various scenarios, coastal projects should be designed with adaptive management strategies in mind.

Lander (2004) provides another informative description of the ongoing oceanographic processes that affect sea level changes in the action area:

“During an El Niño year, the mean sea level drops across most of Micronesia. Typically, the sea level in the region of Guam, Yap, and Saipan falls to its lowest value in December of the El Niño year, and then quickly recovers by the spring of the year following El Niño (Figure 23). During La Niña, the sea level is elevated above its normal value. During the major El Niño of 1997, the sea level fell approximately 0.5 foot below its baseline average, and during the La Niña years that followed (1998-2001), the sea level rose to levels nearly 1 foot above its baseline average. The net difference of the sea level between the El Niño minimum in December 1997 and the La Niña high stands of the sea level during the summers of 1999, 2000, and 2001 was approximately 1.5 ft. This is substantial, considering that the normal range between the daily high and low astronomical tides is on the order of only 2 ft. On the question of long-term sea level rise due to global warming, it must be pointed out that the long-term rise of sea level due to large-scale global climate change is estimated to be on the order of 4 or 5 inches per century. The ENSO changes in sea level of 1.5 ft over the course of a year or two are enormous compared to this, and make it difficult to retrieve the long-term signal.”

We note that although the previous projections of global sea level rise Lander was working from were less than more recent projections, Lander’s description of the ENSO phenomena helps us understand that oceanographic basin-wide processes will continue to affect sea level around Saipan.

***Alt. 2, Proposed Action; Sea level rise considerations:*** Marine engineers designed the revetment to be stable given site conditions that include a broad, shallow lagoon and the presence of an offshore barrier reef that protect the lagoon and coast from large waves (GHD 2020b). The revetment was designed to withstand waves consistent with the most extreme wave event in the historic record (a 1996 wave) and considered the still-water elevation corresponding to a 100-year flood event of +6.1 ft. The design firm noted the revetment was designed for stability, but was not designed to prevent wave run-up.

We conclude that given the fact that there are sea level fluctuations already occurring and the revetment was designed around a historic extreme wave event, the revetment would likely remain viable and prevent coastal erosion under most conditions in the near to mid-term, depending on the rate of change of sea level rise. Within the near and mid-term, the revetment would stabilize the shoreline and, as described in section 4.2.6 above, because the revetment has a low rise and is somewhat permeable, and because storm water could continue to drain around, over and through the revetment, it would not make coastal flooding more likely or more extensive than under the baseline. Thus, the revetment would not appreciably contribute to bank stabilization and hardening in any large way that would exacerbate sea level rise or its effects.

#### **4.8.4.3 Temperature and pH**

***Alt. 1, Baseline; Temperature:*** Periodic low water conditions related to Pacific-wide oceanic processes already affect the project area and have caused a series of coral bleaching events. Ocean warming is projected to increase in the future and ocean water may become more acidic as the ocean absorbs excess carbon dioxide.

**Alt. 2, Proposed Action; Potential effects on temperature and pH:** During construction, water temperatures within the silt curtain may rise temporarily in relation to ambient temperatures due to reduced circulation. The contractor would allow temperatures to normalize before moving or removing the silt curtain. Once built, the revetment is not expected to change ocean currents or water movements in the lagoon and coastal water temperature would not be affected over the mid-to long term. The revetment would not affect the pH of the water.

#### 4.8.5 Ecosystem Processes

**Alt. 1, Baseline; Ecosystem processes:** At Garapan Fishing Base, the likely effects to ecosystem processes under the no-action alternative is a continuation and possible increase in erosion. This would reduce water quality and could reduce the resiliency of nearshore seagrasses and offshore corals, which provide food and shelter for marine species.

**Alt. 2, Proposed Action; Potential effects on ecosystem processes:** The proposed action would not affect predator-prey relationships. In the short-term, BMPs would prevent the accidental introduction of algae such as *Chaetomorpha* spp. into Saipan Lagoon. The contractor would rinse gear that has been used at other work sites on the island.

Over the mid-term, after the revetment is built, native infauna would recolonize benthic areas disrupted during construction.

The revetment is expected to result in minor improvements to water quality along the coast and increase seagrass resilience in nearby beds by reducing sedimentation of the water column and seafloor. The reduction in erosion could slightly improve the resilience of corals further away from the coast. The revetment could also improve the resilience of marine species that rely on healthy seagrass and coral habitats.

Table 3. Summary of Environmental Effects of the Proposed Garapan Fishing Base Revetment Project.

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<b>Physical Resources</b>		
<p><b>Air Quality:</b> EA, section 4.2.1</p>	<p>Air quality is good to excellent. Ongoing emissions from vessels and vehicles using boat ramp and nearby roadway. Land is open and there are no nearby sensitive receptors.</p>	<p>Temporary emissions from construction vehicles and equipment would dissipate and would not combine with vessel and vehicle emissions to result in large adverse air quality issues.</p> <p>The contractor would be responsible for controlling dust.</p> <p>Due to site conditions, relatively low level and temporary use of excavator and power tools, as well as BMPs that would prevent dust, there would be no more than minor temporary effects to air quality during construction. No effect on air quality in the long-term.</p>
<p><b>Noise:</b> EA, section 4.2.2</p>	<p>Noise sources are from vessels, vehicles, and other human activities. Setting is near a main road.</p> <p>Land is open and there are no nearby sensitive receptors.</p>	<p>Construction noise would be from heavy equipment and power tools operating during regular working hours on weekdays. The contractor would maintain control over rocks during deposition.</p> <p>Because of the lack of sensitive receptors in close proximity and sound dissipation over open space areas and because work would be done during regular working hours, the project would not result in large adverse effects on land areas due to noise.</p> <p>Conditions of the site, features of the construction, the silt curtain and other BMPs would prevent large adverse effects from noise on ESA-listed marine species.</p> <p>Effects from noise on the human environment would be no more than minor and temporary during construction. Future uses would not change substantially, so there would be no mid-term or long-term adverse effects due to noise.</p>



Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<p><b>Views:</b> EA, section 4.2.3</p>	<p>Land is open space with minimal vegetation including a narrow line of trees and shrubs along the coast, and some others planted on the parcel. The undercut bank, failing trees, and derelict objects are visible along the coast. Other built areas include a boat ramp, parking lots and a concrete building near the road.</p>	<p>The revetment would be low and at the same level as the land. The row of trees and shrubs along the coast would be removed creating views of Saipan Lagoon from inland. The eroding bank would be replaced by a low limestone rock revetment. A derelict concrete building would be removed from along the coast.</p>
<p><b>Surface and Ground Water Quality:</b> EA, section 4.2.4</p>	<p>There are no surface waters in the project area.</p> <p>The project is affected by a high water table and submarine groundwater is a source of nutrients entering the lagoon.</p>	<p>No effect on surface waters.</p> <p>Site conditions and BMPs would prevent degradation of groundwater during construction. Insignificant effect on groundwater.</p> <p>No effect on groundwater after the revetment is built.</p>
<p><b>Marine Water Quality:</b> EA, section 4.2.4</p>	<p>Marine waters of the action area are classified as AA.</p> <p>CNMI BECQ establishes water quality standards, monitors water quality around the CNMI, works to improve water quality, and publishes monitoring results and reports. BECQ reviews projects.</p> <p>Water quality off Garapan Fishing Base is impaired due to land-based inputs from a nearby storm water</p>	<p>DLNR developed construction BMPs to control erosion and protect Saipan Lagoon water quality during construction. These include erosion control barriers (silt curtain, silt fences, approved dewatering cells) to contain sediments and nutrients to within the silt curtain, requirements on use of clean and properly working equipment, a water monitoring plan, a spill prevention and response plan, and other means of preventing adverse effects on water quality.</p> <p>The contractor would follow an approved water quality monitoring plan and stop work and coordinate with the BECQ if water quality measurements exceed the allowable limits.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
	<p>drain, storm water runoff, and erosion along the shore and inputs from vessels at the nearby boat ramp.</p> <p>Water quality for watershed W. Takpochau South, Site 19C occasionally exceeds standards for dissolved oxygen (DO), low pH, nitrates, and enterococci. Garapan Fishing Dock (monitoring site WB21) occasionally receives Red Flag closure notices (48 hour fishing/swimming closures) due to enterococci bacteria standards being exceeded. Bacteria can be from human or animal waste or the natural environment.</p> <p>Aquatic Life and Recreation Designated Uses (DUs) are not supported. Fish consumption DU has insufficient information to be evaluated. Aesthetic enjoyment/other uses DUs are fully supported.</p>	<p>Effects are likely to be no more than temporary and minor adverse effects on during construction and moderate water quality improvement over the long term.</p> <p>No change to enterococci, pH, or temperature.</p> <p>Short-term increase in turbidity/total suspended solids within the silt curtain. No large change to turbidity beyond the silt curtain due to BMPs.</p> <p>In the long term, moderate beneficial long-term improvements to turbidity and suspended solids levels as a result of stabilizing the shoreline.</p> <p>Potential minor beneficial effects on DO over the long term due to reduction in nutrients and sediments.</p> <p>Potential minor reduction of nitrate and nitrogen due to shoreline stabilization.</p> <p>Potential long-term limited improvement to aquatic life DU due to reduced turbidity and nutrients which would improve seagrass resilience.</p> <p>No change to Fish Consumption DU or to Recreation DU.</p> <p>No change to aesthetic enjoyment/other uses DU, which is fully supported.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<p><b>Soils, Sediments:</b> EA, section 4.2.5</p>	<p>Land area soils are fill over porous limestone and volcanic soils. Marine sediments are calcareous sand, silt, gravel and rocks.</p>	<p>The revetment would stabilize the shoreline which would reduce the loss of soil and reduce sedimentation of the marine environment.</p> <p>The contractor would implement BMPs to control erosion. The revetment would have a moderate beneficial effect on soil loss and sedimentation of nearshore marine areas.</p>
<p><b>Coastal Flooding:</b> EA, section 4.2.6</p>	<p>Low-lying areas of Garapan are subject to flooding during storms and are zoned as a floor area (FEMA Flood Zone AE E1 7).</p> <p>The incidence of flooding in low-lying areas of western Saipan may increase in the future due to more intensive rainfall events and sea level rise associated with climate change projections.</p> <p>Storm water currently drains out through a storm drain. During heavy rain events, water drains over the bank into the lagoon. Storm water also percolates through the permeable soils on Garapan Fishing Base.</p>	<p>Storm water would continue to drain out of the storm water drain into the lagoon. After the revetment is built, water could also drain over the revetment, through the storm drain, and percolate through the permeable soils on Garapan Fishing Base and through the revetment.</p> <p>In the long term, stabilizing the shoreline would reduce flooding at Garapan Fishing Base compared with the no-action alternative in the near and mid-term. However, flood risks may continue to increase under forecasted levels of sea level change and sea level rise.</p> <p>The revetment would not increase flooding or make floods more intense.</p>
<p><b>Biological resources</b></p>		
<p><b>Terrestrial and Marine Habitats:</b></p>	<p>Upland areas have been modified substantially and are urbanized with sparse landscape plantings.</p>	<p>Construction would temporarily disturb a small portion of terrestrial land. Turf grass would be replaced as soon as possible as construction</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
EA, sections 4.3.1, 4.3.2	<p>A narrow beach emerges at low tide and supports intermittent foraging by common migratory birds.</p> <p>Marine nearshore areas have been dredged. The intertidal zone features unconsolidated silty, rocky sand beach that is tidally exposed and submerged.</p> <p>Further offshore, beyond the dredged channel and just beyond the action area, <i>Enhalus</i> seagrass and marine macroalgae and sparse coral are found.</p> <p>There is no habitat suitable for hard corals in the action area. Hard corals are sparsely distributed beyond the property boundary and are more prevalent further out in the lagoon well past the action area.</p> <p>Shoreline erosion introduces sediments into the nearshore marine environment, so water quality is compromised, and nearby seagrass are subject to moderate silt loads.</p>	<p>proceeds. Over a relatively short term, foraging areas for Pacific Golden-Plover would be restored.</p> <p>The construction project would temporarily disturb nearshore habitat within the silt curtain. After construction, sand and sediments would be used to bury the lower portion of the revetment and this would be recolonized by benthic invertebrates and algae and infauna once construction is over. Portions of the nearshore marine habitat would continue to be dredged to support vessel uses.</p> <p>The contractor would implement BMPs to protect water quality and marine habitats from sedimentation, pollution, and physical damage (such as from gear or materials loss during storms). BMPs would mitigate effects of construction on marine habitats beyond the silt curtain to levels that are temporary and no more than minor during construction.</p> <p>Less than one tenth of an acre (0.087 acres) of intertidal beach would be replaced by rock revetment along 380 ft of the shore. Some intertidal beach would be available at low tide. The revetment would provide 3-dimensional structuring habitat for invertebrates and fishes when submerged.</p> <p>The revetment would stabilize the shoreline at Garapan Fishing Base and reduce sediment inputs into the water column and sediments along shore. This would have moderate long-term beneficial effects on water quality and habitat that would, in turn, increase seagrass resilience, and provide continued habitat for sea turtles once construction is over.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<p><b>Wildlife:</b></p> <p>EA, sections 4.3.1, 4.3.2</p>	<p>Land areas support foraging by a small number of migratory Pacific Golden-plovers.</p> <p>No native land-based wildlife, other than plovers, occur at Garapan Fishing Base.</p> <p>Intertidal beach areas support intermittent foraging at low tide by common migratory shorebirds.</p> <p>Marine wildlife includes common marine species associated with nearshore coastal seagrass and sand habitats. Endangered green and hawksbill turtles are confirmed from Saipan Lagoon. Threatened scalloped hammerhead shark juveniles and neonates could occur in the action area. Although coral colonies are not present in the action area, planktonic larvae of three species of threatened corals and larvae of giant clams could occur in the water column, particularly during key spawning events.</p>	<p>After construction, all items would be removed and turf grass replanted. Pacific Golden-plovers would continue to forage on land areas. Migratory shorebirds could forage along the narrow intertidal beach at low tide.</p> <p>Construction would result in unavoidable loss of some individual benthic organisms in the construction footprint. Submerged areas near the foot of the revetment would be buried to grade. Over the mid-term, benthic epifauna and infauna would become re-established.</p> <p>Construction BMPs would protect lagoon water quality and benthic habitats beyond the action area and effects on wildlife would be no more than minor and temporary.</p> <p>BMPs would prevent introducing marine algae that is known to have the potential to spread and smother corals.</p> <p>The revetment would not affect biodiversity because it would continue to provide ecological functions and services. It would not present a barrier to animal movements between habitats or eliminate rare intertidal habitat. The revetment would not affect predator-prey relationships</p> <p>The rock revetment would provide 3-dimensional structuring habitat that could provide shelter and substrate for small fishes and invertebrates when submerged. We do not expect a shift in <i>Enhalus</i> occurrence or in the type of marine fishes, invertebrates and plants in the affected area.</p> <p>The revetment would have moderate beneficial effects on water quality in the long-term which is expected to improve resilience of nearshore</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
		seagrass habitats and improve conditions for wildlife that rely on this habitat.
<b>Designated Management Areas and Vulnerable Ecosystems:</b> EA, section 4.3.3	No vulnerable ecosystem or marine protected area is in the action area or nearby.	No effect because no vulnerable ecosystem or marine protected area is in or near the action area. BMPs that require clean materials be used and gear which has been used in other sites to be cleaned would both prevent the unintentional introduction of invasive algae. This would prevent adverse effects on coral areas in Saipan Lagoon and a Trochus shell reserve, which is well beyond the area of potential effect.
<b>Essential Fish Habitat and Habitat Areas of Particular Concern:</b> EA, section 4.3.4	<p>EFH in the action area is benthic habitat and water column which supports eggs, larvae, juvenile and adult Mariana bottomfish management unit species (BMUS) and Western Pacific Pelagic MUS. (Section 4.3.4 and Appendix F)</p> <p>Erosion and other non-point-source and point-source inputs are affecting water quality along the coast. CNMI is working to improve water quality in Saipan Lagoon.</p>	<p>There would be temporary and unavoidable adverse effects to EFH inside the silt curtain. BMPs would be proactive management strategies to avoid and minimize adverse effects to bottom habitats and water quality (EFH) beyond the immediate work site during construction. In the mid-term, bottom habitats that were disturbed during construction would be recolonized by benthic species.</p> <p>The project would not result in an unavoidable loss of corals or seagrass because these resources are outside the action area and BMPs would protect water quality and habitat beyond the action area.</p> <p>The effects of construction on EFH would be no more than minor due to BMPs, features of the proposed construction, and recolonization of benthic habitats in the mid-term.</p> <p>Once built, less than 1/10<sup>th</sup> acre of unconsolidated sandy intertidal substrate would be replaced with limestone rock and the rock revetment would provide 3-dimensional structured habitat when submerged. In the long-term, stabilizing the shoreline would reduce erosion control and improve water quality and benthic EFH including seagrass.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<b>Protected Species</b>		
<b>Marine Mammals:</b> EA, sections 4.3.2 and 4.4.5	None present.	No effect due to geographic separation.
<b>Migratory Birds:</b> EA, section 4.4.6	Plovers forage on land areas. Migratory shorebirds intermittently forage along the shore.	Construction would temporarily displace plovers and shorebirds due to disturbance and habitat modification. Migratory birds would resume use of the action area after the revetment is built. No more than minor adverse effects on migratory birds due to temporary displacement and loss of a small amount of intertidal foraging area.
<b>ESA-listed Species (USFWS)</b> EA, section 4.4.1	No land-based species including birds, bats, butterfly, tree snail. No sea turtle nesting habitat is present.	No effect on USFWS-listed ESA species. None in the action area.
<b>Designated Critical Habitat</b> EA, sections 4.4.1 and 4.4.3	No critical habitat has been designated in the project area by NMFS or by USFWS.	No effect on USFWS-designated or NMFS-designated critical habitat. None in the action area.
<b>NMFS-proposed Critical Habitat:</b> EA section 4.4.4	NMFS proposed critical habitat for two species of threatened reef-building corals in shallow waters around Saipan. Some areas of Saipan Lagoon, including Garapan Boat Ramp were excluded from proposed critical habitat designation based on a lack of essential feature of hard substrate, use as a harbor or navigation channel, ongoing maintenance through	BMPs would prevent sedimentation or other contaminants from becoming widespread in Saipan Lagoon. BMPs would prevent debris from the construction work entering the lagoon.  Because the action area lacks features of proposed critical habitat that are suitable for hard corals and is in an area that is routinely dredged and specifically excluded from proposed critical habitat designation, the proposed action would not affect proposed critical habitat within the action area.

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
	dredging, or national security considerations.	The proposed action could potentially affect areas proposed as critical habitat for two species of Indo-Pacific corals in Saipan Lagoon in areas beyond the action area. BMPs would provide sufficient protection and allow us to determine the proposed action may affect areas proposed as coral critical habitat but would not likely adversely modify proposed critical habitat for threatened corals.
<p><b>Threatened Corals</b></p> <p>EA, section 4.4.2</p>	<p>None of the three listed species of corals from the CNMI are present in or near the action area. Only <i>Acropora globiceps</i> has been confirmed from Saipan waters. Coral larvae could be present in the water column.</p>	<p>BMPs would protect water quality outside of the construction area. BMPs would prevent widespread sedimentation of lagoon water and benthic habitat and would help prevent and respond to any accidental release of toxins. BMPs would reduce the potential introduction of toxicopathological substances from sunscreens.</p> <p>Over the long-term, improved water quality could benefit coral larvae by reducing sedimentation. Effects are likely to be minor and beneficial because suitable hard substrate is not present in the nearshore environment.</p> <p>NMFS informal ESA section 7 consultation concurred with our finding that the proposed action may affect, but is not likely to adversely affect threatened <i>Acropora globiceps</i>.</p>
<p><b>Endangered Sea Turtles:</b></p> <p>EA, sections 4.2.2 and 4.4.2</p>	<p>Green and hawksbill turtles forage, swim and rest in waters of Saipan Lagoon. They prefer areas further offshore and are not seen in shallow nearshore waters of the action area around Garapan. There is sea turtle foraging habitat near the action area. There is no turtle nesting in the area.</p>	<p>BMPs would protect water and habitat quality in Saipan Lagoon beyond the silt curtain. Work would stop if a turtle approaches within 50 y. The contractor would secure supplies, and monitor the silt curtain to prevent entanglement or entrapment and to prevent marine debris from entering the lagoon. The silt curtain would prevent turtles from entering the construction area, providing separation from the construction area preventing the potential for injury due to equipment or rocks or exposure to loud sounds.</p>



Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
		<p>Water quality improvements could benefit sea turtles over the long term by enhancing viability of seagrasses.</p> <p>Due to site conditions and BMPs, including the presence of the silt curtain and a stop-work requirement if a turtle comes within 50 y of construction, sounds would not reach levels that would result in adverse effects to individual sea turtle hearing. Noise effects, if any, would be minor and temporary and might result in turtles avoiding the area during construction.</p> <p>We conclude the proposed action may affect, but would not likely adversely affect green or hawksbill turtles. NMFS PRD concurred with this determination in its January 31, 2021 Letter of Concurrence.</p>
<p><b>Threatened Scalloped Hammerhead Shark:</b></p> <p>EA, sections 4.2.2 and 4.4.2</p>	<p>Scalloped hammerhead shark from the threatened Indo-West Pacific DPS is not reported from Saipan Lagoon.</p> <p>However, if sharks are present, juveniles and neonates could occur in nearshore coastal waters.</p>	<p>BMPs would protect water and habitat quality in Saipan Lagoon beyond the silt curtain. Work would stop if a hammerhead shark approaches within 50 yards. This would reduce effects of noise on scalloped hammerhead sharks. The contractor would secure supplies and monitor the silt curtain to prevent entanglement or entrapment and to prevent marine debris from entering the lagoon. The silt curtain would prevent sharks from entering the construction area, providing separation from the construction area preventing the potential for injury due to equipment or rocks or exposure to loud sounds.</p> <p>Due to site conditions and BMPs, including the presence of the silt curtain and a stop-work requirement if a scalloped hammerhead shark were to be observed within 50 y of construction, sounds would not reach levels that would result in adverse effects to individual sea turtle hearing. Noise effects, if any, would be minor and temporary and might</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
		<p>result in scalloped hammerhead sharks, if they were in Saipan Lagoon, avoiding the area during construction.</p> <p>We conclude the proposed action may affect, but would not likely adversely affect the threatened scalloped hammerhead shark. NMFS PRD concurred with this determination in its January 31, 2021 Letter of Concurrence.</p>
<b>Socio-economic Effects</b>		
<b>Fishing Infrastructure and Fishing:</b>  EA, section 4.5.1	<p>Vessel owners, fishermen, and other members of the community use the boat ramp, fish from shore and offshore, and use the facilities and recreational amenities Garapan Fishing Base offers. CNMI fisheries are sustainably managed. Garapan Fishing Base would eventually be damaged through continued erosion of the shoreline. Nearshore areas would continue to be subject to sedimentation. Fishermen fish using nets along shore at low tide.</p>	<p>The revetment would stabilize the shoreline, protect public land and infrastructure supporting community boating, fishing, and other activities. This would support food security and jobs. Reducing erosion would improve water quality in the lagoon with minor positive benefits on marine fish and invertebrates and seagrass habitats.</p> <p>No large adverse effect on fishing or fisheries. During construction, net and hook and line shore fishermen could continue to access the beach at low tide in areas outside of the construction safety zone and along the fishing pier. Construction would not affect fish. Once built, fishing could resume along the shore and in the lagoon.</p> <p>Long-term effects would be beneficial and moderate.</p>
<b>Environmental Justice:</b>  EA, section 4.5.2	<p>Surrounding community is not a low-income, minority population area. Limited shore fishing for sustenance is done. The sustenance harvest of fish is occasionally prohibited by CNMI</p>	<p>The proposed action would not have large and adverse environmental or health effects including on sustenance fishing or consumption of marine resources.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
	when water quality standards are exceeded.	BMPs would protect water quality so there is no potential for construction to adversely affect resources caught by fishermen or adversely affect human health.
<b>Historic, Archaeological, and Cultural Resources:</b> EA, section 4.5.3	Land areas have been previously disturbed and paved. No known historic, archaeological, or cultural resources on the site or within the action area. Unknown resources could, potentially exist below ground.	No adverse effect on known historic properties listed on or potentially eligible for listing on the National Register of Historic Places. BMPs would be in place that would protect any unknown resources that may be uncovered during excavation. BMPs would mitigate any potential for adverse effects in the project action area.
<b>Public Safety and Health:</b> EA, section 4.6	Fishing is occasionally prohibited by CNMI when water quality standards are exceeded.  Flooding in low-lying areas happens periodically and will continue to occur, depending on future storms, adaptation, and sea level changes.	No large adverse effects on public health or safety.  The contractor would maintain the site and protect public safety.  Neither construction nor the revetment would affect bacteria levels.  The revetment would not increase flooding likelihood or intensity. Floodwaters could drain off the site after the revetment is built.
<b>CNMI Coastal Zone:</b> EA, section 4.7	The revetment is located in the Coastal Zone and within three established areas of Particular Concern (APC): Shoreline, Lagoon and Reef, and Coastal Hazards.	The proposed action would stabilize the shoreline along Garapan Fishing Base, which is consistent with allowable uses of the coastal zone.  The project would not increase flood hazards.  Construction BMPs would be sufficient to protect marine habitats beyond the action area including water and benthic habitat. BMPs would protect marine wildlife including ESA-listed and candidate species during construction. The proposed action would not adversely

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
		<p>affect proposed critical habitat. The proposed action would not affect marine mammals due to geographic separation.</p> <p>BMPs would be sufficient to protect water quality. The contractor would follow an approved water quality monitoring plan that would include provisions for daily monitoring, stopping work and consulting with the BECQ-DEQ if monitoring within the zone of mixing indicates allowable water quality standards for turbidity are exceeded, and provisions to restart work once water quality standards in the mixing zone have been re-established.</p> <p>The proposed action would not adversely affect Designated Uses (DUs) for Class AA, Tier 2 Marine Waters. The project would improve Aquatic Life DU, would not change Recreation or Fish Consumption DUs, and would not change attainment of the Aesthetic /Other uses DUs.</p> <p>The proposed action would not adversely affect properties listed on or eligible for listing on the National Register of Historic Places. BMPs would enable DLNR to mitigate any potential for adverse effects on historic resources in the action area and coastal zone.</p> <p>The proposed action would not have more than minor adverse effects on shore fishing. Access to the lagoon along Garapan Fishing Base would be curtailed during construction for public safety. Once complete, fishermen could still access the lagoon and shore areas. Fishing along the beach would be limited to low tide.</p> <p>Over the long-term, shoreline stabilization would protect public infrastructure, continue to support community access to sustainably</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
		<p>managed fishery resources and ocean recreation, and other uses of the coastal zone.</p> <p>NMFS provided a Federal Coastal Zone Management Act Consistency Determination to the BECQ DCRM in January 2022. On March 28, 2022, CNMI concurred with NMFS’s Federal Consistency Determination, with no additional requirements.</p>
<b>Other Environmental Considerations</b>		
<b>Relationship to Federal and CNMI Environmental Laws:</b>  EA, section 4.8.1		The proposed action does not have the potential to violate a Federal or CNMI law intended for the protection of the environment.
<b>Precedent, Decisions in Principal, Irreversible, and Irretrievable Commitments of Resources:</b>  EA, sections 1.8, 4.8.2	The government identified the project in its approved marine conservation plan. Other improvements in the same area are being considered by the CNMI.	<p>The proposed action is not a precedent. The shoreline along Garapan Fishing Base has been stabilized in the past through cement walls, and rock piles. Other portions of the Island have had revetments built.</p> <p>The proposed action is a standalone project. The project is not a decision in principal that would lead to automatic approval of future projects or narrow future options.</p> <p>The proposed action would not represent an irreversible or irretrievable commitment of natural resources.</p>

Topic or Resource	Alternative 1: No Action Baseline	Alternative 2. Proposed Action – NMFS to release funds that support DLNR’s construction of shoreline revetment at Garapan Fishing Base.
<p><b>Scientific controversy over effects:</b></p> <p>EA, section 4.8.3</p>		<p>Our coordination with others including CNMI agencies and the public did not reveal the potential for a high degree of scientific controversy related to our environmental effects analysis.</p>
<p><b>Climate Change Considerations</b></p> <p>(EA, section 4.8.4)</p>	<p>Climate change has the potential to affect the coastal environment of CNMI particularly the marine environment through increased temperature, ocean acidity, the potential for changes to the frequency and severity of storms, and sea level rise.</p>	<p>No effects on greenhouse gas emissions. No large net change because construction equipment use would be offset from use on other projects.</p> <p>The revetment is expected to withstand water conditions in the near and mid-term, but could be overtopped if sea level changes are large. The revetment would not make flooding worse or more likely in the future.</p> <p>The revetment would not have large adverse effects on lagoon water temperatures in the short-term and would not affect water temperature in the mid-term or long-term. The project would not affect pH.</p> <p>Improved water quality through reducing erosion is expected to improve the resilience of seagrass beds and coral, and improve the resilience of marine species that rely on these habitats.</p>
<p><b>Biodiversity or Ecosystem Functioning</b></p> <p>EA, section 4.8.5</p>	<p>Erosion may be reducing the resiliency of nearshore seagrasses and offshore corals, which provide food and shelter for marine species.</p>	<p>In the short-term BMPs would prevent the accidental introduction of algae such as <i>Chaetomorpha</i> spp. from other sites and would protect water quality. Over the mid-term, native infauna would recolonize benthic areas disrupted during construction. Thus, effects on benthic productivity are likely to be minor and temporary in the short-term.</p> <p>In the long-term water quality improvements are expected to be minor and positive resulting in increased resilience of corals, seagrasses and marine species that rely on these habitats.</p>

## **5 Preparers and Coordination with Others**

### **5.1 Preparers and Reviewers**

Ron Dean, Acting PIRO NEPA Coordinator, Honolulu, HI (NEPA review draft EA)  
Phyllis Ha, Natural Resource Management Specialist, NMFS, Pacific Islands Regional Office (PIRO), Sustainable Fisheries Division (SFD), Honolulu, HI (Preparer, draft and Final EA/FONSI, NMFS project lead)  
Bob Harman, Assistant Regional Administrator (Ret.), NMFS PIRO SFD (Review, draft EA)  
Jarad Makaiiau, Assistant Regional Administrator, Sustainable Fisheries, NMFS PIRO, SFD, Honolulu, HI (Review, draft EA, Final EA/FONSI, project coordination)  
Brett Schumacher, Fishery Management Specialist, NMFS PIRO SFD (Review final EA/FONSI)  
Sarah Sheffield, Attorney Advisor, NOAA Office of General Counsel, Pacific Islands, Honolulu, HI (Legal Review draft EA, Final EA/FONSI)  
Kate Taylor, PIRO NEPA Coordinator, Honolulu, HI (NEPA review, final EA/FONSI)

### **5.2 Coordination with Others**

The following people provided support and expertise on the project planning and NMFS' environmental review:

Anthony T. Benavente, Secretary, CNMI Department of Lands and Natural Resources (DLNR), project support, reviews, project management  
Augustin M. Kaipat, CNMI DLNR, administrative support  
Manuel Pangelinan, Director, CNMI Division of Fish and Wildlife (DFW)  
Ben Camacho, CNMI DFW, support on permits  
Michael Tenorio, CNMI DFW, field site survey  
John E. Gourley, Micronesian Environmental Services (MES), support on environmental effects analysis and coordination  
Kitty Simonds, Executive Director, Western Pacific Fishery Management Council (WPFMC), applicant for Western Pacific Sustainable Fisheries Funds on behalf of CNMI DLNR  
Mark Mitsuyasu, Insular Officer, WPFMC  
Floyd Masga, CNMI, WPFMC  
Alice Berg, ESA Specialist, NOAA Fisheries, information on protected resources and section 7 review  
Rita Chong-Dela Cruz, Historic Preservation Officer, CNMI Historic Preservation Office, NHPA section 106 consultation  
Larry P. Maurin, Manager, Water Quality Surveillance / Nonpoint Source Branch, CNMI BECQ.  
Steven McKagan, Fishery Biologist, NMFS PIRO, Habitat Conservation Division, CNMI Office, information to support MSA EFH effects review and consultation  
Richard V. Salas, Director, CNMI Bureau of Environmental and Coastal Quality-Division of Coastal Resources Management  
Arthur Charfauros, Coastal Resources Planner III, Division of Coastal Resources Management, CNMI BECQ, information and coordination on Federal Consistency review  
Albert P. Williams, Regulatory Project Manager, Guam Field Office, U.S. Army Corps of Engineers, information related to Department of the Army permits

## **6 Summary of Environmental Compliance Reviews**

NMFS completed compliance reviews in accordance with provisions of the following laws and Executive Orders intended for the protection of the environment prior to releasing Federal funds for the proposed revetment. DLNR will be responsible for obtaining authorization from the U.S. Army Corps of Engineers and local permits and is expected to partially rely on our compliance reviews for those purposes.

### **6.1 Coastal Zone Management Act (CZMA)**

The CZMA of 1972 (16 U.S.C. § 1451 *et seq.*) provides for the management of the nation's coastal resources with the goal to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Section 307 of the CZMA requires Federal agencies to undergo a consistency review of proposed actions with an approved coastal management program. The CNMI Coastal Zone Management Program (CZMP) establishes an overall management strategy for resolving conflicts posed by state priorities of economic development and coastal resource conservation under the Coastal Resources Management Act of 1983 (P.L. 3-47). On January 14, 2022, the Regional Administrator, NMFS, PIRO, provided a Federal Consistency Determination (Consistency Determination) to the CNMI BECQ-DCRM (DCRM) documenting NMFS' determination that the proposed action would be consistent to the extent possible with the enforceable provisions of CNMI's CZMP (NMFS 2022a). The Consistency Determination was supported by the draft EA (NMFS 2022b). Among our findings, we described in our Determination that BMPs would protect lagoon water quality to the extent practicable and benthic habitats outside of the construction area. BMPs would also allow DLNR to protect marine wildlife and historic and cultural resources. The proposed action would not damage seagrasses or corals. The revetment would not increase flood hazards. After construction, benthic infauna would recolonize the nearshore excavated areas, the revetment would provide three-dimensional structuring habitat along the coast, and foraging seabirds would return to intermittent foraging along the beach at low tide. We described that access to the coast and coastal recreation would return to current levels after construction. In the mid- to long-term, the revetment would improve water quality along Garapan Fishing Base which, in turn, is expected to enhance resilience of seagrasses in nearshore areas off Garapan Fishing Base.

On March 28, 2022, the Director of the DCRM concurred that the proposed action would be consistent to the maximum extent practicable with the enforceable policies of the CNMI Coastal Management Program (CNMI DCRM 2022). DCRM noted the DLNR would require a DCRM Coastal permit and the DCRM stated that the agency reserved the right to include additional conditions to their Coastal permit.

### **6.2 Endangered Species Act (ESA) of 1973**

The Endangered Species Act (ESA) of 1973, as amended, requires Federal agencies to ensure that actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of any threatened, endangered or proposed species, or result in the destruction or adverse modification of critical habitat. To "jeopardize" means to reduce appreciably the likelihood of survival and recovery of a species in the wild by reducing its numbers, reproduction, or distribution. In accordance with Section 7 of the ESA, if a Federal agency determines that its



action would adversely affect an ESA-listed species or adversely modify critical habitat of a listed species, the agency must formally consult with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife (USFWS). The consultation would determine whether the proposed action would jeopardize the continued existence of ESA-listed species or any designated critical habitat. If an agency determines, with concurrence from NMFS and/or the USFWS, that the action is not likely to adversely affect ESA-listed species or critical habitat, consultation is terminated and formal consultation is not required.

On December 9, 2021, NMFS provided the PIRO PRD with a Biological Evaluation (BE) and initiated informal consultation under section 7 of the ESA for ESA-listed species under the jurisdiction of NMFS. Based on information in the BE (NMFS 2021a), NMFS SFD preliminary concluded that the proposed action may affect but would not be likely to adversely affect ESA-listed species under the jurisdiction of NMFS that may occur in and near the action area. NMFS SFD also preliminary concluded that the proposed action would not adversely modify proposed critical habitat for three species of ESA-listed corals.

On January 31, 2022, NMFS PRD concluded its section 7 review (NMFS 2022d). NMFS PRD concurred with NMFS SFD's preliminary findings and determinations that the proposed action may affect but would not be likely to adversely affect endangered green or hawksbill turtles, threatened scalloped hammerhead sharks, and *Acropora globiceps* largely due to the features of the proposed action, site conditions, BMPs, and the limited likelihood these species would be in the action area or near the action area. NMFS PRD concluded the proposed action would not adversely affect proposed critical habitat.

In its LOC, NMFS PRD advised NMFS SFD that ESA consultation must be reinitiated if: 1) Take occurs to an endangered species, or to a threatened species for which we have issued regulations prohibiting take under Section 4(d) of the ESA; 2) 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; 3) the identified action is subsequently modified in a manner causing effects to ESA-listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the action.

We conclude, as described in more detail in section 4.4.1, that the proposed action would not affect any ESA-listed species under the jurisdiction of the USFWS because no USFWS-listed ESA species occur in the action area and there is no nesting habitat for sea turtles. Additionally, we conclude that the proposed action would not affect critical habitat designated by the USFWS because the agency has not designated critical habitat in Saipan.

### **6.3 Rivers and Harbors Appropriation Act of 1899**

Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The Act also provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary's approval

authority has since been delegated to the Chief of Engineers, U.S. Army Corps of Engineers (Corps).

Because the proposed Garapan Fishing Base revetment would involve the construction of a structure in navigable waters of the United States, DLNR would coordinate the proposed action with the Honolulu District Engineer to obtain authorization under the Corps' NWP 13 (Bank Stabilization), NWP 16 (Return Water from Upland Contained Disposal Areas), or other authorization applicable to the project. DLNR incorporated BMPs into the proposed activities to help ensure the project would conform to the Corps' Regional and General Conditions for both NWPs. DLNR also incorporated other BMPs typically recommended by the Corps for marine projects in the Pacific Islands that are intended to avoid or minimize adverse effects to listed species. The information in this EA and other completed environmental compliance reviews (i.e., ESA Section 7 consultation, the Magnuson-Stevens Act EFH consultation, NHPA Section 106 consultation, and CZMA Federal Consistency Determination) would support the District Engineer's review of the proposed action as the Corps makes a determination of whether to authorize the project and which authorizations would apply.

#### **6.4 Clean Water Act (CWA) of 1977**

Section 404 of the Clean Water Act (CWA) authorizes the Corps to implement a permit system to regulate the discharge of fill into wetlands. The Act authorizes the U.S. EPA to evaluate permit applications to the U.S. Army Corps of Engineers under CWA Section 404(b)(1), as applicable. DLNR would coordinate the proposed action with the Corps to obtain authorization under NWP 13 (Bank Stabilization), NWP 16 (Return Water from Upland Contained Disposal Areas), and with other authorizations applicable to the project under the CWA. DLNR will follow BMPs intended to protect water quality and meet the expected requirements of the BECQ's water quality review. The information in this EA and other final determinations will support the Corps' review of the proposed action.

#### **6.5 Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat**

Section 305(b)(2) of the Magnuson-Stevens Act requires Federal agencies to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect EFH.

On December 9, 2021, we requested initiation of Magnuson-Stevens Act EFH review and provided a review of potential effects of the proposed action on EFH to the PIRO HCD. Highlights of our review are provided in section 4.3.4. On January 5, 2022, HCD determined that proposed BMPs are adequate to minimize potential adverse effects to EFH and ensure that these effects will be no more than minimal. Therefore, the HCD did not provide additional conservation recommendations for this project, thus satisfying the requirements of Section 305(b)(D)(2) of the MSA.

## **6.6 Marine Mammal Protection Act (MMPA)**

As described in sections 4.3.2 and 4.4.5, construction would not affect marine mammals because no marine mammals have been reported from the shallow coastal areas off of Garapan Fishing Base.

## **6.7 National Historic Preservation Act (NHPA)**

Section 106 of NEPA requires Federal agencies to consider the effects of their proposals on historic properties, and to provide State Historic Preservation Officers (HPO), Tribal HPO, and as necessary, the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on these actions. Early on in the project planning process, on March 10, 2021, NMFS advised the CNMI HPO of the proposed action and requested early assistance with the historic properties review. After a site review and other work, the HPO provided NMFS with information that allowed us to complete our literature review and evaluate the potential effects on known and unknown resources of the area. We summarize potential effects of the proposed action on known and potential historic resources in section 4.5.3, above.

NMFS provided a Section 106 Determination of Effects on Historic Properties to the CNMI HPO on October 7, 2021 (NMFS 2021). By letter dated November 2, 2021, the CNMI HPO notified NMFS of their concurrence with our determination of no adverse effect.

## **6.8 National Environmental Policy Act (NEPA)**

### **6.8.1 Applicable regulations and agency guidance**

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA, (40 CFR 1500–1508), require Federal agencies to consider the effects of their proposals on the environment and provide for appropriate public coordination before taking action. The Council on Environmental Quality (CEQ) Regulations implementing NEPA require the preparation of an EIS for any proposal for a major federal action significantly affecting the quality of the human environment (42 U.S.C. § 4332(C)). CEQ NEPA Regulations direct agencies to prepare a Finding of No Significant Impact (FONSI) when an action not otherwise excluded will not have a significant impact on the human environment (40 CFR §§ 1500.4(b) & 1500.5(b)). To evaluate whether a significant impact on the human environment is likely, the CEQ regulations direct agencies to analyze the potentially affected environment and the degree of the effects of the proposed action (40 CFR § 1501.3(b)). In doing so, agencies should consider the geographic extent of the affected area (i.e., national, regional or local), the resources located in the affected area (40 CFR § 1501.3(b)(1)), and whether the project is considered minor or small-scale (NAO 216-6A CM, Appendix A-2). In considering the degree of effect on these resources, agencies are to examine both short- and long-term effects (40 CFR § 1501.3(b)(2)(i); NAO 216-6A CM Appendix A-2 - A-3), and the magnitude of the effect (e.g., negligible, minor, moderate, major). CEQ identifies specific criteria for consideration (40 CFR § 1501.3(b)(ii)-(iv)). Each criterion is to be considered with respect to the proposed action and considered individually as well as in combination with the other criteria.

This EA was prepared in accordance with the CEQ 2020 regulations and following agency procedures in NOAA’s Administrative Order (NAO) Section 216-6A (“Compliance with the

National Environmental Policy Act, Executive Orders 12114, Environmental Effects Abroad of Major Federal Actions; 11988 and 13690, Floodplain Management; and 11990, Protection of Wetlands”), dated April 22, 2016 (NOAA 2016), and its associated Companion Manual, dated January 13, 2017 (NOAA 2017). We consulted the NOAA Interim Guidance issued December 8, 2020 (NOAA internal memorandum) and NMFS’ NEPA Interim Guidance (NMFS internal memorandum dated March 2, 2021).

### 6.8.2 Analytic approach

We compared the effects of the proposal in comparison to the baseline environmental conditions. Our analysis includes the following considerations:

The geographic scale and setting of the project (e.g., national, regional, local). The revetment would be a small-scale, local project with most effects associated with the temporary and limited effects of construction within the construction footprint as a result of BMPs. (EA, section 4.1)

The occurrence and condition of environmental resources (e.g., physical, ecological, and socioeconomic resources) that are likely to be affected. This is the baseline status quo condition. 40 CFR §1501.3(b)(1). Affected resources and their status are described in section 4.

Degree of effect. We consider whether the proposed action would cause an impact or implicate an issue. If so, we discuss whether the impact caused by the project would be beneficial or adverse, long-term, short-term, or permanent, and whether the magnitude of the effects would be negligible, minor, moderate, or major. We analyze the degree of effects, with respect to environmental change resulting from the proposed action and compared with the baseline in section 4.

In our effects analysis, we use terms defined in the Glossary to NAO 2016-6A, Companion Manual (NOAA 2017) adapted for this EA:

“**Long-term** – refers to a potential impact of long duration, relative to the proposed project and the environmental resources. Long-term impacts continue after the project has ceased. Permanent impacts that remain after the construction phase of a project is an example of a long-term impact.”

“**Major Projects** – as defined by NOAA Administrative Order (NAO) 217-104, Facility Capital Planning and Project Management Policy, major projects are investments subject to DOC approval thresholds for estimated total project cost.” The proposed action would not be a DOC-owned facility so this definition does not apply to the proposed action. The proposed action would not be consistent with the definition of a major project under NAO 217-104 or definitions in NAO 2016-6A Companion Manual (Appendix A, NOAA 2017), if the definitions applied.

“**Minor Projects** – as defined by the NAO 217-104, Facility Capital Planning and Project Management Policy, minor projects are investments involving new facilities or enhancements/additions/expansions to existing facilities below the DOC approval thresholds, but with a total project cost greater than \$300,000.” The proposed action would not be a DOC-owned facility, so this definition does not apply. The proposed action would be consistent with

the definition of a “minor project” as defined in the NAO 216-6A Companion Manual (NOAA 2017) and NAO 217-104, if the provisions applied.

This correction does not represent a substantive change from the conclusions about the degree of effects presented in the draft EA. As described in section 4.1.1, the proposed action would be small-scale local project with effect primarily limited in duration and extent and associated primarily with construction activities. DLNR would incorporate a suite of BMPs that would prevent large and adverse effects on the environment.

**“Minor or small-scale effects** – these are terms NOAA considers in the context of the particular proposal, including its proposed location. In assessing whether the scope of a proposed action is small, in addition to the actual magnitude of the proposal, NOAA considers factors such as industry norms and the relationship of the proposed action to similar types of development or activity in the vicinity of the proposed action. When considering the size of a proposed facility, for example, NOAA would review the surrounding land uses, the scale of the proposed action relative to existing development, and the capacity of existing roads and other infrastructure to support the proposed action...”

**Negligible** – this term refers to a level of impact that is below minor to the point of being barely detectable and therefore discountable. Factors for consideration include: procedures that employ generally accepted industry standards or best management practices that have been tested and verified at the time an activity is proposed; whether an activity has understood or well-documented impacts at the time an activity is proposed; whether control and quality measures are in place (e.g., monitoring and verification; emergency plans and preparedness)...;

**“Short-term** – this term refers to a potential impact of short duration, relative to the proposed project and the environmental resource. Short-term impacts occur while the activity is underway, and do not persist once the activity ends. Noise produced by temporary construction activities are an example of short-term impacts.”

In addition to NOAA’s 2017 definitions, we use the term **“Mid-term”** to refer to effects expected from 1 to 2 years after construction ends.

In our effects analysis, we consider reasonably foreseeable actions by others or the agency with a reasonably close causal relationship.

We evaluate whether the proposed action is related to one or more “connected actions” with the potential for additive effects including synergistic effects [“connected actions” are defined at 40 CFR §1501.9(d)(1)]. The proposed action is a stand-alone proposal that is not connected to other actions. (EA, section 1.8)

We describe that mitigation measures have been incorporated into the proposed action to reduce the magnitude of the impact, especially major to moderate. BMPs are important measures to prevent the project from having large adverse environmental effects and help ensure consistency with enforceable provisions of the CNMI Coastal Zone Management Program, the Corps’ authorizations, local construction permits, and to conform with requirements of other laws intended for the protection of the environment and historic, cultural, and archaeological resources. Relevant BMPs are provided in Appendix A-2.

We described other applicable statutory processes that would ensure the project sufficiently addresses effects on natural socio-economic resources. Specifically, we consider whether:

- The proposed action would violate Federal, state (here, CNMI), tribal or local law or requirements imposed for environmental protection. (section 4.8.1)
- The degree to which the proposed action is expected to affect public health or safety. (section 4.6)
- The degree to which the proposed action is expected to affect a sensitive biological resource including:
  - Species that are known or expected to be present within or near the project area which are listed under the Federal ESA as threatened or endangered species, proposed for listing under the ESA, and designated and proposed critical habitat. (EA, section 4.4)
  - Stocks of marine mammals as defined in the Marine Mammal Protection Act. (EA, section 4.3.2 and 4.4.5)
  - Magnuson–Stevens Fishery Conservation and Management Act. (EA, section 4.3.4)
  - Bird species protected under the Migratory Bird Treaty Act. (EA, sections 4.3.2 and 4.4.6)
  - National marine sanctuaries or monuments. (EA, section 4.3.3)
  - Vulnerable marine or coastal ecosystems, including, but not limited to, shallow or deep coral ecosystems (EA, section 4.3.3)
  - Biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.). (EA, section 4.8.5)
- We evaluated the degree to which the proposed action is reasonably expected to affect a cultural resource including properties listed or eligible for listing on the National Register of Historic Places, archeological resources (including underwater resources), and resources important to traditional cultural and religious tribal practice. (EA, section 4.5.3)
- We evaluated the degree to which the proposed action has the potential to have a disproportionately high and adverse effect on the health or the environment of minority or low-income communities, compared to the impacts on other communities, and whether the proposed action would affect subsistence harvest or gathering and to what degree (E.O. 12898). (EA, section 4.5.2)
- We evaluated the degree to which the proposed action is likely to result in effects that contribute to the introduction, continued existence, or spread of noxious weeds or nonnative invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of the species. (EA, sections 4.8.5, 4.3.4)

- We reviewed whether the proposed action to cause an effect to any other physical or biological resources where the impact is considered substantial in magnitude (e.g., irreversible loss of coastal resource such as marshland or seagrass) or over which there is substantial uncertainty or scientific disagreement. (EA, sections 4.3, 4.8.3)
- Our analysis includes consideration of effects of the proposed action when the effects of the action on a resource are added to the effects of other actions which have occurred, are occurring, or are reasonably certain to occur in a similar geographic area. This allows us to determine whether the effects of otherwise individually insignificant actions, considered together with reasonably foreseeable actions with a close causal relationship to the proposed action, could result in additive or synergistically significant impacts.
- We determined that the project is not connected to other actions. (EA, section 1.8)

We note that the proposed action includes best management practices that are mitigation. Some of the BMPs include monitoring that the DLNR would complete before, during, and immediately after the construction project. We describe that DLNR would be responsible for ensuring its contractor complies with all required BMPs.

### **6.8.3 Other NEPA requirements**

The 2020 CEQ regulations require EAs to be 75 pages or less unless the requirement has been waived by a designated senior agency official. We strove to present a clear, concise analysis, and have added summary tables and figures for the reader's benefit. In addition to the environmental effects analysis, we include information we feel would helpful for the reader to understand our analytical approach as well as to support other compliance reviews under the CZMP, and to support the Department of Army's permitting review.

The combined purposes of this document result in a document that is longer than 75 pages. This EA is 104 pages without the appendices. The required NEPA content is contained in 70 pages, not counting appendices, maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information. We exclude the following pages from our NEPA based on CEQ's 2020 regulations at 40 CFR 1508.1(v): Table of Contents and Abbreviations (4pp); figures which are either geospatial maps, visually convey what is described in text, or are figures brought into the document from Appendix 1 for readability in accordance with plain language guidance (3pp); Tables 1 and 3, which summarize information in the text and are included for the reader's convenience (18pp); and section 6 which provides information for the reader and to inform certain intergovernmental reviews (9pp). Table 2 contains information not presented in the text and is part of the required NEPA analysis content.

The 2020 CEQ regulations require EAs to be prepared in less than one year, unless waived by a designated senior agency official. On August 5, 2021, NMFS PIRO SFD notified the NOAA NEPA Coordinator, through a web-based "Report a Major Federal Action" form, that the agency decided to prepare an EA. We completed the EA within the required timeframe.

### **6.9 Executive Orders**

Executive Orders 11988 and 11990 direct Federal agencies to avoid, to the extent possible, the long and short term adverse impacts associated with modifying or occupying floodplains and

wetlands as well as to avoid direct or indirect support of floodplain or wetland development whenever there is a practical alternative. The revetment would be constructed in an area subject to coastal flooding, but was designed to minimize adverse effects on floodplain hazards. NMFS has preliminarily found that due to the revetment's low relief, and the fact that floodwater would be able to drain from the parcel, that the project is not expected to intensify flooding (section 4.2.6). The proposed action will be coordinated with the CNMI BECQ through Federal Consistency review under the Coastal Zone Management Act.

E.O. 12898 (59 FR 7629; February 16, 1994) directs Federal agencies, as part of environmental effects reviews, to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, to the greatest extent practicable and permitted by law. The E.O. directs agencies to consider potential effects on subsistence use of resources. We review the potential for environmental justice issues in section 4.5.2 above. The proposed action is not likely to have large and adverse environmental or health effects. For these reasons, we preliminarily conclude the proposed action does not have the potential to have disproportionately high and adverse environmental or health effects on minority or low-income populations and would not affect subsistence harvest of marine resources.



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# Appendix A. Garapan Revetment Design Plans and Best Practices

## Appendix A-1. Revetment Design Plans

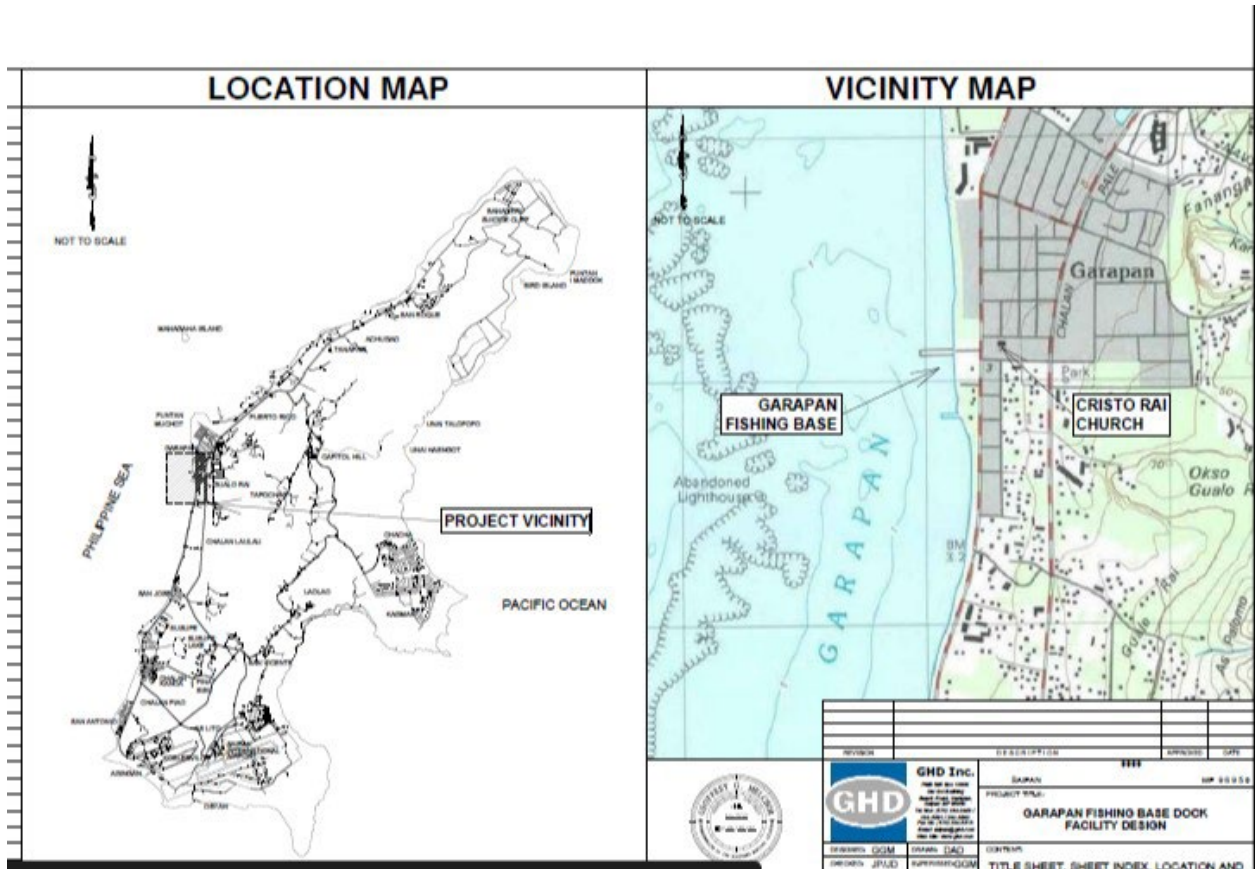


Figure A-1. Project location at Garapan Fishing Base, Saipan.  
 Credit: Modified from GHD (2020). Vicinity map modified by GHD from U.S. Geological Survey.

Appendix A-1 citation: GHD. 2020. Garapan Fishing Base Dock Facility Design. 10pp.





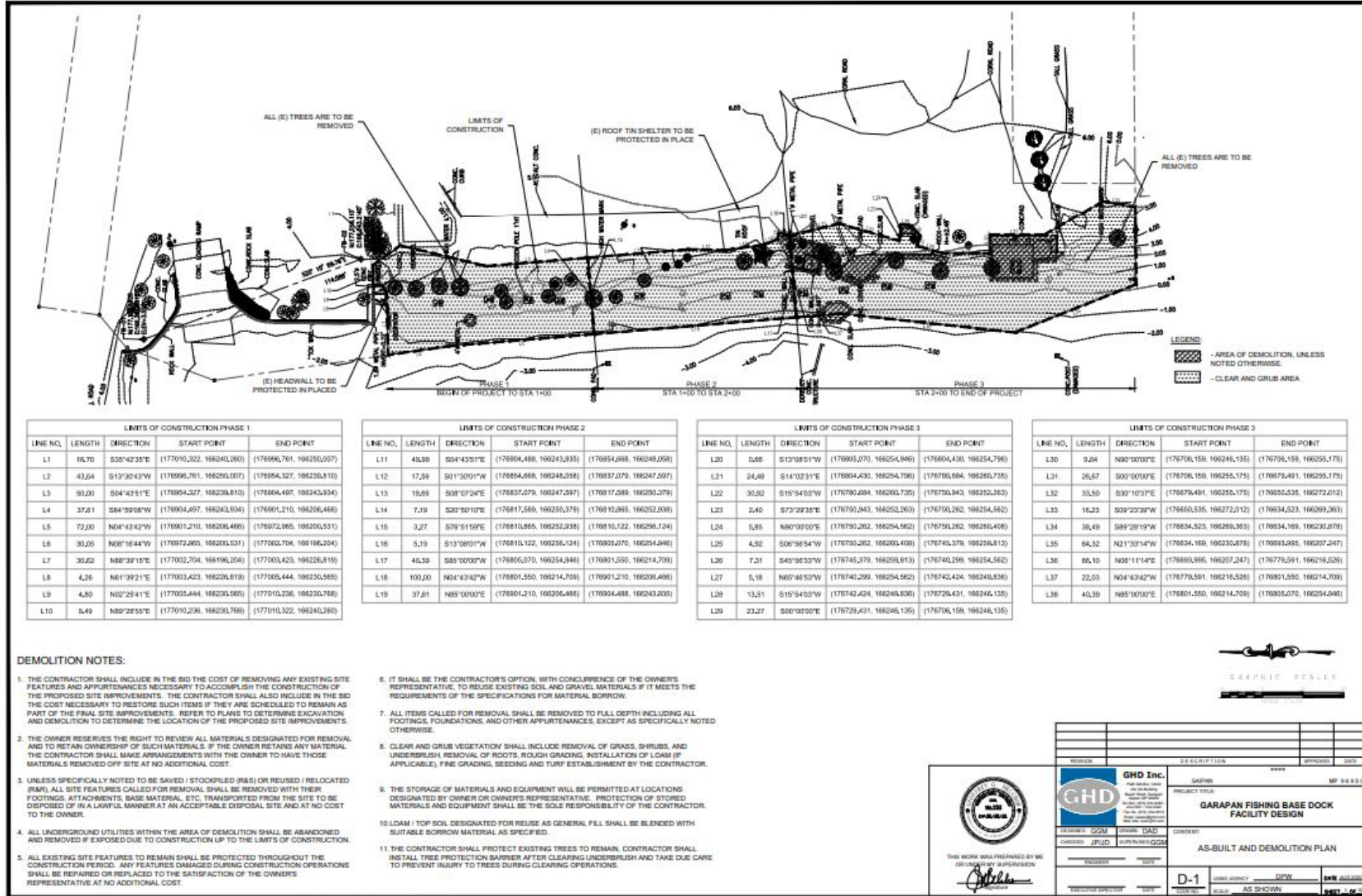


Figure A-3. Garapan Fishing Base Dock Facility Design Demolition Plan. Clip of As Built and Demolition Plan. (D-1)  
 Credit: GHD (2020).

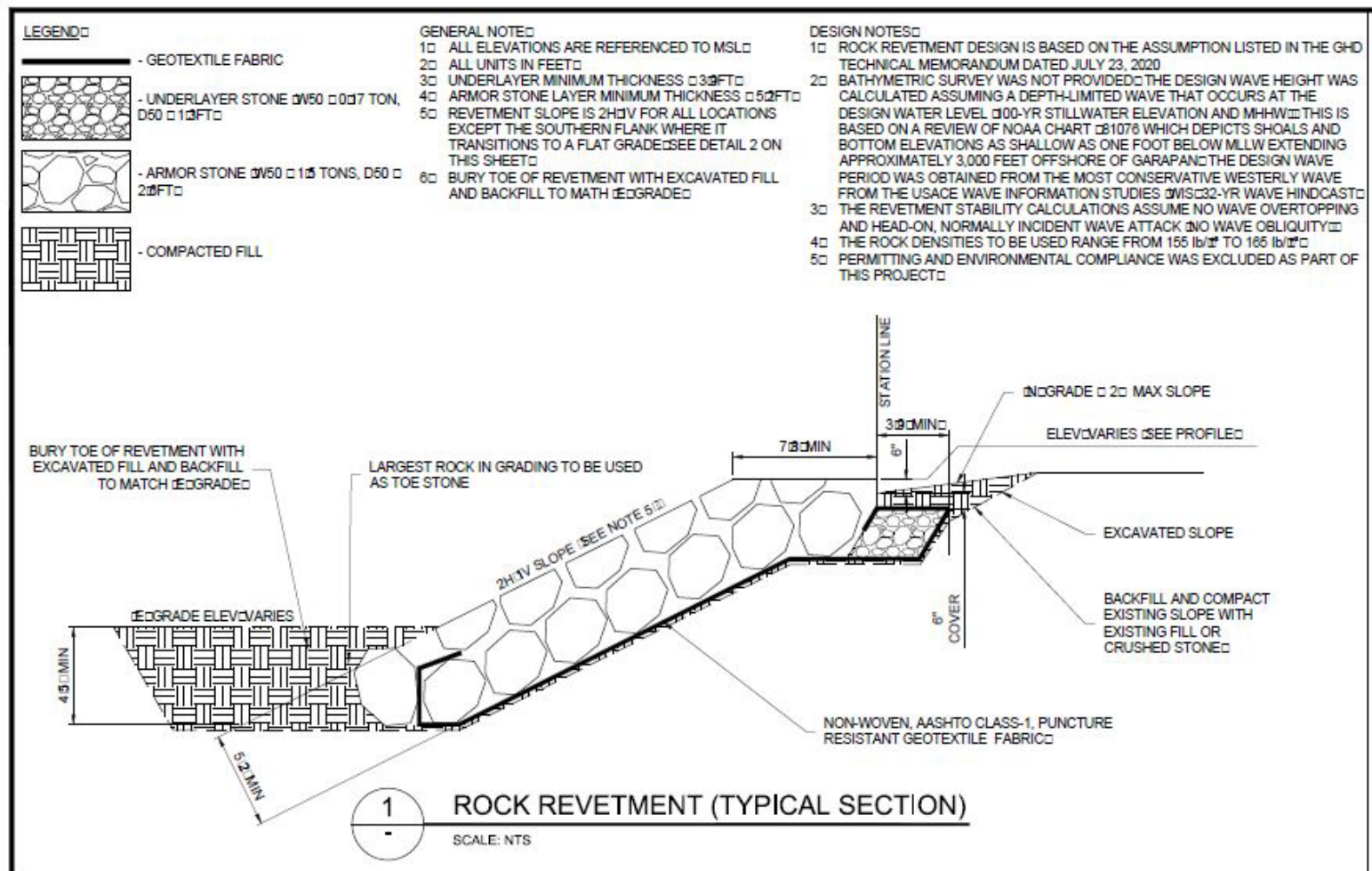


Figure A-4. Garapan Fishing Base Rock Revetment Typical Section.  
Credit: GHD (2020).

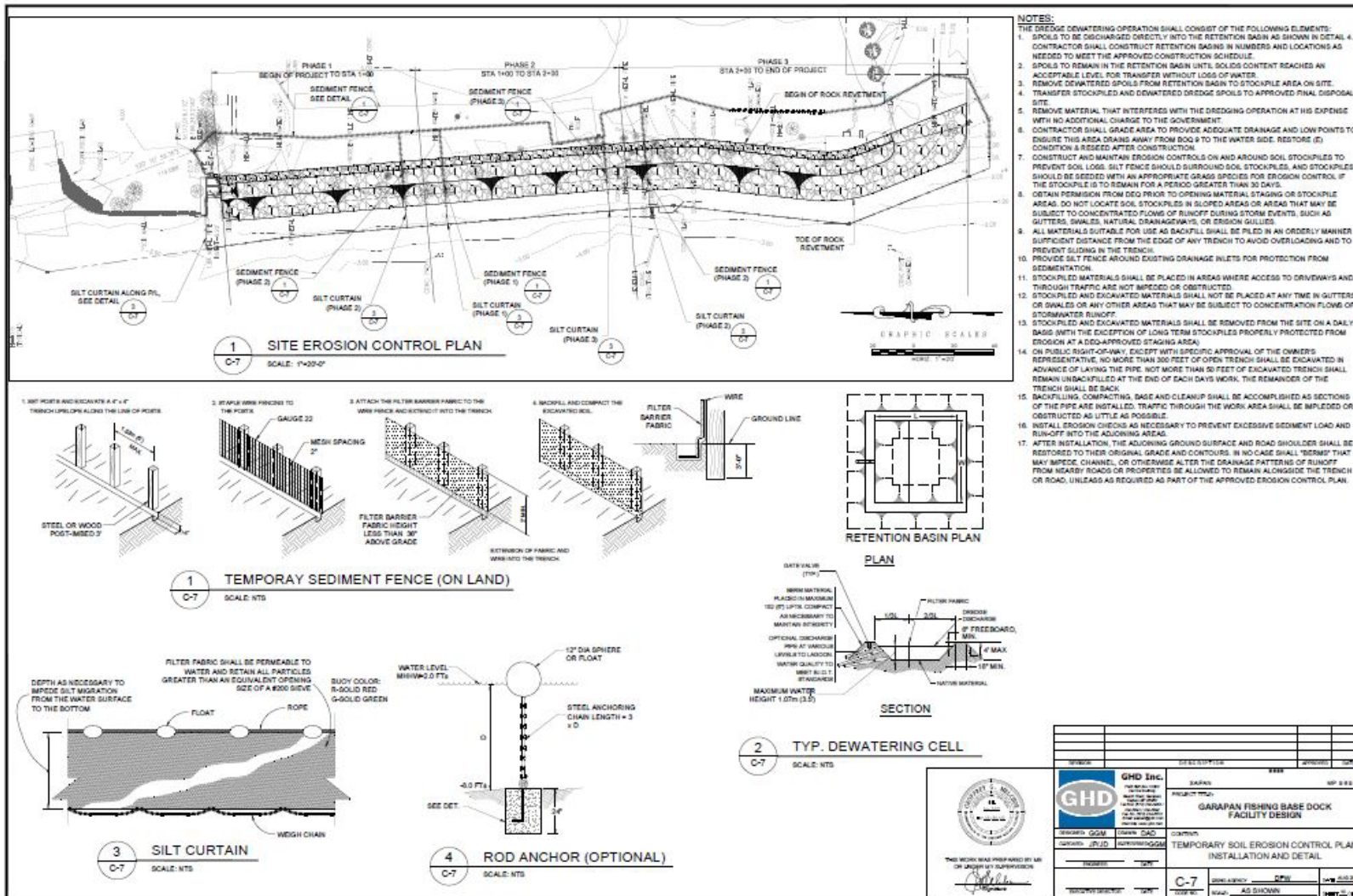


Figure A-5. Temporary Soil Erosion Control Plan, Installation Detail. (C-7)  
Credit: GHD (2020).



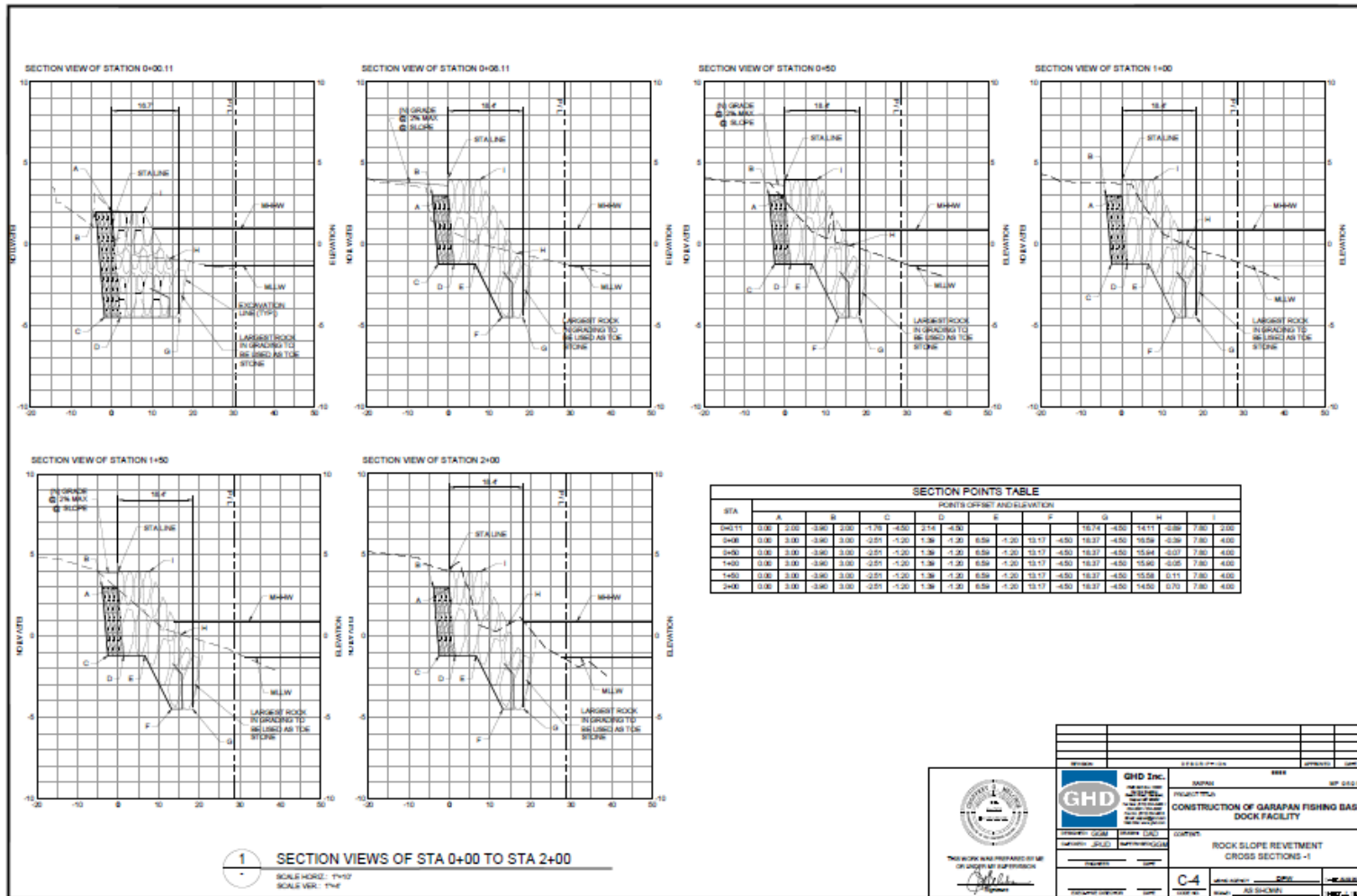


Figure A-7. Rock Slope Revetment Cross Sections-1. (C-4)  
 Credit: GHD 2020.

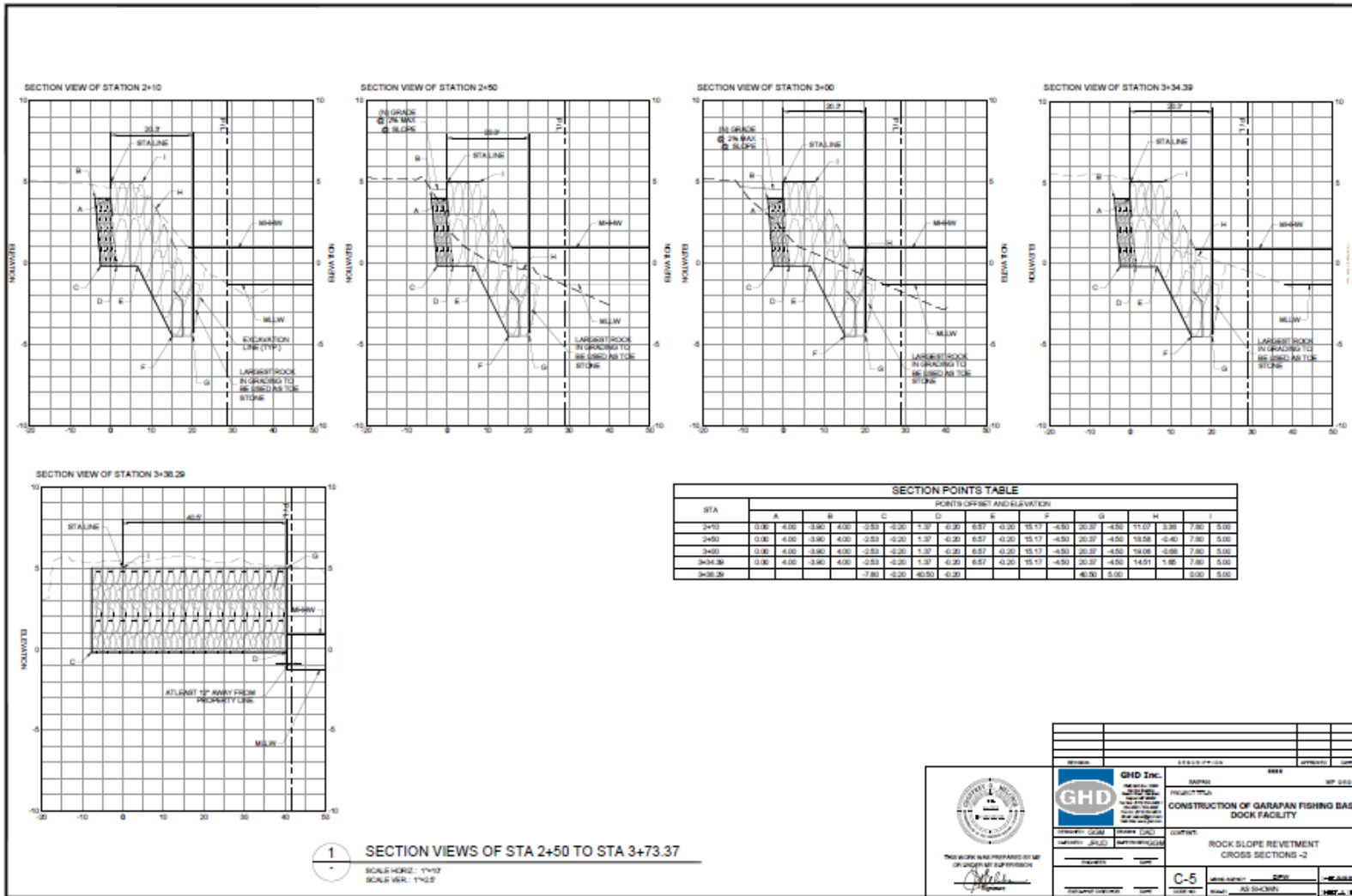


Figure A-8. Rock Slope Retevment Cross Sections - 2. (C-5)  
Credit: GHD (2020).

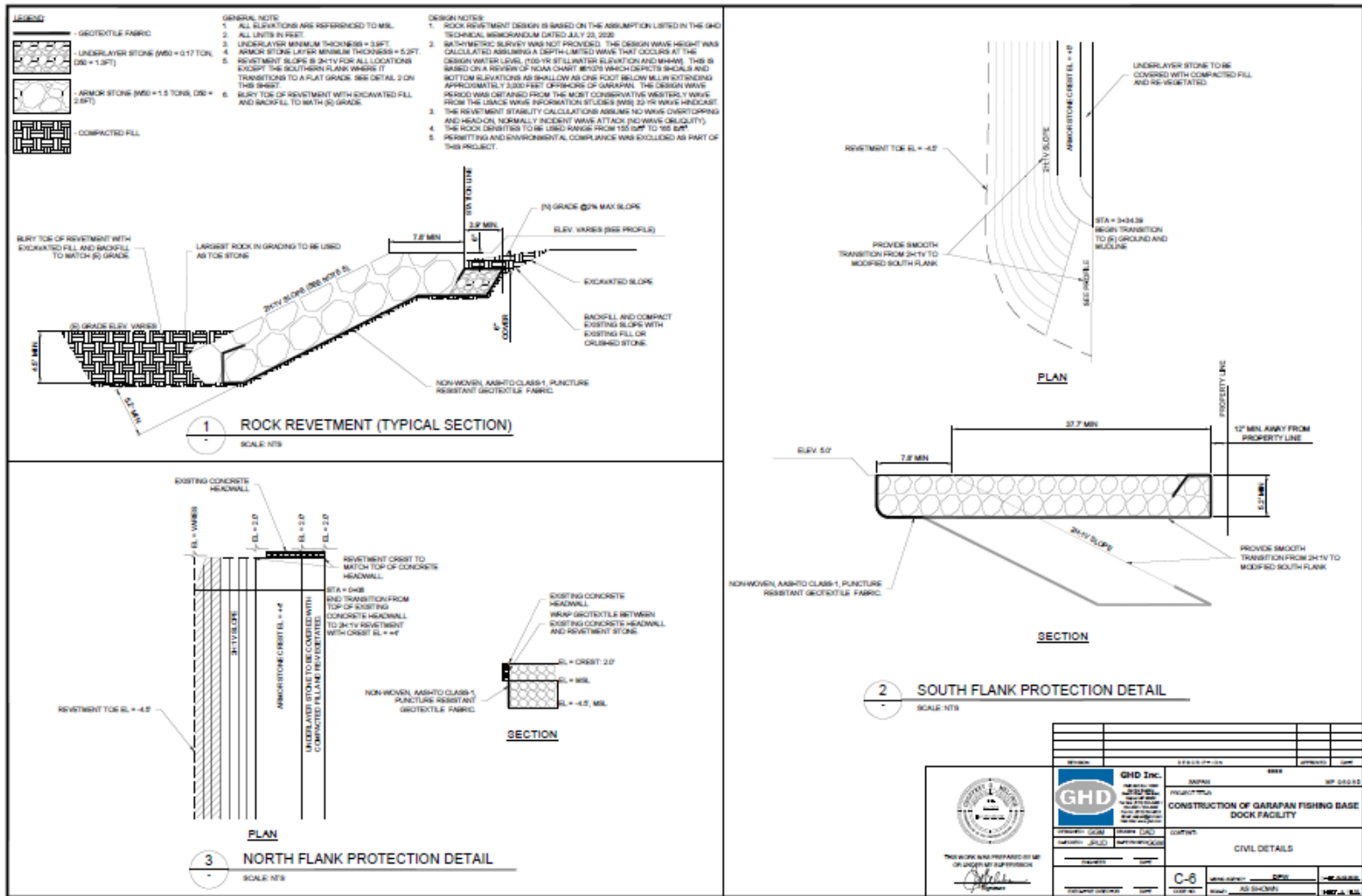


Figure A-9. Civil Details. (C-6)  
Credit: GHD 2020.

## **Appendix A-2. Draft Highlights of Construction Best Management Practices and Conservation Measures for the Garapan Fishing Base Shoreline Revetment**

The Commonwealth of the Northern Mariana Islands (CNMI) Department of Lands and Natural Resources (DLNR) will implement the following best management practices (BMPs) for the Garapan Fishing Base revetment project. These do not reflect all of the required permit conditions. These BMPs derive from:

- Garapan Fishing Base Dock Facility Plans (GHD 2020a)
- Garapan Fishing Base Dock Facility Specifications (GHD 2020b)
- Anticipated provisions of the CNMI Bureau of Environmental Quality (BECQ) construction permit, reflecting CNMI's statutory requirements.
- U.S. Army Corps General Conditions for Nationwide Permits 13 and 16 (USACE 2017a)
- Honolulu District Regional Conditions (RC) under the U.S. Army Corps of Engineers' (Corps) for Nationwide Permit 13 ((USACE 2017b)
- CNMI Water Quality Standards Regulations (WQS)
- National Historic Preservation Act, Section 106 consultation between the CNMI Historic Preservation Office and NMFS.
- Additional best practices developed by DLNR or recommended by NMFS or the Corps (USACE 2021) in support of reducing degree of environmental effects, and in support of the Endangered Species Act section 7 consultation and Magnuson-Stevens Fishery Conservation and Management Act (MSA) Essential Fish Habitat consultation for the Garapan Fishing Base revetment project. These are noted as NMFS if they are recommended by NMFS.

The DLNR will implement all other applicable permit conditions.

### **Traffic Control and Safety Measures**

Access to the construction site will be temporarily limited, as required for public safety.

### **Noise and Disturbance Controls**

Work will be done during normal work hours (weekdays between 7:30 a.m. and 4:30 p.m.), unless other days and times are authorized by DLNR. (GHD 2020b, General 53.)

### **Pre-construction BMPs**

Prior to commencing the Corps-authorized work in waters of Saipan Lagoon, the geographic limits of the authorized work boundary as approved by the Corps is to be demarcated on drawings and delineated (e.g., by staking, flagging, painting, silt fencing, signage, buoys, etc.) and must be maintained and remain observable throughout the construction period. The DLNR must also demarcate in the field the project limits of the Corps-authorized fill footprint to ensure that dredged or fill material is not discharged beyond the authorized limits. The permittee is prohibited from conducting any activity occurring in or affecting lagoon waters that requires



prior authorization from the Corps, outside of the permitted limits of disturbance (as shown on the permit drawings). (RC#8.1.a)

Erosion controls will be properly installed before any alteration of the area may take place. [PS #12]

Prior to construction, DLNR will collect baseline water quality samples in accordance with a BECQ-approved water quality monitoring plan.

Prior to construction, DLNR will undertake a backhoe survey for historic or archaeological resources, as described below. (CNMI HPO)

### **Soil Erosion and Pollution Control Project Features or BMPs**

It is a feature of the Garapan Fishing Base revetment project that heavy equipment will be operated from onshore and motorized equipment will not be stationed in the water.

Turbidity and the suspension or re-suspension of sediment from project-related work will be minimized and contained to the immediate vicinity of the authorized activity through the appropriate use of effective containment devices or measures and based on project-specific conditions. Silt fences, silt curtains, or other diversion or containment devices must be installed to contain sediment and turbidity at the work site (a) parallel to, and along the toe of any fill or exposed soil which may introduce sediment to an adjacent aquatic site; and (b) adjacent to any fill placed or soil exposed within an aquatic site. All silt fences, curtains, and other devices must be installed according to the manufacturer's guidelines and properly maintained throughout the construction period and until the impact area is stabilized and/or elevated turbidity levels have returned to ambient levels. (RC#8.2.a. and b.)

Erosion and sediment control items are to be installed according to the Soil Erosion and Control Plan (GHD 2020a, Code C-7). These include land-based silt fences, an in-water silt curtain, retention basin(s), and dewatering cells. (GHD 2020b, 3.3A.)

All project-related materials (e.g., fill, rocks, landscaping, structures, etc.) and equipment... must be free of invasive plant and animal species. (RC#8.2.b.)

The silt curtain must be placed in a manner to avoid direct physical impact to coral and seagrass beds during installation and throughout the duration of its use in nearshore waters of Saipan Lagoon. (RC#8.2.d.)

Any temporary in-water structures must be removed of, in their entirety, upon completion of the authorized work in or affecting wetlands, other special aquatic sites and other waters. The authorized work is not complete until these temporary structures are removed. (RC#8.2.e.)

Unless specifically authorized, stockpiling of project-related materials (e.g., fill, dredged material, revetment rock, pipe, etc.) or unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.) in or in close proximity to wetlands, other special aquatic sites and other waters such that the stockpiled materials could be carried into such waters by wind, rain, or high surf is prohibited. (RC#8.2.f.)

Upland containment areas sited in uplands near Saipan Lagoon for the purpose of stockpiling, dewatering, etc., must be bounded by impermeable material to prevent return flows of dewatered effluent into such waters. The runoff or overflow from a contained disposal area into such waters requires separate authorization. (RC#8.2.g.)

Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides. (GC #12; 2021)

The contractor will minimize raising dust from construction operations and will prevent air-borne dust from dispersing into the atmosphere. (GHD 2020b 1.20 A, B)

The contractor will minimize surface area of bare soil exposed at one time and will replant exposed soil with turf grass as soon as possible.

All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days. (PS# 16)

All erosion control items will be maintained in good working order.

- The contractor will check the erosion and sediment controls weekly and immediately after each rainfall greater than 1/2 inch. (GHD 2020b, 3.3E)
- Clean silt fences and check dams of excessive sediment accumulation if and when necessary. (GHD 2020b, 3.5A)
- Remove sediment deposits when the level of deposition reaches approximately half the height of the barrier. (GHD 2020b, 3.5B)

Dredging is restricted to uncontaminated areas, and any associated construction and demolition debris, un-reclaimed dredge spoils, and green waste will be completely isolated and disposed of in an approved upland disposal location. (PS #17, modified).

The contractor is responsible for day-to-day job site cleanup.

The contractor will be responsible for complying with pollution and environmental control requirements of authorities having jurisdiction by law. The contractor must provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. The contractor will not dispose of volatile wastes or oils in storm or sanitary drains or on the ground and will not allow waste materials to be washed into streams or bodies of water. (GHD 2020a, 1.24 B,C,D,E).

The contractor will transport, store, and dispose of hazardous materials in accordance with applicable law. (NMFS)

The contractor will implement approved pollution control measures as detailed in the Project Environmental Protection Plan. (GHD 2020b, 1.24A).

A pollution and erosion control plan for the project site and adjacent areas must [will] be prepared and carried out. (PS #11) At a minimum, this plan shall [will] include:

- a) Proper installation and maintenance of silt fences, saudades, equipment diapers, and/or drip pans.
- b) A contingency plan to contain and clean spilled petroleum products 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 from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act). GC#6, 2021)
- e) The equipment operator will perform daily pre-work inspections of heavy equipment for cleanliness and leaks, with all heavy equipment operations postponed or halted until leaks are repaired and equipment is cleaned.
- f) Fueling of project-related vehicles and equipment will take place at least 50 ft away from the water and within a containment area, preferably over an impervious surface.
- g) A plan will be developed to prevent trash and debris from entering the marine environment during the project.
- h) All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.

The dredged or discharged material will be free of contamination. (PS, Other minor discharges and dredging/excavations, #1).

DLNR will establish and follow a water quality monitoring plan developed in coordination with the CNMI Bureau of Environmental and Coastal Quality. The plan will include a sampling plan designating sampling sites, control site, daily measurements, and responses to established turbidity thresholds. Should water quality beyond the silt curtain exceed thresholds established in the plan, construction will temporarily stop until water quality returns to required threshold levels.

Storm water is to be contained within the site so as not to discharge onto neighboring properties.

Erosion checks will be installed as necessary to prevent excessive sediment load and run-off into adjoining areas. (GHD 2020a, C-7 Note 16).

A storm water 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. (PSGC #10).

The Contractor will maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off site. (GHD 2020b, 1.13A, D).

Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate. (GC #13; 2021; NWP 13-GC(i); PS#14).

### **Historic and Cultural Resources**

DLNR will comply with the regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, (36 CF Part 800) throughout the project. The following BMPs resulted from NMFS' NHPA section 106 consultation with the CNMI Historic Preservation Office (HPO):

Prior to excavation or grubbing, the CNMI DLNR will obtain the services of a Secretary of the Interior (SOI) standards-certified archaeologist to conduct a preliminary backhoe (subsurface) testing study and monitoring of the ground disturbance activity of the project to ensure that no historic and/or archaeological resources may be adversely impacted by the proposed project undertaking.

Seventy-two hours prior to beginning construction, including establishment of the silt barriers, the DLNR will notify the CNMI HPO that construction will begin. The SOI standards-certified archaeologist may monitor the excavation.

If any historic properties or cultural remains are found during excavation, including during site access and preparation, the discoveries will be treated in accordance with the NHPA, 36 CFR §800.13, "Post-review discoveries."

The construction contractor will stop work in the area and will notify the DLNR Contracting Officer, NMFS, the CNMI HPO, and the Advisory Council on Historic Preservation (ACHP). The CNMI HPO and the ACHP shall be notified within 48 hours of the discovery. The CNMI HPO and ACHP shall respond within 48 hours of the notification. NMFS and DLNR will take into account the CNMI HPO's and ACHP's recommendations regarding National Register eligibility and then carry out appropriate actions. As the Federal agency of record, NMFS will provide the CNMI HPO and ACHP with a report of the actions when they are completed.

In the case of discovery of any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by the Corps permit, the DLNR must immediately notify the Honolulu District Engineer of what was found; and, to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The District Engineer will initiate the Federal, Tribal,

and CNMI coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

NMFS and the CNMI DLNR, in consultation with the CNMI HPO, may assume a newly-discovered property to be eligible for the National Register for purposes of section 106. In its notification, NMFS will specify the National Register criteria used to assume the property's eligibility so that information can be used in the resolution of adverse effects.

### **Wildlife and Habitat BMPs**

Endangered Species Act (ESA)-listed species that have been observed in coastal marine areas off Garapan Fishing Base include endangered green and hawksbill sea turtles. Threatened scalloped hammerhead sharks and larvae of threatened corals could occur in the project vicinity. In addition to previously listed BMPs, the following BMPs are intended to help avoid and reduce adverse effects on ESA-listed species during revetment construction.

DLNR will document and report to the Corps and NMFS all interactions with listed species, including the disposition of any listed species that are injured or killed. Should an ESA-listed turtle or shark be injured or killed during the project, all work must stop pending re-initiation and completion of consultation between the Corps and NMFS PRD. (NMFS)

Constant vigilance shall be kept for the presence of non-coral ESA-listed marine species (sea turtles, marine mammals, sharks) during all aspects of the action. (PS 5)

- A responsible party, i.e., permittee/site manager/project supervisor, shall designate a competent observer to search/monitor work sites and the areas adjacent to the authorized work area for ESA-listed marine species. (PS#5a)
- Searches and monitoring shall be made prior to the start of work each day, including prior to resumption of work following any break of more than one-half hour. Additional periodic searches and monitoring throughout the work day are strongly recommended. (PS #5b)
- All in-water work will be postponed or halted when ESA-listed marine species are within 50 yards of the proposed work. In-water work will only begin/resume after the animals have voluntarily departed the area, with the following exception: if ESA-listed marine species are noticed within 50 yards after work has already begun, that work may continue only if, in the best judgment of a biologist, the activity is unlikely to disturb or harm the animal(s), for example, divers performing surveys or underwater work (excluding the use of toxic chemicals) is likely safe, the use of heavy machinery is not. (PS #5c)
- For any equipment used in undertaking the authorized work (i.e. dredging, minor excavation) a mandatory shut-down range of 50 m will ensure that no ESA-listed marine animals are exposed to sound levels anywhere near the TTS threshold isopleths. (PS, elevated noise, #1)

- Maintenance dredging, in-water excavation, movement of large armor stones...shall not be undertaken if any ESA-listed species is within 50 yards of the authorized work, and those operations shall immediately shut-down if an ESA-listed species enters within 50 yards of the authorized work. (PS, elevated noise, #2)
- Project-related personnel shall not attempt to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species. (PS #5d)

Project footprints must be limited to the minimum area necessary to complete the project (PS #6)

The project area must be flagged to identify sensitive resource areas, such as seagrass beds, listed terrestrial plants, and sea turtle nests. (PS #7)

Work located lagoonward of the Mean Higher High Tide Line of navigable water or lagoonward of the upward limits of adjacent wetlands must be timed to minimize effects on ESA-listed species and their habitats. (PS #8)

Project operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage. (PS #9)

To avoid physical impacts to corals, work shall be performed outside of the main coral spawning period in accordance with CNMI Water Quality Standards regulations at §65-130-530 “Dredging and Discharge of Dredged or Fill Material: (b)(3)(iii). At June, 2021, this section states, “For activities which have the potential to adversely affect coral reproduction, a stoppage period starting around the June or July full moon (to be determined by BECQ), is required. The stoppage period, if determined to be applicable, shall be no less than twenty-one calendar days around each full moon determined by BECQ to influence coral spawning...”The section lists specific considerations the BECQ will use in its determination. See also, the Wildlife Conservation BMP for other coral below.

The peak spawning period for Acropora corals in the CNMI has been determined to be during the month of June (Keith et al. 2017). The coral spawning period is estimated to be 21 days per event, which includes 8 days before the full moon and 14 days after. The DLNR and BECQ will consult with local NMFS Habitat Conservation Division Biologist to determine the date of mass coral spawning and avoid in-water construction during the primary spawning period.

### **Other Conservation Recommendations**

All workers associated with this project irrespective of their employment arrangement or affiliation (e.g. employee, contractor, etc.) will be fully briefed on these BMPs by the DLNR:

- To reduce entanglement and entrapment hazards for marine wildlife related to the silt curtain, DLNR will ensure the proper length of ropes to secure the silt curtain are installed and use the minimum line length necessary to account for expected fluctuations in water depth due to tides and waves. (PS, entanglement #1)

- The silt curtain system shall be designed to keep the line as tight as possible, with the intent to eliminate the potential for loops to form and maximize the time that the lines are taut. (PS, entanglement #2; NMFS).
- The contractor shall prevent loose lines and gaps on the silt curtain to prevent entanglement or entrapment of ESA-listed turtles or shark. (NMFS)
- Should an ESA-listed species (turtle or scalloped hammerhead shark) be found to be entangled or entrapped, the contractor will remove the animal in coordination with the DLNR and NMFS. (NMFS)
- No project-related material (fill, revetment rock, pipe, etc.) is to be stockpiled in the water (intertidal zone, seagrass beds). (NMFS)
- All materials entering the water should be cleaned prior to installation and free of visible sediment including rock/boulder material, fencing material, etc. (NMFS)
- All objects lowered to the bottom will be lowered in a controlled manner to prevent dropping construction materials or other items to the bottom during demolition and/or construction. (PS, physical impact #3)
- During the construction, any under-layer fills used in the project shall be protected from erosion as soon after placement as practicable. (NMFS)
- If the contractor notes a silt plume, work will stop until the cause has been addressed. (NMFS) Silt fences and the silt curtain are to be maintained as needed to function as intended.
- A water quality monitoring plan approved by CNMI BECQ will establish provisions based for stopping work based on turbidity level monitoring. (CNMI Water quality standards)
- Any permanent or long-term deployments of the silt curtain shall include an inspection and maintenance program to reduce the likelihood of failures that may result in loose mooring lines lying on the substrate or hanging below a float line. (PS, entanglement, #5)
- As a best practice to prevent sediment that builds up in and at the bottom of the silt curtain from spreading into the lagoon environment after removal, the contractor will remove excess sediment trapped by the silt curtain or within the silt curtain and treat it at the project site for disposal. (NMFS)
- To the extent practicable, prior to removing or moving the silt curtain, the contractor should allow time for residual silt to settle out of the water column, and allow temperatures to normalize. (NMFS)

## **Storm Preparation and Response**

The contractor will curtail work during adverse weather conditions to ensure the proper functioning of the silt containment devices. To the extent possible, the contractor will schedule work during the non-rainy season and when ocean conditions are known to be calm. In the event of an out-of-season or adverse rain and swell event, work should ideally halt, equipment should be secured, and mitigation measures put in place that are ensured to be effective in controlling potential impacts to the environment during the event.

The contractor will be responsible for the security and safety of the construction work and the site when warnings of winds of gale force are issued. Gale winds are defined as having a sustained velocity of 34 knots (39 mph) or greater and include winds of tropical storms and typhoon intensities. When warnings of winds of gale force are issued, the contractor will carry out directives concerning securing action to be taken which may be issued to him by the DLNR. These actions are intended to minimize the danger to persons; to prevent damage to work in place, materials, supplies, equipment, adjacent structures, and property of others; and in the public interest. (GHD 2020b, General #59)

The CNMI uses an alert system that ranges from a Condition Level 4, which is the lowest alert level and indicates a possible threat of destructive winds within 72 hours, up to a Condition Level 1, which indicates that destructive winds are expected within 12 hours. When Saipan is in Storm Condition Level 3 (damaging winds are possible within 48 hrs) when a storm is forecast to be a Category 1 or stronger typhoon (e.g., a storm with maximum sustained winds greater than 74 mph) when it passes over or near Saipan, in addition to securing the construction site, the contractor will, at DLNR's direction, remove the in-water silt curtain. (NMFS)

Once the storm has passed, DLNR will visit the construction site as soon as it is feasible to do so safely to evaluate conditions at the construction site. DLNR will retrieve any debris blown into the water from the construction site. (NMFS)

## **Sunscreen**

CNMI Public Law No. 21-20 prohibits the "...importation, sale, and distribution in the CNMI sunscreen containing oxybenzone and octinoxate without a prescription from a licensed healthcare provider..." These chemicals have significant harmful impacts on the marine environment including coral reefs (Downs et al. 2015). To protect corals in Saipan Lagoon during in-water operations for the Garapan Fishing Base revetment project, DLNR will inform the contractor of the existing law; of the benefits to corals of workers using natural, less harmful sunscreen when its use is necessary for sun protection; and of the option of workers using long sleeves, leggings, hats, and hoods to protect themselves. (NMFS)

## **Invasive Species**

The DLNR's construction plans require new materials (GHD 2020b, Note 18). As an additional measure to prevent cross-site transfer of marine organisms including invasive green algae, all equipment, materials, and instruments that have been used at other work sites will be examined and rinsed with fresh water. This will be done at a location away from the lagoon prior to use or deployment to ensure no organisms are being introduced or transported between work sites.



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## Appendix B. Summary of Biological Site Survey

Table B-1. Marine substrate and wildlife (marine fishes, invertebrates, plants) in and adjacent to proposed revetment construction footprint, Garapan Fishing Base, Saipan.

Source: Summary from CNMI Department of Lands and Natural Resources (DLNR) Division of Fish and Wildlife site survey report May 7, 2021. Survey Note: DLNR observed no endangered, threatened or protected species during the survey (DLNR 2021). BT=Belt Transect; I= Inside project boundary; O= Outside project boundary.

Resource Type	Common name <sup>(1)</sup>	Scientific name	Within project BT1/I	Within project BT2/I	Outside Project BT3/O	Property Line BT4/O	Outside Project BT5/O
<b>General habitats</b>							
Substrate	Silt	-	BT1/I	BT2/I	BT3/O	BT4/O	BT5/O
Substrate	Sand	-	BT1/I	BT2/I	BT3/O	BT4/O	BT5/O
Substrate	Rubble	-	BT1/I	BT2/I	BT3/O	BT4/O	BT5/O
Cover	Seagrass	<i>Enhalus acoroides</i>	None	None	Outside property boundary	Outside project footprint	Outside project footprint
<b>Marine Fishes</b>							
Damselfish	Scissortail sergeant	<i>Abudefduf sexfasciatus</i>	BT1/I			BT4/O	
Surgeonfish	Epaulette surgeonfish	<i>Acanthurus nigricauda</i> <sup>(1)</sup>					
Surgeonfish	Ringtail surgeonfish	<i>Acanthurus blochii</i>				BT4/O	
Goby	Sleeper Banded goby or white-barred goby	<i>Amblygobius phalaena</i>	BT1/I		BT3/O		

Resource Type	Common name <sup>(1)</sup>	Scientific name	Within project BT1/I	Within project BT2/I	Outside Project BT3/O	Property Line BT4/O	Outside Project BT5/O
Cardinalfish	Cardinalfish	<i>Apogon sp.</i>	BT1/I			BT4/O	
Pufferfish, toby	Blue Spotted puffer or Spotted sharpnose	<i>Canthigaster solandri</i>	BT1/I	BT2/I		BT4/O	
Carangid, Jack	Bluefin trevally	<i>Caranx melampygus</i>	BT1/I				
Wrasse	Cigar wrasse	<i>Chelio inermis</i>		BT2/I	BT3/O		BT5/O
Butterflyfish	Saddleback butterflyfish	<i>Chaetodon ephippium</i>				BT4/O	BT5/O
Pipefish	Scribbled pipefish	<i>Corythoichthys intestinalis</i>				BT4/O	BT5/O
Damselfish	Damselfish**	<i>Dascyllus aruanus</i>	BT1/I	BT2/I		BT4/O	
Moray Eels	Moray eel	<i>Echidna nebulosa</i>		BT2/I			
Mullet	Squartetail mullet	<i>Ellochelon vaigiensis</i>	BT1/I				
Silver-Biddy	Common silver-biddy	<i>Gerres oyena</i>	BT1/I	BT2/I			
Moray Eel	Moray eel	<i>Gymnothorax flavimarginatus</i>				BT4/O	
Emperor	Emperor	<i>Lethrinus harak</i>	BT1/I		BT3/O	BT4/O	BT5/O
Snapper	Snapper	<i>Lutjanus fulvus</i>				BT4/O	
Goatfish	Goatfish	<i>Parupeneus ciliatus</i>				BT4/O	

Resource Type	Common name <sup>(1)</sup>	Scientific name	Within project BT1/I	Within project BT2/I	Outside Project BT3/O	Property Line BT4/O	Outside Project BT5/O
Catfish	Striped eel catfish	<i>Plotosus lineatus</i> <sup>(1)</sup>					
Damselfish	Dusky farmerfish, Dusky gregory	<i>Stegastes nigricans</i>				BT4/O	
Parrotfish	Blue-barred parrotfish	<i>Scarus ghobban</i>				BT4/O	BT5/O
Scolopsinae	Striped monocle bream	<i>Scolopsis lineata</i>		BT2/I		BT4/O	
Lizardfish	Variegated lizardfish	<i>Synodonus variegatus</i>				BT4/O	
<b>Marine Plants</b>							
Seagrass	Seagrass	<i>Enhalus acoroides</i>	None	None	BT3/O	None	BT5/O
Green algae	Green calcareous algae	<i>Halimeda</i> sp.			BT3/O	BT4/O	BT5/O <sup>(3)</sup>
Green algae	Green algae	<i>Caulerpa</i> sp.			BT3/O	BT4/O	BT5/O
Turf algae	Multiple species	Turf algae	BT1/I	BT2/I			BT5/O
<b>Marine Invertebrates</b>							
Hard coral	Cauliflower or lace coral	<i>Pocillopora damicornis</i>	None	None		BT4/O	None
Jellyfish	Upside-down jellyfish	<i>Cassiopea</i> sp.			BT3/O		
Sea cucumber	Sea cucumber	<i>Holothuria atra</i>	BT1/I	BT2/I	BT3/O	BT4/O	BT5/O

Resource Type	Common name <sup>(1)</sup>	Scientific name	Within project BT1/I	Within project BT2/I	Outside Project BT3/O	Property Line BT4/O	Outside Project BT5/O
Sea cucumber	Sea cucumber	<i>Holothuria hilla</i> <sup>(2)</sup>					
Sea cucumber	Sea cucumber	<i>Holothuria leucospilota</i>		BT2/I			BT5/O
Sea cucumber	Durian sea cucumber	<i>Stichopus horrens</i>		BT2/I		BT4/O	BT5/O
Sea cucumber	Greenfish or spiky sea cucumber	<i>Stichopus chloronotus</i> <sup>(1)</sup>					
Sea star	Blue Linckia or Blue star	<i>Linckia laevigata</i>				BT4/O	
Mollusk	Spider conch	<i>Lambis lambis</i>				BT4/O	
Crustacean, shrimp	Glass shrimp	<i>Palaemonetes sp.</i>		BT2/I			
Crustacean, crab	Thin-shelled rock crab	<i>Grapsus tenuicrustatus</i>		BT2/I			

<sup>(1)</sup> NMFS added the common names.

<sup>(2)</sup> DLNR noted a ball of striped eel catfish within the action area, but outside of their transect.

<sup>(3)</sup> Green calcareous algae is dominant cover within belt transect 5 which is beyond the action area.

Data source: CNMI DLNR. 2021. Resource Survey of the Fishing Base Revetment Project Site. May 7, 2021. 10pp.

**Appendix C. Endangered, Threatened, and Candidate Marine Species and Critical Habitat in the Mariana Islands and Occurrence near Garapan Fishing Base**

[FR = Federal Register; n/a = not applicable, NLAA = Not likely to adversely affect.]

Table C-1. Endangered, Threatened, and Candidate Marine Species and Critical Habitat in the Mariana Islands and Occurrence Near Garapan Fishing Base.

Common Name	Scientific Name	Listing Status	Date Listed	NMFS Effects Determination	Date of ESA Consultation	Likely occurrence in Saipan Lagoon
<b>ESA-listed Sea Turtles</b>						
Green Sea Turtle Central West Pacific Distinct Population Segment (DPS)	<i>Chelonia mydas</i>	Endangered DPS	4/6/2016, 81 FR 20058	May affect, NLAA	1/31/22	Present in Saipan Lagoon, primarily in outer reef areas (Summers et al. 2017). No nesting at Garapan Fishing Base.
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	Endangered	7/28/1978, 43 FR 32800	May affect, NLAA	1/31/22	Rarely in Saipan Lagoon, primarily in reef areas. No nesting at Garapan Fishing Base.
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered	6/2/1970, 35 FR 8491	No effect (geographic separation)	n/a	Not present in Saipan Lagoon

Common Name	Scientific Name	Listing Status	Date Listed	NMFS Effects Determination	Date of ESA Consultation	Likely occurrence in Saipan Lagoon
Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>	Threatened (The eastern Pacific population includes nesting aggregations on the coast of Mexico, which are listed as endangered).	7/28/1978, 43 FR 32800	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
Loggerhead, North Pacific DPS	<i>Caretta caretta</i>	Endangered	9/22/2011, 76 FR 58868	No effect (geographic separation)	n/a	Not present in Saipan Lagoon.
<b>ESA-listed Marine Mammals*</b>						
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered Western North Pacific DPS	09/08/2016, 81 FR 62259	No effect (geographic separation)	n/a	Not present in Saipan Lagoon.
Fin Whale	<i>Balaenoptera physalus</i>	Endangered	12/02/2011, 35 FR 18319	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
Sei Whale	<i>B. borealis</i>	Endangered	12/02/1970, 35 FR 18319	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
Blue Whale	<i>B. musculus</i>	Endangered	12/02/1970, 35 FR 18319	No effect (geographic separation)	n/a	Not present in Saipan Lagoon

Common Name	Scientific Name	Listing Status	Date Listed	NMFS Effects Determination	Date of ESA Consultation	Likely occurrence in Saipan Lagoon
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered	12/02/1970, 35 FR 18319	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
North Pacific Right Whale	<i>Eubalaena japonica</i>	Endangered	03/06/2008, 45 FR 12024	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
<b>ESA-listed Sharks and Ray</b>						
Scalloped Hammerhead Shark, Indo-West Pacific DPS	<i>Sphyrna lewini</i>	Threatened	7/3/2014, 79 FR 38214	May affect, NLAA.	1/31/22	Not confirmed in Saipan Lagoon. Neonates and juveniles could occur near the project site.
Oceanic Whitetip Shark	<i>Carcharhinus longimanus</i>	Threatened	01/30/18, 83 FR 4153	No effect (geographic separation)	n/a	Not present in Saipan Lagoon
Giant Manta Ray	<i>Manta birostris</i>	Threatened	01/22/18, 83 FR 2916.	No effect (geographic separation).	n/a	Not present in shallow Saipan Lagoon waters.
<b>Candidate Shark</b>						
Shortfin Mako shark	<i>Isurus oxyrinchus</i>	Under status review as of April 15, 2021, (86 FR 19863).	n/a	No adverse effect.	n/a	Not confirmed in Saipan Lagoon. Juveniles or neonates could swim near the action area.



Common Name	Scientific Name	Listing Status	Date Listed	NMFS Effects Determination	Date of ESA Consultation	Likely occurrence in Saipan Lagoon
<b>ESA-listed Reef Corals</b>						
Coral (no common name)	<i>Acropora globiceps</i> , <i>A. retusa</i> , and <i>Seriatopora aculeata</i>	Threatened	09/10/2014, 79 FR 53852	May affect, NLAA ( <i>A. globiceps</i> )  No effect ( <i>A. retusa</i> and <i>S. aculeata</i> ) due to geographic separation.	1/31/22	ESA-listed coral colonies not present in or near the action area. Coral larvae could be in the water column after spawning events.  <i>A. globiceps</i> is the only listed coral present near Saipan and is quite rare. (NMFS 2022).
<b>Candidate Clams</b>						
Giant Clams	<i>Hippopus hippopus</i> , <i>Tridacna derasa</i> , <i>T. gigas</i> , and <i>T. squamosa</i>	Under status review as of June 26, 2017 (82 FR 28946)	n/a	No adverse effect.	n/a	Giant clams are not present in or near the action area. Giant clam larvae could be in the water column after spawning events.

Common Name	Scientific Name	Listing Status	Date Listed	NMFS Effects Determination	Date of ESA Consultation	Likely occurrence in Saipan Lagoon
<b>Proposed Critical Habitat</b>						
Coral (no common name)	NMFS proposed portions of marine waters around Saipan as critical habitat for three ESA-listed corals: <i>Acropora globiceps</i> , <i>A. retusa</i> , and <i>Seriatopora aculeata</i> .	n/a	Proposed designation: on November 27, 2020 (85 FR 76262)	No adverse effect on proposed critical habitat beyond the action area.  No effect on proposed critical habitat in the action area.	1/31/22	Essential feature of proposed critical habitat (hard substrate) is not present in the action area but is nearby. NMFS expressly excluded some areas from proposed critical habitat including Garapan Fishing Base boat ramp and areas routinely maintained (dredged) for vessels. BMPs would prevent adverse effects on nearby areas proposed as critical habitat.

Table 1 Note: Dugong (*Dugong dugon*), northern elephant seal (*Mirounga angustirostris*), and Hawaiian monk seal (*Neomonachus (=Monachus) schauinslandi*) are ESA-listed marine mammals that are listed by SRS Parsons (2007) as having been observed around the Mariana Islands; however, the sightings are considered outside their normal range (Fulling et al. 2011). Because these species have not been recently confirmed from around Guam or the CNMI, we are omitting them from the list of ESA-listed marine species potentially affected by the proposed action.

Key sources for Table C-1:

- Fulling, G.L, P.H. Thorson, and J. Rivers. 2011. Distribution and abundance estimates for cetaceans in the waters of Guam and the Commonwealth of the Northern Mariana Islands. *Pac. Sci.*, 65:321–343. Doi: 10.2984/65.3.321.
- Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. *Micronesica*, 34(1): 55–72.
- National Marine Fisheries Service (NMFS). 2022. Response to Informal ESA Consultation Request on Sustainable Fisheries Fund IX Grant #NA17NMF4410166 Garapan Fishing Base Shoreline Revetment, CNMI (PIRO-2021-03153, I-PI-21-1986-AG). NMFS Pacific Islands Regional Office Memorandum, January 31, 2022. 12 pp.
- NMFS. 2021. Potential Effects of the Proposed Garapan Fishing Base Shoreline Revetment, Saipan, Commonwealth of the Northern Mariana Islands on Endangered Species Act-Listed Marine Species and Proposed Coral Critical Habitat and Potential Effects on Essential Fish Habitat for Mariana Bottomfish and Western Pacific Pelagic Management Unit Species. December 9 2021. 48pp. + Attachments.
- Nishiwaki, M., T. Kasuya, N. Miyazaki, T. Tobayama and T. Kataoka. 1979. Present distribution of the dugong in the world. *Sci. Rep. Whales Res. Inst.*, 31:133–141.
- SRS-Parsons. 2007. Marine Mammal and Sea Turtle Survey and Density Estimates for Guam and the Commonwealth of the Northern Mariana Islands. Final report, Contract No. N68711-02-D-8043; Task Order No. 0036. Prepared for Naval Facilities Engineering Command Pacific, Commander U.S. Pacific Fleet. 156.
- Summers, T. M., T.T. Jones, S.L. Martin, J.R. Hapdei, J.R. Ruak, and C.A. Lepczyk. 2017. Demography of marine turtles in the nearshore environments of the Northern Mariana Islands. *Pac. Sci.*, 71: 269–286.
- Summers, T.M., S.L. Martin, J.R. Hapdei, J.K. Ruak, and T.T. Jones. 2018. Endangered Green Turtles (*Chelonia mydas*) of the Northern Mariana Islands: Nesting Ecology, Poaching, and Climate Concerns. *Front. Mar. Sci.*, 15 pp.

Figure 9 to paragraph (f) – Saipan and Garapan Bank

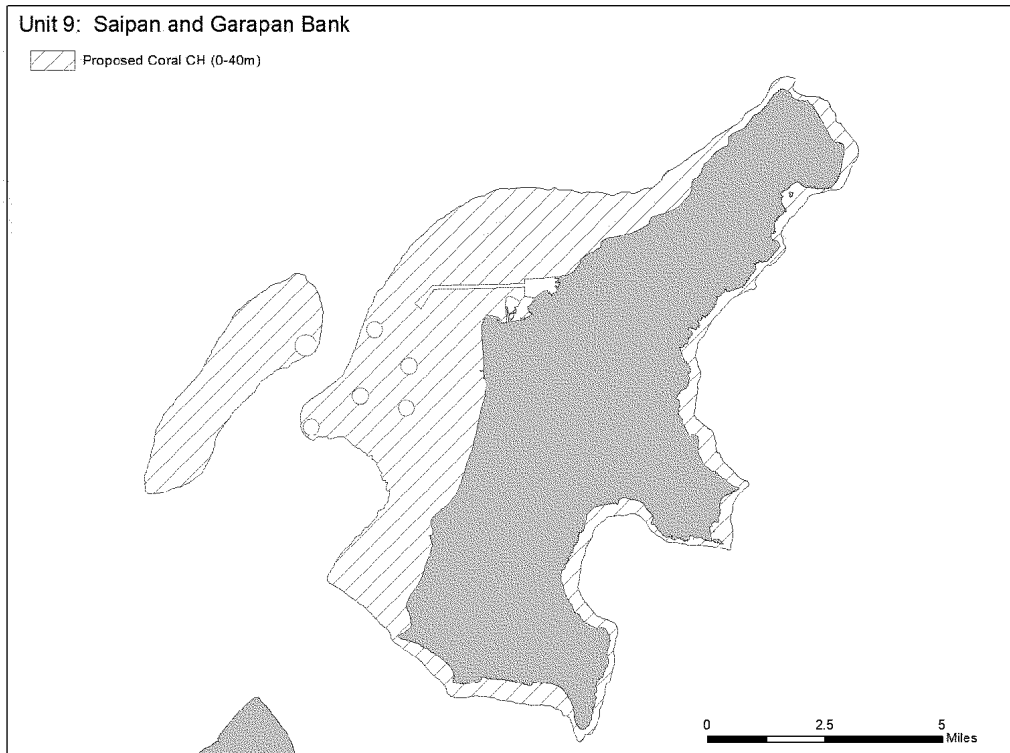


Figure C-1. Generalized depiction of areas NMFS has proposed as critical habitat around Saipan, CNMI. Source: NMFS Proposed Rule, Critical Habitat for the Threatened Indo-Pacific Corals (85 FR 76262; November 27, 2020).

Note:

Detailed information describing proposed critical habitat in Saipan and other areas for threatened Indo-Pacific corals is found in the Proposed Rule published by NMFS November 27, 2020 (85 FR, 76262) available at: <https://www.federalregister.gov/documents/2020/11/27/2020-21226/endangered-and-threatened-species-critical-habitat-for-the-threatened-indo-pacific-corals>.

In the agency’s Proposed Rule for Critical Habitat for the Threatened Indo-Pacific Corals (85 FR 76262; November 27, 2020) NMFS proposed critical habitat for three ESA-listed corals around Saipan: threatened *Acropora globiceps*, *Acropora retusa*, and *Seriatopora aculeata*. In the proposed rule, “Unit 9 Saipan and Garapan Bank” includes “all waters 0–40 m depth around Saipan and Garapan Bank, except the areas specified in paragraph (d) of this section and the national security exclusion (six Navy berths) specified in paragraph (e) of ...”

The areas excepted from proposed critical habitat are in paragraph (d), which reads, “*Areas not included in critical habitat*. Critical habitat does not include the following particular areas where they overlap with the areas described in paragraphs (a) through (c) of this section:

(2) Pursuant to ESA section 3(5)(A)(i)(I), areas where the essential feature does not occur;

(3) Pursuant to ESA section 3(5)(A)(i)(I), all managed areas that may contain natural hard substrate but do not provide the quality of substrate essential for the conservation of threatened corals. Managed areas that do not provide the quality of substrate essential for the conservation of the seven Indo-Pacific corals are defined as particular areas whose consistently disturbed nature renders them poor habitat for coral growth and survival over time. These managed areas include specific areas where the substrate has been disturbed by planned management authorized by local, territorial, state, or Federal governmental entities at the time of critical habitat designation, and will continue to be periodically disturbed by such management. Examples include, but are not necessarily limited to, dredged navigation channels, shipping basins, vessel berths, and active anchorages;

(4) Pursuant to ESA section 3(5)(A)(i), artificial substrates including but not limited to: Fixed and floating structures, such as aids-to-navigation (AToNs), seawalls, wharves, boat ramps, fishpond walls, pipes, submarine cables, wrecks, mooring balls, docks, aquaculture cages...”

In its Proposed Rule, NMFS states that, “The feature essential to the conservation of the three species is: Reproductive, recruitment, growth, and maturation habitat. 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...”

The proposed rule describes specific areas proposed to be excluded. Specifically, for Saipan, the rule states, “...(13) Areas not included in critical habitat on Saipan and Garapan Bank.

(i) Critical habitat does not include the Commonwealth Ports Authority harbors, basins, and navigation channels, their seawall breakwaters; all other channels, turning basins, berthing areas that are periodically dredged or maintained, and a 25 m radius of substrate around each of the AToN bases.

(ii) Critical habitat does not include artificial substrates, including but not limited to: The 15 USCG-managed fixed AToNs, Territory-managed boat ramps at Smiling Cove (Garapan), Sugar Dock (Chalan Kanoa), Tanapag, Fishing Base (Garapan), and Lower Base (Tanapag); and all other AToNs, seawalls, wharves, docks, boat ramps, moorings, pipes, wrecks, and other artificial structures...”

## Appendix D. Supporting Maps and Figures

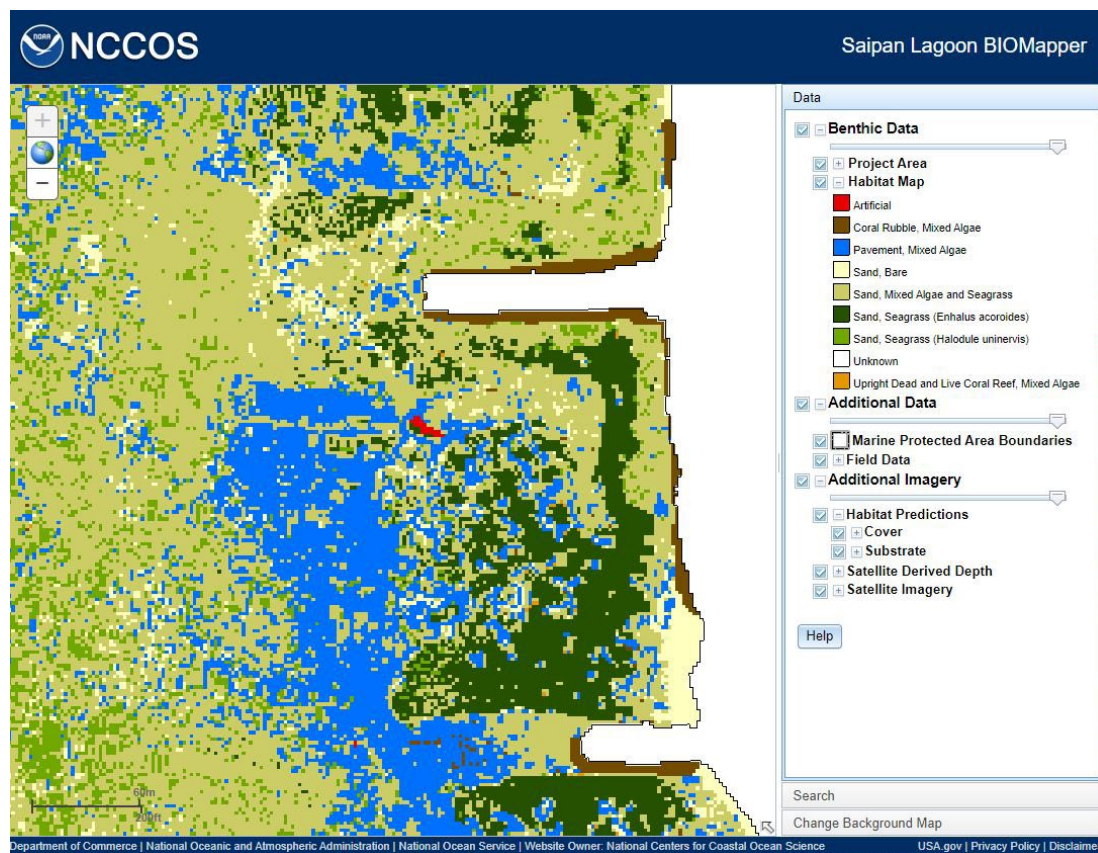


Figure D-1. Generalized benthic habitats, Saipan Lagoon near Garapan Fishing Base.

Source: Kendall, M., B. Costa, S. McKagan, and L. Johnston. 2017. Benthic habitat maps of Saipan Lagoon, Commonwealth of the Northern Mariana Islands (NCEI Accession 0162517). NOAA National Centers for Environmental Information. Dataset. Doi:10.7289/V5NV9GB9Benthic habitat maps of Saipan Lagoon, CNMI (NCEI Accession 0162517). <https://maps.coastalscience.noaa.gov/biomapper/biomapper.html?id=saipan>

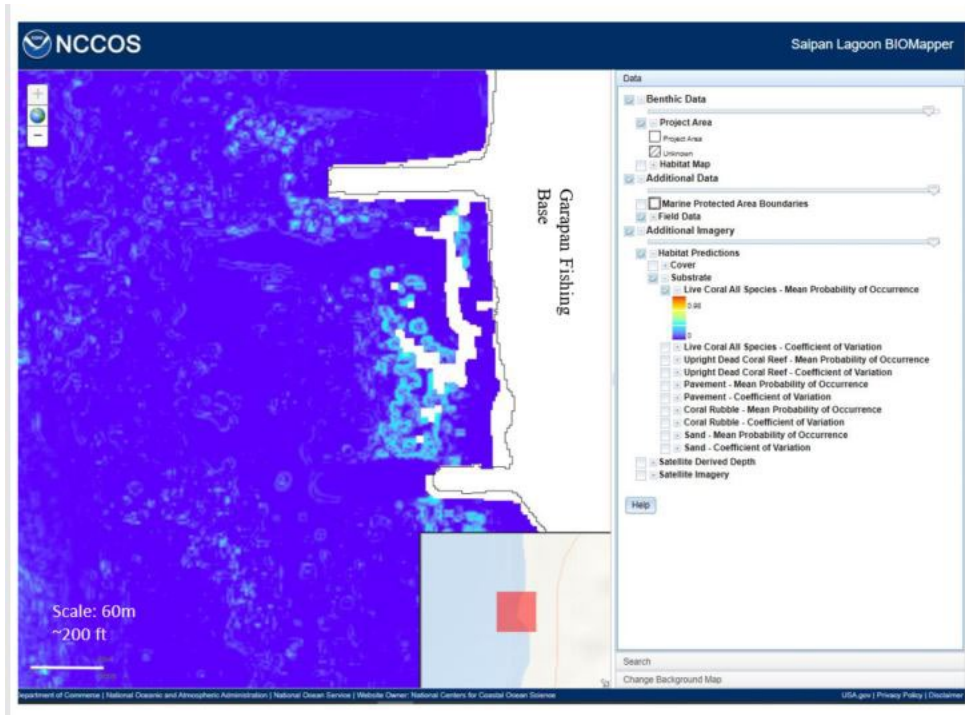


Figure D-2. Potential occurrence of coral, Saipan Lagoon near Garapan Fishing Base.

Source: Kendall, M., B. Costa, S. McKagan, and L. Johnston. 2017. Benthic habitat maps of Saipan Lagoon, Commonwealth of the Northern Mariana Islands (NCEI Accession 0162517). NOAA National Centers for Environmental Information. Dataset. Doi:10.7289/V5NV9GB9Benthic habitat maps of Saipan Lagoon, CNMI (NCEI Accession 0162517).

<https://maps.coastalscience.noaa.gov/biomapper/biomapper.html?id=saipan>

There is no probability of coral close to shore along the project work site. There is some probability of coral occurring beyond the dredged area and in areas closer to the boat ramp.

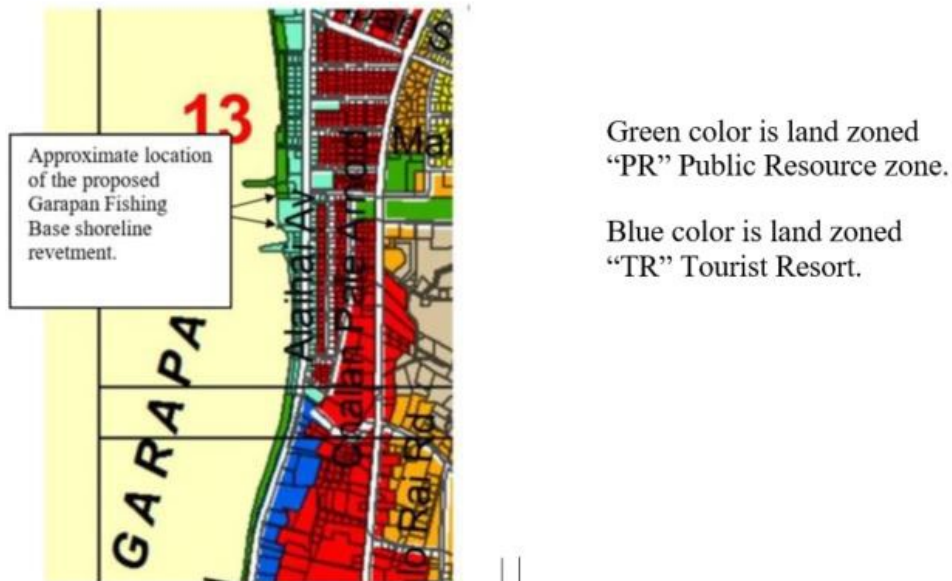


Figure D-3. Land Use Zones at Garapan Fishing Base.

<https://cnmizoning.com/resources/files/WHOLE%20MAP.pdf>

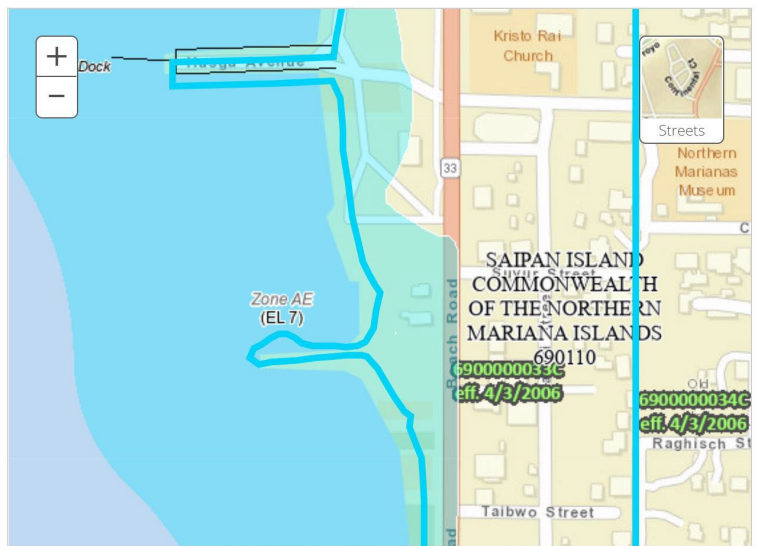


Figure D-4. FEMA Flood Zones Panel 690000033C, Saipan Island, CNMI, effective 4/3/2006.

Source: FEMA Portal

<https://msc.fema.gov/portal/search?AddressQuery=garapan%20saipan#searchresultsanchor>

Note: The blue highlight in Figure D-4 shows that the revetment would be built in a flood hazard area, AE EL 7. Locations covered with the light blue color are subject to inundation by a flood that has a 1-percent or greater chance of being equaled or exceeded during any given year. This is the “base flood” or “100-year flood.” Detailed hydraulic analyses found that the base flood elevation is 7 ft.



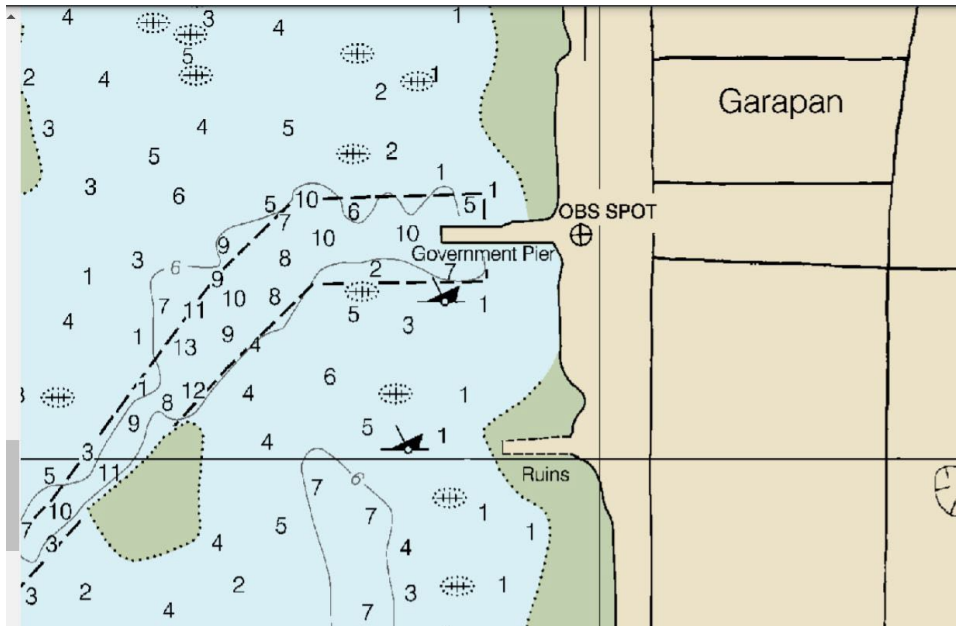


Figure D-5. Clip of NOAA Chart 81076.  
Soundings in ft.

Figure D-5 shows the shallow lagoon areas with soundings of 1 foot along Garapan Fishing Base between the “Government Pier” and “Ruins,” the remains of a former pier.

**Appendix E. Photographs of Constructed or Fabricated Objects Within or Near the Area of Potential Effect for the Garapan Fishing Base Revetment**

The following images show constructed or fabricated items in the area of potential effect for the Garapan Fishing Base revetment project. NMFS preliminarily determined that none of these items is considered to be a structure or object of historic importance under the National Historic Preservation Act (NMFS 2021).



Figure E-1. Fabricated metal buoy proposed to be moved by DLNR before construction. Credit: CNMI DLNR 2021.

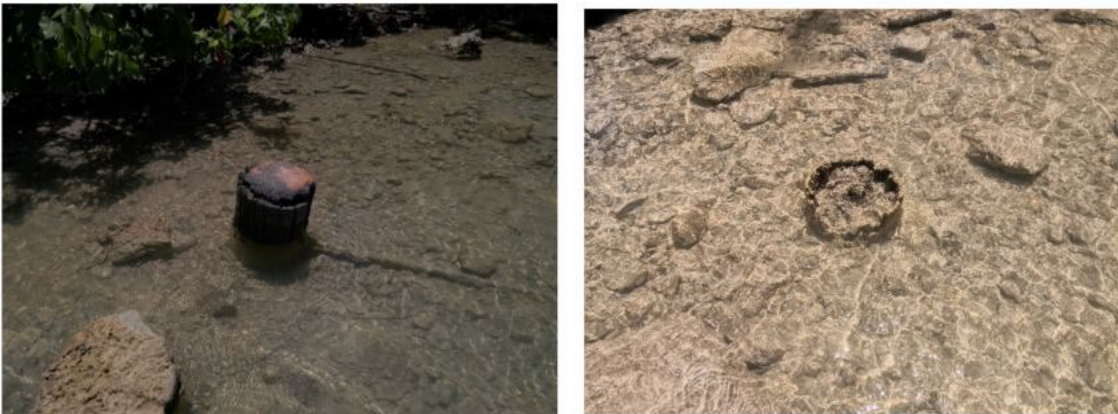


Figure E-2. Remains of former pier pilings along Garapan Fishing Base that would be removed. Credit: CNMI DLNR, 2021.



Figure E-3. Small cement platform near the coast considered to be part of the former Ship Ashore Restaurant that would be demolished.  
Credit: NMFS, 2021.



Figure E-4. Cement foundation and cemented seawall to be demolished.  
Credit: CNMI DLNR 2021.



Figure E-5. Cement block structure and associated round cement pad to be demolished.  
Credit: NMFS, 2021.

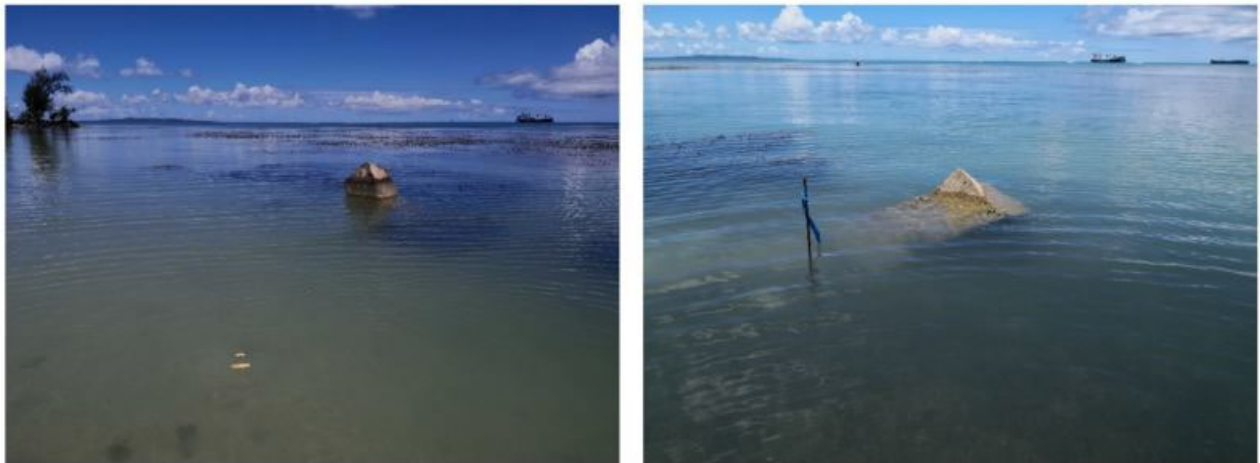


Figure E-6. Derelict concrete pillars outside the construction footprint that would remain in place.  
Credit: CNMI DLNR 2021.



Figure E-7. Remains of a wooden ship formerly part of the Ship Ashore Restaurant lie beyond the construction footprint and would remain in place.

Credit: J. Gourley, Micronesian Environmental Services, 2021.

**Reference cited:**

National Marine Fisheries Service. 2021. Historic Resources Review and Effects Determination for the Proposed Garapan Fishing Base Shoreline Revetment, Saipan, Commonwealth of the Northern Mariana Islands: Section 106 of the National Historic Preservation Act Consultation. October 6, 2021. 39 pp.

**Appendix F. Marianas Bottomfish and Western Pacific Pelagic Management Unit Species and Designated Essential Fish Habitat and Habitat Areas of Particular Concern off Garapan Fishing Base, Saipan, CNMI**

**Designated Essential Fish Habitat and Habitat Areas of Particular Concern in the Project Area**

The Magnuson-Stevens Act defines essential fish habitat (EFH) as, “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (50 CFR, section 600.10). The Magnuson-Stevens Act requires any Federal agency that may adversely affect EFH to consult with NMFS. Adverse effects on EFH are defined as “any impact that reduces the quality and/or quantity of EFH,” and may include “site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.” 50 CFR §600.810(a). 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.”

Habitat Areas of Particular Concern (HAPC) are subsets of EFH identified pursuant to 50 CFR, section 600.815(a)(8).

EFH and HAPC have been defined in the Council’s approved Fishery Ecosystem Plan (FEP) for the Mariana Archipelago (WPFMC 2009a), as amended in 2018 (WPFMC and NMFS 2018); and the FEP for the Pelagic Fisheries of the Western Pacific (WPFMC 2009b). The water column and seafloor in the project area are designated EFH for various life stages of bottomfish management unit species (BMUS) and pelagic management unit species (PMUS) listed in Table and Table, respectively. Amendment 5 to the Mariana Islands FEP, designated former coral reef ecosystem MUS, crustacean MUS, and precious coral MUS as “ecosystem component species or ECS.” The Council has not designated EFH or HAPC for ECS (WPFMC and NMFS 2018).

**Mariana Bottomfish MUS**

Mariana Bottomfish MUS are listed in Table F-1.

Table F-1. Mariana Bottomfish Management Unit Species.

<b>Local name</b>	<b>Common name</b>	<b>Scientific name</b>
(1) lehi/marobw	red snapper, silvermouth	<i>Aphareus rutilans</i>
(2) tarakitu/etam		<i>Caranx ignobilis</i>
(3) tarakiton attelong, orong	black trevally, jack	<i>Caranx lugubris</i>
(4) bueli, bwele	lunartail grouper	<i>Variola louti</i>
(5) buninas agaga’, falaghal moroobw	red snapper	<i>Etelis carbunculus</i>
(6) abuninas, taighulupegh	red snapper	<i>Etelis coruscans</i>
(7) mafuti, atigh	redgill emperor	<i>Lethrinus rubrioperculatus</i>
(8) funai, saas	blueline snapper	<i>Lutjanus kasmira</i>
(9) buninas, falaghal-marobw	Yellowtail snapper	<i>Pristipomoides auricilla</i>

Local name	Common name	Scientific name
(10) buninas, pakapaka, falaghal-marooow	pink snapper	<i>Pristipomoides filamentosus</i>
(11) buninas, falaghal-marooow	yelloweye snapper	<i>Pristipomoides flavipinnis</i>
(12) buninas, falaghal-marooow	pink snapper	<i>Pristipomoides sieboldii</i>
(13) buninas rayao amariyu, falaghal-marooow	flower snapper	<i>Pristipomoides zonatus</i>

Source: List and local name are from the Mariana Archipelago FEP (WPFMC 2009a), as amended (WPFMC and NMFS 2018) and 50 CFR §665.401 (Definitions).

### Mariana Bottomfish EFH and HAPC

The Council defines Mariana Bottomfish EFH (WPFMC 2009a, WPFMC and NMFS 2018) as:

“Bottomfish EFH (shallow water and deep-water bottomfish MUS):

Eggs and larvae: The water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm)

Juvenile/adults: The water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm).”

The Council defines Mariana Bottomfish HAPC as, “All slopes and escarpments between 40–280 m (20fm and 140 fm).”

For the current project, bottom habitat and the water column in and adjacent to Garapan Fishing Base within the area of potential effect and adjacent areas is designated Mariana Bottomfish EFH for eggs, larvae, juvenile, and adult life stages. There is no Mariana Bottomfish HAPC in Saipan Lagoon.

### Western Pacific Pelagic MUS

Pelagic MUS of the Western Pacific and their EFH and HAPC are described in the Pacific Pelagic Fishery Ecosystem Plan (WPFMC 2009b) and listed in Table. Note that the list of Pelagic MUS in Table F-2 may include pelagic fish and shrimp species that do not occur in the project area.

Table F-2. Western Pacific Pelagic Management Unit Species.

English common name	Scientific name
Tunas:	
Albacore	<i>Thunnus alalunga</i>
bigeye tuna	<i>Thunnus obesus</i>
yellowfin tuna	<i>Thunnus albacares</i>
northern bluefin tuna	<i>Thunnus thynnus</i>
skipjack tuna	<i>Katsuwonus pelamis</i>
Kawakawa	<i>Euthynnus affinis</i>
other tuna relatives	<i>Auxis</i> spp., <i>Scomber</i> spp., <i>Allothunnus</i> spp.

English common name	Scientific name
Billfishes:	
Indo-Pacific blue marlin	<i>Makaira mazara</i>
black marlin	<i>Makaira indica</i>
striped marlin	<i>Tetrapturus audax</i>
shortbill spearfish	<i>Tetrapturus angustirostris</i>
Swordfish	<i>Xiphias gladius</i>
Sailfish	<i>Istiophorus platypterus</i>
Sharks:	
pelagic thresher shark	<i>Alopias pelagicus</i>
bigeye thresher shark	<i>Alopias superciliosus</i>
common thresher shark	<i>Alopias vulpinus</i>
silky shark	<i>Carcharhinus falciformis</i>
oceanic whitetip shark	<i>Carcharhinus longimanus</i>
blue shark	<i>Prionace glauca</i>
shortfin mako shark	<i>Isurus oxyrinchus</i>
longfin mako shark	<i>Isurus paucus</i>
salmon shark	<i>Lamna ditropis</i>
Other pelagic fishes:	
mahimahi (dolphinfish)	<i>Coryphaena</i> spp.
Wahoo	<i>Acanthocybium solandri</i>
Moonfish	<i>Lampris</i> spp.
Oilfish	Gempylidae
Pomfret	Bramidae
Squid:	
diamondback squid	<i>Thysanoteuthis rhombus</i>
neon flying squid	<i>Ommastrephes bartramii</i>
purpleback flying squid	<i>Stenoteuthis oualaniensis</i>

Source: Common name and scientific name are as in 75 FR 2252 (January 14, 2010), Regulations implementing Western Pacific Pelagic Fishery Ecosystem Plan (WPFMC 2009b).

### Western Pacific Pelagic EFH and HAPC

EFH for Western Pacific Pelagic MUS is defined as:

**“Eggs and larvae:** the (epipelagic zone) water column down to a depth of 200m (100 fm) from the shoreline to the outer limit of the EEZ.

**Juvenile/adults:** the water column down to a depth of 1,000 m (500 fm) from the shoreline to the outer limit of the EEZ.”

Pelagic HAPC is defined as:

“The water column from the surface down to a depth of 1,000 m (500 fm) above all seamounts and banks with summits shallower than 2,000 m (1,000 fm) within the EEZ.”

For the Garapan Fishing Base revetment project, bottom habitat and the water column in and adjacent to Garapan Fishing Base within the area of potential effect and adjacent areas are



designated EFH for all life stages of Pelagic MUS. There is no HAPC for Pelagic MUS in the shallow areas of Saipan Lagoon.

Management Unit Species and life stages that may be found within the project area include eggs, larvae, juveniles, and adult BMUS and PMUS. Specific types of habitat considered as EFH within the proposed project area include soft substrate (unconsolidated sandy, silty, gravel), rubble with turf algae, rocks with macroalgae, and lagoon water. Habitat adjacent to and outside of the construction zone includes seagrasses. Nearby EFH includes coral reefs.

Sources cited:

Western Pacific Fishery Management Council (WPFMC) 2009a. Fishery Ecosystem Plan for the Mariana Archipelago. Western Pacific Fishery Management Council, Honolulu, HI. 231pp.

WPFMC. 2009b. Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region. Western Pacific Fishery Management Council, Honolulu, HI. 249pp.

WPFMC and NMFS. 2018. Ecosystem Components 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. Including an Environmental Assessment and Regulatory Impact Review. 165pp.